

CFS PRODUCT GUIDE

COLD-FORMED STEEL CONSTRUCTION

General Information

Product Notes

- 1) This guide reflects the most current information available at the time of printing. However, we are continually improving our products through better engineering design and development and recommend visiting our website for the latest on-line version of the catalog at MiTek-US.com. MiTek reserves the right to change specifications, designs, and models at any time without notice and liability for such changes. This catalog may not be reproduced in whole or in part without the prior written approval of MiTek.
- 2) This guide reflects changes to product design and allowable loads to some MiTek products. The information presented in this publication supersedes all previously published guides.
- 3) This guide was designed as a general reference for the MiTek CFS Product Line. Various specialized publications have also been developed for design professionals, truss manufacturers, contractors, and building material distributors. Consequently, product information may vary from one publication to another due to product development testing and revisions to code evaluation report upgrades. We recommend visiting our website for the latest on-line version of these specialized publications.
- 4) The type and quantity of fasteners used to install MiTek products is critical to connector performance. To achieve the allowable loads presented in this catalog, all specified fasteners must be used and proper installation procedures observed. Verify that the dimensions of the supporting members are sufficient to receive the specified fasteners. All product modifications will void the warranty unless prior written consent from MiTek has been obtained.
- 5) Some connector models are listed more than once to indicate installation and/or fastener options.
- 6) Throughout this guide, dimensions are expressed in inches and loads in pounds unless specifically noted otherwise.
- 7) Some MiTek products show both nail fastening and bolt schedules. In those cases, specific loads for each has been identified. Nail and bolt values cannot be combined unless noted otherwise.
- 8) Bolts specified in this catalog are through-bolts and must conform to requirements for ASTM A 307 Grade A, or ASME SAE Grade 2, or better unless noted otherwise.
- 9) Anchor Bolts must conform to ASTM F 1554.
- 10) Unless otherwise noted, MiTek products may not be bent or cut for any reason unless prior written consent from MiTek has been obtained. **Field alterations may significantly reduce the published allowable load values in this catalog.**

Design Notes

- 1) Allowable loads are determined per the AISI S100 unless noted otherwise.
- 2) The allowable loads in this guide are determined following AISI S100. Design values are typically limited to an average test load producing 1/8" deflection, an average ultimate test load adjusted with a safety factor, or a calculated value.
- 3) The Designer must verify that the self-drilling screws used have values greater than or equal to the values given in the table.
- 4) Unless otherwise noted, the allowable loads shown in this catalog are based on Allowable Stress Design methodology. Multiply seismic and wind ASD load values by 1.4 or 1.6 respectively to obtain LRFD values.
- 5) Verify that the size of the supporting member can accommodate the connectors specified fasteners.
- 6) All steel-to-steel connector screws must comply with ASTM C1513.
- 7) When attaching multiple CFS members of different thickness, the thinner member should be used to determine allowable design loads.

Installation Notes

- 1) Use proper safety equipment during connector installations. Always wear gloves when handling connectors.
- 2) All welding should be done in accordance with the American Welding Society (AWS) Standard by a certified welder. **Caution: Welding galvanized steel may produce harmful fumes and should only be performed in well-ventilated environments.**
- 3) The proper type and quantity of fasteners must be used to install MiTek products. To achieve the published allowable loads, install with the specified fasteners for that particular product.
- 4) Washers should always be used under the head or nut of a bolt when not in contact with the connector unless noted otherwise.
- 5) Multiple-ply members must be properly fastened together to distribute loads as a single member.
- 6) Top mount hangers installed in floor systems may produce unevenness. This will vary based on thickness of the top flange and nail heads. **If a problem is anticipated, the effects can be mitigated by dapping or notching the beam or cutting the subfloor at hanger locations. Face mount hangers will eliminate this problem.**

WARRANTY

MiTek USA, Inc. ("MiTek") warrants its MiTek catalog Products to be free from material defects in manufacture and design, and further warrants that they will perform within the design limitations of its published building code approvals for the applications described, when properly installed and maintained. These warranties do not cover Product deterioration due to environmental conditions, Products that have been modified or damaged, improperly installed or used outside of published design limitations or for other applications. In the event any Product is shown to not conform to these warranties, MiTek's sole obligation, and Customer's sole and exclusive remedy, shall be, at MiTek's option, to replace the non-conforming product or refund the full purchase price paid by Customer to MiTek therefor. MITEK MAKES NO OTHER PRODUCT WARRANTIES,

EXPRESS OR IMPLIED, OF ANY KIND, AND PARTICULARLY EXCLUDES ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL MITEK BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, REGARDLESS OF THE LEGAL THEORY OF RECOVERY, EVEN IF IT WAS AWARE OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY CASE, MITEK'S MAXIMUM LIABILITY SHALL NOT EXCEED THE PURCHASE PRICE PAID BY CUSTOMER FOR THE NON-CONFORMING PRODUCT. Some states restrict consequential or other liability damage limitations, so some of the above limitations may not apply to you. MiTek reserves the right to change this warranty periodically. Consult MiTek's website MiTek-US.com or contact MiTek for a current warranty statement.

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⚠ THIS IS A REQUIREMENT ONLY FOR THE STATE OF CALIFORNIA.

Based on our experience, we do not believe that our products when used as intended present an exposure risk of ingestion, inhalation or by absorption through the skin to any of Prop 65's current list of chemicals. Nonetheless, out of an abundance of caution, and in the event our MiTek products are misused or used in ways we do not foresee, we are taking the precaution of placing a short-form Prop 65 warning on the labels of our retail packaged products, and in some instances, on signs posted in the California retail locations where our products are sold to consumers without labels.

MiTek manufactures and supplies some products that are not intended as consumer products, and are sold through professional construction supply channels and/or delivered directly to job sites. These products will not carry the Prop 65 warning. To learn more about the California Proposition 65, visit www.P65Warning.ca.gov. For MiTek specific questions please contact MiTek Customer Service at 800-328-5934 with any questions or visit our website, www.MiTek-US.com.

