

GENERAL INFORMATION

POWER-STUD®

Stainless Steel Wedge Expansion Anchor

PRODUCT DESCRIPTION

The Power-Stud anchor, is a fully threaded, torque-controlled, wedge expansion anchor. It is available in a threaded version suitable for applications in solid concrete and grout-filled concrete masonry. The threaded version is produced in Type 304 and Type 316 stainless steel.

GENERAL APPLICATIONS AND USES

- Lighting Standards and Base Plates
- Sills and Support Ledgers
- Retrofit Projects and Machinery Anchorage
- Food and Beverage Facilities
- Water Treatment Plants and Marine Applications

FEATURE AND BENEFITS

- + Fully threaded, medium duty all-purpose anchor
- + Length ID stamped on each threaded anchor
- + Anchors can be installed through the fixture for hole spotting not required
- + Chamfered impact section prevents damage to threads
- + Clip design prevents spinning during installation
- + Nominal drill bit diameter same as anchor diameter

APPROVALS AND LISTINGS

- Tested in accordance with ASTM E488
- Underwriters Laboratory (UL Listed) – File No. EX1289 (see listing)
- Federal GSA Specification
Meets the descriptive and proof load requirements of CID A-A-1923A, Type 4

GUIDE SPECIFICATIONS

CSI Divisions: 03 16 00 - Concrete Anchors, 04 05 19.16 - Masonry Anchors and 05 05 19 - Post-Installed Concrete Anchors. Expansion anchors shall be Power-Stud as supplied by DEWALT, Towson, MD. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

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THREADED POWER-STUD
ASSEMBLY

HEAD STYLES

- Threaded Stud

ANCHOR MATERIALS

- Type 304 Stainless Steel
- Type 316 Stainless Steel

ANCHOR SIZE RANGE (TYP.)

- 1/4" diameter through 1" diameter

SUITABLE BASE MATERIALS

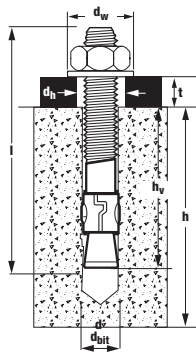
- Normal-weight Concrete
- Structural Lightweight Concrete
- Grouted Concrete Masonry (CMU)

INSTALLATION SPECIFICATIONS

Type 304 and Type 316 Stainless Steel Power-Stud

Dimension	Anchor Diameter, d						
	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
ANSI Drill Bit Size, d_{bit} (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1
Fixture Clearance Hole, d_h (in.)	5/16	7/16	9/16	11/16	13/16	15/16	1-1/8
Thread Size (UNC)	1/4-20	3/8-16	1/2-13	5/8-11	3/4-10	7/8-9	1-8
Nut Height (in.)	7/32	21/64	7/16	35/64	41/64	3/4	55/64
Washer O.D. (304 SS), d_w (in.)	5/8	13/16	1-1/16	1-3/4	2	2-1/4	2-1/2
Washer O.D. (316 SS), d_w (in.)	5/8	7/8	1-1/4	1-1/2	1-3/4	2	2
Wrench Size (in.)	7/16	9/16	3/4	15/16	1-1/8	1-5/16	1-1/2
Tightening Torque, T_{inst} (ft-lbs)	8	28	60	90	175	250	300

Tightening torque is listed for anchors installed in normal-weight concrete. Consult performance data tables for other base materials.

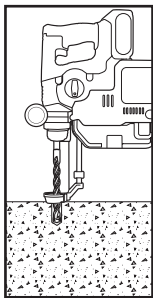


Nomenclature

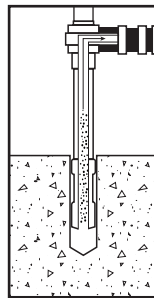
- d = Diameter of anchor
- d_{bit} = Diameter of drill bit
- d_h = Diameter of fixture clearance hole
- d_w = Diameter of washer
- h = Base material thickness
The minimum value of h should be 1.5h_v or 3" whichever is greater
- h_v = Minimum embedment depth
- l = Overall length of anchor
- t = Fixture thickness

INSTALLATION PROCEDURE

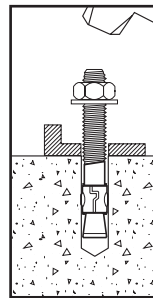
Threaded Stud Version



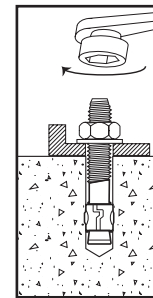
Step 1
Using the proper diameter bit, drill a hole into the base material to a depth of at least 1/2" or one anchor diameter deeper than the embedment required. The tolerances of the drill bit used must meet the requirements of ANSI Standard B212.15



Step 2
Remove dust and debris from the hole during drilling (e.g. dust extractor, hollow bit) or following drilling (e.g. suction, forced air) to extract loose particles created by drilling.



Step 3
Position the washer on the anchor and thread on the nut. Drive the anchor through the fixture into the anchor hole until the nut and washer are firmly seated against the fixture. Be sure the anchor is driven to the required embedment depth.

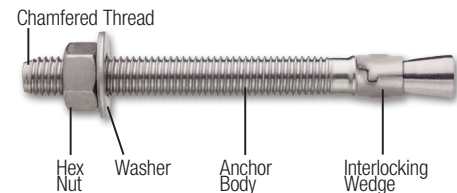


Step 4
Tighten the anchor by turning the nut 3 to 5 turns past finger tight or by applying the guide installation torque from the finger tight position.

