

**Calk-In™** Machine Bolt Anchor

**PRODUCT DESCRIPTION**

The Calk-In is a pre-assembled precision cast calking type machine bolt anchor which can be used in concrete, block, brick or stone. The Calk-In consists of an antimonial lead alloy calking sleeve and a Zamac alloy internally threaded expanded cone. This anchor is not recommended for use in overhead applications. Overhead applications are better served typically by an FMRC or UL listed anchor.

**GENERAL APPLICATIONS AND USES**

- Windows
- Sliding Doors
- Screens
- Shutters

**FEATURES AND BENEFITS**

- Readily accepts machine bolts
- Internally threaded anchor for easy removability and service work
- Shallow Embedment

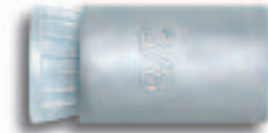
**APPROVALS AND LISTINGS**

Southern Building Code Conference International (SBCCI) #9944A  
Federal GSA Specification – Meets the proof load requirements of FF-S-325C, Group I, Type 1, Class 1 (superseded) and CID A-A 1922A, Type 1

**GUIDE SPECIFICATIONS**

**CSI Divisions:** 03151-Concrete Anchoring, 04081-Masonry Anchorage and 05090-Metal Fastening. Machine Bolt Anchors shall be Calk-In as supplied by Powers Fasteners, Inc., Brewster, NY.

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Calk-In

**THREAD VERSION**

UNC Thread

**ANCHOR MATERIALS**

Antimonial Lead Alloy body and Zamac Alloy cone

**ROD/ANCHOR SIZE RANGE (TYP.)**

#8 Screw to 1/2" diameter

**SUITABLE BASE MATERIALS**

Normal-Weight Concrete  
Hollow Concrete Masonry  
Brick Masonry

**INSTALLATION AND MATERIAL SPECIFICATIONS**

**Installation Specifications**

Dimension	Rod/Anchor Size, <i>d</i>					
	#8-32	#10-24	1/4"	5/16"	3/8"	1/2"
ANSI Drill Bit Size, $d_{bit}$ (in.)	5/16	3/8	1/2	5/8	3/4	7/8
Max. Tightening Torque, $T_{max}$ (ft.-lbs.)	15	20	60	7	10	15
Thread Size (UNC)	13/32	15/32	19/32	3/4	1	1 1/8

**Material Specifications**

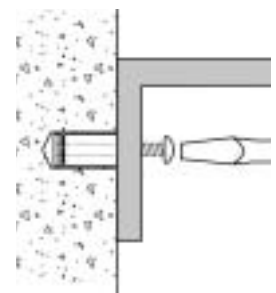
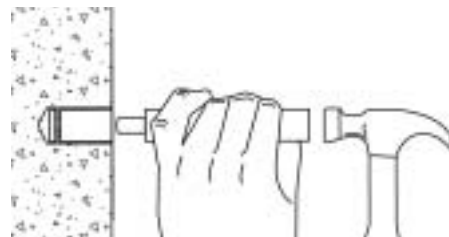
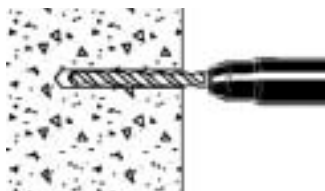
Anchor Component	Component Material
Anchor Sleeve	Antimonial Lead
Cone	Zamac Alloy

**Installation Guidelines**

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. Do not over drill the hole.

Blow the hole clean of dust and other material. Insert the anchor into the hole. Position the setting tool in the anchor.

Using the tool, set the anchor by driving the lead sleeve over the cone using several sharp hammer blows. Be sure the anchor is at the required embedment depth so that anchor threads do not protrude above the surface of the base material. Positions the fixture, insert screw or bolt and tighten.