Fastening Information

MiTek recommends the use of hex head metal screws with a self-drilling tip, for ease of installation and strength. Screw diameter ranges from 0.190" to 0.250" and is specified for each connector in their corresponding load table.

An important factor to consider when selecting a self-drilling screw is the material thickness specifically the combined side and main member thickness. Care should be taken by the designer to verify that the drill point and thread length are long enough to appropriately fasten the members per the fasteners manufacturers specifications.

The drill point is the unthreaded section from the drill point to the first thread. This length must be long enough to completely drill through the material before the threads engage. If the threads engage too early, they can cause the fastener to bind and break.



Specification Table

Screw Size	Nominal Diameter d (in)	Washer Diameter d _w (in)	Allowable Screw Shear Strength (P _{ss} /Ω)	Allowable Shear Connection Strength (P _{ns} /Ω, P _{ss} /Ω)					Allowable Screw Tension Strength (P _{ts} /Ω)	Allowable Tensile Pull-Out Strength (P _{not} /Ω, P _{ts} /Ω)				
				Steel Thickness mil (gauge)						Steel Thickness mil (gauge)				
				33–33	43–43	54–54	68–68	97–97		33	43	54	68	97
				(20–20)	(18–18)	(16–16)	(14–14)	(12–12)		(20)	(18)	(16)	(14)	(12)
#10 x 1/2"	0.190	0.375	548	177	263	370	523	548	386	84	109	137	173	246
#12 x 3/4"	0.216	0.375	775	188	280	394	557	775	777	95	124	156	196	280
#14 x 3/4"	0.250	0.500	1016	203	302	424	600	1016	1067	110	144	180	227	324

- 1) Allowable loads are per AISI S-100 and are for use when utilizing the traditional Allowable Stress Design methodology. The tabulated loads may be multiplied by a Factor of Safety (Ω) of 3 to determine the screw nominal strength. The LRFD load may be determined by multiplying the allowable screw load by the ASD safety factor of 3 then by Resistance Factor (φ) of 0.50.
- 2) Allowable loads may not be increased for wind or seismic load unless otherwise noted.
- 3) Allowable loads are based on cold-formed steel members with a minimum yield strength, F_y, of 33 ksi and tensile strength, with an F_u, of 45 ksi.
- 4) Allowable loads are based on design steel thickness for 33 mil = 0.036", 43 mil = 0.048", 54 mil = 0.060", 68 mil = 0.075", and 97 mil = 0.105" with the #10, #12 and #14 screws having of minimum nominal shear strength of 1650 lbs, 2325 lbs and 3050 lbs respectively.
- 5) Self-drilling tapping screw fasteners for steel-to-steel connections used for connectors in this catalog shall be in compliance with ASTM C1513.
- 6) Screw diameters used in the calculation of shear loads per ANSI/ASME standard.

PFM Concrete Screw Anchors

Screw-Bolt+ anchors are a one-piece, heavy duty screw anchor with a finished hex head. The patented thread design, designed for use with standard ANSI drill bits, reduces installation torque and enhances productivity. The steel threads along the anchor body tap into the hole during installation to provide keyed engagement and allow for reduced edge and spacing distances.

Finish: Zinc Plated or Mechanically Galvanized

Codes: ESR-3889, ESR-4042



Screw-Bolt™+
(zinc plated)

Zinc Plated		Mechanically Galvanized		Anchor Size (in) ¹	Hole Size (in)	Socket Size (in)
MiTek Stock No.	Ref. No.	MiTek Stock No.	Ref. No.			
PFM1411000	THDB25178H	--	--	1/4 x 1-1/4	1/4	7/16
PFM1411020	THD25134H	--	--	1/4 x 1-3/4		
PFM1411060	THD25214H	--	--	1/4 x 2-1/4		
PFM1411100	THDB25300H	--	--	1/4 x 3		
PFM1411160	THD37134H	--	--	3/8 x 1-3/4	3/8	9/16
PFM1411220	THD37212H	--	--	3/8 x 2-1/2		
PFM1411240	THD37300H	--	--	3/8 x 3		
PFM1411280	THD37400H	PFM1461280	THD37400HMG	3/8 x 4		
PFM1411300	THD37500H	PFM1461300	THD37500HMG	3/8 x 5		
PFM1411320	THD37600H	PFM1461320	THD37600HMG	3/8 x 6		
PFM1411340	--	--	--	1/2 x 2	1/2	3/4
PFM1411360	--	--	--	1/2 x 2-1/2		
PFM1411380	THD50300H	--	--	1/2 x 3		
PFM1411420	THD50400H	PFM1461420	THD50400HMG	1/2 x 4		
PFM1411460	THD50500H	PFM1461460	THD50500HMG	1/2 x 5		
PFM1411480	THD50600H	PFM1461480	THD50600HMG	1/2 x 6		
PFM1411520	THD50800H	PFM1461520	THD50800HMG	1/2 x 8	5/8	15/16
PFM1411540	--	--	--	5/8 x 3		
PFM1411580	THD62400H	--	--	5/8 x 4		
PFM1411600	THD62500H	PFM1461600	THD62500HMG	5/8 x 5		
PFM1411640	THD62600H	PFM1461640	THD62600HMG	5/8 x 6		
PFM1411680	THD62800H	PFM1461680	THD62800HMG	5/8 x 8		
PFM1411700	--	--	--	3/4 x 3	3/4	1-1/8
PFM1411720	THD75400H	--	--	3/4 x 4		
PFM1411760	THD75500H	--	--	3/4 x 5		
PFM1411800	THD75600H	PFM1461800	THD75600HMG	3/4 x 6		
PFM1411840	THD75812H	--	--	3/4 x 8		
--	--	PFM1461850	THD75812HMG	3/4 x 8-1/2		
PFM1411880	THD75100H	--	--	3/4 x 10		

1) The anchor size includes the diameter and length of the anchor measured from under the head.

