



Wedge-Bolt®

BASE MATERIAL

Concrete, Block, Brick, Stone

SIZE RANGE

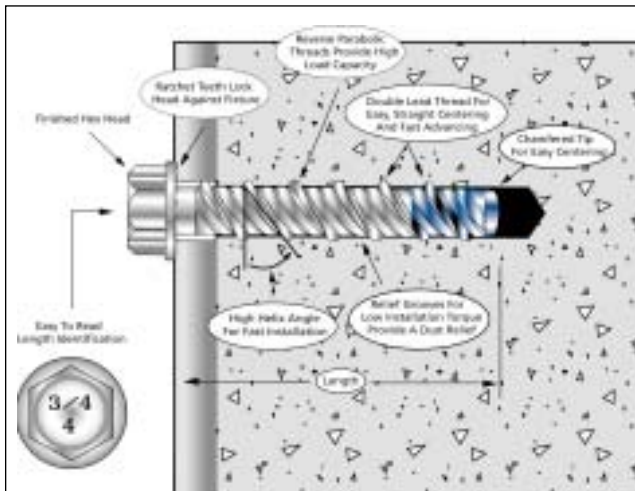
3/16" x 1-1/4" to 3/4" x 8"

ANCHOR MATERIAL

410 stainless steel

PRODUCT DESCRIPTION

The Wedge-Bolt anchor is a one piece, heavy duty anchor with either a finished hex head or countersunk Phillips flat head. It is easy to identify, removable and vibration resistant. The Wedge-Bolt anchor also has many unique features and benefits that make it well suited for almost every application. Optimum performance is obtained using a combination of patented design concepts. The benefit to the designer is higher load capacities while the benefit to the user is ease of installation.

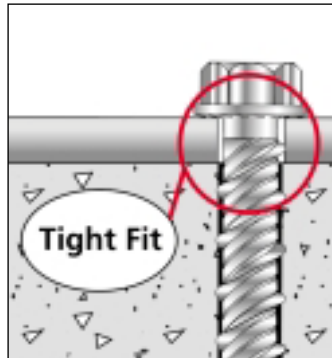


ONE-PIECE DESIGN



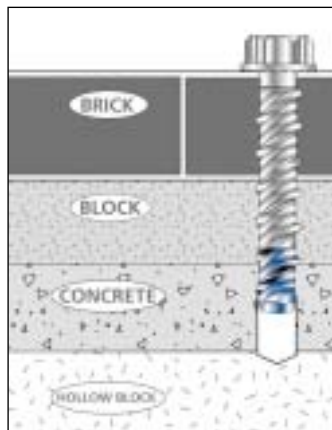
The Wedge-Bolt anchor is a one-piece unit which features a finished hex head formed with an integral washer, a patented dual lead thread, and a chamfered tip. A one-piece design eliminates the possibility of lost anchor parts or improper assembly.

MATCHES STANDARD FIXTURE HOLES



The Wedge-Bolt anchor is designed to match standard fixture clearance holes that are 1/16" over nominal to provide a secure fit. Since the Wedge-Bolt is specially matched to the clearance hole, the need for layout or hole spotting is eliminated.

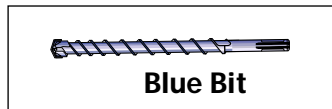
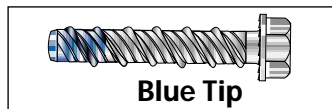
WORKS IN MOST BASE MATERIALS



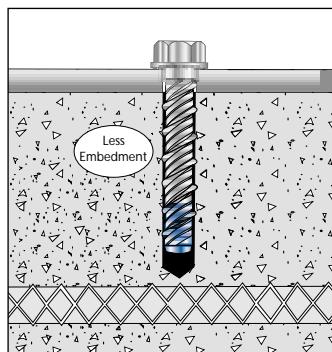
The Wedge-Bolt anchor is versatile and can be used in a variety of base materials. This reduces the need to stock assorted anchor types and learn a variety of installation procedures. A function test (i.e. trial installation) in the actual base material is recommended for high density precast concrete and slabs with compressive strengths greater than 5,000 psi.

MATCHED TOLERANCE SYSTEM

The Wedge-Bolt anchor is designed to be used with a matched tolerance Wedge-Bit for optimum performance. This high performance bit has a special tolerance range to ensure optimum results. Remember ... Blue tip, Blue bit!



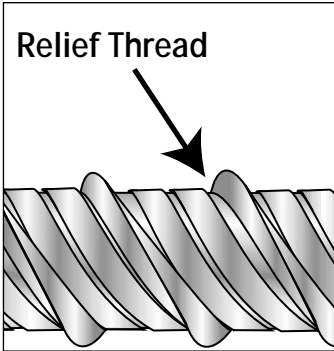
SHALLOW EMBEDMENT DEPTH



The Wedge-Bolt anchor can be installed at shallower embedment depths than traditional wedge or sleeve anchors reducing the chance of striking reinforcing bars or embedded cables. Drilling time and bit wear can be reduced resulting in significant savings.

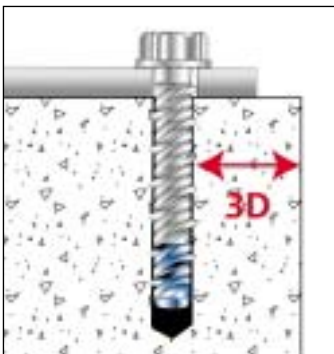


LOW INSTALLATION TORQUE



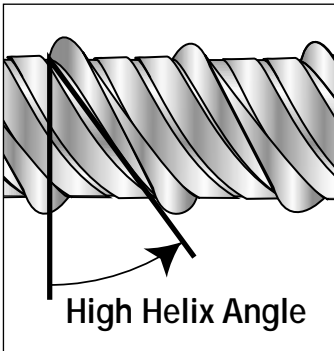
A specially designed relief thread formed in the body of the anchor allows easy tightening at a reduced torque level and provides dust relief to help reduce jamming of the anchor.

CLOSE TO EDGE INSTALLATION



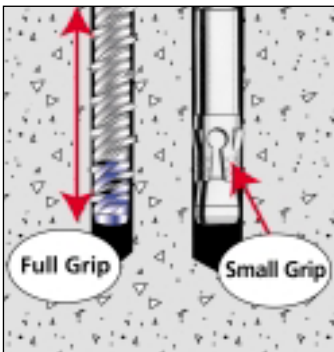
The Wedge-Bolt anchor cuts a thread into the base material. Since there are no expansion forces, the Wedge-Bolt anchor can be installed closer to the edge than traditional mechanical anchors without damaging the base material.

FAST, EASY, SAFE, HIGH SPEED INSTALLATION



The Wedge-Bolt anchor is fast, easy and safe to install. A chamfer on the working end quickly centers the anchor and a high 30° helix angle allows it to be tightened quickly. The controlled "screw-in" method is safer than the hammer driving method used with traditional anchor types.

