

**GENERAL INFORMATION**

**ATOMIC+ UNDERCUT®**

Heavy Duty Undercut Anchor

**PRODUCT DESCRIPTION**

The Atomic+ Undercut anchor is designed for applications in cracked and uncracked concrete. The anchors are available in standard ASTM A 36 steel, high strength ASTM A 193 Grade B7 steel and Type 316 stainless steel in Class 1 and Class 2 strength designations.

The Type 316 stainless steel version can be considered for exterior use and industrial applications where a high level of corrosion resistance is required.

The Atomic+ Undercut anchor is installed into a pre-drilled hole which has been enlarged at the bottom in the shape of a reversed cone using the undercut drill bit supplied by DEWALT. The result is an anchor which transfers load mainly through bearing, and unlike a typical expansion anchor is not dependent upon friction between the expansion sleeve and the concrete. Due to the use of a thick walled expansion sleeve, the load is distributed to a large area which can provide ductile behavior of the anchor even at relatively shallow embedments.

**GENERAL APPLICATIONS AND USES**

- Structural connections, beam and column anchorage
- Safety related attachments
- Tension zone applications
- Heavy duty loading
- Pipe supports, strut & base mounts
- Suspended equipment
- Seismic and wind loading

**FEATURE AND BENEFITS**

- + Consistent performance in high and low strength concrete
- + Anchors available for standard pre-set installations and for through bolt applications
- + Length ID code and identifying marking stamped on head of each anchor
- + Load transfers to concrete through bearing, not friction, behaves like a cast-in-place bolt
- + Bearing load transfer allows for closer spacing and edge distances
- + Can be designed for predictable ductile steel performance
- + Undercut created in seconds with durable undercutting tool

**APPROVALS AND LISTINGS**

- International Code Council, Evaluation Service (ICC-ES), ESR-3067  
Code compliant with the 2015 IBC, 2015 IRC, 2012 IBC, 2012 IRC, 2009 IBC, 2009 IRC, 2006 IBC, and 2006 IRC
- Tested in accordance with ACI 355.2/ASTM E488 and ICC-ES AC193 for use in structural concrete under the design provisions of ACI 318-14 Chapter 17 or ACI 318-11/08 Appendix D
- Evaluated and qualified by an accredited independent testing laboratory for recognition in cracked and uncracked concrete including seismic and wind loading (Category 1 anchors)

**GUIDE SPECIFICATIONS**

CSI Divisions: 03 16 00 – Concrete Anchors and 05 05 19 - Post-Installed Concrete Anchors. Undercut anchors shall be Atomic+ Undercut as supplied by DEWALT, Towson, MD. Anchors shall be installed in accordance with published instructions and the Authority Having Jurisdiction.

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ATOMIC+ UNDERCUT ASSEMBLY

**THREAD VERSION**

- UNC threaded stud

**ANCHOR MATERIALS**

- Zinc Plated Carbon Steel
- Type 316 Stainless Steel

**ANCHOR SIZE RANGE (TYP.)**

- 3/8" through 3/4" diameter

**SUITABLE BASE MATERIALS**

- Normal-weight concrete
- Sand-lightweight concrete



**MATERIAL SPECIFICATIONS**

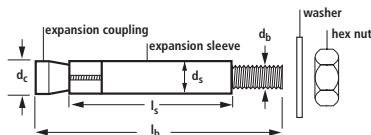
Anchor Component	Anchor Designation			
	Carbon Steel	High Strength Carbon Steel	Stainless Steel (Type 316)	High Strength Stainless Steel (Type 316)
Threaded Rod	ASTM A 36	ASTM A 193, Grade B7	ASTM A193, Grade B8M, Class 1	ASTM A193, Grade B8M, Class 2
Expansion Coupling (Cone)	ASTM A 108 12L14		ASTM A 274 S	
Expansion/Spacer Sleeve	ASTM A 513 Type 5		ASTM A 274 S	
Hex Nut	ASTM A 563, Grade C		ASTM A 194, Grade 8M	
Washer	ASTM F 844; Meets dimensional requirements of ANSI B18.22.1, Type A plain		Type 316 SS; Meets dimensional requirements of ANSI B18.22.1, Type A plain	
Plating	Zinc plating in accordance with ASTM B 633, SC1 (Fe/Zn 5) or equivalent; Minimum plating requirement for Mild Service Condition		Not applicable	

**ANCHOR SPECIFICATIONS**

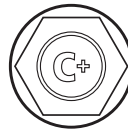
**Dimensional Characteristics Table for Atomic+ Undercut**

Anchor Designation	Anchor Type	Anchor Rod ASTM Designation	Rod Diameter, d <sub>r</sub> (inch)	Anchor Length, l <sub>a</sub> (inches)	Sleeve Length, l <sub>s</sub> (inches)	Sleeve Diameter, d <sub>s</sub> (inch)	Expansion Coupling Diameter d <sub>c</sub> (inch)	Max. Fixture Thickness, t (inches)
03100SD	Standard	A 36	3/8	5-1/2	2-3/4	5/8	5/8	1-3/4
03102SD	Through bolt (TB)	A 36	3/8	5-1/2	4-1/2	5/8	5/8	1-3/4
03600SD	Standard	A 193, Grade B8M, Class 1	3/8	5-1/2	2-3/4	5/8	5/8	1-3/4
03602SD	Through bolt (TB)	A 193, Grade B8M, Class 1	3/8	5-1/2	4-1/2	5/8	5/8	1-3/4
03603SD	Standard	A193, Grade B8M, Class 2	3/8	6-3/4	4	5/8	5/8	1-3/4
03605SD	Through Bolt (TB)	A193, Grade B8M, Class 2	3/8	6-3/4	5-3/4	5/8	5/8	1-3/4
03104SD	Standard	A 193, Grade B7	3/8	6-3/4	4	5/8	5/8	1-3/4
03106SD	Through bolt (TB)	A 193, Grade B7	3/8	6-3/4	5-3/4	5/8	5/8	1-3/4
03108SD	Standard	A 36	1/2	7	4	3/4	3/4	1-3/4
03110SD	Through bolt (TB)	A 36	1/2	7	5-3/4	3/4	3/4	1-3/4
03608SD	Standard	A 193, Grade B8M, Class 1	1/2	7	4	3/4	3/4	1-3/4
03610SD	Through bolt (TB)	A 193, Grade B8M, Class 1	1/2	7	5-3/4	3/4	3/4	1-3/4
03609SD	Standard	A193, Grade B8M, Class 2	1/2	8	5	3/4	3/4	1-3/4
03613SD	Through Bolt (TB)	A193, Grade B8M, Class 2	1/2	8	6-3/4	3/4	3/4	1-3/4
03112SD	Standard	A 193, Grade B7	1/2	8	5	3/4	3/4	1-3/4
03114SD	Through bolt (TB)	A 193, Grade B7	1/2	8	6-3/4	3/4	3/4	1-3/4
03116SD	Standard	A 193, Grade B7	1/2	9-3/4	6-3/4	3/4	3/4	1-3/4
03118SD	Through bolt (TB)	A 193, Grade B7	1/2	9-3/4	8-1/2	3/4	3/4	1-3/4
03120SD	Standard	A 36	5/8	7-3/4	4-1/2	1	1	1-3/4
03122SD	Through bolt (TB)	A 36	5/8	7-3/4	6-1/4	1	1	1-3/4
03620SD	Standard	A 193, Grade B8M, Class 1	5/8	7-3/4	4-1/2	1	1	1-3/4
03622SD	Through bolt (TB)	A 193, Grade B8M, Class 1	5/8	7-3/4	6-1/4	1	1	1-3/4
03635SD	Standard	A193, Grade B8M, Class 2	5/8	10-3/4	7-1/2	1	1	1-3/4
03639SD	Through Bolt (TB)	A193, Grade B8M, Class 2	5/8	10-3/4	9-1/4	1	1	1-3/4
03124SD	Standard	A 193, Grade B7	5/8	10-3/4	7-1/2	1	1	1-3/4
03126SD	Through bolt (TB)	A 193, Grade B7	5/8	10-3/4	9-1/4	1	1	1-3/4
03128SD	Standard	A 193, Grade B7	5/8	12-1/4	9	1	1	1-3/4
03130SD	Through bolt (TB)	A 193, Grade B7	5/8	12-1/4	10-3/4	1	1	1-3/4
03132SD	Standard	A 36	3/4	8-5/8	5	1-1/8	1-1/8	1-3/4
03134SD	Through bolt (TB)	A 36	3/4	8-5/8	6-3/4	1-1/8	1-1/8	1-3/4
03632SD	Standard	A 193, Grade B8M, Class 1	3/4	8-5/8	5	1-1/8	1-1/8	1-3/4
03634SD	Through bolt (TB)	A 193, Grade B8M, Class 1	3/4	8-5/8	6-3/4	1-1/8	1-1/8	1-3/4
03648SD	Standard	A193, Grade B8M, Class 2	3/4	13-5/8	10	1-1/8	1-1/8	1-3/4
03649SD	Through Bolt (TB)	A193, Grade B8M, Class 2	3/4	13-5/8	11-3/4	1-1/8	1-1/8	1-3/4
03136SD	Standard	A 193, Grade B7	3/4	13-5/8	10	1-1/8	1-1/8	1-3/4
03138SD	Through bolt (TB)	A 193, Grade B7	3/4	13-5/8	11-3/4	1-1/8	1-1/8	1-3/4

