The Wedge-All® wedge anchors are a non-bottom bearing, wedge-style expansion anchor for use in solid concrete or grout-filled masonry. A one-piece clip ensures uniform holding capacity that increases as tension is applied. The threaded stud version is available in eight diameters and multiple lengths. A single size tie-wire version is available for wire supported fixtures. Threaded studs are set by tightening the nut. Tie-wire anchors are set with the claw end of a hammer.

WEDGE-ALL SPECIAL FEATURES:

- One piece wrap around clip
- Threaded end is chamfered for ease of starting nut
- Most sizes feature full thread for added versatility

MATERIAL: Carbon and stainless steel

FINISH: Carbon steel anchors are available zinc plated or mechanically galvanized.

CODES: ICC-ES ESR-1396 (CMU); City of L.A. RR24682; Factory Mutual 3017082 and 3031136; Florida FL 11506.8; Underwriters Laboratories File Ex3605; Meets requirements of Federal Specifications A-A-1923A, Type 4. The Tie-Wire anchor is not code listed.

⚠ The load tables list values based upon results from the most recent testing and may not reflect those in current code reports. Where code jurisdictions apply, consult the current reports for applicable load values.

TEST CRITERIA: The Wedge-All anchor has been tested in accordance with ICC-ES's Acceptance Criteria for Expansion Anchors (AC01) for the following:

- Static tension and shear loading
- Seismic and wind loading
- Combination tension and shear loading
- Critical and minimum edge distance

INSTALLATION:

- Holes in metal fixtures to be mounted should exceed nominal anchor diameter by 1/16" for 1/4" thru 5/8" diameter anchors, and by 1/8" for all other diameters.
- Do not use an impact wrench to set or tighten the Wedge-All.

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

Threaded studs:

- Drill a hole in the 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 embedment depth and dust from drilling.
- 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 into the hole until washer and nut are tight against fixture.
- Tighten to the required installation torque.

Tie-Wire:

- Drill a hole at least 1½" deep using a ¼" diameter carbide tipped bit.
- Drive the anchor into the hole until the head is seated against the base material.
- Set the anchor by prying/pulling the head with the claw end of the hammer.

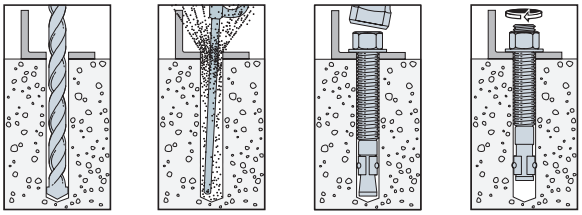
SUGGESTED SPECIFICATIONS:

Wedge anchors shall be a threaded stud with an integral cone expander and a single piece expansion clip. The stud shall be carbon steel with a minimum 70,000 psi tensile strength, or type 303, 304 or 316 stainless steel, as called for on the drawings. Anchors shall meet Federal Specification A-A-1923A, Type 4. Anchors shall be Wedge-All® anchors from Simpson Strong-Tie, Pleasanton, CA. Anchors shall be installed following the Simpson Strong-Tie instructions for Wedge-All anchors.

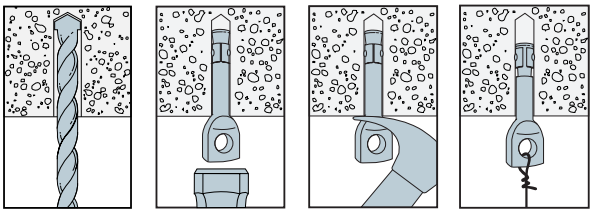
Wedge-All® Anchor

Tie-Wire Anchor (Zinc plate only)

Wedge-All® Anchor Installation Sequence



Tie-Wire Anchor Installation Sequence



Wedge-All® Anchor Installation Data

Wedge-All Dia. (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4
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	11/16	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	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	11	12	13	14	15	16	17	18
Up To But Not Including	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	11	12	13	14	15	16	17	18	19

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

Size (in.)	Carbon Steel Model No.	Mechanically Galvanized Model No.	Drill Bit Dia. (in.)	Thread Length (in.)	Quantity	
					Box	Carton
¼ x 1½[3]	TWD25112[4]	•	¼	Hole dia. is 9/32	100	500
¼ x 1¾	WA25134	WA25134MG		15/16	100	500
¼ x 2¼	WA25214	WA25214MG		1 7/16	100	500
¼ x 3¼	WA25314	WA25314MG		2 7/16	100	500
⅜ x 2¼	WA37214	WA37214MG	⅜	1⅛	50	250
⅜ x 2¾	WA37234	WA37234MG		1⅝	50	250
⅜ x 3	WA37300	WA37300MG		1⅞	50	250
⅜ x 3½	WA37312	WA37312MG		2½	50	250
⅜ x 3¾	WA37334	WA37334MG		2⅝	50	250
⅜ x 5	WA37500	WA37500MG		3⅞	50	200
⅜ x 7	WA37700	WA37700MG		5⅞	50	200
½ x 2¾	WA50234	WA50234MG	½	1 5/16	25	125
½ x 3¾	WA50334	WA50334MG		2 5/16	25	125
½ x 4¼	WA50414	WA50414MG		2 13/16	25	100
½ x 5½	WA50512	WA50512MG		4 1/16	25	100
½ x 7	WA50700	WA50700MG		4 9/16	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		3⅜	20	80
⅝ x 6	WA62600	WA62600MG		4⅜	20	80
⅝ x 7	WA62700	WA62700MG		5⅜	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	2⅜	10	40
¾ x 4¾	WA75434	WA75434MG		2⅞	10	40
¾ x 5½	WA75512	WA75512MG		3⅝	10	40
¾ x 6¼	WA75614	WA75614MG		4⅜	10	40
¾ x 7	WA75700	WA75700MG		5⅛	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
⅞ x 6	WA87600	WA87600MG	⅞	2⅛	5	20
⅞ x 8	WA87800	WA87800MG		2⅛	5	10
⅞ x 10	WA87100	WA87100MG		2⅛	5	10
⅞ x 12	WA87120	WA87120MG		2⅛	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	WA12590MG	1¼	2¾	5	10
1¼ x 12	WA12512	WA12512MG		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.
2. Special lengths are available on request. Load values are valid as long as minimum embedment depths are satisfied.
3. Tie-Wire Wedge-All® anchor, overall length is 2".
4. Tie-Wire Wedge-All® anchor also available in bulk quantity of 2,000, model TWD25112B.
5. Bulk packaged Wedge-All® anchors available, call Simpson Strong-Tie® for details.

