

Sheathing-to-Steel Fastening

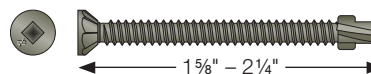
CBSDQ SHEATHING-TO-CFS Screw

Common Application:

Wood structural panel/sheathing to cold-formed steel

Codes/Standards: ASTM C1513 compliant, ICC-ES ESR-4208

For more information, see p. 213, C-F-2019 Fastening Systems Catalog



CBSDQ — Pull-Out Loads — Steel Connections

Model No.	Screw Size	Load Description	Reference Pull-Out Loads (lb.)	
			Steel Thickness [mil (ga.)]	
			43 (18)	54 (16)
CBSDQ158S	#8	ASD	105	175
		LRFD	170	280
		Nominal strength	300	460
CBSDQ214S	#10	ASD	155	255
		LRFD	250	410
		Nominal strength	445	665

1. Screws and connections have been tested per AISI Standard Methods S904-17 and S905-17.

2. Values are based on cold-formed steel (CFS) members with a minimum yield strength of $F_y=33$ ksi and tensile strength of $F_u=45$ ksi for 43 mil (18 ga.), and a minimum yield strength of $F_y=50$ ksi and $F_u=65$ ksi for 54 mil (16 ga.).

3. For design purposes, steel sheet thicknesses are 0.0451 inch for 43 mil (18 ga.) and 0.0566 inch for 54 mil (16 ga.).

4. A minimum of three exposed screw threads are required to achieve the loads in the Table.

CBSDQ — Pull-Through Loads — Rated Sheathing Panels

Model No.	Screw Size	Load Description	Reference Pull-Through Loads (lb.)		
			Minimum Nominal Panel Thickness (in.)		
			OSB		
			15/32	19/32	23/32
CBSDQ158S	#8	ASD	58	63	86
		LRFD	125	135	185
		Nominal strength	290	315	430
CBSDQ214S	#10	ASD	47	47	78
		LRFD	102	102	168
		Nominal strength	235	235	390

1. The tabulated values are based on testing per AC233.

2. ASD pull-through loads based on a factor of safety of five applied to the nominal strength value ($C_D=1.0$, increases to $C_D=1.6$ allowed when applicable).

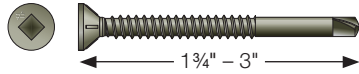
3. LRFD load based on adjustment of ASD load per NDS 2018 Appendix N using $K_F = 3.32$, $\Phi_z = 0.65$, and $\lambda = 1.0$.

CFS Systems

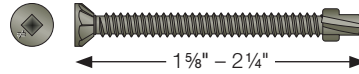
PPSD/CBSDQ/FHSD/WSFLRV Screws

For More Product Information:

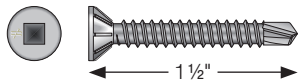
- Strong-Drive® PPSD Sheathing-to-CFS screw: see pp. 94 and 209, C-F-2019
- CBSDQ Sheathing screw: see p. 213, C-F-2019
- FHSD Wood-to-CFS screw: see p. 215, C-F-2019
- WSFLRV Wood-to-CFS/Aluminum screw: see p. 215, C-F-2019
- See ESR-4208 for Strong-Drive PPSD Sheathing-to-CFS and CBSDQ Sheathing screws design and installation with wood structural panels.



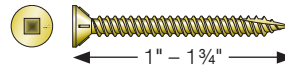
Strong-Drive® PPSD SHEATHING-TO-CFS Screw



CBSDQ Sheathing-to-CFS Screw



FHSD Wood-to-CFS Screw



WSFLRV Wood-to-CFS/Aluminum Screw

PPSD, CBSDQ, FHSD, WSFLRV Screw¹¹ — Nominal Shear Strength (R_n) for Wind and Other In-Plane Loads for Shearwall (lb./ft.)

Assemble Description	Maximum Aspect Ratio (h/w)	Fastener Spacing at Panel Edges (in.)			
		6	4	3	2
1 ⁵ / ₃₂ " structural 1 sheathing (4 ply), one side	2:1	1,065 ³	—	—	—
7/ ₁₆ " rated sheathing (OSB), one side	2:1	910 ³	1,410	1,735	1,910
7/ ₁₆ " rated sheathing (OSB), one side oriented perpendicular to framing	2:1	1,020	—	—	—
7/ ₁₆ " rated sheathing (OSB), one side	2:1 ⁵	—	1,025	1,425	1,825