**Atomic+ Undercut Anchor Detail**



**Head Marking**



**Legend**  
Letter Code = Length Identification Mark  
"++" Symbol = Strength Design Compliant Anchor (see ordering information)

**Length Identification**

Mark	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
From	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	4-1/2"	5"	5-1/2"	6"	6-1/2"	7"	7-1/2"	8"	8-1/2"	9"	9-1/2"	10"	11"	12"
Up to but not including	2"	2-1/2"	3"	3-1/2"	4"	4-1/2"	5"	5-1/2"	6"	6-1/2"	7"	7-1/2"	8"	8-1/2"	9"	9-1/2"	10"	11"	12"	13"

Length identification mark indicates overall length of anchor.

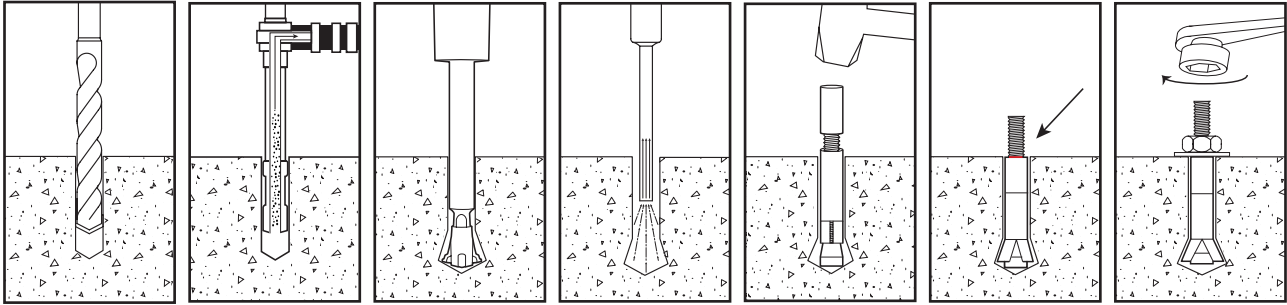
**MECHANICAL ANCHORS**

**ATOMIC+ UNDERCUT®**  
Heavy Duty Undercut Anchor

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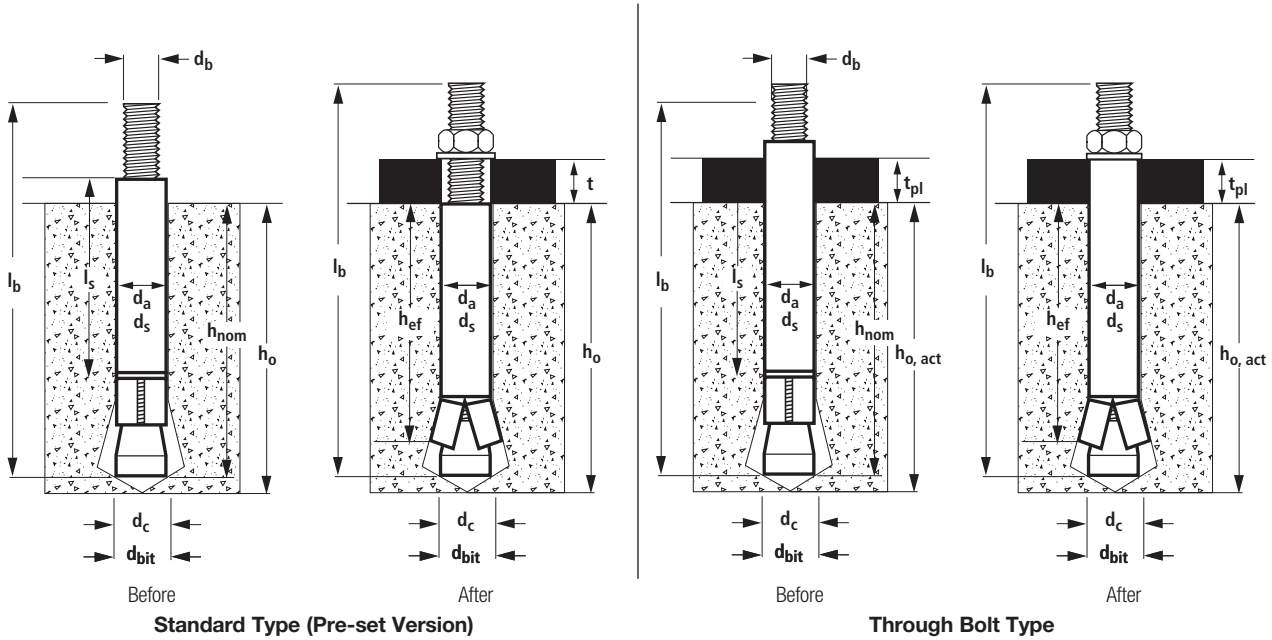
**INSTALLATION INSTRUCTIONS**

**Installation Instructions for Atomic+ Undercut Anchors**



- Using the proper drill bit size, drill a hole into the base material to the required depth. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.15.
- 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.
- Insert the undercut bit and start the rotohammer. Undercutting is complete when the stopper sleeve is fully compressed (gap closed)
- Remove dust and debris from the hole following drilling (e.g. suction, forced air)
- Insert anchor into hole. Place setting sleeve over anchor and drive the expansion sleeve over the expansion coupling.
- Verify that the setting mark is visible on the threaded rod above the sleeve.
- Apply proper torque; Do not exceed maximum torque.