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

Application: Interior environment, low level of corrosion resistance. See page 16 for more corrosion information.

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.

Application: Exterior unpolluted environment, medium level of corrosion resistance. Well suited to humid environments. See page 16 for more corrosion information.

Wedge-All® Anchor Product Data - Stainless Steel

Size (in.)	304/303 Stainless Model No.[1]	316 Stainless Model No.[2]	Drill Bit Dia. (in.)	Thread Length (in.)	Standard Quantity		Mini-Pack Quantity "-R" Suffix in Model No. (see note below)	
					Box	Carton	Box	Carton
¼ x 1¾	WA251344SS	WA251346SS	¼	15⁄16	100	500	20	200
¼ x 2¼	WA252144SS	WA252146SS		1 7⁄16	100	500	20	200
¼ x 3¼	WA253144SS	WA253146SS		2 7⁄16	100	500	20	200
⅜ x 2¼	WA372144SS	WA372146SS	⅜	1⅛	50	250	20	200
⅜ x 2¾	WA372344SS	WA372346SS		1⅝	50	250	20	200
⅜ x 3	WA373004SS	WA373006SS		1⅞	50	250	20	200
⅜ x 3½	WA373124SS	WA373126SS		2½	50	250	20	200
⅜ x 3¾	WA373344SS	WA373346SS		2⅝	50	250	20	200
⅜ x 5	WA375004SS	WA375006SS		3⅞	50	200	10	100
⅜ x 7	WA377004SS	WA377006SS		5⅞	50	200	18	80
½ x 2¾	WA502344SS	WA502346SS	½	1 5⁄16	25	125	10	100
½ x 3¾	WA503344SS	WA503346SS		2 5⁄16	25	125	10	100
½ x 4¼	WA504144SS	WA504146SS		2 13⁄16	25	100	–	–
½ x 5½	WA505124SS	WA505126SS		4 1⁄16	25	100	10	80
½ x 7	WA507004SS	WA507006SS		5 9⁄16	25	100	4	32
½ x 8½	WA50812SS	WA508123SS		2	25	50	4	16
½ x 10	WA50100SS	WA501003SS		2	25	50	4	16
½ x 12	WA50120SS	WA501203SS		2	25	50	4	16
⅝ x 3½	WA623124SS	WA623126SS	⅝	1⅞	20	80	10	100
⅝ x 4½	WA624124SS	WA624126SS		2⅞	20	80	10	80
⅝ x 5	WA625004SS	WA625006SS		3⅜	20	80	10	80
⅝ x 6	WA626004SS	WA626006SS		4⅜	20	80	10	80
⅝ x 7	WA627004SS	WA627006SS		5⅜	20	80	4	16
⅝ x 8½	WA62812SS	WA628123SS		2	20	40	4	16
⅝ x 10	WA62100SS	WA621003SS		2	10	20	4	16
⅝ x 12	WA62120SS	WA621203SS		2	10	20	4	16
¾ x 4¼	WA754144SS	WA754146SS	¾	2⅜	10	40	4	40
¾ x 4¾	WA754344SS	WA754346SS		2⅞	10	40	4	40
¾ x 5½	WA755124SS	WA755126SS		3⅝	10	40	4	32
¾ x 6¼	WA756144SS	WA756146SS		4⅜	10	40	4	32
¾ x 7	WA757004SS	WA757006SS		5⅛	10	40	4	32
¾ x 8½	WA75812SS	WA758123SS		2¼	10	20	4	16
¾ x 10	WA75100SS	WA751003SS		2¼	10	20	4	16
¾ x 12	WA75120SS	WA751203SS		2¼	5	10	4	16
⅞ x 6	WA87600SS	WA876003SS	⅞	2⅛	5	20	4	8
⅞ x 8	WA87800SS	WA878003SS		2⅛	5	10	4	8
⅞ x 10	WA87100SS	WA871003SS		2⅛	5	10	4	8
⅞ x 12	WA87120SS	WA871203SS		2⅛	5	10	–	–
1 x 6	WA16000SS	WA160003SS	1	2¼	5	20	4	8
1 x 9	WA19000SS	WA190003SS		2¼	5	10	4	8
1 x 12	WA11200SS	WA112003SS		2¼	5	10	4	8
1¼ x 9	WA12590SS	WA125903SS	1¼	2¾	5	10	4[3]	8
1¼ x 12	WA12512SS	WA125123SS		2¾	5	10	4[3]	8

