



TOGGLER®
HIGH-PERFORMANCE ANCHORS®

wej-it®
FASTENING SYSTEMS

Mechanical and Adhesive Anchors

for Masonry,
Concrete and
Drywall

Buyer's Guide
2012

*We didn't build the USA,
but we do hold it together!™*

Two Proven Product Lines – Now Together!

Over 100 Years of Fastening Experience

TOGGLER®
HIGH-PERFORMANCE ANCHORS®

wej-it®
FASTENING SYSTEMS



Since its inception in 1968, TOGGLER Anchor System, division of Mechanical Plastics Corp., has continued to invent, improve, manufacture and sell only TOGGLER® brand anchors, the highest quality, best-performing anchors on the market. All are designed to solve real problems on the job site and at home.

High-strength, multi-functional TOGGLER High-Performance Anchors® provide fast, easy, and secure fastening in many applications and substrates, from light- to heavy-duty.

We are the only manufacturer that proudly makes all of its anchors in the USA and the only one that puts its name on every anchor.

You can always rely on TOGGLER anchors to work properly the first time, every time.



Wej-It®, the original wedge anchor, first came on the scene over 60 years ago. Today professional installers around the world still rely on its outstanding performance. Over the years, the quality and reliability of the Wej-It brand has expanded into a full range of mechanical and adhesive concrete and drywall fasteners.

Wej-It Fastening Systems is now the newest division of Mechanical Plastics Corp. This means the proven reliability of Wej-It products is combined with the high level of customer service and support that has been provided to TOGGLER customers for over 44 years.

Investment into updated processes and technology will ensure the best quality concrete anchoring systems available to meet your high-strength concrete anchoring needs now and in the future.

We didn't build the USA, but we do hold it together!™

TOGGLER®
HIGH-PERFORMANCE ANCHORS®

wej-it®
FASTENING SYSTEMS

Call us toll-free: 888-TOGGLER (888-864-4537)

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Divisions of Mechanical Plastics Corp.







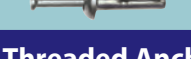



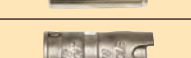




110 Richards Avenue • Norwalk, CT 06854

Mechanical and Adhesive Anchors



















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			cracked concrete	normal weight concrete	lightweight concrete	hollow masonry	solid masonry	wallboard/ drywall	
Expansion Anchors: Heavy-duty bolts with an expanding clip or sleeve									
	Ankr-TITE [®] CCAT Wedge Anchors for Cracked and Uncracked Concrete	7	▲	▲	▲			Category 1 ICC-ES ESR-2777 Miami-Dade NOA: #09-0319.05 COLA RR 24939	
	Ankr-TITE [®] Wedge Anchors	10		▲	▲		▲	GSA FFS-325 Group II, Type 4, Class 1 Miami-Dade NOA: #08-0911.02	
	Original Wej-It [®] Wedge Anchors	15		▲	▲		▲	GSA FFS-325, Group II, Type 4, Class 1 Former ICC-ES Legacy Report #1821	
	Wej-It [®] Tie Wire (WTW) Anchors	17		▲	▲		▲		
	Sleeve Anchors	18		▲	▲	▲	▲	GSA: FFS-325, Group II, Type 3, Class 3	
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	Center Pin Anchors	20		▲			▲	GSA FFS-325 Group II Type 4 Class I	
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	UltraCon [®] Threaded Anchors	25		▲	▲	▲	▲	Miami-Dade NOA: #11-0406.01	
Drop-In and Shield Anchors: Internally-threaded anchors for concrete and masonry applications									
	POWER-Drop [™] Drop-In Anchors	27		▲	▲		▲	Former ICC-ES Legacy Report #5063	
	Drop-In/MINI Drop-In Anchors	28		▲	▲		▲	GSA FFS-325, Group VIII, Type I	
	Single Expansion Shields	30		▲				GSA FF-S-325, Group II, Type 2, Class 2, Style 1	
	Double Expansion Shields	30		▲		▲	▲	GSA FF-S-325, Group II, Type 2, Class 2, Style 2	
	Lag Screw Shields	31		▲			▲	GSA FF-S-325C Group 2, Type 1, Class 1 (long), Class 2C (short)	
	Machine Screw Anchors	31		▲			▲	A-A 1922A, Type 1 and FF-S-325C, Group 1, Type 1, Class 1	

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Wall Anchors: Secure fixtures in hollow and solid walls									
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	TOGGLER [®] Specialty Anchors	34				▲	▲	▲	
	TOGGLER [®] SNAPTOGGLE [®] Heavy-Duty Anchors	35				▲		▲	
	Standard Wing Toggles	37				▲		▲	
	Hollow Wall Anchors	38				▲		▲	
	Hollow Wall Drive Anchors	38				▲		▲	
	TOGGLER [®] SnapSkru [®] Self-Drilling Anchors	39				▲		▲	
	TOGGLER [®] ALLIGATOR [®] All-Purpose Anchors	41	▲	▲	▲	▲	▲	▲	
SDS Drill Bits for Concrete Applications: Carbide-tipped, high-performance drill bits									
	SDS-plus [®] Bits	44	N/A	▲	▲	▲	▲	▲	
	SDS-max [®] Cutter and Spline Bits	45	N/A	▲	▲	▲	▲	▲	
Adhesive Anchors: Utilize high-strength epoxies and ester-based resins to provide holding power									
	POWER-Sert [™] Anchors	45		▲	▲		▲		
	Inject-TITE [™] Adhesive Anchors	47		▲	▲	▲	▲		
	Screens, Tools & Straight-Cut Studs	47		▲	▲	▲	▲		
	All-Weather (AWF) Formula Epoxy	49		▲	▲	▲	▲		VOC-Compliant
	Fast-Set Formula Epoxy	52		▲	▲	▲	▲		ICC-ES ESR-2621; NSF/ANSI 61 certified; VOC-Compliant
	Standard-Set Formula Epoxy	54		▲	▲	▲	▲		Miami-Dade NOA: #00-0229.05; NSF/ANSI 61 certified
	Slam-TITE [™] Hammer-In Capsules	55		▲	▲		▲		
	Spin-In Capsules & Bevel-Cut Studs	57		▲	▲		▲		

Ankr-TITE® CCAT Wedge Anchors



Specifications, Listings and Approvals

Diameters: 3/8" – 1"

Material:

- Anchor Body: C1035 carbon steel
- Anchor Clip: AISI Type 316 stainless steel
- Washer: ASTM F844
- Nut: ASTM A563 Grade A

Finish: Zinc plated to ASTM B633 with clear chromate added

Federal Specifications: QQZ-325, Type II, Class 3

Code Compliance:

- **ICC-ES Report Number ESR-2777 Category 1: Cracked and Uncracked Concrete**
- 2009, 2006, 2003 and 2000 International Building Codes (IBC)
- 2009, 2006, 2003 and 2000 International Residential Code (IRC)
- 1999 Standard Building Code (SBC)
- 1997 Uniform Building Code (UBC)
- 2007 Florida Building Code (BC & RC)
- Miami-Dade NOA: #09-0319.05
- COLA RR 24939

NOTE: Order Information on following page.

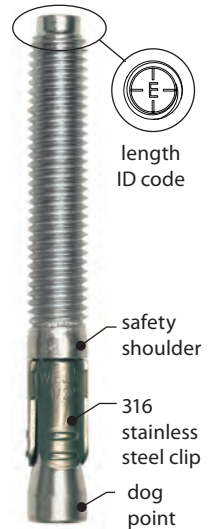
Engineered for Superior Performance in Cracked Concrete

Key Features and Benefits

- Engineered to provide superior performance in cracked concrete in both seismic and wind load conditions
- **Category 1** design criteria ICC-ES Report Number ESR-2777
- **Bolt Size is Hole Size**®
- Safe and reliable expansion mechanism works in both normal and extreme load conditions
- 360° segment contact equalizes load distribution, increasing load-carrying capacity
- Unique **safety shoulder** supports the clip when the anchor is under strain
- Corrosion-resistant **316 stainless steel clip** increases service life and strength
- Dog point prevents damage during installation
- 4-line marking around the length ID stamp eases post-installation inspection
- Proprietary design (US Patent #5,413,441) meets strict acceptance criteria in the 2009, 2006 and 2003 International Building Code for post-installed anchoring applications

Code Compliance:
Category 1
ICC ESR-2777
Miami-Dade
NOA
#09-0319.05
COLA RR 24939

Expansion Anchors



Installation Data[†]