**Atomic+ Undercut Anchor Detail (before and after application of setting sleeve and attachment)**



**Axial Stiffness Values,  $\beta$ , for Atomic+ Undercut Anchors in Normal-Weight Concrete<sup>1</sup>**

Concrete State	Notation	Units	Nominal Anchor Size / Rod Diameter (inch)			
			3/8	1/2	5/8	3/4
Uncracked concrete	$\beta_{min}$	10 <sup>3</sup> lbf/in	131			
	$\beta_m$	10 <sup>3</sup> lbf/in	930			
	$\beta_{max}$	10 <sup>3</sup> lbf/in	1,444			
Cracked concrete	$\beta_{min}$	10 <sup>3</sup> lbf/in	91			
	$\beta_m$	10 <sup>3</sup> lbf/in	394			
	$\beta_{max}$	10 <sup>3</sup> lbf/in	1,724			

1. Valid for anchors with high strength threaded rod (A 193 Grade B7). For anchors with low strength threaded rod (A 36) values must be multiplied by 0.7.

**INSTALLATION SPECIFICATIONS**

**Installation Specifications for Atomic+ Undercut Anchors**

Anchor Property/Setting Information	Notation	Units	Nominal Anchor Diameter									
			3/8 inch		1/2 inch		5/8 inch		3/4 inch			
Outside anchor diameter	d <sub>a</sub>	in. (mm)	0.625 (15.9)		0.750 (19.1)		1.000 (25.4)		1.125 (28.6)			
Minimum diameter of hole clearance in fixture <sup>2</sup>	d <sub>h</sub>	in. (mm)	7/16 (11.1)		9/16 (14.3)		11/16 (17.5)		13/16 (20.6)			
Anchor rod designation, carbon steel	ASTM	-	A36	A193 Gr. B7	A36	A193 Grade B7		A36	A193 Grade B7			
Anchor rod designation, stainless steel	ASTM	-	A193 Gr. B8M Class 1	A193 Gr. B8M Class 2	A193 Gr. B8M Class 1	A193 Gr. B8M Class 2	-	A193 Gr. B8M Class 1	A193 Gr. B8M Class 2	-	A193 Gr. B8M Class 1	A193 Gr. B8M Class 2
Minimum nominal embedment depth	h <sub>nom</sub>	in. (mm)	3-1/8 (79)	4-3/8 (111)	4-1/4 (108)	5-1/4 (133)	7 (178)	5 (127)	8 (203)	9-1/2 (241)	5-7/8 (149)	10-7/8 (276)
Effective embedment	h <sub>ef</sub>	in. (mm)	2-3/4 (68)	4 (102)	4 (102)	5 (127)	6-3/4 (171)	4-1/2 (114)	7-1/2 (190)	9 (229)	5 (127)	10 (254)
Minimum hole depth <sup>1</sup>	h <sub>o</sub>	in. (mm)	3-1/8 (79)	4-3/8 (111)	4-1/4 (108)	5-1/4 (133)	7 (178)	5 (127)	8 (204)	9-1/2 (241)	5-7/8 (149)	10-7/8 (276)
Minimum concrete member thickness	For h <sub>min1</sub>	in. (mm)	5-1/2 (140)	8 (204)	8 (204)	10 (254)	13-1/2 (343)	9 (229)	15 (381)	18 (457)	10 (254)	20 (508)
	C <sub>ac,1</sub> ≥	in. (mm)	4-1/8 (105)	6 (152)	6 (152)	7-1/2 (190)	10-1/8 (257)	6-3/4 (171)	11-1/4 (256)	13-1/2 (343)	7-1/2 (190)	15 (381)
	For h <sub>min2</sub>	in. (mm)	4-3/8 (111)	6 (152)	6 (152)	7-1/2 (190)	10-1/8 (257)	6-3/4 (171)	11-1/4 (256)	13-1/2 (343)	7-1/2 (190)	15 (381)
	C <sub>ac,2</sub> ≥	in. (mm)	5-1/2 (140)	10-1/4 (260)	9-1/4 (235)	13 (330)	20-1/4 (514)	9-1/2 (241)	21 (533)	27 (686)	10-1/2 (267)	30 (762)
Minimum edge distance	C <sub>min</sub>	in. (mm)	2-1/4 (57)	3-1/4 (82)	3-1/4 (82)	4 (102)	5-3/8 (86)	3-5/8 (92)	6 (152)	7-1/4 (184)	4 (102)	8 (204)
Minimum spacing distance	S <sub>min</sub>	in. (mm)	2-3/4 (70)	4 (102)	4 (102)	5 (127)	6-3/4 (171)	4-1/2 (114)	7-1/2 (190)	9 (229)	5 (127)	10 (254)
Maximum thickness of fixture	t	in. (mm)	1-3/4 (44)		1-3/4 (44)		1-3/4 (44)		1-3/4 (44)		1-3/4 (44)	
Maximum torque	T <sub>inst</sub>	ft.-lbf.	26		44		60		133			
Torque wrench / socket size	-	in.	11/16		7/8		1-1/16		1-1/4			
Nut Height	-	in.	23/64		31/64		39/64		47/64			
<b>Stop Drill Bit</b>												
Nominal stop drill bit diameter	d <sub>bit</sub>	in.	5/8 ANSI		3/4 ANSI		1 ANSI		1-1/8 ANSI			
Stop drill bit for anchor installation	-	-	3220SD	3221SD	3222SD	3223SD	3224SD	3225SD	3226SD	3227SD	3228SD	3229SD
Drilled hole depth of stop bit <sup>1</sup>	-	-	3-1/8	4-3/8	4-1/4	5-1/4	7	5	8	9-1/2	5-7/8	10-7/8
Stop drill bit shank type	-	-	SDS		SDS		SDS-Max		SDS-Max		SDS-Max	
<b>Undercut Drill Bit</b>												
Nominal undercut drill bit diameter	d <sub>uc</sub>	in.	5/8		3/4		1		1-1/8			
Undercut drill bit designation	-	-	3200SD		3201SD		3202SD		3203SD			
Maximum depth of hole for undercut drill bit	-	in. (mm)	9 (229)		10-1/4 (260)		12-1/4 (311)		13-1/2 (343)			
Undercut drill bit shank type	-	-	SDS		SDS		SDS-Max		SDS-Max			
Required impact drill energy	-	ft.-lbf.	1.6		2.5		3.2		4.0			
<b>Setting Sleeve</b>												
Recommended setting sleeve	-	-	3210SD		3211SD		3212SD		3213SD			

For SI: 1 inch = 25.4 mm, 1 ft-lbf = 1.356 N-m.

- For through bolt applications, the actual hole depth is given by the minimum hole depth plus the maximum thickness of fixture less the thickness of the actual part(s) being fastened to the base material (h<sub>o,act</sub> = h<sub>o</sub> + t - t<sub>p</sub>).
- For through bolt applications the minimum diameter of hole clearance in fixture is 1/16-inch larger than the nominal outside anchor diameter.