S/PHD Holdowns

The S/PHD holdowns are high performance ductile holdowns used for providing a tension connection between CFS framing members and the foundation or other structural members. The pre-deflected design keeps deflection low. The S/PHD holdowns attach with #14 self-drilling screws making installation an ease, saving time and labor.

Materials: S/PHD4, S/PHD6 – 14 gauge; S/PHD9 – 12 gauge

Finish: G90 galvanizing

Codes: ER-0566

Installation:

- Use all specified .
- Place the S/PHD over the anchor bolt. No washer is required.
- Install with standard #14 self-drilling (tapping) screws to fasten to CFS framing members.
- Tighten anchor bolt nuts finger tight to base plus 1/3 to 1/2 additional turns with a wrench.
- S/PHD Holdowns installed elevated more than 4" off the base track may have higher deflection values.
- The design engineer may specify any alternate anchorage calculated to resist the tension load for a specific application. Anchor rod exposure length should take the bearing plate height of 1-5/8" into account, anchor bolt thread should visibly extend above nut.
- The built up studs shall be designed to act as a single unit. Holdown specified shall not be considered to attach multiple CFS members together.
- For anchorage options see STBL Anchor Bolt series or ATR threaded rod series products epoxied into place at required depth.



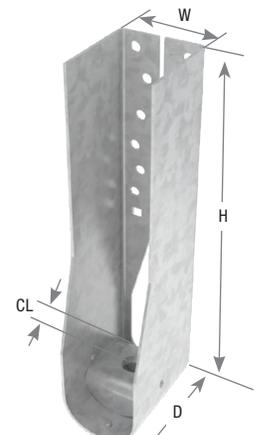
Typical S/PHD installation



Typical S/PHD Corner installation



S/PHD4



S/PHD6

MiTek Stock No.	Ref. No.	Steel Gauge	Dimensions (in)				Fastener Schedule				Metal Stud Member Mils (Gauge) ⁴	ASD		LRFD		
			W	H	D	CL	Min/Max	Anchor Bolt ¹		Stud		Tension Load (lbs.)	Deflection (in)	Tension Load (lbs.)	Deflection (in)	
								Qty	Dia (in)	Qty						Type ³
S/PHD4	S/HDU4	14	2-3/8	7-3/4	3-1/4	1-3/8	Min	1	5/8	6	#14	2-33 (20Ga)	2255	0.080	3605	0.118
												2-43 (18Ga)	3165	0.104	5070	0.149
												2-54 (16Ga)	3955	0.132	6330	0.188
							Max	1	5/8	8	#14	2-33 (20Ga)	2960	0.088	4740	0.133
												2-43 (18Ga)	4375	0.076	7000	0.132
												2-54 (16Ga)	4595	0.122	7355	0.183
S/PHD6	S/HDU6	14	2-3/8	10-3/8	3-1/4	1-3/8	Min	1	5/8	12	#14	2-33 (20Ga)	4880	0.100	7805	0.173
												2-43 (18Ga)	5525	0.105	8840	0.161
												2-54 (16Ga)	6670	0.108	10670	0.188
							Max	1	5/8	14	#14	2-33 (20Ga)	5390	0.087	8620	0.166
												2-43 (18Ga)	6315	0.096	10105	0.157
												2-54 (16Ga)	6435	0.112	10300	0.183
S/PHD9	S/HDU9	12	2-3/8	12-3/4	3-1/4	1-3/8	--	1	7/8	18	#14	2-33 (20Ga)	6495	0.096	10390	0.154
												2-43 (18Ga)	8875	0.112	14195	0.191
												2-54 (16Ga)	10345	0.099	16345	0.152

1) The designer must specify the anchor bolt type, length and embedment.

2) Deflections are derived from static, monotonic load tests of device connected to a 2-ply cold-formed steel stud and include fastener slip, holdown elongation and anchor bolt elongation (L = 4").

3) #14 screws are self-drilling 0.250 inch diameter hardened washer-head screws with a minimum nominal shear strength of 3,050 pounds.

6 4) The designer must specify the metal stud size and mil thickness.

HTT14S / LTS20B Holdowns

The LTS20B and the HTT14S tension ties are designed for both new construction and retrofit applications for concrete-to-steel connections and do not require an additional washer.

LTS20B is a light capacity tension tie strap with a 1/4" load transfer plate.

Materials: See chart

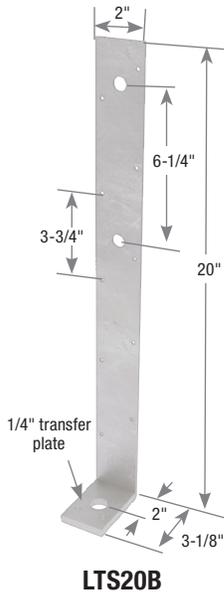
Finish: Strap - G90 galvanizing; Plate - Primer

Installation:

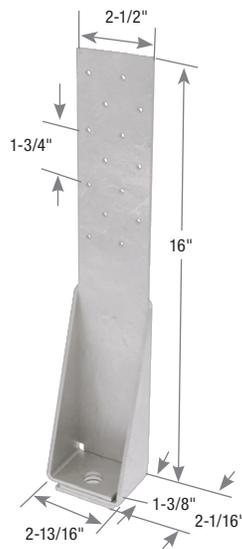
- Use all specified fasteners.
- Attach the strap portion of the connector to the steel stud. Secure the base to the foundation or wall with specified anchor bolt.
- A design professional shall specify the type, length, and embedment of the anchor bolt. No washers are required.