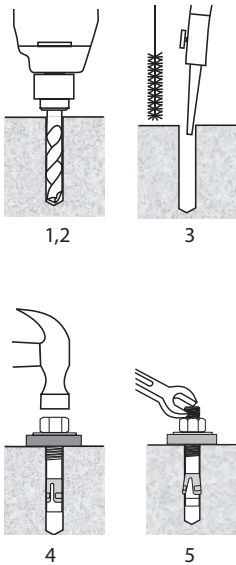
Characteristic	Sym.	Units	Nom. Anchor Dia. (in.)									
			1/2	5/8	3/4							
Outside Diameter	d _o	in.	1/2	5/8	3/4							
Drill Bit Diameter	d	in.	1/2	5/8	3/4							
Installation Torque	T _{inst}	ft-lbf	75		125		225					
Min. Nom. Embedment Depth	h _{nom}	in.	3-1/4	5-1/2	4	6-3/8	4-1/2	7-3/4				
Effective Embedment Depth	h _{ef}	in.	2-3/4	5	3-3/8	5-3/4	3-3/4	7				
Critical Edge Distance	c _{ac}	in.	4-1/8	7-1/2	5	8-5/8	7-1/2	10-1/2				
Min. Edge Distance	c _{min}	in.	5-1/2		5		5-5/8					
Min. Spacing	s _{min}	in.	8-1/4		9-1/4		5-5/8					
Min. Concrete Thickness	h _{min}	in.	6	10	6-3/4	11-1/2	7-1/2	14				
Specified Yield Strength of Anchor Steel	f _{ya}	psi	88,000		83,000		73,000					
Specified Tensile Strength of Anchor Steel	f _{uta}	psi	110,000		104,000		91,000					
Effective Tensile and Shear Stress Area	A _{se}	in ²	0.116		0.144		0.219					

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m, 1 psi = 6.89 Pa, 1 in² = 645 mm², 1 lb./in. = 0.175 N/mm. †The information presented in this table is to be used in conjunction with the design criteria of ACI 318 Appendix D.

Order Information

Catalog No.	Anchor Size (in.)	Max. Thickness Fastened Material (in.)	Thread Length (in.)	Quantity Box/ Carton
CCAT3830	3/8 x 3	0.525	1-3/4	50/400
CCAT3833	3/8 X 3 -3/4	1.275	2-1/2	50/400
CCAT3850	3/8 X 5	2.525	3-1/4	50/400
CCAT1223	1/2 X 2 -3/4	0.125	1-1/8	25/200
CCAT1233	1/2 X 3 -3/4	0.375	2-5/8	25/200
CCAT1241	1/2 X 4 -1/4	0.875	2-5/8	25/200
CCAT1252	1/2 X 5-1/2	2.125	3-3/4	25/150
CCAT1270	1/2 X 7	3.625	4-1/2	25/150
CCAT1282	1/2 X 8-1/2	5.125	5	25/150
CCAT1210	1/2 X 10	6.625	5	25/150
CCAT5832	5/8 X 3-1/2	0.245	1-1/2	10/80
CCAT5841	5/8 X 4-1/4	0.245	2-3/8	10/80
CCAT5850	5/8 X 5	0.87	3-1/8	10/80
CCAT5860	5/8 X 6	1.87	4	10/80
CCAT5870	5/8 X 7	2.87	4-1/2	10/80
CCAT5882	5/8 X 8-1/2	4.37	5	10/40
CCAT5810	5/8 X 10	5.87	5	10/40
CCAT3443	3/4 X 4-3/4	0.55	2-1/4	10/80
CCAT3452	3/4 X 5-1/2	1	3-1/4	10/60
CCAT3461	3/4 X 6-1/4	2.05	3-3/4	10/60
CCAT3470	3/4 X 7	2.8	4-3/4	10/60
CCAT3482	3/4 X 8-1/2	4.3	5	10/40
CCAT3410	3/4 X 10	5.8	5	10/40
CCAT3412	3/4 X 12	7.8	5	5/20
CCAT1060	1 X 6	0.75	3	5/30
CCAT1090	1 X 9	3.75	5	5/20
CCAT1012	1 X 12	6.75	5	5/20

Installation Instructions



1. Drill the hole, at a diameter equal to the anchor diameter, perpendicular to the work surface. To assure full holding power, do not ream the hole or allow the drill to wobble.
2. Drill the hole deeper than the intended embedment, but not closer than two diameters to the bottom (opposite) surface of the concrete.
3. A clean hole is necessary for proper performance. Clean the hole using a nylon brush and compressed air.
4. Assemble the nut and washer so that the top of the anchor extends above the nut slightly. Install the anchor through the material to be fastened.
5. Installing the Ankr-TITE CCAT anchors with a torque wrench is recommended for optimum performance. Refer to torque recommendations on this page.

NOTE: Always wear safety glasses. Follow drill manufacturer's instructions. Use only solid carbide-tipped drill bits meeting ANSI B212.15 diameter standards.

Allowable Stress Design Values

Anchor Dia. (in.)	h_{nom} Nom. Embedment (in.)	h_{ef} Effective Embedment (in.)	Allowable Tension Load (lb.)
3/8	2-3/8	2	1,050
1/2	3-1/4	2-3/4	2,080
	5-1/2	5	2,246
5/8	4	3-3/8	3,110
	6-3/8	5-3/4	5,593
3/4	4-1/2	3-3/4	3,827
	7-3/4	7	7,294

NOTES:

- For SI: 1 inch = 25.4 mm; 1 lbf = 4.45 N
- Single anchor with static tension only
- Concrete determined to remain uncracked for life of the anchorage
- Load combinations from ACI 318 9.2 (no seismic loading)
- 30% dead load and 70% live load, controlling load combination 1.2D + 1.6L
- Calculation of weighed average:
 $\alpha = 1.2(0.3) + 1.6(0.7) = 1.48$
- $f'_c = 2,500$ psi normal weight concrete
 $C_{at} = C_{a2} \geq C_{ac} \quad h \geq h_{min}$
- Values are for Condition B (supplementary reinforcement in accordance with ACI 318 D.4.4 is not provided).

Torque Values

Anchor Dia. (in.)	Recommended Setting Torque (ft. lb.)
3/8	20
1/2	75
5/8	125
3/4	225
1	290

Length Identification Codes

Code	Length of Anchor
A	1-1/2 < 2
B	2 < 2-1/2
C	2-1/2 < 3
D	3 < 3-1/2
E	3-1/2 < 4
F	4 < 4-1/2
G	4-1/2 < 5
H	5 < 5-1/2
I	5 1/2 < 6
J	6 < 6-1/2
K	6-1/2 < 7

Code	Length of Anchor
L	7 < 7-1/2
M	7 1/2 < 8
N	8 < 8-1/2
O	8-1/2 < 9
P	9 < 9-1/2
Q	9-1/2 < 10
R	10 < 11
S	11 < 12
T	12 < 13
U	13 < 14
V	14 < 15

Characteristic Shear Strength Design Values

Characteristic	Symbol	Units	Nominal Anchor Diameter (inch)						
			3/8 [†]	1/2	5/8	3/4			
Anchor Category	1, 2, or 3	–	3	1	1	1			
Effective Embedment Depth	<i>h_{ef}</i>	in.	2	2-3/4	5	3-3/8	5-3/4	3-3/4	7
Steel Strength in Shear (ACI 318 D.6.1)^{†††}									
Shear Resistance of Steel	<i>V_{sa}</i>	lbf	3,108	3,599	7,195	7,217	8,986	8,683	11,957
Strength Reduction Factor – Steel Failure	<i>ϕ_{sa}</i>	–	0.6						
Concrete Breakout In Shear (ACI 318 D.6.2)									
Load-bearing Length for Shear	<i>l_e</i>	in.	2	2-3/4	5	3-3/8	5-3/4	3-3/4	7
Nominal Anchor Diameter	<i>d_a[d_a]^{††}</i>	in.	3/8	1/2	1/2	5/8	5/8	3/4	3/4
Strength Reduction Factor – Concrete Breakout	<i>ϕ_{cb}</i>	–	0.65	0.7					
Pry-out Strength in Shear									
Coefficient for Pry-out Strength (1.0 for <i>h_{ef}</i> < 2.5 in., 2.0 for <i>h_{ef}</i> > 2.5 in.)	<i>k_{cp}</i>	–	1	2					
Strength Reduction Factor – Pry-out Failure	<i>ϕ_p</i>	–	0.6	0.7					
Shear Strength for Seismic Applications (ACI 318 D.3.3.3)									
Shear Resistance of Single Anchor for Seismic Loads (<i>f'_c</i> = 2,500 psi)	<i>V_{eq}</i>	lbf	–	3,239	6,476	5,055	8,154	8,504	11,957
Strength Reduction Factor – Pull-out Failure	<i>ϕ_{eq}</i>	–	–	0.7					
Shear Strength for Sand-Lightweight and Normal-weight Concrete Over Steel Deck									
Steel Strength in Shear for Concrete Over Steel Deck	<i>V_{sa, deck}</i>	lbf	–	3,200	–	3,890	–	–	–
Steel Strength in Shear, Concrete Over Steel Deck, Seismic	<i>V_{sa, deck, eq}</i>	lbf	–	2,880	–	2,725	–	–	–
Reduction Factor for Steel Strength in Shear, Concrete Over Steel Deck	<i>ϕ</i>	–	–	0.65					

