Titen HD[®] Threaded Rod Hanger

The Titen HD threaded rod hanger is a high-strength screw anchor designed to suspend threaded rod from concrete slabs, beams or concrete over steel in order to hang pipes, cable trays and other HVAC equipment. The anchor offers low installation torque with no secondary setting, and has been tested to offer industry-leading performance in cracked and uncracked concrete - even in seismic loading conditions.

Features

Mechanical Anchors

- Thread design undercuts to efficiently transfer the load to the base material
- · Serrated cutting teeth and patented thread design enable quick and easy installation
- · Specialized heat-treating process creates tip hardness to facilitate cutting while the anchor body remains ductile
- · Designed to install using a rotary hammer or hammer drill with standard ANSI drill bits - no special tools required
- · Installs with standard-sized sockets
- Use in dry interior environments only
- · Code listed for cracked and uncracked concrete applications under the 2015, 2012 and 2009 IBC/IRC, per ICC-ES ESR-2713
- FM listed

Codes: ICC-ES ESR-2713:

City of LA Supplement within ESR-2713; Florida FL15730 (concrete and masonry); Factory Mutual 3031136 (THD50234RH) and 3061897 (THDB37158RH)

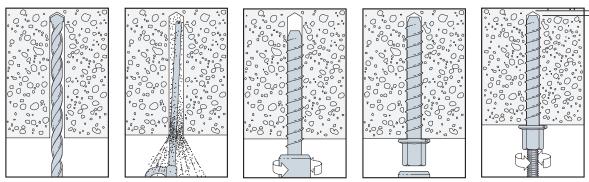
Material: Carbon steel

Coating: Zinc plated

Installation

- Caution: Oversized holes in the base material will reduce or eliminate A the mechanical interlock of the threads with base material and will reduce the anchor's load capacity.
- Caution: Use a Titen HD rod hanger one time only. Installing the anchor multiple times may result in excessive thread wear and reduce load capacity.
- 1. Drill a hole using the specified diameter carbide bit into the base material to the specified embedment depth plus minimum hole depth overdrill (see the product data table on the next page).
- 2. Blow the hole clean of dust and debris using compressed air.
- 3. Install with a torque wrench, driver drill, hammer drill or cordless impact wrench.
- 4. Fully insert threaded rod.

Installation Sequence









THD50234RH (%"-dia. shank)

THDB37158RH THDB25158RH (1/4"-dia. shank) (1/4"-dia. shank)



Overdrill depth (see product data table on the next page)

Titen HD^{\circ} Rod Hanger Design Information — Concrete

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Titen HD Threaded Rod Hanger Product Data

	Size (in.)	Model No.	Accepts Rod Size (in.)	Drill Bit Dia. (in.)	Wrench Size (in.)	Min. Embed. (in.)	Hole Depth Overdrill (in.)	Quantity	
								Вох	Carton
Cracked	¼ x 1%	THDB25158RH	1⁄4-20	1⁄4	3⁄8	1%	1⁄8	100	500
FIM Concrete	3∕8 x 15⁄8	THDB37158RH	³⁄8-16	1⁄4	1⁄2	1%	1⁄8	50	200
FIN APPRIVED	1∕₂ x 2¾	THD50234RH	1⁄2-13	3⁄8	11/16	21⁄2	1⁄4	50	100

Titen HD Threaded Rod Hanger Installation Information and Additional Data¹

			Model No.					
Characteristic	Symbol	Units	THDB25158RH THDB37158RH	THD50234RH				
Installation Information								
Rod Hanger Diameter	d _o	in.	1⁄4 Or 3⁄8	1/2				
Drill Bit Diameter	d _{bit}	in.	1⁄4	3⁄8				
Maximum Installation Torque ²	T _{inst,max}	ftlb.	24	50				
Maximum Impact Wrench Torque Rating ³	T _{impact,max}	ftlb.	125	150				
Minimum Hole Depth	h _{hole}	in.	1¾	3				
Embedment Depth	h _{nom}	in.	1 %	2¾				
Effective Embedment Depth	h _{ef}	in.	1.19	1.77				
Critical Edge Distance	C _{ac}	in.	3	211/16				
Minimum Edge Distance	C _{min}	in.	1½	1¾				
Minimum Spacing	S _{min}	in.	1½	3				
Minimum Concrete Thickness	h _{min}	in.	31⁄4	41⁄4				
Anchor Data								
Yield Strength	f _{ya}	psi	100,000	97,000				
Tensile Strength	f _{uta}	psi	125,000	110,000				
Minimum Tensile and Shear Stress Area A _{se}		in. ²	0.042	0.099				
Axial Stiffness in Service Load Range — Uncracked Concrete	iffness in Service Load Range — β_{uncr}		202,000	672,000				
Axial Stiffness in Service Load Range — Cracked Concrete	β_{cr}	lb./in.	173,000	345,000				

1. The information presented in this table is to be used in conjunction with the design criteria of ACI 318-19 Chapter 17,

ACI 318-14 Chapter 17 or ACI 318-11 Appendix D.

2. T_{inst,max} is the maximum permitted installation torque for installations using a torque wrench.

3. $T_{impact,max}$ is the maximum permitted torque rating for impact wrenches.

