



SPECIFICATIONS, LISTINGS AND APPROVALS

CARBON STEEL

Anchor Component: Carbon steel
Anchor Body: AISI 1018 for 1/4" and AISI 1008 for 3/8"- 3/4"
Nut: Carbon steel, ASTM A563, Grade A
Washer: AISI 1010 carbon steel, meets dimensional requirements of ANSI/ASME 18.22.1, Type A plain
Expansion Wedge: Tempered AISI 1008/1010 carbon steel
Plating: Zinc ASTM B633, SC1, Type III (Fe/Zn 5)
All diameters are anchors of CATEGORY 1

STAINLESS STEEL

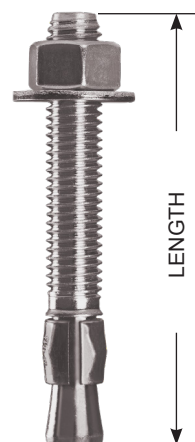
Anchor Component: Stainless steel
Anchor Body: AISI 304 HQ SS
Nut: SS 304
Washer: SS 304
Expansion Wedge: SS 304

CARBON STEEL



Nut
 Washer
 Body
 Parabolic Mandrel

STAINLESS STEEL



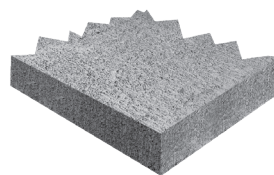
DIAMETER

LENGTH

FEATURES

- ▶ Anchor size = Hole size
- ▶ Fast & easy to install
- ▶ Cold roll formed thread
- ▶ Full thread design
- ▶ Chamfered head
- ▶ Length Identification
- ▶ Unique Parabolic Design
- ▶ Double Expansion Clip
- ▶ Taper Shape Clip

MATERIALS



Concrete

CERTIFICATIONS & APPROVALS

PARAWEDGE™ ANCHOR

Seismic, cracked & uncracked concrete rated / approved (ICC-ES) *

- ICC Evaluation Service Inc. #ESR-3852
 - All diameters are Category 1
 - Meets ACI 318-14 ductility requirements
 - 2015 IBC compliant
 - Tested in accordance with ACI 355.2 and ICC-ES AC193
 - 1/4" diameter is used in uncracked concrete applications (Seismic Design Categories A & B).
 - 3/8", 1/2", 5/8" and 3/4" are used in uncracked and cracked concrete applications (Seismic Design Categories A through F).
- FM approvals
- Underwriters Laboratories (UL)
- Los Angeles Research Reports (LARR) *
- FBC supplement



ESR-3852

International Code Council
Evaluation Service



PIPE HANGER
6N38

Underwriter Laboratory

LARR
#26043

Los Angeles
Research Reports



FM Approvals
(Factory Mutual Laboratories)

*ICC-ES and LARR certifications are for Carbon Steel Parawedge only.





TABLE 1 – LENGTH CODE

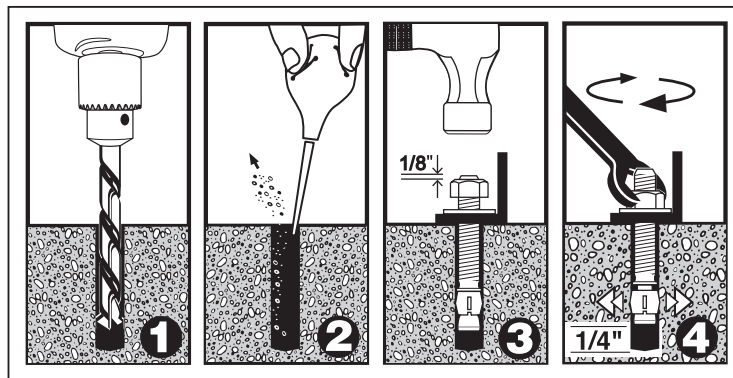
LENGTH IDENTIFICATION CODE												
Stamp on Anchor	A	B	C	D	E	F	G	H	I	J	K	L
Anchor Size	From:	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	4-1/2"	5"	5-1/2"	6"	6-1/2"
	Up to:	2"	2-1/2"	3"	3-1/2"	4"	4-1/2"	5"	5-1/2"	6"	6-1/2"	7-1/2"



INSTALLATION INSTRUCTIONS

1. Use a carbide bit ANSI B212.15 (-1994) that is the same size as the bolt diameter. Drill hole deeper than bolt embedment (min.0.5 dia.) Do not use core bits. Maintain accurate hole size.
2. Clean hole using a dust blower or compressed air.
3. Add washer and thread nut 1/8" from the top of bolt. Drive bolt into hole through item to be fastened.
4. To set, tighten nut 3 to 4 full turns or consult chart for guide installation torque.

