Titen HD® Rod Coupler

The Titen HD rod coupler is designed to be used in conjunction with a single or multi-story rod tie-down system. This anchor provides a fast and simple way to attach threaded rod to a concrete stem wall or thickened slab footing. Unlike adhesive anchors, the installation requires no special tools, cure time or secondary setting process; just drill a hole and drive the anchor.

Features

- Now included in ESR-2713 for wind and seismic loading
- The serrated cutting teeth and patented thread design enable the Titen HD rod coupler to be installed quickly and easily. Less installation time translates to lower installed cost.
- The specialized heat treating process creates tip hardness to facilitate cutting while the body remains ductile.
- No special setting tools are required. The Titen HD rod coupler installs with regular or hammer drill, ANSI size bits and standard sockets.
- Compatible with threaded rods in ⅜" and ½" diameters.

Codes: ICC-ES ESR-2713 (concrete);
City of LA Supplement within ESR-2713 (concrete);
FL15730 (concrete)

Material: Carbon steel

Coating: Zinc plated

Installation

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

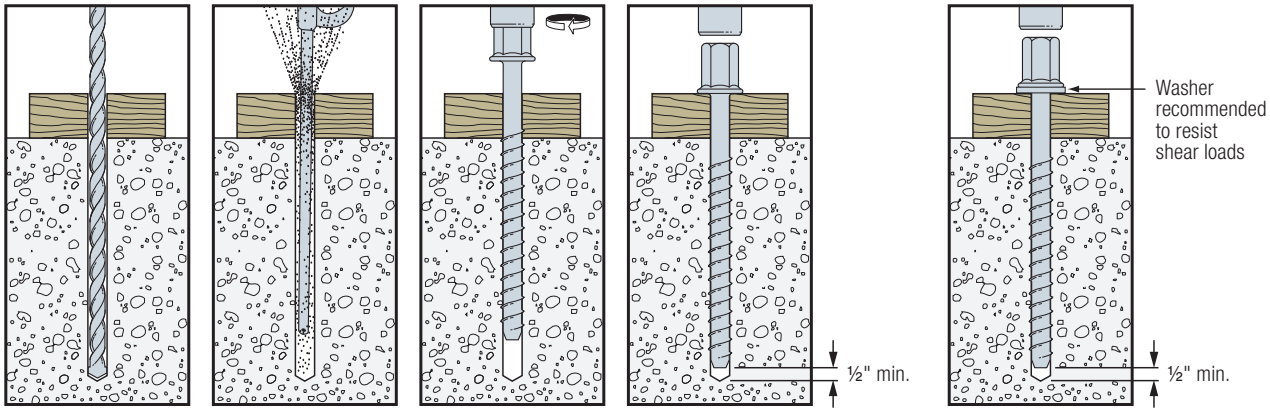
1. Drill a hole using the specified diameter carbide bit into the base material to a depth of at least ½" deeper than the required embedment.
2. Blow the hole clean of dust and debris using compressed air. Overhead application need not be blown clean.
3. Tighten the anchor with appropriate size socket until the head sits flush against base material.

Titen HD Rod Coupler
US Patent 6,623,228

Titen HD Rod Coupler Product Data

Size (in)	Model No.	Accepts Rod Diameter (in.)	Drill Bit Diameter (in.)	Wrench Size (in.)	Quantity	
					Box	Carton
⅜ x 6¾	THD37634RC	⅜	⅜	9⁄16	25	50
½ x 9¾	THD50934RC	½	½	¾	20	40

Installation Sequence



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Titen HD Rod Coupler Installation Information and Additional Data[1]

Characteristic	Symbol	Units	Model No.	
			THD37634RC	THD50934RC
Installation Information				
Nominal Diameter	d_a	in.	⅜	½
Drill Bit Diameter	d_{bit}	in.	⅜	½
Internal Thread Diameter	d_{rh}	—	⅜	½
Maximum Installation Torque[2]	$T_{inst,max}$	ft.-lbf.	50	65
Maximum Impact Wrench Torque Rating	$T_{impact,max}$	ft.-lbf.	150	340
Minimum Hole Depth	h_{hole}	in.	3½	4½
Nominal Embedment Depth	h_{nom}	in.	3¼	4
Effective Embedment Depth	h_{ef}	in.	2.40	2.99
Critical Edge Distance	c_{ac}	in.	3⅝	4½
Minimum Edge Distance	c_{min}	in.	1¾	
Minimum Spacing	s_{min}	in.	3	
Minimum Concrete Thickness	h_{min}	in.	5	6¼
Anchor Data				
Yield Strength	f_{ya}	psi	97,000	
Tensile Strength	f_{uta}	psi	110,000	
Minimum Tensile Stress Area	A_{se}	in.^{2}	0.099	0.183
Axial Stiffness in Service Load Range — Uncracked Concrete	β_{uncr}	lb./in.	672,000	
Axial Stiffness in Service Load Range — Cracked Concrete	β_{cr}	lb./in.	345,000	

1. The information presented in this table is to be used in conjunction with the design criteria of ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable.
2. $T_{inst,max}$ applies to installations using a calibrated torque wrench.

