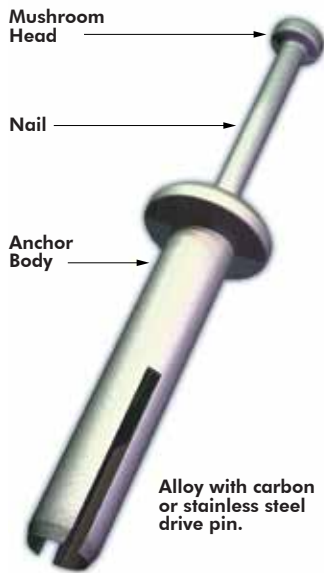


NAIL-IN PIN ANCHORS



*This anchor is not recommended for overhead applications.

Description

GrabMac Drive Pin Anchors are excellent for light-duty, tamper-proof applications in concrete, block, brick or stone (not recommended for overhead applications). These anchors are very quick and easy to install—just hammer in the drive pin until it is fully seated.

GrabMac anchors are made of a tough, corrosion-resistant alloy body with stainless or carbon steel pins. They are available in either a flat or mushroom-head style.

Anchor sizes and styles

Determine the proper minimum anchor depth for the load requirements of your application and choose the appropriate head style (flat or mushroom-head).

The correct anchor length is the depth of the anchor plus the thickness of the fixture, including any spacers or shims. Mushroom-head GrabMac anchors are sized from below the head whereas flat-head anchors are measured end to end.

Mushroom Head - Carbon Steel Nail

	Size	Drill Dia.	Box	Std Ctn	Wt/100
G2802	3/16" X 7/8"	3/16"	100	500	3/4
G2806	1/4" X 3/4"	1/4"	100	500	1-1/2
G2808	1/4" X 1"	1/4"	100	500	1-3/4
G2814	1/4" X 1-1/4"	1/4"	100	500	2-1/4
G2820	1/4" X 1-1/2"	1/4"	100	500	2-1/2
G2826	1/4" X 2"	1/4"	100	500	3

Installation



1 Using the proper size drill bit, drill a hole at least 1/4" deeper than the length of the anchor. Blow the hole clean of dust and debris.



2 Insert the GrabMac anchor through the fixture and into the pre-drilled hole. Be sure the head is seated firmly against the fixture.



3 Hammer the pin into the anchor body until the pin is fully seated. This expands the alloy body and tightens the anchor.

Installation Specifications

Anchor Size	3/16"MH	1/4"MH	1/4"FH
ANSI Drill Bit Size	3/16"	1/4"	1/4"
Fixture Clearance Hole	1/4"	5/16"	5/16"
Head Height	7/64"	9/64"	3/16"
Head Width	13/32"	35/64"	35/64"

Material Specifications

Head Component	CS Nail	Flat Head CS Nail	Mushroom Head CS Nail
Drive Nail	AISI 1018	AISI 1018	Type 304 SS
Anchor Body	Zamac Alloy	Zamac Alloy	Zamac Alloy
Nail Plating	ASTM B 633, sc1, Type III (Fe/Zn 5)		N/A

Performance Data

The following ultimate load capacities are based on testing conducted according to ASTM Standard E 488.

Anchor Size	Embed Depth	Tension (Lbs.)	2,000 PSI Concrete Shear (Lbs.)	Tension (Lbs.)	4,000 PSI Concrete Shear (Lbs.)	Tension (Lbs.)	6,000 PSI Concrete Shear (Lbs.)
3/16"	3/4"	460	520	500	700	580	700
1/4"	5/8"	480	550	600	820	640	820
1/4"	3/4"	655	755	1,045	1,065	1,045	1,065
1/4"	7/8"	780	800	1,070	1,115	1,070	1,115
1/4"	1-1/8"	1,030	900	1,120	1,215	1,120	1,215
1/4"	1-3/8"	1,085	1,105	1,150	1,460	1,230	1,460
1/4"	1-3/4"	1,165	1,420	1,200	1,825	1,260	1,825
1/4"	1-7/8"	1,165	1,420	1,300	1,825	1,365	1,825

NOTE: The values listed above are ultimate load capacities which should be reduced by a minimum safety factor of 4 or greater to determine the allowable working load.