MATERIAL SPECIFICATIONS

Anchor Component	Type 304 Stainless Steel Power-Stud	Type 316 Stainless Steel Power-Stud
Anchor Body	Type 304Cu (1/4"– 3/4", lengths up to 7") Type 304 (7/8"– 1", lengths up to 7")	Type 316 Stainless Steel
Nut	Type 18-8 (300 Series) Stainless Steel	Type 316 Stainless Steel
Washer	Type 18-8 (300 Series) Stainless Steel	Type 316 Stainless Steel
Expansion Wedge	Type 18-8 (300 Series) Stainless Steel	Type 316 Stainless Steel

Stainless steel anchor components are passivated.



Length Identification (Threaded Version)

Mark	◆	■	A	B	C	D	E	F	G	H	I
From	1/2"	1"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	4-1/2"	5"	5-1/2"
Up to but not including	1"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	4-1/2"	5"	5-1/2"	6"

Mark	J	K	L	M	N	O	P	Q	R	S	T
From	6"	6-1/2"	7"	7-1/2"	8"	8-1/2"	9"	9-1/2"	10"	11"	12"
Up to but not including	6-1/2"	7"	7-1/2"	8"	8-1/2"	9"	9-1/2"	10"	11"	12"	13"

PERFORMANCE DATA

Ultimate Load Capacities for Stainless Steel Power-Stud in Normal-Weight Concrete^{1,2}

Anchor Diameter d in. (mm)	Minimum Embedment Depth h in. (mm)	Minimum Concrete Compressive Strength (f _c)					
		2,000 psi (13.8 MPa)		4,000 psi (27.6 MPa)		6,000 psi (41.4 MPa)	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4 (6.4)	1-1/8 (28.6)	1,240 (5.6)	1,580 (7.1)	1,440 (6.5)	1,620 (7.3)	1,740 (7.8)	1,620 (7.3)
	1-1/2 (38.1)	1,635 (7.4)	1,580 (7.1)	2,080 (9.4)	1,620 (7.3)	2,100 (9.5)	1,620 (7.3)
	2 (50.8)	1,900 (8.6)	1,580 (7.1)	2,080 (9.4)	1,620 (7.3)	2,100 (9.5)	1,620 (7.3)
3/8 (9.5)	1-5/8 (41.3)	1,920 (8.6)	3,560 (16.0)	3,040 (13.7)	3,760 (16.9)	3,040 (13.7)	3,760 (16.9)
	2 (50.8)	2,800 (12.6)	3,560 (16.0)	3,850 (17.3)	3,760 (16.9)	4,075 (18.3)	3,760 (16.9)
	3 (76.2)	4,100 (18.5)	3,560 (16.0)	4,200 (18.7)	3,760 (16.9)	4,200 (18.7)	3,760 (16.9)
1/2 (12.7)	2-1/4 (57.2)	3,440 (15.5)	6,540 (29.4)	5,560 (25.0)	6,800 (30.6)	6,540 (29.4)	6,800 (30.6)
	3 (76.2)	5,100 (23.0)	6,540 (29.4)	6,540 (29.4)	6,800 (30.6)	6,540 (29.4)	6,800 (30.6)
	4 (101.6)	5,700 (25.7)	6,540 (29.4)	6,540 (29.4)	6,800 (30.6)	6,540 (29.4)	6,800 (30.6)
5/8 (15.9)	2-3/4 (69.9)	6,240 (27.8)	9,280 (41.8)	8,300 (37.4)	11,900 (53.6)	9,860 (44.4)	11,900 (53.6)
	4 (101.6)	7,125 (31.7)	9,280 (41.8)	9,000 (40.0)	11,900 (53.6)	9,000 (40.0)	11,900 (53.6)
3/4 (19.1)	3-3/8 (85.7)	7,420 (33.0)	12,380 (55.7)	9,500 (42.3)	15,060 (67.8)	10,250 (45.6)	15,060 (67.8)
	5 (127.0)	10,640 (47.3)	12,380 (55.7)	10,640 (47.3)	15,060 (67.8)	10,640 (47.3)	15,060 (67.8)
7/8 (22.2)	3-7/8 (98.4)	7,600 (34.2)	17,960 (80.8)	12,300 (55.4)	24,160 (108.7)	12,500 (55.6)	24,160 (108.7)
	4-1/2 (114.3)	9,600 (43.2)	17,960 (80.8)	12,500 (55.6)	24,160 (108.7)	12,500 (55.6)	24,160 (108.7)
	5-3/4 (146.1)	10,640 (47.3)	17,960 (80.8)	12,500 (55.6)	24,160 (108.7)	12,500 (55.6)	24,160 (108.7)
1 (25.4)	4-1/2 (114.3)	8,740 (39.3)	26,420 (118.9)	13,820 (62.2)	31,100 (140.0)	17,125 (76.2)	31,100 (140.0)
	5-1/2 (139.7)	12,770 (57.5)	26,420 (118.9)	17,125 (76.2)	31,100 (140.0)	17,125 (76.2)	31,100 (140.0)
	6-1/2 (165.1)	16,605 (74.7)	26,420 (118.9)	17,125 (76.2)	31,100 (140.0)	17,125 (76.2)	31,100 (140.0)

1. Tabulated load values are for anchors installed in concrete. Concrete compressive strength must be at the specified minimum at the time of installation.
 2. Ultimate load capacities must be reduced by a minimum safety factor of 4.0 or greater to determine allowable working load. Consideration of safety factors of 10 or higher may be necessary depending upon the application such as life safety or overhead.

