SIMPSON Strong-Tie®

Strong-Drive® SDWH TIMBER-HEX HDG Screw

Structural Wood and Engineered Wood Including Ledgers

The SDWH Timber-Hex HDG screw is a 0.276"-diameter hot-dip galvanized screw suitable for marine and coastal applications. The SDWH Timber-Hex HDG screw has a SawTooth™ point and oversized integral washer that makes for fast installations; no predrilling or separate washer needed. Speed up your next pile job by replacing ¾" and ⅝" HDG bolt/washer/nut assemblies (two screws for one bolt in many conditions) with the Strong-Drive SDWH Timber-Hex HDG screw. It is code listed under IAPMO-UES ER-192 and meets 2015 and 2018 IRC® and IBC® code requirements for several common wood framing applications.

Features:

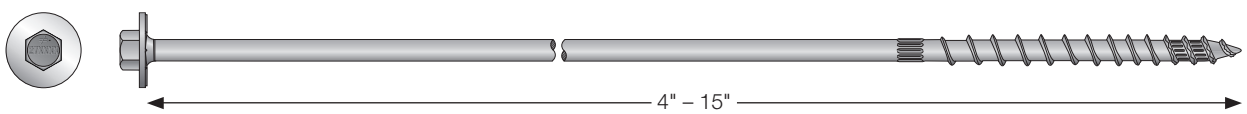
- 0.276" shank diameter for heavy-duty structural applications
- ASTM A153 Class-C hot-dip galvanized coating suitable for coastal and marine environments
- SawTooth™ point design for fast starts and no predrilling
- Oversized 0.93"-diameter integral washer eliminates the need for a separate washer
- ⅜" hex drive for secure driving (replacement driver bit — BITHEXR38-134)

Codes/Standards: IAPMO-UES ER-192*, City of Los Angeles RR25906, State of Florida FL13975

For Technical Data and Loads, see Technical Supplement

Install Tips: For best results, use a minimum of ½" low-speed corded drill to install

US Patent 9,523,383



Class C, Hot Dip Galvanized

Size Dia. x L (in.)	Hex Drive (in.)	Thread Length (in.)	Flagged Fasteners		Retail		Mini-Bulk		Bucket	
			Fast. per Pack	Model No.	Fast. per Pack	Model No.	Fast. per Pack	Model No.	Fast. per Pack	Model No.
0.276 x 4	⅜	3	1	SDWH27400G-RP1	30	SDWH27400GR30	150	SDWH27400GMB	350	SDWH27400G
0.276 x 6	⅜	3	1	SDWH27600G-RP1	30	SDWH27600GR30	150	SDWH27600GMB	300	SDWH27600G
0.276 x 8	⅜	3	1	SDWH27800G-RP1	30	SDWH27800GR30	150	SDWH27800GMB	—	—
0.276 x 10	⅜	3	1	SDWH271000G-RP1	30	SDWH271000GR30	150	SDWH271000GMB	—	—
0.276 x 12	⅜	3	1	SDWH271200G-RP1	30	SDWH271200GR30	150	SDWH271200GMB	—	—
0.276 x 15	⅜	3	1	SDWH271500G-RP1	—	—	100	SDWH271500GMB	—	—

*15" SDWH Timber-Hex HDG screw is not listed in IAPMO-UES ER-192.

4" flagged fasteners per master carton: 40; 6" flagged fasteners per master carton: 35; 8"–15" flagged fasteners per master carton: 25.

Strong-Drive®
SDWH TIMBER-HEX HDG Screw

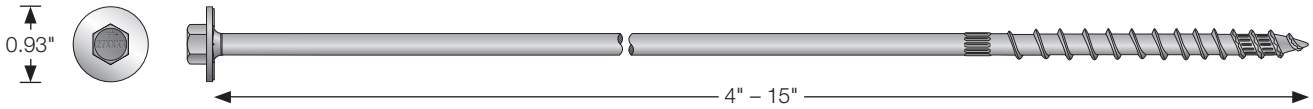
Structural Wood-to-Wood Connections, Indoor/Outdoor Projects, Applications Requiring High to Severe Corrosion Resistance

The Strong-Drive line of structural screws includes a 0.276"-diameter hot-dip galvanized screw suitable for heavy-duty marine and coastal applications. The SDWH Timber-Hex HDG screw has a SawTooth™ point and oversized integral washer that makes for fast installations; no predrilling or separate washer needed.