WARNING: WEAR SAFETY GOGGLES



Installation instructions and warnings packaged with products must be followed precisely or holding power will be significantly lower. Safety goggles must be worn when working with all products.

All test data provided were from tests performed to ASTM E-488-81 and conducted in normal weight, hard rock aggregate concrete of the specific strength with a 28-day curing time designated in each chart.

Ultimate values of tensile and shear loads shown in test data should be used purely as a guide. Actual results may vary and are dependent on such factors as concrete strength, concrete curing time, grade of steel, embedment depth, and proper installation. All drill sizes are per ANSI B212.15.

NOTE: Installing in concrete that is cured for less than 28 days will greatly reduce the anchor's strength.

PARAWEDGE concrete anchors must be installed at the recommended spacing and edge distances to obtain full working load.




General industry practice for static loads is to use a safety factor of 4:1 to obtain safe working loads. In all installations, it is recommended that tests to simulate actual conditions are to be carried out to determine the suitability of the products for a particular application. For technical information and product performance data, contact Cobra Anchors Co. Ltd.




TOOLS REQUIRED





TABLE 2 — CERTIFICATION CHARTS

REGULAR CARBON STEEL PARAWEDGE						
ANCHOR PARAMETERS *			CERTIFICATIONS (for Carbon Steel only)			
Size	Thread Length	Component				LARR #26043
1/4" x 1-3/4"	3/4"	Carbon Steel			•	•
1/4" x 2-1/4"	1-1/4"	Carbon Steel			•	•
1/4" x 3-1/4"	2-1/4"	Carbon Steel			•	•
3/8" x 2-1/4"	1-1/8"	Carbon Steel	•	•	•	•
3/8" x 2-3/4"	1-1/2"	Carbon Steel	•	•	•	•
3/8" x 3"	1-3/4"	Carbon Steel	•	•	•	•
3/8" x 3-3/4"	2-1/2"	Carbon Steel	•	•	•	•
3/8" x 5"	3-1/2"	Carbon Steel	•	•	•	•
3/8" x 6-1/2"	3"	Carbon Steel	•	•	•	•
1/2" x 2-3/4"	1-1/2"	Carbon Steel	•	•	•	•
1/2" x 3-3/4"	2-1/4"	Carbon Steel	•	•	•	•
1/2" x 4-1/4"	2-3/4"	Carbon Steel	•	•	•	•
1/2" x 5-1/2"	3-1/4"	Carbon Steel	•	•	•	•
1/2" x 7"	4"	Carbon Steel		•	•	•
1/2" x 8-1/2"	3"	Carbon Steel		•		
1/2" x 10"	3"	Carbon Steel		•		
5/8" x 3-1/2"	1-1/2"	Carbon Steel	•	•	•	•
5/8" x 4-1/2"	2-1/2"	Carbon Steel	•	•	•	•
5/8" x 5"	3"	Carbon Steel	•	•	•	•
5/8" x 6"	4"	Carbon Steel	•	•	•	•
5/8" x 7"	4"	Carbon Steel		•	•	•
5/8" x 8-1/2"	3"	Carbon Steel		•		
5/8" x 10"	3"	Carbon Steel		•		
5/8" x 12"	3"	Carbon Steel				
3/4" x 4-1/4"	2"	Carbon Steel	•	•	•	•
3/4" x 4-3/4"	2-1/2"	Carbon Steel	•	•	•	•
3/4" x 5-1/2"	3-1/4"	Carbon Steel	•	•	•	•
3/4" x 6-1/4"	4"	Carbon Steel	•	•	•	•
3/4" x 7"	4"	Carbon Steel		•	•	•
3/4" x 8-1/2"	3"	Carbon Steel		•		
3/4" x 10"	3"	Carbon Steel		•		
3/4" x 12"	3"	Carbon Steel		•		
7/8" x 6"	2-1/4"	Carbon Steel				
7/8" x 8"	3"	Carbon Steel				
7/8" x 10"	3"	Carbon Steel				
1" x 6"	2-1/4"	Carbon Steel				
1" x 9"	3"	Carbon Steel				
1" x 12"	3"	Carbon Steel				
1-1/4" x 9"	3"	Carbon Steel				
1-1/4" x 12"	3"	Carbon Steel				

