

PHD predeflected holdowns feature the predeflected base, minimizing deflection while providing uplift resistance. Installs with screws eliminating the need for predrilling and potential fastener slip. No thru bolts to countersink.

DTB-TZ is a light capacity holddown for single 2x installations.

Materials: See chart

Finish: G90 galvanizing; DTB-TZ – G-185 galvanizing

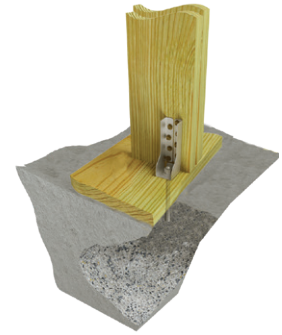
Codes: IBC, FL, LA

Installation:

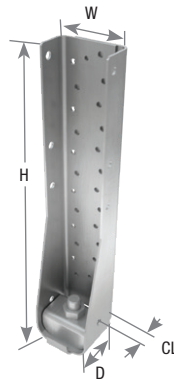
- Use all specified fasteners. See Product Notes, page 18.
- **Place the PHD over the anchor bolt, no washer is required. Washer is required on DTB installations.**
- Install with MiTek's code evaluated WS15-EXT (1/4" dia. x 1-1/2" long) and WS3 (1/4" dia. x 3" long) structural wood screws, which are provided with the holddown.
- Tighten anchor bolt nuts finger tight to base plus 1/3 to 1/2 additional turns with a wrench.
- **PHD Predeflected Holdowns may be installed off sill plate with no load reduction.** Reference page 72 for more information.
- The design engineer may specify any alternate anchorage calculated to resist the tension load for a specific application. Anchorage exposure length should take the bearing plate height of 1-5/8" into account, anchor bolt thread should visibly extend above nut.
- If used to anchor a built-up post, such as a double 2x4, the post component shall be designed to act as a single unit. Holddown fasteners specified shall not be considered to attach multiple plies together.
- For anchorage options see STB/STBL Anchor Bolt section on pages 49-50.



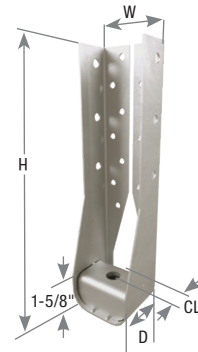
Typical PHD5A installation



Typical DTB-TZ installation

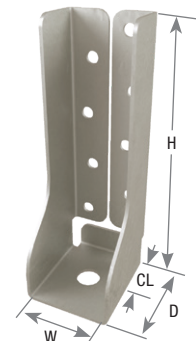


PHD8



PHD5A

(PHD2A / PHD4A similar)



DTB-TZ

MiTek USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)				Fastener Schedule				Allowable Loads (Lbs.) ^{1,4,7}			Corrosion Finish
			W	H	D	CL ⁸	Anchor Bolts ²		Screws ⁶		DF/SP	S-P-F	Deflection Δ (in) at 160% ^{3,5}	
							Qty	Dia.	Qty	Type	Tension 160%	Tension 160%		
DTB-TZ	DTT2Z	14	1-13/16	6	2-1/4	1-1/8	1	1/2	8	WS15-EXT	1835	1510	0.119	IBC, FL, LA
PHD2A	HDU2-SDS2.5	14	3	7-3/4	2-5/8	1-3/8	1	5/8	6	WS3	3215	2700	0.155	
PHD4A	HDU4-SDS2.5	14	3	9-3/4	2-5/8	1-3/8	1	5/8	10	WS3	5215	4380	0.137	
PHD5A	HDU5-SDS2.5	14	3	11-11/16	2-5/8	1-3/8	1	5/8	14	WS3	6525	5480	0.135	
PHD8	HDU8-SDS2.5	12	3-1/4	16-1/2	3	1-3/8	1	7/8	24	WS3	8185	6875	0.062	

1) Allowable loads have been increased 60% for wind and seismic loads; no further increase shall be permitted.
 2) The designer must specify anchor bolt type, length, and embedment.
 3) Deflections are derived from static, monotonic load tests of devices connected to DF-L wood members with specified fasteners.
 4) The designer shall consider the effect of compression, bearing, tension, and combined bending due to device eccentricity when applicable.
 5) The PHD/PHDA may be elevated off the sill and may increase deflection. Reference page 72 for more information.
 6) MiTek's WS15-EXT (1/4" dia. x 1-1/2" long) and WS3 (1/4" dia. x 3" long) structural wood screws are included with holdowns.
 7) For PHD holdowns, minimum post thickness is 3". Consult MiTek for installations less than 3".
 8) "CL" denotes the distance between the post and center of the anchor bolt.

