

Wedge-All® Wedge Anchor

A non-bottom-bearing, wedge-style expansion anchor for use in solid concrete or grout-filled masonry. The Wedge-All wedge anchor is available in carbon steel with zinc or mechanically galvanized coating, as well as Types 303/304 and Type 316 stainless steel. Threaded studs are set by tightening the nut to the specified torque. The Wedge-All is code listed for grout-filled masonry applications.

Features

- Code-listed under IBC/IRC for grout-filled CMU per ICC-ES ESR-1396
- One-piece, wrap-around clip ensures uniform holding capacity
- Threaded end is chamfered for ease of starting nut
- Available in a wide range of diameters and lengths

Codes: ICC-ES ESR-1396 (CMU); Florida FL-15730.7; FM 3017082 and 3131136; UL File Ex3605; Multiple DOT listings; meets the requirements of Federal Specification A-A-1923A, Type 4

Material: Carbon or stainless steel (Types 303/304; Type 316)

Coating: Carbon steel anchors are available zinc plated or mechanically galvanized

Installation



Do not use an impact wrench to set or tighten anchors.



Caution: Oversized holes in the base material will make it difficult to set the anchor and will reduce the anchor's load capacity.

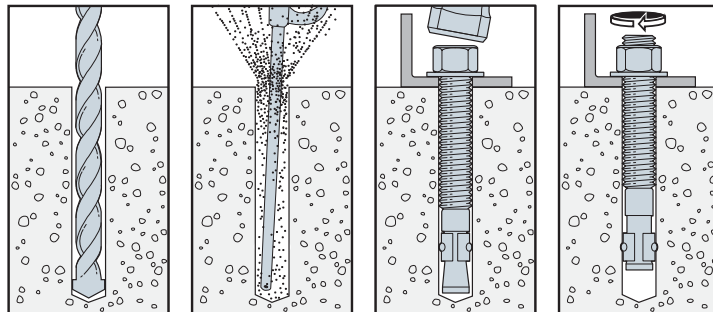
1. Drill a hole in base material using a carbide drill bit the same diameter as the nominal diameter of the anchor to be installed. Drill the hole to the specified embedment depth, and blow it clean using compressed air. (Overhead installations need not be blown clean.) Alternatively, drill the hole deep enough to accommodate the embedment depth and the dust from drilling.
2. Assemble the anchor with nut and washer so the top of the nut is flush with the top of the anchor. Place the anchor in the fixture, and drive it into the hole until the washer and nut are tight against the fixture.
3. Tighten to the required installation torque.



Head Stamp

The head is stamped with the length identification letter.

Installation Sequence



Wedge-All Anchor

Wedge-All Anchor Installation Data

Wedge-All Diameter (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Drill Bit Size (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Min. Fixture Hole (in.)	5/16	7/16	9/16	1 1/16	7/8	1	1 1/8	1 3/8
Wrench Size (in.)	7/16	9/16	3/4	15/16	1 1/8	1 5/16	1 1/2	1 7/8

Length Identification Head Marks on Wedge-All Anchors (corresponds to length of anchor — inches).

Mark	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
From	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	11	12	13	14	15	16	17	18
Up To But Not Including	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	11	12	13	14	15	16	17	18	19

Wedge-All® Wedge Anchor

Wedge-All Anchor Product Data — Carbon Steel:
Zinc Plated and Mechanically Galvanized

Size (in.)	Zinc Plated Model No.	Mechanically Galvanized Model No.	Drill Bit Dia. (in.)	Thread Length (in.)	Quantity	
					Box	Carton
¼ x 1¾	—	WA25134MG	¼	1⅝	100	500
¼ x 2¼	—	WA25214MG		1⅞	100	500
¼ x 3¼	—	WA25314MG		2⅞	100	500
⅜ x 2¼	WA37214	WA37214MG	⅜	1⅝	50	250
⅜ x 2¾	WA37234	WA37234MG		1⅞	50	250
⅜ x 3	WA37300	WA37300MG		1⅞	50	250
⅜ x 3½	WA37312	WA37312MG		2½	50	250
⅜ x 3¾	WA37334	WA37334MG		2⅞	50	250
⅜ x 5	WA37500	WA37500MG		3⅞	50	200
⅜ x 7	WA37700	WA37700MG		5⅞	50	200
½ x 2¾	WA50234	WA50234MG	½	1⅝	25	125
½ x 3¾	WA50334	WA50334MG		2⅝	25	125
½ x 4¼	WA50414	WA50414MG		2⅞	25	100
½ x 5½	WA50512	WA50512MG		4⅞	25	100
½ x 7	WA50700	WA50700MG		4⅞	25	100
½ x 8½	WA50812	WA50812MG		6	25	50
½ x 10	WA50100	WA50100MG		6	25	50
½ x 12	WA50120	WA50120MG		6	25	50
⅝ x 3½	WA62312	WA62312MG	⅝	1⅞	20	80
⅝ x 4½	WA62412	WA62412MG		2⅞	20	80
⅝ x 5	WA62500	WA62500MG		3⅞	20	80
⅝ x 6	WA62600	WA62600MG		4⅞	20	80
⅝ x 7	WA62700	WA62700MG		5⅞	20	80
⅝ x 8½	WA62812	WA62812MG		6	20	40
⅝ x 10	WA62100	WA62100MG		6	10	20
⅝ x 12	WA62120	WA62120MG		6	10	20
¾ x 4¼	WA75414	WA75414MG	¾	2⅞	10	40
¾ x 4¾	WA75434	WA75434MG		2⅞	10	40
¾ x 5½	WA75512	WA75512MG		3⅞	10	40
¾ x 6¼	WA75614	WA75614MG		4⅞	10	40
¾ x 7	WA75700	WA75700MG		5⅞	10	40
¾ x 8½	WA75812	WA75812MG		6	10	20
¾ x 10	WA75100	WA75100MG		6	10	20
¾ x 12	WA75120	WA75120MG		6	5	10
7⁄8 x 6	WA87600	WA87600MG	7⁄8	2⅞	5	20
7⁄8 x 8	WA87800	WA87800MG		2⅞	5	10
7⁄8 x 10	WA87100	WA87100MG		2⅞	5	10
7⁄8 x 12	WA87120	WA87120MG		2⅞	5	10
1 x 6	WA16000	WA16000MG	1	2¼	5	20
1 x 9	WA19000	WA19000MG		2¼	5	10
1 x 12	WA11200	WA11200MG		2¼	5	10
1¼ x 9	WA12590	—	1¼	2¾	5	10
1¼ x 12	WA12512	—		2¾	5	10

1. The published length is the overall length of the anchor. Allow one anchor diameter for the nut and washer thickness plus the fixture thickness when selecting the minimum length.