Characteristic Tension Strength Design Values

Characteristic	Symbol	Units	Nominal Anchor Diameter (in.)						
			3/8 [†]	1/2	5/8	3/4			
Anchor Category	1, 2 or 3	–	3	1	1	1			
Effective Embedment Depth	<i>h_{ef}</i>	in.	2	2-3/4	5	3-3/8	5-3/4	3-3/4	7
Steel Strength in Tension (ACI 318 D.5.1)^{†††}									
Tension Resistance of Steel	<i>N_{sa}</i>	lbf	5,180	12,760	14,980	19,930			
Strength Reduction Factor – Steel Failure	<i>ϕ_{sa}</i>	–	0.65						
Concrete Breakout Strength In Tension (ACI 318 D.5.2)									
Effectiveness Factor – Uncracked Concrete	<i>K_{un-cr}</i>	–	24						
Effectiveness Factor – Cracked Concrete	<i>K_{cr}</i>	–	–	17					
Modification Factor for Cracked and Uncracked Concrete	<i>ψ_{c, N}**</i>	–	–	1.00					
Strength Reduction Factor – Concrete Breakout Failure	<i>ϕ_{cb}</i>	–	0.45	0.65					
Pull-Out Strength in Tension (ACI 318 D.5.3)									
Pull-Out Resistance, Uncracked Concrete (<i>f'_c</i> =2,500 psi)	<i>N_{p, un-cr}</i>	lbf	N/A*	4,737	5,115	7,082	12,734	N/A*	16,607
Pull-Out Resistance, Cracked Concrete (<i>f'_c</i> =2,500 psi)	<i>N_{p, cr}</i>	lbf	–	2,616	3,584	5,144	6,645	N/A*	11,849
Strength Reduction Factor – Pull-out Failure	<i>ϕ_p</i>	0.45	–	0.65					
Tension Strength for Seismic Applications (ACI D.3.3.3)									
Tension Resistance Factor of Single Anchor for Seismic Loads (<i>f'_c</i> =2,500 psi)	<i>N_{p, eq}</i>	lbf	–	2,616	3,584	5,144	6,645	N/A*	11,849
Strength Reduction Factor – Pull-out Failure	<i>ϕ_{eq}</i>	–	–	0.65					
Pull-Out Strength in Tension for Concrete Over Steel Deck									
Characteristic Pull-Out Strength, Uncracked Concrete Over Steel Deck	<i>N_{p, deck un-cr}</i>	lbf	–	2,475	4,061	–			
Characteristic Pull-Out Strength, Cracked Concrete Over Steel Deck	<i>N_{p, deck cr}</i>	lbf	–	1,361	2,965	–			
Reduction Factor for Pull-Out Strength	<i>ϕ</i>	–	–	0.65					

NOTES:

- For SI: 1 inch = 25.4 mm; 1 lbf = 4.45 N
- All values of *ϕ* apply to the load combinations of IBC Section 1605.2.1, UBC Section 1612.2.1, or ACI 318 Section 9.2. If the load combinations of UBC Section 1902.2 or ACI 318 Appendix C are used, the appropriate value of *ϕ* must be determined in accordance with ACI 318 D.4.5. For reinforcement that complies with ACI 318 Appendix D requirements for Condition A, the appropriate *ϕ* factor must be determined in accordance with ACI 318 D.4.4.
- Installation must comply with published instructions and details.
- The information presented in these tables must be used in conjunction with the design criteria of ACI 318 Appendix D; for anchors resisting seismic load combinations the additional requirements of ACI 318 D.3.3 must apply.
- Shear loads for anchors installed through steel deck into concrete may be applied in any direction.

- The nominal pull-out strength in tension can be adjusted in accordance with Section 4.1.4 of ICC-ES ESR-2777.
- † The 3/8" anchor must be limited to uncracked concrete and not used in concrete-filled metal deck applications.
- †† The notation in brackets is for the 2006 IBC.
- ††† The Ankr-TITE anchor is considered a brittle steel element as defined by ACI 318 D.1.
- *Pull-out strength will not control design of indicated anchors.
- ** For all cases, *ψ_{c, N}*=1.0. The appropriate effectiveness factor for cracked concrete *K_{cr}* or uncracked concrete *K_{un-cr}* must be used.

Ankr-TITE® Wedge Anchors

wej-it
FASTENING SYSTEMS

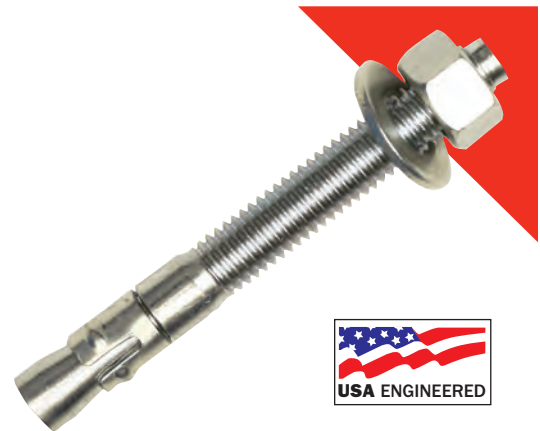
Code Compliance:
Miami-Dade
NOA
#08-0911.02



Features unique safety shoulder and clip combination

Key Features and Benefits

- Bolt Size is Hole Size®
- Available in four combinations:
 1. Zinc plated carbon steel with steel clip
 2. Hot-dip galvanized carbon steel with 304 stainless steel clip
 3. All 304 stainless steel
 4. All 316 stainless steel
- Sets up fast
 - Needs less rotation to achieve required torque
- Unique “**safety shoulder**”
 - Supports clip when anchor is under strain
 - Minimizes bolt-end collapse and/or clip slippage under ultimate loading conditions
- Enlarged dimples on clip
 - Reduce slip
 - Increase response in lighter concrete
- 360° segment contact on clip equalizes load distribution
 - Increases load-carrying capacity
 - More adaptable to “forgiving” in different installation conditions



Specifications, Listings and Approvals

Diameters: 1/4" – 1-1/4"

Body

- Carbon Steel: UNS G 10350, AISI 1035
- Stainless: AISI 12L14 Type 304 or Type 316

Finish

- Zinc: ASTM B633 Type III, SC1
- Hot-dip galvanized: ASTM A153; B454; B695-82 and MIL-C-81562A

Clip

- Carbon steel: ASTM A108 Grade 1018
- Stainless steel: Type 304 or Type 316

Washer

- Carbon steel: ANSI/ASME B18.22.1 zinc coated
- Stainless steel: Type 304 or Type 316

Nut

- Carbon steel: ANSI/ASME B18.2.2 zinc coated
- Stainless steel: Type 304 or Type 316

Federal Specifications

- QQZ-325Z, Type II, Class 3
- GSA FFS-325 Group II, Type 4, Class 1 (Clear Chromate Added)
- GSA FFS-325 Group II, Type 4, Class 1

Code Compliance

- Miami/Dade NOA: No. 08-0911.02
- State DOT Approvals: Call Customer Service for specific information by state