Allowable Load Capacities for Stainless Steel Power-Stud in Normal-Weight Concrete^{1,2,3}

Anchor Diameter d in. (mm)	Minimum Embedment Depth h in. (mm)	Minimum Concrete Compressive Strength (f'c)					
		2,000 psi (13.8 MPa)		4,000 psi (27.6 MPa)		6,000 psi (41.4 MPa)	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4 (6.4)	1-1/8 (28.6)	310 (1.4)	395 (1.8)	360 (1.6)	405 (1.8)	435 (2.0)	405 (1.8)
	1-1/2 (38.1)	410 (1.8)	395 (1.8)	520 (2.3)	405 (1.8)	525 (2.4)	405 (1.8)
	2 (50.8)	475 (2.1)	395 (1.8)	520 (2.3)	405 (1.8)	525 (2.4)	405 (1.8)
3/8 (9.5)	1-5/8 (41.3)	480 (2.2)	890 (4.0)	760 (3.4)	940 (4.2)	760 (3.4)	940 (4.2)
	2 (50.8)	700 (3.2)	890 (4.0)	965 (4.3)	940 (4.2)	1,020 (4.6)	940 (4.2)
	3 (76.2)	1,025 (4.6)	890 (4.0)	1,050 (4.7)	940 (4.2)	1,050 (4.7)	940 (4.2)
1/2 (12.7)	2-1/4 (57.2)	860 (3.9)	1,635 (7.4)	1,390 (6.3)	1,700 (7.7)	1,635 (7.4)	1,700 (7.7)
	3 (76.2)	1,275 (5.7)	1,635 (7.4)	1,635 (7.3)	1,700 (7.7)	1,635 (7.3)	1,700 (7.7)
	4 (101.6)	1,425 (6.4)	1,635 (7.4)	1,635 (7.3)	1,700 (7.7)	1,635 (7.3)	1,700 (7.7)
5/8 (15.9)	2-3/4 (69.9)	1,560 (6.9)	2,320 (10.4)	2,075 (9.3)	2,975 (13.4)	2,215 (9.9)	2,975 (13.4)
	4 (101.6)	1,780 (7.9)	2,320 (10.4)	2,250 (10.0)	2,975 (13.4)	2,250 (10.0)	2,975 (13.4)
3/4 (19.1)	3-3/8 (85.7)	1,855 (8.3)	3,095 (13.9)	2,375 (10.6)	3,765 (16.9)	2,560 (11.4)	3,765 (16.9)
	5 (127.0)	2,660 (11.8)	3,095 (13.9)	2,660 (11.8)	3,765 (16.9)	2,660 (11.8)	3,765 (16.9)
7/8 (22.2)	3-7/8 (98.4)	1,900 (8.6)	4,490 (20.2)	3,075 (13.8)	6,040 (27.2)	3,125 (13.9)	6,040 (27.2)
	4-1/2 (114.3)	2,400 (10.8)	4,490 (20.2)	3,125 (13.9)	6,040 (27.2)	3,125 (13.9)	6,040 (27.2)
	5-3/4 (146.1)	2,660 (11.8)	4,490 (20.2)	3,125 (13.9)	6,040 (27.2)	3,125 (13.9)	6,040 (27.2)
1 (25.4)	4-1/2 (114.3)	2,185 (9.8)	6,605 (29.7)	3,455 (15.5)	7,775 (35.0)	4,280 (19.0)	7,775 (35.0)
	5-1/2 (139.7)	3,195 (14.4)	6,605 (29.7)	4,280 (19.0)	7,775 (35.0)	4,280 (19.0)	7,775 (35.0)
	6-1/2 (165.1)	4,150 (18.7)	6,605 (29.7)	4,280 (19.0)	7,775 (35.0)	4,280 (19.0)	7,775 (35.0)

1. Allowable load capacities listed are calculated using and applied safety factor of 4.0. Consideration of safety factors of 10 or higher may be necessary depending upon the application such as life safety or overhead.
 2. Allowable load capacities are multiplied by reduction factors found in the Design Criteria section when anchor spacing or edge distances are less than critical distances.
 3. Linear interpolation may be used to determine allowable loads for intermediate embedments and concrete compressive strength.

MECHANICAL ANCHORS

POWER-STUD®
Stainless Steel Wedge Expansion Anchor

Ultimate and Allowable Load Capacities for Stainless Steel Power-Stud in Structural Lightweight Concrete^{1,2,3}