Material Specifications

Carbon Steel — Zinc Plated			
Component Materials			
Anchor Body	Nut	Washer	Clip
Material meets minimum 70,000 psi tensile strength	Carbon Steel ASTM A 563, Grade A	Carbon Steel	Carbon Steel

Material Specifications

Carbon Steel — Mechanically Galvanized ¹			
Component Materials			
Anchor Body	Nut	Washer	Clip
Material meets minimum 70,000 psi tensile strength	Carbon Steel ASTM A 563, Grade A	Carbon Steel	Carbon Steel

1. Mechanical Galvanizing meets ASTM B695, Class 55, Type 1.

Wedge-All® Wedge Anchor

Wedge-All Anchor Product Data — Stainless Steel

Size (in.)	Type 303/304 Stainless Model No. ²	Type 316 Stainless Model No.	Drill Bit Dia. (in.)	Thread Length (in.)	Quantity	
					Box	Carton
3/8 x 2 1/4	WA372144SS	WA372146SS	3/8	1 1/8	50	250
3/8 x 2 3/4	WA372344SS	WA372346SS		1 5/8	50	250
3/8 x 3	WA373004SS	WA373006SS		1 7/8	50	250
3/8 x 3 1/2	WA373124SS	WA373126SS		2 1/2	50	250
3/8 x 3 3/4	WA373344SS	WA373346SS		2 5/8	50	250
3/8 x 5	WA375004SS	WA375006SS		3 7/8	50	200
3/8 x 7	WA377004SS	WA377006SS		5 7/8	50	200
1/2 x 2 3/4	WA502344SS	WA502346SS	1/2	1 5/16	25	125
1/2 x 3 3/4	WA503344SS	WA503346SS		2 5/16	25	125
1/2 x 4 1/4	WA504144SS	WA504146SS		2 13/16	25	100
1/2 x 5 1/2	WA505124SS	WA505126SS		4 1/16	25	100
1/2 x 7	WA507004SS	WA507006SS		5 9/16	25	100
1/2 x 8 1/2	WA508124SS	WA508126SS		2	25	50
1/2 x 10	WA50100SS	—		2	25	50
1/2 x 12	WA50120SS	—		2	25	50
5/8 x 3 1/2	WA623124SS	WA623126SS	5/8	1 7/8	20	80
5/8 x 4 1/2	WA624124SS	WA624126SS		2 7/8	20	80
5/8 x 5	WA625004SS	WA625006SS		3 3/8	20	80
5/8 x 6	WA626004SS	WA626006SS		4 3/8	20	80
5/8 x 7	WA627004SS	WA627006SS		5 3/8	20	80
5/8 x 8 1/2	WA628124SS	WA628126SS		2	20	40
5/8 x 10	WA62100SS	WA621003SS		2	10	20
5/8 x 12	WA62120SS	WA621203SS		2	10	20
3/4 x 4 1/4	WA754144SS	WA754146SS	3/4	2 3/8	10	40
3/4 x 4 3/4	WA754344SS	WA754346SS		2 7/8	10	40
3/4 x 5 1/2	WA755124SS	WA755126SS		3 3/8	10	40
3/4 x 6 1/4	WA756144SS	WA756146SS		4 3/8	10	40
3/4 x 7	WA757004SS	WA757006SS		5 1/8	10	40
3/4 x 8 1/2	WA758124SS	WA758126SS		2 1/4	10	20
3/4 x 10	WA75100SS	WA751003SS		2 1/4	10	20
3/4 x 12	WA75120SS	WA751203SS		2 1/4	5	10
7/8 x 6	WA87600SS	WA876003SS	7/8	2 1/8	5	20
7/8 x 8	WA87800SS	WA878003SS		2 1/8	5	10
7/8 x 10	WA87100SS	WA871003SS		2 1/8	5	10
7/8 x 12	WA87120SS	—		2 1/8	5	10
1 x 6	WA16000SS	WA160003SS	1	2 1/4	5	20
1 x 9	WA19000SS	WA190003SS		2 1/4	5	10
1 x 12	WA11200SS	WA112003SS		2 1/4	5	10

1. The published length is the overall length of the anchor. Allow one anchor diameter for the nut and washer thickness plus the fixture thickness when selecting a length.
2. Anchors with the "SS" suffix in the model number are manufactured from Type 303 stainless steel; the remaining anchors (with the "4SS" suffix) are manufactured from Type 304 stainless steel. Types 303 and 304 stainless steel perform equally well in certain corrosive environments.

Material Specifications

Type 303/304 Stainless Steel ¹			
Component Materials			
Anchor Body	Nut	Washer	Clip
Type 303 or 304 stainless steel	Type 304 stainless steel	Type 304 stainless steel	Type 304 or 316 stainless steel

1. Types 303 and 304 stainless steels perform equally well in certain corrosive environments. Larger sizes are manufactured from Type 303.

Material Specifications

Type 316 Stainless Steel ¹			
Component Materials			
Anchor Body	Nut	Washer	Clip
Type 316 stainless steel	Type 316 stainless steel	Type 316 stainless steel	Type 316 stainless steel

1. Type 316 stainless steel provides the greatest degree of corrosion resistance offered by Simpson Strong-Tie.

Wedge-All® Design Information — Concrete



Carbon-Steel Wedge-All Allowable Tension Loads in Normal-Weight Concrete

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Tension Load							Install. Torque ft.-lb. (N-m)	
				f' _c ≥ 2,000 psi (13.8 MPa) Concrete			f' _c ≥ 3,000 psi (20.7 MPa) Concrete		f' _c ≥ 4,000 psi (27.6 MPa) Concrete			
				Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allowable lb. (kN)	Allowable lb. (kN)	Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allowable lb. (kN)		
¼ (6.4)	1 ⅞ (29)	2 ½ (64)	1 ⅝ (41)	680 (3.0)	167 (0.7)	170 (0.8)	205 (0.9)	960 (4.3)	233 (1.0)	240 (1.1)	8 (10.8)	
	2 ¼ (57)	2 ½ (64)	3 ⅞ (79)	1,920 (8.5)	286 (1.3)	480 (2.1)	530 (2.4)	2,320 (10.3)	105 (0.5)	580 (2.6)		
⅜ (9.5)	1 ¾ (44)	3 ¾ (95)	2 ⅝ (60)	1,560 (6.9)	261 (1.2)	390 (1.7)	555 (2.5)	2,880 (12.8)	588 (2.6)	720 (3.2)	30 (40.7)	
	2 ⅝ (67)	3 ¾ (95)	3 ⅝ (92)	3,360 (14.9)	464 (2.1)	840 (3.7)	1,100 (4.9)	5,440 (24.2)	553 (2.5)	1,360 (6.0)		
	3 ⅝ (86)	3 ¾ (95)	4 ¾ (121)	3,680 (16.4)	585 (2.6)	920 (4.1)	1,140 (5.1)	5,440 (24.2)	318 (1.4)	1,360 (6.0)		
½ (12.7)	2 ¼ (57)	5 (127)	3 ⅞ (79)	3,280 (14.6)	871 (3.9)	820 (3.6)	1,070 (4.8)	5,280 (23.5)	849 (3.8)	1,320 (5.9)	60 (81.3)	
	3 ⅝ (86)	5 (127)	4 ¾ (121)	6,040 (26.9)	654 (2.9)	1,510 (6.7)	1,985 (8.8)	9,840 (43.8)	1,303 (5.8)	2,460 (10.9)		
	4 ½ (114)	5 (127)	6 ¼ (159)	6,960 (31.0)	839 (3.7)	1,740 (7.7)	2,350 (10.5)	11,840 (52.7)	2,462 (11.0)	2,960 (13.2)		
⅝ (15.9)	2 ¾ (70)	6 ¼ (159)	3 ⅞ (98)	4,520 (20.1)	120 (0.5)	1,130 (5.0)	1,640 (7.3)	8,600 (38.3)	729 (3.2)	2,150 (9.6)	90 (122.0)	
	4 ½ (114)	6 ¼ (159)	6 ¼ (159)	8,200 (36.5)	612 (2.7)	2,050 (9.1)	2,990 (13.3)	15,720 (69.9)	1,224 (5.4)	3,930 (17.5)		
	5 ½ (140)	6 ¼ (159)	7 ¾ (197)	8,200 (36.5)	639 (2.8)	2,050 (9.1)	2,990 (13.3)	15,720 (69.9)	1,116 (5.0)	3,930 (17.5)		
¾ (19.1)	3 ⅝ (86)	7 ½ (191)	4 ¾ (121)	6,760 (30.1)	1,452 (6.5)	1,690 (7.5)	2,090 (9.3)	9,960 (44.3)	1,324 (5.9)	2,490 (11.1)	150 (203.4)	
	5 (127)	7 ½ (191)	7 (178)	10,040 (44.7)	544 (2.4)	2,510 (11.2)	3,225 (14.3)	15,760 (70.1)	1,550 (6.9)	3,940 (17.5)		
	6 ¾ (171)	7 ½ (191)	9 ½ (241)	10,040 (44.7)	1,588 (7.1)	2,510 (11.2)	3,380 (15.0)	17,000 (75.6)	1,668 (7.4)	4,250 (18.9)		
7/8 (22.2)	3 ⅞ (98)	8 ¾ (222)	5 ⅝ (137)	7,480 (33.3)	821 (3.7)	1,870 (8.3)	2,275 (10.1)	10,720 (47.7)	1,253 (5.6)	2,680 (11.9)	200 (271.2)	
	7 ⅞ (200)	8 ¾ (222)	11 (279)	17,040 (75.8)	1,566 (7.0)	4,260 (18.9)	4,670 (20.8)	20,320 (90.4)	2,401 (10.7)	5,080 (22.6)		
1 (25.4)	4 ½ (114)	10 (254)	6 ¼ (159)	11,550 (51.4)	1,830 (8.1)	2,888 (12.8)	2,891 (12.9)	11,760 (52.3)	1,407 (6.3)	2,940 (13.1)	225 (305.1)	
	9 (229)	10 (254)	12 ⅝ (321)	15,570 (69.3)	2,337 (10.4)	3,893 (17.3)	4,766 (21.2)	22,560 (100.4)	1,209 (5.4)	5,640 (25.1)		
1 ¼ (31.8)	5 ⅝ (143)	12 ½ (318)	7 ⅞ (200)	11,370 (50.6)	1,010 (4.5)	2,843 (12.6)	3,743 (16.6)	18,570 (82.6)	469 (2.1)	4,643 (20.7)	400 (542.3)	
	9 ½ (241)	12 ½ (318)	13 ¼ (337)	15,120 (67.3)	2,438 (10.8)	3,780 (16.8)	6,476 (28.8)	36,690 (163.2)	1,270 (5.6)	9,173 (40.8)		