Order Information†

Carbon Steel Catalog No.		Stainless Steel Catalog No.		Anchor Size (in.)	Min. Embed. (in.)	Thread Length (in.)	Quantity Box /Carton
Zinc Plated	Galvanized	Type 304	Type 316				
AT1413	ATG1413	ATS1413	ATSS1413*	1/4 x 1-3/4	1-1/4	3/4	100/800
AT1421	ATG1421	ATS1421	ATSS1421	1/4 x 2-1/4	1-1/4	1-1/4	100/800
AT1431	ATG1431	ATS1431	ATSS1431	1/4 x 3-1/4	1-1/4	2-1/4	100/800
AT3821	ATG3821	ATS3821	ATSS3821	3/8 x 2-1/4	1-3/4	1	50/400
AT3823	ATG3823	ATS3823	ATSS3823	3/8 x 2-3/4	1-3/4	1-1/2	50/400
AT3830	ATG3830	ATS3830	ATSS3830	3/8 x 3	1-3/4	1-3/4	50/400
AT3833	ATG3833	ATS3833	ATSS3833	3/8 x 3-3/4	1-3/4	2-1/2	50/400
AT3850	ATG3850	ATS3850	ATSS3850	3/8 x 5	1-3/4	3-1/4	50/400
AT3870	ATG3870	ATS3870	ATSS3870	3/8 x 7	1-3/4	4-1/2	50/300
AT1223	ATG1223	ATS1223	ATSS1223	1/2 x 2-3/4	2-1/8	1-1/8	25/200
AT1233	ATG1233	ATS1233	ATSS1233	1/2 x 3-3/4	2-1/8	2-1/8	25/200
AT1241	ATG1241	ATS1241	ATSS1241	1/2 x 4-1/4	2-1/8	2-5/8	25/200
AT1242	ATG1242*	ATS1242*	ATSS1242*	1/2 x 4-1/2	2-1/8	2-5/8	25/200
AT1252	ATG1252	ATS1252	ATSS1252	1/2 x 5-1/2	2-1/8	3-3/4	25/150
AT1270	ATG1270	ATS1270	ATSS1270	1/2 x 7	2-1/8	4-1/2	25/150
AT1282	ATG1282	ATS1282*	ATSS1282*	1/2 x 8-1/2	2-1/8	5	10/40
AT1210	ATG1210	ATS1210*	ATSS1210*	1/2 x 10	2-1/8	5	10/40
AT5832	ATG5832	ATS5832	ATSS5832	5/8 x 3-1/2	2-5/8	1-1/2	10/80
AT5841	ATG5841	ATS5841	ATSS5841	5/8 x 4-1/4	2-5/8	2-3/8	10/80
AT5850	ATG5850	ATS5850	ATSS5850	5/8 x 5	2-5/8	3-1/8	10/80
AT5860	ATG5860	ATS5860	ATSS5860	5/8 x 6	2-5/8	4	10/80
AT5870	ATG5870	ATS5870	ATSS5870	5/8 x 7	2-5/8	4-1/2	10/80
AT5882	ATG5882	ATS5882	ATSS5882	5/8 x 8-1/2	2-5/8	5	10/40
AT5810	ATG5810	ATS5810	ATSS5810*	5/8 x 10	2-5/8	5	10/40
AT5812	ATG5812	ATS5812*	ATSS5812*	5/8 x 12	2-5/8	5	10/40
AT3441	ATG3441	ATS3441	ATSS3441*	3/4 x 4-1/4	3-1/4	2	10/80
AT3443	ATG3443	ATS3443	ATSS3443	3/4 x 4-3/4	3-1/4	2-1/2	10/80
AT3452	ATG3452	ATS3452	ATSS3452	3/4 x 5-1/2	3-1/4	3-1/4	10/60
AT3461	ATG3461	ATS3461	ATSS3461	3/4 x 6-1/4	3-1/4	3-3/4	10/60
AT3470	ATG3470	ATS3470	ATSS3470	3/4 x 7	3-1/4	4-3/4	10/60
AT3482	ATG3482	ATS3482	ATSS3482	3/4 x 8-1/2	3-1/4	5	10/40
AT3410	ATG3410	ATS3410	ATSS3410*	3/4 x 10	3-1/4	5	10/40
AT3412	ATG3412	ATS3412	ATSS3412*	3/4 x 12	3-1/4	5	4/16
AT7860	ATG7860	ATS7860*	ATSS7860*	7/8 x 6	3-7/8	3-1/2	4/24
AT7880	ATG7880	ATS7880*	ATSS7880*	7/8 x 8	3-7/8	5	4/16
AT7810	ATG7810	ATS7810*	ATSS7810*	7/8 x 10	3-7/8	5	4/16
AT1060	ATG1060	ATS1060	ATSS1060*	1 x 6	4	3	4/24
AT1090	ATG1090	ATS1090	ATSS1090*	1 x 9	4	5	4/16
AT1012	ATG1012	ATS1012	ATSS1012*	1 x 12	4	5	4/16
AT11490*	ATG11490 ¹	ATS11490*	ATSS11490*	1-1/4 x 9	5-5/8	5	4/16
AT11412*	ATG11412 ¹	ATS11412*	ATSS11412*	1-1/4 x 12	5-5/8	5	4/16

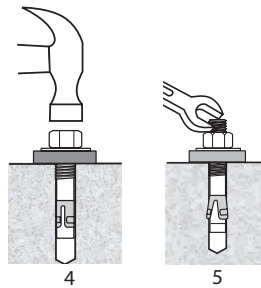
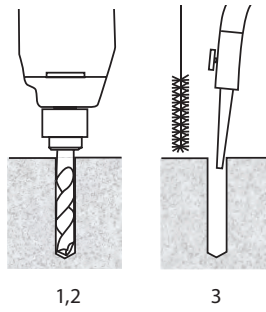
† Call for pallet pricing

* Special order items: please contact Customer Service, extension 101

1. ATG11490 and ATG11412 have a steel clip instead of a stainless steel clip

Installation Instructions

1. Drill the hole, whose diameter equals the anchor diameter, perpendicular to the work surface. To assure full holding power, do not ream the hole or allow the drill to wobble.
2. Drill the hole deeper than the intended embedment, but not closer than two diameters to the opposite surface of the concrete.
3. A clean hole is necessary for proper performance. Clean the hole using a nylon brush and compressed air.
4. Assemble the nut and washer so that the top of the nut is flush with the top of the anchor. Drive the anchor through the material to be fastened so that the nut and washer are flush with the surface of the material.
5. Tighten the nut, or head, 3 to 5 turns past the hand tight position. Installing the "Ankr-TITE® Series" of anchors with a torque wrench is recommended for optimum performance. Refer to adjacent chart.*



NOTE: Always wear safety glasses. Follow drill manufacturer's instructions. Use only solid carbide-tipped drill bits meeting ANSI B212.15 diameter standards.

Edge Distance

Embedment (E) in Anchor Diameters	Edge Distance
$E < 6d$ (shallow)	1.75E
$6d \leq E \leq 8d$ (standard)	1.00E
$8d < E$ (deep)	0.75E

*Torque Values

Anchor Dia. (in.)	Recommended Setting Torque (ft lb.)		W/O Inspection Turns To Set
	for Zinc & Galvanized	Stainless Steel	
1/4	6-8	4-7	3-5
3/8	20-25	20-25	3-5
1/2	50-55	40-50	3-5
5/8	90-95	80-90	3-5
3/4	165-175	145-155	3-5
7/8	240-250	N/A	3-5
1	290-300	250-275	3-5

Recommended Edge Distance & Spacing

Anchor Diameter (in.)	Embedment Depth (in.)	Edge Distance Requirements (in.)
1/4	1-1/4	2-1/4
	2-7/8	2-1/8
3/8	1-3/4	3-1/8
	4-5/8	3-1/2
1/2	2-1/8	3-3/4
	2-1/2	4-3/8
	6-1/4	4-1/2
5/8	2-5/8	4-1/2
	3-1/4	5-1/2
	6-1/4	4-1/2
3/4	3-1/4	5-1/2
	3-3/4	6-1/2
	7-7/8	6
7/8	3-7/8	6-3/4
	8-5/8	6-1/2
1	4	7
	10-1/2	7-7/8

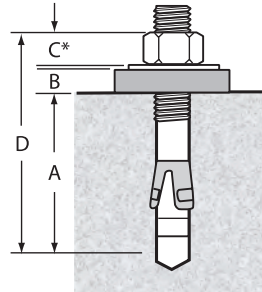
Load Adjustment Factor For Anchor Spacing

Spacing Tension ^FAN (all dimensions in inches)

Anchor Dia. 1/4			Anchor Dia. 3/8			Anchor Dia. 1/2			Anchor Dia. 5/8			Anchor Dia. 3/4		
Embed. Depth	1-1/4	2-1/2	Embed. Depth	1-3/4	4-5/8	Embed. Depth	2-1/8	6-1/4	Embed. Depth	2-3/4	6	Embed. Depth	3-3/4	7-7/8
1-1/8			1	0.50		1			3			2		
1-1/4	0.65	0.70	1-1/4	0.65	0.7	1-1/4	0.60	0.70	2-1/4	0.65	0.75	2-1/4		
1-1/2	0.75	0.75	1-1/2	0.70	0.75	1-1/2	0.70	0.75	2-1/2	0.77	0.76	2-1/2		
1-3/4	0.78	0.79	1-3/4	0.73	0.79	2-1/4	0.83	0.78	2-3/4	0.95	0.78	3	0.60	
2	0.86	0.84	2	0.76	0.80	2-1/2	0.85	0.79	3-1/2	0.93	0.80	4	0.75	0.75
2-1/4	0.87	0.85	2-1/2	0.77	0.83	3	0.90	0.80	4	0.95	0.83	5	0.80	0.80
2-1/2	0.99	0.86	3	1.00	0.87	3-3/8	0.93	0.87	4-1/2	0.96	0.86	5-3/4	0.87	0.83
3	1.00	0.87	3	0.80	0.85	3-3/4	0.99	0.90	5-1/2	0.99	0.93	6-1/4	0.90	0.85
3-3/8		0.88	3-1/2	0.90	0.90	4-1/4	1.00	0.93	6	1.00	0.96	7	1.00	0.90
3-1/2		0.89	3-3/4	1.00	0.93	4-3/4		0.96	7		1.00	8		0.96
3-3/4		1.00	4		0.95	5		0.98				9		0.98
			4-1/2		0.98	6		0.99				10		1.00
			4-5/8		1.00	7		1.00						

Length Selection

- Minimum Embedment (A)
 - + Attached Material Thickness (B)
 - + Nut Height* (C)
 - = Total Anchor Length (D)
- *Nut height equals anchor diameter.