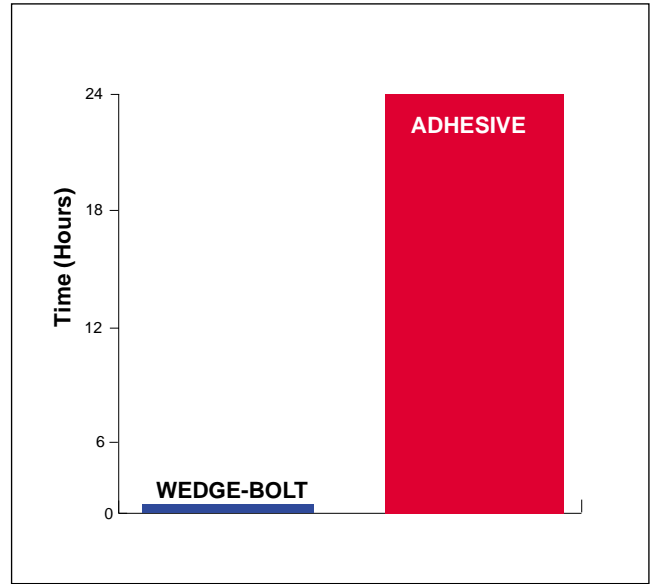
WON'T SPIN IN THE HOLE



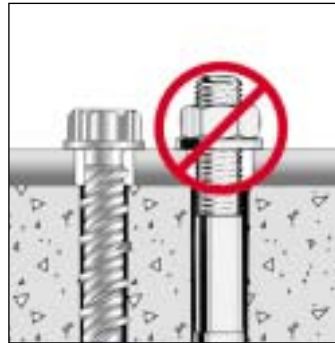
The Wedge-Bolt anchor has specially designed dual threads that engage the base material immediately upon tightening. Unlike traditional wedge or sleeve type anchors, they will not spin in the hole when attempting to tighten.

IMMEDIATE, HIGH STRENGTH LOADING

The Wedge-Bolt anchor can be loaded immediately. Unlike adhesive anchors, there is no lengthy curing time.

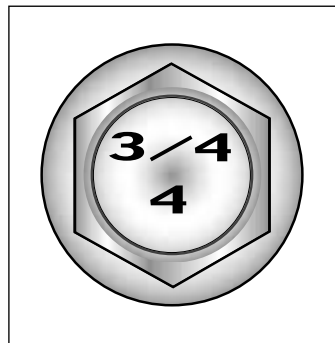


FINISHED APPEARANCE



The Wedge-Bolt anchor has a finished hex washer head that provides an attractive appearance. They are safer than traditional mechanical anchors where exposed thread above the nut creates a tripping hazard.

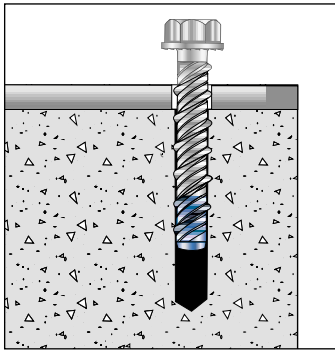
EASY TO READ LENGTH IDENTIFICATION



The Wedge-Bolt anchor has both the diameter and length clearly stamped on the head. Inspection is easy since there are no complicated letter codes to memorize.

REMOVABLE AND RE-USABLE

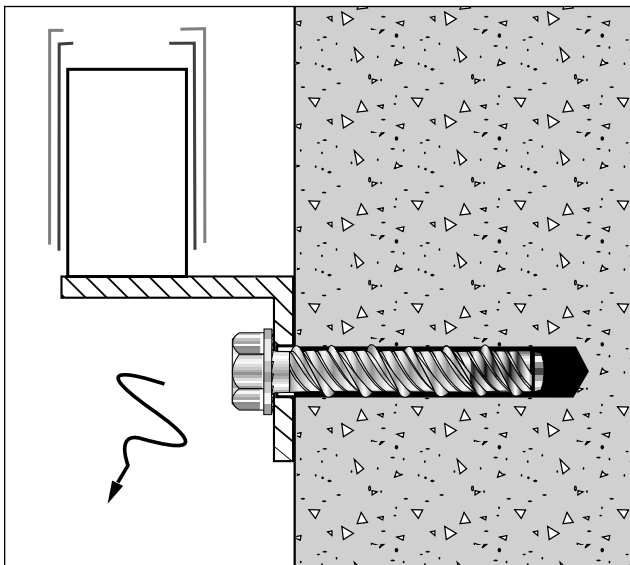
The Wedge-Bolt anchor is easy to remove, leaving a neat clean hole. Unlike traditional anchor types, Wedge-Bolt anchors can be removed to correct installation errors such as improperly drilled or unclean anchor holes. Once removed, no components that will corrode remain in the base material. When re-used in the same anchor hole, advance the anchor with a handheld socket, locating the tracks cut into the wall of the anchor hole by the double lead thread during its original installation. Do not use an electric impact wrench when re-using in the same hole.



When re-used to pilot a new anchor hole, 1 or 2 additional applications or re-uses are possible. The high double lead thread should be checked for excessive wear. Base material conditions (hardness and density) will affect re-usability.

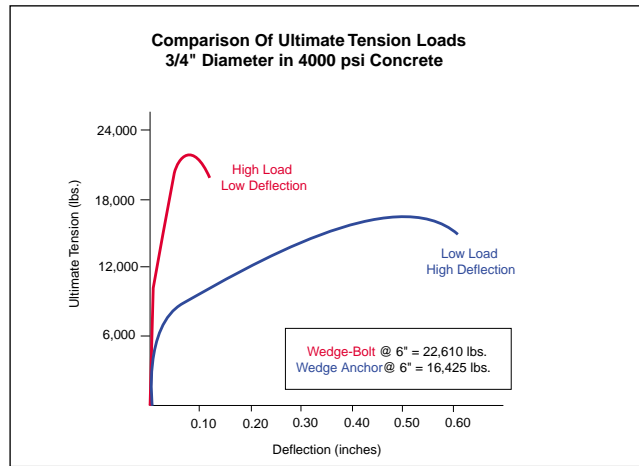
VIBRATION RESISTANT

The Wedge-Bolt anchor is vibration resistant. Unlike traditional anchors that have a small expansion mechanism, the double lead threads grip a large portion of the embedment length and there are no expansion forces to pulverize the concrete. For additional vibration resistance, the ratchet teeth on the underside of the hex washer head lock against the fixture. Factors of safety greater than 4 may be required to compensate for excessive vibration. The design professional in charge of the actual product installation should determine an appropriate factor of safety.