Anchor Diameter d in. (mm)	Install Torque T _{inst} ft.-lbs.	Min. Embed. Depth h _v in. (mm)	Minimum Concrete Compressive Strength (f'c)						Shear, lbs (kN)	
			Tension, lbs (kN)						f'c ≥ 3,000 psi (20.7 MPa)	
			3,000 psi (20.7 MPa)		4,000 psi (27.6 MPa)		5,000 psi (34.5 MPa)			
			Ultimate Load	Allowable Load	Ultimate Load	Allowable Load	Ultimate Load	Allowable Load	Ultimate Load	Allowable Load
1/4 (6.4)	4	1-1/8 (28.6)	720 (3.2)	180 (0.8)	960 (4.3)	240 (1.1)	1,200 (5.4)	300 (1.4)	720 (3.2)	180 (0.8)
3/8 (9.5)	20	1-5/8 (41.3)	1,600 (7.2)	400 (1.8)	1,940 (8.7)	485 (2.2)	2,300 (10.4)	575 (2.6)	1,840 (8.3)	460 (2.1)
		3 (76.2)	-	-	2,860 (12.9)	715 (3.2)	-	-	1,840 (8.3)	460 (2.1)
1/2 (12.7)	30	2-1/4 (57.2)	2,820 (12.7)	705 (3.2)	3,180 (14.3)	795 (3.6)	3,560 (16.0)	890 (4.0)	5,040 (22.7)	1,260 (5.7)
		4 (101.6)	-	-	4,200 (18.9)	1,050 (4.7)	-	-	5,040 (22.7)	1,260 (5.7)
5/8 (15.9)	65	2-3/4 (69.9)	4,380 (19.7)	1,095 (4.9)	4,980 (22.4)	1,245 (5.6)	5,580 (25.1)	1,395 (6.3)	6,940 (31.2)	1,735 (7.8)
		5 (127.0)	-	-	6,920 (31.1)	1,730 (7.8)	-	-	6,940 (31.2)	1,735 (7.8)
3/4 (19.1)	90	3-3/8 (85.7)	5,060 (22.8)	1,265 (5.7)	5,600 (25.2)	1,400 (6.3)	6,140 (27.6)	1,535 (6.9)	9,880 (44.5)	2,470 (11.1)
		5 (127.0)	-	-	9,300 (41.9)	2,325 (10.5)	-	-	9,880 (44.5)	2,470 (11.1)

1. Tabulated load values are for anchors installed in sand-lightweight concrete. Concrete compressive strength must be at the specified minimum at the time of installation.
2. Allowable load capacities listed are calculated using and applied safety factor of 4.0. Consideration of safety factors of 10 or higher may be necessary depending upon the application such as life safety or overhead.
3. Allowable load capacities are multiplied by reduction factors found in the Design Criteria section when anchor spacing or edge distances are less than critical distances.

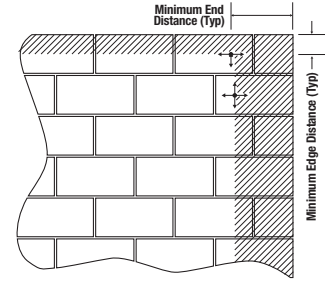
Ultimate and Allowable Load Capacities for Stainless Steel Power-Stud in Grout-Filled Concrete Masonry^{1,2,3}

Anchor Dia. d in. (mm)	Install Torque T _{inst} ft.-lbs.	Min. Embed. Depth h _v in. (mm)	Min. Edge Distance in. (mm)	Min. End Distance in. (mm)	Grout-Filled Concrete Masonry f' _m ≥ 1,500 psi (10.4 MPa)			
					Ultimate Load		Allowable Load	
					Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
1/4 (6.4)	4	1-1/8 (28.6)	3-3/4 (95.3)	3-3/4 (95.3)	1,230 (5.5)	1,230 (5.5)	245 (1.1)	245 (1.1)
		2 (50.8)	5-1/4 (133.4)	3-3/4 (95.3)	1,670 (7.5)	1,230 (5.5)	335 (1.5)	245 (1.1)
3/8 (9.5)	20	1-5/8 (41.3)	5-5/8 (142.9)	5-5/8 (142.9)	1,990 (9.0)	3,240 (14.6)	400 (1.8)	650 (2.9)
		3 (76.2)	7-7/8 (200.0)	5-5/8 (142.9)	2,200 (9.9)	3,240 (14.6)	440 (2.0)	650 (2.9)
1/2 (12.7)	30	2-1/4 (57.2)	7-1/2 (190.5)	7-1/2 (190.5)	2,260 (10.2)	6,230 (28.0)	450 (2.0)	1,245 (5.6)
		4 (101.6)	10-1/2 (266.7)	7-1/2 (190.5)	2,620 (11.8)	6,230 (28.0)	525 (2.4)	1,245 (5.6)
5/8 (15.9)	65	2-3/4 (69.9)	9-3/8 (238.1)	9-3/8 (238.1)	3,170 (14.3)	7,830 (35.2)	635 (2.9)	1,565 (7.0)
		5 (127.0)	13-1/8 (333.4)	9-3/8 (238.1)	3,780 (17.0)	7,830 (35.2)	755 (3.4)	1,565 (7.0)
3/4 (19.1)	90	3-3/8 (85.7)	11-1/4 (285.8)	11-1/4 (285.8)	4,085 (18.4)	9,760 (43.9)	815 (3.7)	1,950 (8.8)
		5 (127.0)	15-3/4 (400.1)	11-1/4 (285.8)	4,420 (19.9)	9,760 (43.9)	885 (4.0)	1,950 (8.8)

1. Tabulated load values are for anchors installed in minimum 8-inch wide, minimum Grade N, Type II, lightweight, medium-weight or normal-weight concrete masonry units conforming to ASTM C 90. Mortar must be minimum Type N. Masonry cells may be grouted. Masonry compressive strength must be at the specified minimum at the time of installation (f'_m ≥ 1,500 psi).

2. Allowable load capacities listed are calculated using and applied safety factor of 5.0. Consideration of safety factors of 10 or higher may be necessary depending upon the application such as life safety or overhead.

3. The tabulated values are for anchors installed at a minimum of 12 anchor diameters on center for 100 percent capacity. Spacing distances may be reduced to 6 anchor diameters on center provided the capacities are reduced by 50 percent. Linear interpolation may be used for intermediate spacing.