**MECHANICAL ANCHORS**

**ATOMIC+ UNDERCUT**  
Heavy Duty Undercut Anchor

**PERFORMANCE DATA**

**Tension and Shear Design Information For Atomic+ Undercut Anchor in Concrete  
(For use with load combinations taken from ACI 318-14 Section 5.3 or ACI 318-11 Section 9.2)<sup>1</sup>**

Anchor Property / Setting Information	Notation	Units	Nominal Anchor Diameter										
			3/8 inch		1/2 inch		5/8 inch		3/4 inch				
Anchor category	1, 2 or 3	-	1										
Outside anchor diameter	$d_a[d_a]^8$	in. (mm)	0.625 (15.9)		0.750 (19.1)		1.000 (25.4)		1.125 (28.6)				
Effective embedment	$h_{ef}$	in. (mm)	2-3/4 (68)	4 (102)	4 (102)	5 (127)	6-3/4 (171)	4-1/2 (114)	7-1/2 (190)	9 (229)	5 (127)	10 (254)	
<b>STEEL STRENGTH IN TENSION AND SHEAR<sup>9</sup></b>													
Tensile stress area of anchor rod steel	$A_{se}$	in. <sup>2</sup> (mm <sup>2</sup> )	0.0775 (50)		0.1419 (91)		0.2260 (146)		0.3345 (216)				
ASTM A36 ( $f_y \geq 36$ ksi) ASTM A193 Grade B7 ( $f_y \geq 105$ ksi)	Minimum specified yield strength of anchor rod <sup>10</sup>	$f_y$	36 (248)	105 (723)	36 (248)	105 (723)	105 (723)	36 (248)	105 (723)	105 (723)	36 (248)	105 (723)	
	Minimum specified ultimate tensile strength of anchor rod <sup>10</sup>	$f_{uta}$	58 (400)	125 (860)	58 (400)	125 (860)	125 (860)	58 (400)	125 (860)	125 (860)	58 (400)	125 (860)	
	Steel strength in tension, static <sup>10</sup>	$N_{sa}$	4,495 (20.1)	9,685 (43.2)	8,230 (36.7)	17,735 (79.1)	17,735 (79.1)	13,100 (58.5)	28,250 (126.1)	28,250 (126.1)	19,400 (86.3)	41,810 (186.0)	
	Steel strength in shear, static <sup>9,10</sup>	$V_{sa}$	lb (kN)	2,245 (10.0)	4,885 (21.7)	4,110 (18.4)	8,855 (39.5)	8,855 (39.5)	6,560 (29.3)	14,110 (63.0)	14,110 (63.0)	9,685 (43.2)	20,875 (93.2)
	Steel strength in shear, seismic <sup>9,10</sup>	$V_{eq}$	lb (kN)	2,245 (10.0)	4,885 (21.7)	4,110 (18.4)	8,855 (39.5)	8,855 (39.5)	6,560 (29.3)	14,110 (63.0)	14,110 (63.0)	9,685 (43.2)	20,875 (93.2)
ASTM A193 Grade B8M, Class 1 ( $f_y \geq 30$ ksi) ASTM A193 Grade B8M, Class 2 ( $f_y \geq 95$ ksi)	Minimum specified yield strength of anchor rod (Type 316 stainless steel anchor)	$f_{y,ss}$	30 (205)	95 (655)	30 (205)	95 (655)	-	30 (205)	95 (655)	-	30 (205)	95 (655)	
	Minimum specified ultimate tensile strength of anchor rod (Type 316 stainless steel anchor)	$f_{uta,ss}$	75 (515)	105 (760)	75 (515)	105 (760)	-	75 (515)	105 (760)	-	75 (515)	105 (760)	
	Steel strength in tension, static (Type 316 stainless steel anchor) <sup>11</sup>	$N_{sa,ss}$	4,415 (19.6)	8,525 (37.9)	8,085 (36.0)	15,610 (69.4)	-	12,880 (57.3)	24,860 (110.6)	-	19,065 (84.8)	36,795 (163.7)	
	Steel strength in shear, static (Type 316 stainless steel anchor) <sup>11</sup>	$V_{sa,ss}$	lb (kN)	2,210 (9.8)	4,265 (19.0)	4,045 (18.0)	7,805 (34.7)	-	6,440 (28.6)	12,430 (55.3)	-	9,535 (42.4)	18,400 (81.8)
Reduction factor for steel strength in tension <sup>2</sup>	$\phi$	-	0.75										
Reduction factor for steel strength in shear <sup>2</sup>	$\phi$	-	0.65										
<b>CONCRETE BREAKOUT STRENGTH IN TENSION AND SHEAR<sup>2</sup></b>													
Effectiveness factor for uncracked concrete	$k_{uncr}$	-	30		30		30		30				
Effectiveness factor for cracked concrete	$k_{cr}$	-	24		24		24		24				
Modification factor for cracked and uncracked concrete <sup>4</sup>	$\Psi_{c,N}$	-	1.0 (See note 4)		1.0 (See note 4)		1.0 (See note 4)		1.0 (See note 4)				
Reduction factor for concrete breakout strength in tension <sup>2</sup>	$\phi$	-	0.65 (Condition B)										
Reduction factor for concrete breakout strength in shear <sup>2</sup>	$\phi$	-	0.70 (Condition B)										
<b>PULLOUT STRENGTH IN TENSION<sup>5</sup></b>													
Characteristic pullout strength, uncracked concrete (2,500 psi) <sup>5</sup>	$N_{p,uncr}$	lb (kN)	See note 6		See note 6		See note 6		See note 6				
Characteristic pullout strength, cracked concrete (2,500 psi) <sup>5</sup>	$N_{p,cr}$	lb (kN)	See note 6	9,000 (40.2)	See note 6	11,500 (51.3)	See note 6	15,000 (67.0)	See note 6	22,000 (98.2)			
Characteristic pullout strength, seismic (2,500 psi) <sup>5,10</sup>	$N_{eq}$	lb (kN)	See note 6	9,000 (40.2)	See note 6	11,500 (51.3)	See note 6	15,000 (67.0)	See note 6	22,000 (98.2)			
Reduction factor for pullout strength <sup>2</sup>	$\phi$	-	0.65 (Condition B)										
<b>PRYOUT STRENGTH IN SHEAR<sup>7</sup></b>													
Coefficient for pryout strength	$k_{cp}$	-	2.0		2.0		2.0		2.0				
Reduction factor for pryout strength <sup>2</sup>	$\phi$	-	0.70 (Condition B)										
For Sl: 1 inch = 25.4 mm, 1 ksi = 6.895 MPa (N/mm <sup>2</sup> ), 1 lbf = 0.0044 kN, 1 in <sup>2</sup> = 645 mm <sup>2</sup> .													
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, shall apply.													
2. All values of $\phi$ were determined from 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 $\phi$ 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, as applicable, 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 $\phi$ 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.													
3. Anchors are considered a ductile steel element as defined by ACI 318-14 2.3 or ACI 318-11 D.1, as applicable.													
4. For all design cases $\Psi_{c,N} = 1.0$ . The appropriate effectiveness factor for cracked concrete ( $k_{cr}$ ) or uncracked concrete ( $k_{uncr}$ ) must be used.													
5. For all design cases $\Psi_{c,P} = 1.0$ . For concrete compressive strength greater than 2,500 psi $N_{pr} = (\text{pullout strength from table}) \times (\text{specified concrete compressive strength}/2,500)^{0.5}$ .													
6. Pullout strength does not control design of indicated anchors. Do not calculate pullout strength for indicated anchor size and embedment.													
7. Anchors are permitted to be used in lightweight concrete provided the modification factor $\lambda_a$ equal to $0.8\lambda$ is applied to all values of $\sqrt{f'_c}$ affecting $N_p$ and $V_n$ . $\lambda$ shall be determined in accordance with the corresponding version of ACI 318.													
8. The notation in brackets is for the 2006 IBC.													
9. Shear strength values are based on standard (pre-set) installation, and must be used for both standard (pre-set) and through-bolt installations.													
10. These values are only applicable to carbon steel anchors; values are not established for stainless steel anchors.													
11. Calculated using $f_{ub,ss} = 57$ ksi (1.9f <sub>y</sub> ) in accordance with ACI 318-14 Chapter 17 or ACI 318-11 Appendix D.													