Typical HTT14S installation



LTS20B



HTT14S

MiTek Stock No.	Ref. No.	Steel Thickness		Fastener Schedule				Allowable Tension Loads (Lbs.) ^{1,2,4}						
		Strap Gauge	Plate (in)	To Sill Plate		To Stud		2-33 mil (2-20ga)		2-43 mil (2-18ga)		2-54 mil (2-16ga)		
				Anchor Bolt ³	Qty	Dia. (in)	Qty	Type	Back-to-Back Studs		Back-to-Back Studs		Back-to-Back Studs	
Qty							100%	160%	100%	160%	100%	160%		
LTS20B	S/LTT20	12	1/4	1		3/4	5	#10	885	1140	1090	1090	1210	1210
HTT14S	S/HTT14	10	--	1		5/8	14	#10	2480	3290	3680	4425	4825	4825

- 1) Back-to-back stud members are required unless otherwise noted.
- 2) Allowable loads at 160% can only be used with codes that permit the use of alternate basic load combinations and when the referenced materials standard permits it.
- 3) Designer shall specify anchor embedment and configuration.
- 4) Designer shall verify the adequacy of the steel studs to transfer the required load.
- 5) #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1,650 pounds.

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TDS Holdowns

The **TD8S**, **TD10S**, and **TD15S** are high capacity holdowns which are designed for attachment to cold formed steel (CFS) framing members. Holdowns are secured at the base by attachment to an anchor bolt.

Materials: See chart

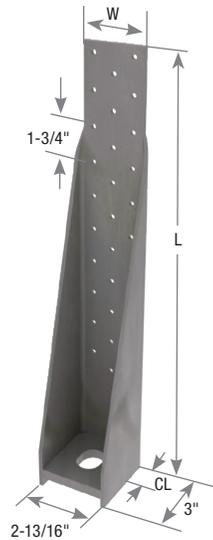
Finish: Primer

Installation:

- Use #10 self-tapping screws to attach the back or strap portion of the holdown to a steel stud. Install nut to secure the base of holdown to foundation with anchor bolt of specified diameter.
- A design professional shall specify the type, length, and embedment depth of the anchor bolt.
- Install anchor bolt nut to base of holdown until finger tight, then tighten an additional 1/3 to 1/2 turns with a wrench.



Typical TD10S installation



TD10S

MiTek Stock No.	Ref No.	Steel Thickness		Dimensions (in)			Fastener Schedule			CFS Member			ASD		LRFD		Nominal Tension Load ⁶ (in)
		Body	Base (in)	W	L	CL	Anchor Bolt ² Dia. (in)	Stud Screws ⁴		Stud ^{1,3}			Tension (Lbs.)	Deflection ⁵ (in)	Tension (Lbs.)	Deflection ⁵ (in)	
								Qty	Type	Plies	Mils	Gr					
TD8S	S/HD8S	10	3/8	2-1/2	13-7/8	1-5/8	7/8	24	#10	2	33	33	8250	0.074	13200	0.164	22325
										2	43	33	10115	0.109	16350	0.242	27650
										2	54	50	10900	0.091	17435	0.205	29485
TD10S	S/HD10S	10	3/8	2-1/2	16-1/8	1-5/8	7/8	30	#10	2	33	33	8690	0.071	13900	0.159	24575
										2	43	33	9310	0.076	14900	0.195	26335
										2	54	50	9985	0.058	15975	0.146	28235
TD15S	S/HD15S	7	1/2	2-5/8	21-1/2	1-11/16	1	48	#10	2	33	33	11780	0.075	18845	0.146	33410
										2	43	33	13770	0.100	22035	0.192	39065
										2	54	50	15920	0.096	25475	0.144	45160

1) Back-to-back stud members are required.
 2) The designer must specify anchor bolt type, length, and embedment.
 3) Designer shall verify the adequacy of the steel studs to transfer the required load.
 4) #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1,650 pounds.
 5) Holdown deflection at ASD and LRFD static test load includes fastener slip, holdown deflection, and anchor bolt elongation.
 6) The nominal tension load is based on the average of the ultimate tested values.

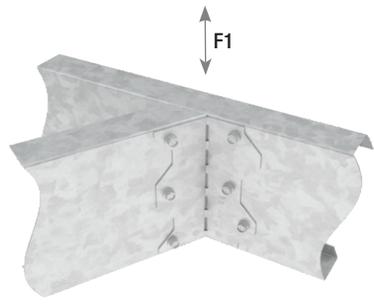
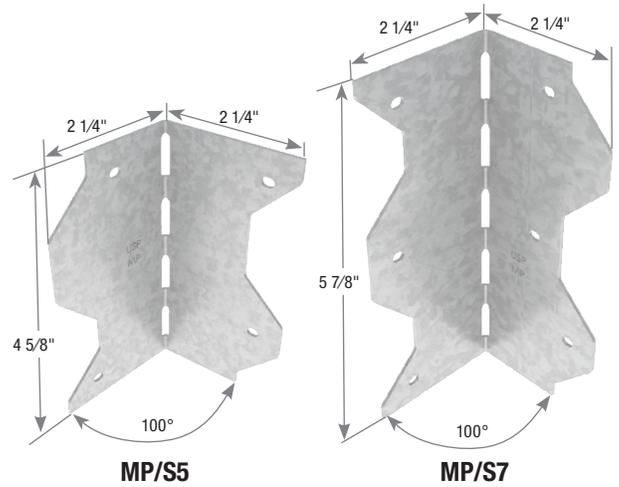
MP/S Skewable Angles

MP/S angles are field-adjustable to attach members intersecting at angles. MP/S angles are load rated and provide adequate thickness and fastener quantity to the field fabricated clip angles.

Materials: 18 gauge
Finish: G90 galvanizing

Installation:

- Use all specified fasteners.
- Field-adjustable from 45°-180° (flat). Bend angle only once.
- Joist must be constrained from rotation.



