

Hollow-Set™ Dropin

BASE MATERIAL

Concrete, Block, Brick, Precast Hollow Core Plank, Stone

SIZE RANGE

1/4" to 5/8"

ANCHOR MATERIAL

Zamac Alloy with Carbon Steel or Stainless Steel Cones

PRODUCT DESCRIPTION

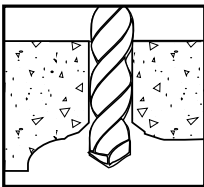
The Hollow-Set Dropin anchor is designed for anchoring in hollow base materials such as hollow concrete block, brick with weep holes, and hollow core pre-cast concrete plank. It can also be used in solid base materials making it a problem solving universal anchor.

Hollow base materials such as precast plank or C-90 Block often have a maximum outer wall thickness of 1-1/2". During the drilling process, spalling on the back side of the wall as the bit penetrates into the hollow portion of the base material often decreases the wall thickness available for anchoring to 1" or less. This creates a problem for most conventional style anchors which will not function properly in materials of this thickness.

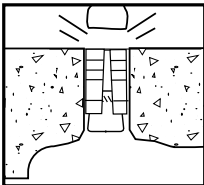
The design of the Hollow-Set Dropin overcomes this problem. FMRC and UL listings make this anchor appropriate for overhead applications.

INSTALLATION PROCEDURES

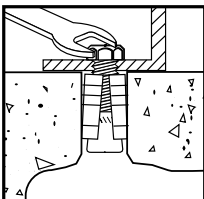
HOLLOW BASE MATERIALS



Drill a hole into the base material to the required depth. In hollow base materials, drill through into the cell or void. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.15.



Blow the hole clean of dust and other material. Do not expand the anchor prior to installation. Insert cone end and tap flush to surface.

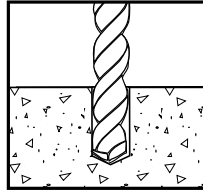


Position fixture, insert bolt and tighten. The bolt should engage a minimum of 2/3 of the anchor threads. The anchor can also be expanded using a Hollow-Set Tool.

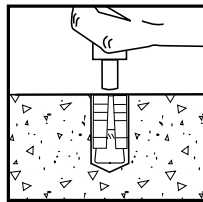
If Hollow Tool is used, thread anchor onto tool prior to tapping into anchor hole. When flush with surface, turn tool clockwise to tighten. Release tool from set anchor by turning counterclockwise. Fixture can then be attached.

INSTALLATION PROCEDURES

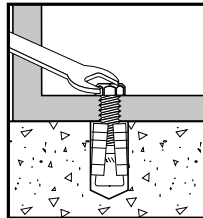
SOLID BASE MATERIALS



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.



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



Using the Solid Tool, set the anchor by driving the Zamac 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. Position the fixture, insert bolt or threaded rod and tighten.

ANCHOR SIZES

To select the proper minimum length bolt, determine the thickness of the fixture including any spacers or shims. Add this to the depth required to engage at least 2/3 of the threads in the cone.

CAT. NO. CS	SS	ANCHOR SIZE	DRILL DIA.	OVERALL LENGTH	SLEEVE LENGTH	STD. BOX	STD. CTN.	WT./100
9320	9420	1/4"	3/8"	7/8"	5/8"	100	1000	1-3/4
9330	-	5/16"	5/8"	1-5/16"	15/16"	100	500	5-1/2
9340	9440	3/8"	5/8"	1-5/16"	15/16"	100	500	5-1/2
9350	-	1/2"	3/4"	1-3/4"	1-1/4"	100	100	9-1/2
9360	-	5/8"	1"	2"	1-1/2"	100	100	21

SETTING TOOLS

ANCHOR	1/4"	5/16"	3/8"	1/2"	5/8"
Hollow Tool	9323	9333	9343	9353	9363
Solid Tool	9322	9332	9342	9352	9362



Solid Setting Tool



Hollow Setting Tool (also for Solid Setting)



INSTALLATION SPECIFICATIONS

ANCHOR SIZE	1/4"	5/16"	3/8"	1/2"	5/8"
ANSI Drill Bit Size	3/8"	5/8"	5/8"	3/4"	1"
Max Torque (ft.-lbs.)	5	7	10	20	40
Thread Size	1/4-20	5/16-18	3/8-16	1/2-13	5/8-11
Thread Length in cone	3/8"	5/8"	5/8"	3/4"	1"

MATERIAL SPECIFICATIONS

ANCHOR COMPONENT	CARBON STEEL	STAINLESS STEEL
Anchor Body	Zamac Alloy	Zamac Alloy
Cone	AISI 12L14	Type 304 SS
Plating (Cone)	ASTM B633, 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.

