FC Bypass Framing Fixed-Clip Connector

Ideal for high-seismic areas, Simpson Strong-Tie® FC connectors are the optimal solution for fixed-clip bypass framing. FC clips are often welded to the structure in high-seismic zones, but they also feature anchorage holes so that concrete screws or powder-actuated fasteners can be used to attach the clip to the structure. In addition to its anchorage versatility, the FC clip features prepunched screw holes for the framing attachment, eliminating the need for predrilling holes or worrying that fastener placement doesn't match the designer specifications. FC connectors are manufactured using heavy-duty 10- and 12-gauge steel to provide exceptional resistance to in-plane seismic load.

Features:

- The clips come in lengths of 3½", 6" and 8" and are intended to be used with 3⅝", 6" and 8" studs, respectively
- The maximum standoff distance is 1" for 3⅝" studs and 1½" for 6" and 8" studs
- Embossments in the bend line provide increased strength and stiffness in the F_1 and F_2 load directions, but are positioned towards the center of the clip so that 1½"-long welds can be applied at the top and bottom of the clip
- Prepunched large-diameter anchor holes accommodate ¼"-diameter concrete screws like the Simpson Strong-Tie Titen HD® screw anchor
- Prepunched small-diameter anchor holes accommodate powder-actuated fasteners like the 0.157"-diameter Simpson Strong-Tie PDPAT or #12 self-drilling Simpson Strong-Tie Strong-Drive® XL Large-Head Metal screw

Material: 50 ksi

Finish: Galvanized (G90)

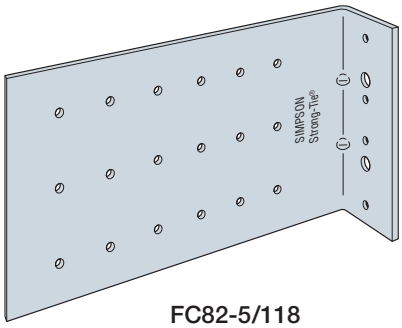
Installation:

- Use the specified type and number of fasteners and anchors

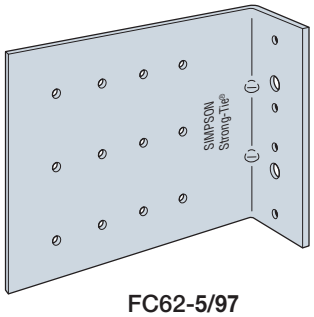
Codes: See p. 13 for Code Reference Key Chart

WANT MORE OPTIONS IN YOUR CLIP?

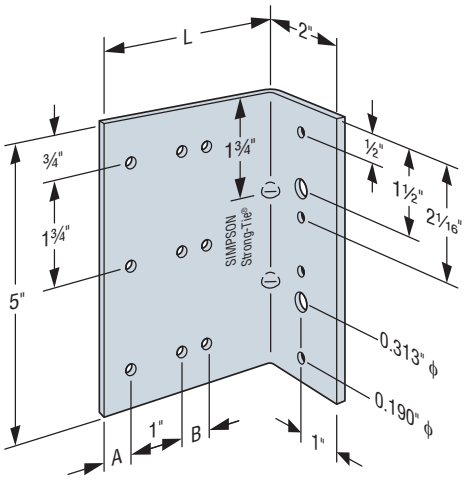
Try our SCS hybrid clip. Supports slip and fixed conditions in one clip. Also has the most versatile options in the industry for attaching to structure. Attach with weld, screws, powder-actuated fasteners to steel or attach to concrete with single ½"-diameter or (2) ¼"-diameter anchors. Reference p. 34 for SCS fixed-clip load chart.