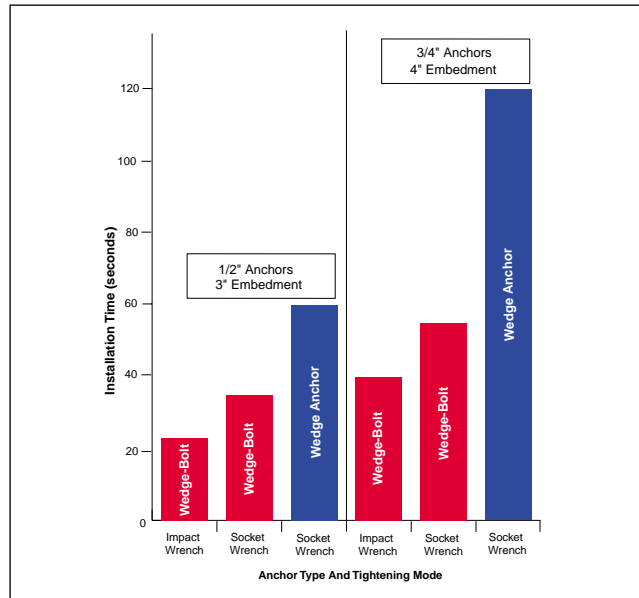
HIGH STRENGTH

The Wedge-Bolt anchor is typically stronger than a traditional wedge or sleeve type anchor. They have the low slip and close edge characteristics of adhesive anchors. A combination of a patented dual lead thread and high strength steel material provide excellent performance. High tension loads often allow the Wedge-Bolt to be used at a shallower embedment while high shear loads allow use of smaller diameters. Knowledge of an application's load requirements is the key to selecting a proper size and embedment depth.

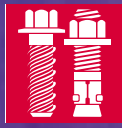


COST EFFECTIVE

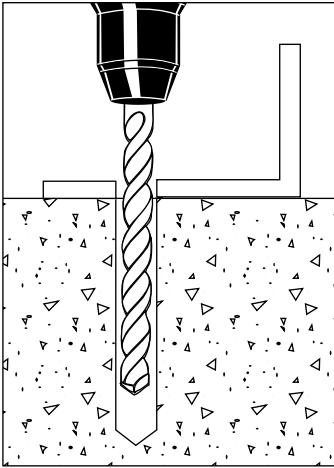
The Wedge-Bolt anchor saves time and money. It is faster to install and easier to use. This helps to increase productivity while reducing worker fatigue. Installation time is decreased up to 70%. For fast, easy, cost effective, high performance installations, the innovative Wedge-Bolt anchor is the one product that does it all.



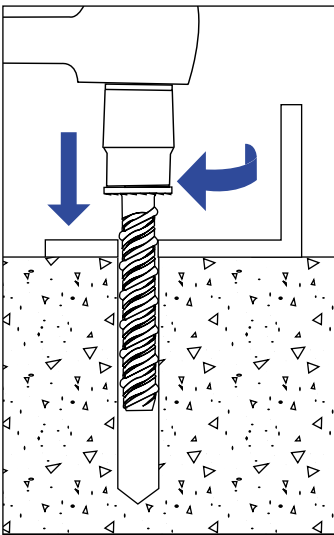
Note: Electric impact wrenches are available in different sizes (e.g. 1/2" drive or 3/4" drive) providing different torque capacities. Anchor size and base material conditions will determine the appropriate size electric impact wrench.



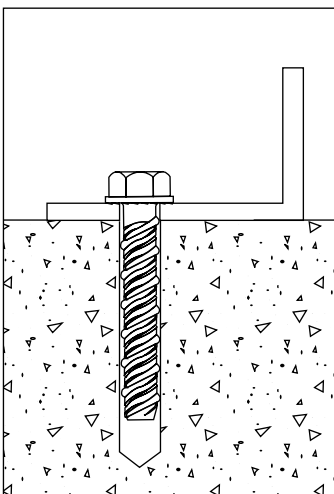
INSTALLATION PROCEDURE FOR BLUE-TIPPED WEDGE-BOLTS



Using the proper diameter **Wedge-Bit**, drill a hole into the base material to a depth of at least 1/2" or one anchor diameter deeper than the embedment required. Be sure to use a **Wedge-Bit**. Blow the hole clean of dust and other material. (When attaching to hollow base material, insert the appropriate Block Plug into the anchor hole).

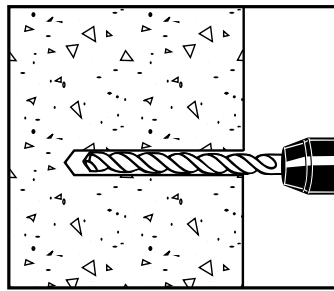


Insert the anchor through the fixture into the anchor hole. Begin tightening the anchor by rotating clockwise and applying pressure in toward the base material. This will engage the first few threads as the anchor begins to advance.

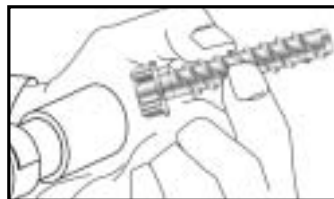


Continue tightening the anchor until the head is firmly seated against the fixture while achieving the required embedment depth. In extremely dense materials, use of an impact wrench is recommended.

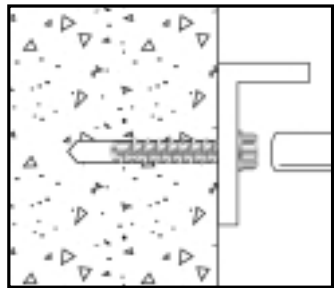
INSTALLATION PROCEDURES FOR 3/16" WEDGE-BOLT



Using a 3/16" diameter bit, drill a hole into the base material to a depth of at least 1/2" deeper than the embedment required. A **TAPPER** drill bit must be used. Blow the hole clean of dust and other material.



Using the Combo 3/16" Wedge-Bolt / **TAPPER** Tool and the appropriate driver, insert the head of the 3/16" Wedge-Bolt anchor. The drill motor should be set to "rotation only" mode.



Place the chamfered end of the 3/16" Wedge-Bolt through the fixture into the pre-drilled hole and drive the anchor in one steady continuous motion until it is fully seated at the proper embedment. The driver will automatically disengage from the head of the Wedge-Bolt.

ANCHOR SIZES

The following tables list the sizes of hex head Wedge-Bolt anchors. The anchor length published is measured from below the hex washer head to the end of the anchor. To select the proper length, determine the embedment depth required to obtain the desired load capacity. Then add the thickness of the fixture, including any spacers or shims, to the embedment depth.

CARBON STEEL HEX HEAD WEDGE-BOLT

Wedge-Bolt anchors are manufactured from heat treated carbon steel that is plated with commercial bright zinc and a supplementary chromate treatment in accordance with ASTM Specification B 633, SC1, Type III (Fe / Zn 5).