1. 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. 303 stainless anchors may require extra lead time, call factory for details. Types 303 and 304 stainless steel perform equally well in certain corrosive environments.
2. Anchors with the "3SS" suffix in the model number may require extra lead time. Call Simpson Strong-Tie for details.
3. These package quantities available in type 303 stainless steel only.
4. 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.
5. Special lengths are available on request. Load values are valid as long as minimum embedment depths are satisfied.

Mini Pack: These package quantities must be ordered with a "-R" suffix on the end of the standard model number. (example: WA505124SS-R).

Material Specifications

304/303 Stainless Steel[1]			
Component Materials			
Anchor Body	Nut	Washer	Clip
Type 303 and 304 Stainless Steel	Type 18-8 Stainless Steel	Type 18-8 Stainless Steel	Type 304 or 316 Stainless Steel

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

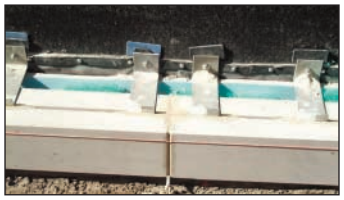
Application: Exterior environment, high level of corrosion resistance. Resistant to organic chemicals, many inorganic chemicals, mild atmospheric pollution and mild marine environments (not in direct contact with salt water). See page 16 for more corrosion information.

Material Specifications

316 Stainless Steel[1]			
Component Materials			
Anchor Body	Nut	Washer	Clip
Type 316 Stainless Steel	Type 316 Stainless Steel	Type 316 Stainless Steel	Type 304 or 316 Stainless Steel

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

Application: Exterior environment, high level of corrosion resistance. Resistant to chlorides, sulfuric acid compounds and direct contact with salt water. See page 16 for more corrosion information.



Tension Loads for Carbon-Steel Wedge-All® (and Tie-Wire) Anchors 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-lbs (N-m)
				f'c ≥ 2000 psi (13.8 MPa) Concrete			f'c ≥ 3000 psi (20.7 MPa) Concrete	f'c ≥ 4000 psi (27.6 MPa) Concrete			
				Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allowable lbs. (kN)	
¼[6] (6.4)	1⅛ (29)	2½ (64)	1⅝ (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)
	2¼ (57)	2½ (64)	3⅛ (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)	1¾ (44)	3¾ (95)	2⅜ (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)
	2⅝ (67)	3¾ (95)	3⅝ (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)	
	3⅜ (86)	3¾ (95)	4¾ (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)	2¼ (57)	5 (127)	3⅛ (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)
	3⅜ (86)	5 (127)	4¾ (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)	
	4½ (114)	5 (127)	6¼ (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)	2¾ (70)	6¼ (159)	3⅞ (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)
	4½ (114)	6¼ (159)	6¼ (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)	
	5½ (140)	6¼ (159)	7¾ (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)	3⅜ (86)	7½ (191)	4¾ (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)	7½ (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)	
	6¾ (171)	7½ (191)	9½ (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)	
⅞ (22.2)	3⅞ (98)	8¾ (222)	5⅜ (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)
	7⅞ (200)	8¾ (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)	4½ (114)	10 (254)	6¼ (159)	15,400 (68.5)	2,440 (10.9)	3,850 (17.1)	3,885 (17.3)	15,680 (69.7)	1,876 (8.3)	3,920 (17.4)	300 (406.7)
	9 (229)	10 (254)	12⅝ (321)	20,760 (92.3)	3,116 (13.9)	5,190 (23.1)	6,355 (28.3)	30,080 (133.8)	1,612 (7.2)	7,520 (33.5)	
1¼ (31.8)	5⅝ (143)	12½ (318)	7⅞ (200)	15,160 (67.4)	1,346 (6.0)	3,790 (16.9)	4,990 (22.2)	24,760 (110.1)	625 (2.8)	6,190 (27.5)	400 (542.3)
	9½ (241)	12½ (318)	13¼ (337)	20,160 (89.7)	3,250 (14.5)	5,040 (22.4)	8,635 (38.4)	48,920 (217.6)	1,693 (7.5)	12,230 (54.4)	

1. The allowable loads listed are based on a safety factor of 4.0.
2. Allowable loads may be increased by 33⅓% for short-term loading due to wind or seismic forces where permitted by code.
3. Refer to allowable load-adjustment factors for edge distance and spacing on pages 144 and 146.
4. Drill bit diameter used in base material corresponds to nominal anchor diameter.
5. Allowable loads may be linearly interpolated between concrete strengths listed.
6. Allowable loads for ¼-inch size at 1⅛-inch embedment apply to both the Wedge-All® and Tie-Wire anchors. Installation torque does not apply to the Tie-Wire anchor.
7. The minimum concrete thickness is 1½ times the embedment depth.