Codes/Standards: IAPMO-UES ER-192, City of Los Angeles RR25906, State of Florida FL13975

US Patent 9,523,383

For more information, see p. 57, C-F-2019 Fastening Systems Catalog and Engineering Letters: L-F-SDWH27GRD for round pile connection loads/details, and L-F-SDWH27GSQ for square pile connection loads/details



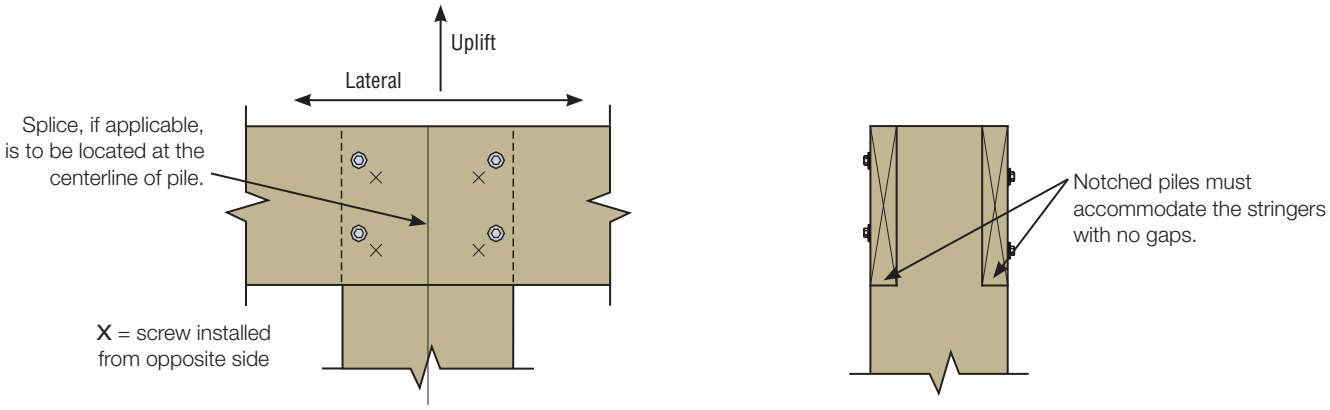
SDWH Timber-Hex HDG — Allowable Single Shear and Withdrawal Loads

Size (dia. x length) (in.)	Model No.	Thread Length (in.)	Reference Allowable Shear Loads (lb.)						Reference Allowable Withdrawal Load, W (lb./in.)			Max. Withdrawal Load, W_{max} (lb.)		
			Wood Side Member Thickness (in.)											
			SP		DFL		HF/SPF		SP	DFL	HF/SPF	SP	DFL	HF/SPF
			1.5	3	1.5	3	1.5	3						
0.276 x 4	SDWH27400G	3	505	—	440	—	400	—	287	255	212	860	765	635
0.276 x 6	SDWH27600G	3	505	545	440	545	400	450						
0.276 x 8	SDWH27800G	3	570	675	430	675	430	595						
0.276 x 10	SDWH271000G	3	570	675	430	675	430	595						
0.276 x 12	SDWH271200G	3	570	675	430	675	430	595						
0.276 x 15	SDWH271500G	3	570	675	430	675	430	595						

1. All shear loads are based on full penetration into the main member. Full penetration is the screw length minus the side member thickness.
2. Allowable loads are shown at the wood load duration factor of C_D=1.0. Loads may be increased for load duration per the building code up to a C_D=1.6. Tabulated values must be multiplied by all applicable adjustment factors per the NDS.
3. For in-service moisture content greater than 19%: withdrawal C_M=0.65; shear C_M=0.70.
4. When using tabulated single shear loads for multiple fasteners, minimum fastener spacing requirements: 8" end distance, 1½" edge distance, ⅝" between staggered rows of fasteners, 4" between non-staggered rows of fasteners and 8" between fasteners in a row, multiply the table values by 0.80.
5. Tabulated loads are for both parallel- and perpendicular-to-grain loading.
6. Maximum withdrawal loads are based on full thread length penetration in the main member.
7. SDWH271500G is not included in IAPMO-UES-ER-192.

Strong-Drive®
SDWH TIMBER-HEX HDG Screw (cont.)