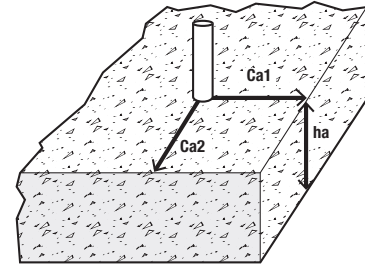
**MECHANICAL ANCHORS**

**ATOMIC+ UNDERCUT®**  
Heavy Duty Undercut Anchor

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**FACTORED DESIGN STRENGTH ( $\phi N_n$  AND  $\phi V_n$ ) CALCULATED IN ACCORDANCE WITH ACI 318-14 CHAPTER 17:**

- Tabular values are provided for illustration and are applicable for single anchors installed in normal-weight concrete with minimum slab thickness,  $h_a = h_{min2}$ , and with the following conditions:
  - $C_{a1}$  is greater than or equal to the critical edge distance,  $C_{ac}$  (table values based on  $C_{a1} = C_{ac}$ ).
  - $C_{a2}$  is greater than or equal to 1.5 times  $C_{a1}$ .
- Calculations were performed according to ACI 318-14 Chapter 17. The load level corresponding to the controlling failure mode is listed. (e.g. For tension: steel, concrete breakout and pullout; For shear: steel, concrete breakout and pryout). Furthermore, the capacities for concrete breakout strength in tension and pryout strength in shear are calculated using the effective embedment values,  $h_{ef}$ , for the selected anchors as noted in the design information tables. Please also reference the installation specifications for more information.
- Strength reduction factors ( $\phi$ ) were based on ACI 318-14 Section 5.3 for load combinations. Condition B is assumed.
- Tabular values are permitted for static loads only, seismic loading is not considered with these tables.
- For designs that include combined tension and shear, the interaction of tension and shear loads must be calculated in accordance with ACI 318-14 Chapter 17.
- Interpolation is not permitted to be used with the tabular values. For intermediate base material compressive strengths please see ACI 318-14 Chapter 17. For other design conditions including seismic considerations please see ACI 318-14 Chapter 17.



**Tension and Shear Design Strength for Carbon Steel Atomic+ Undercut in Cracked Concrete**



Nominal Anchor Size (in.)	Nominal Embed. $h_{nom}$ (in.)	Anchor Rod Designation (ASTM)	Minimum Concrete Compressive Strength, $f_c$ (psi)									
			2,500		3,000		4,000		6,000		8,000	
			$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)
3/8	3-1/8	A 36	3,370	1,460	3,370	1,460	3,370	1,460	3,370	1,460	3,370	1,460
	4-3/8	A 193, Gr. B7	5,850	3,175	6,410	3,175	7,265	3,175	7,265	3,175	7,265	3,175
1/2	4-1/4	A 36	6,175	2,670	6,175	2,670	6,175	2,670	6,175	2,670	6,175	2,670
	5-1/4	A 193, Gr. B7	7,475	5,755	8,190	5,755	9,455	5,755	11,580	5,755	13,300	5,755
	7	A 193, Gr. B7	7,475	5,755	8,190	5,755	9,455	5,755	11,580	5,755	13,300	5,755
5/8	5	A 36	7,445	4,265	8,155	4,265	9,420	4,265	9,825	4,265	9,825	4,265
	8	A 193, Gr. B7	9,750	9,170	10,680	9,170	12,335	9,170	15,105	9,170	17,440	9,170
	9-1/2	A 193, Gr. B7	9,750	9,170	10,680	9,170	12,335	9,170	15,105	9,170	17,440	9,170
3/4	5-7/8	A 36	8,720	6,410	9,555	6,410	11,030	6,410	13,510	6,410	14,550	6,410
	10-7/8	A 193, Gr. B7	14,300	13,570	15,665	13,570	18,090	13,570	22,155	13,570	25,580	13,570

■ - Anchor Pullout/Pryout Strength Controls 
 ■ - Concrete Breakout Strength Controls 
 ■ - Steel Strength Controls

**Tension and Shear Design Strength for Carbon Steel Atomic+ Undercut in Uncracked Concrete**

Nominal Anchor Size (in.)	Nominal Embed. $h_{nom}$ (in.)	Anchor Rod Designation (ASTM)	Minimum Concrete Compressive Strength, $f_c$ (psi)									
			2,500		3,000		4,000		6,000		8,000	
			$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)
3/8	3-1/8	A 36	3,370	1,460	3,370	1,460	3,370	1,460	3,370	1,460	3,370	1,460
	4-3/8	A 193, Gr. B7	7,265	3,175	7,265	3,175	7,265	3,175	7,265	3,175	7,265	3,175
1/2	4-1/4	A 36	6,175	2,670	6,175	2,670	6,175	2,670	6,175	2,670	6,175	2,670
	5-1/4	A 193, Gr. B7	10,900	5,755	11,940	5,755	13,300	5,755	13,300	5,755	13,300	5,755
	7	A 193, Gr. B7	13,300	5,755	13,300	5,755	13,300	5,755	13,300	5,755	13,300	5,755
5/8	5	A 36	9,305	4,265	9,825	4,265	9,825	4,265	9,825	4,265	9,825	4,265
	8	A 193, Gr. B7	20,025	9,170	21,190	9,170	21,190	9,170	21,190	9,170	21,190	9,170
	9-1/2	A 193, Gr. B7	21,190	9,170	21,190	9,170	21,190	9,170	21,190	9,170	21,190	9,170
3/4	5-7/8	A 36	10,900	6,410	11,940	6,410	13,790	6,410	14,550	6,410	14,550	6,410
	10-7/8	A 193, Gr. B7	30,830	13,570	31,360	13,570	31,360	13,570	31,360	13,570	31,360	13,570

■ - Anchor Pullout/Pryout Strength Controls 
 ■ - Concrete Breakout Strength Controls 
 ■ - Steel Strength Controls