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 pp. 155 and 157.
3. Drill bit diameter used in base material corresponds to nominal anchor diameter.
4. Allowable loads may be linearly interpolated between concrete strengths listed.
5. The minimum concrete thickness is $1\frac{1}{2}$ times the embedment depth.

* See p. 13 for an explanation of the load table icons.

Wedge-All® Design Information — Concrete



Carbon-Steel Wedge-All Allowable Shear Loads in Normal-Weight Concrete

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Shear Load					Install. Torque ft.-lb. (N-m)
				$f'_c \geq 2,000$ psi (13.8 MPa) Concrete			$f'_c \geq 3,000$ psi (20.7 MPa) Concrete	$f'_c \geq 4,000$ psi (27.6 MPa) Concrete	
				Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allowable lb. (kN)	Allowable lb. (kN)	Allowable lb. (kN)	
$\frac{1}{4}$ (6.4)	$1\frac{1}{8}$ (29)	$2\frac{1}{2}$ (64)	$1\frac{5}{8}$ (41)	920 (4.1)	47 (0.2)	230 (1.0)	230 (1.0)	230 (1.0)	8 (10.8)
	$2\frac{1}{4}$ (57)	$2\frac{1}{2}$ (64)	$3\frac{1}{8}$ (79)	—	—	230 (1.0)	230 (1.0)	230 (1.0)	
$\frac{3}{8}$ (9.5)	$1\frac{3}{4}$ (44)	$3\frac{3}{4}$ (95)	$2\frac{5}{8}$ (60)	2,280 (10.1)	96 (0.4)	570 (2.5)	570 (2.5)	570 (2.5)	30 (40.7)
	$2\frac{5}{8}$ (67)	$3\frac{3}{4}$ (95)	$3\frac{5}{8}$ (92)	4,220 (18.8)	384 (1.7)	1,055 (4.7)	1,055 (4.7)	1,055 (4.7)	
	$3\frac{3}{8}$ (86)	$3\frac{3}{4}$ (95)	$4\frac{1}{4}$ (121)	—	—	1,055 (4.7)	1,055 (4.7)	1,055 (4.7)	
$\frac{1}{2}$ (12.7)	$2\frac{1}{4}$ (57)	5 (127)	$3\frac{1}{8}$ (79)	6,560 (29.2)	850 (3.8)	1,345 (6.0)	1,485 (6.6)	1,625 (7.2)	60 (81.3)
	$3\frac{3}{8}$ (86)	5 (127)	$4\frac{1}{4}$ (121)	8,160 (36.3)	880 (3.9)	1,675 (7.5)	1,850 (8.2)	2,020 (9.0)	
	$4\frac{1}{2}$ (114)	5 (127)	$6\frac{1}{4}$ (159)	—	—	1,675 (7.5)	1,850 (8.2)	2,020 (9.0)	
$\frac{5}{8}$ (15.9)	$2\frac{3}{4}$ (70)	$6\frac{1}{4}$ (159)	$3\frac{5}{8}$ (98)	8,720 (38.8)	1,699 (7.6)	1,620 (7.2)	1,900 (8.5)	2,180 (9.7)	90 (122.0)
	$4\frac{1}{2}$ (114)	$6\frac{1}{4}$ (159)	$6\frac{1}{4}$ (159)	12,570 (55.9)	396 (1.8)	2,330 (10.4)	2,740 (12.2)	3,145 (14.0)	
	$5\frac{1}{2}$ (140)	$6\frac{1}{4}$ (159)	$7\frac{3}{4}$ (197)	—	—	2,330 (10.4)	2,740 (12.2)	3,145 (14.0)	
$\frac{3}{4}$ (19.1)	$3\frac{3}{8}$ (86)	$7\frac{1}{2}$ (191)	$4\frac{1}{4}$ (121)	11,360 (50.5)	792 (3.5)	2,840 (12.6)	2,840 (12.6)	2,840 (12.6)	150 (203.4)
	5 (127)	$7\frac{1}{2}$ (191)	7 (178)	18,430 (82.0)	1,921 (8.5)	4,610 (20.5)	4,610 (20.5)	4,610 (20.5)	
	$6\frac{3}{4}$ (171)	$7\frac{1}{2}$ (191)	$9\frac{1}{2}$ (241)	—	—	4,610 (20.5)	4,610 (20.5)	4,610 (20.5)	
$\frac{7}{8}$ (22.2)	$3\frac{7}{8}$ (98)	$8\frac{3}{4}$ (222)	$5\frac{5}{8}$ (137)	13,760 (61.2)	2,059 (9.2)	3,440 (15.3)	3,440 (15.3)	3,440 (15.3)	200 (271.2)
	$7\frac{7}{8}$ (200)	$8\frac{3}{4}$ (222)	11 (279)	22,300 (99.2)	477 (2.1)	5,575 (24.8)	5,575 (24.8)	5,575 (24.8)	
1 (25.4)	$4\frac{1}{2}$ (114)	10 (254)	$6\frac{1}{4}$ (159)	22,519 (100.2)	1,156 (5.1)	5,730 (25.5)	5,730 (25.5)	5,730 (25.5)	300 (406.7)
	9 (229)	10 (254)	$12\frac{5}{8}$ (321)	25,380 (112.9)	729 (3.2)	6,345 (28.2)	6,345 (28.2)	6,345 (28.2)	
$1\frac{1}{4}$ (31.8)	$5\frac{5}{8}$ (143)	$12\frac{1}{2}$ (318)	$7\frac{7}{8}$ (200)	29,320 (130.4)	2,099 (9.3)	7,330 (32.6)	7,330 (32.6)	7,330 (32.6)	400 (542.3)
	$9\frac{1}{2}$ (241)	$12\frac{1}{2}$ (318)	$13\frac{1}{4}$ (337)	—	—	7,330 (32.6)	7,330 (32.6)	7,330 (32.6)	

1. The allowable loads listed are based on a safety factor of 4.0.
2. Refer to allowable load-adjustment factors for spacing and edge distance on pp. 155, 156 and 158.
3. Drill bit diameter used in base material corresponds to nominal anchor diameter.
4. Allowable loads may be linearly interpolated between concrete strengths listed.
5. The minimum concrete thickness is $1\frac{1}{2}$ times the embedment depth.