CAT. NO.	SIZE	MIN. EMBED.	THREAD LENGTH	STD. BOX	STD. CTN.	WT./100
7000*	3/16" x 1-1/4"	1"	1-3/8"	100	500	1-3/4
7002*	3/16" x 1-3/4"	1"	1-5/8"	100	500	2-1/4
7004*	3/16" x 2-1/4"	1"	2"	100	500	2-1/2
7006*	3/16" x 2-3/4"	1"	2-1/2"	100	500	3
7204	1/4" x 1-1/4"	1"	1-1/8"	100	500	2-1/2
7206	1/4" x 1-3/4"	1"	1-5/8"	100	500	3-1/4
7208	1/4" x 2-1/4"	1"	2"	100	500	4-1/4
7210	1/4" x 3"	1"	2-3/4"	100	500	5-1/2
7220	3/8" x 1-3/4"	1-1/2"	1-1/2"	50	250	8
7222	3/8" x 2-1/2"	1-1/2"	2-1/4"	50	250	11
7224	3/8" x 3"	1-1/2"	2-3/4"	50	250	12
7226	3/8" x 4"	1-1/2"	3-3/4"	50	250	15
7240	1/2" x 2"	1-3/4"	1-3/4"	50	200	14

CAT. NO.	SIZE	MIN. EMBED.	THREAD LENGTH	STD. BOX	STD. CTN.	WT./100
7242	1/2" x 2-1/2"	1-3/4"	2-1/4"	50	200	15-1/2
7244	1/2" x 3"	1-3/4"	2-3/4"	50	150	21
7246	1/2" x 4"	1-3/4"	3-3/4"	50	150	25
7248	1/2" x 5"	1-3/4"	3-3/4"	25	100	28
7250	1/2" x 6"	1-3/4"	3-3/4"	25	75	34
7260	5/8" x 3"	2-1/2"	2-3/4"	25	100	28
7262	5/8" x 4"	2-1/2"	3-3/4"	25	100	30
7264	5/8" x 5"	2-1/2"	3-3/4"	25	75	39
7266	5/8" x 6"	2-1/2"	3-3/4"	25	75	47
7280	3/4" x 3"	2-1/2"	2-3/4"	20	60	48
7282	3/4" x 4"	2-1/2"	3-3/4"	20	60	56
7284	3/4" x 5"	2-1/2"	3-3/4"	20	60	70
7286	3/4" x 6"	2-1/2"	3-3/4"	20	60	86
7288	3/4" x 8"	2-1/2"	3-3/4"	10	40	100

The published length is measured from below the hex washer head to the end of the anchor.

* 3/16" Wedge-Bolt anchors do not have a Blue Tip. See separate section for appropriate 3/16" diameter carbide tipped drill bits.

CARBON STEEL PHILLIPS FLAT HEAD 3/16" WEDGE-BOLT

CAT. NO.	SIZE	MIN. EMBED.	THREAD LENGTH	STD. BOX	STD. CTN.	WT./100
7100*	3/16" x 1-1/4"	1"	1"	100	500	1-1/4
7102*	3/16" x 1-3/4"	1"	1-1/2"	100	500	1-3/4
7104*	3/16" x 2-1/4"	1"	2"	100	500	2
7106*	3/16" x 2-3/4"	1"	2-1/2"	100	500	3-1/2

The published length is the overall length of the anchor.

* 3/16" Wedge-Bolt anchors do not have a Blue Tip. See separate section for appropriate 3/16" diameter carbide tipped drill bits.

WEDGE-BIT™ SIZES

For proper performance, all blue tipped Wedge-Bolt anchors must be installed with a blue Wedge-Bit. The Wedge-Bit has a special matched tolerance range designed to provide optimum performance for the anchor. The available shank styles and sizes are listed below.

WEDGE-BOLT TOLERANCES

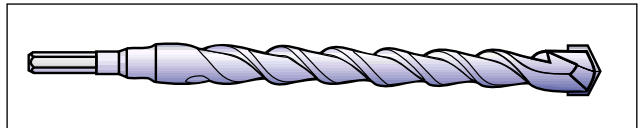
WEDGE-BOLT SIZE	BIT SIZE RANGE
1/4"	0.255" - 0.259"
3/8"	0.385" - 0.389"
1/2"	0.490" - 0.495"
5/8"	0.600" - 0.605"
3/4"	0.720" - 0.725"

SDS-PLUS WEDGE-BIT™



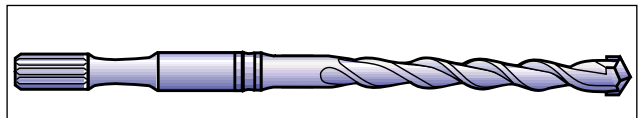
CAT. NO.	DRILL SIZE (IN.)	USABLE LENGTH (IN.)	OVERALL LENGTH (IN.)	STD. POUCH	WT./DOZEN
1312	1/4	2	4	1	1
1314	1/4	4	6	1	1-1/4
1316	3/8	4	6	1	2
1318	3/8	6	8	1	2-1/2
1320	1/2	4	6	1	2-3/4
1322	1/2	8	10	1	4-1/4
1324	5/8	6	8	1	4-1/2
1326	5/8	10	12	1	6-1/4
1328	3/4	6	8	1	5
1330	3/4	10	12	1	6-3/4

HEAVY DUTY STRAIGHT SHANK WEDGE-BIT



CAT. NO.	DRILL SIZE (IN.)	USABLE LENGTH (IN.)	OVERALL LENGTH (IN.)	STD. POUCH	WT./DOZEN
1370	1/4	2-3/4	4	1	1
1372	1/4	4	6	1	1-1/4
1380	3/8	4	6	1	2
1384	3/8	11	13	1	2-1/2
1390	1/2	4	6	1	2-3/4
1394	1/2	11	13	1	4-1/4
1396	5/8	11	13	1	6-1/4
1397	3/4	11	13	1	6-3/4

SPLINE WEDGE-BIT



CAT. NO.	DRILL SIZE (IN.)	USABLE LENGTH (IN.)	OVERALL LENGTH (IN.)	STD. TUBE	WT./DOZEN
1340	1/2	8	13	1	11
1344	5/8	8	13	1	12-1/2
1348	3/4	8	13	1	15

SDS-MAX WEDGE-BIT



CAT. NO.	DRILL SIZE (IN.)	USABLE LENGTH (IN.)	OVERALL LENGTH (IN.)	STD. TUBE	WT./DOZEN
1354	1/2	8	13	1	12
1356	5/8	8	13	1	13
1358	3/4	8	13	1	15

3/16" BITS FOR 3/16" WEDGE-BOLT

For proper performance all 3/16" Wedge Bolt anchors must be installed with a 3/16" diameter bit. Tolerance range = 0.202" to 0.204" for the available styles and sizes listed below.