**MECHANICAL ANCHORS**

**ATOMIC+ UNDERCUT®**  
Heavy Duty Undercut Anchor



**Converted Allowable Loads for Carbon Steel Atomic+ Undercut in Cracked Concrete<sup>1,2</sup>**

Nominal Anchor Diameter (in.)	Nominal Embed. h <sub>nom</sub> (in.)	Anchor Rod Designation (ASTM)	Minimum Concrete Compressive Strength									
			f 'c = 2,500 psi		f 'c = 3,000 psi		f 'c = 4,000 psi		f 'c = 6,000 psi		f 'c = 8,000 psi	
			T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)
3/8	3-1/8	A 36	2,405	1,045	2,405	1,045	2,405	1,045	2,405	1,045	2,405	1,045
	4-3/8	A 193, Gr. B7	4,180	2,270	4,580	2,270	5,190	2,270	5,190	2,270	5,190	2,270
1/2	4-1/4	A 36	4,410	1,905	4,410	1,905	4,410	1,905	4,410	1,905	4,410	1,905
	5-1/4	A 193, Gr. B7	5,340	4,110	5,850	4,110	6,755	4,110	8,270	4,110	9,500	4,110
	7	A 193, Gr. B7	5,340	4,110	5,850	4,110	6,755	4,110	8,270	4,110	9,500	4,110
5/8	5	A 36	5,320	3,045	5,825	3,045	6,730	3,045	7,020	3,045	7,020	3,045
	8	A 193, Gr. B7	6,965	6,550	7,630	6,550	8,810	6,550	10,790	6,550	12,455	6,550
	9-1/2	A 193, Gr. B7	6,965	6,550	7,630	6,550	8,810	6,550	10,790	6,550	12,455	6,550
3/4	5-7/8	A 36	6,230	4,580	6,825	4,580	7,880	4,580	9,650	4,580	10,395	4,580
	10-7/8	A 193, Gr. B7	10,215	9,695	11,190	9,695	12,920	9,695	15,825	9,695	18,270	9,695

1. Allowable load values are calculated using a conversion factor,  $\alpha$ , from Factored Design Strengths and conditions shown on the previous page.
2. Tabulated allowable load values assume 50% dead load and 50% live load, with controlling load combination 1.2D + 1.6L. Calculated weighted average for the conversion factor  $\alpha : 1.2(0.5) + 1.6(0.5) = 1.4$ .

**Converted Allowable Loads for Carbon Steel Atomic+ Undercut in Uncracked Concrete<sup>1,2</sup>**

Nominal Anchor Diameter (in.)	Nominal Embed. h <sub>nom</sub> (in.)	Anchor Rod Designation (ASTM)	Minimum Concrete Compressive Strength									
			f 'c = 2,500 psi		f 'c = 3,000 psi		f 'c = 4,000 psi		f 'c = 6,000 psi		f 'c = 8,000 psi	
			T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)
3/8	3-1/8	A 36	2,405	1,045	2,405	1,045	2,405	1,045	2,405	1,045	2,405	1,045
	4-3/8	A 193, Gr. B7	5,190	2,270	5,190	2,270	5,190	2,270	5,190	2,270	5,190	2,270
1/2	4-1/4	A 36	4,410	1,905	4,410	1,905	4,410	1,905	4,410	1,905	4,410	1,905
	5-1/4	A 193, Gr. B7	7,785	4,110	8,530	4,110	9,500	4,110	9,500	4,110	9,500	4,110
	7	A 193, Gr. B7	9,500	4,110	9,500	4,110	9,500	4,110	9,500	4,110	9,500	4,110
5/8	5	A 36	6,645	3,045	7,020	3,045	7,020	3,045	7,020	3,045	7,020	3,045
	8	A 193, Gr. B7	14,305	6,550	15,135	6,550	15,135	6,550	15,135	6,550	15,135	6,550
	9-1/2	A 193, Gr. B7	15,135	6,550	15,135	6,550	15,135	6,550	15,135	6,550	15,135	6,550
3/4	5-7/8	A 36	7,785	4,580	8,530	4,580	9,850	4,580	10,395	4,580	10,395	4,580
	10-7/8	A 193, Gr. B7	22,020	9,695	22,400	9,695	22,400	9,695	22,400	9,695	22,400	9,695

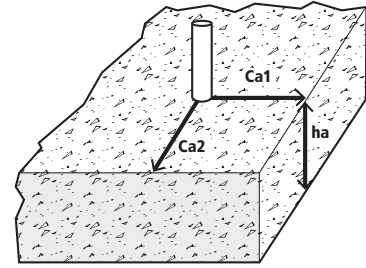
1. Allowable load values are calculated using a conversion factor,  $\alpha$ , from Factored Design Strengths and conditions shown on the previous page.
2. Tabulated allowable load values assume 50% dead load and 50% live load, with controlling load combination 1.2D + 1.6L. Calculated weighted average for the conversion factor  $\alpha : 1.2(0.5) + 1.6(0.5) = 1.4$ .

**MECHANICAL ANCHORS**

**ATOMIC+ UNDERCUT®**  
Heavy Duty Undercut Anchor

**FACTORED DESIGN STRENGTH ( $\phi N_n$  AND  $\phi V_n$ ) CALCULATED IN ACCORDANCE WITH ACI 318-14 CHAPTER 17:**

- Tabular values are provided for illustration and are applicable for single anchors installed in normal-weight concrete with minimum slab thickness,  $h_a = h_{min2}$ , and with the following conditions:
  - $C_{a1}$  is greater than or equal to the critical edge distance,  $C_{ac}$  (table values based on  $C_{a1} = C_{ac}$ ).
  - $C_{a2}$  is greater than or equal to 1.5 times  $C_{a1}$ .
- Calculations were performed according to ACI 318-14 Chapter 17. The load level corresponding to the controlling failure mode is listed. (e.g. For tension: steel, concrete breakout and pullout; For shear: steel, concrete breakout and pryout). Furthermore, the capacities for concrete breakout strength in tension and pryout strength in shear are calculated using the effective embedment values,  $h_{ef}$ , for the selected anchors as noted in the design information tables. Please also reference the installation specifications for more information.
- Strength reduction factors ( $\phi$ ) were based on ACI 318-14 Section 5.3 for load combinations. Condition B is assumed.
- Tabular values are permitted for static loads only, seismic loading is not considered with these tables.
- For designs that include combined tension and shear, the interaction of tension and shear loads must be calculated in accordance with ACI 318-14 Chapter 17.
- Interpolation is not permitted to be used with the tabular values. For intermediate base material compressive strengths please see ACI 318-14 Chapter 17. For other design conditions including seismic considerations please see ACI 318-14 Chapter 17.



**Tension and Shear Design Strength for Stainless Steel Atomic+ Undercut Anchor in Cracked Concrete**



Nominal Anchor Size (in.)	Nominal Embed. $h_{nom}$ (in.)	Anchor Rod Designation (ASTM)	Minimum Concrete Compressive Strength, $f'_c$ (psi)									
			2,500		3,000		4,000		6,000		8,000	
			$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)
3/8	3-1/8	A 193, Gr. B8M Class 1	3,310	1,435	3,310	1,435	3,310	1,435	3,310	1,435	3,310	1,435
	4-3/8	A 193, Gr. B8M Class 2	5,850	2,770	6,395	2,770	6,395	2,770	6,395	2,770	6,395	2,770
1/2	4-1/4	A 193, Gr. B8M Class 1	6,065	2,625	6,065	2,625	6,065	2,625	6,065	2,625	6,065	2,625
	5-1/4	A 193, Gr. B8M Class 2	7,475	5,075	8,190	5,075	9,455	5,075	11,580	5,075	11,705	5,075
5/8	5	A 193, Gr. B8M Class 1	7,445	4,185	8,155	4,185	9,420	4,185	9,660	4,185	9,660	4,185
	8	A 193, Gr. B8M Class 2	9,750	8,080	10,680	8,080	12,335	8,080	15,105	8,080	17,440	8,080
3/4	5-7/8	A 193, Gr. B8M Class 1	8,720	6,195	9,555	6,195	11,030	6,195	13,510	6,195	14,300	6,195
	10-7/8	A 193, Gr. B8M Class 2	14,300	11,955	15,665	11,955	18,090	11,955	22,155	11,955	25,580	11,955