Round Pilings



SDWH Timber-Hex HDG — Stringer-to-Round Pile Connection Loads

Round Pile Diameter (in.)	Nominal Stringer Size (in.)	Total No. Stringers	Screw Length (in.)	Model No.	No. Screws (Each Side)	Reference Allowable Connection Loads (lb.)					
						Uplift			Lateral		
						Continuous	Spliced	End	Continuous	Spliced	End
10	2 x 10	2	10	SDWH271000G	4	3,965	2,960	2,140	3,430	3,190	2,875
12	2 x 10	2	12	SDWH271200G	4	3,725	3,130	2,240	4,000	3,645	3,505
14	2 x 10	2	12	SDWH271200G	4	1,865	1,565	1,120	2,000	1,825	1,755
10	2 x 10	4	10	SDWH271000G	4	4,590	3,745	2,785	3,430	3,190	2,875
12	2 x 10	4	12	SDWH271200G	4	7,055	4,975	4,140	4,990	4,165	3,130
12	2 x 12	4	12	SDWH271200G	6	8,735	5,330	4,750	6,000	5,470	5,260
14	2 x 10	4	12	SDWH271200G	4	3,530	2,490	2,070	2,495	2,085	1,565
14	2 x 12	4	12	SDWH271200G	6	4,370	2,665	2,375	3,000	2,735	2,630

1. All tabulated values are based on double shear action with the same size and quantity of stringers on each side of the pile.
2. Dimensions and allowable connection loads are based on notched piles that must accommodate the stringers with adequate bearing and no gaps. Notched piles shall not be notched such that more than 50% of the cross section is removed. Unnotched piles may be used providing the width and area of wood between the stringers and the fastener placement geometry is unchanged from the notched conditions.
3. Allowable loads are shown at the wood load duration factor of C_D=1.0. Loads may be increased for load duration per the building code up to a C_D=1.6. Tabulated values must be multiplied by all applicable adjustment factors per the NDS.
4. For in-service moisture content greater than 19%, use C_M = 0.68.
5. For conditions with stringers on one side only, use the longest screw length that does not extend beyond the opposite surface of the pile. Use one quarter of the loads shown for that length screw and stringer condition.
6. Wood piles are SP. Wood stringers may be sawn lumber, glulam or SCL with minimum SG = 0.55 (or equivalent). For stringer widths at least 1.5" and less than 3.0" thick, use the table values for the conditions with a single 2x stringer on each side of the pile.
7. For 14" diameter piles, use the same screw pattern as for the 12" piles. Loads for 14" diameter piles are based on single shear action.
8. When a screw is loaded simultaneously in more than one direction, the allowable load must be evaluated using the unity equation: (Design Uplift ÷ Allowable Uplift) + (Design F1 ÷ Allowable F1) + (Design F2 ÷ Allowable F2) ≤ 1.0. The three terms in the unity equation represent the possible generated force directions. The number of terms that must be considered for simultaneous loading is the sole discretion of the Designer and depends on the method of calculating wind forces and the utilization of the screws within the structural system.

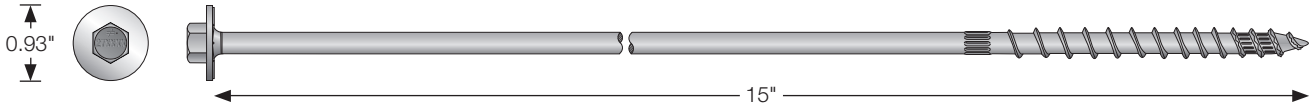
Strong-Drive®
SDWS **LOG** and SDWH **TIMBER-HEX HDG** Screw

Floor-to-Floor

The SDWS Log screw (SDWS221500) and SDWH Timber-Hex HDG screw (SDWH271500G) have been evaluated as alternatives for uplift connection between floors that do not require shrinkage compensation. The application is specific to framing that consists of a single wall bottom plate, joist depth of 9.25 to 9.5 inches, and double 2x wall top plate. These screws are recognized in IAPMO-UES ER-192. Typical installation and corresponding load tables for floor systems is shown in the following pages.