DESIGN CRITERIA (ALLOWABLE STRESS DESIGN)

Combined Loading

For anchors loaded in both shear and tension, the combination of loads should be proportioned as follows:

$$\left(\frac{N_u}{N_n}\right)^{\frac{5}{3}} + \left(\frac{V_u}{V_n}\right)^{\frac{5}{3}} \leq 1 \quad \text{OR} \quad \left(\frac{N_u}{N_n}\right) + \left(\frac{V_u}{V_n}\right) \leq 1$$

Where: N_u = Applied Service Tension Load
N_n = Allowable Tension Load
V_u = Applied Service Shear Load
V_n = Allowable Shear Load

LOAD ADJUSTMENT FACTORS FOR SPACING AND EDGE DISTANCES¹

Anchor Installed in Normal-Weight Concrete

Anchor Dimension	Load Type	Critical Distance (Full Anchor Capacity)	Critical Load Factor	Minimum Distance (Reduced Capacity)	Minimum Load Factor
Spacing (s)	Tension and Shear	S _{cr} = 2.0h _v	F _{NS} = F _{VS} = 1.0	S _{min} = h _v	F _{NS} = F _{VS} = 0.50
Edge Distance (c)	Tension	C _{cr} = 12d	F _{NC} = 1.0	C _{min} = 5d	F _{NC} = 0.75
	Shear	C _{cr} = 12d	F _{VC} = 1.0	C _{min} = 5d	F _{VC} = 0.75

Anchor Installed in Structural Lightweight Concrete

Anchor Dimension	Load Type	Critical Distance (Full Anchor Capacity)	Critical Load Factor	Minimum Distance (Reduced Capacity)	Minimum Load Factor
Spacing (s)	Tension and Shear	S _{cr} = 2.0h _v	F _{NS} = F _{VS} = 1.0	S _{min} = h _v	F _{NS} = F _{VS} = 0.50
Edge Distance (c)	Tension	C _{cr} = 12d	F _{NC} = 1.0	C _{min} = 5d	F _{NC} = 0.95
	Shear	C _{cr} = 12d	F _{VC} = 1.0	C _{min} = 5d	F _{VC} = 0.30

1. Allowable load values found in the performance data tables are multiplied by reduction factors when anchor spacing or edge distances are less than critical distances. Linear interpolation is allowed for intermediate anchor spacing and edge distances between critical and minimum distances. When an anchor is affected by both reduced spacing and edge distance, the spacing and edge reduction factors must be combined (multiplied). Multiple reduction factors for anchor spacing and edge distance may be required depending on the anchor group configuration.

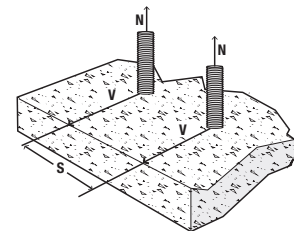
Spacing Load Adjustment Factors for Normal-Weight and Lightweight Concrete (Continued Below)

Dia. (in.)	1/4				3/8				1/2						5/8				
h _v (in.)	1-1/8	1-1/2	2	2-3/4	1-5/8	2	3	4-1/4	2-1/4	3	4	5	6	2-3/4	3-1/2	4	5	7	
s _c (in.)	2-1/4	3	4	5-1/2	3-1/4	4	6	8-1/2	4-1/2	6	8	10	12	5-1/2	7	8	10	14	
s _{min} (in.)	1-1/8	1-1/2	2	2-3/4	1-5/8	2	3	4-1/4	2-1/4	3	4	5	6	2-3/4	3-1/2	4	5	7	
Spacing, s (inches)	1-1/8	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1-1/2	0.67	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1-5/8	0.72	0.54	-	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-	
	2	0.89	0.67	0.50	-	0.62	0.50	-	-	-	-	-	-	-	-	-	-	-	
	2-1/4	1.00	0.75	0.56	-	0.69	0.56	-	0.50	-	-	-	-	-	-	-	-	-	
	2-3/4	1.00	0.92	0.69	0.50	0.85	0.69	-	0.61	-	-	-	-	0.50	-	-	-	-	
	3	1.00	1.00	0.75	0.55	0.92	0.75	0.50	-	0.67	0.50	-	-	0.55	-	-	-	-	
	3-1/4	1.00	1.00	0.81	0.59	1.00	0.81	0.54	-	0.72	0.54	-	-	0.59	-	-	-	-	
	3-1/2	1.00	1.00	0.88	0.64	1.00	0.88	0.58	-	0.78	0.58	-	-	0.64	0.50	-	-	-	
	4	1.00	1.00	1.00	0.73	1.00	1.00	0.67	-	0.89	0.67	0.50	-	0.73	0.57	0.50	-	-	
	4-1/4	1.00	1.00	1.00	0.77	1.00	1.00	0.71	0.50	0.94	0.71	0.53	-	0.77	0.61	0.53	-	-	
	4-1/2	1.00	1.00	1.00	0.82	1.00	1.00	0.75	0.53	1.00	0.75	0.56	-	0.82	0.64	0.56	-	-	
	5	1.00	1.00	1.00	0.91	1.00	1.00	0.83	0.59	1.00	0.83	0.63	0.50	-	0.91	0.71	0.63	0.50	
	5-1/2	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.65	1.00	0.92	0.69	0.55	1.00	0.79	0.69	0.55	-	
6	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.71	1.00	1.00	0.75	0.60	0.50	1.00	0.86	0.75	0.60		
7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	1.00	1.00	0.88	0.70	0.58	1.00	1.00	0.88	0.70		
8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	1.00	1.00	1.00	0.80	0.67	1.00	1.00	1.00	0.80		
8-1/2	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.71	1.00	1.00	1.00	0.85		
10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.83	1.00	1.00	1.00	1.00		
11	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	1.00	1.00	1.00	1.00		
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
13	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		