Length Identification Codes

Code	Length of Anchor	Code	Length of Anchor	Code	Length of Anchor
A	1-1/2 < 2	J	6 < 6-1/2	S	11 < 12
B	2 < 2-1/2	K	6-1/2 < 7	T	12 < 13
C	2-1/2 < 3	L	7 < 7-1/2	U	13 < 14
D	3 < 3-1/2	M	7-1/2 < 8	V	14 < 15
E	3-1/2 < 4	N	8 < 8-1/2	W	15 < 16
F	4 < 4-1/2	O	8-1/2 < 9	X	16 < 17
G	4-1/2 < 5	P	9 < 9-1/2	Y	17 < 18
H	5 < 5-1/2	Q	9-1/2 < 10	Z	18 < 19
I	5-1/2 < 6	R	10 < 11		

**Maximum Tensile Capacity For Static Loads
All Anchor Materials**

Anchor & Hole Size	4000 psi Concrete			6000 psi Concrete		
	Embed. (in.)	Tension (lb.)	Shear (lb.)	Embed. (in.)	Tension (lb.)	Shear (lb.)
1/4	1-1/4	2000	2811	1-1/4	2042	2811
	2-1/2	2600	2811	2-1/2	2826	2811
3/8	1-3/4	3850	3075	1-3/4	4790	3075
	4-5/8	6020	4227	4-5/8	6635	4227
1/2	2-1/8	6324	6260	2-1/8	7540	6260
	6-1/4	8249	7516	6-1/4	10713	7516
5/8	2-5/8	9527	9760	2-5/8	10597	9760
	6	15893	11743	6	16705	11743
3/4	3-3/4	13130	15860	3-3/4	18979	15860
	7-7/8	19795	23817	7-7/8	24145	23817
7/8	4	16591	24000	4	19945	24000
	8	27484	25710	8	33113	25710
1	5	26676	32494	5	30683	32494
	9	36171	36896	9	36171	36896
1-1/4	5-5/8	28733	46975	5-5/8	28733	46975
	10	50390	46975	10	50390	46975

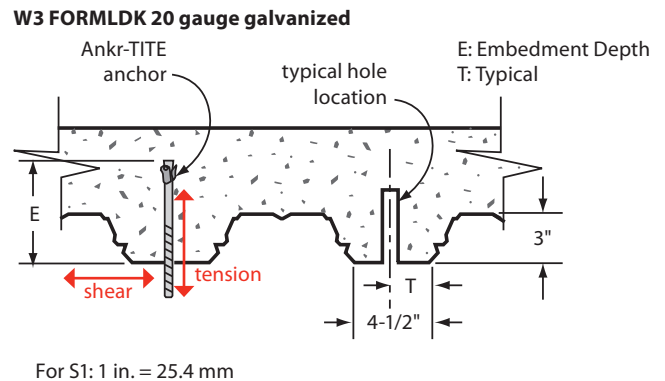
**Allowable Tensile Capacity For Static Loads
All Anchor Materials**

Anchor & Hole Size	4000 psi Concrete			6000 psi Concrete		
	Embed. (in.)	Tension (lb.)	Shear (lb.)	Embed. (in.)	Tension (lb.)	Shear (lb.)
1/4	1-1/4	500	703	1-1/4	511	703
	2-1/2	650	703	2-1/2	707	703
3/8	1-3/4	963	769	1-3/4	1198	769
	4-5/8	1505	1057	4-5/8	1659	1057
1/2	2-1/8	1581	1565	2-1/8	1885	1565
	6-1/4	2062	1879	6-1/4	2678	1879
5/8	2-5/8	2382	2440	2-5/8	2649	2440
	6	3973	2936	6	4176	2936
3/4	3-3/4	3283	3965	3-3/4	4745	3965
	7-7/8	4949	5920	7-7/8	6036	5954
7/8	4	4148	6000	4	4986	6000
	8	6871	6428	8	8278	6428
1	5	6669	8124	5	7670	8124
	9	9043	9224	9	9043	9224
1-1/4	5-5/8	7183	11744	5-5/8	7183	11744
	10	12598	11744	10	12598	11744

Ultimate Tension and Shear

Anchor Dia. (in.)	Install. Torque	Embed. Depth (in.)	Lower Flute of Steel Deck with Lightweight Concrete Fill* f'c = 3,000 PSI	
			Tension (lb.)	Shear (lb.)
3/8	20-25	1-3/4	2414	4054
		3	3169	
1/2	50-55	2-1/2	3458	5038
		4	4274	
5/8	90-95	3-1/4	4199	5884
		5	5036	
3/4	110-120	3-3/4	5136	8030
		5-1/2	7711	

Concrete-filled Steel Deck



• Information provided only for the use of a qualified design engineer. Use of technical data by unqualified persons could cause serious damage, injury, or even death.

NOTES:

- For static loads, use one-fourth of the maximum tensile and shear capacities for the recommended 4:1 safety factor.
- Tested to ASTM E488 Test Standard. Sources (available upon request): U.S. Testing Co., Tulsa, OK, Stork, Minneapolis, MN

ALLOWABLE Tension Capacity for Static Load: 4K & 6K psi Concrete, 4-1 Safety Factor

Expansion Anchors

PSI	Dia. (in.)	Embedment (in.)																		
		1-3/4	2	2-1/4	2-1/2	2-3/4	3	3-1/4	3-1/2	3-3/4	4	4-1/4	4-1/2	4-5/8						
4K	3/8	963	1010	1057	1104	1151	1198	1246	1289	1340	1387	1434	1481	1505						
6K		1198	1238	1278	1318	1358	1398	1438	1478	1518	1559	1599	1639	1659						
		2-1/8	2-1/2	2-3/4	3	3-1/4	3-1/2	3-3/4	4	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4	6	6-1/4		
4K	1/2	1581	1625	1654	1683	1712	1742	1771	1800	1829	1858	1887	1917	1946	1975	2004	2033	2062		
6K		1885	1957	2005	2053	2101	2150	2198	2246	2294	2342	2390	2438	2486	2534	2582	2630	2678		
		2-5/8	2-3/4	3	3-1/4	3-1/2	3-3/4	4	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4	6				
4K	5/8	2382	2441	2559	2677	2794	2912	3030	3148	3266	3384	3502	3620	3738	3855	3973				
6K		2649	2701	2819	2932	3045	3158	3271	3386	3498	3611	3724	3837	3950	4063	4176				
		3-3/4	4	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2	7-3/4	7-7/8	
4K	3/4	3283	3384	3485	3586	3687	3788	3889	3990	4091	4192	4292	4393	4494	4595	4696	4797	4898	4949	
6K		4745	4823	4901	4980	5058	5136	5215	5293	5371	5449	5528	5606	5684	5762	5841	5919	5997	6036	
		4	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2	7-3/4	8		
4K	7/8	4148	4318	4488	4658	4828	4999	5169	5339	5510	5680	5850	6020	6190	6361	6531	6701	6871		
6K		4986	5192	5398	5603	5809	6015	6221	6427	6633	6838	7044	7250	7455	7661	7867	8073	8278		
		5	5-1/4	5-1/2	5-3/4	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2	7-3/4	8	8 1/4	8-1/2	8-3/4	9		
4K	1	6669	6820	6921	7116	7263	7411	7559	7708	7856	8004	8153	8301	8449	8598	8746	8895	9043		
6K		7671	7757	7842	7929	8014	8100	8185	8271	8357	8443	8528	8614	8700	8786	8871	8958	9043		
		5-5/8	5-3/4	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2	7-3/4	8	8-1/4	8-1/2	8-3/4	9	9-1/4	9-1/2	9-3/4	10
4K	1-1/4	7183	7338	7647	7957	8266	8576	8885	9194	9504	9813	10123	10432	10741	11051	11360	11669	11979	12288	12598

