

SCS Seismic Bypass Framing Connector



The first product of its type to undergo full-scale cyclic research testing to determine its load capacities in real-world conditions, the SCS is a hybrid clip designed specifically to allow both slide-clip or fixed-clip applications in areas of high seismic activity. Everything about the SCS clip — from its heavy-duty 10- and 12-gauge steel manufacturing to its strategically placed darts to the location of its fastener slots and holes — has been engineered to provide exceptional resistance to in-plane seismic loads. Because slide-clip testing shows that attachment at the first slot is most critical to in-plane capacity, the SCS is designed to accommodate two large washer screws (included) at the first slot attached to the stud.

The SCS clip is the most versatile clip on the market making it the ideal clip in seismic and non-seismic areas. This clip has three prepunched oblong slots for slide applications and a pattern of round holes for fixed-clip applications to meet a range of load needs. In addition, the support leg features anchor holes for concrete supports using 1/4"- or 1/2"-diameter concrete screws or bolts, plus smaller holes for steel supports using powder-actuated fasteners such as Simpson Strong-Tie® PDPAT 0.157"-diameter pins or #12 self-drilling Strong-Drive® XL Large-Head Metal screws.

Features:

- 3 1/2", 6" and 8" lengths
- Slide slots used with shouldered washer screws (included) allow a full 1" of vertical deflection
- Precision-located stiffeners enhance strength while allowing ductility
- Simpson Strong-Tie No-Equal® stamps alongside slide slots indicate proper screw placement
- Dual-function clip with prepunched slots for slide application and small round holes for fixed application

Material: 12 ga. (97 mil) and 10 ga. (118 mil), 50 ksi

Finish: Galvanized (G90)

Installation:

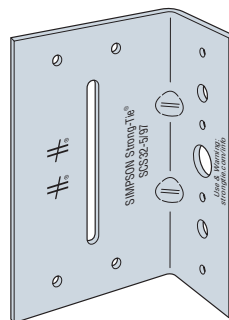
- SCS32-5 permits 1" maximum standoff for fixed applications and 1 1/2" maximum for slide applications. SCS62-5 and SCS82-5 maximum standoff are 2 1/4" for fixed applications and 3" for slide applications.
- Use the specified type and number of anchors.
- Slide applications — Use the specified number of XLSH78B1414 #14 shouldered screws (included). Install the screws in the slots adjacent to the No-Equal stamps.
- Fixed applications — Use the specified number of #10 screws (not included) in the designated screw holes.

Codes: See p. 13 for Code Reference Key Chart.

Ordering Information

Model No.	Order SKU	Thickness mil (ga.)	L (in.)	A (in.)	B (in.)
SCS32-5/97	SCS32-5/97-KT25	97 (12)	3 1/2	1 5/8	—
SCS62-5/97	SCS62-5/97-KT25	97 (12)	6	1 1/8	1 1/2
SCS62-5/118	SCS62-5/118-KT25	118 (10)	6	1 1/8	1 1/2
SCS82-5/118	SCS82-5/118-KT25	118 (10)	8	1 1/8	1 1/2

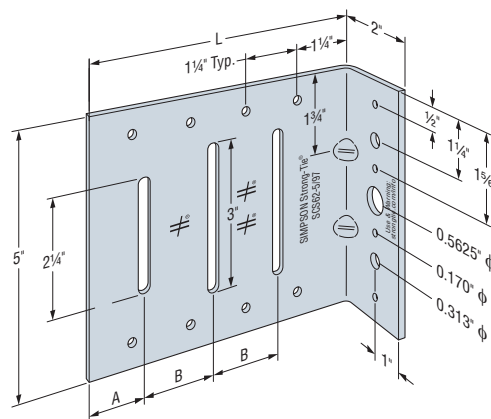
1. Each box contains (25) connectors.
2. SCS32-5/97-KT25 comes with 55 screws for slide-clip applications. All other SCS kits come with 83 screws for slide-clip applications.



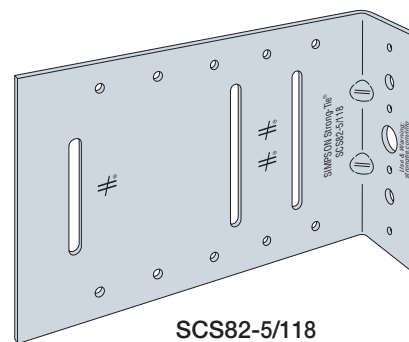
SCS32-5/97

Clip features designed to dramatically increase in-plane resistance. Load rated per ICC-ES AC261.