Spacing Load Adjustment Factors for Normal-Weight and Lightweight Concrete (Continued from Above)

Dia. (in.)	3/4				7/8				1						1-1/4			
h _v (in.)	3-3/8	4	5	6	8	3-7/8	4-1/2	5-3/4	7	8	4-1/2	5-1/2	6-1/2	8	9	5-1/2	7	10
s _c (in.)	6-3/4	8	10	12	16	7-3/4	9	11-1/2	14	16	9	11	13	16	18	11	14	20
s _{min} (in.)	3-3/8	4	5	6	8	3-7/8	4-1/2	5-3/4	7	8	4-1/2	5-1/2	6-1/2	8	9	5-1/2	7	10
Spacing, s (inches)	3-3/8	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3-7/8	0.57	-	-	-	0.50	-	-	-	-	-	-	-	-	-	-	-	-
	4	0.59	0.50	-	-	0.52	-	-	-	-	-	-	-	-	-	-	-	-
	4-1/2	0.67	0.56	-	-	0.58	0.50	-	-	-	0.50	-	-	-	-	-	-	-
	5	0.74	0.63	0.50	-	0.65	0.56	-	-	-	0.56	-	-	-	-	-	-	-
	5-1/2	0.81	0.69	0.55	-	0.71	0.61	-	-	-	0.61	0.50	-	-	-	0.50	-	-
	5-3/4	0.85	0.72	0.58	-	0.74	0.64	0.50	-	-	0.64	0.52	-	-	-	0.52	-	-
	6	0.89	0.75	0.60	0.50	0.77	0.67	0.52	-	-	0.67	0.55	-	-	-	0.55	-	-
	6-1/2	0.96	0.81	0.65	0.54	0.84	0.72	0.57	-	-	0.72	0.59	0.50	-	-	0.59	-	-
	6-3/4	1.00	0.84	0.68	0.56	0.87	0.75	0.59	-	-	0.75	0.61	0.52	-	-	0.61	-	-
	7	1.00	0.88	0.70	0.58	0.90	0.78	0.61	0.50	-	0.78	0.64	0.54	-	-	0.64	0.50	-
	7-3/4	1.00	0.97	0.78	0.65	1.00	0.86	0.67	0.55	-	0.86	0.70	0.60	-	-	0.70	0.55	-
	8	1.00	1.00	0.80	0.67	0.50	1.00	0.89	0.70	0.57	0.50	0.89	0.73	0.62	0.50	-	0.73	0.57
	9	1.00	1.00	0.90	0.75	0.56	1.00	1.00	0.78	0.64	0.56	1.00	0.82	0.69	0.56	0.50	0.82	0.64
	10	1.00	1.00	1.00	0.83	0.63	1.00	1.00	0.87	0.71	0.63	1.00	0.91	0.77	0.63	0.56	0.91	0.71
	11	1.00	1.00	1.00	0.92	0.69	1.00	1.00	0.96	0.79	0.69	1.00	1.00	0.85	0.69	0.61	1.00	0.79
	11-1/2	1.00	1.00	1.00	0.96	0.72	1.00	1.00	1.00	0.82	0.72	1.00	1.00	0.88	0.72	0.64	1.00	0.82
12	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	0.86	0.75	1.00	1.00	0.92	0.75	0.67	1.00	0.86	
13	1.00	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.93	0.81	1.00	1.00	1.00	0.81	0.72	1.00	0.93	
14	1.00	1.00	1.00	1.00	0.88	1.00	1.00	1.00	1.00	0.88	1.00	1.00	1.00	0.88	0.78	1.00	1.00	
16	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	1.00	1.00	
18	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
20	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

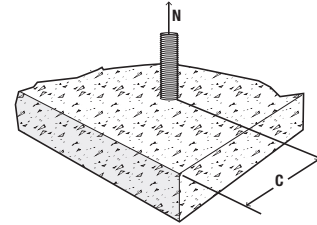
Notes: Critical spacing (s_c) is equal to 2 embedment depths (2h_v) at which the anchor achieves 100% of load.
Minimum spacing (s_{min}) is equal to 1 embedment depth (h_v) at which the anchor achieves 50% of load.