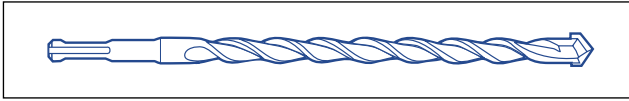
STRAIGHT SHANK TANGED WEDGE-BIT



CAT. NO.	DRILL SIZE (IN.)	USABLE LENGTH (IN.)	OVERALL LENGTH (IN.)	STD. TUBE	WT./10
2785	3/16	2	3-1/2	10	1/4
2786	3/16	3	4-1/2	10	1/4
2787	3/16	4	5-1/2	10	1/2
2788	3/16	5	6-1/2	10	1/2
2789	3/16	6	7-1/2	10	1/2



HEX SHANK SDS-PLUS WEDGE-BIT

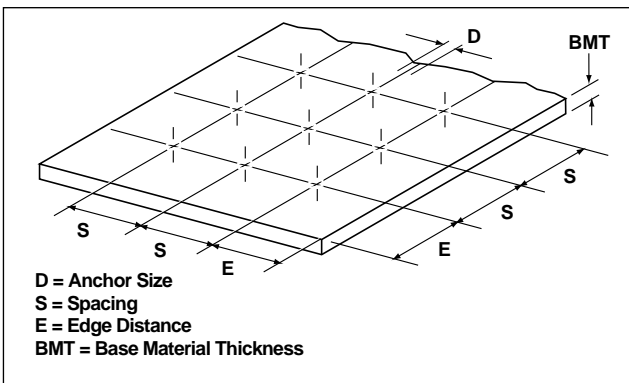


CAT. NO.	DRILL SIZE (IN.)	USABLE LENGTH (IN.)	OVERALL LENGTH (IN.)	STD. TUBE	WT./ 10
2796	3/16	3	5	1	1
2797	3/16	5	7	1	1

COMBO 3/16" WEDGE-BOLT / TAPPER INSTALLATION TOOL

CAT. NO.	DESCRIPTION	MAX. SCREW LENGTH	MAX. BIT LENGTH	STD. BOX	WT./ EACH
2791	Combo 3/16" Wedge-Bolt/TAPPER 1000 Tool	4"	5-1/2"	1	3/4

DESIGN CRITERIA



BASE MATERIAL THICKNESS

The minimum recommended thickness of solid base material, BMT, is 125% of the embedment to be used. For example, when installing an anchor to a depth of 4", the base material thickness should be 5".

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
3/16	2-1/2	2-1/4	2 .	1-3/4	1-1/2	1-1/4
1/4	2-1/2	2-1/4	2 .	1-3/4	1-1/2	1-1/4
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
3/4	7-1/2	6-3/4	6 .	5-1/4	4-1/2	3-3/4
Rs	1.00	0.90	0.80	0.70	0.60	0.50

EDGE DISTANCE - TENSION

For tension loads, an edge distance, E, of 10 diameters (10D) or greater should be used to obtain the maximum tension load. The minimum recommended edge distance, E, is 3 diameters (3D) at which point the tension load should be

reduced by 28%. Edge distances closer or less than 3 diameters (3D) 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.

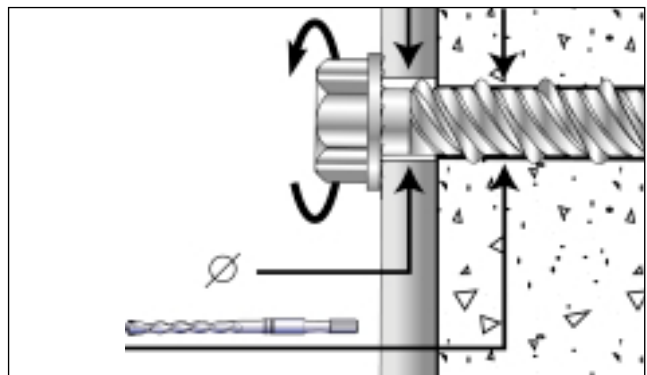
ANCHOR SIZE D	EDGE DISTANCE, E (INCHES) TENSION ONLY							
	10D	9D	8D	7D	6D	5D	4D	3D
3/16	2-1/2	2-1/4	2 .	1-3/4	1-1/2	1-1/4	1	3/4
1/4	2-1/2	2-1/4	2 .	1-3/4	1-1/2	1-1/4	1	3/4
3/8	3-3/4	3-3/8	3 .	2-5/8	2-1/4	1-7/8	1-1/2	1-1/8
1/2	5	4-1/2	4 .	3-1/2	3	2-1/2	2	1-1/2
5/8	6-1/4	5-5/8	5 .	4-3/8	3-3/4	3-1/8	2-1/2	1-7/8
3/4	7-1/2	6-3/4	6 .	5-1/4	4-1/2	3-3/4	7	2-1/4
Re	1.00	0.96	0.92	0.88	0.84	0.80	0.76	0.72

EDGE DISTANCE - SHEAR

For shear loads, an edge distance, E, of 10 anchor diameters (10D) or greater should be used to obtain the maximum load. The minimum recommended edge distance, E, is 3 anchor diameters (3D) at which point the shear load should be reduced by 84%. Edge distances closer or less than 3 diameters (3D) 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.

ANCHOR SIZE D	EDGE DISTANCE, E (INCHES) SHEAR ONLY							
	10D	9D	8D	7D	6D	5D	4D	3D
3/16	2-1/2	2-1/4	2 .	1-3/4	1-1/2	1-1/4	1	3/4
1/4	2-1/2	2-1/4	2 .	1-3/4	1-1/2	1-1/4	1	3/4
3/8	3-3/4	3-3/8	3 .	2-5/8	2-1/4	1-7/8	1-1/2	1-1/8
1/2	5	4-1/2	4 .	3-1/2	3	2-1/2	2	1-1/2
5/8	6-1/4	5-5/8	5 .	4-3/8	3-3/4	3-1/8	2-1/2	1-7/8
3/4	7-1/2	6-3/4	6 .	5-1/4	4-1/2	3-3/4	3	2-1/4
Re	1.00	0.88	0.76	0.64	0.52	0.40	0.28	0.16

INSTALLATION SPECIFICATIONS



CARBON STEEL WEDGE-BOLT

ANCHOR SIZE	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"
Wedge-Bit/Drill Bit Size	**3/16"	*1/4"	*3/8"	*1/2"	*5/8"	*3/4"
Fixture Clearance Hole	**5/16"	5/16"	7/16"	9/16"	11/16"	13/16"
Head Washer Height	7/32"	21/64"	7/16"	1/2"	19/32"	
Washer O.D.	9/16"	47/64"	1"	1-3/16"	1-13/32"	
Wrench Size		7/16"	9/16"	3/4"	15/16"	1-1/8"

* For proper performance, a Wedge-Bit must be used.

** Same 3/16" standard bit used for 1/4" TAPPER is packaged with each box of 3/16" Wedge-Bolt anchors.

ANSI DRILL BIT REDUCTION FACTORS

For proper performance, the Wedge-Bolt anchor should be installed with a Wedge-Bit. The Wedge-Bit has a special matched tolerance range designed to provide maximum pullout with a minimum amount of installation torque. When Wedge-Bits cannot be used, corresponding ANSI drill bits may be substituted. Load reduction factors must be applied to both the 1/4" and 3/8" sizes and the installation torque on the 1/2", 5/8" and 3/4" sizes is increased when standard ANSI drill bits are used. Below please find the appropriate cross-reference of ANSI to Wedge-Bit dimensions with the load reduction factors noted accordingly.