Corrosion Finish ■ Stainless Steel ■ Gold Coat ■ HDG ■ Triple Zinc

Engineered for high capacity with minimum deflection and low eccentricity. Installs with screws eliminating the need for predrilling and potential fastener slip. No thru bolts to countersink.

Materials: See chart

Finish: Primer

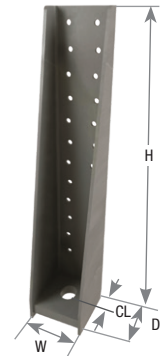
Codes: IBC, FL, LA

Installation:

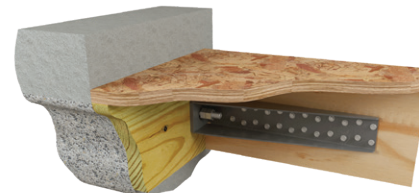
- Use all specified fasteners. See Product Notes, page 18.
- Place holdown over anchor bolt and drive screws into post.
- Tighten anchor bolt nuts finger tight to base plus 1/3 to 1/2 additional turns with a wrench.
- Holdown may be installed off of the plate with no load reduction. Reference page 72 for more information.
- If used to anchor a built-up post, such as a double 2x4, the post component shall be designed to act as a single unit. Holddown fasteners specified shall not be considered to attach multiple plies together.



Typical UPHD installation



UPHD



Typical UPHD concrete wall installation

MiTek USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)				Fastener Schedule				Allowable Loads (Lbs.) ^{1,5,7}			Code Ref.
			W	H	D	CL	Anchor Bolts ²		Screws ⁶		DF/SP	S-P-F	Deflection Δ (in) at 160% ³	
							Qty	Dia.	Qty	Type	Tension 160%	Tension 160%		
UPHD8	HDQ8-SDS3	10	3-1/4	17-1/2	3-1/8	1-3/8	1	7/8	24	WS3	9165	7695	0.075	IBC, FL, LA
UPHD9	HDU11-SDS2.5	10	3-1/4	17-1/4	3-1/2	1-1/2	1	1	24	WS3	11270	9465	0.057	
UPHD11	HHDQ11-SDS2.5	7	3	15-1/8	3-1/2	1-1/2	1	1	24	WS3	14395	12090	0.077	
UPHD14	HDU14-SDS2.5, HHDQ14-SDS2.5	7	3	18-3/4	3-1/2	1-1/2	1	1	30	WS3	16695	14020	0.082	

- 1) Allowable loads have been increased 60% for wind and seismic loads; no further increase shall be permitted.
- 2) The designer must specify anchor bolt type, length, and embedment.
- 3) Deflections are derived from static, monotonic load tests of devices connected to DF-L wood members with specified fasteners.
- 4) The designer shall consider the effect of compression, bearing, tension, and combined bending due to device eccentricity when applicable.
- 5) The UPHD may be elevated off the sill and may increase deflection. Reference page 72 for more information.
- 6) MiTek's WS3 structural wood screws are 1/4" dia. x 3" long and are included with UPHD models.
- 7) Minimum post thickness is 3" or greater. Consult MiTek for installations less than 3".

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Holdowns

TD – Different welded configurations and sizes achieve a great deal of versatility within the TD series.

TDX – The TDX2 and TDX5 feature formed designs, all others are welded. All are self-jigging.

All models, except TD2, TD5, and TD7, feature a self-jigging design with code required end distances built in. (End distance = 7 bolt diameters from the top of the sill to the center of the first bolt hole in the studs or post.)