■ - Anchor Pullout/Pryout Strength Controls 
 ■ - Concrete Breakout Strength Controls 
 ■ - Steel Strength Controls

**Tension and Shear Design Strength for Stainless Steel Atomic+ Undercut Anchor in Uncracked Concrete**



Nominal Anchor Size (in.)	Nominal Embed. $h_{nom}$ (in.)	Anchor Rod Designation (ASTM)	Minimum Concrete Compressive Strength, $f'_c$ (psi)									
			2,500		3,000		4,000		6,000		8,000	
			$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)	$\phi N_n$ Tension (lbs.)	$\phi V_n$ Shear (lbs.)
3/8	3-1/8	A 193, Gr. B8M Class 1	3,310	1,435	3,310	1,435	3,310	1,435	3,310	1,435	3,310	1,435
	4-3/8	A 193, Gr. B8M Class 2	6,395	2,770	6,395	2,770	6,395	2,770	6,395	2,770	6,395	2,770
1/2	4-1/4	A 193, Gr. B8M Class 1	6,065	2,625	6,065	2,625	6,065	2,625	6,065	2,625	6,065	2,625
	5-1/4	A 193, Gr. B8M Class 2	10,900	5,075	11,705	5,075	11,705	5,075	11,705	5,075	11,705	5,075
5/8	5	A 193, Gr. B8M Class 1	9,305	4,185	9,660	4,185	9,660	4,185	9,660	4,185	9,660	4,185
	8	A 193, Gr. B8M Class 2	18,645	8,080	18,645	8,080	18,645	8,080	18,645	8,080	18,645	8,080
3/4	5-7/8	A 193, Gr. B8M Class 1	10,900	6,195	11,940	6,195	13,790	6,195	14,300	6,195	14,300	6,195
	10-7/8	A 193, Gr. B8M Class 2	27,595	11,955	27,595	11,955	27,595	11,955	27,595	11,955	27,595	11,955

■ - Anchor Pullout/Pryout Strength Controls 
 ■ - Concrete Breakout Strength Controls 
 ■ - Steel Strength Controls

**MECHANICAL ANCHORS**

**ATOMIC+ UNDERCUT®**  
Heavy Duty Undercut Anchor



**Converted Allowable Loads for Stainless Steel Atomic+ Undercut in Cracked Concrete<sup>1,2</sup>**

Nominal Anchor Diameter (in.)	Nominal Embed. h <sub>nom</sub> (in.)	Anchor Rod Designation (ASTM)	Minimum Concrete Compressive Strength									
			f 'c = 2,500 psi		f 'c = 3,000 psi		f 'c = 4,000 psi		f 'c = 6,000 psi		f 'c = 8,000 psi	
			T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)
3/8	3-1/8	A 193, Gr. B8M Class 1	2,365	1,025	2,365	1,025	2,365	1,025	2,365	1,025	2,365	1,025
	4-3/8	A 193, Gr. B8M Class 2	4,180	1,980	4,570	1,980	4,570	1,980	4,570	1,980	4,570	1,980
1/2	4-1/4	A 193, Gr. B8M Class 1	4,330	1,875	4,330	1,875	4,330	1,875	4,330	1,875	4,330	1,875
	5-1/4	A 193, Gr. B8M Class 2	5,340	3,625	5,850	3,625	6,755	3,625	8,270	3,625	8,360	3,625
5/8	5	A 193, Gr. B8M Class 1	5,320	2,990	5,825	2,990	6,730	2,990	6,900	2,990	6,900	2,990
	8	A 193, Gr. B8M Class 2	6,965	5,770	7,630	5,770	8,810	5,770	10,790	5,770	12,455	5,770
3/4	5-7/8	A 193, Gr. B8M Class 1	6,230	4,425	6,825	4,425	7,880	4,425	9,650	4,425	10,215	4,425
	10-7/8	A 193, Gr. B8M Class 2	10,215	8,540	11,190	8,540	12,920	8,540	15,825	8,540	18,270	8,540

1. Allowable load values are calculated using a conversion factor,  $\alpha$ , from Factored Design Strengths and conditions shown on the previous page.
2. Tabulated allowable load values assume 50% dead load and 50% live load, with controlling load combination 1.2D + 1.6L. Calculated weighted average for the conversion factor  $\alpha : 1.2(0.5) + 1.6(0.5) = 1.4$ .

**Converted Allowable Loads for Stainless Steel Atomic+ Undercut in Uncracked Concrete<sup>1,2</sup>**

Nominal Anchor Diameter (in.)	Nominal Embed. h <sub>nom</sub> (in.)	Anchor Rod Designation (ASTM)	Minimum Concrete Compressive Strength									
			f 'c = 2,500 psi		f 'c = 3,000 psi		f 'c = 4,000 psi		f 'c = 6,000 psi		f 'c = 8,000 psi	
			T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)	T <sub>allowable, ASD</sub> Tension (lbs.)	V <sub>allowable, ASD</sub> Shear (lbs.)
3/8	3-1/8	A 193, Gr. B8M Class 1	2,365	1,025	2,365	1,025	2,365	1,025	2,365	1,025	2,365	1,025
	4-3/8	A 193, Gr. B8M Class 2	4,570	1,980	4,570	1,980	4,570	1,980	4,570	1,980	4,570	1,980
1/2	4-1/4	A 193, Gr. B8M Class 1	4,330	1,875	4,330	1,875	4,330	1,875	4,330	1,875	4,330	1,875
	5-1/4	A 193, Gr. B8M Class 2	7,785	3,625	8,360	3,625	8,360	3,625	8,360	3,625	8,360	3,625
5/8	5	A 193, Gr. B8M Class 1	6,645	2,990	6,900	2,990	6,900	2,990	6,900	2,990	6,900	2,990
	8	A 193, Gr. B8M Class 2	13,320	5,770	13,320	5,770	13,320	5,770	13,320	5,770	13,320	5,770
3/4	5-7/8	A 193, Gr. B8M Class 1	7,785	4,425	8,530	4,425	9,850	4,425	10,215	4,425	10,215	4,425
	10-7/8	A 193, Gr. B8M Class 2	19,710	8,540	19,710	8,540	19,710	8,540	19,710	8,540	19,710	8,540

1. Allowable load values are calculated using a conversion factor,  $\alpha$ , from Factored Design Strengths and conditions shown on the previous page.
2. Tabulated allowable load values assume 50% dead load and 50% live load, with controlling load combination 1.2D + 1.6L. Calculated weighted average for the conversion factor  $\alpha : 1.2(0.5) + 1.6(0.5) = 1.4$ .