WEDGE-BOLT DIAMETER	WEDGE-BIT	ANSI	ANSI LOAD REDUCTION	INSTALLATION TORQUE
1/4	1/4	1/4	20%	-
3/8	3/8	3/8	15%	-
1/2	1/2	7/16	0	++
5/8	5/8	9/16	0	+
3/4	3/4	11/16	0	+

No reduction factor is required when Wedge-Nits are used with Wedge-Bolts. Also when installing larger diameter Wedge-Bolts with ANSI bits, an electric impact wrench is recommended. The amount of torque increase is variable and is a function of both the hardness of aggregate and density of concrete. The amount of increase is either slight(+) to significant(++) based on these factors.

MAXIMUM CLAMPING TORQUE

Wedge-Bolt anchors achieve their load capacity by the thread undercutting the base material. It is not necessary to tighten the anchor to any special torque value.

The amount of torque needed to advance the anchor will vary due to actual base material conditions (e.g., aggregate size, type, hardness, density, etc.) While the Wedge-Bolt anchor does not require any specific installation torque, some installers may request a maximum clamping torque. This is the maximum permissible torque value to be used to clamp the fixture to the base material. The values listed below should be used as guidelines. Their purpose is to prevent the anchor from stripping out when too much torque is applied. However, certain base material conditions will allow for higher clamping torque values.

MAXIMUM CLAMPING TORQUE (FT. - LBS.)

BASE MATERIAL	ANCHOR DIAMETER					
	3/16"	1/4"	3/8"	1/2"	5/8"	3/4"
2,000 psi Concrete	5	5	40	60	75	150
4,000 psi Concrete	10	10	40	60	75	250
6,000 psi Concrete	10	10	40	60	75	250
4,000 psi Lightweight	10	10	15	40	60	70
Grout Filled Block	10	10	15	40	60	70
Solid Red Brick	10	10	30	60	80	100
Hollow Block	5	5	10	-	-	-

MATERIAL SPECIFICATIONS

CARBON STEEL WEDGE-BOLT

ANCHOR COMPONENT	COMPONENT MATERIAL
Anchor Body	Through Hardened AISI 1020 / 1040 Carbon Steel
Zinc Plating	ASTM B 633, SC1, Type III (Fe/Zn 5)

PERFORMANCE DATA

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

ULTIMATE LOAD CAPACITIES IN CONCRETE

ANCHOR SIZE	EMBED. DEPTH	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"	1"	920	1,030	1,550	2,090	1,650	2,440
1/4"	1-1/2"	1,860	2,580	2,360	2,600	2,480	2,600
1/4"	2"	2,800	2,780	4,230	2,780	4,980	3,360
1/4"	2-1/2"	2,870	3,080	4,000	3,080	5,260	3,660
1/4"	3"	4,940	3,080	5,880	3,080	6,480	3,660
3/8"	1-1/2"	2,140	3,600	2,660	4,870	3,030	7,340
3/8"	2"	3,300	4,915	4,105	4,990	5,185	7,340
3/8"	2-1/2"	4,460	5,110	5,550	5,110	7,340	7,340
3/8"	3"	6,180	6,275	7,970	6,275	9,890	7,475
3/8"	3-1/2"	7,900	7,290	10,390	7,440	12,440	7,610
1/2"	1-3/4"	3,055	6,400	3,860	7,300	4,620	8,900
1/2"	2"	3,625	6,570	3,930	7,420	4,780	9,000
1/2"	2-1/2"	4,770	7,420	6,165	8,075	7,075	9,130
1/2"	3"	5,910	7,700	8,400	8,730	9,960	9,260
1/2"	3-1/2"	6,765	8,650	11,110	9,430	11,890	9,430
1/2"	4"	7,620	8,650	13,820	9,600	14,580	9,600
5/8"	2-1/2"	4,950	7,790	6,800	11,320	8,240	13,610
5/8"	3"	6,800	10,075	9,100	12,740	10,820	14,305
5/8"	3-1/2"	8,650	12,360	11,400	14,160	13,600	15,000
5/8"	4"	10,245	13,735	13,675	15,400	15,880	15,920
5/8"	5"	13,440	16,480	18,220	17,750	20,850	17,750
3/4"	2-1/2"	4,050	10,800	6,100	14,000	8,480	17,000
3/4"	3"	5,880	12,270	9,085	15,500	11,390	18,770
3/4"	3-1/2"	7,655	13,945	12,570	19,255	14,345	20,795
3/4"	4"	9,430	15,620	14,800	22,820	17,300	22,820
3/4"	5"	13,500	21,825	18,705	26,780	21,525	27,500
3/4"	6"	17,570	28,030	22,610	30,550	25,750	32,180

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



ULTIMATE LOAD CAPACITIES IN CONCRETE - 3/16" WEDGE-BOLT

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

ANCHOR SIZE	EMBED. DEPTH	2,000 PSI CONCRETE		3,000 PSI CONCRETE		4,000 PSI CONCRETE		5,000 PSI CONCRETE		6,000 PSI CONCRETE	
		TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)	TENSION (LBS)	SHEAR (LBS)
3/16"	1"	660	1,300	800	1,465	945	1,630	1,090	1,800	1,250	1,920
3/16"	1-1/8"	775	1,485	970	1,590	1,170	1,700	1,370	1,810	1,475	1,920
3/16"	1-1/4"	895	1,675	1,155	1,725	1,385	1,775	1,650	1,825	1,700	1,930
3/16"	1-3/8"	1,010	1,840	1,315	1,840	1,620	1,840	1,930	1,840	1,930	1,930
3/16"	1-1/2"	1,130	1,955	1,465	1,955	1,800	1,955	2,140	1,955	2,140	2,025
3/16"	1-5/8"	1,345	2,075	1,680	2,075	2,015	2,075	2,355	2,075	2,355	2,120
3/16"	1-3/4"	1,560	2,165	1,895	2,175	2,230	2,185	2,570	2,195	2,570	2,200
3/16"	1-7/8"	1,775	2,220	-	-	-	-	-	-	-	-
3/16"	2"	1,990	2,280	-	-	-	-	-	-	-	-

Ultimate load values should be reduced by a minimum safety factor of 4 or greater to determine the allowable working load. All anchors were installed in holes drilled with 3/16" diameter (TAPPER) drill bits that have a tolerance range of 0.202" to 0.204". All anchors were installed using the TAPPER 1000 Installation (Combo Kit) Tool - Catalog Number 2791. To avoid installation problems in denser concrete base materials having compressive strengths over 2,000 psi, select an anchor length that results in an embedment depth that does not exceed 1-3/4".

ULTIMATE LOAD CAPACITIES IN LIGHTWEIGHT CONCRETE

ANCHOR SIZE	EMBED. DEPTH	4,000 PSI LIGHTWEIGHT TENSION (LBS.)	SHEAR (LBS.)
1/4"	1"	1,080	1,640
1/4"	2"	2,630	1,880
3/8"	1-1/2"	2,160	4,260
3/8"	3-1/2"	6,510	5,480
1/2"	2-1/2"	3,880	7,200
1/2"	4"	7,830	8,230
5/8"	3"	5,940	10,640
5/8"	4"	8,930	12,960
3/4"	3"	7,260	13,600
3/4"	5"	14,970	17,220

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

The following tables list the ultimate or failure load for the Wedge-Bolt anchor when installed in grout filled block or solid red brick. These values should be used as a guide since the consistency of walls constructed from these materials varies widely. Job site tests should be conducted to determine site specific values.