* See p. 13 for an explanation of the load table icons.

Wedge-All® Design Information — Concrete



Stainless-Steel Wedge-All Allowable Tension Loads in Normal-Weight Concrete

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Allowable Tension Load lb. (kN)			Install. Torque ft.-lb. (N-m)
				$f'_c \geq 2,000$ psi (13.8 MPa) Concrete	$f'_c \geq 3,000$ psi (20.7 MPa) Concrete	$f'_c \geq 4,000$ psi (27.6 MPa) Concrete	
$\frac{1}{4}$ (6.4)	$1\frac{1}{8}$ (29)	$2\frac{1}{2}$ (64)	$1\frac{5}{8}$ (41)	155 (0.7)	185 (0.8)	215 (1.0)	8 (10.8)
	$2\frac{1}{4}$ (57)	$2\frac{1}{2}$ (64)	$3\frac{1}{8}$ (79)	430 (1.9)	475 (2.1)	520 (2.3)	
$\frac{3}{8}$ (9.5)	$1\frac{3}{4}$ (44)	$3\frac{3}{4}$ (95)	$2\frac{3}{8}$ (60)	350 (1.6)	500 (2.2)	650 (2.9)	30 (40.7)
	$2\frac{5}{8}$ (67)	$3\frac{3}{4}$ (95)	$3\frac{5}{8}$ (92)	755 (3.4)	990 (4.4)	1,225 (5.4)	
	$3\frac{3}{8}$ (86)	$3\frac{3}{4}$ (95)	$4\frac{3}{4}$ (121)	830 (3.7)	1,025 (4.6)	1,225 (5.4)	
$\frac{1}{2}$ (12.7)	$2\frac{1}{4}$ (57)	5 (127)	$3\frac{1}{8}$ (79)	740 (3.3)	965 (4.3)	1,190 (5.3)	60 (81.3)
	$3\frac{3}{8}$ (86)	5 (127)	$4\frac{3}{4}$ (121)	1,360 (6.0)	1,785 (7.9)	2,215 (9.9)	
	$4\frac{1}{2}$ (114)	5 (127)	$6\frac{1}{4}$ (159)	1,565 (7.0)	2,115 (9.4)	2,665 (11.9)	
$\frac{5}{8}$ (15.9)	$2\frac{3}{4}$ (70)	$6\frac{1}{4}$ (159)	$3\frac{7}{8}$ (98)	1,015 (4.5)	1,475 (6.6)	1,935 (8.6)	90 (122.0)
	$4\frac{1}{2}$ (114)	$6\frac{1}{4}$ (159)	$6\frac{1}{4}$ (159)	1,845 (8.2)	2,690 (12.0)	3,535 (15.7)	
	$5\frac{1}{2}$ (140)	$6\frac{1}{4}$ (159)	$7\frac{3}{4}$ (197)	1,845 (8.2)	2,690 (12.0)	3,535 (15.7)	
$\frac{3}{4}$ (19.1)	$3\frac{3}{8}$ (86)	$7\frac{1}{2}$ (191)	$4\frac{3}{4}$ (121)	1,520 (6.8)	1,880 (8.4)	2,240 (10.0)	150 (203.4)
	5 (127)	$7\frac{1}{2}$ (191)	7 (178)	2,260 (10.1)	2,905 (12.9)	3,545 (15.8)	
	$6\frac{3}{4}$ (171)	$7\frac{1}{2}$ (191)	$9\frac{1}{2}$ (241)	2,260 (10.1)	3,040 (13.5)	3,825 (17.0)	
$\frac{7}{8}$ (22.2)	$3\frac{7}{8}$ (98)	$8\frac{3}{4}$ (222)	$5\frac{3}{8}$ (137)	1,685 (7.5)	2,050 (9.1)	2,410 (10.7)	200 (271.2)
	$7\frac{7}{8}$ (200)	$8\frac{3}{4}$ (222)	11 (279)	3,835 (17.1)	4,205 (18.7)	4,570 (20.3)	
1 (25.4)	$4\frac{1}{2}$ (114)	10 (254)	$6\frac{1}{4}$ (159)	2,599 (11.6)	2,621 (11.7)	2,648 (11.8)	225 (305.1)
	9 (229)	10 (254)	$12\frac{5}{8}$ (321)	3,503 (15.6)	4,290 (19.1)	5,078 (22.6)	
$1\frac{1}{4}$ (31.8)	$5\frac{5}{8}$ (143)	$12\frac{1}{2}$ (318)	$7\frac{7}{8}$ (200)	2,558 (11.4)	3,368 (15.0)	4,178 (18.6)	400 (542.3)
	$9\frac{1}{2}$ (241)	$12\frac{1}{2}$ (318)	$13\frac{1}{4}$ (337)	3,401 (15.1)	5,828 (25.9)	8,254 (36.7)	

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 pp. 155 and 157.
3. Drill bit diameter used in base material corresponds to nominal anchor diameter.
4. Allowable loads may be linearly interpolated between concrete strengths listed.
5. The minimum concrete thickness is $1\frac{1}{2}$ times the embedment depth.

* See p. 13 for an explanation of the load table icons.