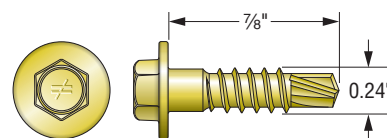
US Patent: 10,749,229



SCS62-5/97, SCS62-5/118



SCS82-5/118

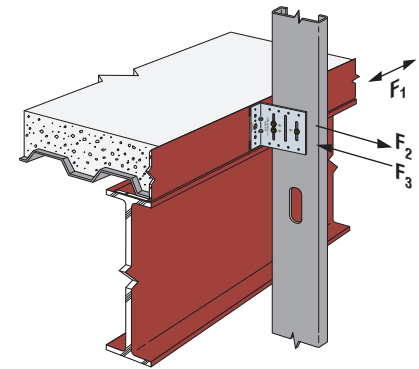


XLSH78B1414 #14 Shouldered Screw for Attachment to Stud Framing Slide Application (included)

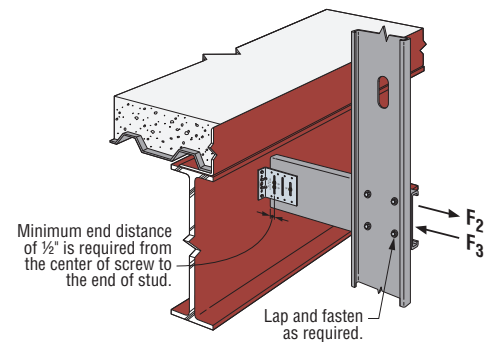
SCS Seismic Bypass Framing Connector

SCS Slide-Clip Allowable Connector Loads (lb.)

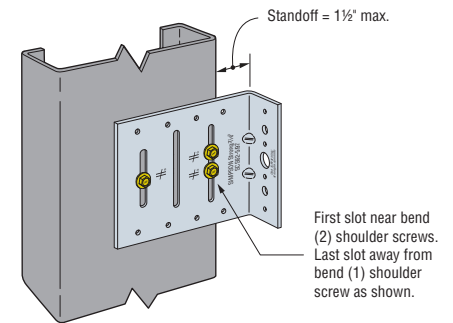
Model No.	Framing Members Thickness mil (ga.)	Fasteners to Framing Member		Max. Standoff Distance (in.)	Allowable Load (lb.)			Code Ref.
		Fastener Pattern	No. of #14 Shouldered Screws		In-Plane Load F_1	Tension Load F_2	Comp. Load F_3	
SCS32-5/97	33 (20)	S1	2	1½	200	425	425	IBC, LA
SCS62-5/97		S1	3	1½	205	635	760	
SCS62-5/118	33 (20)	S2	3	3	205	635	760	
		S1	3	1½	270	650	760	
SCS82-5/118	33 (20)	S2	3	3	270	650	760	
		S1	3	1½	290	540	540	
SCS32-5/97	43 (18)	S1	2	1½	290	540	540	
SCS62-5/97		S1	3	1½	350	895	1,165	
SCS62-5/118	43 (18)	S2	3	3	335	895	1,165	
		S1	3	1½	435	940	1,165	
SCS82-5/118	43 (18)	S2	3	3	435	940	1,165	
		S1	3	1½	540	890	890	
SCS32-5/97	54 (16)	S1	2	1½	540	890	890	
SCS62-5/97		S1	3	1½	655	1,275	1,525	
SCS62-5/118	54 (16)	S2	3	3	620	1,635	1,530	
		S1	3	1½	655	1,825	2,085	
SCS82-5/118	54 (16)	S2	3	3	620	1,825	2,085	
		S1	3	1½	655	1,825	2,085	
SCS32-5/97	68 (14)	S1	2	1½	550	925	925	
		SCS62-5/97	S1	3	1½	685	2,065	2,155
SCS62-5/118	68 (14)	S2	3	3	650	2,065	1,630	
		S1	3	1½	705	2,065	2,220	
SCS82-5/118	68 (14)	S2	3	3	670	2,065	2,220	
		S1	3	1½	705	2,065	2,220	
SCS32-5/97	97 (12)	S1	2	1½	650	925	925	
		SCS62-5/97	S1	3	1½	975	2,065	2,155
SCS62-5/118	97 (12)	S2	3	3	930	2,065	1,630	
		S1	3	1½	975	2,065	2,220	
SCS82-5/118	97 (12)	S2	3	3	930	2,065	2,220	
		S1	3	1½	975	2,065	2,220	