FC82-5/118



FC62-5/97
(FC62-5/118 similar)



FC32-5/97

Ordering Information and Dimensions

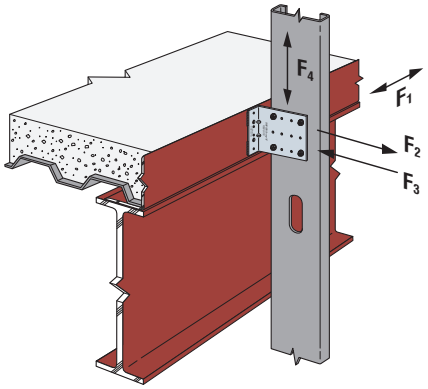
Model No.	Ordering SKU	Thickness mil (ga.)	L (in.)	A (in.)	B (in.)
FC32-5/97	FC32-5/97-R25	97 (12)	3½	½	½
FC62-5/97	FC62-5/97-R25	97 (12)	6	1	1
FC62-5/118	FC62-5/118-R25	118 (10)	6	1	1
FC82-5/118	FC82-5/118-R25	118 (10)	8	1	1

Note: Each box contains (25) connectors.

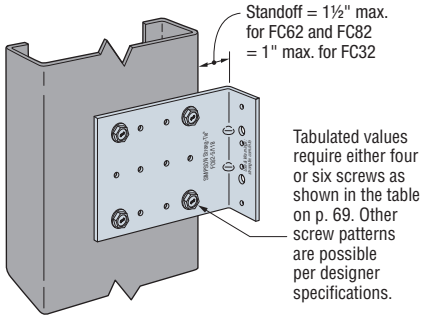
FC Bypass Framing Fixed-Clip Connector

FC Allowable Connector Loads (lb.)

Model No.	Stud Thickness mil (ga.)	Fasteners to Stud		Allowable Load (lb.)					Code Ref.
		Allowable Pullout per Single #10 Screw	No. of #10 Self-Drilling Screws	F_1		F_2	F_3	F_4	
				1" Standoff	1½" Standoff				
FC32-5/97	33 (20)	85	4	165	—	705	1,130	705	—
			6	225	—	1,060	1,355	1,060	
FC62-5/97			4	115	130	705	1,130	705	
			6	140	160	1,060	1,355	1,060	
FC62-5/118			4	115	130	705	1,130	705	
			6	140	160	1,060	1,355	1,060	
FC82-5/118			4	105	120	705	1,130	705	
			6	135	155	1,060	1,355	1,060	
FC32-5/97	43 (18)	110	4	215	—	1,050	1,470	1,050	
			6	290	—	1,580	1,765	1,580	
FC62-5/97			4	150	175	1,050	1,470	1,050	
			6	185	215	1,580	1,765	1,580	
FC62-5/118			4	150	175	1,050	1,470	1,050	
			6	185	215	1,580	1,765	1,580	
FC82-5/118			4	140	160	1,050	1,470	1,050	
			6	175	200	1,580	1,765	1,580	
FC32-5/97	54 (16)	200	4	395	—	2,135	2,885	2,045	
			6	530	—	2,690	2,885	2,195	
FC62-5/97			4	325	375	2,135	2,885	2,045	
			6	405	465	2,690	2,885	2,195	
FC62-5/118			4	345	395	2,135	2,885	2,045	
			6	370	425	3,205	2,885	2,195	
FC82-5/118			4	325	375	2,135	2,885	2,045	
			6	440	505	3,205	2,885	2,195	
FC32-5/97	68 (14)	250	4	495	—	2,160	2,885	2,045	
			6	670	—	2,690	2,885	2,195	
FC62-5/97			4	435	500	2,160	2,885	2,045	
			6	465	535	2,690	2,885	2,195	
FC62-5/118			4	435	500	2,160	2,885	2,045	
			6	465	535	3,240	3,780	2,195	
FC82-5/118			4	410	470	2,160	2,885	2,045	
			6	555	640	3,240	3,780	2,195	
FC32-5/97	97 (12)	355	4	710	—	2,160	2,885	2,045	
			6	955	—	2,690	2,885	2,195	
FC62-5/97			4	775	775	2,160	2,885	2,045	
			6	1295	1295	2,690	2,885	2,195	
FC62-5/118			4	775	775	2,160	2,885	2,045	
			6	1150	1150	3,240	3,780	2,195	
FC82-5/118			4	585	585	2,160	2,885	2,045	
			6	790	790	3,240	3,780	2,195	