Materials: See chart

Finish: TDX2-TZ – G-185 galvanizing; All others – Primer

Codes: See chart for code references

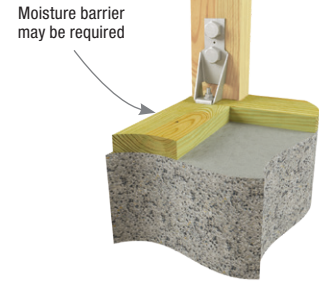
Patents: U.S. Patent No. 5,092,097 – TDX2

Installation:

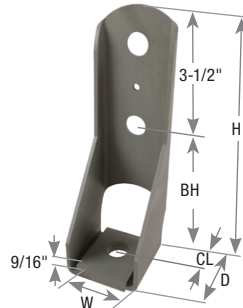
- Use all specified fasteners. See Product Notes, page 18.
- Do not use lag bolts. Washers are not required for anchor bolts or between holdown and bolt hex head, but standard washers should be used against stud or post under the nut. See page 51 for BP/LBP Bearing Plates.
- Bolt holes should be a minimum of 1/32" to a maximum of 1/16" larger than the bolt diameter (as per NDS® specifications).
- See pages 49-50 for STB Anchor Bolt section for anchorage options. A design professional may specify alternate anchorage with conventional anchor bolts.
- A design professional shall determine the adequacy of the stud to resist published loads. Holdown fasteners specified shall not be considered to attach multiple plies together.
- Self-jigging models are designed to provide the required minimum end distance of 7 bolt diameters from the bottom of the stud or post to the centerline of the first bolt hole.
- Tighten anchor bolt nuts finger tight to base plus 1/3 to 1/2 additional turns with a wrench. Wood members may shrink over time; if possible, nut tightness should be checked periodically.
- If used to anchor a built-up post, such as a double 2x4, the post component shall be designed to act as a single unit.



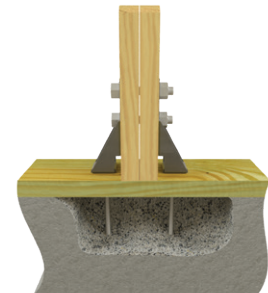
Typical TDX6 installation



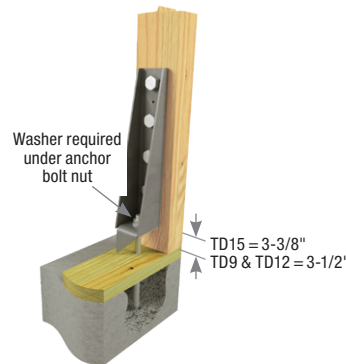
Typical TDX2-TZ installation



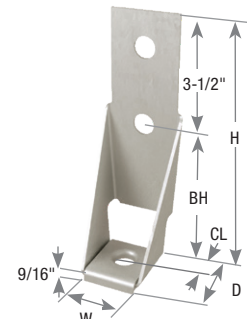
TDX6



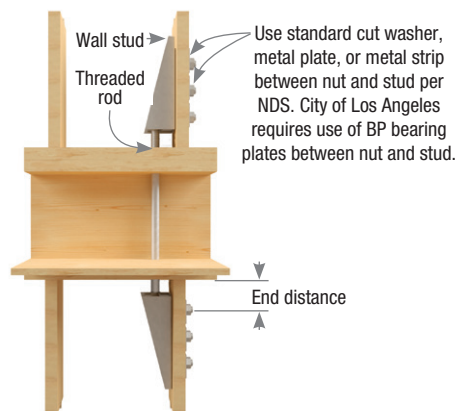
Typical TDX2-TZ back-to-back installation