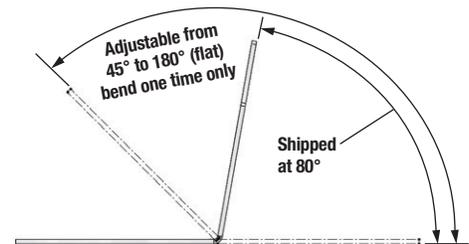
Typical MP/S7 installation
(MP/S5 similar)



Typical MP/S7 skew installation
(MP/S5 similar)

MiTek Stock No.	Ref. No.	Steel Gauge	Fastener Schedule		Allowable F1 Loads (Lbs.) ¹		
			Qty	Type ³	33 mil ² (20ga)	43 mil ² (18ga)	54 mil ² (16ga)
MP/S5	S/LS50	18	4	#10	310	410	480
MP/S7	S/LS70	18	6	#10	405	640	745

1) Allowable loads are for one part only.
 2) Member mils (33, 43, 54) has been considered as Grade 33.
 3) #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1,650 pounds.



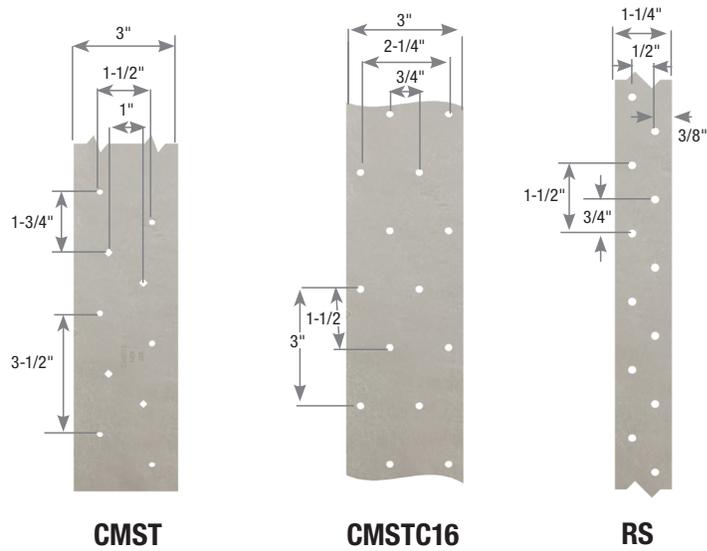
MP/S Top View

CMST / CMSTC / RS Coiled Strapping

MiTek straps may be used to create a tension connection between multiple CFS members with the use of self-tapping screws.

Materials: See chart
Finish: G90 galvanizing

- Installation:**
- Use all specified fasteners.
 - Install equal amount of screws on each end of tension connection.



MiTek Stock No.	Ref. No.	Steel Gauge	Dimensions		Fastener O.C. Spacing (in)	Fastener Schedule				Allowable Shear Loads (Lbs.)			Allowable Tension Loads (Lbs.) ¹		
			W (in)	Coil Length (ft)		Min Qty ^{3,4}			Type ^{2,5}	33 mil (20ga)	43 mil (18ga)	54 mil (16ga)	33 mil (20ga)	43 mil (18ga)	54 mil (16ga)
						33 mil (20ga)	43 mil (18ga)	54 mil (16ga)							
CMST12	CMST12	12	3	40'	1-3/4	106	72	36	#10	177	263	534	9318		
CMST14	CMST14	14	3	52-1/2'	1-3/4	76	52	26	#10	177	263	534	6630		
CMSTC16	CMSTC16	16	3	54'	1-1/2	54	36	18	#10	177	263	534	4715		
RS20-R	CS20-R	20	1-1/4	25'	1-1/2	12	8	8	#10	177	276	329	1045		
RS250	CS20			250'											
RS18-R	CS18-R	18	1-1/4	25'	1-1/2	16	12	8	#10	177	263	433	1375		
RS100	--			100'											
RS200	CS18			200'											
RS16-R	CS16-R	16	1-1/4	25'	1-1/2	20	14	8	#10	177	263	534	1732		
RS150	CS16			150'											
RS14-R	CS14-R	14	1-1/4	25'	1-1/2	30	20	10	#10	177	263	534	2612		
RS14-100	CS14			100'											

- 1) Allowable load is tension capacity of the strap based on the total quantity of screws installed in the strap to develop full tension strength.
- 2) Allowable loads are based on Grade 33 steel for 43 mil (18 ga) and thinner CFS members and Grade 50 steel for 54 mil (16 ga) and thicker CFS members.
- 3) Install half the total quantity of fasteners on each end of the strap to achieve full tension load of strap.
- 4) Minimum quantity of fasteners to be installed with equal fasteners at each end of the connection. Product may have additional holes not needed to meet the published allowable load of the strap.
- 5) #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1,650 pounds.

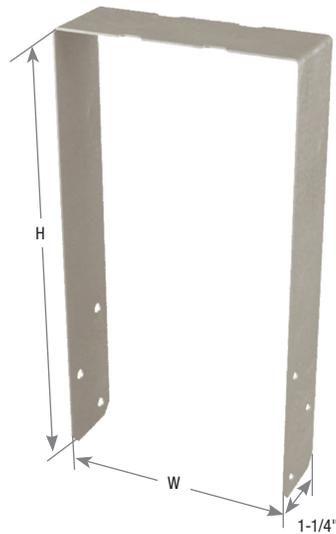
SPT Stud Plate Ties

MiTek SPT4 and SPT6 Stud Plate Ties may be used to create a tension and bearing connection between multiple CFS members with self-tapping screws.

Materials: 20 gauge
Finish: G90 galvanizing

Installation:

- Wrap SPT tie around top or bottom track.
- Use all specified fasteners.



SPT

MiTek Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Fastener Schedule		Allowable Uplift Loads 100% (Lbs.) ¹		
			W	H	Qty	Type ²	33 mil (20 ga)	43 mil (18 ga)	54 mil (16 ga)
SPT4	SP4	20	3-9/16	6-7/8	6	#10	530	830	985
SPT6	SP6	20	5-9/16	7-5/8	6	#10	530	830	985

1) Allowable loads are based on Grade 33 steel for 43 mil (18 ga) or thinner CFS members and Grade 50 steel for 54 mil (16 ga) or thicker CFS members.