Load Capacities in C-90 Block and Solid Brick

Anchor	Embed	C-90 Hollow Block		Solid Red Brick	
		Tension	Shear	Tension	Shear
3/16"	3/4"	270	860	560	920
1/4"	5/8"	360	1,040	570	1,250
1/4"	3/4"	735	1,075	790	1,400
1/4"	1"	835	1,130	820	1,400
1/4"	1-1/8"	1,040	1,250	865	1,400
1/4"	1-3/8"	1,090	1,275	950	1,400
1/4"	1-1/2"	1,090	1,275	1,015	1,400

NOTE: Depending upon anchor application and governing building code, ultimate load capacities should be reduced by a minimum safety factor of 4 or greater to determine the allowable working load. The design professional familiar with the actual product installation should be consulted. Please refer to the general section entitled Evaluation of Test Data that appears earlier in this manual for current industry standards. The consistency of C-90 hollow block and solid brick varies greatly. The load capacities listed above should be used as guidelines only. Job site tests should be conducted to verify base material consistency and actual anchor performance.

Design Criteria

Base Material Thickness

The minimum recommended thickness of base material, BMT, when using the GrabMac is 125% of the embedment to be used. For example, when installing an anchor to a depth of 1 1/2", the base material thickness should be 1 7/8". This does not apply to the face shell of a hollow block wall.

Spacing Between Anchors

Size	10D	9D	8D	7D	6D	5D
3/16	1-7/8	1-3/4	1-1/2	1-3/8	1-1/8	1
1/4	2-1/2	2-1/4	2	1-3/4	1-1/2	1-1/4
Rs	1.00	0.90	0.80	0.70	0.60	0.50

To obtain the maximum load in tension or shear a spacing, S, of 10 anchor diameters (10D) or greater should be used. The minimum recommended anchor spacing, S, is 5 anchor diameters (5D) at which point the load should be reduced by 50%. Anchor spacing closer or less than 5 diameters (5D) needs to be field tested. Actual base material conditions will determine any applicable reduction factor. The following table lists the load reduction factor Rs for each anchor diameter, D, based on the center to center anchor spacing.

Edge Distance - Tension

Anchor Size D	Edge Distance, E (inches)							
	12D	11D	10D	Tension Only				5D
3/16	2-1/4	2-1/8	1-7/8	1-3/4	1-1/2	1-3/8	1-1/8	1
1/4	3	2-3/4	2-1/2	2-1/4	2	1-3/4	1-1/2	1-1/4
Re	1.00	0.97	0.94	0.91	0.89	0.86	0.83	0.80

For tension loads, an edge distance, E, of 12 diameters (12D) or greater should be used to obtain the maximum tension load. The minimum recommended edge distance, E, is 5 diameters (5D) at which point the tension load should be reduced by 20%. Edge distances closer or less than 5 diameters (5D) need to be field tested. Actual base material conditions will determine any applicable reduction factor. The following table lists the load reduction factor, Re, for each anchor diameter, D, based on the anchor center to edge distance.

Edge Distance - Shear

Anchor Size D	Edge Distance, E (inches)							
	12D	11D	10D	Shear Only				5D
3/16	2-1/4	2-1/8	1-7/8	1-3/4	1-1/2	1-3/8	1-1/8	1
1/4	3	2-3/4	2-1/2	2-1/4	2	1-3/4	1-1/2	1-1/4
Re	1.00	0.93	0.86	0.79	0.71	0.64	0.57	0.50

For shear loads, an edge distance, E, of 12 anchor diameters (12D) or greater should be used to obtain the maximum load. The minimum recommended edge distance, E, is 5 anchor diameters (5D) at which point the shear load should be reduced by 50%. Edge distances closer or less than 5 diameters (5D) need to be field tested. Actual base material conditions will determine any applicable reduction factor. The following table lists the load reduction factor, Re, for each anchor diameter, D, based on the anchor center to edge distance.

Suggested Specifications

The following approvals and listings are for reference purposes. They should be reviewed by the design professional responsible for the product installation to verify approved base materials, sizes, and compliance with local codes. SBCCI Report No.9944 Factory Mutual Research Corporation J.I.1K6A7.AM Federal Specification Meets the descriptive requirements of FF-S-325C, Group V, Type 2, Class 3 (superseded) and CID A-A-1925A, Type 1 (mushroom head) & Type 2 (flathead).

GrabMac With Carbon Steel Nail

Expansion anchors shall be a pre-assembled nail drive anchor with a mushroom head and body formed from Zamac alloy. The carbon steel nail shall be plated according to ASTM Specifications B633, SC1, Type III (Fe/Zn5) GrabMac anchors shall be as dimensioned and supplied by GRABBER.

GrabMac With Stainless Steel Nail

Expansion anchors shall be a pre-assembled nail drive anchor with a mushroom style head and a body formed from Zamac alloy. The nail shall be manufactured from Type 304 stainless steel. GrabMac anchors shall be as dimensioned and supplied by GRABBER.