STAINLESS STEEL PARAWEDGE						
ANCHOR PARAMETERS *			CERTIFICATIONS (for Stainless Steel only)			
Size	Thread Length	Component				LARR #26043
1/4" x 1-3/4"	3/4"	Stainless Steel				
1/4" x 2-1/4"	1-1/4"	Stainless Steel				
1/4" x 3-1/4"	2-1/4"	Stainless Steel				
3/8" x 2-1/4"	1-1/8"	Stainless Steel	•	•		
3/8" x 2-3/4"	1-1/2"	Stainless Steel	•	•		
3/8" x 3"	1-3/4"	Stainless Steel	•	•		
3/8" x 3-3/4"	2-1/2"	Stainless Steel	•	•		
3/8" x 5"	3-1/2"	Stainless Steel	•	•		
3/8" x 6-1/2"	3"	Stainless Steel	•	•		
1/2" x 2-3/4"	1-1/2"	Stainless Steel	•	•		
1/2" x 3-3/4"	2-1/4"	Stainless Steel	•	•		
1/2" x 4-1/4"	2-3/4"	Stainless Steel	•	•		
1/2" x 5-1/2"	3-1/4"	Stainless Steel	•	•		
1/2" x 7"	4"	Stainless Steel	•	•		
1/2" x 8-1/2"	3"	Stainless Steel	•	•		
1/2" x 10"	3"	Stainless Steel	•	•		
5/8" x 3-1/2"	1-1/2"	Stainless Steel		•		
5/8" x 4-1/2"	2-1/2"	Stainless Steel	•	•		
5/8" x 5"	3"	Stainless Steel	•	•		
5/8" x 6"	4"	Stainless Steel	•	•		
5/8" x 7"	4"	Stainless Steel	•	•		
5/8" x 8-1/2"	3"	Stainless Steel	•	•		
5/8" x 10"	3"	Stainless Steel	•	•		
3/4" x 4-1/4"	2"	Stainless Steel	•	•		
3/4" x 4-3/4"	2-1/2"	Stainless Steel	•	•		
3/4" x 5-1/2"	3-1/4"	Stainless Steel	•	•		
3/4" x 6-1/4"	4"	Stainless Steel	•	•		
3/4" x 7"	4"	Stainless Steel	•	•		
3/4" x 8-1/2"	3"	Stainless Steel	•	•		
3/4" x 10"	3"	Stainless Steel	•	•		
3/4" x 12"	3"	Stainless Steel	•	•		
7/8" x 6"	2-1/4"	Stainless Steel				
7/8" x 8"	3"	Stainless Steel				
7/8" x 10"	3"	Stainless Steel				
1" x 6"	2-1/4"	Stainless Steel				
1" x 9"	3"	Stainless Steel				
1" x 12"	3"	Stainless Steel				
1-1/4" x 9"	3"	Stainless Steel				
1-1/4" x 12"	3"	Stainless Steel				

* For a complete list of the different packaging formats available please visit our website cobraanchors.com



Underwriter Laboratory



FM Approvals
(Factory Mutual Laboratories)



International Code Council
Evaluation Service

**LARR
#26043**

Los Angeles
Research Reports



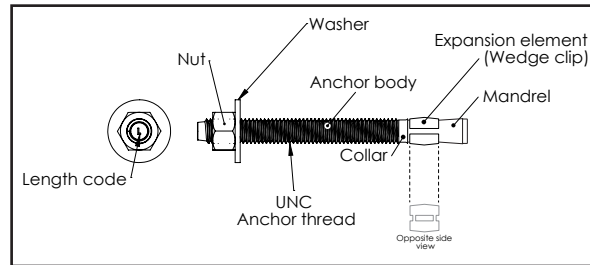
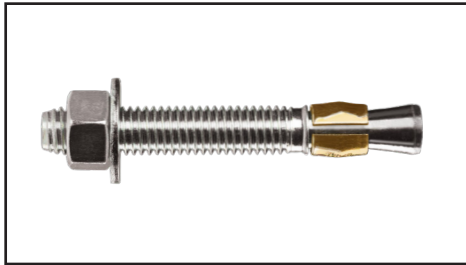


