Drop-In
Internally Threaded Anchor

Expansion shell anchors for use in solid base materials

Simpson Strong-Tie introduces a new, redesigned Drop-In Anchor (DIAB) that provides easier installation into base materials. Improved geometry in the preassembled expansion plug allows the anchor to install with 40% fewer hammer strikes than previous versions. These deformation-controlled expansion anchors are easily set by driving the plug toward the bottom of the anchor using either the hand- or power-setting tools. DIAB anchors feature a positive-set marking indicator at the top of the anchor – helping you see more clearly when proper setting has taken place.

Use a Simpson Strong-Tie fixed-depth stop bit to take the guesswork out of drilling to the correct depth. The fluted design of the tip draws debris away from the hole during drilling, allowing for a cleaner installation.

Key features

- New design offers easier installation than previous drop-in anchor design – sets with 40% fewer hammer strikes
- Positive-set marking system indicates when anchor is properly set
- Lipped drop-in version keeps top of anchor flush with concrete
- Hand- and power-setting tools available for fast, easy and economical installation
- Fixed-depth stop bit helps you drill to the correct depth every time
- UL and FM approvals

Material: Carbon steel

Coating: Zinc plated

Drop-In Lipped Drop-In

Anchor being set with hand tool.

Anchor can be set with SDS setting tool for faster installation.

Positive set indicator.

Drop-In Internally Threaded Anchor

Tension and Shear Loads for Drop-In Anchor in Normal-Weight Concrete

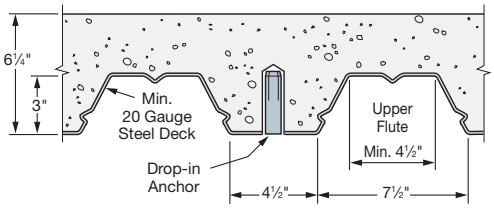
Model No.	Rod Size in. (mm)	Drill Bit Dia. in.	Embed Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	$f'_c \geq$ 2,500 psi (17.2 MPa)				$f'_c \geq$ 4,000 psi (27.6 MPa)			
						Tension Load		Shear Load		Tension Load		Shear Load	
						Ultimate lb. (kN)	Allowable lb. (kN)	Ultimate lb. (kN)	Allowable lb. (kN)	Ultimate lb. (kN)	Allowable lb. (kN)	Ultimate lb. (kN)	Allowable lb. (kN)
DIAB25 DIABL25	¼ (6.4)	⅜	1 (25)	3 (76)	4 (102)	1,565 (7.0)	390 (1.7)	1,840 (8.2)	460 (2.0)	1,965 (8.7)	490 (2.2)	1,840 (8.2)	460 (2.0)
DIAB37 DIABL37	⅜ (9.5)	½	1 9⁄16 (40)	4½ (114)	6 (152)	2,950 (13.1)	740 (3.3)	4,775 (21.2)	1,195 (5.3)	3,910 (17.4)	980 (4.4)	4,775 (21.2)	1,195 (5.3)
DIAB50 DIABL50	½ (12.7)	⅝	2 (51)	6 (152)	8 (203)	5,190 (23.1)	1,300 (5.8)	6,760 (30.1)	1,690 (7.5)	6,515 (29.0)	1,630 (7.3)	6,760 (30.1)	1,690 (7.5)
DIAB62	⅝ (15.9)	⅞	2½ (64)	7½ (191)	10 (254)	7,010 (31.2)	1,755 (7.8)	12,190 (54.2)	3,050 (13.6)	9,060 (40.3)	2,265 (10.1)	12,190 (54.2)	3,050 (13.6)
DIAB75	¾ (19.1)	1	3⅛ (79)	9 (229)	12½ (318)	9,485 (42.2)	2,370 (10.5)	15,960 (71.0)	3,990 (17.7)	11,660 (51.9)	2,915 (13.0)	15,960 (71.0)	3,990 (17.7)

1. The allowable loads listed are based on a safety factor of 4.0.
2. Refer to allowable load-adjustment factors for edge distance and spacing on page 3.
3. Allowable loads may be linearly interpolated between concrete strength listed.
4. The minimum concrete thickness is 1½ times the embedment depth.