Typical FC Installation at Bypass Framing

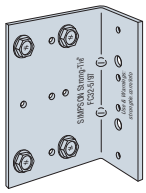
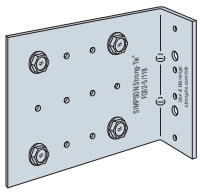
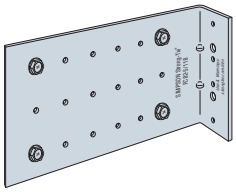
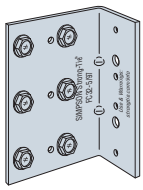
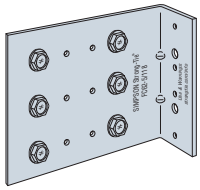
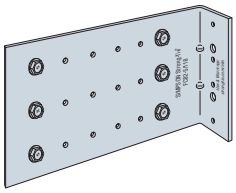


FC62 with Four Screws

1. For additional important information, see General Information and Notes on p. 26.
2. FC Allowable Connector Loads are also limited by the FC Anchorage Load tables on pp. 79 and 80. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
3. See illustrations on p. 79 for screw fastener placement to stud framing.
4. Tabulated F_1 loads are based on assembly tests with the load through the centerline of stud. Tested failure modes were due to screw pullout; therefore compare F_1 against F_p calculated per ASCE 7-16 Chapter 13 with $a_p = 1.25$ and $R_p = 1.0$.
5. F_1 loads are based on maximum standoff distances of 1" or 1½" as shown. Other loads are applicable to a 1" standoff for FC32 and 1" or 1½" standoff for FC62 and FC82.
6. The allowable plastic moment at the bend line in the F_1 load direction for 97 mil (12 ga.) and 118 mil (10 ga.) FC connectors are 395 in.-lb. and 675 in.-lb., respectively.

FC Bypass Framing Fixed-Clip Connector

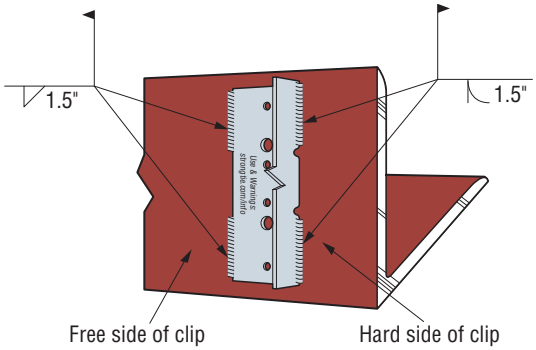
FC Screw Patterns

Screw Pattern	Models		
	FC32-5/97	FC62-5/97 and FC62-5/118	FC82-5/118
4 screws			
6 screws			

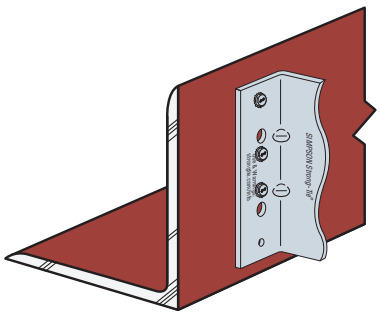
FC Allowable Anchorage Loads to Steel (lb.)

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" thick	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" thick	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" thick	3	—	1,260	—
		4	—	1,710	1,710
Weld E70XX electrodes	A36 steel 3/16" thick	(2) Hard side: 1 1/2"	2,040	4,720	3,865
		(2) Free side: 1 1/2"			

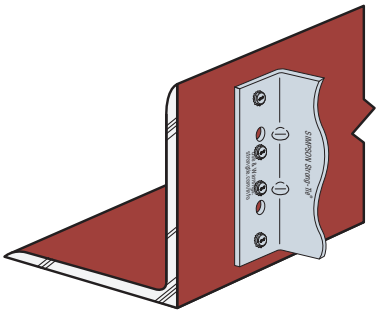
1. For additional important information, see General Information and Notes on p. 26.
2. Allowable anchorage loads are also limited by the FC Connector Load table on p. 78. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
3. Allowable loads for #12–24 self-drilling 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 maybe used where other thicknesses of steel are encountered or other manufacturers are used, provided that the fastener has equal or better tested values (see p. 26). It is the responsibility of the designer to select the proper length fasteners based on the steel thickness installation.
4. 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.