2) #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1,650 pounds.

HDO/S / HDOL/S Top Mount Bridle Hangers

HDOL/S (14 ga) and HDO/S (12 ga) top mount bridle hangers are available in a wide variety of stock sizes to match the most common framing needs with economical solutions where custom or special order hangers were required before. The revolutionary design utilizes shear lag slots designed to maximize the capacity of the hangers while providing a safe and ductile connection.

The HDOL/S and HDO/S hangers may be installed with screws, powder actuated, or welded to the header.

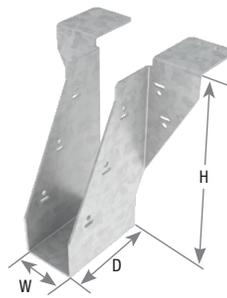
Materials: HDOL/S 68mil (14 gauge), HDO/S 97mil (12 gauge)

Finish: G90 galvanizing

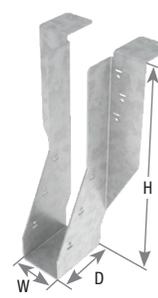
Patents: U.S. Patent No. 10,072,412,
U.S. Patent No. 10,662,641

Installation:

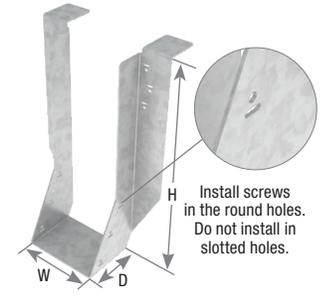
- Install prescribed type and number of self-drilling screws in to the round holes of the hangers. Do not install screws in the shear lag slots.
- Powder actuated are permitted.
- Welding of the hangers is permitted. Place a minimum 1/8" x 2" fillet weld on each top flange of the hanger. Welding should be performed by a qualified welder using a qualified welding procedure while distributing the weld evenly across both flanges. Weld-on applications produce maximum allowable load listed. **Uplift loads do not apply to this application.**



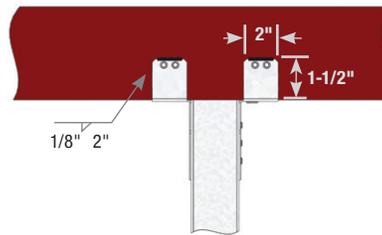
HDOL/S1606



HDOL/S2010



HDOL/S4012



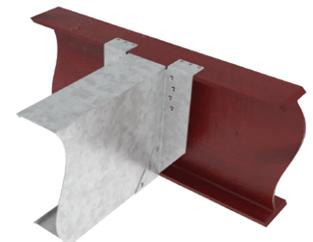
Top view detail of welds



Typical HDOL/S1616 (I-beam) installation



Typical HDOL/S2010 (CFS Header) installation



Typical HDOL/S4012 (I-beam) installation

MiTek Stock No.	Ref. No.	Steel Gauge	Dimensions (in)			Fastener Schedule					Allowable Loads ^{1,2,3}
			W	H	D	Header		Joist			
						Top Qty	Face Qty	Type ⁴	Qty	Type ⁴	
HDOL/S1606	S/LBV1.68/6	14	1-5/8	6	3	4	6	#10	3	#10	2950
HDO/S1606	S/B1.68/6	12			3-1/2	6	8				6140
HDOL/S1608	S/LBV1.68/8	14	1-5/8	8	3	4	6	#10	3	#10	2950
HDO/S1608	S/B1.68/8	12			3-1/2	6	8				6140
HDOL/S1610	S/LBV1.68/10	14	1-5/8	10	3	4	6	#10	3	#10	2950
HDO/S1610	S/B1.68/10	12			3-1/2	6	8				6140
HDOL/S1612	S/LBV1.68/12	14	1-5/8	12	3	4	6	#10	3	#10	2950
HDO/S1612	S/B1.68/12	12			3-1/2	6	8				6140
HDOL/S2006	S/LBV2.06/6	14	2	6	3	4	6	#10	3	#10	2950
HDO/S2006	S/B2.06/6	12			3-1/2	6	8				6140
HDOL/S2008	S/LBV2.06/8	14	2	8	3	4	6	#10	3	#10	2950
HDO/S2008	S/B2.06/8	12			3-1/2	6	8				6140
HDOL/S2010	S/LBV2.06/10	14	2	10	3	4	6	#10	3	#10	2950
HDO/S2010	S/B2.06/10	12			3-1/2	6	8				6140
HDOL/S2012	S/LBV2.06/12	14	2	12	3	4	6	#10	3	#10	2950
HDO/S2012	S/B2.06/12	12			3-1/2	6	8				6140
HDOL/S4006	S/LBV4.06/6	14	4	6	3	4	6	#10	3	#10	2950
HDO/S4006	S/B4.06/6	12			3-1/2	6	8				6140
HDOL/S4008	S/LBV4.06/8	14	4	8	3	4	6	#10	3	#10	2950
HDO/S4008	S/B4.06/8	12			3-1/2	6	8				6140
HDOL/S4010	S/LBV4.06/10	14	4	10	3	4	6	#10	3	#10	2950
HDO/S4010	S/B4.06/10	12			3-1/2	6	8				6140
HDOL/S4012	S/LBV4.06/12	14	4	12	3	4	6	#10	3	#10	2950
HDO/S4012	S/B4.06/12	12			3-1/2	6	8				6140

1) Testing of HDOL/S and HDO/S hangers was performed with framing members with minimum steel yield strengths of Fy=50 ksi.
 2) Qualified designer shall design connection to ensure the header is designed to carry the load and the joist member is sufficient to transfer load to hanger.
 3) Allowable loads based on testing with 68 mil (14ga) CFS members for the HDOL/S hanger and 97 mil (12ga) CFS members for the HDO/S hanger.
 4) #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1,650 pounds.