ULTIMATE LOAD CAPACITIES FOR GROUT FILLED C-90 BLOCK

ANCHOR SIZE	EMBED. DEPTH	GROUT FILLED BLOCK TENSION (LBS.)	SHEAR (LBS.)
1/4"	2-1/2"	2,280	1,480
3/8"	3-1/2"	3,390	3,830
1/2"	4"	4,800	7,060
5/8"	4"	6,120	11,250
3/4"	4"	6,580	12,340

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. The consistency of grout filled masonry 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.

ULTIMATE LOAD CAPACITIES FOR GROUT FILLED C-90 BLOCK

ANCHOR SIZE	EMBED. DEPTH	GROUT FILLED BLOCK TENSION (LBS.)	SHEAR (LBS.)
3/16"	1-1/4"	2,095	2,160
3/16"	1-1/2"	3,140	2,160
3/16"	1-7/8"	3,400	2,160
3/16"	2-1/4"	3,485	2,160

Depending upon anchor application and governing building code, ultimate load values in masonry base materials should be reduced by a minimum safety factor of either 4 or greater to determine

the allowable working load. The design professional familiar with the actual product installation should be consulted. All anchors were installed in holes drilled with 3/16" diameter (TAPPER) drill bits that have a tolerance range of 0.202" to 0.204". All anchors were installed using the TAPPER 1000 Installation (Combo Kit) Tool - Catalog Number 2791. Since the consistency of masonry base materials varies greatly, the load capacities shown should be used as guidelines only. Job site tests should be conducted to determine installation success rate and actual load capacities.

ULTIMATE LOAD CAPACITIES FOR SOLID RED BRICK

ANCHOR SIZE	EMBED. DEPTH	SOLID RED BRICK TENSION (LBS.)	SHEAR (LBS.)
1/4"	2-1/2"	2,280	1,480
3/8"	3-1/2"	3,390	3,830
1/2"	4"	4,800	7,060
5/8"	4"	6,120	11,250
3/4"	4"	6,580	12,340

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 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 and actual anchor performance.

ULTIMATE LOAD CAPACITIES FOR SOLID RED BRICK

ANCHOR SIZE	EMBED. DEPTH	SOLID RED BRICK TENSION (LBS.)	SHEAR (LBS.)
3/16"	1-1/4"	770	1,310
3/16"	1-1/2"	950	1,310
3/16"	1-7/8"	1,450	1,310
3/16"	2-1/4"	1,920	1,310

ULTIMATE LOAD CAPACITIES FOR ASTM C-90 HOLLOW BLOCK

ANCHOR SIZE	EMBED. DEPTH	ASTM C-90 HOLLOW BLOCK TENSION (LBS.)	SHEAR (LBS.)
3/16"	1-1/4"	1,140	1,840

ULTIMATE LOAD CAPACITIES FOR "FLORIDA" HOLLOW BLOCK

ANCHOR SIZE	EMBED. DEPTH	"FLORIDA" HOLLOW BLOCK TENSION (LBS.)	SHEAR (LBS.)
3/16"	1-1/4"	1,160	1,475

NOTE: Depending upon anchor application and governing building code, ultimate load values in masonry base materials 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. All anchors were installed in holes drilled with 3/16" diameter (TAPPER) drill bits that have a tolerance range of 0.202" to 0.204". All anchors were installed using the TAPPER 1000 Installation (Combo Kit) Tool - Catalog Number 2791 with the exception of those installed in "Florida" Hollow Block. Anchors used in extremely soft base materials should be manually installed with a hand held socket or screwdriver. Since the consistency of masonry base materials varies greatly, the load capacities shown should be used as guidelines only. Job site tests should be conducted to determine installation success rate and actual load capacities.



Block-Plug™ for Wedge-Bolt Anchors

Insert either 1/4" or 3/8" Block-Plug into fixture or anchor hole prior to installation of 1/4" or 3/8" diameter Wedge-Bolt anchors into hollow concrete block. When fastening into ASTM C-90 Hollow Block, installers know that a relatively thin amount of base material is all that's left after the anchor holes have been drilled through the outside face of the block (i.e. face shell). The 1/4" or 3/8" diameter Wedge-Bolt anchor can still often be considered in this questionable base material when used with either a 1/4" or 3/8" Block Plug.

CAT. NO.	DESCRIPTION	STD. BOX	STD. CTN.	WT./100
7190	1/4" Block Plug	100	500	0.053
7191	3/8" Block Plug	50	250	0.078

To select the proper length Wedge-Bolt anchor to use with the corresponding Block Plug, add the thickness of the fixture, including any spacers and shims, to a minimum Wedge-Bolt anchor length of 1-3/4".

Example 1: An installer wants to fasten a fixture (thickness = 1/8") to a hollow block base material using a 1/4" diameter Wedge-Bolt anchor and 1/4" Block Plug: 1/8" + 1-3/4" = 1-7/8"

Use Catalog No. 7208, 1/4" x 2-1/4" Wedge-Bolt anchor with Catalog No. 7190, 1/4" Block Plug.

Example 2: An installer wants to fasten a fixture (thickness = 1/4") to a hollow block base material using a 3/8" diameter Wedge-Bolt anchor with a 3/8" Block Plug: 1/4" + 1-3/4" = 2"

Use Catalog No. 7222, 3/8" x 2-1/2" Wedge-Bolt anchor with Catalog No. 7191, 3/8" Block Plug.

INSTALLATION TIPS

In hollow block base materials, either a 1/4" or 3/8" Wedge-Bit is used to drill the anchor hole. The Block Plug is inserted into the anchor hole after it has been properly blown clean. The corresponding 1/4" or 3/8" diameter Wedge-Bolt anchor is then inserted through the fixture, into the Block Plug. A hand held socket wrench is used to install the Wedge-Bolt anchor into the Block Plug and base material until the head is firmly seated against the fixture. Be sure not to apply too much torque to the anchor. A large electric impact wrench should not be used for Block Plug applications.

ULTIMATE LOAD CAPACITIES FOR C-90 HOLLOW BLOCK

ANCHOR SIZE	EMBED. DEPTH	C-90 HOLLOW BLOCK TENSION (LBS.)	SHEAR (LBS.)
1/4"	1-1/2"	1,180	1,750
3/8"	1-1/2"	1,360	1,890

NOTE: Depending upon anchor application and governing building code, ultimate load capacities should be reduced by a 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 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.