FIGURE 1 – PARAWEDGE™ ANCHOR ASSEMBLY

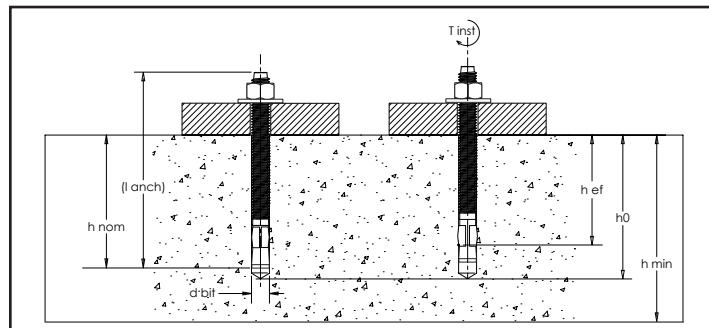


FIGURE 2 – PARAWEDGE™ ANCHOR DETAIL

TABLE 3 – PARAWEDGE™ ANCHOR DESIGN AND INSTALLATION INFORMATION¹ - FOR CARBON STEEL

Setting and Design Information	Symbol	Units	Nominal anchor diameter				
			1/4"	3/8"	1/2"	5/8"	3/4"
Anchor O.D.	$d_a(d_o)^2$	in. (mm)	0.250 (6.4)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)
Nominal drill bit dia.	d_{bit}	in. (mm)	1/4 (6.4)	3/8 (9.5)	1/2 (12.7)	5/8 (15.9)	3/4 (19.1)
Nominal embedment depth	h_{nom}	in. (mm)	1-3/4 (44)	2-1/2 (63)	2-7/8 (73)	3-1/2 (89)	4 (102)
Effective min. embedment	h_{ef}	in. (mm)	1-1/2 (38)	2 (51)	2-1/4 (57)	2-3/4 (70)	3-1/8 (79)
Min. hole depth	h_{hole}	in. (mm)	2 (51)	2-5/8 (67)	3 (76)	3-5/8 (92)	4-1/8 (105)
Min. member thickness	h_{min}	in. (mm)	4 (102)	4 (102)	4-1/2 (114)	5-1/2 (140)	6 (152)
Critical edge distance	c_{ac}	in. (mm)	2-1/2 (64)	5-1/2 (140)	7 (178)	6 (152)	9 (229)
Min. edge distance	c_{min}	in. (mm)	2 (51)	2-1/2 (64)	3-1/4 (83)	4-1/2 (114)	4-3/4 (121)
Min. anchor spacing	s_{min}	in. (mm)	3 (76)	3 (76)	6-1/2 (165)	5-1/2 (140)	6-1/4 (159)
Installation torque	T_{inst}	ft-lb (Nm)	10 (14)	30 (41)	50 (68)	70 (95)	120 (163)

For **SI**: 1 inch = 25.4 mm, 1lbf = 4.45 N, 1Psi = 0.006895 MPa. For **pound-in** units: 1 mm = 0.03937 inches.

¹ The information presented in this table is to be used in conjunction with the design criteria of ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable.

² The notation in parenthesis is for the 2006 IBC.


TABLE 4 – TENSION DESIGN INFORMATION FOR PARAWEDGE™ ANCHOR ^{1,2} - FOR CARBON STEEL

DESIGN INFORMATION	Symbol	Units	NOMINAL ANCHOR DIAMETER				
			1/4"	3/8"	1/2"	5/8"	3/4"
Anchor category	1, 2 or 3	-	1				
Effective min. embedment	h_{ef}	in. (mm)	1-1/2 (38)	2 (51)	2-1/4 (57)	2-3/4 (70)	3-1/8 (79)
STEEL STRENGTH IN TENSION							
Min. specified yield strength	f_{ya}	psi (N/mm ²)	55,000 (379)	50,000 (345)	50,000 (345)	50,000 (345)	50,000 (345)
Min. specified ult. strength	f_{uta}	psi (N/mm ²)	80,000 (552)	65,000 (448)	65,000 (448)	65,000 (448)	65,000 (448)
Effective tensile stress area (neck)	A_{se}	in ² (mm ²)	0.0254 (16.16)	0.0556 (35.29)	0.1018 (64.64)	0.1810 (114.91)	0.2697 (171.27)
Steel strength in tension ⁴ (neck)	N_{sa}	lb (kN)	2,035 (9.0)	3,610 (16.0)	6,615 (29.4)	11,760 (52.3)	17,530 (88.0)
Reduction factor Ø for tension, steel strength ³			0.75				
CONCRETE BREAKOUT STRENGTH IN TENSION							
Effective min. embedment	h_{ef}	in. (mm)	1-1/2 (38)	2 (51)	2-1/4 (57)	2-3/4 (70)	3-1/8 (79)
Effectiveness factor K_{uncr} uncracked concrete ²	K_{uncr}	-	24	24	27	27	27
Effectiveness factor K_{cr} cracked concrete ²	K_{cr}	-	NA	17	21	21	21
Critical edge distance	C_{ac}	in. (mm)	2-1/2 (64)	5-1/2 (140)	7 (178)	6 (152)	9 (229)
Reduction factor Ø for concrete breakout ³			0.65 (Condition B)				
PULLOUT STRENGTH IN TENSION							
Pullout strength uncracked concrete (2,500 psi)	$N_{p,uncr}$	lb (kN)	1,795 (8.0)	3,800 (16.9)	See Note 6	See Note 6	See Note 6
Pullout strength cracked/seismic concrete (2,500 psi) ^{5,7}	$N_{p,cr}$ N_{eq}	lb (kN)	NA	1,740 (7.7)	See Note 6	See Note 6	See Note 6
Reduction factor Ø for concrete pullout ³ (uncracked/cracked/seismic)			0.65 (Condition B)				

For **SI**: 1 inch = 25.4 mm, 1lbf = 4.45 N, 1Psi = 0.006895 MPa. For **pound-in** units: 1 mm = 0.03937 inches.