MAXIMUM Tension Capacity for Static Loads: 4K & 6K psi Concrete

PSI	Dia. (in.)	Embedment (in.)																		
		1-3/4	2	2-1/4	2-1/2	2-3/4	3	3-1/4	3-1/2	3-3/4	4	4-1/4	4-1/2	4-5/8						
4K	3/8	3850	4039	4227	4416	4605	4793	4982	5157	5360	5548	5737	5926	6020						
6K		4790	4950	5111	5271	5432	5592	5753	5913	6073	6234	6394	6555	6635						
		2-1/8	2-1/2	2-3/4	3	3-1/4	3-1/2	3-3/4	4	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4	6	6-1/4		
4K	1/2	6324	6499	6616	6732	6849	6966	7082	7199	7316	7532	7549	7666	7782	7899	8016	8132	8249		
6K		7540	7828	8021	8213	8405	8598	8790	8982	9175	9367	9559	9751	9944	10136	10328	10521	10713		
		2-5/8	2-3/4	3	3-1/4	3-1/2	3-3/4	4	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4	6				
4K	5/8	9527	9763	10234	10706	11177	11649	12121	12592	13064	13535	14007	14478	14950	15421	15893				
6K		10597	10803	11276	11728	12181	12633	13085	13538	13990	14443	14895	15348	15800	16253	16705				
		3-3/4	4	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2	7-3/4	7-7/8	
4K	3/4	13130	13534	13938	14342	14746	15150	15554	15958	16362	16765	17169	17573	17977	18381	18785	19189	19593	19795	
6K		18979	19292	19605	19918	20231	20544	20858	21171	21484	21797	22110	22423	22736	23049	23362	23675	23988	24145	
		4	4-1/4	4-1/2	4-3/4	5	5-1/4	5-1/2	5-3/4	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2	7-3/4	8		
4K	7/8	16591	17272	17953	18633	19314	19995	20676	21357	22038	22718	23399	24080	24761	25442	26122	26803	27484		
6K		19945	20768	21591	22414	23237	24060	24883	25706	26529	27352	28175	28998	29821	30644	31467	32290	33113		
		5	5-1/4	5-1/2	5-3/4	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2	7-3/4	8	8-1/4	8-1/2	8-3/4	9		
4K	1	26676	27279	27863	28465	29050	29643	30237	30830	31424	32017	32610	33204	33797	34391	34984	35578	36171		
6K		30683	31026	31369	31712	32055	32398	32741	33084	33427	33770	34113	34456	34799	35142	35485	35828	36171		
		5-5/8	5-3/4	6	6-1/4	6-1/2	6-3/4	7	7-1/4	7-1/2	7-3/4	8	8-1/4	8-1/2	8-3/4	9	9-1/4	9-1/2	9-3/4	10
4K	1-1/4	28733	29352	30589	31827	33064	34302	35539	36777	38015	39252	40490	41727	42965	44202	45440	46677	47915	49152	50390



Specifications, Listings and Approvals

Diameters: 1/4" – 1"

Material: Carbon steel

Finish: Zinc plating ASTM B633, Type III, SC1

Federal Specifications:

- QQZ-325C, Type II, Class 3 (clear chromate added)
- GSA FFS-325, Group II, Type 4, Class 1

Code Compliance:

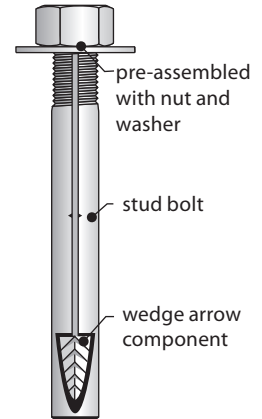
- Formerly ICC-ES Legacy Report #1821
- 1997 Uniform Building Code (UBC)
- 2000 International Building Code (IBC)
- 2000 International Residents Code
- Data Test in accordance with the ICC-ES criteria for Expansion Anchors in Concrete and Masonry Elements (ACOI) dated April 2002. Available upon request.
- State DOT: Please call Customer Service for specific approval information by state

60 years of proven performance

Key Features and Benefits

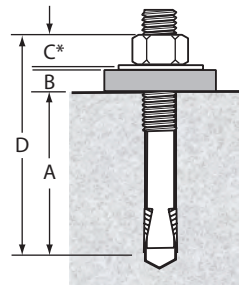
- Time-tested, proven reliability
 - An industry standard for over 60 years
- Fully assembled and ready to use
- Unparalleled job-site convenience
 - No fixture-moving required
- **Bolt Size is Hole Size®** eases installation
 - Allows precision placement of equipment through pre-drilled holes
- Exclusive **"positive wedge connections"**
 - Minimizes wedge loosening due to vibratory loads

Code Compliance:
Formerly ICC-ES Legacy Report #1821



Expansion Anchors

Length Selection



Minimum Embedment (A)
 + Attached Material Thickness (B)
 + Nut Height* (C)
 = Total Anchor Length (D)

*Nut height equals anchor diameter.

Order Information

Catalog Number	Anchor Size (in.)	Min. Embedment (in.)	Thread Length (in.)	Quantity Box /Carton
1413	1/4 x 1-3/4	1	1/2	100/600
1423	1/4 x 2-3/4	1	1/2	100/600
1430	1/4 x 3	1	1/2	100/600
5620	5/16 x 2	1-1/4	5/8	100/600
5630	5/16 x 3	1-1/4	5/8	100/600
3820	3/8 x 2	1-1/2	3/4	100/600
3823	3/8 x 2-3/4	1-1/2	3/4	100/600
3832	3/8 x 3-1/2	1-1/2	3/4	50/300
3850	3/8 x 5	1-1/2	3/4	50/300
3860	3/8 x 6	1-1/2	3/4	50/300
1223	1/2 x 2-3/4	2	1	50/300
1232	1/2 x 3-1/2	2	1	50/300
1250	1/2 x 5	2	1	25/150
1260	1/2 x 6	2	1	25/150
1270	1/2 x 7	2	1	25/150
5832	5/8 x 3-1/2	3	1-1/4	25/150
5842	5/8 x 4-1/2	3	1-1/4	25/150

Order information continued on following page

Order Information, continued

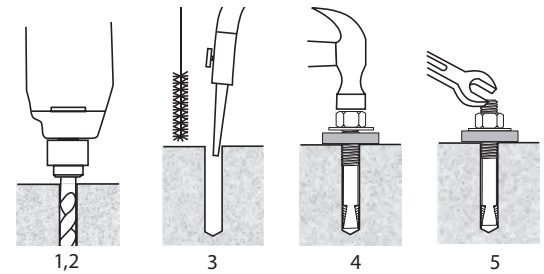
Catalog Number	Anchor Size (in.)	Min. Embedment (in.)	Thread Length (in.)	Quantity Box /Carton
5850	5/8 x 5	3	1-1/4	20/120
5860	5/8 x 6	3	1-1/4	15/90
5870	5/8 x 7	3	1-1/4	15/90
3440	3/4 x 4	3	1-1/2	18/108
3450	3/4 x 5	3	1-1/2	12/72
3460	3/4 x 6	3	1-1/2	12/72
3470	3/4 x 7	3	1-1/2	10/60
3482	3/4 x 8-1/2	3	1-1/2	10/30
3410	3/4 x 10	3	1-1/2	10/30
7880	7/8 x 8	4-1/2	1-3/4	10/30
7810	7/8 x 10	4-1/2	1-3/4	10/30
7812	7/8 x 12	4-1/2	1-3/4	5/15
1080	1 x 8	5-1/2	2	10/30
1010	1 x 10	5-1/2	2	5/15
1012	1 x 12	5-1/2	2	5/15

Edge Distance & Spacing Requirements

Embedment (E) in Anchor Diameters	Spacing	Edge Distance
$E < 6d$ (shallow)	3.5E	1.75E
$6d \leq E \leq 8d$ (standard)	2.00E	1.00E
$8d < E$ (deep)	1.50E	0.75E

Recommended Edge Distance & Spacing

Anchor Diameter (in.)	Embedment Depth	Edge Distance Requirements	Spacing Requirements
1/4	1-1/8	1-31/32	3-15/16
	1-1/2	2-5/8	5-1/4
5/16	1-1/4	2-3/16	4-3/8
	1-3/4	3-1/16	6-1/8
3/8	1-1/2	2-5/8	5-1/4
	4	3	6
1/2	2-1/4	3-15/16	7-7/8
	5	3-3/4	7-1/2
5/8	3-1/2	6-1/8	12-1/4
	4-3/4	8-5/16	16-5/8
3/4	3	5-1/4	10-1/2
	7	5-1/4	10-1/2
7/8	4-1/2	7-7/8	15-3/4
	7	7	14
1	5-1/2	9-5/8	19-1/4
	7	7	14



Installation Instructions

1. Drill the hole perpendicular to the work surface with a solid carbide bit that meets ANSI B212.5 specifications. The drill bit diameter will be the same as the anchor diameter that you are installing. To assure full holding power, do not ream the hole or allow the drill to wobble.
2. Drill the hole one diameter deeper than the intended embedment of the anchor, but not closer than two diameters to the bottom (opposite) surface of the concrete.
3. Clean the hole using compressed air and a nylon brush. A clean hole is necessary for proper performance.
4. Insert anchor into hole until washer rests solidly against fixture.
5. Tighten 1-1/2 to 3 turns past hand tight position but to a maximum torque as listed in the table below.

NOTE: Always wear safety glasses. Follow drill manufacturer's instructions. Use only solid carbide-tipped drill bits meeting ANSI B212.15 diameter standards.