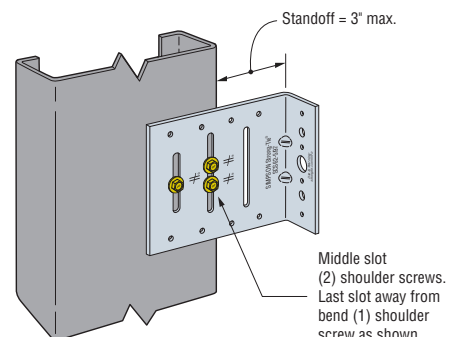
Typical SCS Slide-Clip Installation



Typical SCS Slide-Clip Installation with Stud Strut



SCS62-5
1½" Maximum Standoff
(Pattern S1 — reference p. 35 for all fastener patterns)



SCS62-5
3" Maximum Standoff
(Pattern S2 — reference p. 35 for all fastener patterns)

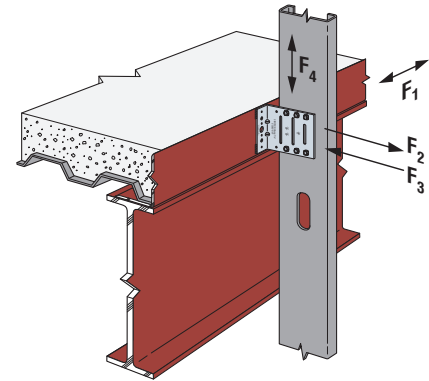
- For additional important information, see General Information and Notes on p. 26.
- SCS Allowable Connector Loads are also limited by the SCS Anchorage Load tables on pp. 36 and 37. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
- See illustrations on p. 35 for fastener placement to stud framing.
- Tabulated F_1 loads are based on assembly tests with the load through the centerline of the stud. Tests are governed by fastener connections.
- F_1 loads are based on maximum standoff distances of 1½" or 3" as shown. SCS32-5/97 maximum 1½" standoff.

SCS Seismic Bypass Framing Connector

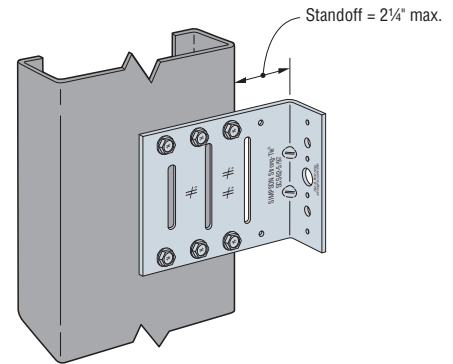


SCS Fixed-Clip Allowable Connector Loads (lb.)