Typical TD15 installation



TDX2-TZ



Holdown installation between floors

Continued on next page

MiTek USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)					Fastener Schedule ⁴			Min. Required Bolt End Distance ⁵	Length of Bolt in Vertical Member	DF/SP Allowable Tension Loads (Lbs.) ^{1,2,3}		Corrosion Finish	Code Ref.
			W	H	D	BH	CL	Anchor Bolt Dia.	Bolts				160%	Δ (in) ⁶		
									Qty	Dia.						
TD5	--	7	3	6-3/8	3-3/4	1-1/4	2-1/8	3/4	2	3/4	5-1/4	1-1/2"	2405	0.122 ⁶		IBC, FL, LA
												3"	4040	0.140 ⁶		
												3-1/2"	4040	0.140 ⁶		
												5-1/2"	4040	0.140 ⁶		
TD7	--	3	3-3/8	11-7/8	3-5/8	3-3/8	2-1/8	1-1/8	3	7/8	6-1/8	1-1/2"	4600	0.095 ⁶		IBC, FL
												3"	8195	0.125 ⁶		
												3-1/2"	9420	0.139 ⁶		
												5-1/2"	10510	0.152 ⁶		
TD9	--	3	3-3/8	16-1/2	4-1/4	4-1/8	2-1/8	1-1/8	3	1	7	3"	9330	0.146 ⁶		
												3-1/2"	10715	0.160 ⁶		
												4-1/2"	13370	0.169 ⁶		
												5-1/2"	13500	0.170 ⁶		
TD12	HD12	3	3-1/2	20-1/2	4-1/4	4-1/8	2-1/8	1-1/8	4	1	7	3"	12070	0.132 ⁶		
												3-1/2"	13960	0.142 ⁶		
												4-1/2"	16550	0.185 ⁶		
												5-1/2"	16550	0.185 ⁶		
TD15	HD19	3	3-1/2	25	4-3/8	4-1/4	2-1/8	1-1/4	5	1	7	3"	14505	0.167 ⁶		
												3-1/2"	16845	0.178 ⁶		
												4-1/2"	20710	0.155 ⁶		
												5-1/2"	20390	0.153 ⁶		
TDX2-TZ	HD3B	12	2-1/16	8-1/8	2-3/4	4-1/2	1-1/2	5/8	2	5/8	4-1/2	1-1/2"	1920	0.150 ⁶		
												3"	3295	0.169 ⁶		
												3-1/2"	3295	0.169 ⁶		
												5-1/2"	3295	0.169 ⁶		
TDX5	--	10	2-1/2	9-3/8	3-7/8	6	2	3/4	2	3/4	5-1/4	1-1/2"	2340	0.079 ⁶		IBC, FL, LA
												3"	4515	0.151 ⁶		
												3-1/2"	4530	0.151 ⁶		
												4-1/2"	4530	0.151 ⁶		
TDX6	HD5B	7	3-1/2	11-1/8	3-3/4	6-1/8	2	7/8	2	7/8	6-1/8	1-1/2"	2835	0.093 ⁶		
												3"	5350	0.128 ⁶		
												3-1/2"	5805	0.138 ⁶		
												4-1/2"	5805	0.138 ⁶		
TDX8	--	7	3-1/2	14-5/8	3-3/4	6-1/8	2	7/8	3	7/8	6-1/8	1-1/2"	4160	0.060 ⁶		
												3"	7870	0.132 ⁶		
												3-1/2"	9125	0.172 ⁶		
												4-1/2"	9125	0.172 ⁶		
TDX10	HD7B	7	3-1/2	18-1/8	3-3/4	6-1/8	2	7/8	4	7/8	6-1/8	3"	10140	0.128 ⁶		
												3-1/2"	10570	0.137 ⁶		
												4-1/2"	10570	0.137 ⁶		
												5-1/2"	10570	0.137 ⁶		
TDX14	HD9B	3	3-1/2	20-1/2	3-5/8	7	2-1/8	1	4	1	7	3"	11995	0.117 ⁶		
												3-1/2"	13895	0.146 ⁶		
												4-1/2"	15015	0.166 ⁶		
												5-1/2"	15015	0.166 ⁶		

Holdowns

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- 1) Allowable loads shown are for single shear connections and may be doubled for back-to-back installations. The designer must verify post and anchor bolt capacities.
- 2) Allowable loads have been increased 60% for wind or seismic loads; no further increase shall be permitted.
- 3) The designer must specify stud or post to resist published load values.
- 4) The designer must specify anchor bolt type, length, and embedment.
- 5) TD models - install TD holdown raised off of bottom plate if the BH dimension is less than end distance dimension.
- 6) Deflections are derived from static, monotonic load tests of devices connected to DF wood members and consider both the deflection of the holdown and cross grain crushing of the wood post.
- 7) The designer shall consider the effect of compression, bearing, tension, and combined bending due to device eccentricity when applicable.
- 8) The TD/TDX may be elevated off the sill which may increase deflection. Reference page 72 for more information.

