

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 stand-off 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 F₁ and F₂ 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. 11 for Code Reference Key Chart

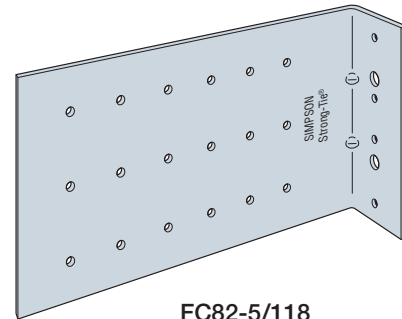
Ordering Information and Dimensions

| 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 |

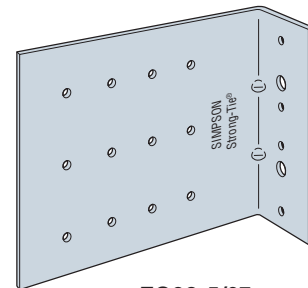
Note: Each box contains (25) connectors.

WANT MORE OPTIONS IN YOUR CLIP?

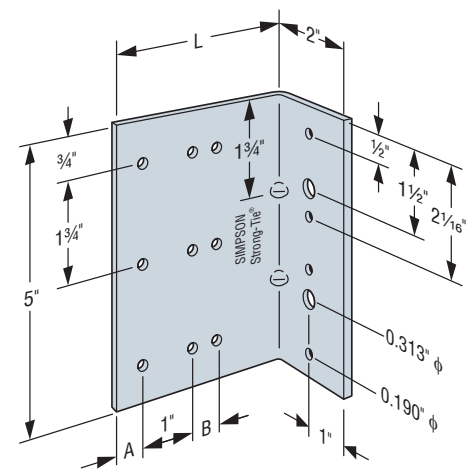
Try our SCS hybrid clip. Supports slip and fixed conditions in one clip. Also has the most versatile options in the industry for attaching to structure. Attach with weld, screws, powder-actuated fasteners to steel or attach to concrete with single ½"-diameter or (2) ¼"-diameter anchors. Reference p. 30 for SCS fixed-clip load chart.



FC82-5/118



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



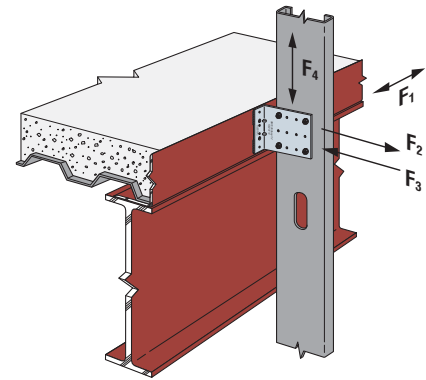
FC32-5/97

FC Bypass Framing Fixed-Clip Connector

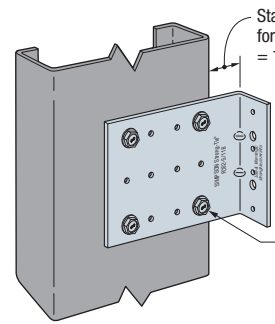
Rigid Connectors

FC Allowable Connector Loads

| 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" Stand-Off | 1½" Stand-Off | | | | | | | |
| 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 | 1,295 | 1,295 | 2,690 | 2,885 | 2,195 | | |
| FC62-5/118 | | | 4 | 775 | 775 | 2,160 | 2,885 | 2,045 | | | | |
| | | | 6 | 1,150 | 1,150 | 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

- For additional important information, see General Information and Notes on p. 22.
- FC Allowable Connector Loads are also limited by the FC Anchorage Load tables on pp. 69 and 70. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
- See illustrations on p. 69 for screw fastener placement to stud framing.
- Tabulated F₁ loads are based on assembly tests with the load through the centerline of stud. Tested failure modes were due to screw pullout; therefore compare F₁ against F_p calculated per ASCE 7-10 Chapter 13 with a_p = 1.25 and R_p = 1.0.
- F₁ loads are based on maximum stand-off distances of 1" or 1½" as shown. Other loads are applicable to a 1" stand-off for FC32 and 1" or 1½" stand-off for FC62 and FC82.
- The allowable plastic moment at the bend line in the F₁ 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