For more information, see p. 83 (SDWS Log) and p. 57 (SDWH Timber-Hex HDG), C-F-2019 Fastening Systems Catalog

SDWS Log Screw (SDWS221500)

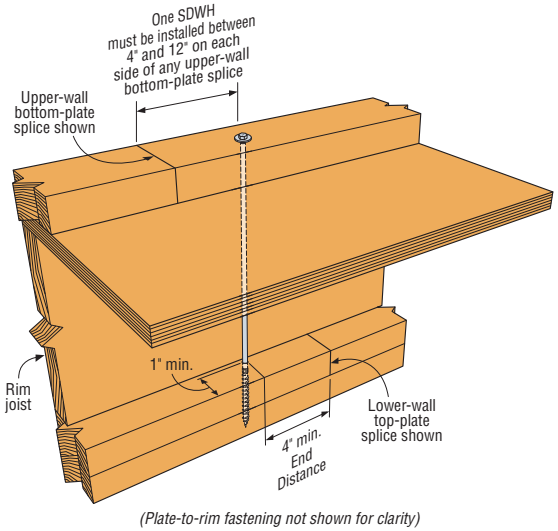


SDWH Timber-Hex HDG Screw (SDWH271500G)

Product Information and Withdrawal/Pull-Through Loads

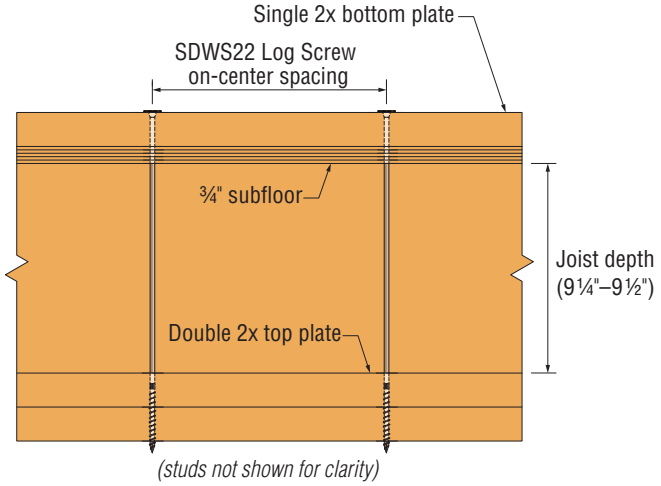
Size (in.)	Model No.	Thread Length (in.)	Reference Allowable Withdrawal per Inch of Thread Penetration (lb./in.)[1]			Reference Allowable Fastener Head Pull-Through for 2x Plate (lb.)[1]		
			SP	DFL	SPF	SP	DFL	SPF
0.22 x 15	SDWS221500	2¾	260	215	185	800	695	495
0.27 x 15	SDWH271500G	3	285	255	210	880	875	695

1. Allowable loads are shown at the wood load duration factor of C_D = 1.0. Loads may be increased for load duration up to a C_D = 1.6.



(Plate-to-rim fastening not shown for clarity)

Typical SDWH271500G Installation
(SDWS221500 Similar)



(studs not shown for clarity)

Typical SDWS221500 Spacing
(SDWH271500G Similar)

Floor-to-Floor Fastening

On-Center Spacing for Uniform Uplift Loads

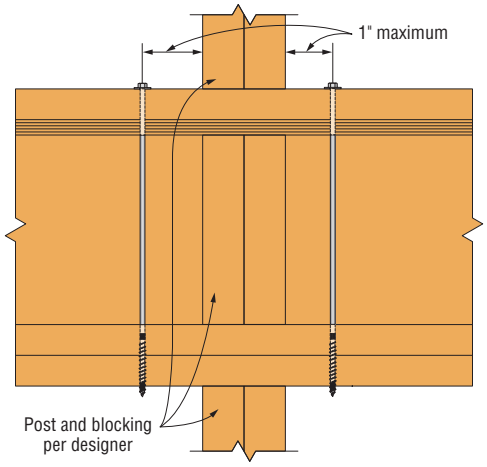
Joist Depth (in.)	Model No.	Wall Plate Species	Withdrawal per Screw (lb.)[2]	Maximum Screw Spacing (in.) Along Wall Bottom Plate for Wind Uplift										
				Interstory Unit Wind Uplift (Pounds per Lineal Foot)[2]										
				100 plf	150 plf	200 plf	250 plf	300 plf	350 plf	400 plf	450 plf	500 plf	550 plf	600 plf
9¼ to 9½	SDWS221500	**Single 2x4 Bottom Plate**												
		SP	930	46	40	36	34	32	30	28	24	22	20	18
		DFL	770	48	42	38	36	30	26	22	20	18	16	14
		SPF	675	46	40	36	32	26	22	20	18	16	14	12
		Single 2x6 Bottom Plate												
		SP	930	54	46	42	40	36	32	28	24	22	20	18
		DFL	770	56	48	44	36	30	26	22	20	18	16	14
		SPF	675	54	46	40	32	26	22	20	18	16	14	12
9¼ to 9½	SDWH271500G	**Single 2x4 Bottom Plate**												
		SP	1,150	46	40	36	34	32	30	28	26	24	24	22
		DFL	1,020	48	42	38	36	34	32	30	26	24	22	20
		SPF	850	46	40	36	34	32	28	24	22	20	18	16
		Single 2x6 Bottom Plate												
		SP	1,150	54	46	42	40	36	36	34	30	28	24	22
		DFL	1,020	56	48	44	42	38	34	30	26	24	22	20
		SPF	850	54	46	42	40	34	28	24	22	20	18	16