¹ The data in this table is intended to be used with the design provisions of ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable; for anchors resisting seismic load combinations the additional requirements of ACI 318-14 17.2.3 or ACI 318-11 D.3.3, as applicable, must apply.

² Installation must comply with published instructions and details.

³ All values of ϕ apply to the load combinations of IBC Section 1605.2, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2 as applicable. If the load combinations of ACI 318-11 Appendix C are used, then the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4. For reinforcement that meets ACI 318-14 Chapter 17 or ACI 318-11 Appendix D requirements for Condition A, see ACI 318-14 17.3.3.(c) or ACI 318-11 D.4.3 (c), as applicable, for the appropriate ϕ factor when the load combinations of IBC Section 1605.2, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used.

⁴ The carbon steel is a ductile steel element as defined by ACI 318-14 2.3 or ACI 318-11 D.1, as applicable.

⁵ See Section 4.1.4 of this report, NA (not applicable) denotes that this value is not available for design.

⁶ Pullout strength does not control design of indicated anchors.

⁷ Tabulated values for characteristic pullout strength in tension are for seismic applications and based on test results in accordance with ACI 355.2, Section 9.5.


TABLE 5 — SHEAR DESIGN INFORMATION FOR PARAWEDGE™ ANCHOR ^{1,2} - FOR CARBON STEEL

DESIGN INFORMATION	Symbol	Units	NOMINAL ANCHOR DIAMETER				
			1/4"	3/8"	1/2"	5/8"	3/4"
Anchor category	1,2 or 3	-	1				
Effective min. embedment	h_{ef}	in. (mm)	1-1/2 (38)	2 (51)	2-1/4 (57)	2-3/4 (70)	3-1/8 (79)
STEEL STRENGTH IN SHEAR							
Min. specified yield strength (thread)	f_{ya}	psi (N/mm ²)	55,000 (379)	50,000 (345)	50,000 (345)	50,000 (345)	50,000 (345)
Min. specified ult. strength (thread)	f_{uta}	psi (N/mm ²)	80,000 (552)	65,000 (448)	65,000 (448)	65,000 (448)	65,000 (448)
Effective shear stress area (thread)	A_{se}	in ² (mm ²)	0.0276 (17.55)	0.0693 (44.00)	0.1283 (81.45)	0.2058 (130.70)	0.3073 (195.14)
Steel strength in shear ⁴	V_{sa}	lb (kN)	910 (4.0)	1,680 (7.5)	2,860 (12.7)	5,555 (24.7)	10,660 (47.4)
Steel strength in shear, seismic ⁵	$V_{sa,eq}$	lb (kN)	NA	1,680 (7.47)	2,860 (12.7)	5,555 (24.7)	10,660 (47.4)
Reduction factor Ø for shear, steel strength ³			0.65				
CONCRETE BREAKOUT STRENGTH IN SHEAR							
Anchor O.D.	$d_a(d_o)^6$	in. (mm)	0.250 (6.4)	0.375 (9.5)	0.500 (12.7)	0.625 (15.9)	0.750 (19.1)
Load-bearing length of anchor (lesser of h_{ef} or $8d_a$)	ℓ_e	in. (mm)	1.75 (38)	2.00 (51)	2.25 (57)	2.75 (70)	3.125 (79)
Reduction factor Ø for concrete breakout ³			0.70 (Condition B)				
PRYOUT STRENGTH IN SHEAR							
Effective min. embedment	h_{ef}	in. (mm)	1-1/2 (38)	2 (51)	2-1/4 (57)	2-3/4 (70)	3-1/8 (79)
Coefficient for pryout strength (1.0 for $h_{ef} < 2.5$ in., 2.0 for $h_{ef} \geq 2.5$ in.)	K_{cp}	-	1.0	1.0	1.0	2.0	2.0
Reduction factor Ø for concrete pryout ³			0.70 (Condition B)				

For **SI**: 1 inch = 25.4 mm, 1lbf = 4.45 N, 1Psi = 0.006895 MPa. For **pound-in** units: 1 mm = 0.03937 inches.

¹ The data in this table is intended to be used with the design provisions of ACI 318-14 Chapter 17 or ACI 318-11 Appendix D, as applicable; for anchors resisting seismic load combinations the additional requirements of ACI 318-14 17.2.3 or ACI 318-11 D.3.3, as applicable, must apply.

² Installation must comply with published instructions and details.