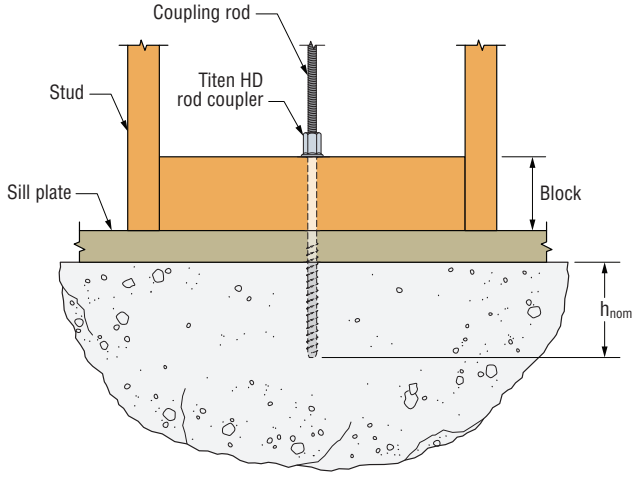

Figure 1.
Typical Titen HD Rod Coupler Installation Through Blocking and Sill Plate

Titen HD Rod Coupler Block Height Requirement

Model No.	Shank Length (in.)	Nominal Embedment Depth (in.)	Sill Plate Thickness	Block Height (in.)
THD37634RC	6¾	3¼	2x	2
			3x	1
THD50934RC	9¾	4	2x	4¼
			3x	3¼

** See p. 12 for an explanation of the load table icons.*

Titen HD Rod Coupler Tension Strength Design Data[1]

IBC LW*

Characteristic	Symbol	Units	Model No.	
			THD37634RC	THD50934RC
Anchor Category	1, 2 or 3	—	1	
Nominal Embedment Depth	h_{nom}	in.	3¼	4
Steel Strength in Tension (ACI 318-14 17.4.1 or ACI 318-11 Section D.5.1)				
Tension Resistance of Steel	N_{sa}	lbf.	10,890	20,130
Strength Reduction Factor — Steel Failure[2]	ϕ_{sa}	—	0.65	
Concrete Breakout Strength in Tension (ACI 318-14 17.4.2 or ACI 318 Section D.5.2)				
Effective Embedment Depth	h_{ef}	in.	2.4	2.99
Critical Edge Distance	c_{ac}	in.	3⅝	4½
Effectiveness Factor — Uncracked Concrete	k_{uncr}	—	24	
Effectiveness Factor — Cracked Concrete	k_{cr}	—	17	
Modification factor	$\Psi_{c,N}$	—	1	
Strength Reduction Factor — Concrete Breakout Failure[3]	ϕ_{cb}	—	0.65	
Pullout Strength in Tension (ACI 318-14 17.4.3 or ACI 318-11 Section D.5.3)				
Pullout Resistance Uncracked Concrete (f'_c = 2,500 psi)	$N_{p,uncr}$	lbf.	N/A[4]	N/A[4]
Pullout Resistance Cracked Concrete (f'_c = 2,500 psi)	$N_{p,cr}$	lbf.	2,700[5]	N/A[4]
Strength Reduction Factor — Pullout Failure[6]	ϕ_p	—	0.65	
Tension Strength for Seismic Applications (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 psi)	$N_{p,eq}$	lbf.	2,700[5]	N/A[4]
Strength Reduction Factor for Pullout Failure[6]	ϕ_{eq}	—	0.65	

1. The information presented in this table is to be used in conjunction with the design criteria of ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable.
2. The tabulated value of ϕ_{sa} applies when the load combinations of Section 1605.2 of the IBC, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2 are used, as applicable. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4(b), as applicable.
3. The tabulated values of ϕ_{cb} applies when both the load combinations of Section 1605.2 of the IBC, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used and the requirements of ACI 318-11 D.4.3(c) for Condition B are met. Condition B applies where supplementary reinforcement is not provided in concrete. For installations were complying reinforcement can be verified, the ϕ_{cb} factors described in ACI 318-14 17.3.3(c) or ACI 318-11 D.4.3(c), as applicable, may be used for Condition A. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4(c) for Condition B.
4. As described in this report, N/A denotes that pullout resistance does not govern and does not need to be considered.
5. The characteristic pullout resistance for greater compressive strengths may be increased by multiplying the tabular value by $(f'_c/2{,}500)^{0.5}$.
6. The tabulated values of ϕ_p or ϕ_{eq} applies when both the load combinations of ACI 318-14 Section 5.3 or ACI 318-11 Section 9w.2, as applicable, are used and the requirements of ACI 318-14 17.3.3(c) or ACI 318-11 D.4.3(c) for Condition B are met. Condition B applies where supplementary reinforcement is not provided in concrete. For installations were complying reinforcement can be verified, the ϕ_p or ϕ_{eq} factors described in ACI 318-14 17.3.3(c) or ACI 318-11 D.4.3(c), as applicable, may be used for Condition A. If the load combinations of ACI 318-11 Appendix C are used, the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4(c) for Condition B.

** See p. 12 for an explanation of the load table icons.*