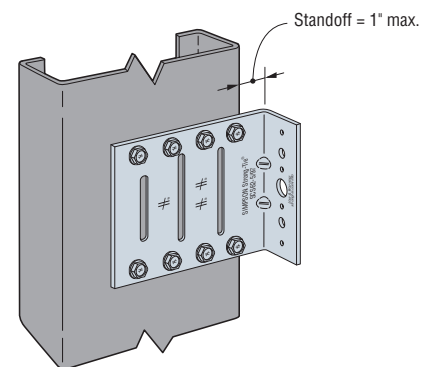
Model No.	Framing Members Thickness mil (ga.)	Fasteners to Framing Member		Max. Standoff Distance (in.)	Allowable Load (lb.)				Code Ref.
		Fastener Pattern	No. of #10 Self-Drilling Screws		In-Plane Load F ₁	Tension Load F ₂	Comp. Load F ₃	Shear Load F ₄	
SCS32-5/97	33 (20)	R1	4	1	160	705	705	705	IBC, LA
SCS62-5/97		R1	6	2¼	145	1,060	1,060	650	
SCS62-5/118	33 (20)	R2	8	1	175	1,415	1,415	995	
		R1	6	2¼	150	1,060	1,060	650	
SCS82-5/118	33 (20)	R2	8	1	175	1,415	1,415	995	
		R1	8	2¼	150	1,415	1,415	690	
SCS32-5/97	43 (18)	R2	10	1	175	1,765	1,765	1,050	
		R1	4	1	200	1,050	1,050	1,050	
SCS62-5/97	43 (18)	R1	6	2¼	190	1,580	1,580	970	
		R2	8	1	225	2,105	2,105	1,480	
SCS62-5/118	43 (18)	R1	6	2¼	195	1,580	1,580	970	
		R2	8	1	245	2,105	2,105	1,480	
SCS82-5/118	43 (18)	R1	8	2¼	195	2,105	2,105	1,025	
		R2	10	1	245	2,630	2,105	1,565	
SCS32-5/97	54 (16)	R1	4	1	395	2,135	2,135	1,405	
SCS62-5/97		R1	6	2¼	345	3,205	2,275	1,970	
SCS62-5/118	54 (16)	R2	8	1	410	4,275	3,125	3,005	
		R1	6	2¼	360	3,205	2,440	2,085	
SCS82-5/118	54 (16)	R2	8	1	445	4,275	3,350	3,005	
		R1	8	2¼	360	4,275	2,440	2,010	
SCS62-5/118	68 (14)	R2	10	1	445	4,540	3,350	3,180	
		R1	4	1	445	2,160	2,160	1,405	
SCS32-5/97	68 (14)	R1	6	2¼	410	3,240	2,275	1,970	
		R2	8	1	435	4,320	3,125	3,005	
SCS62-5/118	68 (14)	R1	6	2¼	535	3,240	2,440	1,970	
		R2	8	1	540	4,320	3,350	3,005	
SCS82-5/118	68 (14)	R1	8	2¼	535	4,320	2,980	2,085	
		R2	10	1	675	4,720	4,095	3,180	
SCS32-5/97	97 (12)	R1	4	1	635	2,160	2,160	1,405	
SCS62-5/97		R1	6	2¼	775	3,240	2,275	1,970	
SCS62-5/118	97 (12)	R2	8	1	775	4,320	3,125	3,005	
		R1	6	2¼	775	3,240	2,440	1,970	
SCS82-5/118	97 (12)	R2	8	1	775	4,320	3,350	3,005	
		R1	8	2¼	775	4,320	2,980	2,085	
SCS62-5/118	97 (12)	R2	10	1	775	4,720	4,095	3,180	



Typical SCS Fixed-Clip Installation



SCS62-5
2¼" Maximum Standoff
(Pattern R1 — reference p. 35 for all fastener patterns)



SCS62-5
1" Maximum Standoff
(Pattern R2 — reference p. 35 for all fastener patterns)

- For additional important information, see General Information and Notes on p. 26.
- SCS Allowable Connector Loads are also limited by the SCS Anchorage Load tables on pp. 36 and 37. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
- See illustrations on p. 35 for screw fastener placement to stud framing.
- Tabulated F₁ loads are based on assembly tests with the load through the centerline of the stud. Tests are governed by fastener connections.
- F₁ loads are based on maximum standoff distances of 1" or 2¼" as shown.
SCS32-5/97 maximum 1" standoff.
- XLSH78B1414 #14 shouldered screw may be used to replace #10 screws in a fixed application.

SCS Seismic Bypass Framing Connector

Fastener Patterns

Model No.	Slide Conditions		Fixed Conditions	
	Pattern S1	Pattern S2	Pattern R1	Pattern R2
SCS32-5/97				
SCS62-5/97 SCS62-5/118				
SCS82-118				



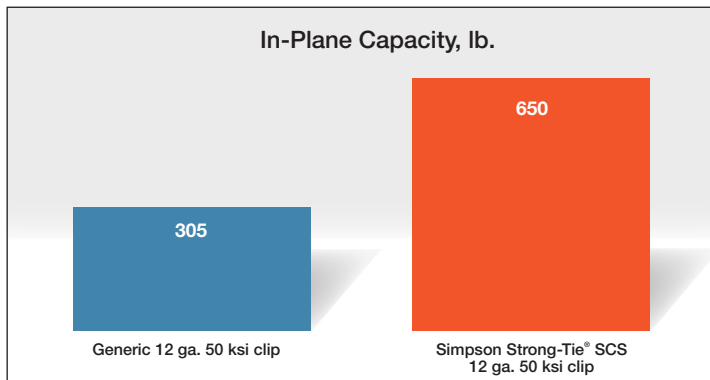
First of Its Kind — Full-Scale Cyclic Testing for Bypass Clips

The Re-Engineered Bypass Clip

Our engineering expertise went into our new SCS seismic bypass clip. All aspects of the clip were evaluated. One significant modification was the location of our screw holes and slots. Our tests showed that in-plane load is not evenly applied to all screws. In-plane load, or seismic shaking along the plane of the wall, applies predominantly to the first row of screws. Our SCS clip was designed to accommodate two shoulder screws at the first screw line, doubling the number of screws effectively resisting in-plane load.