*See page 10 for an explanation of the load table icons

SIMPSON Strong-Tie ANCHOR SYSTEMS

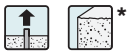
Shear Loads for Carbon-Steel Wedge-All® (and Tie-Wire) Anchors in Normal-Weight Concrete

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Shear Load					Install. Torque ft-lbs (N-m)
				f'c ≥ 2000 psi (13.8 MPa) Concrete			f'c ≥ 3000 psi (20.7 MPa) Concrete	f'c ≥ 4000 psi (27.6 MPa) Concrete	
				Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	Allowable lbs. (kN)	
¼[6] (6.4)	1⅛ (29)	2½ (64)	1⅝ (41)	920 (4.1)	47 (0.2)	230 (1.0)	230 (1.0)	230 (1.0)	8 (10.8)
	2¼ (57)	2½ (64)	3⅛ (79)	•	•	230 (1.0)	230 (1.0)	230 (1.0)	
⅜ (9.5)	1¾ (44)	3¾ (95)	2⅜ (60)	2,280 (10.1)	96 (0.4)	570 (2.5)	570 (2.5)	570 (2.5)	30 (40.7)
	2⅝ (67)	3¾ (95)	3⅝ (92)	4,220 (18.8)	384 (1.7)	1,055 (4.7)	1,055 (4.7)	1,055 (4.7)	
	3⅜ (86)	3¾ (95)	4¾ (121)	•	•	1,055 (4.7)	1,055 (4.7)	1,055 (4.7)	
½ (12.7)	2¼ (57)	5 (127)	3⅛ (79)	6,560 (29.2)	850 (3.8)	1,345 (6.0)	1,485 (6.6)	1,625 (7.2)	60 (81.3)
	3⅜ (86)	5 (127)	4¾ (121)	8,160 (36.3)	880 (3.9)	1,675 (7.5)	1,850 (8.2)	2,020 (9.0)	
	4½ (114)	5 (127)	6¼ (159)	•	•	1,675 (7.5)	1,850 (8.2)	2,020 (9.0)	
⅝ (15.9)	2¾ (70)	6¼ (159)	3⅞ (98)	8,720 (38.8)	1,699 (7.6)	1,620 (7.2)	1,900 (8.5)	2,180 (9.7)	90 (122.0)
	4½ (114)	6¼ (159)	6¼ (159)	12,570 (55.9)	396 (1.8)	2,330 (10.4)	2,740 (12.2)	3,145 (14.0)	
	5½ (140)	6¼ (159)	7¾ (197)	•	•	2,330 (10.4)	2,740 (12.2)	3,145 (14.0)	
¾ (19.1)	3⅜ (86)	7½ (191)	4¾ (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)	7½ (191)	7 (178)	18,430 (82.0)	1,921 (8.5)	4,610 (20.5)	4,610 (20.5)	4,610 (20.5)	
	6¾ (171)	7½ (191)	9½ (241)	•	•	4,610 (20.5)	4,610 (20.5)	4,610 (20.5)	
⅞ (22.2)	3⅞ (98)	8¾ (222)	5⅜ (137)	13,760 (61.2)	2,059 (9.2)	3,440 (15.3)	3,440 (15.3)	3,440 (15.3)	200 (271.2)
	7⅞ (200)	8¾ (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)	4½ (114)	10 (254)	6¼ (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)	12⅝ (321)	25,380 (112.9)	729 (3.2)	6,345 (28.2)	6,345 (28.2)	6,345 (28.2)	
1¼ (31.8)	5⅝ (143)	12½ (318)	7⅞ (200)	29,320 (130.4)	2,099 (9.3)	7,330 (32.6)	7,330 (32.6)	7,330 (32.6)	400 (542.3)
	9½ (241)	12½ (318)	13¼ (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. Allowable loads may be increased by 33⅓% for short-term loading due to wind or seismic forces where permitted by code.
3. Refer to allowable load-adjustment factors for spacing and edge distance on pages 144, 145 and 147.
4. Drill bit diameter used in base material corresponds to nominal anchor diameter.
5. Allowable loads may be linearly interpolated between concrete strengths listed.
6. Allowable loads for ¼-inch size at 1⅛-inch embedment apply to both the Wedge-All® and Tie-Wire anchors. Installation torque does not apply to the Tie-Wire anchor.
7. The minimum concrete thickness is 1½ times the embedment depth.