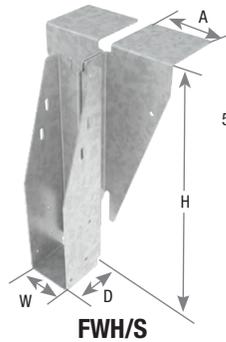
FWH/S Fire Wall Hangers

The FWH/S Fire Wall Hanger attaches to cold-formed steel wall framing to support cold-formed steel joists.

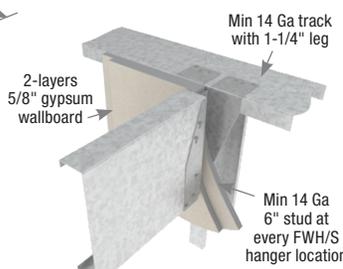
- Materials:** 14 gauge
Finish: G90 galvanizing
Options: See Specialty Options chart

Installation:

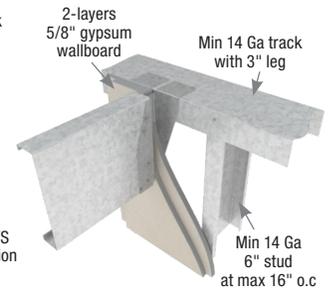
- Install prescribed type and number of self-drilling screws through the round holes into the wall track. Install (5) self-drilling screws through the hanger into one side of the joist using the round and slotted holes.
- Powder actuated are permitted.
- Welding of the hangers is permitted. Place a minimum 1/8" x 2" fillet weld on each top flange of the hanger. Welding should be performed by a qualified welder using a qualified welding procedure while distributing the weld evenly across both flanges. Weld-on applications produce maximum allowable load listed. **Uplift loads do not apply to this application.**



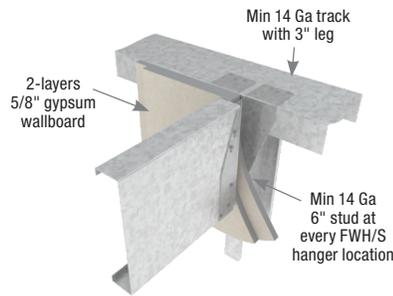
FWH/S



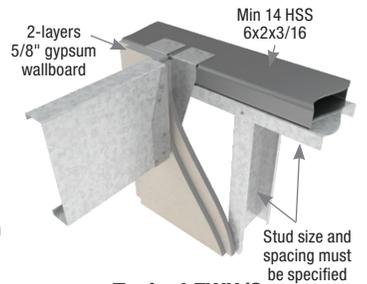
Typical FWH/S shallow-track-aligned installation
Figure 1



Typical FWH/S deep-track installation
Figure 2



Typical FWH/S deep-track aligned installation
Figure 3



Typical FWH/S continuous HSS installation
Figure 4

MiTek Stock No.	Ref. No.	Dimensions (in)			
		W	H	D	A
FWH/S1608	--	1-11/16	7-15/16	2	2-3/4
FWH/S1610	--	1-11/16	9-15/16	2	2-3/4
FWH/S1612	--	1-11/16	11-15/16	2	2-3/4
FWH/S2008	--	2-1/16	7-15/16	2	2-3/4
FWH/S2010	--	2-1/16	9-15/16	2	2-3/4
FWH/S2012	--	2-1/16	11-15/16	2	2-3/4
FWH/S2508	--	2-9/16	7-15/16	2	2-3/4
FWH/S2510	--	2-9/16	9-15/16	2	2-3/4
FWH/S2512	--	2-9/16	11-15/16	2	2-3/4

Fastener / Allowable Load Table

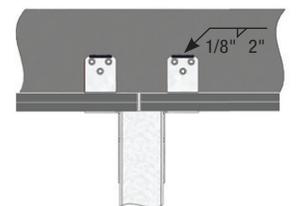
Installation Type	Description	Fastener Schedule				Joist Steel Thickness	Allowable Download (Lbs.)		
		Header		Joist Qty	Type ^{1,2}		Without Bearing Stiffeners	With ³ Bearing Stiffeners	Uplift
		Top Qty	Face Qty						
Figure 1	14Ga 6" CFS Track (1-1/4" Leg) with 14Ga 6" Stud Directly Below	6	--	5	#10 Self-Tapping	54 mil	625	1165	180
						68 mil	875	1800	
						97 mil	1750	1800	
Figure 2	14Ga 6" CFS Deep Track (3" Leg) with No Stud Directly Below	6	2	5	#10 Self-Tapping	54 mil	625	1165	380
						68 mil	875	1220	
						97 mil	1750	1220	
Figure 3	14Ga 6" CFS Deep Track (3" Leg) with 14Ga 6" Stud Directly Below	6	2	5	#10 Self-Tapping	54 mil	625	1165	380
						68 mil	875	2200	
						97 mil	1750	2200	
Figure 4	HSS 6x2x3/16 on 14Ga CFS Track (1-1/4" Leg) with No Stud Directly Below	6	--	5	#10 Self-Tapping	54 mil	625	1165	180
						68 mil	875	2200	
						97 mil	1750	2200	

- #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1650 pounds.
- Larger self-drilling/tapping screws may be used with no reduction in load carrying capacity.

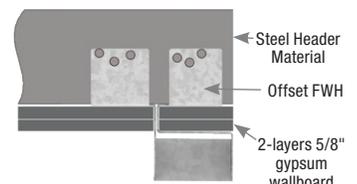
Specialty Options Chart – Refer to Specialty Options pages 320 and 322 for additional details.

Option	Skewed ¹	Top Flange Offset
Range	1° to 70°	--
Allowable Loads	70% of table load	70% of table download. 180 lbs. Max uplift
Ordering	Add <i>SK</i> angle required, right (<i>R</i>) or left (<i>L</i>), and square cut (<i>SQ</i>) to product number. Ex. FWH/S2010_SK45R_SQ	Add <i>OS</i> , and right (<i>R</i>) or left (<i>L</i>), to product number. Ex. FWH/S2010_OSL

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.