Testing Results Explained

To determine the in-plane performance of our SCS clips, Simpson Strong-Tie conducted full-scale cyclic testing on our uniaxial shake table at our Tye Gilb Research Laboratory in Stockton, CA. The full-scale test results were used to develop a representative component test to determine various combinations of stud/clip in-plane capacities. This first-of-its-kind testing represents something that was sorely needed because of the lack of industry testing and design standards. Our tests also allowed us to re-engineer the bypass clip to significantly increase the in-plane capacities. Prior to our tested values, various unproven calculation techniques have been used to estimate in-plane loads. Our tested in-plane loads eliminate the guesswork and thus mitigate risk for engineers, contractors and building owners.



Test based on 16 ga. 50 ksi stud and 12 ga. generic clip with (3) #14 screws through slot with flat washer tested in same manner as Simpson Strong-Tie SCS 12 ga. 50 ksi clip in slide-clip application.

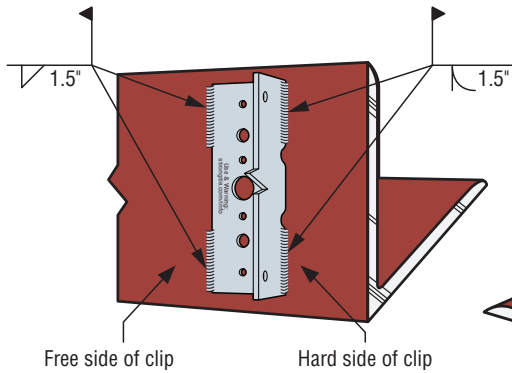


SCS Seismic Bypass Framing Connector

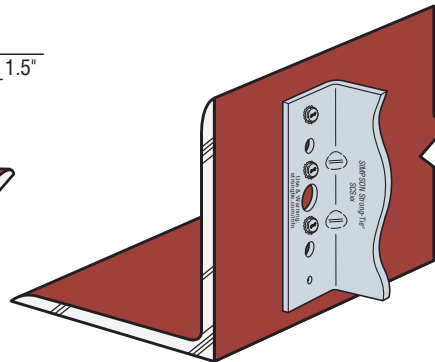
SCS Allowable Anchorage Loads to Steel (lb.)

Anchorage Type	Minimum Base Material	No. of Anchors	Allowable Load (lb.)		
			F ₁	F ₂ and F ₃	F ₄
#12–24 self-drilling screws Simpson Strong-Tie® X and XL Metal screws	A36 steel 3/16" thickness	3	730	1,910	1,590
		4	975	2,545	3,180
Simpson Strong-Tie 0.157" x 5/8" powder-actuated fasteners PDPAT-62KP	A36 steel 3/16" thickness	3	—	780	—
		4	—	1,040	1,040
Simpson Strong-Tie 0.157" x 5/8" powder-actuated fasteners PDPAT-62KP	A572 or A992 steel 3/16" thickness	3	—	1,260	—
		4	—	1,710	1,710
Weld E70XX electrodes	A36 steel 3/16" thickness	(2) Hard side: 1.5"	2,040	4,720	3,865
		(2) Free side: 1.5"			

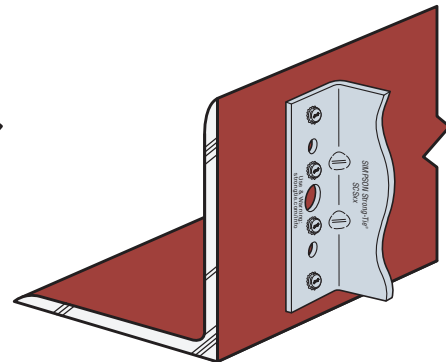
- For additional important information, see General Information and Notes on p. 26.
- Allowable anchorage loads are also limited by the SCS Connector Loads on p. 33 for slide applications and p. 34 for fixed applications. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
- Allowable loads for self-drilling screws and PDPAT powder-actuated fasteners are based on installation in minimum 3/16"-thick structural steel with F_y = 36 ksi. PDPAT values are also provided for A572 steel. Values listed above may be used where other thicknesses of steel are encountered provided that the fastener has equal or better tested values into thicker steel. It is the responsibility of the designer to select the proper length fasteners based on the steel thickness installation.
- For screw fastener installation into steel backed by concrete, predrilling of both the steel and the concrete is suggested. For predrilling, use a maximum 3/16"-diameter drill bit.
- F₁, F₂, F₃ and F₄ load directions are the same as SCS Connector Loads on p. 33 for slide applications and p. 34 for fixed applications.