*See page 10 for an explanation of the load table icons

Tension Loads for Stainless-Steel Wedge-All® Anchors in Normal-Weight Concrete

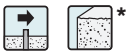


*See page 10 for an explanation of the load table icons

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Allowable Tension Load lbs. (kN)			Install. Torque ft-lbs (N-m)
				f'c ≥ 2000 psi (13.8 MPa) Concrete	f'c ≥ 3000 psi (20.7 MPa) Concrete	f'c ≥ 4000 psi (27.6 MPa) Concrete	
¼ (6.4)	1⅛ (29)	2½ (64)	1⅝ (41)	155 (0.7)	185 (0.8)	215 (1.0)	8 (10.8)
	2¼ (57)	2½ (64)	3⅛ (79)	430 (1.9)	475 (2.1)	520 (2.3)	
⅜ (9.5)	1¾ (44)	3¾ (95)	2⅜ (60)	350 (1.6)	500 (2.2)	650 (2.9)	30 (40.7)
	2⅝ (67)	3¾ (95)	3⅝ (92)	755 (3.4)	990 (4.4)	1,225 (5.4)	
	3⅜ (86)	3¾ (95)	4¾ (121)	830 (3.7)	1,025 (4.6)	1,225 (5.4)	
½ (12.7)	2¼ (57)	5 (127)	3⅛ (79)	740 (3.3)	965 (4.3)	1,190 (5.3)	60 (81.3)
	3⅜ (86)	5 (127)	4¾ (121)	1,360 (6.0)	1,785 (7.9)	2,215 (9.9)	
	4½ (114)	5 (127)	6¼ (159)	1,565 (7.0)	2,115 (9.4)	2,665 (11.9)	
⅝ (15.9)	2¾ (70)	6¼ (159)	3⅞ (98)	1,015 (4.5)	1,475 (6.6)	1,935 (8.6)	90 (122.0)
	4½ (114)	6¼ (159)	6¼ (159)	1,845 (8.2)	2,690 (12.0)	3,535 (15.7)	
	5½ (140)	6¼ (159)	7¾ (197)	1,845 (8.2)	2,690 (12.0)	3,535 (15.7)	
¾ (19.1)	3⅜ (86)	7½ (191)	4¾ (121)	1,520 (6.8)	1,880 (8.4)	2,240 (10.0)	150 (203.4)
	5 (127)	7½ (191)	7 (178)	2,260 (10.1)	2,905 (12.9)	3,545 (15.8)	
	6¾ (171)	7½ (191)	9½ (241)	2,260 (10.1)	3,040 (13.5)	3,825 (17.0)	
⅞ (22.2)	3⅞ (98)	8¾ (222)	5⅜ (137)	1,685 (7.5)	2,050 (9.1)	2,410 (10.7)	200 (271.2)
	7⅞ (200)	8¾ (222)	11 (279)	3,835 (17.1)	4,205 (18.7)	4,570 (20.3)	
1 (25.4)	4½ (114)	10 (254)	6¼ (159)	3,465 (15.4)	3,495 (15.5)	3,530 (15.7)	300 (406.7)
	9 (229)	10 (254)	12⅝ (321)	4,670 (20.8)	5,720 (25.4)	6,770 (30.1)	
1¼ (31.8)	5⅝ (143)	12½ (318)	7⅞ (200)	3,410 (15.2)	4,490 (20.0)	5,570 (24.8)	400 (542.3)
	9½ (241)	12½ (318)	13¼ (337)	4,535 (20.2)	7,770 (34.6)	11,005 (49.0)	

1. The allowable loads listed are based on a safety factor of 4.0.
2. Allowable loads may be increased by 33⅓% for short-term loading due to wind or seismic forces where permitted by code.
3. Refer to allowable load-adjustment factors for edge distance and spacing on pages 144 and 146.
4. Drill bit diameter used in base material corresponds to nominal anchor diameter.
5. Allowable loads may be linearly interpolated between concrete strengths listed.
6. The minimum concrete thickness is 1½ times the embedment depth.

Shear Loads for Stainless-Steel Wedge-All® Anchors in Normal-Weight Concrete



*See page 10 for an explanation of the load table icons

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Allowable Shear Load lbs. (kN)			Install. Torque ft-lbs (N-m)
				f'c ≥ 2000 psi (13.8 MPa) Concrete	f'c ≥ 3000 psi (20.7 MPa) Concrete	f'c ≥ 4000 psi (27.6 MPa) Concrete	
¼ (6.4)	1⅛ (29)	2½ (64)	1⅝ (41)	265 (1.2)	265 (1.2)	265 (1.2)	8 (10.8)
	2¼ (57)	2½ (64)	3⅛ (79)	265 (1.2)	265 (1.2)	265 (1.2)	
⅜ (9.5)	1¾ (44)	3¾ (95)	2⅜ (60)	655 (2.9)	655 (2.9)	655 (2.9)	30 (40.7)
	2⅝ (67)	3¾ (95)	3⅝ (92)	1,215 (5.4)	1,215 (5.4)	1,215 (5.4)	
	3⅜ (86)	3¾ (95)	4¾ (121)	1,215 (5.4)	1,215 (5.4)	1,215 (5.4)	
½ (12.7)	2¼ (57)	5 (127)	3⅛ (79)	1,545 (6.9)	1,710 (7.6)	1,870 (8.3)	60 (81.3)
	3⅜ (86)	5 (127)	4¾ (121)	1,925 (8.6)	2,130 (9.5)	2,325 (10.3)	
	4½ (114)	5 (127)	6¼ (159)	1,925 (8.6)	2,130 (9.5)	2,325 (10.3)	
⅝ (15.9)	2¾ (70)	6¼ (159)	3⅞ (98)	1,865 (8.3)	2,185 (9.7)	2,505 (11.1)	90 (122.0)
	4½ (114)	6¼ (159)	6¼ (159)	2,680 (11.9)	3,150 (14.0)	3,615 (16.1)	
	5½ (140)	6¼ (159)	7¾ (197)	2,680 (11.9)	3,150 (14.0)	3,615 (16.1)	
¾ (19.1)	3⅜ (86)	7½ (191)	4¾ (121)	3,265 (14.5)	3,265 (14.5)	3,265 (14.5)	150 (203.4)
	5 (127)	7½ (191)	7 (178)	5,300 (23.6)	5,300 (23.6)	5,300 (23.6)	
	6¾ (171)	7½ (191)	9½ (241)	5,300 (23.6)	5,300 (23.6)	5,300 (23.6)	
⅞ (22.2)	3⅞ (98)	8¾ (222)	5⅜ (137)	3,955 (17.6)	3,955 (17.6)	3,955 (17.6)	200 (271.2)
	7⅞ (200)	8¾ (222)	11 (279)	6,410 (28.5)	6,410 (28.5)	6,410 (28.5)	
1 (25.4)	4½ (114)	10 (254)	6¼ (159)	6,590 (29.3)	6,590 (29.3)	6,590 (29.3)	300 (406.7)
	9 (229)	10 (254)	12⅝ (321)	7,295 (32.4)	7,295 (32.4)	7,295 (32.4)	
1¼ (31.8)	5⅝ (143)	12½ (318)	7⅞ (200)	8,430 (37.5)	8,430 (37.5)	8,430 (37.5)	400 (542.3)
	9½ (241)	12½ (318)	13¼ (337)	8,430 (37.5)	8,430 (37.5)	8,430 (37.5)	