Wedge-All® Design Information — Concrete

Stainless-Steel Wedge-All Allowable Shear Loads in Normal-Weight Concrete



Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Allowable Shear Load lb. (kN)			Install. Torque ft.-lb. (N-m)
				$f'_c \geq 2,000$ psi (13.8 MPa) Concrete	$f'_c \geq 3,000$ psi (20.7 MPa) Concrete	$f'_c \geq 4,000$ psi (27.6 MPa) Concrete	
$\frac{1}{4}$ (6.4)	$1\frac{1}{8}$ (29)	$2\frac{1}{2}$ (64)	$1\frac{5}{8}$ (41)	265 (1.2)	265 (1.2)	265 (1.2)	8 (10.8)
	$2\frac{1}{4}$ (57)	$2\frac{1}{2}$ (64)	$3\frac{1}{8}$ (79)	265 (1.2)	265 (1.2)	265 (1.2)	
$\frac{3}{8}$ (9.5)	$1\frac{3}{4}$ (44)	$3\frac{3}{4}$ (95)	$2\frac{3}{8}$ (60)	655 (2.9)	655 (2.9)	655 (2.9)	30 (40.7)
	$2\frac{5}{8}$ (67)	$3\frac{3}{4}$ (95)	$3\frac{5}{8}$ (92)	1,215 (5.4)	1,215 (5.4)	1,215 (5.4)	
	$3\frac{3}{8}$ (86)	$3\frac{3}{4}$ (95)	$4\frac{3}{4}$ (121)	1,215 (5.4)	1,215 (5.4)	1,215 (5.4)	
$\frac{1}{2}$ (12.7)	$2\frac{1}{4}$ (57)	5 (127)	$3\frac{1}{8}$ (79)	1,545 (6.9)	1,710 (7.6)	1,870 (8.3)	60 (81.3)
	$3\frac{3}{8}$ (86)	5 (127)	$4\frac{3}{4}$ (121)	1,925 (8.6)	2,130 (9.5)	2,325 (10.3)	
	$4\frac{1}{2}$ (114)	5 (127)	$6\frac{1}{4}$ (159)	1,925 (8.6)	2,130 (9.5)	2,325 (10.3)	
$\frac{5}{8}$ (15.9)	$2\frac{3}{4}$ (70)	$6\frac{1}{4}$ (159)	$3\frac{7}{8}$ (98)	1,865 (8.3)	2,185 (9.7)	2,505 (11.1)	90 (122.0)
	$4\frac{1}{2}$ (114)	$6\frac{1}{4}$ (159)	$6\frac{1}{4}$ (159)	2,680 (11.9)	3,150 (14.0)	3,615 (16.1)	
	$5\frac{1}{2}$ (140)	$6\frac{1}{4}$ (159)	$7\frac{3}{4}$ (197)	2,680 (11.9)	3,150 (14.0)	3,615 (16.1)	
$\frac{3}{4}$ (19.1)	$3\frac{3}{8}$ (86)	$7\frac{1}{2}$ (191)	$4\frac{3}{4}$ (121)	3,265 (14.5)	3,265 (14.5)	3,265 (14.5)	150 (203.4)
	5 (127)	$7\frac{1}{2}$ (191)	7 (178)	5,300 (23.6)	5,300 (23.6)	5,300 (23.6)	
	$6\frac{3}{4}$ (171)	$7\frac{1}{2}$ (191)	$9\frac{1}{2}$ (241)	5,300 (23.6)	5,300 (23.6)	5,300 (23.6)	
$\frac{7}{8}$ (22.2)	$3\frac{7}{8}$ (98)	$8\frac{3}{4}$ (222)	$5\frac{3}{8}$ (137)	3,955 (17.6)	3,955 (17.6)	3,955 (17.6)	200 (271.2)
	$7\frac{7}{8}$ (200)	$8\frac{3}{4}$ (222)	11 (279)	6,410 (28.5)	6,410 (28.5)	6,410 (28.5)	
1 (25.4)	$4\frac{1}{2}$ (114)	10 (254)	$6\frac{1}{4}$ (159)	6,590 (29.3)	6,590 (29.3)	6,590 (29.3)	300 (406.7)
	9 (229)	10 (254)	$12\frac{5}{8}$ (321)	7,295 (32.4)	7,295 (32.4)	7,295 (32.4)	
$1\frac{1}{4}$ (31.8)	$5\frac{5}{8}$ (143)	$12\frac{1}{2}$ (318)	$7\frac{7}{8}$ (200)	8,430 (37.5)	8,430 (37.5)	8,430 (37.5)	400 (542.3)
	$9\frac{1}{2}$ (241)	$12\frac{1}{2}$ (318)	$13\frac{1}{4}$ (337)	8,430 (37.5)	8,430 (37.5)	8,430 (37.5)	

1. The allowable loads listed are based on a safety factor of 4.0.
2. Refer to allowable load-adjustment factors for spacing and edge distance on pp. 155, 156 and 158.
3. Drill bit diameter used in base material corresponds to nominal anchor diameter.
4. Allowable loads may be linearly interpolated between concrete strengths listed.
5. The minimum concrete thickness is $1\frac{1}{2}$ times the embedment depth.

* See p. 13 for an explanation of the load table icons.

Wedge-All® Design Information — Concrete and Masonry

Carbon-Steel Wedge-All Allowable Tension Loads in Sand-Lightweight Concrete over Metal Deck



Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Tension Load (Install in Concrete)			Tension Load (Install through Metal Deck)			Install. Torque ft.-lb. (N-m)
				f' _c ≥ 3,000 psi (20.7 MPa) Concrete			f' _c ≥ 3,000 psi (20.7 MPa) Concrete			
				Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allow. lb. (kN)	Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allow. lb. (kN)	
¼ (6.4)	1½ (38)	3¾ (86)	2¾ (70)	—	—	—	1,440 (6.4)	167 (0.7)	360 (1.6)	—
½ (12.7)	2¼ (57)	6¾ (171)	4½ (105)	3,880 (17.3)	228 (1.0)	970 (4.3)	3,860 (17.2)	564 (2.5)	965 (4.3)	60 (81.3)
⅝ (15.9)	2¾ (70)	8¾ (213)	5 (127)	5,920 (26.3)	239 (1.1)	1,480 (6.6)	5,220 (23.2)	370 (1.6)	1,305 (5.8)	90 (122.0)
¾ (19.1)	3¾ (>86)	10 (254)	6½ (156)	7,140 (31.8)	537 (2.4)	1,785 (7.9)	6,600 (29.4)	903 (4.0)	1,650 (7.3)	150 (203.4)

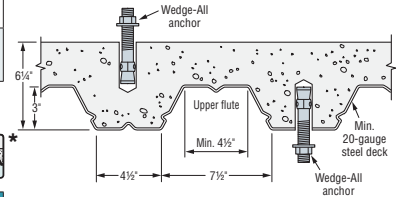
See notes 1–7 below.

Carbon-Steel Wedge-All Allowable Shear Loads in Sand-Lightweight Concrete over Metal Deck



Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Shear Load (Install in Concrete)			Shear Load (Install through Metal Deck)			Install. Torque ft.-lb. (N-m)
				f'c ≥ 3,000 psi (20.7 MPa) Concrete			f'c ≥ 3,000 psi (20.7 MPa) Concrete			
				Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allow. lb. (kN)	Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allow. lb. (kN)	
¼ (6.4)	1½ (38)	3⅝ (86)	2¾ (70)	—	—	—	1,660 (7.4)	627 (2.8)	415 (1.8)	—
½ (12.7)	2¼ (57)	6¾ (171)	4⅝ (105)	5,575 (24.8)	377 (1.7)	1,395 (6.2)	7,260 (32.3)	607 (2.7)	1,815 (8.1)	60 (81.3)
⅝ (15.9)	2¾ (70)	8⅝ (213)	5 (127)	8,900 (39.6)	742 (3.3)	2,225 (9.9)	8,560 (38.1)	114 (0.5)	2,140 (9.5)	90 (122.0)
¾ (19.1)	3⅝ (86)	10 (254)	6⅝ (156)	10,400 (46.3)	495 (2.2)	2,600 (11.6)	11,040 (49.1)	321 (1.4)	2,760 (12.3)	150 (203.4)

- The allowable loads listed are based on a safety factor of 4.0.
- Refer to allowable load-adjustment factors for edge distance on p. 159.
- 100% of the allowable load is permitted at critical spacing. Loads at reduced spacing have not been determined.
- Drill bit diameter used in base material corresponds to nominal anchor diameter.
- The minimum concrete thickness is 1 1/2 times the embedment depth.
- Metal deck must be minimum 20 gauge.
7. Anchors installed in the bottom flute of the steel deck must have a minimum allowable edge distance of 1 1/2" from the inclined edge of the bottom flute.