1. Spacing listed based on lesser of: single bottom plate bending allowable load, single bottom plate deflection limited to spacing/240 and ¼" max. for No. 2 grade lumber, screw allowable withdrawal and pull-through loads.
2. Withdrawal and uplift loads are based on C_D = 1.6.
3. Stud-to-plate connections and plate-to-rim connections are required to complete the load path.
4. Tabulated loads are applicable to the following minimum thread embedment length into double top plate: SDWS221500 = 2¼", SDWH271500G = 2½".

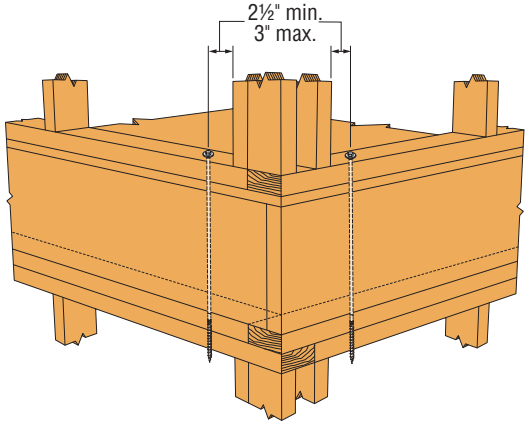
Concentrated Uplift Loads

Size (in.)	Model No.	Thread Length (in.)	Single Fastener			Double Fastener		
			Allowable Tension Load (lb.)			Allowable Tension Load (lb.)		
			SP	DFL	SPF	SP	DFL	SPF
0.22 x 15	SDWS221500	2¾	930	770	675	1,860	1,540	1,350
0.27 x 15	SDWH271500G	3	1,150	1,020	850	2,240	2,040	1,700

1. Allowable loads include a wood load duration factor of C_D = 1.6 for wind and earthquake loading with no further increase allowed; reduce when other loads govern.
2. Single and double fastener applications are for concentrated-load uplift restraint conditions (i.e. end of header, at girders, or at the end of shear walls).
3. Tabulated loads are applicable to the following minimum thread embedment into the double top plate: SDWS221500 = 2¼", SDWH271500G = 2½".



Typical Double SDWH27G or SDWS22 (Similar) Concentrated Load Restraint Detail at Compression Blocking



Typical Double SDWH27G or SDWS22 (Similar) Concentrated Load Restraint Detail at Wall Corner

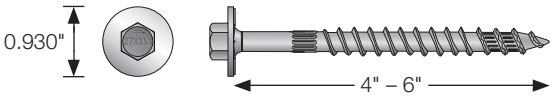
Note: Stud-to-plate connections and rim-to-plate connections are required to complete the load path and are in the responsibility of the designer. SDWS22 and SDWH27G do not replace holdowns in shearwall applications.

Strong-Drive® SDWH TIMBER-HEX HDG Screw

Deck Ledger-to-Rim Board Applications

The Strong-Drive SDWH Timber-Hex HDG (SDWH27G) screws have been tested for use in attaching a deck ledger to a rim board, through a maximum ½" thickness of wood structural panel sheathing. The table below is based on the lesser of single fastener ICC-ES AC233 testing of the fastener or ICC-ES AC13 ledger assembly testing with an applied factor of safety of 5.0. Values include adjustment for wet service. Maximum fastener on-center spacing is listed for the standard International Residential Code loading case (40 psf Live + 10 psf Dead) and an alternate case (60 psf Live + 10 psf Dead).