## PERFORMANCE DATA

### Ultimate Load Capacities for Calk-In in Normal-Weight Concrete<sup>1,2</sup>

Rod/Anchor Size <i>d</i> in. (UNC)	Minimum Embedment Depth <i>h<sub>v</sub></i> in. (mm)	Minimum Concrete Compressive Strength ( <i>f'<sub>c</sub></i> )					
		2,000 psi (13.8 MPa)		4,000 psi (27.6 MPa)		6,000 psi (41.4 MPa)	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
#8-32	1/2 (12.7)	840 (3.8)	565 (2.5)	915 (4.1)	655 (2.9)	950 (4.3)	655 (2.9)
#10-24	5/8 (15.9)	960 (4.3)	885 (4.0)	1,215 (5.5)	940 (4.2)	1,380 (6.2)	940 (4.2)
1/4-20	7/8 (22.2)	1,870 (8.4)	1,355 (6.1)	2,340 (10.5)	1,410 (6.3)	2,440 (11.0)	1,410 (6.3)
5/16-18	1 (25.4)	2,250 (10.1)	1,880 (8.5)	2,445 (11.0)	2,070 (9.3)	3,030 (13.6)	2,070 (9.3)
3/8-16	1 1/4 (31.8)	2,625 (11.8)	2,700 (12.2)	3,105 (14.0)	3,305 (14.9)	3,600 (16.2)	3,305 (14.9)
1/2-13	1 1/2 (38.1)	4,260 (19.2)	3,995 (18.0)	4,370 (19.7)	4,545 (20.5)	4,895 (22.0)	4,545 (20.5)

- The values listed above are ultimate load capacities which should be reduced by a minimum safety factor of 4.0 or greater to determine the allowable working load.
- Linear interpolation may be used to determine ultimate loads for intermediate compressive strengths.

### Allowable Load Capacities for Calk-In in Normal-Weight Concrete<sup>1,2,3</sup>

Rod/Anchor Size <i>d</i> in. (UNC)	Minimum Embedment Depth <i>h<sub>v</sub></i> in. (mm)	Minimum Concrete Compressive Strength ( <i>f'<sub>c</sub></i> )					
		2,000 psi (13.8 MPa)		4,000 psi (27.6 MPa)		6,000 psi (41.4 MPa)	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
#8-32	1/2 (12.7)	210 (0.9)	140 (0.6)	230 (1.0)	165 (0.7)	240 (1.1)	165 (0.7)
#10-24	5/8 (15.9)	240 (1.1)	220 (1.0)	305 (1.4)	235 (1.1)	345 (1.6)	235 (1.1)
1/4-20	7/8 (22.2)	470 (2.1)	340 (1.5)	585 (2.6)	355 (1.6)	610 (2.7)	355 (1.6)
5/16-18	1 (25.4)	565 (2.5)	470 (2.1)	610 (2.7)	520 (2.3)	760 (3.4)	520 (2.3)
3/8-16	1 1/4 (31.8)	655 (2.9)	675 (3.0)	775 (3.5)	825 (3.7)	900 (4.1)	825 (3.7)
1/2-13	1 1/2 (38.1)	1,065 (4.8)	1,000 (4.5)	1,095 (4.9)	1,135 (5.1)	1,225 (5.5)	1,135 (5.1)

- Allowable load capacities listed are calculated using an applied safety factor of 4.0.
- Linear interpolation may be used to determine allowable loads for intermediate compressive strengths.
- Critical and minimum spacing and edge distances as well as reduction factors for intermediate spacing and edge distances are listed in the Design Criteria section.

**PERFORMANCE DATA**

**Ultimate and Allowable Load Capacities for Calk-In in Hollow Concrete Masonry<sup>1,2,3</sup>**

Rod/Anchor Size <i>d</i> in. (UNC)	Minimum Embedment Depth <i>h<sub>v</sub></i> in. (mm)	<i>f'<sub>m</sub></i> ≥ 1,500 psi (10.4 MPa)			
		Ultimate Load		Allowable Load	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
#8-32	1/2 (12.7)	680 (3.1)	565 (2.5)	135 (0.6)	115 (0.5)
#10-24	5/8 (15.9)	740 (3.3)	885 (4.0)	150 (0.7)	175 (0.8)
1/4-20	7/8 (22.2)	880 (4.0)	1,250 (5.6)	175 (0.8)	250 (1.1)
5/16-18	1 (25.4)	1,470 (6.6)	1,585 (7.1)	295 (1.3)	315 (1.4)
3/8-16	1 1/4 (31.8)	1,700 (7.7)	2,265 (10.2)	340 (1.5)	455 (2.0)
1/2-13	1 1/2 (38.1)	2,360 (10.6)	3,210 (14.4)	470 (2.1)	640 (2.9)

1. Tabulated load values are for anchors installed in minimum 6-inch wide, Grade N, Type II, medium and normal-weight concrete masonry units. Mortar must be minimum Type N. Masonry compressive strength must be 1,500 psi minimum at the time of installation.
2. Allowable loads are based on average ultimate values using a safety factor of 5.0.
3. Anchors installed flush with face shell surface.