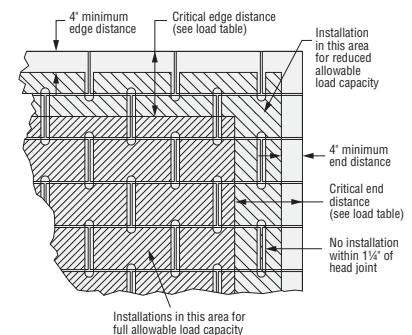
Lightweight Concrete on Metal Deck

Carbon-Steel Wedge-All Allowable Tension and Shear Loads in Grout-Filled CMU



Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical End Dist. in. (mm)	Critical Spacing in. (mm)	8" Grout-Filled CMU Allowable Load Based on CMU Strength						Install. Torque ft.-lb. (N-m)
					Tension Load			Shear Load			
					Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allow. lb. (kN)	Ultimate lb. (kN)	Std. Dev. lb. (kN)	Allow. lb. (kN)	
Anchor Installed on the Face of the CMU Wall at Least 1 ¼ inch Away from Head Joint (See Figure)											
¾ (9.5)	2½ (67)	10½ (267)	10½ (267)	10½ (267)	1,700 (7.6)	129 (0.6)	340 (1.5)	3,360 (14.9)	223 (1.0)	670 (3.0)	30 (40.7)
½ (12.7)	3½ (89)	14 (356)	14 (356)	14 (356)	2,120 (9.4)	129 (0.6)	425 (1.9)	5,360 (23.8)	617 (2.7)	1,070 (4.8)	35 (47.4)
⅝ (15.9)	4¾ (111)	17½ (445)	17½ (445)	17½ (445)	3,120 (13.9)	342 (1.5)	625 (2.8)	8,180 (36.4)	513 (2.3)	1,635 (7.3)	55 (74.5)
¾ (19.1)	5¼ (133)	21 (533)	21 (533)	21 (533)	4,320 (19.2)	248 (1.1)	865 (3.8)	10,160 (45.2)	801 (3.6)	2,030 (9.0)	120 (162.6)

- The tabulated allowable loads are based on a safety factor of 5.0 for installations under the IBC and IRC.
- Listed loads may be applied to installations on the face of the CMU wall at least 1 1/4" away from headjoints.
- Values for 8"-wide concrete masonry units (CMU) with a minimum specified compressive strength of masonry, f'_m , at 28 days is 1,500 psi.
- Embedment depth is measured from the outside face of the concrete masonry unit.
- Drill bit diameter used in base material corresponds to nominal anchor diameter.
- Allowable loads may be increased 33 1/3% for short-term loading due to wind and seismic forces, where permitted by code.
- Tension and shear loads for the Wedge-All anchor may be combined using the parabolic interaction equation ($n = 5/8$).
- Refer to allowable load-adjustment factors for edge distance on p. 159.



Shaded area = Placement for Full and Reduced Allowable Load Capacity in Grout-Filled CMU

* See p. 13 for an explanation of the load table icons.

Wedge-All® Design Information — Concrete

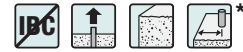
Allowable Load-Adjustment Factors for Carbon-Steel and Stainless-Steel Wedge-All Anchors in Normal-Weight Concrete: Edge Distance, Tension and Shear Loads

How to use these charts:

1. The following tables are for reduced edge distance.
2. Locate the anchor size to be used for either a tension and/or shear load application.
3. Locate the edge distance (c_{act}) at which the anchor is to be installed.
4. The load adjustment factor (f_c) is the intersection of the row and column.
5. Multiply the allowable load by the applicable load adjustment factor.
6. Reduction factors for multiple edges are multiplied together.

Edge Distance Tension (f_c)

Edge Dist. c_{act} (in.)	Size	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4
	c_{cr}	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10	12 1/2
	c_{min}	1	1 1/2	2	2 1/2	3	3 1/2	4	5
	f_{cmin}	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
1		0.70							
1 1/2		0.80	0.70						
2		0.90	0.77	0.70					
2 1/2		1.00	0.83	0.75	0.70				
3			0.90	0.80	0.74	0.70			
3 1/2			0.97	0.85	0.78	0.73	0.70		
3 3/4			1.00	0.88	0.80	0.75	0.71		
4				0.90	0.82	0.77	0.73	0.70	
4 1/2				0.95	0.86	0.80	0.76	0.73	
5				1.00	0.90	0.83	0.79	0.75	0.70
5 1/2					0.94	0.87	0.81	0.78	0.72
6					0.98	0.90	0.84	0.80	0.74
6 1/4					1.00	0.92	0.86	0.81	0.75
6 1/2						0.93	0.87	0.83	0.76
7						0.97	0.90	0.85	0.78
7 1/2						1.00	0.93	0.88	0.80
8							0.96	0.90	0.82
8 1/2							0.99	0.93	0.84
8 3/4							1.00	0.94	0.85
10								1.00	0.90
12 1/2									1.00
15									



See notes below.

Edge Distance Shear (f_c) (Shear Applied Perpendicular to Edge)

Edge Dist. c_{act} (in.)	Size	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4
	c_{cr}	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10	12 1/2
	c_{min}	1	1 1/2	2	2 1/2	3	3 1/2	4	5
	f_{cmin}	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
1		0.30							
1 1/2		0.53	0.30						
2		0.77	0.46	0.30					
2 1/2		1.00	0.61	0.42	0.30				
3			0.77	0.53	0.39	0.30			
3 1/2			0.92	0.65	0.49	0.38	0.30		
3 3/4			1.00	0.71	0.53	0.42	0.33		
4				0.77	0.58	0.46	0.37	0.30	
4 1/2				0.88	0.67	0.53	0.43	0.36	
5				1.00	0.77	0.61	0.50	0.42	0.30
5 1/2					0.86	0.69	0.57	0.48	0.35
6					0.95	0.77	0.63	0.53	0.39
6 1/4					1.00	0.81	0.67	0.56	0.42
6 1/2						0.84	0.70	0.59	0.44
7						0.92	0.77	0.65	0.49
7 1/2						1.00	0.83	0.71	0.53
8							0.90	0.77	0.58
8 1/2							0.97	0.83	0.63
8 3/4							1.00	0.85	0.65
10								1.00	0.77
12 1/2									1.00
15									



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. $f_c = f_{cmin} + [(1 - f_{cmin}) (c_{act} - c_{min} / (c_{cr} - c_{min}))]$.

Load-Adjustment Factors for Reduced Spacing:

Critical spacing is listed in the load tables. No adjustment in load is required when the anchors are spaced at critical spacing.

No additional testing has been performed to determine the adjustment factors for spacing dimensions less than those listed in the load tables.

* See p. 13 for an explanation of the load table icons.

Wedge-All® Design Information — Concrete

Allowable Load-Adjustment Factors for Carbon-Steel and Stainless-Steel Wedge-All Anchors in Normal-Weight Concrete: Edge Distance and Shear Load Applied Parallel to Edge

How to use these charts:

1. The following tables are for reduced edge distance.
2. Locate the anchor size to be used for a shear load application.
3. Locate the edge distance ($C_{act||}$) at which the anchor is to be installed.
4. The load adjustment factor ($\phi_{c||}$) is the intersection of the row and column.
5. Multiply the allowable load by the applicable load adjustment factor.
6. Reduction factors for multiple edges are multiplied together.

Edge Distance Shear ($\phi_{c||}$) (Shear Applied Parallel to Edge with End Distance $\geq ED_{min}$)

Edge Dist. $C_{act }$ (in.)	Size	¼	⅜	½	⅝	¾	⅞	1	1¼
	E	2¼	3⅝	4½	5½	6¾	7⅞	9	9½
	ED_{min}	9	13½	18	22	27	31½	36	38
	$C_{crit }$	2½	3¾	5	6¼	7½	8¾	10	12½
	$C_{min }$	1	1½	2	2½	3	3½	4	5
	$f_{cmin }$	1.00	0.93	0.70	0.62	0.62	0.62	0.62	0.62
1		1.00							
1½		1.00	0.93						
2		1.00	0.95	0.70					
2½		1.00	0.96	0.75	0.62				
3			0.98	0.80	0.67	0.62			
3½			0.99	0.85	0.72	0.66	0.62		
4			1.00	0.90	0.77	0.70	0.66	0.62	
5				1.00	0.87	0.79	0.73	0.68	0.62
6					0.97	0.87	0.80	0.75	0.67
7					1.00	0.96	0.87	0.81	0.72
8						1.00	0.95	0.87	0.77
9							1.00	0.94	0.82
10								1.00	0.87
11									0.92
12									0.97
13									1.00



1. Table is not applicable to anchors with $ED < ED_{min}$. Factors from this table may not be combined with load-adjustment factors for shear loads applied perpendicular to edge.
2. $C_{act||}$ = actual edge distance (measured perpendicular to direction of shear load) at which anchor is installed (inches).
3. $C_{crit||}$ = critical edge distance (measured perpendicular to direction of shear load) for 100% load (inches).
4. $C_{min||}$ = minimum edge distance (measured perpendicular to direction of shear load) for reduced load (inches).
5. ED = actual end distance (measured parallel to direction of shear load) at which anchor is installed (inches).
6. ED_{min} = minimum edge distance (measured parallel to direction of shear load).
7. $f_{c||}$ = adjustment factor for allowable load at actual edge distance.
8. $f_{ccrit||}$ = adjustment factor for allowable load at critical edge distance. $f_{ccrit||}$ is always = 1.00.
9. $f_{cmin||}$ = adjustment factor for allowable load at minimum edge distance.
10. $f_{c||} = f_{cmin||} + [(1 - f_{cmin||}) (C_{act||} - C_{min||}) / (C_{crit||} - C_{min||})]$.