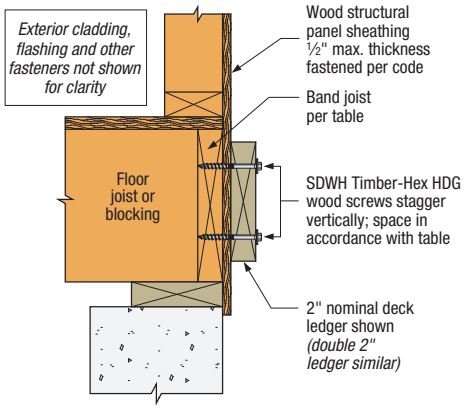
For more information, see p. 56, C-F-2019 Fastening Systems Catalog



SDWH Timber-Hex HDG Screw – 2015 and 2018 IRC Compliant Spacing for a Sawn Lumber Deck Ledger-to-Rim Board

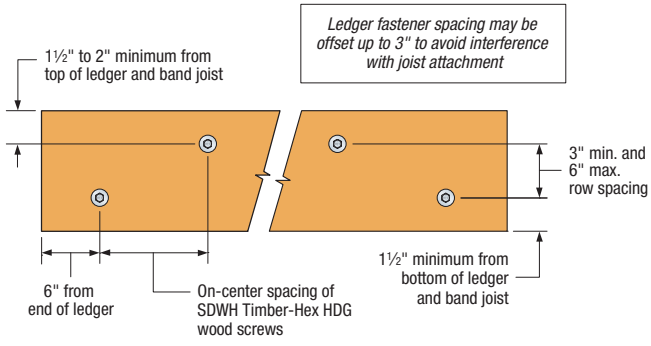
Loading Condition	Nominal Ledger Size (in.)	Size (in.)	Model No.	Rim Board Material and Minimum Size	Maximum Deck Joist Span						
					Up to 6 ft.	Up to 8 ft.	Up to 10 ft.	Up to 12 ft.	Up to 14 ft.	Up to 16 ft.	Up to 18 ft.
					Maximum On-Center Spacing of Fasteners (in.)						
40 psf Live 10 psf Dead	2x	0.276 x 4	SDWH27400G	1" OSB 1" LVL 1⅛" OSB 1 5/16" LVL 1¼" LSL 2x SP, DFL – 2x SPF, HF	22	17	13	11	10	8	7
60 psf Live 10 psf Dead	2x	0.276 x 4	SDWH27400G	1" OSB 1" LVL 1⅛" OSB 1 5/16" LVL 1¼" LSL 2x SP, DFL – 2x SPF, HF	16	12	10	8	7	6	5
40 psf Live 10 psf Dead	(2) 2x	0.276 x 6	SDWH27600G	1" OSB 1" LVL 1⅛" OSB 1 5/16" LVL 1¼" LSL 2x SP, DFL – 2x SPF, HF	25	19	15	13	11	9	8
60 psf Live 10 psf Dead	(2) 2x	0.276 x 6	SDWH27600G	1" OSB 1" LVL 1⅛" OSB 1 5/16" LVL 1¼" LSL 2x SP, DFL – 2x SPF, HF	18	14	11	9	8	7	6

1. SDWH27G screw spacing values are equivalent to 2015 IRC Table R507.2. The table above also provides SDWH27G screw spacing for a wide range of materials commonly used for rim board, and an alternate loading condition as required by some jurisdictions.
2. Sawn lumber rim board shall be Spruce-Pine-Fir, Hem-Fir, Douglas Fir-Larch, or Southern Pine species. Ledger shall be Hem-Fir, Douglas Fir-Larch, or Southern Pine species.
3. Fastener spacings are based on the lesser of single fastener ICC-ES AC233 testing of the Strong-Drive SDWH27G screw with a safety factor of 5.0 or ICC-ES AC13 assembly testing with a factor of safety of 5.0. Spacing includes NDS wet service factor adjustment.
4. Multiple ledger plies shall be fastened together per code independent of the SDWH27G screws.
5. Rows of screws shall be vertically offset and evenly staggered. Screws shall be placed 1½" to 2" from the top and bottom of the ledger or rim board with 3" minimum and 6" maximum between rows and spaced per the table. End screws shall be located 6" from the end and at 1½" to 2" from the bottom of the ledger. For screws located at least 2" but less than 6" from the end, use 50% of the load per screw and 50% of the table spacing between the end screw and the adjacent screw, and for screws located between 2" and 4" from the end, predrill using a 3/16" drill bit.
6. Structural sheathing between the ledger and rim board shall be a maximum of ½" thick and fastened per code.