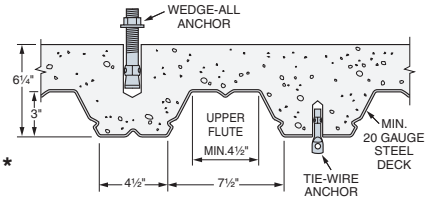
1. The allowable loads listed are based on a safety factor of 4.0.
2. Allowable loads may be increased by 16% for short-term loading due to wind or seismic forces where permitted by code.
3. Refer to allowable load-adjustment factors for spacing and edge distance on pages 144, 145 and 147.
4. Drill bit diameter used in base material corresponds to nominal anchor diameter.
5. Allowable loads may be linearly interpolated between concrete strengths listed.
6. The minimum concrete thickness is 1½ times the embedment depth.

Tension Loads for Carbon-Steel Wedge-All® (and Tie-Wire) Anchors in Sand-Lightweight Concrete over Metal Deck

*See page 10 for an explanation of the load table icons

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Tension Load (Install in Concrete) f'c ≥ 3000 psi (20.7 MPa) Concrete			Tension Load (Install through Metal Deck) f'c ≥ 3000 psi (20.7 MPa) Concrete			Install. Torque ft-lbs (N-m)
				Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	
¼ (TWD) (6.4)	1½ (38)	3⅜ (86)	2¾ (70)	•	•	•	1,440 (6.4)	167 (0.7)	360 (1.6)	•
½ (12.7)	2¼ (57)	6¾ (171)	4⅛ (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)	8⅜ (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)	3⅜ (86)	10 (254)	6⅛ (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 1–8 Below



Lightweight Concrete On Metal Deck

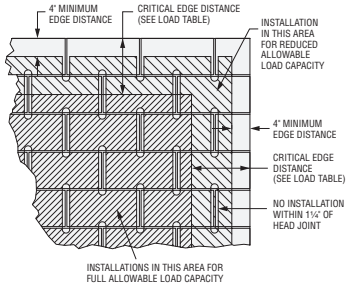
Shear Loads for Carbon-Steel Wedge-All® (and Tie-Wire) Anchors in Sand-Lightweight Concrete over Metal Deck

Size in. (mm)	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing in. (mm)	Shear Load (Install in Concrete) f'c ≥ 3000 psi (20.7 MPa) Concrete			Shear Load (Install through Metal Deck) f'c ≥ 3000 psi (20.7 MPa) Concrete			Install. Torque ft-lbs (N-m)
				Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	
¼ (TWD) (6.4)	1½ (38)	3⅜ (86)	2¾ (70)	•	•	•	1,660 (7.4)	627 (2.8)	415 (1.8)	•
½ (12.7)	2¼ (57)	6¾ (171)	4⅛ (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)	8⅜ (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)	3⅜ (86)	10 (254)	6⅛ (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)

1. The allowable loads listed are based on a safety factor of 4.0.
2. For installations in concrete (not through metal deck), allowable loads may be increased by 33⅓% for short-term loading due to wind or seismic forces.
3. For installations through metal deck, allowable tension loads must be decreased 23% and allowable shear loads may be increased 33⅓% for short-term loading due to wind or seismic forces.
4. Refer to allowable load-adjustment factors for edge distance on page 148.
5. 100% of the allowable load is permitted at critical spacing. loads at reduced spacing have not been determined.
6. Drill bit diameter used in base material corresponds to nominal anchor diameter.
7. The minimum concrete thickness is 1½ times the embedment depth.
8. Metal deck must be minimum 20 gauge.
9. Anchors installed in the bottom flute of the steel deck must have a minimum allowable edge distance of 1½" from the inclined edge of the bottom flute.