* See p. 13 for an explanation of the load table icons.

Wedge-All® Design Information — Concrete

Allowable Load-Adjustment Factors for Carbon-Steel and Stainless-Steel Wedge-All Anchors in Normal-Weight Concrete: Spacing, Tension Loads

How to use these charts:

- The following tables are for reduced spacing.
- Locate the anchor size to be used for a tension load application.
- Locate the anchor embedment (E) used for a tension load application.
- Locate the spacing (s_{act}) at which the anchor is to be installed.
- The load adjustment factor (f_s) is the intersection of the row and column.
- Multiply the allowable load by the applicable load adjustment factor.
- Reduction factors for multiple spacings are multiplied together.

Spacing Tension (f_s)

S _{act} (in.)	Dia.	¼		⅜			½			⅝		
	E	1⅝	2¼	1¾	2⅝	3⅜	2¼	3⅜	4½	2¾	4½	5½
	S _{cr}	1⅝	3⅝	2⅜	3⅝	4¾	3⅝	4¾	6¼	3⅝	6¼	7¾
	S _{min}	⅝	1⅝	⅞	1⅝	1¾	1⅝	1¾	2¼	1⅝	2¼	2¾
	f _{smin}	0.43	0.70	0.43	0.43	0.70	0.43	0.43	0.70	0.43	0.43	0.70
¾		0.50										
1		0.64		0.48								
1¼		0.79	0.72	0.57			0.47					
1½		0.93	0.76	0.67	0.46		0.54			0.46		
1¾		1.00	0.79	0.76	0.53	0.70	0.61	0.43		0.52		
2			0.83	0.86	0.59	0.73	0.68	0.48		0.57		
2¼			0.87	0.95	0.65	0.75	0.75	0.53	0.70	0.63	0.43	
2½			0.91	1.00	0.72	0.78	0.82	0.57	0.72	0.69	0.47	
2¾			0.94		0.78	0.80	0.89	0.62	0.74	0.74	0.50	0.70
3			0.98		0.84	0.83	0.96	0.67	0.76	0.80	0.54	0.72
3½			1.00		0.97	0.88	1.00	0.76	0.79	0.91	0.61	0.75
4					1.00	0.93		0.86	0.83	1.00	0.68	0.78
4½						0.98		0.95	0.87		0.75	0.81
5						1.00		1.00	0.91		0.82	0.84
6									0.98		0.96	0.90
7									1.00		1.00	0.96
8												1.00

See notes below.

Spacing Tension (f_s)

s_{act} (in.)	Dia.	$\frac{3}{4}$			$\frac{7}{8}$		1		$1\frac{1}{4}$	
	E	$3\frac{3}{8}$	5	$6\frac{3}{4}$	$3\frac{7}{8}$	$7\frac{7}{8}$	$4\frac{1}{2}$	9	$5\frac{5}{8}$	$9\frac{1}{2}$
	s_{cr}	$4\frac{3}{4}$	7	$9\frac{1}{2}$	$5\frac{3}{8}$	11	$6\frac{1}{4}$	$12\frac{5}{8}$	$7\frac{7}{8}$	$13\frac{1}{4}$
	s_{min}	$1\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{3}{8}$	2	4	$2\frac{1}{4}$	$4\frac{1}{2}$	$2\frac{7}{8}$	$4\frac{3}{4}$
	f_{smin}	0.43	0.43	0.70	0.43	0.70	0.43	0.70	0.43	0.70
2		0.48			0.43					
3		0.67	0.49		0.60		0.54		0.46	
4		0.86	0.62	0.73	0.77	0.70	0.68		0.57	
5		1.00	0.75	0.78	0.94	0.74	0.82	0.72	0.68	0.71
6			0.87	0.83	1.00	0.79	0.96	0.76	0.79	0.74
7			1.00	0.88		0.83	1.00	0.79	0.90	0.78
8				0.93		0.87		0.83	1.00	0.81
9				0.98		0.91		0.87		0.85
10				1.00		0.96		0.90		0.89
11						1.00		0.94		0.92
12								0.98		0.96
13								1.00		0.99
14										1.00

- E = Embedment depth (inches).
- s_{act} = actual spacing distance at which anchors are installed (inches).
- s_{cr} = critical spacing distance for 100% load (inches).
- s_{min} = minimum spacing distance for reduced load (inches).
- f_s = adjustment factor for allowable load at actual spacing distance.
- f_{scr} = adjustment factor for allowable load at critical spacing distance. f_{scr} is always = 1.00.
- f_{smin} = adjustment factor for allowable load at minimum spacing distance.
- $f_s = f_{smin} + [(1 - f_{smin}) (s_{act} - s_{min}) / (s_{cr} - s_{min})]$.

* See p. 13 for an explanation of the load table icons.



Wedge-All® Design Information — Concrete

Allowable Load-Adjustment Factors for Carbon-Steel and Stainless-Steel Wedge-All Anchors in Normal-Weight Concrete: Spacing, Shear Loads

How to use these charts:

1. The following tables are for reduced spacing.
2. Locate the anchor size to be used for a shear load application.
3. Locate the anchor embedment (E) used for a shear load application.
4. Locate the spacing (s_{act}) at which the anchor is to be installed.
5. The load adjustment factor (f_s) is the intersection of the row and column.
6. Multiply the allowable load by the applicable load adjustment factor.
7. Reduction factors for multiple spacings are multiplied together.

Spacing Shear (f_s)

s_{act} (in.)	Dia.	$\frac{1}{4}$		$\frac{3}{8}$			$\frac{1}{2}$			$\frac{5}{8}$		
	E	1 $\frac{1}{8}$	2 $\frac{1}{4}$	1 $\frac{3}{4}$	2 $\frac{5}{8}$	3 $\frac{3}{8}$	2 $\frac{1}{4}$	3 $\frac{3}{8}$	4 $\frac{1}{2}$	2 $\frac{3}{4}$	4 $\frac{1}{2}$	5 $\frac{1}{2}$
	s_{cr}	1 $\frac{1}{8}$	3 $\frac{1}{8}$	2 $\frac{3}{8}$	3 $\frac{5}{8}$	4 $\frac{3}{8}$	3 $\frac{1}{8}$	4 $\frac{3}{8}$	6 $\frac{1}{4}$	3 $\frac{3}{8}$	6 $\frac{1}{4}$	7 $\frac{3}{4}$
	s_{min}	$\frac{5}{8}$	1 $\frac{1}{8}$	$\frac{7}{8}$	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$	1 $\frac{1}{4}$	2 $\frac{1}{4}$	1 $\frac{1}{8}$	2 $\frac{1}{4}$	2 $\frac{3}{4}$
	f_{smin}	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
$\frac{3}{4}$		0.82										
1		0.87		0.81								
1 $\frac{1}{4}$		0.92	0.80	0.84			0.80					
1 $\frac{1}{2}$		0.97	0.83	0.88	0.80		0.83			0.80		
1 $\frac{3}{4}$		1.00	0.86	0.91	0.83	0.79	0.86	0.79		0.82		
2			0.88	0.95	0.85	0.81	0.88	0.81		0.84		
2 $\frac{1}{4}$			0.91	0.98	0.87	0.83	0.91	0.83	0.79	0.86	0.79	
2 $\frac{1}{2}$			0.93	1.00	0.90	0.84	0.93	0.84	0.80	0.88	0.80	
2 $\frac{3}{4}$			0.96		0.92	0.86	0.96	0.86	0.82	0.91	0.82	0.79
3			0.99		0.94	0.88	0.99	0.88	0.83	0.93	0.83	0.80
3 $\frac{1}{2}$			1.00		0.99	0.91	1.00	0.91	0.86	0.97	0.86	0.82
4					1.00	0.95		0.95	0.88	1.00	0.88	0.84
4 $\frac{1}{2}$						0.98		0.98	0.91		0.91	0.86
5						1.00		1.00	0.93		0.93	0.88
6									0.99		0.99	0.93
7									1.00		1.00	0.97
8												1.00