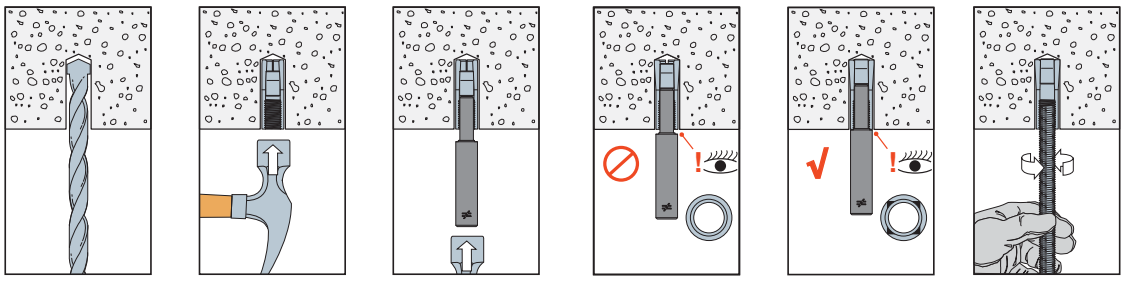
Tension and Shear Loads for Drop-In Anchor in Soffit of Sand-Lightweight Concrete Over Metal Deck

Model No.	Rod Size in. (mm)	Drill Bit Dia. in.	Embed Depth in. (mm)	Critical End Dist.[6] in. (mm)	Critical Spacing in. (mm)	$f'_c \geq$ 3,000. psi (20.7 MPa)			
						Tension Load		Shear Load	
						Ultimate lb. (kN)	Allowable lb. (kN)	Ultimate lb. (kN)	Allowable lb. (kN)
DIAB37 DIABL37	⅜ (9.5)	½	1 9⁄16 (40)	4½ (114)	6 (152)	2,895 (12.9)	725 (3.2)	3,530 (15.7)	885 (3.9)
DIAB50 DIABL50	½ (12.7)	⅝	2 (51)	6 (152)	8 (203)	4,100 (18.2)	1,025 (4.6)	4,685 (20.8)	1,170 (5.2)

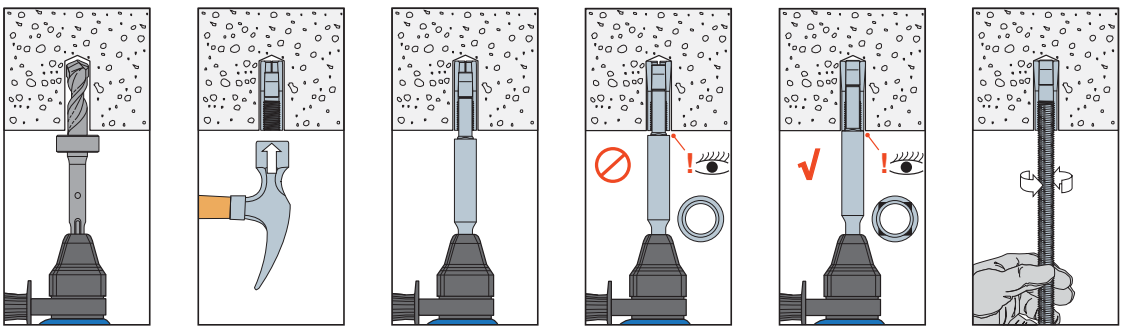
1. The allowable loads listed are based on a safety factor of 4.0.
2. Allowable loads may not be increased for short-term loading due to wind or seismic forces.
3. Refer to allowable load-adjustment factors for edge distance and spacing on page 3.
4. Anchors were installed in the center of the bottom flute of the steel deck
5. Metal deck must be minimum 20-guage thick with minimum yield strength of 33 ksi.
6. Critical end distance is defined as the distance from end of the slab in the direction of the flute



Lightweight Concrete over Metal Deck



DIAB Installation



DIAB Installation Using Stop Bit SDS Tool

Load-Adjustment Factors for Drop-In Anchor (DIAB) in Normal-Weight and Sand-Lightweight Concrete over Metal Deck: Edge Distance and Spacing, Tension and Shear Loads

Edge Distance Tension (f_c)