**Ultimate and Allowable Load Capacities for Calk-In in Clay Brick Masonry<sup>1,2</sup>**

Rod/Anchor Size <i>d</i> in. (UNC)	Minimum Embedment Depth <i>h<sub>v</sub></i> in. (mm)	Structural Brick Masonry <i>f'<sub>m</sub></i> ≥ 1,500 psi (10.4 MPa)			
		Ultimate Load		Allowable Load	
		Tension lbs. (kN)	Shear lbs. (kN)	Tension lbs. (kN)	Shear lbs. (kN)
#8-32	1/2 (12.7)	740 (3.3)	655 (2.9)	150 (0.7)	130 (0.6)
#10-24	5/8 (15.9)	960 (4.3)	890 (4.0)	190 (0.9)	180 (0.8)
1/4-20	7/8 (22.2)	1,460 (6.6)	1,480 (6.7)	290 (1.3)	295 (1.3)
5/16-18	1 (25.4)	1,730 (7.8)	1,995 (9.0)	345 (1.6)	400 (1.8)
3/8-16	1 1/4 (31.8)	2,200 (9.9)	3,600 (16.2)	440 (2.0)	720 (3.2)
1/2-13	1 1/2 (38.1)	3,200 (14.4)	4,535 (20.4)	640 (2.9)	905 (4.1)

1. Tabulated load values are for anchors installed in Grade SW multiple wythe, solid brick masonry conforming to ASTM C62.
2. Allowable loads are calculated using an applied safety factor of 5.0.

**DESIGN CRITERIA**

**Combined Loading**

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

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

Where: *N<sub>u</sub>* = Applied Service Tension Load  
*N<sub>n</sub>* = Allowable Tension Load  
*V<sub>u</sub>* = Applied Service Shear Load  
*V<sub>n</sub>* = Allowable Shear Load

**Load Adjustment Factors for Spacing and Edge Distances**

Anchor Installed in Normal-Weight Concrete					
Anchor Dimension	Load Type	Critical Distance (Full Anchor Capacity)	Critical Load Factor	Minimum Distance (Reduced Capacity)	Minimum Load Factor
Spacing ( <i>s</i> )	Tension and Shear	<i>s<sub>cr</sub></i> = 10 <i>d</i>	<i>F<sub>N</sub></i> = <i>F<sub>V</sub></i> = 1.0	<i>s<sub>min</sub></i> = 5 <i>d</i>	<i>F<sub>N</sub></i> = <i>F<sub>V</sub></i> = 0.50
Edge Distance ( <i>c</i> )	Tension	<i>c<sub>cr</sub></i> = 12 <i>d</i>	<i>F<sub>N</sub></i> = 1.0	<i>c<sub>min</sub></i> = 8 <i>d</i>	<i>F<sub>N</sub></i> = 0.80
	Shear	<i>c<sub>cr</sub></i> = 12 <i>d</i>	<i>F<sub>V</sub></i> = 1.0	<i>c<sub>min</sub></i> = 8 <i>d</i>	<i>F<sub>V</sub></i> = 0.50

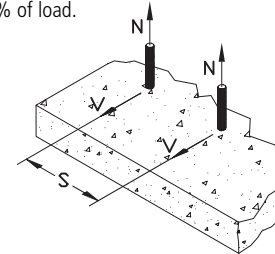
**DESIGN CRITERIA**

**Load Adjustment Factors for Normal-Weight Concrete**

Spacing, Tension ( $F_N$ ) & Shear ( $F_V$ )							
Dia. (in.)	#8	#10	1/4	5/16	3/8	1/2	
$s_{cr}$ (in.)	1 5/8	1 7/8	2 1/2	3 1/8	3 3/4	5	
$s_{min}$ (in.)	7/8	1	1 1/4	1 9/16	1 7/8	2 1/2	
Spacing, $s$ (inches)	7/8	0.50					
	1	0.61	0.50				
	1 1/4	0.76	0.66	0.50			
	1 3/8	0.84	0.72	0.55			
	1 9/16	0.95	0.82	0.63	0.50		
	1 5/8	1.00	0.86	0.65	0.52		
	1 7/8		1.00	0.75	0.60	0.50	
	2 1/8			0.85	0.68	0.57	
	2 1/2			1.00	0.80	0.67	0.50
	3 1/8				1.00	0.83	0.63
	3 3/4					1.00	0.75
5						1.00	