Weld



3 PAF Anchor Placement
(3 screws similar)

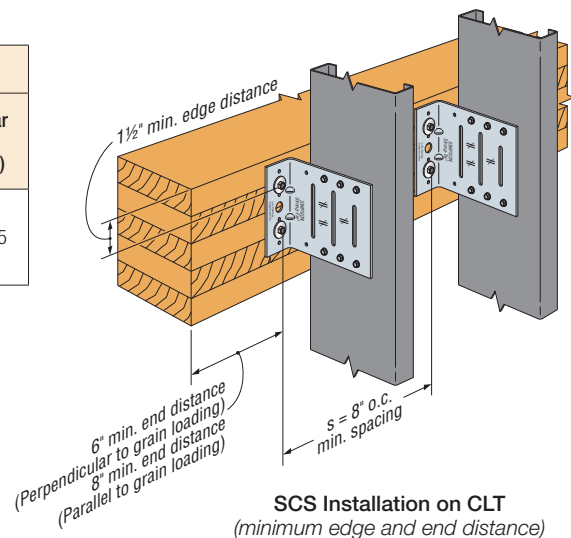


4 PAF Anchor Placement
(4 screws similar)

SCS Allowable Anchorage Loads to CLT (lb.)

Models	Anchorage Type	Minimum Base Material	Allowable Load (lb.)			
			In-Plane F ₁ (160)	Tension F ₂ (160)	Comp. F ₃ (160)	Shear F ₄ (100)
SCS62-5/97	(2) SDHW27400G	5-ply (6 7/8") SPF CLT into side or end grain	560	1,260	1,260	1,295

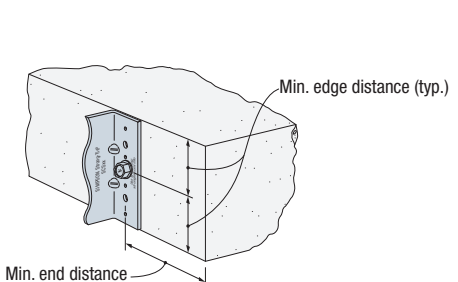
- For additional important information, see General Information and Notes on p. 26.
- Allowable anchorage loads are also limited by the SCS Connector Loads on p. 33 for slide applications and p. 34 for fixed applications. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
- Tabulated values are based on (2) Strong-Drive® SDHW27400G Timber-Hex HDG Screws 0.276" diameter x 4" length. Minimum spacing, end distance, and edge distances for wood screws are shown in the illustration.
- SDHW27400G screw is designed to thread into SCS anchor hole without enlargement of clip hole.
- The SDHW27400G have been increased for wind or earthquake loading (160) in the F₁, F₂ and F₃ direction. No further increase allowed.



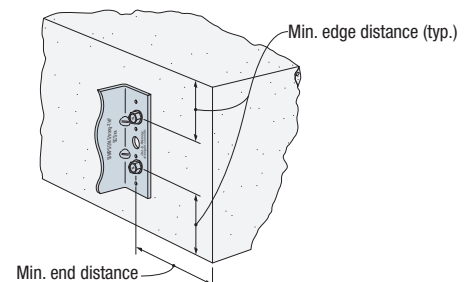
SCS Allowable Anchorage Loads to Concrete (lb.)