Edge Dist. c_{act} (in.)	Size	¼	⅜	½	⅝	¾
	c_{cr}	3	4½	6	7½	9
	c_{min}	1¾	2⅝	3½	4⅜	5¼
	f_{cmin}	0.77	0.77	0.77	0.77	0.77
1¾		0.77				
2		0.82				
2½		0.91				
2⅝		0.93	0.77			
3		1.00	0.82			
3½			0.88	0.77		
4			0.94	0.82		
4⅜			0.98	0.85	0.77	
4½			1.00	0.86	0.78	
5				0.91	0.82	
5¼				0.93	0.83	0.77
5½				0.95	0.85	0.79
6				1.00	0.89	0.82
6½					0.93	0.85
7					0.96	0.88
7½					1.00	0.91
8						0.94
8½						0.97
9						1.00

1. c_{act} = actual edge distance at which anchor is installed (inches).
2. c_{cr} = critical edge distance for 100% load (inches).
3. c_{min} = minimum edge distance for reduced load (inches).
4. f_c = adjustment factor for allowable load at actual edge distance.
5. f_{ccr} = adjustment factor for allowable load at critical edge distance. f_{ccr} is always = 1.00.
6. f_{cmin} = adjustment factor for allowable load at minimum edge distance.
7. $f_c = f_{cmin} + [(1 - f_{cmin}) (c_{act} - c_{min}) / (c_{cr} - c_{min})]$.

Edge Distance Shear (f_c)

Edge Dist. c_{act} (in.)	Size	¼	⅜	½	⅝	¾
	c_{cr}	3	4½	6	7½	9
	c_{min}	1¾	2⅝	3½	4⅜	5¼
	f_{cmin}	0.54	0.54	0.64	0.64	0.64
1¾		0.54				
2		0.63				
2½		0.82				
2⅝		0.86	0.54			
3		1.00	0.63			
3½			0.75	0.64		
4			0.88	0.71		
4⅜			0.97	0.77	0.64	
4½			1.00	0.78	0.65	
5				0.86	0.71	
5¼				0.89	0.74	0.64
5½				0.93	0.77	0.66
6				1.00	0.83	0.71
6½					0.88	0.76
7					0.94	0.81
7½					1.00	0.86
8						0.90
8½						0.95
9						1.00

1. c_{act} = actual edge distance at which anchor is installed (inches).
2. c_{cr} = critical edge distance for 100% load (inches).
3. c_{min} = minimum edge distance for reduced load (inches).
4. f_c = adjustment factor for allowable load at actual edge distance.
5. f_{ccr} = adjustment factor for allowable load at critical edge distance. f_{ccr} is always = 1.00.
6. f_{cmin} = adjustment factor for allowable load at minimum edge distance.
7. $f_c = f_{cmin} + [(1 - f_{cmin}) (c_{act} - c_{min}) / (c_{cr} - c_{min})]$.

Spacing Tension (f_s)

Spacing s_{act} (in.)	Size	¼	⅜	½	⅝	¾
	s_{cr}	4	6	8	10	12½
	s_{min}	1½	2¼	3	3¾	4¾
	f_{smin}	0.72	0.72	0.80	0.80	0.80
1½		0.72				
2		0.78				
2¼		0.80	0.72			
2½		0.83	0.74			
3		0.89	0.78	0.80		
3½		0.94	0.81	0.82		
3¾		0.97	0.83	0.83	0.80	
4		1.00	0.85	0.84	0.81	
4½			0.89	0.86	0.82	
4¾			0.91	0.87	0.83	0.80
5			0.93	0.88	0.84	0.81
5½			0.96	0.90	0.86	0.82
6			1.00	0.92	0.87	0.83
6½				0.94	0.89	0.85
7				0.96	0.90	0.86
7½				0.98	0.92	0.87
8				1.00	0.94	0.88
8½					0.95	0.90
9					0.97	0.91
9½					0.98	0.92
10					1.00	0.94
10½						0.95
11						0.96
11½						0.97
12						0.99
12½						1.00

1. s_{act} = actual spacing distance at which anchor is installed (inches).
2. s_{cr} = critical spacing distance for 100% load (inches).
3. s_{min} = minimum spacing distance for reduced load (inches).
4. f_s = adjustment factor for allowable load at actual spacing distance.
5. f_{scr} = adjustment factor for allowable load at critical spacing distance. f_{scr} is always = 1.00.
6. f_{smin} = adjustment factor for allowable load at minimum spacing distance.
7. $f_s = f_{smin} + [(1 - f_{smin}) (s_{act} - s_{min}) / (s_{cr} - s_{min})]$.