Torque Values

Anchor Dia. (in.)	Recommended Setting Torque (ft lb.)	Recommended Minimum Embedment (in.)
1/4	8	1
5/16	15	1-1/4
3/8	25	1-1/2
1/2	55	2
5/8	95	3
3/4	170	3
7/8	250	4-1/2
1	300	5-1/2

Maximum Tensile and Shear Capacity For Static Loads

Anchor & Hole Size	Limestone Aggregate			Unreinforced Stone Aggregate Concrete							Unreinforced Lightweight (Idealite)		
	Embed. (in.)	2000 psi		Embed. (in.)	3000 psi		5000 psi		7000 psi		Embed. (in.)	5000 psi	
		Tension (lb.)	Shear (lb.)		Tension (lb.)	Shear (lb.)	Tension (lb.)	Shear (lb.)	Tension (lb.)	Shear (lb.)		Tension (lb.)	Shear (lb.)
1/4	1-1/8	1132	1211	1-1/8	1320	1751	1760	2316	2464	2494	1-1/2	1861	1947
1/4	1-3/4	1256	1211	1-1/2	1856	1751	2473	2316	3462	2494	-	-	-
5/16	1-1/4	1308	1210	1-1/4	2057	1839	2742	2530	3939	3439	1-1/2	2493	3064
5/16	2	1181	1210	1-3/4	2389	1839	3185	2530	4459	3439	-	-	-
3/8	1-1/4	994	1223	1-1/2	2876	4286	3834	5213	5368	5658	1-3/4	3125	4289
3/8	4	1728	1223	4	3488	4286	4650	5213	6510	5658	-	-	-
1/2	1-3/4	1542	3009	2-1/4	3473	7138	5789	10748	8105	11550	2-1/4	4778	9833
1/2	6	2695	3009	5	4809	7138	8015	10748	11221	11550	-	-	-
5/8	-	-	-	3-1/2	7582	10719	12636	15583	17690	16700	2-1/2	6455	12500
5/8	-	-	-	4-3/4	9179	10719	15299	15583	21419	16700	-	-	-
3/4	-	-	-	3	11579	15537	19299	21000	27019	23103	3-1/2	17293	19050
3/4	-	-	-	7	15444	15537	25740	21000	36036	23103	-	-	-
7/8	-	-	-	4-1/2	15266	-	25444	25099	33622	28718	-	-	-
7/8	-	-	-	7	16992	-	28320	25099	39648	28718	-	-	-
1	-	-	-	5-1/2	16351	-	27252	33083	38153	35700	4-1/2	21616	31666
1	-	-	-	7	17837	-	29728	33083	41619	35700	-	-	-
Source	1			2							2		

Sources (available upon request):

1. University of Texas, Austin, TX (using ICBO-ES testing criteria); 1993.
2. AA Engineers & Associates, Inc., Denver, CO; 1981.

NOTES:

- Information provided only for the use of a qualified design engineer. Use of technical data by persons not qualified could cause serious damage, injury, or even death.
- Ultimate values shown. For static loads, use one-fourth of the maximum tensile and shear capacities for the recommended 4:1 safety factor.
- Tested to ASTM E488 Test Standard
- Sources (available upon request): U.S. Testing Co., Tulsa, OK



Wej-It Tie Wire WTW Anchor

- For bracing and hanging acoustical ceiling tile, hanging electrical lights or other lightweight applications

Order Information

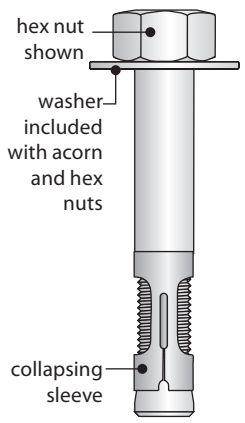
Catalog Number	Anchor Dia. & Length (in.)	Min. Embedment (in.)	Eye Diameter	Quantity: Cards Per Box/Carton
WTW1421	1/4 x 2 1/4	1 1/4	9/32	100/1000

Edge Distance

Embedment (E) in Anchor Diameters	Edge Distance
E < 6d (shallow)	1.75E
6d ≤ E ≤ 8d (standard)	1.00E
8d < E (deep)	0.75E

Sleeve Anchors

Expansion Anchors



For a wide variety of masonry applications

Key Features/Benefits

- Fully assembled and ready to use
 - Speeds installation
 - Eliminates the problem of missing components
- Suitable for a wide variety of applications
- Available with acorn or hex nut, or with slotted flat head



Specifications, Listings and Approvals

Diameters: 1/4" – 3/4"

Carbon Steel Anchor Materials:

- Anchor body:
 - 1/4 through 5/16: C1035
 - 3/8 through 5/8: C1010
- Anchor expansion sleeve : C1008
- Anchor spacer: C1008
- Finish: Zinc plating
 - Meets ASTM B633, SC1 Type III with clear chromate, SC1 class mild
 - Corrosion resistance: 12 hour salt spray

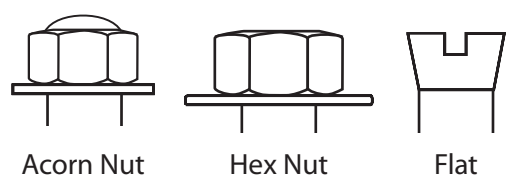
Stainless Steel Anchor Material:

- All components: AISI Type 304

Federal Specifications:

- QQZ-325C, Type II, Class 3 (clear chromate added)
- GSA FFS-325, Group II, Type 3, Class 3

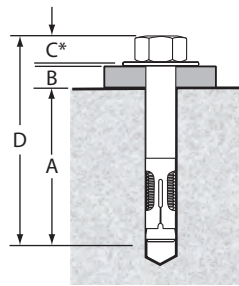
Available Nut and Head Styles



Length Selection

Minimum Embedment (A)
 + Attached Material Thickness (B)
 + Nut Height* (C)
 = Total Anchor Length (D)

*Nut height equals anchor diameter.



Order Information

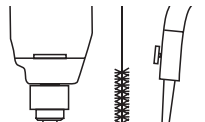
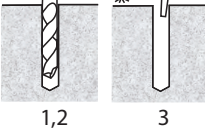
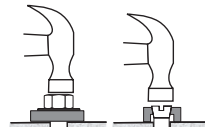
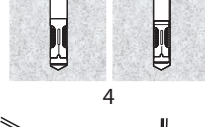
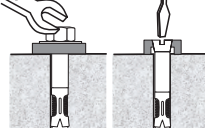
Catalog Number		Head or Nut Style	Anchor Size (in.)	Drill Bit Size (in.)	Min. Embed. (in.)	Qty. Box/ Carton
Carbon Steel	Stainless Steel					
ASA1413	ASAX1413	Acorn Nut	1/4 x 1-3/8	1/4	1-1/8	100/1000
ASA1421		Acorn Nut	1/4 x 2-1/4	1/4	1-1/8	100/800
HSA5612	HSAX5612	Hex Nut	5/16 x 1-1/2	5/16	1-1/4	100/800
HSA5622	HSAX5622	Hex Nut	5/16 x 2-1/2	5/16	1-1/4	100/800
HSA3813	HSAX3813	Hex Nut	3/8 x 1-7/8	3/8	1-1/2	50/400
HSA3830	HSAX3830	Hex Nut	3/8 x 3	3/8	1-1/2	50/400
HSA1221	HSAX1221	Hex Nut	1/2 x 2-1/4	1/2	1-7/8	25/200
HSA1230	HSAX1230	Hex Nut	1/2 x 3	1/2	1-7/8	25/200
HSA1240	HSAX1240	Hex Nut	1/2 x 4	1/2	1-7/8	25/200
HSA1260		Hex Nut	1/2 x 6	1/2	1-7/8	25/200
HSA5821		Hex Nut	5/8 x 2-1/4	5/8	2	25/200
HSA5830		Hex Nut	5/8 x 3	5/8	2	25/200
HSA5841	HSAX5841	Hex Nut	5/8 x 4-1/4	5/8	2	10/80
HSA5860		Hex Nut	5/8 x 6	5/8	2	10/80
HSA3422		Hex Nut	3/4 x 2-1/2	3/4	2-1/4	10/80
HSA3440		Hex Nut	3/4 x 4	3/4	2-1/4	10/80
HSA3461		Hex Nut	3/4 x 6-1/4	3/4	2-1/4	10/80
FSA1421		Flat Head	1/4 x 2-1/4	1/4	1-1/8	100/800
FSA1431		Flat Head	1/4 x 3-1/4	1/4	1-1/8	100/800

Order information continued on following page.