Ledger-to-Rim Board Assembly

(wood-framed lower floor acceptable, concrete wall shown for illustration purposes; other fasteners not shown for clarity.)



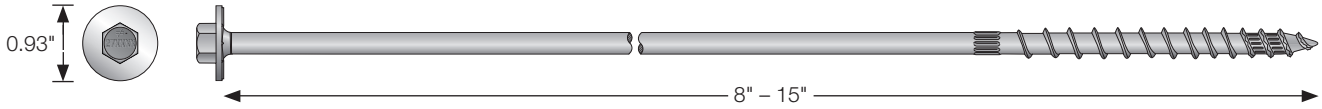
SDWH Timber-Hex HDG Screw Spacing Detail for Ledgers

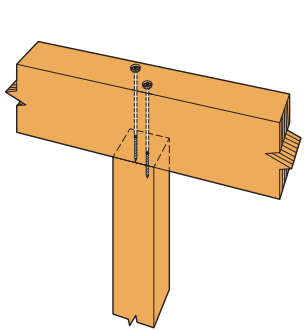
Strong-Drive® SDWH TIMBER-HEX HDG Screw Beam-to-Top-of-Post Connection

The Simpson Strong-Tie® Strong-Drive SDWH TIMBER-HEX HDG (SDWH27G) structural wood screws may be used to attach a 6x or 8x beam to the top of a post. The screws are available with a hot-dip galvanized coating in accordance with ASTM A153, Class C, suitable for severe exposure applications including preservative treated woods in general exterior construction (AWPA UC4C). The 8" – 12" SDWH27G fasteners are the subject of IAPMO-UES ER-192.

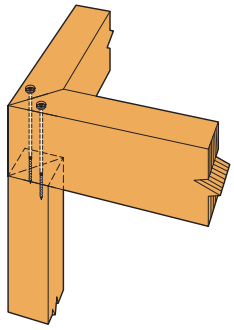
See illustrations for two beam-to-post conditions using the SDWH27G to make the connection. Minimum fastener spacing requirements are shown below. The following table provides allowable shear and uplift loads tested in accordance with ICC-ES AC233, when installed through the top of a wood beam into the end grain of a wood post.

For more information, see p. 57, C-F-2019 Fastening Systems Catalog



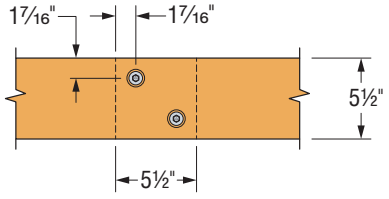


Continuous Beam over Post

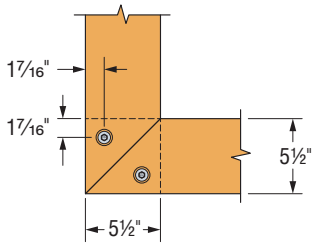


Mitered Beam over Corner Post

Beam-to-Post Connection



Continuous Beam over Post
(6x shown, 8x similar)



Mitered Beam over Corner Post
(6x shown, 8x similar)

Plan View

SDWH Timber-Hex HDG — Allowable Uplift Loads for Beam-to-Top-of-Post Connections

Screw Length (in.)	Model No.	Thread Length (in.)	Screws per Post	Max Beam Depth (in.)	Reference DFL/SP Allowable Load per Post (lb.)			
					Mitered Beam over Corner Post		Continuous Beam	
					Uplift	Shear	Uplift	Shear
8	SDWH27800G	3	2	5	905	665	920	725
10	SDWH271000G	3	2	7				
12	SDWH271200G	3	2	9				
15	SDWH271500G	3	2	12				

1. Allowable loads are shown at the wood load duration factor of C_D = 1.0. Loads may be increased for load duration per the building code up to C_D = 1.6. Tabulated values must be multiplied by all applicable adjustment factors per NDS.
2. Tabulated loads are based on entire threaded length installed into post.
3. For in-service moisture content greater than 19%: shear C_M = 0.70, withdrawal C_M = 0.65.
4. Tabulated shear loads are for the beam loaded parallel or perpendicular to grain with the SDWH27G embedded in the end grain of the post.
5. Tabulated loads are total for the connection, not per screw.
6. Maximum beam depths account for no countersinking of the screw. Screws may be countersunk a maximum of ½" depth with no reduction in allowable loads which will allow the 8", 10" and 12" screw lengths to be installed in 6x, 8x, 10x and 12x nominal beam depths, respectively.