Tension and Shear Loads for Carbon-Steel Wedge-All® Anchors 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 Tension Load			Shear Load			Install. Torque ft-lbs (N-m)
					Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	
Anchor Installed on the Face of the CMU Wall at Least 1¼ inch Away from Head Joint (See Figure)											
⅜ (9.5)	2⅝ (67)	12 (305)	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)	12 (305)	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)	4⅜ (111)	20 (508)	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)	20 (508)	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)



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

1. The tabulated allowable loads are based on a safety factor of 5.0 for installations under the IBC and IRC. For installations under the UBC use a safety factor of 4.0 (multiply the tabulated allowable loads by 1.25).
2. Listed loads may be applied to installations on the face of the CMU wall at least 1¼ inch away from headjoints.
3. Values are for 8-inch-wide CMU Grade N, Type II, lightweight, medium-weight and normal-weight concrete masonry units conforming to UBC standard 21-4 or ASTM C90. The masonry units must be fully grouted with grout complying with UBC section 2103.4 or IBC section 2103.12. Mortar must be Type M or S prepared in accordance with section 2103.3 of the UBC and UBC standard 21-15, or IBC section 2103.8. The specified compressive strength of masonry, f'm, at 28 days must be a minimum of 1,500 psi.
4. Embedment depth is measured from the outside face of the concrete masonry unit.
5. Drill bit diameter used in base material corresponds to nominal anchor diameter.
6. Allowable loads may be increased by 33⅓ percent for short-term loading due to wind and seismic forces.
7. Tension and shear loads for the Wedge-All® anchor may be combined using the parabolic interaction equation (n=⅝).
8. Refer to allowable load-adjustment factors for edge distance on page 148.

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	¼	⅜	½	⅝	¾	⅞	1	1¼
	C_{cr}	2½	3¾	5	6¼	7½	8¾	10	12½
	C_{min}	1	1½	2	2½	3	3½	4	5
	f_{cmin}	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
1		0.70							
1½		0.80	0.70						
2		0.90	0.77	0.70					
2½		1.00	0.83	0.75	0.70				
3			0.90	0.80	0.74	0.70			
3½			0.97	0.85	0.78	0.73	0.70		
3¾			1.00	0.88	0.80	0.75	0.71		
4				0.90	0.82	0.77	0.73	0.70	
4½				0.95	0.86	0.80	0.76	0.73	
5				1.00	0.90	0.83	0.79	0.75	0.70
5½					0.94	0.87	0.81	0.78	0.72
6					0.98	0.90	0.84	0.80	0.74
6¼					1.00	0.92	0.86	0.81	0.75
6½						0.93	0.87	0.83	0.76
7						0.97	0.90	0.85	0.78
7½						1.00	0.93	0.88	0.80
8							0.96	0.90	0.82
8½							0.99	0.93	0.84
8¾							1.00	0.94	0.85
10								1.00	0.90
12½									1.00
15									

*See page 10 for an explanation of the load table icons

See Notes Below

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

Edge Dist. C_{act} (in.)	Size	¼	⅜	½	⅝	¾	⅞	1	1¼
	C_{cr}	2½	3¾	5	6¼	7½	8¾	10	12½
	C_{min}	1	1½	2	2½	3	3½	4	5
	f_{cmin}	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
1		0.30							
1½		0.53	0.30						
2		0.77	0.46	0.30					
2½		1.00	0.61	0.42	0.30				
3			0.77	0.53	0.39	0.30			
3½			0.92	0.65	0.49	0.38	0.30		
3¾			1.00	0.71	0.53	0.42	0.33		
4				0.77	0.58	0.46	0.37	0.30	
4½				0.88	0.67	0.53	0.43	0.36	
5				1.00	0.77	0.61	0.50	0.42	0.30
5½					0.86	0.69	0.57	0.48	0.35
6					0.95	0.77	0.63	0.53	0.39
6¼					1.00	0.81	0.67	0.56	0.42
6½						0.84	0.70	0.59	0.44
7						0.92	0.77	0.65	0.49
7½						1.00	0.83	0.71	0.53
8							0.90	0.77	0.58
8½							0.97	0.83	0.63
8¾							1.00	0.85	0.65
10								1.00	0.77
12½									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.

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 ($f_{c||}$) 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 Shear ($f_{c||}$) (Shear Applied Parallel to Edge with End Distance ≥ ED_{min})

*See page 10 for an explanation of the load table icons

Edge Dist. $C_{act||}$ (in.)	Size	¼	⅜	½	⅝	¾	⅞	1	1¼
	E	2¼	3⅜	4½	5½	6¾	7⅞	9	9½
	ED_{min}	9	13½	18	22	27	31½	36	38
	$C_{cr||}$	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. $C_{cr||}$ = 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. $f_{ccr||}$ = adjustment factor for allowable load at critical edge distance. $f_{ccr||}$ is always = 1.00.
9. $f_{cmin||}$ = adjustment factor for allowable load at minimum edge distance.
10. $f_{c||} = f_{cmin||} + [(1 - f_{cmin||}) (C_{act||} - C_{min||}) / (C_{cr||} - C_{min||})]$.

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

How to use these charts:

1. The following tables are for reduced spacing.
2. Locate the anchor size to be used for a tension load application.
3. Locate the anchor embedment (E) used for a tension 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 Tension (f_s)

*See page 10 for an explanation of the load table icons

S_{act} (in.)	Dia.	¼		⅜			½			⅝		
	E	1⅛	2¼	1¾	2⅝	3⅜	2¼	3⅜	4½	2¾	4½	5½
	S_{cr}	1⅝	3⅛	2⅜	3⅝	4¾	3⅛	4¾	6¼	3⅞	6¼	7¾
	S_{min}	⅝	1⅛	⅞	1⅜	1¾	1⅛	1¾	2¼	1⅜	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.	¾			⅞		1		1¼	
	E	3⅜	5	6¾	3⅞	7⅞	4½	9	5⅝	9½
	S_{cr}	4¾	7	9½	5⅜	11	6¼	12⅝	7⅞	13¼
	S_{min}	1¾	2½	3⅜	2	4	2¼	4½	2⅞	4¾
	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

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. $f_s = f_{smin} + [(1 - f_{smin}) (S_{act} - S_{min}) / (S_{cr} - S_{min})]$.