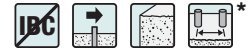
See notes below.

Spacing Shear (f_s)

s_{act} (in.)	Dia.	$\frac{3}{4}$			$\frac{7}{8}$		1		1 $\frac{1}{4}$	
	E	3 $\frac{3}{8}$	5	6 $\frac{3}{4}$	3 $\frac{7}{8}$	7 $\frac{7}{8}$	4 $\frac{1}{2}$	9	5 $\frac{5}{8}$	9 $\frac{1}{2}$
	s_{cr}	4 $\frac{3}{4}$	7	9 $\frac{1}{2}$	5 $\frac{3}{8}$	11	6 $\frac{1}{4}$	12 $\frac{5}{8}$	7 $\frac{7}{8}$	13 $\frac{1}{4}$
	s_{min}	1 $\frac{3}{4}$	2 $\frac{1}{2}$	3 $\frac{3}{8}$	2	4	2 $\frac{1}{4}$	4 $\frac{1}{2}$	2 $\frac{7}{8}$	4 $\frac{3}{4}$
	f_{smin}	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
2		0.81			0.79					
3		0.88	0.81		0.85		0.83		0.80	
4		0.95	0.86	0.81	0.91	0.79	0.88		0.84	
5		1.00	0.91	0.85	0.98	0.82	0.93	0.80	0.88	0.80
6			0.95	0.88	1.00	0.85	0.99	0.83	0.92	0.82
7			1.00	0.91		0.88	1.00	0.85	0.96	0.85
8				0.95		0.91		0.88	1.00	0.87
9				0.98		0.94		0.91		0.90
10				1.00		0.97		0.93		0.92
11						1.00		0.96		0.94
12								0.98		0.97
13								1.00		0.99
14										1.00

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

* See p. 13 for an explanation of the load table icons.



Wedge-All® Design Information — Concrete and Masonry

Allowable Load-Adjustment Factors for Carbon-Steel Wedge-All Anchors in Sand-Lightweight Concrete: Edge Distance, Tension and Shear Loads

How to use these charts:

1. The following tables are for reduced edge distance.
2. Locate the anchor size to be used for either a tension and/or shear load application.
3. Locate the edge distance (c_{act}) at which the anchor is to be installed.
4. The load adjustment factor (f_c) is the intersection of the row and column.
5. Multiply the allowable load by the applicable load adjustment factor.
6. Reduction factors for multiple edges are multiplied together.

Edge Distance Tension (f_c)

Edge Dist. c_{act} (in.)	Size	1/4	1/2	5/8	3/4
	c_{cr}	3 3/8	6 3/4	8 3/8	10
	c_{min}	1 3/8	2 3/4	3 3/8	4
	f_{cmin}	0.70	0.70	0.70	0.70
1 3/8		0.70			
1 1/2		0.72			
2		0.79			
2 1/2		0.87			
2 3/4		0.91	0.70		
3		0.94	0.72		
3 3/8		1.00	0.75	0.70	
3 1/2			0.76	0.71	
4			0.79	0.74	0.70
4 1/2			0.83	0.77	0.73
5			0.87	0.80	0.75
5 1/2			0.91	0.83	0.78
6			0.94	0.86	0.80
6 1/2			0.98	0.89	0.83
6 3/4			1.00	0.90	0.84
7				0.92	0.85
7 1/2				0.95	0.88
8				0.98	0.90
8 3/8				1.00	0.92
8 1/2					0.93
9					0.95
9 1/2					0.98
10					1.00

See notes below.

Edge Distance Shear (f_c)
(Shear Applied Perpendicular to Edge)

Edge Dist. c_{act} (in.)	Size	1/4	1/2	5/8	3/4
	c_{cr}	3 3/8	6 3/4	8 3/8	10
	c_{min}	1 3/8	2 3/4	3 3/8	4
	f_{cmin}	0.30	0.30	0.30	0.30
1 3/8		0.30			
1 1/2		0.34			
2		0.52			
2 1/2		0.69			
2 3/4		0.78	0.30		
3		0.87	0.34		
3 3/8		1.00	0.41	0.30	
3 1/2			0.43	0.32	
4			0.52	0.39	0.30
4 1/2			0.61	0.46	0.36
5			0.69	0.53	0.42
5 1/2			0.78	0.60	0.48
6			0.87	0.67	0.53
6 1/2			0.96	0.74	0.59
6 3/4			1.00	0.77	0.62
7				0.81	0.65
7 1/2				0.88	0.71
8				0.95	0.77
8 3/8				1.00	0.81
8 1/2					0.83
9					0.88
9 1/2					0.94
10					1.00

See notes below.

Load Adjustment Factors for Carbon-Steel Wedge-All® Anchors in Face-of-Wall Installation in 8" Grout-Filled CMU: Edge Distance, Tension and Shear Loads

Edge Distance Tension (f_c)

Edge Dist. c_{act} (in.)	Size	3/8	1/2	5/8	3/4
	c_{cr}	10 1/2	14	17 1/2	21
	c_{min}	4	4	4	4
	f_{cmin}	1.00	1.00	0.80	0.80
4		1.00	1.00	0.80	0.80
6		1.00	1.00	0.83	0.82
8		1.00	1.00	0.86	0.85
10 1/2		1.00	1.00	0.90	0.88
12			1.00	0.92	0.89
14			1.00	0.95	0.92
16				0.98	0.94
17 1/2				1.00	0.96
21					1.00

Load-Adjustment Factors for Reduced Spacing:

Critical spacing is listed in the load tables. No adjustment in load is required when the anchors are spaced at critical spacing. No additional testing has been performed to determine the adjustment factors for spacing dimensions less than those listed in the load tables.

Edge Distance Shear (f_c)

Edge Dist. c_{act} (in.)	Size	3/8	1/2	5/8	3/4
	c_{cr}	10 1/2	14	17 1/2	21
	c_{min}	4	4	4	4
	f_{cmin}	0.79	0.52	0.32	0.32
4		0.79	0.52	0.32	0.32
6		0.85	0.62	0.42	0.40
8		0.92	0.71	0.52	0.48
10 1/2		1.00	0.83	0.65	0.58
12			0.90	0.72	0.64
14			1.00	0.82	0.72
16				0.92	0.80
17 1/2				1.00	0.86
21					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. $f_c = f_{cmin} + [(1 - f_{cmin})(c_{act} - c_{min}) / (c_{cr} - c_{min})]$.

* See p. 13 for an explanation of the load table icons.