Top view detail of welds



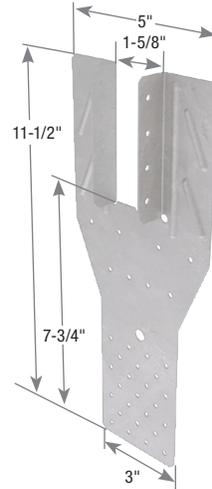
Typical FWH top flange offset, left shown (Top View)

LUGT Girder Tiedowns

The LUGT is designed to transfer uplift loads from roof framing members to the wall studs.

Materials: 20 gauge
Finish: G90 galvanizing

Installation:
 • Use all specified fasteners.



LUGT1

MiTek Stock No.	Ref. No.	Steel Gauge	Fastener Schedule				Allowable Shear Loads (Lbs.)			Allowable Tension Loads (Lbs.) ²		
			Min Qty ³			Type ^{1,4,5}	33 mil (20ga)	43 mil (18ga)	54 mil (16ga)	33 mil (20ga)	43 mil (18ga)	54 mil (16ga)
			33 mil (20ga)	43 mil (18ga)	54 mil (16ga)							
LUGT1	H10S	18	6	4	4	#10	177	263	433	1045		

- 1) Install self-tapping screws symmetrically into CFS stud to prevent any eccentricity.
- 2) Allowable load is based on allowable tension capacity of truss to connector. Be sure to install all prescribed nails.
- 3) Minimum quantity of fasteners to be installed. Product may have additional holes not needed to meet the published allowable load.
- 4) #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1,650 pounds.
- 5) Allowable loads are based on Grade 33 steel for 43 mil (18 ga) and thinner CFS members and Grade 50 steel for 54 mil (16 ga) and thicker CFS members.

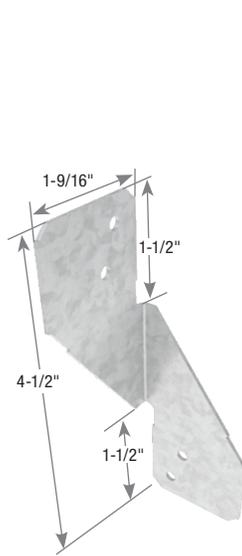
RT/S Hurricane Ties

RT/S are designed to tie trusses and rafter to wall systems. RT/S are to resist uplift and lateral forces between framing members.

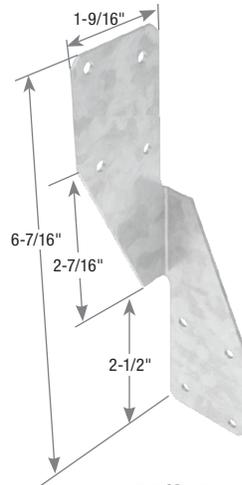
Materials: 20 gauge
Finish: G90 galvanizing

Installation:

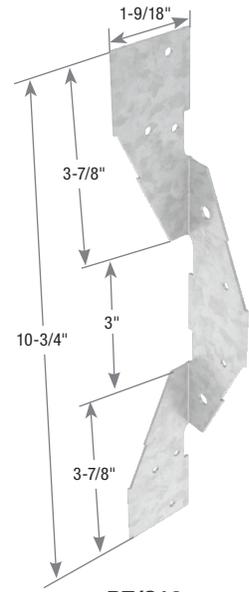
- Use all specified fasteners.
- Designer shall determine if solid blocking is required.



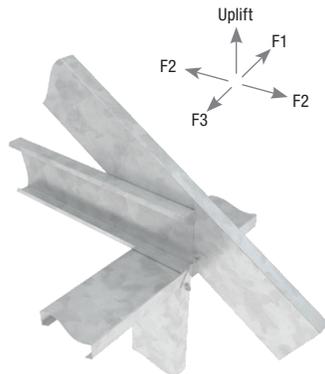
RT/S3A



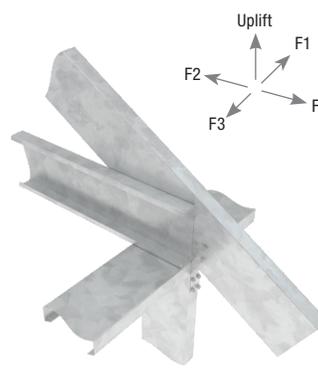
RT/S7A



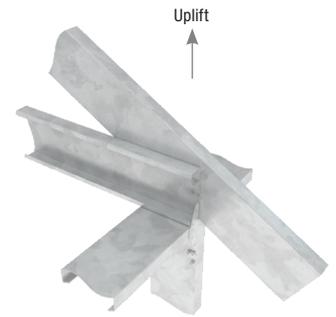
RT/S10



Typical RT/S3A installation



Typical RT/S7A installation



Typical RT/S10 installation

MiTek Stock No.	Ref. No.	Steel Gauge	Fastener Schedule				Allowable Loads (Lbs.) ^{1,2}			
			Truss/Rafter ³		Stud/Track ³		33 mil (20 ga)			
			Qty	Type ⁴	Qty	Type ⁴	Uplift	Lateral		
				F1	F2	F3				
RT/S3A	S/H3	18	2	#10	2	#10	355	85	185	230
RT/S7A	S/H2.5	18	4	#10	4	#10	465	115	160	145
RT/S10	S/H2	18	3	#10	3	#10	455	--	--	--

1) Allowable loads are for one part only.
 2) Allowable uplift loads for the RT/S3A may be increased up to 375 lbs. when GR50 members are used.
 3) 33 mil members have been evaluated as Grade 33.
 5) #10 screws are self-drilling 0.190 inch diameter hardened washer-head screws with a minimum nominal shear strength of 1,650 pounds.



Commercial Cold-Formed Steel Products

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