Edge Distance Load Adjustment Factors for Normal-Weight Concrete

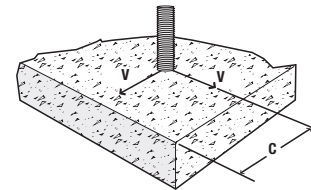
Edge Distance, Tension (F_{Tc})								
Diameter (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1	
c_{cr} (in.)	3	4-1/2	6	7-1/2	9	10-1/2	12	
c_{min} (in.)	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4	4-3/8	5	
Edge Distance, c (inches)	1-1/4	0.75	-	-	-	-	-	-
	1-5/8	0.80	-	-	-	-	-	-
	1-7/8	0.84	0.75	-	-	-	-	-
	2	0.86	0.76	-	-	-	-	-
	2-1/2	0.93	0.81	0.75	-	-	-	-
	3	1.00	0.86	0.79	-	-	-	-
	3-1/8	1.00	0.87	0.79	0.75	-	-	-
	3-3/4	1.00	0.93	0.84	0.79	0.75	-	-
	4	1.00	0.95	0.86	0.80	0.76	-	-
	4-3/8	1.00	0.99	0.88	0.82	0.78	0.75	-
	4-1/2	1.00	1.00	0.89	0.83	0.79	0.76	-
	5	1.00	1.00	0.93	0.86	0.81	0.78	0.75
	6	1.00	1.00	1.00	0.91	0.86	0.82	0.79
	6-1/4	1.00	1.00	1.00	0.93	0.87	0.83	0.79
	7	1.00	1.00	1.00	0.97	0.90	0.86	0.82
7-1/2	1.00	1.00	1.00	1.00	0.93	0.88	0.84	
8	1.00	1.00	1.00	1.00	0.95	0.90	0.86	
9	1.00	1.00	1.00	1.00	1.00	0.94	0.89	
10-1/2	1.00	1.00	1.00	1.00	1.00	1.00	0.95	
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
15	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Notes: For anchors loaded in tension, the critical edge distance (c_{cr}) is equal to 12 anchor diameters (12d) at which the anchor achieves 100% of load.
Minimum edge distance (c_{min}) is equal to 5 anchor diameters (5d) at which the anchor achieves 75% of load.



Edge Distance, Shear (F_{Vc})								
Diameter (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1	
c_{cr} (in.)	3	4-1/2	6	7-1/2	9	10-1/2	12	
c_{min} (in.)	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4	4-3/8	5	
Edge Distance, c (inches)	1-1/4	0.35	-	-	-	-	-	-
	1-5/8	0.49	-	-	-	-	-	-
	1-7/8	0.58	0.35	-	-	-	-	-
	2	0.63	0.38	-	-	-	-	-
	2-1/2	0.81	0.50	0.35	-	-	-	-
	3	1.00	0.63	0.44	-	-	-	-
	3-1/8	1.00	0.66	0.47	0.35	-	-	-
	3-3/4	1.00	0.81	0.58	0.44	0.35	-	-
	4	1.00	0.88	0.63	0.48	0.38	-	-
	4-3/8	1.00	0.97	0.70	0.54	0.43	0.35	-
	4-1/2	1.00	1.00	0.72	0.55	0.44	0.36	-
	5	1.00	1.00	0.81	0.63	0.50	0.42	0.35
	6	1.00	1.00	1.00	0.78	0.63	0.52	0.44
	6-1/4	1.00	1.00	1.00	0.81	0.66	0.55	0.47
	7	1.00	1.00	1.00	0.93	0.75	0.63	0.54
7-1/2	1.00	1.00	1.00	1.00	0.81	0.68	0.58	
8	1.00	1.00	1.00	1.00	0.88	0.73	0.63	
9	1.00	1.00	1.00	1.00	1.00	0.84	0.72	
10-1/2	1.00	1.00	1.00	1.00	1.00	1.00	0.86	
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
15	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Notes: For anchors loaded in shear, the critical edge distance (c_{cr}) is equal to 12 anchor diameters (12d) at which the anchor achieves 100% of load.
Minimum edge distance (c_{min}) is equal to 5 anchor diameters (5d) at which the anchor achieves 35% of load.

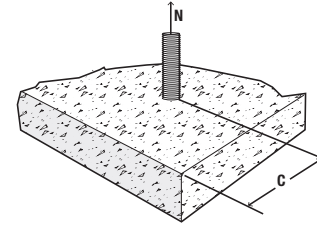


Edge Distance Load Adjustment Factors for Lightweight Concrete

Edge Distance, Tension (F_{Tc})								
Diameter (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1	
c_{cr} (in.)	3	4-1/2	6	7-1/2	9	10-1/2	12	
c_{min} (in.)	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4	4-3/8	5	
Edge Distance, c (inches)	1-1/4	0.95	-	-	-	-	-	-
	1-5/8	0.96	-	-	-	-	-	-
	1-7/8	0.97	0.95	-	-	-	-	-
	2	0.97	0.95	-	-	-	-	-
	2-1/2	0.99	0.96	0.95	-	-	-	-
	3	1.00	0.97	0.96	-	-	-	-
	3-1/8	1.00	0.97	0.96	0.95	-	-	-
	3-3/4	1.00	0.99	0.97	0.96	0.95	-	-
	4	1.00	0.99	0.97	0.96	0.95	-	-
	4-3/8	1.00	1.00	0.98	0.96	0.96	0.95	-
	4-1/2	1.00	1.00	0.98	0.97	0.96	0.95	-
	5	1.00	1.00	0.99	0.97	0.96	0.96	0.95
	6	1.00	1.00	1.00	0.98	0.97	0.96	0.96
	6-1/4	1.00	1.00	1.00	0.99	0.97	0.97	0.96
	7	1.00	1.00	1.00	0.99	0.98	0.97	0.96
7-1/2	1.00	1.00	1.00	1.00	0.99	0.98	0.97	
8	1.00	1.00	1.00	1.00	0.99	0.98	0.97	
9	1.00	1.00	1.00	1.00	1.00	0.99	0.98	
10-1/2	1.00	1.00	1.00	1.00	1.00	1.00	0.99	
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
15	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Notes: For anchors loaded in tension, the critical edge distance (c_{cr}) is equal to 12 anchor diameters (12d) at which the anchor achieves 100% of load.