- Nominal strength shall be multiplied by the resistance factor ($\phi = 0.65$) to determine the design strength or divided by the safety factor ($\Omega = 2.0$) to determine the allowable strength.
- Screws in the field of the panel shall be installed 12" (305 mm) on center (o.c.).
- Where fully blocked gypsum board is applied to the opposite side of this assembly, per Table C2.1-2 AISI S213 Standard *North American Standard for Cold-Formed Steel Framing — Lateral Design 2018 Edition with Supplement No. 1 and Commentary* with screw spacing at 7" (178 mm) o.c. edge and 7" (178 mm) o.c. field, these nominal strengths are permitted to be increased by 30%.
- For walls with material of the same type and nominal strength applied to opposite faces of the same wall, the available strength of material of same capacity is cumulative. Where the material nominal strengths are not equal, the available strength shall be either two times the available strength of the material with the smaller value or shall be taken as the value of the stronger side, whichever is greater. Summing the available strengths of dissimilar material applied to opposite faces or to the same wall line is not allowed.
- Shearwall height to width aspect ratio (h/w) greater than 2:1, but not exceeding 4:1, shall be permitted provided the nominal shear strength is multiplied by 2w/h.
- For wood structural panel sheathed shearwalls, tabulated R_n values shall be applicable for short-term load duration (wind loads). For other in-plane lateral loads of normal or permanent load duration as defined by the AWC NDS, the values in the table above for wood structural panel sheathed shearwalls shall be multiplied by 0.63 (normal) or 0.56 (permanent).
- Maximum stud spacing 24" o.c.
- All sheathing edges shall be attached to framing or 1¹/₂" width 33 mil blocking.
- Table based on Table C2.1-1 AISI S213 Standard *North American Standard for Cold-Formed Steel Framing — Lateral Design 2018 Edition with Supplement No. 1 and Commentary*.
- See General Load Table on p. 16 for screw strength.
- #8 screws — PPSD, CBSDQ, FHSD, WSFLRV. #10 screws — FHSD.
- Stud, track and blocking (if applicable) shall be a minimum of 33 mil.

CFS Systems

PPSD/CBSDQ/FHSD/WSFLRV Screws (cont.)

PPSD, CBSDQ, FHSD, WSFLRV Screw¹² — Nominal Shear Strength (Rn) for Seismic and Other In-Plane Loads for Shearwall (lb./ft.)

Assemble Description	Maximum Aspect Ratio (h/w)	Fastener Spacing at Panel Edges ² (in.)				Designation Thickness ^{5,6} of Stud, Track and Blocking (mil)	Required Sheathing Screw Size
		6	4	3	2		
1 ⁵ / ₃₂ " structural 1 sheathing (4 ply), one side	2:1 ³	780	990	—	—	33 or 43	8
	2:1	890	1,330	1,775	2,190	43	10
7/ ₁₆ " rated sheathing (OSB), one side	2:1 ³	700	915	—	—	68	8
	2:1 ³	825	1,235	1,545	2,060	48	8
	2:1	940	1,410	1,760	2,350	54	8
	2:1	1,232	1,848	2,310	3,080	68	10

- Nominal strength shall be multiplied by the resistance factor ($\phi = 0.60$) to determine the design strength or divided by the safety factor ($\Omega = 2.5$) to determine the allowable strength.
- Screws in the field of the panel shall be installed 12" (305 mm) on center (o.c.).
- Shearwall height to width aspect ratio (h/w) greater than 2:1, but not exceeding 4:1, shall be permitted provided the nominal shear strength is multiplied by 2w/h.
- For walls with material of the same type and nominal strength applied to opposite faces of the same wall, the available strength of material of same capacity is cumulative. Where the material nominal strengths are not equal, the available strength shall be either two times the available strength of the material with the smaller value or shall be taken as the value of the stronger side, whichever is greater. Summing the available strengths of dissimilar material applied to opposite faces or to the same wall line is not allowed.
- Substitution of a stud or track of a different designation thickness is not permitted.
- Wall studs and track shall be of ASTM A1003 Structural Grade 33 (Grade 230) Type H steel for members with a designation thickness of 33 and 43 mil, and A1003 Structural Grade 50 (Grade 340) Type H steel for members with a designation thickness equal to greater than 54 mil.
- For wood structural panel sheathed shearwalls, tabulated Rn values shall be applicable for short-term load duration (seismic loads). For other in-plane lateral loads of normal or permanent load duration as defined by the AF&PA NDS, the values in the table above for wood structural panel sheathed shearwalls shall be multiplied by 0.63 (normal) or 0.56 (permanent).
- Maximum stud spacing 24" o.c.
- All sheathing edges shall be attached to framing or 1 1/2" width 33 mil blocking.
- Table based on Table C2.1-3 AISI S213 Standard *North American Standard for Cold-Formed Steel Framing — Lateral Design 2018 Edition with Supplement No. 1 and Commentary*.
- See General Load Table on p. 16 for screw strength.
- #8 screws — PPSD, CBSDQ, FHSD, WSFLRV. #10 screws — FHSD.



Collated Metal Screws

CBSDQ Sheathing-to-CFS Screw

Common Applications:

Sheathing to cold-formed steel (Recommended thicknesses: 16 and 18 ga.)

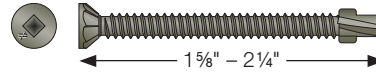
Features:

- Ribbed flat head with nibs for easy countersinking
- #2 undersized square drive (driver bit in each box; replacement bit model BIT2SU)
- #2 drill point with wings
- Quik Guard® coating
- Curved collation
- CBSDQ screws may be used as prescribed by the codes for shear walls and diaphragms as described in AISI S240, S400 and S213.

Codes/Standards: ICC-ES ESR-4208, ASTM C1513 compliant, #8 screws meet minimum head-diameter requirement per AISI S213-07, Lateral Design Standard.

For Technical Data and Loads, see Technical Supplement

Warning: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.



Quik Guard Coating

Length (in.)	Shank Size	Threads Per Inch	Point Size	Carton Quantity	Min. Head Dia. (in.)	Model No.	PRO 200SG2	PRO 250G2	PRO 300SG2
1 1/2	#8	18	2	1,500	0.322	CBSDQ158S	✓	✓	
2 1/4	#10	16	2	1,000	0.322	CBSDQ214S		✓	✓