Titen HD[®] Rod Hanger Design Information — Concrete

Titen HD Threaded Rod Hanger Tension Strength Design Data for Installations in Concrete¹

			Model No.				
Characteristic	Symbol	Units	THDB25158RH THDB37158RH	THD50234RH			
Anchor Category	1, 2 or 3	_	1				
Embedment Depth	h _{nom}	in.	1%	21⁄2			
Steel Strength in Tension (ACI 318-19 17.6.1, ACI 318-14 17.4.1 or ACI 318-11 Section D.5.1)							
Tension Resistance of Steel	N _{sa}	lb. 5,195		10,890			
Strength Reduction Factor — Steel Failure ²	ϕ_{sa}	_	0.	65			
Concrete Breakout Strength in Tension (ACI 318-19 17.6.2, ACI 318-14 17.4.2 or ACI 318-11 Section D.5.2)							
Effective Embedment Depth	h _{ef}	in.	1.19	1.77			
Critical Edge Distance	C _{ac}	in.	3	211/16			
Effectiveness Factor — Uncracked Concrete	k _{uncr}	-	30	24			
Effectiveness Factor — Cracked Concrete	k _{cr}	_	17				
Modification Factor	$\psi_{c,N}$	_	1.0				
Strength Reduction Factor — Concrete Breakout Failure ²	ϕ_{cb}	_	0.65				
Pullout Strength in Tension (ACI 318-19 17.6.3, ACI 318-14 17.4.3 or ACI 318-11 Section D.5.3)							
Pullout Resistance — Uncracked Concrete ($f'_c = 2,500$ psi)	N _{p,uncr}	lb.	N/A ⁴	2,0254			
Pullout Resistance — Cracked Concrete (f' $_{c}$ = 2,500 psi)	N _{p,cr}	lb.	N/A ⁴	1,235 ⁴			
Strength Reduction Factor — Pullout Failure ²	ϕ_p	_	0.65				
Tension Strength for Seismic Applications (ACI 318-19 17.10.3, ACI 318-14 17.2.3.3 or ACI 318-11 Section D.3.3.3)							
Nominal Pullout Strength for Seismic Loads ($f'_c = 2,500 \text{ psi}$)	N _{p,eq}	lb. N/A ³		1,2354			
Strength Reduction Factor — Pullout Failure ²	ϕ_{eq}	_	0.65				

1. The information presented in this table is to be used in conjunction with the design criteria of ACI 318-19 Chapter 17, ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable.

2. The strength reduction factor applies when the load combinations from the IBC or ACI 318 are used and the requirements of ACI 318-19 17.5.3, ACI 318-14 17.3.3 or ACI 318-11 D.4.3, as applicable, are met. If the load combinations of ACI 318-11 Appendix C are used, the appropriate strength reduction factor must be determined in accordance with ACI 318-11 D.4.4.

As described in this report, N/A denotes that pullout resistance does not govern and does not need to be considered.
The characteristic pullout resistance for greater compressive strengths may be increased by multiplying the tabular value by (f'_c/2,500)^{0.5}.

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Titen HD[®] Rod Hanger Design Information — Concrete

Titen HD Threaded Rod Hanger Tension Strength Design Data for Installations in the Lower and Upper Flute of Normal-Weight or Sand-Lightweight Concrete Through Steel Deck^{1,2,5,6}

		Units	Model No.				
	Symbol		Lowei	Upper Flute			
Characteristic			Figure 2	Figure 1	Figure 2		
			THDB25158RH THDB37158RH	THD50234RH	THDB25158RH THDB37158RH		
Minimum Hole Depth	h _{hole}	in.	13⁄4	3	1 3⁄4		
Embedment Depth	h _{nom}	in.	15%	21⁄2	1 5⁄8		
Effective Embedment Depth	h _{ef}	in.	1.19	1.77	1.19		
Pullout Resistance – Cracked Concrete ^{2,3,4}	N _{p,deck,cr}	lbf	420	870	655		
Pullout Resistance – Uncracked Concrete ^{2,3,4}	N _{p,deck,uncr}	lbf	995	1,430	1,555		

1. The information presented in this table is to be used in conjunction with the design criteria of ACI 318-19 Chapter 17, ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable.

 Concrete compressive strength shall be 3,000 psi minimum. The characteristic pullout resistance for greater compressive strengths shall be increased by multiplying the tabular value by (f' _{crspecified}/3,000 psi)^{0.5}.

3. For anchors installed in the soffit of sand-lightweight or normal-weight concrete over steel deck floor and roof assemblies,

as shown in Figure 1 or Figure 2, calculation of the concrete breakout strength may be omitted.

4. In accordance with ACI 318-19 Section 17.6.3.2.1, ACI 318-14 Section 17.4.3.2 or ACI 318-11 Section D.5.3.2, the nominal pullout strength in cracked concrete for anchors installed in the soffit of sand-lightweight or normal-weight-concrete-over-steel-deck floor and roof assemblies N_{p,deck,cr} shall be substituted for N_{p,cr}. Where analysis indicates no cracking at service loads, the normal pullout strength in uncracked concrete N_{p,deck,uncr} shall be substituted for N_{p,uncr}.

5. Minimum distance to edge of panel is 2h_{ef}.

6. The minimum anchor spacing along the flute must be the greater of $3h_{ef}$ or 1.5 times the flute width.

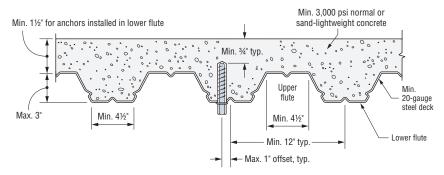


Figure 1. THD50234RH Installation in Concrete over Steel Deck

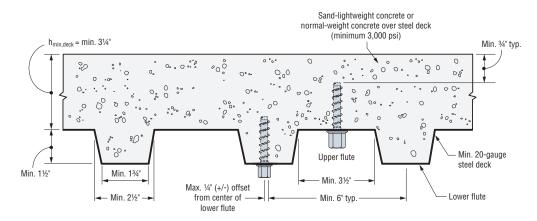


Figure 2. THDB25158RH and THDB37158RH Installation in Concrete over Steel Deck

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