ULTIMATE LOAD CAPACITIES - CONCRETE (CARBON AND STAINLESS STEEL CONE)

ANCHOR SIZE (IN)	DRILL BIT (IN)	EMBED. DEPTH (IN)	2,000 PSI CONCRETE TENSION (LBS)	CONCRETE SHEAR (LBS)	4,000 PSI CONCRETE TENSION (LBS)	CONCRETE SHEAR (LBS)	6,000 PSI CONCRETE TENSION (LBS)	CONCRETE SHEAR (LBS)
1/4	3/8	3/4	760	1,200	1,140	1,200	1,440	1,200
1/4	3/8	7/8	1,000	1,440	1,305	1,440	2,045	1,440
5/16	5/8	3/4	840	1,840	1,240	1,840	1,500	1,840
5/16	5/8	1	1,120	1,980	1,680	1,980	2,200	1,980
5/16	5/8	1-1/2	2,710	2,740	3,405	2,740	5,110	2,740
3/8	5/8	3/4	960	2,230	1,460	2,230	1,660	2,230
3/8	5/8	1	1,370	2,550	2,070	2,550	2,290	2,550
3/8	5/8	1-1/2	3,010	3,145	4,315	3,145	5,085	3,145
1/2	3/4	1-1/2	2,140	4,015	4,025	4,015	7,285	4,015
1/2	3/4	2	3,420	4,020	5,370	4,020	9,705	4,020
5/8	1	2-1/4	5,725	6,400	9,660	6,400	12,745	6,400

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.

ULTIMATE LOAD CAPACITIES - HOLLOW CONCRETE PLANK (CARBON AND STAINLESS STEEL CONE)

ANCHOR SIZE (IN)	DRILL BIT (IN)	EMBED. DEPTH (IN)	4,000 PSI CONCRETE TENSION (LBS)	CONCRETE PLANK SHEAR (LBS)
1/4	3/8	7/8 *	2,240	1,800
5/16	5/8	1-1/2 *	3,280	2,640
3/8	5/8	3/4 **	2,525	3,775
3/8	5/8	1-1/2 *	3,620	4,220
1/2	3/4	1-1/2 *	4,660	6,840
5/8	1	1-1/2 *	9,660	12,680

* Anchors were installed with sleeve flush to surface of the plank.

** Anchors were installed in solid portion of plank in anchor holes that did not spill into hollow cavity.

ULTIMATE LOAD CAPACITIES - C-90 BLOCK AND SOLID BRICK

ANCHOR SIZE	EMBED. DEPTH	C-90 HOLLOW BLOCK TENSION (LBS)	SHEAR (LBS)
1/4"	*7/8"	1,325	1,575
5/16"	*1-1/2"	3,070	1,815
3/8"	*1-1/2"	3,450	2,485
1/2"	*1-1/2"	3,580	3,655
5/8"	*1-1/2"	3,580	3,740

ANCHOR SIZE	EMBED. DEPTH	TENSION (LBS)	SOLID RED BRICK SHEAR (LBS)
1/4"	7/8"	880	1,640
5/16"	1-1/2"	1,460	2,230
3/8"	1-1/2"	1,860	2,980
1/2"	1-1/2"	3,240	4,230
5/8"	2-1/4"	4,680	6,420

*Anchors were installed with sleeve flush to face shell surface.

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 plank, C-90 hollow block and solid red 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, proper installation torque values and actual anchor performance.

DESIGN CRITERIA

BASE MATERIAL THICKNESS

In solid base materials, the minimum recommended thickness of base material, BMT, when using the Hollow-Set Dropin is 125% of the embedment for solid materials to be used. For hollow materials, a minimum wall thickness of 1-1/2" is suggested. Job site tests should be performed on installations in hollow base materials.

SPACING BETWEEN ANCHORS

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.

ANCHOR SIZE D	ANCHOR SPACING, S (INCHES) TENSION AND SHEAR					
	10D	9D	8D	7D	6D	5D
1/4	2-1/2	2-1/4	2	1-3/4	1-1/2	1-1/4
5/16	3-1/8	2-7/8	2-1/2	2-1/4	1-7/8	1-1/2
3/8	3-3/4	3-3/8	3	2-5/8	2-1/4	1-7/8
1/2	5	4-1/2	4	3-1/2	3	2-1/2
5/8	6-1/4	5-5/8	5	4-3/8	3-3/4	3-1/8
Rs	1.00	0.90	0.80	0.70	0.60	0.50

EDGE DISTANCE - TENSION

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 8 diameters (8D) at which point the tension load should be reduced by 20%. Edge distances closer or less than 8 diameters (8D) need to be field tested. Actual base material conditions will determine any applicable