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)

*See page 10 for an explanation of the load table icons

S_{act} (in.)	Dia.	¼		⅜			½			⅝		
	E	1⅛	2¼	1¾	2⅝	3⅜	2¼	3⅜	4½	2¾	4½	5½
	S_{cr}	1⅝	3⅛	2⅜	3⅝	4¾	3⅛	4¾	6¼	3⅞	6¼	7¾
	S_{min}	⅝	1⅛	⅞	1⅜	1¾	1⅛	1¾	2¼	1⅜	2¼	2¾
	f_{smin}	**0.79**	**0.79**	**0.79**	**0.79**	**0.79**	**0.79**	**0.79**	**0.79**	**0.79**	**0.79**	**0.79**
¾		0.82										
1		0.87		0.81								
1¼		0.92	0.80	0.84			0.80					
1½		0.97	0.83	0.88	0.80		0.83			0.80		
1¾		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		
2¼			0.91	0.98	0.87	0.83	0.91	0.83	0.79	0.86	0.79	
2½			0.93	1.00	0.90	0.84	0.93	0.84	0.80	0.88	0.80	
2¾			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
3½			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
4½						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.	¾			⅞		1		1¼	
	E	3⅜	5	6¾	3⅞	7⅞	4½	9	5⅝	9½
	S_{cr}	4¾	7	9½	5⅜	11	6¼	12⅝	7⅞	13¼
	S_{min}	1¾	2½	3⅜	2	4	2¼	4½	2⅞	4¾
	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. $f_s = f_{smin} + [(1 - f_{smin}) (S_{act} - S_{min}) / (S_{cr} - S_{min})]$.

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	¼	½	⅝	¾
	C_{cr}	3⅜	6¾	8⅜	10
	C_{min}	1⅜	2¾	3⅜	4
	f_{cmin}	**0.70**	**0.70**	**0.70**	**0.70**
1⅜		0.70			
1½		0.72			
2		0.79			
2½		0.87			
2¾		0.91	0.70		
3		0.94	0.72		
3⅜		1.00	0.75	0.70	
3½			0.76	0.71	
4			0.79	0.74	0.70
4½			0.83	0.77	0.73
5			0.87	0.80	0.75
5½			0.91	0.83	0.78
6			0.94	0.86	0.80
6½			0.98	0.89	0.83
6¾			1.00	0.90	0.84
7				0.92	0.85
7½				0.95	0.88
8				0.98	0.90
8⅜				1.00	0.92
8½					0.93
9					0.95
9½					0.98
10					1.00

See Notes Below

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

Edge Dist. C_{act} (in.)	Size	¼	½	⅝	¾
	C_{cr}	3⅜	6¾	8⅜	10
	C_{min}	1⅜	2¾	3⅜	4
	f_{cmin}	**0.30**	**0.30**	**0.30**	**0.30**
1⅜		0.30			
1½		0.34			
2		0.52			
2½		0.69			
2¾		0.78	0.30		
3		0.87	0.34		
3⅜		1.00	0.41	0.30	
3½			0.43	0.32	
4			0.52	0.39	0.30
4½			0.61	0.46	0.36
5			0.69	0.53	0.42
5½			0.78	0.60	0.48
6			0.87	0.67	0.53
6½			0.96	0.74	0.59
6¾			1.00	0.77	0.62
7				0.81	0.65
7½				0.88	0.71
8				0.95	0.77
8⅜				1.00	0.81
8½					0.83
9					0.88
9½					0.94
10					1.00

See Notes Below

*See page 10 for an explanation of the load table icons

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	⅜	½	⅝	¾
	C_{cr}	12	12	20	20
	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	0.83
8		1.00	1.00	0.85	0.85
10		1.00	1.00	0.88	0.88
12		1.00	1.00	0.90	0.90
14				0.93	0.93
16				0.95	0.95
18				0.98	0.98
20				1.00	1.00

Edge Distance Shear (f_c)

Edge Dist. C_{act} (in.)	Size	⅜	½	⅝	¾
	C_{cr}	12	12	20	20
	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
5		0.82	0.58	0.36	0.36
6		0.84	0.64	0.41	0.41
7		0.87	0.70	0.45	0.45
8		0.90	0.76	0.49	0.49
9		0.92	0.82	0.53	0.53
10		0.95	0.88	0.58	0.58
11		0.97	0.94	0.62	0.62
12		1.00	1.00	0.66	0.66
13				0.70	0.70
14				0.75	0.75
15				0.79	0.79
16				0.83	0.83
17				0.87	0.87
18				0.92	0.92
19				0.96	0.96
20				1.00	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. $f_c = f_{cmin} + [(1 - f_{cmin}) (C_{act} - C_{min}) / (C_{cr} - C_{min})]$.

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.