Weld



3 PAF Anchor Placement
(3 screws similar)



4 PAF Anchor Placement
(4 screws similar)

FC Anchor Layout

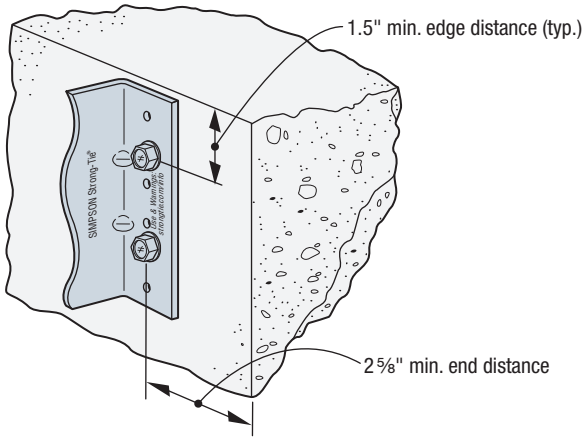
FC Bypass Framing Fixed-Clip Connector

Allowable Titen HD® Anchorage Loads into Concrete with FC Clip (lb.)

Anchorage Type	Nominal Embedment (in.)	Anchor Quantity and Size	f'_c (psi)	Load Direction	Wind and Seismic in SDC A&B		Seismic in SDC C through F
					Uncracked Concrete	Cracked Concrete	Cracked Concrete[6]
Simpson Strong-Tie® Titen HD screw anchor THDB25178H	1⅝	(2) ¼" x 1⅞"	3,000	F_1	335	240	280
				F_2 and F_3	660	630	550
				F_4	565	405	470
			4,000	F_1	390	280	325
				F_2 and F_3	760	725	635
				F_4	655	465	545
Simpson Strong-Tie Titen HD screw anchor THDB25234H	2½	(2) ¼" x 2¾"	3,000	F_1	370	265	310
				F_2 and F_3	475	695	610
				F_4	515	445	520
			4,000	F_1	430	305	360
				F_2 and F_3	550	805	705
				F_4	590	515	600

1. 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 0.68 for sand light-weight concrete.
2. Edge distance is assumed to be 1½", and end distance is 2⅝".
3. 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.
4. Allowable Stress Design (ASD) values were determined by multiplying calculated LRFD 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.
5. 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.
6. Design loads shall include the over-strength factor per ASCE7 Section 12.4.3. For fasteners in exterior wall connection systems, Ω_o = 1.5 per Table 13.5-1.
7. Allowable loads for F_4 are based on the governing loading direction which is toward the edge of slab.
8. Allowable loads for F_1 are based on the governing loading direction which is toward the end of slab.
9. For anchor subjected to both tension and shear loads, it shall be designed to satisfy the following:
   - For N_a / N_{all} ≤ 0.2, the full allowable load in shear is permitted.
   - For V_a / V_{all} ≤ 0.2, the full allowable load in tension is permitted.
   - For all other cases: N_a / N_{all} + V_a / V_{all} ≤ 1.2 where:

   N_a = Applied ASD tension load
   N_{all} = Allowable F_2 or F_3 load from the FC Allowable Anchorage Loads for Concrete table
   V_a = Applied ASD shear load
   V_{all} = Allowable F_4 or F_1 load from the FC Allowable Anchorage Loads for Concrete table
10. 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 FC Allowable Connector Loads.



Titen HD Anchorage

For single-bolt fixed-clip connection to concrete, try the SCS hybrid clip; see p. 32.