Order Information, continued

Catalog Number		Head or Nut Style	Anchor Size (in.)	Drill Bit Size (in.)	Min. Embed. (in.)	Qty. Box/ Carton
Carbon Steel	Stainless Steel					
FSA1440		Flat Head	1/4 x 4	1/4	1-1/8	100/800
FSA3823		Flat Head	3/8 x 2-3/4	3/8	1-1/2	50/400
FSA3840		Flat Head	3/8 x 4	3/8	1-1/2	50/400
FSA3850		Flat Head	3/8 x 5	3/8	1-1/2	50/400
FSA3860		Flat Head	3/8 x 6	3/8	1-1/2	50/400

Installation Instructions

1. Drill the hole perpendicular to the work surface. To assure full holding power, do not ream the hole or allow the drill to wobble. 
2. Drill the hole deeper than the intended embedment of the anchor, but not closer than two anchor diameters to the bottom (opposite) surface of the concrete. Through drilling is allowed when using sleeve anchors in hollow concrete block. 
3. Clean the hole using compressed air and a nylon brush. A clean hole is necessary for proper performance. 
4. Assemble the washer and nut on the anchor so that the nut protrudes slightly beyond the fixture and insert anchor into the hole making sure the nut, or head, rests solidly against the fixture. 
5. Tighten the nut, or head, 3 to 5 turns past the hand tight position. 

NOTE: Always wear safety glasses. Follow drill manufacturer's instructions. Use only solid carbide-tipped drill bits meeting ANSI B212.15 diameter standards.

Information provided only for the use of a qualified design engineer. Use of technical data by persons not qualified could cause serious damage, injury or even death.

Ultimate values shown. For static loads, use one-fourth of the maximum tensile and shear capacities for the recommended 4:1 safety factor.

Edge Distance and Spacing Requirements

Embedment (E) in Anchor Diameters	Spacing	Edge Distance
E < 6d (shallow)	3.5E	1.75E
6d ≤ E ≤ 8d (standard)	2.00E	1.00E
8d < E (deep)	1.50E	0.75E

Maximum Tensile and Shear For Static Loads in Concrete

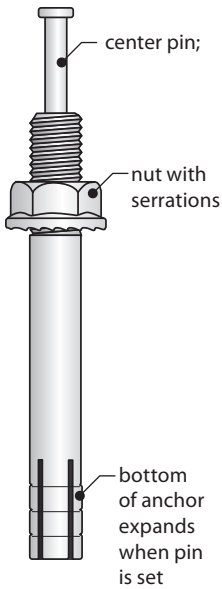
Anchor Dia. (in.)	Head or Nut Style	Drill Dia. (in.)	Bolt Size (in.)	4000 psi Concrete		
				Embed. (in.)	Tension (lb.)	Shear (lb.)
1/4	Acorn Nut	1/4	10-24	1-1/16	1049	1379
				1-11/16	1493	1774
1/4	Flat Head	1/4	10-24	1-5/8	1393	1141
				2-5/8	1470	1243
5/16	Hex Nut	5/16	1/4-20	1-3/16	1630	2225
				2-1/16	2181	2311
3/8	Hex Nut	3/8	5/16-18	1-1/4	2502	3116
				2-1/2	3046	3691
3/8	Flat Head	3/8	5/16-18	2-3/8	2928	2318
				3-11/16	2345	1954
				4-5/8	2563	2064
				5-5/8	2842	2238
1/2	Hex Nut	1/2	3/8-16	1-1/2	2656	3724
				2-3/8	4649	2726
				3-3/8	5127	4726
5/8	Hex Nut	5/8	1/2-13	2-1/4	4568	5218
				3-15/16	7285	6747
				5-7/16	7631	7689
3/4	Hex Nut	3/4	5/8-11	1-7/8	5388	7862
				3-9/16	6219	9786
				5-1/2	6456	10073

Maximum Tensile and Shear For Static Loads in Hollow Concrete Block

Anchor Dia. (in.)	Head Style	Drill Dia. (in.)	Bolt Size (in.)	Embed. (in.)	2000 psi Hollow Concrete Block			
					w/o 2000 psi grout		w/ 2000 psi grout	
					Tension (lb.)	Shear (lb.)	Tension (lb.)	Shear (lb.)
1/4	Acorn	1/4	10-24	1-1/16	943	1587	1476	1587
				1-5/8	1065	2265	1346	1518
5/16	Acorn	5/16	1/4-20	2-1/16	1127	3056	1479	2265
3/8	Hex Nut	3/8	5/16-18	1-1/4	891	3009	2311	3056
				2-1/2	625	3794	2218	3009
1/2	Hex Nut	1/2	3/8-16	1-1/2	973	4071	2094	3794
				2-3/8	-	-	2689	4071
				3-3/8	-	-	2816	5197
5/8	Hex Nut	5/8	1/2-13	3-5/16	-	-	4098	6580
				5-7/16	-	-	4432	6617
3/4	Hex Nut	3/4	5/8-11	3-9/16	-	-	4990	9888
				5-1/2	-	-	4699	9924

Source (available on request): SGS U.S. Testing Co. Inc., Tulsa, OK; 1996 (Tested in accordance with ASTM E-488).

Center Pin Drive Anchors



Hammer in to create tension then tighten nut to secure

Key Features/Benefits

- Easy to install
 - Just hammer the center pin and it's set
 - Anchor tensions itself automatically, so no wrench is needed
- Easy to inspect
 - Anchor is set when center pin is flush with top of hole
- Depth of hole not critical
 - No depth gauge required
- Actual diameter of the anchor is the same as its nominal diameter
 - No templates required
- Serrations on nut provide vibration resistance
- Yellow dichromate finish provides superior corrosion resistance



Specifications, Listings and Approvals

Diameters: 1/4" – 3/4"

Materials:

- **Anchor Body:** Hot Rolled Steel
- **Pin:** Hot Wrought Iron

Finish: Yellow Dichromate Coating

Federal Specifications:

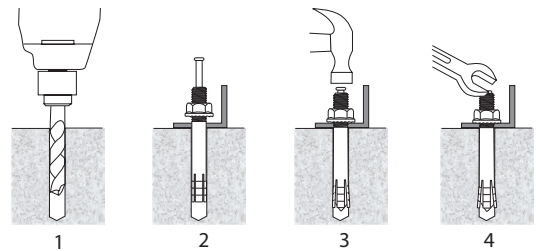
- QQZ-325Z, Type II Class 3 (yellow dichromate added)
- GSA FFS-325 Group II Type 4 Class I

Order Information

Catalog Number	Anchor Size (in.)	Max. Thickness Fastened (in.)	Minimum Embedment (in.)	Box Qty.	Case Qty.
CP1413	1/4 x 1-3/4	3/8	1-1/8	100	800
CP1423	1/4 x 2-3/8	1	1-1/8	100	800
CP5620	5/16 x 2	5/16	1-3/8	100	800
CP5623	5/16 x 2-3/4	11/16	1-3/4	100	800
CP3823	3/8 x 2-3/8	5/8	1-3/8	50	400
CP3832	3/8 x 3-1/2	1-3/8	1-3/4	50	400
CP3843	3/8 x 4-3/4	2-5/8	1-3/4	50	400
CP1223	1/2 x 2-3/4	1/4	2	25	200
CP1232	1/2 x 3-1/2	3/4	2-1/4	25	200
CP1243	1/2 x 4-3/4	2	2-1/4	25	200
CP1260	1/2 x 6	3-1/4	2-1/4	25	200
CP5840	5/8 x 4	1-5/8	2-3/4	10	80
CP5860	5/8 x 6	2	2-3/4	10	80
CP3450	3/4 x 5	2	3-1/2	10	30
CP3460	3/4 x 6	2	3-1/2	10	30
CP3472	3/4 x 7-1/2	2	3-1/2	10	30

Maximum Tensile and Shear Capacity For Static Loads

Anchor Dia. (in.)	Embedment Depth (in.)	2000 psi		4000 psi	
		Tension (lb.)	Shear (lb.)	Tension (lb.)	Shear (lb.)
1/4	1-1/8	780	1000	1567	1000
5/16	1-1/2	2130	1320	3159	1320
3/8	1-7/8	2530	2580	3307	3580
1/2	2-1/2	4040	4920	5604	4920
5/8	2-3/4	6360	9200	7742	9200
3/4	3-1/2	8700	11400	12083	11400



Installation Instructions

1. Drill the hole perpendicular to the work surface. To assure full holding power, do not ream the hole or allow drill to wobble. Clean hole using compressed air and a nylon brush. A clean hole is necessary for proper performance.
2. Preset the nut and washer for desired embedment.
3. Hammer center pin until it is aligned with the top of the bolt.
4. Tighten nut.

NOTE: Always wear safety glasses. Follow drill manufacturer's instructions. Use only solid carbide-tipped drill bits meeting ANSI B212.15 diameter standards.

Edge Distance Requirements

Embedment (E) in Anchor Diameters	Spacing	Edge Distance
E < 6d (shallow)	3.5E	1.75E
6d ≤ E ≤ 8d (standard)	2.00E	1.00E
8d < E (deep)	1.50E	0.75E