³ All values of ϕ apply to the load combinations of IBC Section 1605.2, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2 as applicable. If the load combinations of ACI 318-11 Appendix C are used, then the appropriate value of ϕ must be determined in accordance with ACI 318-11 D.4.4. For reinforcement that meets ACI 318-14 Chapter 17 or ACI 318-11 Appendix D requirements for condition A, see ACI 318-14 17.3.3.(c) or ACI 318-11 D.4.3 (c), as applicable, for the appropriate ϕ factor when the load combinations of IBC Section 1605.2, ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2, as applicable, are used.

⁴ Tabulated values for steel strength in shear must be used for design. These tabulated value are based on test results per ACI 355.2, Section 9.4. and must be used for design in lieu of calculation.

⁵ Tabulated values for steel strength in shear are for seismic applications and based on test results in accordance with ACI 355.2 Section 9.6

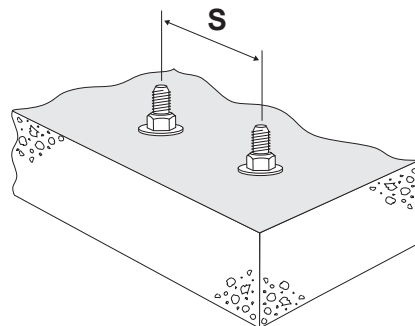
⁶ The notation in parenthesis is for the 2006 IBC.



TABLE 6 — PARAWEDGE™ ANCHOR SPACING INFORMATION

ANCHOR SPACING (CENTER TO CENTER SPACING)

To obtain the maximum tension and shear load, a spacing, $S = 12$ anchor diameters ($12d$) should be used. When using the minimum recommended anchor spacing, $S = 6$ anchor diameters ($6d$) the load should be reduced by 50%. The following table lists the load reduction factor for each anchor diameter (d), based on the center to center anchor spacing.



ANCHOR SPACING (S) in inches							
dia. = d	12d	11d	10d	9d	8d	7d	6d
1/4"	3"	2-3/4"	2-1/2"	2-1/4"	2"	1-3/4"	1-1/2"
5/16"	3-3/4"	3-3/8"	3-1/8"	2-7/8"	2-1/2"	2-1/4"	1-7/8"
3/8"	4-1/2"	4-1/8"	3-3/4"	3-3/8"	3"	2-5/8"	2-1/4"
1/2"	6"	5-1/2"	5"	4-1/2"	4"	3-1/2"	3"
5/8"	7-1/2"	6-7/8"	6-1/4"	5-5/8"	5"	4-3/8"	3-3/4"
3/4"	9"	8-1/4"	7-1/2"	6-3/4"	6"	5-1/4"	4-1/2"
7/8"	10-1/2"	9-5/8"	8-3/4"	7-7/8"	7"	6-1/8"	5-1/4"
1"	12"	11"	10"	9"	8"	7"	6"
1-1/4"	15"	13-3/4"	12-1/2"	11-1/4"	10"	8-3/4"	7-1/2"
REDUCTION FACTOR - ANCHOR CAPACITY							
Tension/Shear	1,00	0,91	0,83	0,75	0,65	0,55	0,5

NOTE: Using in concrete cured less than 28 days will greatly reduce anchor strength.

CAUTION: WEAR SAFETY GOGGLES

WARNINGS:

Installation instructions and warnings packaged with products must be followed precisely or holding power will be significantly lower. Safety goggles must be worn when working with all products.

All tests data given were from tests performed to ASTM E-488-81 conducted in normal weight, hard rock aggregate concrete of the specific strength with a 28 day cure time designated in each chart.

Ultimate values of tensile and shear loads shown in test data should be used purely as a guide. Actual results may vary and are dependent on such factors as concrete strength, concrete cure time, grade of steel, embedment depth, and proper installation. All drill sizes are per ANSI B212.15.

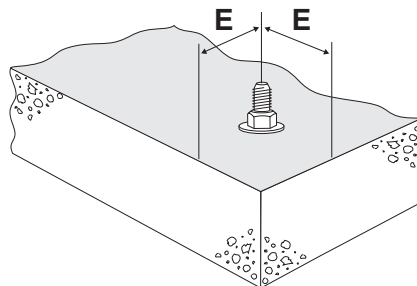
Using mechanical anchors in concrete cured less than 28 days will greatly reduce anchor strength.

Note: PARAWEDGE™ concrete anchors must be installed at the recommended spacing and edge distance to obtain full working load. (Table 6 & Table 7)

General industry practice for static loads is to use a safety factor of 4:1 to obtain safe working loads. In all installations, it is recommended that tests to simulate actual conditions are to be carried out to determine the suitability of the products for a particular application.