Model No.	Anchor Bolt Quantity and Diameter	Nominal Embed. Depth, h_{nom} (in.)	Minimum Edge Distance (in.)	Minimum End Distance (in.)	Allowable Load (lb.)					
					$f'_c = 3,000$ psi			$f'_c = 4,000$ psi		
					F ₁	F ₂ and F ₃	F ₄	F ₁	F ₂ and F ₃	F ₄
Uncracked Concrete, Wind and Seismic in SDC A & B^{4,6}										
Titen HD®	(2) ¼"	1⅝	1½	2⅝	375	725	565	430	840	655
		2½			410	525	565	475	605	655
Strong-Bolt® 2	(2) ¼"	1¾	4	4	750	1,245	750	750	1,245	750
Titen HD	(1) ½"	3¼	2½	2⅝	525	1,105	665	605	1,245	770
		3¾			540	1,110	690	625	1,245	795
Strong-Bolt 2	(1) ½"	2¾	4	4	1,035	1,155	1,240	1,195	1,330	1,435
		3⅞			1,120	1,245	1,400	1,295	1,245	1,620
AT-XP®	(1) ½"	7	2½	2⅝	1,160	1,145	1,450	1,340	1,145	1,675
SET-3G™					1,160	1,245	1,450	1,340	1,245	1,675
Cracked Concrete, Wind and Seismic in SDC A & B^{4,6}										
Titen HD	(2) ¼"	1⅝	1½	2⅝	265	690	405	305	800	465
		2½			295	770	445	340	885	515
Titen HD	(1) ½"	3¼	2½	2⅝	375	790	475	430	910	550
		3¾			385	790	490	445	910	565
Strong-Bolt 2	(1) ½"	2¾	4	4	740	1,225	925	855	1,245	1,065
		3⅞			800	1,245	1,000	925	1,245	1,155
AT-XP	(1) ½"	7	2½	2⅝	830	1,245	1,035	955	1,245	1,195
SET-3G					830	1,245	1,035	955	1,245	1,195
Cracked Concrete, Seismic in SDC C Through F^{5,6}										
Titen HD	(2) ¼"	1⅝	1½	2⅝	310	605	470	360	700	545
		2½			340	670	520	395	775	600
Titen HD	(1) ½"	3¼	2½	2⅝	435	690	555	505	800	640
		3¾			450	690	575	520	800	660
Strong-Bolt 2	(1) ½"	2¾	4	4	860	1,070	1,075	995	1,240	1,245
		3⅞			935	1,245	1,170	1,080	1,245	1,350
AT-XP	(1) ½"	7	2½	2⅝	965	1,245	1,210	1,115	1,245	1,395
SET-3G					965	1,245	1,210	1,115	1,245	1,395

- Allowable anchor capacities have been determined using ACI 318-14 Chapter 17 calculations with a minimum concrete compressive strength (f'_c) of 3,000 and 4,000 psi in normal-weight concrete. Tabulated values shall be multiplied by a factor (λ_a) of 0.51 for adhesive anchor and 0.68 for mechanical anchor for installation in sand light-weight concrete.
- Load values are for group anchors based on ACI 318, condition B, load factors from ACI 318-14 Section 5.3, no supplement edge reinforcement, $\Psi_{c,v} = 1.0$ for cracked concrete and periodic special inspection.
- Allowable Stress Design (ASD) values were determined by multiplying calculated LFRD capacities by a conversion factor, Alpha (α), of 0.70 for seismic load and 0.6 for wind loads. ASD values for other combinations may be determined using alternate conversion factors.
- Tabulated allowable ASD loads for Wind and Seismic in SDC A&B are based on using wind conversion factors and may be increased by 1.17 for SDC A and B only.
- Design loads shall include the over-strength factor per ASCE7 Section 12.4.3. For fasteners in exterior wall connection systems, $\Omega_o = 1.5$ per Table 13.5-1.
- Tabulated allowable loads are based on anchorage only. The capacity of the connection system shall be the minimum of the allowable anchorage load and the SCS allowable connector loads on p. 33 for slide applications and p. 34 for fixed applications.
- Shaded values are limited by connector serviceability and strength in a single-fastener anchorage.
- For anchor subjected to both tension and shear loads, it shall be designed to satisfy the following:
 - For $N_a / N_{all} \leq 0.2$, the full allowable load in shear is permitted.
 - For $V_a / V_{all} \leq 0.2$, the full allowable load in tension is permitted.
 - For all other cases, $N_a / N_{all} + V_a / V_{all} \leq 1.2$, where N_a = Applied ASD tension load.
 N_{all} = Allowable F₂ or F₃ load column from SCS allowable anchorage loads to concrete table.
 V_a = Applied ASD shear load.
 V_{all} = Allowable F₄ or F₁ load column from the SCS allowable anchorage loads to concrete table.



(1) Anchor, End and Edge Distance



(2) Anchor, End and Edge Distance