Notes: For anchors loaded in tension and shear, the critical spacing ( $s_{cr}$ ) is equal to 10 anchor diameters ( $10d$ ) at which the anchor achieves 100% of load.

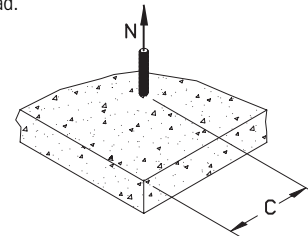
Minimum spacing ( $s_{min}$ ) is equal to 5 anchor diameters ( $5d$ ) at which the anchor achieves 50% of load.



Edge Distance, Tension ( $F_N$ )							
Dia. (in.)	#8	#10	1/4	5/16	3/8	1/2	
$c_{cr}$ (in.)	2	2 1/4	3	3 3/4	4 1/2	6	
$c_{min}$ (in.)	1 1/4	1 1/2	2	2 1/2	3	4	
Edge Distance, $c$ (inches)	1 1/4	0.80					
	1 1/2	0.86	0.80				
	1 5/8	0.90	0.83				
	2	1.00	0.93	0.80			
	2 1/4		1.00	0.85			
	2 1/2			0.90	0.80		
	3			1.00	0.88	0.80	
	3 3/4				1.00	0.90	
	4					0.93	0.80
	4 1/2					1.00	0.85
	5						0.90
6						1.00	

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

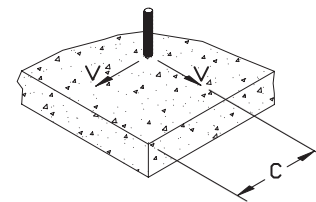
Minimum edge distance ( $c_{min}$ ) is equal to 8 anchor diameters ( $8d$ ) at which the anchor achieves 80% of load.



Edge Distance, Shear ( $F_V$ )							
Dia. (in.)	#8	#10	1/4	5/16	3/8	1/2	
$c_{cr}$ (in.)	2	2 1/4	3	3 3/4	4 1/2	6	
$c_{min}$ (in.)	1 1/4	1 1/2	2	2 1/2	3	4	
Edge Distance, $c$ (inches)	1 1/4	0.50					
	1 1/2	0.64	0.50				
	1 5/8	0.74	0.57				
	2	1.00	0.82	0.50			
	2 1/4		1.00	0.63			
	2 1/2			0.75	0.50		
	3			1.00	0.70	0.50	
	3 3/4				1.00	0.75	
	4					0.83	0.50
	4 1/2					1.00	0.63
	5						0.75
6						1.00	

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

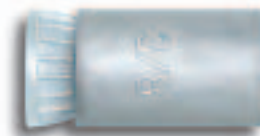
Minimum edge distance ( $c_{min}$ ) is equal to 8 anchor diameters ( $8d$ ) at which the anchor achieves 50% of load.



**ORDERING INFORMATION**

**Calk-In**

Cat. No.	Size	Drill Diameter	Min. Hole Depth	Std. Box	Std. Carton	Wt./100
9205	#8-32	5/16"	1/2"	100	1,000	1
9210	#10-24	3/8"	5/8"	100	1,000	1 3/4
9220	1/4"-20	1/2"	7/8"	100	1,000	4 1/2
9225	5/16"-18	5/8"	1"	50	250	7 3/4
9230	3/8"-16	3/4"	1 1/4"	50	250	14
9240	1/2"-13	7/8"	1 1/2"	50	250	19



**Setting Tools**

Cat. No.	9201	9211	9221	9226	9231	9241
Size	#8	#10	1/4"	5/16"	3/8"	1/2"

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