TABLE 7 – PARAWEDGE™ ANCHOR EDGE DISTANCE INFORMATION
EDGE DISTANCE (CENTER TO EDGE SPACING)

To obtain the maximum tension and shear load, an edge distance, $E = 12$ anchor diameters ($12d$) should be used. When using the minimum recommended edge distance, $E = 6$ anchor diameters ($6d$), the tension load should be reduced by 50% and the shear load by 20%. The following table lists the load reduction factor for each anchor diameter (d) based on the anchor center to edge distance.



ANCHOR SPACING (E) in inches							
dia. = d	12d	11d	10d	9d	8d	7d	6d
1/4"	3"	2-3/4"	2-1/2"	2-1/4"	2"	1-3/4"	1-1/2"
5/16"	3-3/4"	3-1/2"	3-1/8"	2-7/8"	2-1/2"	2-1/4"	1-7/8"
3/8"	4-1/2"	4-1/8"	3-3/4"	3-3/8"	3"	2-5/8"	2-1/4"
1/2"	6"	5-1/2"	5"	4-1/2"	4"	3-1/2"	3"
5/8"	7-1/2"	6-7/8"	6-1/4"	5-5/8"	5"	4-3/8"	3-3/4"
3/4"	9"	8-1/4"	7-1/2"	6-3/4"	6"	5-1/4"	4-1/2"
7/8"	10-1/2"	9-5/8"	8-3/4"	7-7/8"	7"	6-1/8"	5-1/4"
1"	12"	11"	10"	9"	8"	7"	6"
1-1/4"	15"	13-1/4"	12-1/2"	11-1/4"	10"	8-3/4"	7-1/2"
REDUCTION FACTOR - ANCHOR CAPACITY							
Tension	1,00	0,91	0,83	0,75	0,65	0,55	0,5
Shear	1,00	0,97	0,94	0,91	0,89	0,83	0,8

NOTE: Using in concrete cured less than 28 days will greatly reduce anchor strength.

CAUTION: WEAR SAFETY GOGGLES

WARNINGS:

Installation instructions and warnings packaged with products must be followed precisely or holding power will be significantly lower. Safety goggles must be worn when working with all products.

All tests data given were from tests performed to ASTM E-488-81 conducted in normal weight, hard rock aggregate concrete of the specific strength with a 28 day cure time designated in each chart.

Ultimate values of tensile and shear loads shown in test data should be used purely as a guide. Actual results may vary and are dependent on such factors as concrete strength, concrete cure time, grade of steel, embedment depth, and proper installation. All drill sizes are per ANSI B212.15.

Using mechanical anchors in concrete cured less than 28 days will greatly reduce anchor strength.

Note: PARAWEDGE™ concrete anchors must be installed at the recommended spacing and edge distance to obtain full working load. (Table 6 & Table 7)

General industry practice for static loads is to use a safety factor of 4:1 to obtain safe working loads. In all installations, it is recommended that tests to simulate actual conditions are to be carried out to determine the suitability of the products for a particular application.


TABLE 8 – PERFORMANCE TABLE

REGULAR CARBON STEEL PARAWEDGE™										
ANCHOR PARAMETERS *					SAFE WORKING LOAD 4:1 **					
					Concrete: 3,000 psi		Concrete: 4,000 psi		Concrete: 6,000 psi	
Size	Component	Drill Size	Installation Torque ft. lb	Nominal Embedment	TENSION lb	SHEAR lb	TENSION lb	SHEAR lb	TENSION lb	SHEAR lb
1/4"	Carbon Steel	1/4"	10	1-1/8"	269	228	311	228	380	228
				1-3/4"	449	228	449	228	449	228
				2-3/4"	449	228	449	228	449	228
3/8"	Carbon Steel	3/8"	30	1-5/8"	392	392	453	420	555	420
				2"	604	420	697	420	854	420
				2-1/4"	761	420	878	420	903	420
				2-3/8"	844	420	903	420	903	420
				2-1/2"	903	420	903	420	903	420
				4-1/4"	903	420	903	420	903	420
1/2"	Carbon Steel	1/2"	50	2-1/2"	949	715	1096	715	1342	715
				2-7/8"	1248	715	1441	715	1654	715
				3-1/2"	1654	715	1654	715	1654	715
				4-1/8"	1654	715	1654	715	1654	715
				6"	1654	715	1654	715	1654	715
				6"	1654	715	1654	715	1654	715
				6"	1654	715	1654	715	1654	715
5/8"	Carbon Steel	5/8"	70	2-7/8"	1145	1145	1322	1322	1620	1389
				3"	1248	1248	1441	1389	1765	1389
				3-1/2"	1686	1389	1947	1389	2384	1389
				4"	2166	1389	2501	1389	2940	1389
				4-1/2"	2685	1389	2940	1389	2940	1389
				4-5/8"	2820	1389	2940	1389	2940	1389
				7"	2940	1389	2940	1389	2940	1389
				7"	2940	1389	2940	1389	2940	1389
3/4"	Carbon Steel	3/4"	120	3-3/8"	1461	2665	1688	2665	2067	2665
				4"	2042	2665	2358	2665	2888	2665
				4-3/4"	2820	2665	3256	2665	3988	2665
				5"	3097	2665	3577	2665	4380	2665
				5-1/2"	3677	2665	4246	2665	4383	2665
				6"	4289	2665	4383	2665	4383	2665
				8"	4383	2665	4383	2665	4383	2665
				8"	4383	2665	4383	2665	4383	2665
7/8"	Carbon Steel	7/8"	200	4"	-	-	4688	-	4688	-
				4"	-	-	4688	-	4688	-
				4"	-	-	4688	-	4688	-
1"	Carbon Steel	1"	250	4-1/2"	-	-	5750	-	5750	-
				4-1/2"	-	-	5750	-	5750	-
				4-1/2"	-	-	5750	-	5750	-
1-1/4"	Carbon Steel	1-1/4"	400	5-1/2"	-	-	8750	-	8750	-
				5-1/2"	-	-	8750	-	8750	-