Spacing Shear (f_s)

Spacing s_{act} (in.)	Size	¼	⅜	½	⅝	¾
	s_{cr}	4	6	8	10	12½
	s_{min}	1½	2¼	3	3¾	4¾
	f_{smin}	1.00	1.00	1.00	1.00	1.00
1½		1.00				
2		1.00				
2¼		1.00	1.00			
2½		1.00	1.00			
3		1.00	1.00	1.00		
3½		1.00	1.00	1.00		
3¾		1.00	1.00	1.00	1.00	
4		1.00	1.00	1.00	1.00	
4½			1.00	1.00	1.00	
4¾			1.00	1.00	1.00	1.00
5			1.00	1.00	1.00	1.00
5½			1.00	1.00	1.00	1.00
6			1.00	1.00	1.00	1.00
6½				1.00	1.00	1.00
7				1.00	1.00	1.00
7½				1.00	1.00	1.00
8				1.00	1.00	1.00
8½					1.00	1.00
9					1.00	1.00
9½					1.00	1.00
10					1.00	1.00
10½						1.00
11						1.00
11½						1.00
12						1.00
12½						1.00

1. s_{act} = actual spacing distance at which anchor is installed (inches).
2. s_{cr} = critical spacing distance for 100% load (inches).
3. s_{min} = minimum spacing distance for reduced load (inches).
4. f_s = adjustment factor for allowable load at actual spacing distance.
5. f_{scr} = adjustment factor for allowable load at critical spacing distance. f_{scr} is always = 1.00.
6. f_{smin} = adjustment factor for allowable load at minimum spacing distance.
7. $f_s = f_{smin} + [(1 - f_{smin}) (s_{act} - s_{min}) / (s_{cr} - s_{min})]$.

Drop-In Internally Threaded Anchor

Drop-In Anchor

Rod Size (in.)	Model No.	Drill Bit Dia. (in.)	Bolt Threads (per in.)	Body Length (in.)	Thread Length (in.)	Quantity	
						Box	Carton
¼	DIAB25	⅜	20	1	⅜	100	500
⅜	DIAB37	½	16	1 9⁄16	⅝	50	250
½	DIAB50	⅝	13	2	¾	50	200
⅝	DIAB62	⅞	11	2½	1	25	100
¾	DIAB75	1	10	3⅛	1¼	20	80

Drop-In

Lipped Drop-In Anchor

Rod Size (in.)	Model No.	Drill Bit Dia. (in.)	Bolt Threads (per in.)	Body Length (in.)	Thread Length (in.)	Quantity	
						Box	Carton
¼	DIABL25	⅜	20	1	⅜	100	500
⅜	DIABL37	½	16	1 9⁄16	⅝	50	250
½	DIABL50	⅝	13	2	¾	50	200

Lipped Drop-In

Drop-In Anchor Hand Setting Tool

Model No.	For Use With	Box Quantity
DIABST25	DIAB25, DIABL25	10
DIABST37	DIAB37, DIABL37	10
DIABST50	DIAB50, DIABL50	10
DIABST62	DIAB62	5
DIABST75	DIAB75	5

Hand Setting Tool

Drop-In Anchor Power Setting Tool

Model No.	For Use With	Box Quantity
DIABST25-SDS	DIAB25, DIABL25	10
DIABST37-SDS	DIAB37, DIABL37	10
DIABST50-SDS	DIAB50, DIABL50	10

Power Setting Tool

Fixed-Depth Drill Bit

Model No.	Drill Bit Diameter (in.)	Drop-In Anchor (in.)	For Use With
MDPL037DIA	⅜	1 1⁄16	DIAB25. DIABL25
MDPL050DIA	½	1 11⁄16	DIAB37, DIABL37
MDPL062DIA	⅝	2 1⁄16	DIAB50, DIABL50

Fixed-Depth Drill Bit

This flier is effective until December 31, 2017, and reflects information available as of October 1, 2015. This information is updated periodically and should not be relied upon after December 31, 2017; contact Simpson Strong-Tie for current information and limited warranty or see www.strongtie.com.

F-A-DIAB15 10/15 exp. 12/17

800-999-5099
www.strongtie.com