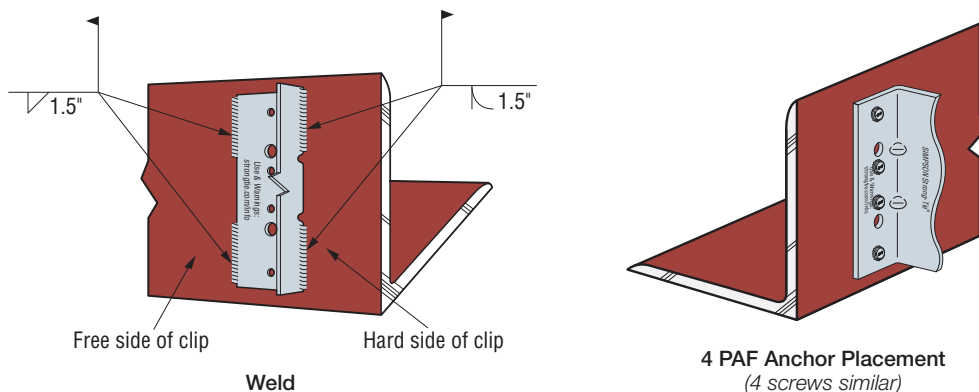
FC Screw Patterns

| 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

| 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 | 4 | — | 2,545 | 2,545 |
| #14 self-drilling screws Simpson Strong-Tie E Metal screws E1B1414 | A36 steel 3/16" thick | 4 | — | 2,620 | 2,610 |
| Simpson Strong-Tie 0.157" x 5/8" powder-actuated fasteners PDPAT-62KP | A36 steel 3/16" thick | 4 | — | 1,040 | 1,040 |
| Simpson Strong-Tie 0.157" x 5/8" powder-actuated fasteners PDPAT-62KP | A572 Gr. 50 or A992 steel 3/16" thick | 4 | — | 1,710 | 1,710 |
| Weld E70XX electrodes | A36 steel 3/16" thick | (2) Hard side: 1 1/2" | 2,040 | 3,710 | 4,330 |
| | | (2) Free side: 1 1/2" | | | |

- For additional important information, see General Information and Notes on p. 22.
- Allowable anchorage loads are also limited by the FC Connector Load table on p. 68. Use the minimum tabulated values from the connector and anchorage load tables as applicable.
- 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 may be 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. 22). 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.



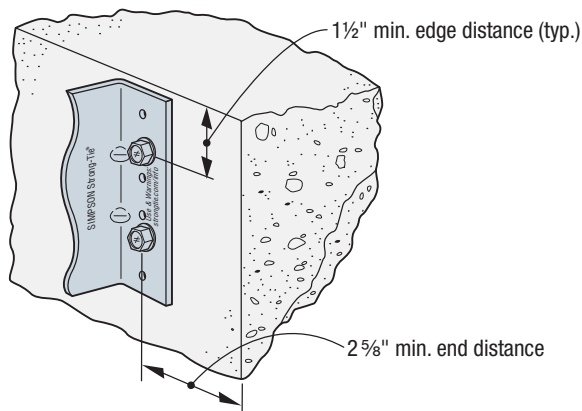
FC Anchor Layout

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 | 1½" | (2) ¼" x 1 7/8" | 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 |

- 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 0.6 for sand light-weight concrete.
- Edge distance is assumed to be 1½", and end distance is 2½".
- 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, Ψ_{c,v} = 1.0 for cracked concrete and periodic special inspection.
- 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.
- 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, Ω_o = 1.5 per Table 13.5-1.
- Allowable loads for F₄ are based on the governing loading direction which is toward the edge of slab.
- Allowable loads for F₁ are based on the governing loading direction which is toward the end of slab.
- 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 F₂ or F₃ load from the FC Allowable Anchorage Loads for Concrete table
 - V_a = Applied ASD shear load
 - V_{all} = Allowable F₄ or F₁ load from the FC Allowable Anchorage Loads for Concrete table
- 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. 30.