* For a complete list of the different packaging formats available please visit our website cobraanchors.com

** Loads may vary according to the quality of the concrete.




TABLE 8 – PERFORMANCE TABLE

STAINLESS STEEL PARAWEDGE										
ANCHOR PARAMETERS *					SAFE WORKING LOAD 4:1 **					
					Concrete: 3,000 psi		Concrete: 4,000 psi		Concrete: 6,000 psi	
Diameter	Component	Drill Size	Installation Torque ft. lb	Nominal Embedment	TENSION lb	SHEAR lb	TENSION lb	SHEAR lb	TENSION lb	SHEAR lb
1/4"	Stainless Steel	1/4"	10	1-1/8"	269	228	311	228	380	228
				1-3/4"	449	228	449	228	449	228
				2-3/4"	449	228	449	228	449	228
3/8"	Stainless Steel	3/8"	30	1-5/8"	392	392	453	420	555	420
				2"	604	420	697	420	854	420
				2-1/4"	761	420	878	420	903	420
				2-3/8"	844	420	903	420	903	420
				2-1/2"	903	420	903	420	903	420
				4-1/4"	903	420	903	420	903	420
1/2"	Stainless Steel	1/2"	50	2-1/2"	949	715	1096	715	1342	715
				2-7/8"	1248	715	1441	715	1654	715
				3-1/2"	1654	715	1654	715	1654	715
				4-1/8"	1654	715	1654	715	1654	715
				6"	1654	715	1654	715	1654	715
				6"	1654	715	1654	715	1654	715
5/8" ***	Stainless Steel	5/8"	70	2-7/8"	1145	1145	1322	1322	1620	1389
				3"	1248	1248	1441	1389	1765	1389
				3-1/2"	1686	1389	1947	1389	2384	1389
				4"	2166	1389	2501	1389	2940	1389
				4-1/2"	2685	1389	2940	1389	2940	1389
				4-5/8"	2820	1389	2940	1389	2940	1389
3/4" ***	Stainless Steel	3/4"	120	7"	2940	1389	2940	1389	2940	1389
				3-3/8"	1461	2665	1688	2665	2067	2665
				4"	2042	2665	2358	2665	2888	2665
				4-3/4"	2820	2665	3256	2665	3988	2665
				5"	3097	2665	3577	2665	4380	2665
				5-1/2"	3677	2665	4246	2665	4383	2665
				6"	4289	2665	4383	2665	4383	2665
				8"	4383	2665	4383	2665	4383	2665
7/8"	Stainless Steel	7/8"	200	8"	4383	2665	4383	2665	4383	2665
				4"	-	-	4688	-	4688	-
				4"	-	-	4688	-	4688	-
1"	Stainless Steel	1"	250	4"	-	-	4688	-	4688	-
				4-1/2"	-	-	5750	-	5750	-
				4-1/2"	-	-	5750	-	5750	-
1-1/4"	Stainless Steel	1-1/4"	400	4-1/2"	-	-	5750	-	5750	-
				5-1/2"	-	-	8750	-	8750	-
1-1/4"	Stainless Steel	1-1/4"	400	5-1/2"	-	-	8750	-	8750	-
				5-1/2"	-	-	8750	-	8750	-

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** Loads may vary according to the quality of the concrete.

*** For UL approval, the minimum embedment for 5/8" and 3/4" Stainless Steel is 3-1/4"