**ORDERING INFORMATION**

**MECHANICAL ANCHORS**

**Atomic+ Undercut Anchor Zinc Plated Carbon Steel**



Cat. No.	Anchor Rod ASTM Designation	Nominal Anchor Diameter	Anchor Outside Diameter	Overall Length	Required Undercut Bit (Cat. No.)	Required Stop Bit (Cat. No.)	Anchor Type	Std. Box
03100SD	ASTM A36	3/8"	5/8"	5-1/2"	03200SD	03220SD	Standard	20
03102SD	ASTM A36	3/8"	5/8"	5-1/2"		*	Through Bolt	20
03104SD	ASTM A193 Gr. B7	3/8"	5/8"	6-3/4"		03221SD	Standard	20
03106SD	ASTM A193 Gr. B7	3/8"	5/8"	6-3/4"		*	Through Bolt	20
03108SD	ASTM A36	1/2"	3/4"	7"	03201SD	03222SD	Standard	15
03110SD	ASTM A36	1/2"	3/4"	7"		*	Through Bolt	15
03112SD	ASTM A193 Gr. B7	1/2"	3/4"	8"		03223SD	Standard	15
03114SD	ASTM A193 Gr. B7	1/2"	3/4"	8"		*	Through Bolt	15
03116SD	ASTM A193 Gr. B7	1/2"	3/4"	9-3/4"		03224SD	Standard	15
03118SD	ASTM A193 Gr. B7	1/2"	3/4"	9-3/4"		*	Through Bolt	15
03120SD	ASTM A36	5/8"	1"	7-3/4"	03202SD	03225SD	Standard	10
03122SD	ASTM A36	5/8"	1"	7-3/4"		*	Through Bolt	10
03124SD	ASTM A193 Gr. B7	5/8"	1"	10-3/4"		03226SD	Standard	10
03126SD	ASTM A193 Gr. B7	5/8"	1"	10-3/4"		*	Through Bolt	10
03128SD	ASTM A193 Gr. B7	5/8"	1"	12-1/4"		03227SD	Standard	10
03130SD	ASTM A193 Gr. B7	5/8"	1"	12-1/4"	*	Through Bolt	10	
03132SD	ASTM A36	3/4"	1-1/8"	8-5/8"	03203SD	03228SD	Standard	8
03134SD	ASTM A36	3/4"	1-1/8"	8-5/8"		*	Through Bolt	8
03136SD	ASTM A193 Gr. B7	3/4"	1-1/8"	13-5/8"		03229SD	Standard	8
03138SD	ASTM A193 Gr. B7	3/4"	1-1/8"	13-5/8"		*	Through Bolt	8

For availability of all anchor lengths please contact DEWALT.  
 \*Contact DEWALT for appropriate drilling method and hardware

**Atomic+ Undercut Anchor Type 316 Stainless Steel**



Cat. No.	Anchor Rod ASTM Designation	Nominal Anchor Diameter	Anchor Outside Diameter	Overall Length	Required Undercut Bit (Cat. No.)	Required Stop Bit (Cat. No.)	Anchor Type	Std. Box
03600SD	ASTM A193, Grade B8M, Class 1	3/8"	5/8"	5-1/2"	03200SD	03220SD	Standard	20
03602SD	ASTM A193, Grade B8M, Class 1	3/8"	5/8"	5-1/2"		*	Through Bolt	20
03603SD	ASTM A193, Grade B8M, Class 2	3/8"	5/8"	6-3/4"		03221SD	Standard	20
03605SD	ASTM A193, Grade B8M, Class 2	3/8"	5/8"	6-3/4"		*	Through Bolt	20
03608SD	ASTM A193, Grade B8M, Class 1	1/2"	3/4"	7"	03201SD	03222SD	Standard	15
03610SD	ASTM A193, Grade B8M, Class 1	1/2"	3/4"	7"		*	Through Bolt	15
03609SD	ASTM A193, Grade B8M, Class 2	1/2"	3/4"	8"		03223SD	Standard	15
03613SD	ASTM A193, Grade B8M, Class 2	1/2"	3/4"	8"	*	Through Bolt	15	
03620SD	ASTM A193, Grade B8M, Class 1	5/8"	1"	7-3/4"	03202SD	03225SD	Standard	10
03622SD	ASTM A193, Grade B8M, Class 1	5/8"	1"	7-3/4"		*	Through Bolt	10
03635SD	ASTM A193, Grade B8M, Class 2	5/8"	1"	10-3/4"		03226SD	Standard	10
03639SD	ASTM A193, Grade B8M, Class 2	5/8"	1"	10-3/4"	*	Through Bolt	10	
03632SD	ASTM A193, Grade B8M, Class 1	3/4"	1-1/8"	8-5/8"	03203SD	03228SD	Standard	8
03634SD	ASTM A193, Grade B8M, Class 1	3/4"	1-1/8"	8-5/8"		*	Through Bolt	8
03648SD	ASTM A193, Grade B8M, Class 2	3/4"	1-1/8"	13-5/8"		03229SD	Standard	8
03649SD	ASTM A193, Grade B8M, Class 2	3/4"	1-1/8"	13-5/8"		*	Through Bolt	8

For availability of all anchor lengths please contact DEWALT.  
 \*Contact DEWALT for appropriate drilling method and hardware

Heavy Duty Undercut Anchor

**ATOMIC+ UNDERCUT®**

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**Stop Drill Bits**

Cat. No.	Nominal Stop Drill Bit Diameter	Corresponding Nominal Anchor Diameter	Max. Drill Depth	Shank Type	Std. Tube
03220SD	5/8	3/8	3-1/8"	SDS	1
03221SD	5/8	3/8	4-3/8"	SDS	1
03222SD	3/4	1/2	4-1/4"	SDS	1
03223SD	3/4	1/2	5-1/4"	SDS	1
03224SD	3/4	1/2	7"	SDS	1
03225SD	1	5/8	5"	SDS-Max	1
03226SD	1	5/8	8"	SDS-Max	1
03227SD	1	5/8	9-1/2"	SDS-Max	1
03228SD	1-1/8	3/4	5-13/16"	SDS-Max	1
03229SD	1-1/8	3/4	10-13/16"	SDS-Max	1

The Stop Drill Bit creates a drill hole to the proper depth for standard installations of the Atomic+ Undercut anchor.  
(For through bolt applications please contact DEWALT for appropriate drilling method and hardware)



**Undercut Drill Bits**

Cat. No.	Nominal Undercut Drill Bit Diameter	Corresponding Nominal Anchor Diameter	Maximum Depth of Hole	Shank Type	Std. Tube
03200SD	5/8	3/8	9"	SDS	1
03201SD	3/4	1/2	10-1/4"	SDS	1
03202SD	1	5/8	12-1/4"	SDS-Max	1
03203SD	1-1/8	3/4	13-1/2"	SDS-Max	1

The Undercut Drill Bit has a unique design that enlarges the bottom of the drill hole creating a reverse cone sized to receive the Atomic+ Undercut anchor.



**Setting Sleeve for Undercut Anchors**

Cat. No.	Corresponding Nominal Anchor Diameter	Std. Box
03210SD	3/8	1
03211SD	1/2	1
03218SD	5/8	1
03213SD	3/4	1



**Replacement Blade Assemblies for Undercut Drill Bit**

Cat. No.	Description	Std. Tube
03205SD	Atomic+ (3/8") Cutter Blade - 5/8"	1
03206SD	Atomic+ (1/2") Cutter Blade - 3/4"	1
03208SD	Atomic+ (5/8") Cutter Blade - 1"	1
03209SD	Atomic+ (3/4") Cutter Blade - 1-1/8"	1



**Replacement Bow Jaws for Undercut Drill Bit**

Cat. No.	Description	Std. Tube
03212SD	3/8" Bow Jaw for 5/8" Hole	1
03215SD	1/2" Bow Jaw for 3/4" Hole	1
03216SD	5/8" Bow Jaw for 1" Hole	1
03217SD	3/4" Bow Jaw for 1-1/8" Hole	1



**ATOMIC+ UNDERCUT®**  
Heavy Duty Undercut Anchor