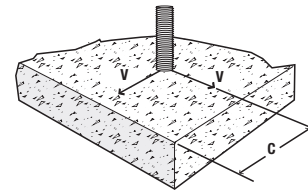
Minimum edge distance (c_{min}) is equal to 5 anchor diameters (5d) at which the anchor achieves 95% of load.



Edge Distance, Shear (F_{Vc})								
Diameter (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1	
c_{cr} (in.)	3	4-1/2	6	7-1/2	9	10-1/2	12	
c_{min} (in.)	1-1/4	1-7/8	2-1/2	3-1/8	3-3/4	4-3/8	5	
Edge Distance, c (inches)	1-1/4	0.30	-	-	-	-	-	-
	1-5/8	0.45	-	-	-	-	-	-
	1-7/8	0.55	0.30	-	-	-	-	-
	2	0.60	0.33	-	-	-	-	-
	2-1/2	0.80	0.47	0.30	-	-	-	-
	3	1.00	0.60	0.40	-	-	-	-
	3-1/8	1.00	0.63	0.43	0.30	-	-	-
	3-3/4	1.00	0.80	0.55	0.40	0.30	-	-
	4	1.00	0.87	0.60	0.44	0.33	-	-
	4-3/8	1.00	0.97	0.68	0.50	0.38	0.30	-
	4-1/2	1.00	1.00	0.70	0.52	0.40	0.31	-
	5	1.00	1.00	0.80	0.60	0.47	0.37	0.30
	6	1.00	1.00	1.00	0.76	0.60	0.49	0.40
	6-1/4	1.00	1.00	1.00	0.80	0.63	0.51	0.43
	7	1.00	1.00	1.00	0.92	0.73	0.60	0.50
7-1/2	1.00	1.00	1.00	1.00	0.80	0.66	0.55	
8	1.00	1.00	1.00	1.00	0.87	0.71	0.60	
9	1.00	1.00	1.00	1.00	1.00	0.83	0.70	
10-1/2	1.00	1.00	1.00	1.00	1.00	1.00	0.85	
12	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
15	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Notes: For anchors loaded in shear, the critical edge distance (c_{cr}) is equal to 12 anchor diameters (12d) at which the anchor achieves 100% of load.

Minimum edge distance (c_{min}) is equal to 5 anchor diameters (5d) at which the anchor achieves 30% of load.



ORDERING INFORMATION

Stainless Steel Power-Stud

Cat. No.		Anchor Size	Min.-Embed.	Thread- Length	Std. Box	Std. Carton	Wt./100
Type 304 SS	Type 316 SS						
7300	7600	1/4" x 1-3/4"	1-1/8"	3/4"	100	500	3
7302	7602	1/4" x 2-1/4"	1-1/8"	1-1/4"	100	500	3-1/2
7304	7604	1/4" x 3-1/4"	1-1/8"	2-1/4"	100	500	4-3/4
7310	7610	3/8" x 2-1/4"	1-5/8"	1-1/4"	50	250	8-3/4
7312	7612	3/8" x 2-3/4"	1-5/8"	1-5/8"	50	250	9-1/2
7313	7613	3/8" x 3"	1-5/8"	1-7/8"	50	250	10-3/4
7314	7614	3/8" x 3-1/2"	1-5/8"	2-3/8"	50	250	12
7315	7615	3/8" x 3-3/4"	1-5/8"	2-5/8"	50	250	12-3/4
7316	7616	3/8" x 5"	1-5/8"	3-1/8"	50	250	15-1/2
7320	7620	1/2" x 2-3/4"	2-1/4"	1-3/8"	50	200	18
7322	7622	1/2" x 3-3/4"	2-1/4"	2-3/8"	50	200	23
7323	7623	1/2" x 4-1/2"	2-1/4"	3-1/8"	50	200	30
7324	7624	1/2" x 5-1/2"	2-1/4"	4-1/8"	50	150	34
7326	7626	1/2" x 7"	2-1/4"	5-5/8"	25	100	44
7330	7630	5/8" x 3-1/2"	2-3/4"	2"	25	100	40
7332	7632	5/8" x 4-1/2"	2-3/4"	3"	25	100	54
7333	7633	5/8" x 5"	2-3/4"	3-1/2"	25	100	57
7334	7634	5/8" x 6"	2-3/4"	4-1/2"	25	75	64
7336	7636	5/8" x 7"	2-3/4"	5-1/2"	25	75	72
7338	7638	5/8" x 8 1/2"	2-3/4"	7"	25	75	84
7340	7640	3/4" x 4 1/4"	3-3/8"	2-3/8"	20	60	70
7341	7641	3/4" x 4 3/4"	3-3/8"	2-7/8"	20	60	76
7342	7642	3/4" x 5 1/2"	3-3/8"	3-5/8"	20	60	85
7344	7644	3/4" x 6-1/4"	3-3/8"	4-3/8"	20	60	95
7346	7646	3/4" x 7"	3-3/8"	5-1/8"	20	60	105
7348	7648	3/4" x 8-1/2"	3-3/8"	6-5/8"	10	40	120
7349	-	3/4" x 10"	3-3/8"	8-1/8"	10	30	135
7352	-	7/8" x 8"	3-7/8"	4-3/4"	10	40	160
7361	-	1" x 6"	4-1/2"	2-3/8"	10	30	170
7363	-	1" x 9"	4-1/2"	5-3/8"	10	30	240
7365	-	1" x 12"	4-1/2"	8-3/8"	5	15	300

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



MECHANICAL ANCHORS

POWER-STUD®
Stainless Steel Wedge Expansion Anchor