Corrosion Finish ■ Stainless Steel ■ Gold Coat ■ HDG ■ Triple Zinc

Allowable loads and deflection values for holdowns such as TD, PHD, TDX, HTT and UPHD are based on installation with the anchor bolt aligned directly below the centerline of the holdown. The maximum tolerances for anchor bolt offset are described below.

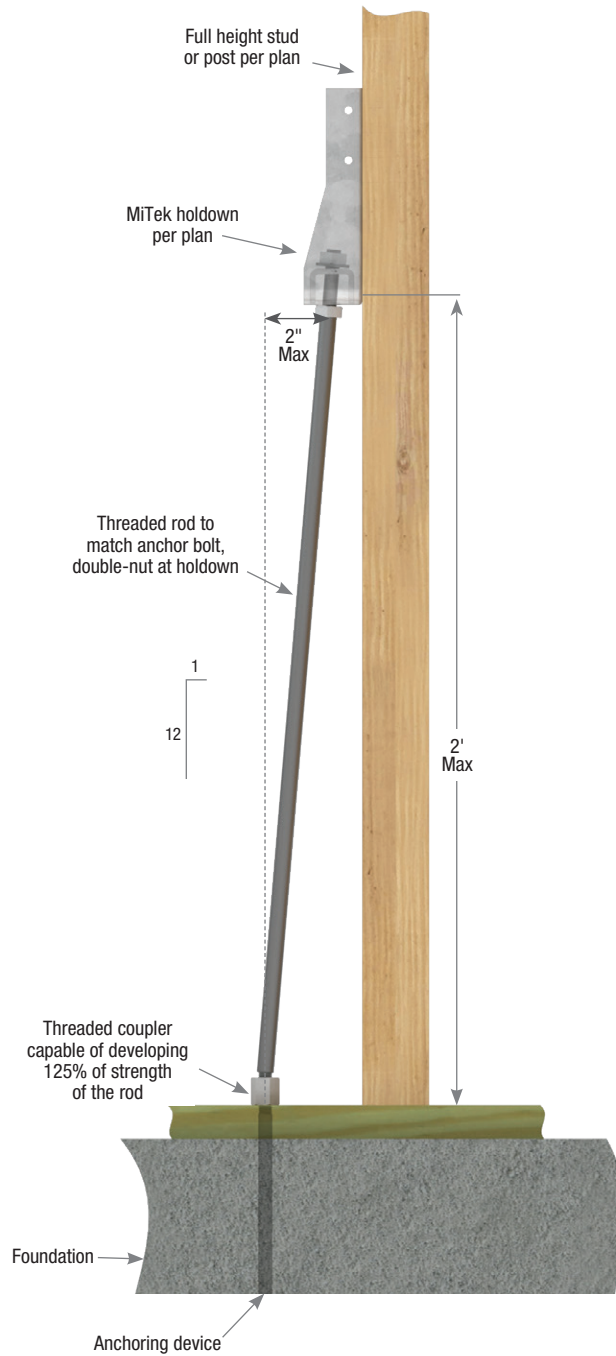
Designer should consider that installation of a holdown raised above the sill plate may result in higher deflections. These deflections are different for every installation and should be calculated by a certified designer.

Installation:

- Holdown installed at maximum of 2' above the bottom plate.
- Anchor bolt installed at maximum 2" away from the centerline of the holdown.
- Threaded rod angle must not exceed 5 degrees or a pitch of 1/12.
- A threaded coupler must be used at the anchor bolt connection capable of developing 125% of strength of the rod.

Alternate installations:

1. Install additional full-height member(s) to the existing stud(s) or post to reduce the horizontal distance between the anchor bolt and the vertical member(s).
 - Multi-ply studs/posts must be fastened together to act as a single unit. Holdown fasteners must not be considered to contribute to fastening multiple members together.
 - Added members shall be of equal or better wood species.
 - Designer must consider any effect of additional eccentricity introduced on the connection.
2. Using a threaded rod epoxied into place at the proper location in lieu of cast-in anchor bolts. These can be installed after the rough framing is completed.



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Holdowns