SUGGESTED SPECIFICATION

Anchor hardware shall consist of a one-piece unit made from hardened carbon steel featuring a finished hex head formed with an integral washer, a double lead thread, and a chamfered tip. Anchors shall be designed to be installed in a hole that is pre-drilled using a special matched tolerance bit. The anchor shall have ratchet teeth on the underside of the hex washer head that engage the fixture. Installation shall consist of screwing or tightening the anchor into the pre-drilled hole. The head of the anchor shall be stamped with both the diameter and the length of the anchor. The anchors shall be plated according to ASTM Standard B 633, SC1, Type III (Fe / Zn 5). The anchor hardware shall be the Wedge-Bolt anchor as dimensioned and supplied by Powers Fasteners, Inc. The special matched tolerance carbide drill bit for 1/4" through 3/4" sizes shall be the Wedge-Bit as dimensioned and supplied by Powers Fasteners, Inc. The matched tolerance carbide drill bit for the 3/16" Wedge-Bolt shall be the same 3/16" diameter ANSI bit manufactured for the 1/4" TAPPER concrete screw anchor as dimensioned and supplied by Powers Fasteners, Inc.

APPROVALS AND LISTINGS

The following approvals and listings are for reference purposes. They should be reviewed by the design professional responsible for the actual product installation to verify approved base materials, sizes, and compliance with local codes.

ICBO ES Evaluation Report No. 5788

SBCCI Report No. 2124

COLA Research Report No. 25415

Metro-Dade - pending

Federal Specification

Meets the proof load requirements of FF-S-325C Group II, Type 4, Class 1 (superseded) and CID A-A1923A, Type 4



Tilt Wall Wedge-Bolt®

Ideal for brace shoes used to support tilt up wall panels. The NEW Powers Tilt Wall Wedge-Bolt anchors are specifically engineered for high load Tilt-up applications. Tilt Wall Wedge-Bolt anchors can be used in systems such as those manufactured by Meadow Burke.

CAT. NO.	SIZE	THREAD LENGTH	STD. CTN.	STD.
7296	Tilt Wall Wedge-Bolt 3/4" x 6" Black	5"	20	60
7298	Tilt Wall Wedge-Bolt 3/4" x 8" Black	6"	10	40

ADVANTAGES

- One-piece design
- Low Installation torque
- Vibration resistant
- Cost effective.
- Safe controlled installation methods
- Easy to read length identification
- Fast, easy, high speed installation
- Immediate high strength loading

PERFORMANCE DATA

ANCHOR SIZE (IN)	EMBED. DEPTH (LBS)	2,000 PSI CONCRETE			4,000 PSI CONCRETE		
		TENSION (LBS)	SHEAR (LBS)	60° COMB. LOAD (LBS)	TENSION (LBS)	SHEAR (LBS)	60° COMB. LOAD (LBS)
3/4" x 6"	5	13,500	21,825	14,780	18,705	26,780	16,150
3/4" x 8"	7	17,570	28,030	22,750	22,610	30,550	24,855

The values listed above are ultimate load capacities which should be reduced a minimum factor of safety of 2 or greater to determine the allowable working load.

WEDGE-BIT™ SIZES AND STYLES

CAT. NO.	DRILL SIZE	USABLE LENGTH	OVERALL LENGTH	STD. POUCH.
SDS-PLUS WEDGE-BIT				
1328	3/4"	6"	8"	1
1330	3/4"	10"	12"	1
SPLINE WEDGE-BIT				
1348	3/4"	8"	13"	1
SDS-MAX WEDGE-BIT				
1358	3/4"	8"	13"	1
HEAVY DUTY STRAIGHT SHANK WEDGE-BIT				
1397	3/4"	11"	13"	1

SPACING BETWEEN ANCHORS

ANCHOR SIZE D	ANCHOR SPACING, S (INCHES)					
	10D	9D	8D	7D	6D	5D
3/4	7-1/2	6-3/4	6	5-1/4	4-1/2	3-3/4
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 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)							
	10D	9D	8D	7D	6D	5D	4D	3D
3/4	7-1/2	6-3/4	6	5-1/4	4-1/2	3-3/4	7	2-1/4
Re	1.00	0.96	0.92	0.88	0.84	0.80	0.76	0.72

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 3 diameters (3D) at which point the tension load should be reduced by 28%. Edge distances closer or less than 3 diameters (3D) 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

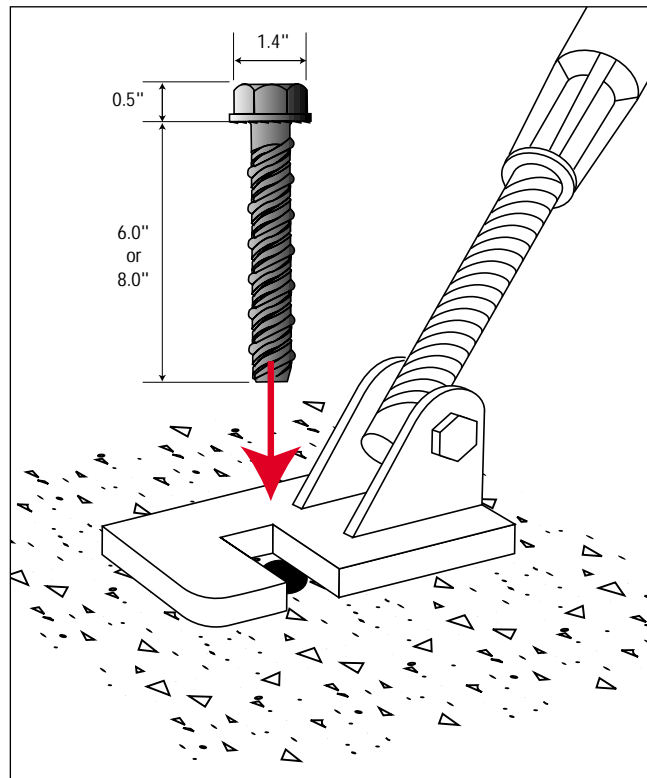
ANCHOR SIZE D	EDGE DISTANCE, E (INCHES)							
	10D	9D	8D	7D	6D	5D	4D	3D
3/4	7-1/2	6-3/4	6	5-1/4	4-1/2	3-3/4	3	2-1/4
Re	1.00	0.88	0.76	0.64	0.52	0.40	0.28	0.16

For shear loads, an edge distance, E, of 12 diameters (12D) or greater should be used to obtain the maximum shear load. The minimum recommended edge distance, E, is 3 diameters (3D) at which point the shear load should be reduced by 84%. Edge distances closer or less than 3 diameters (3D) 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.

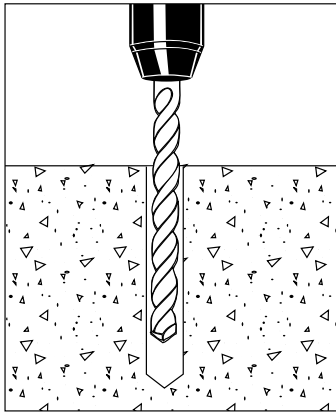
APPROVALS

Meadow Burke Products (pending)

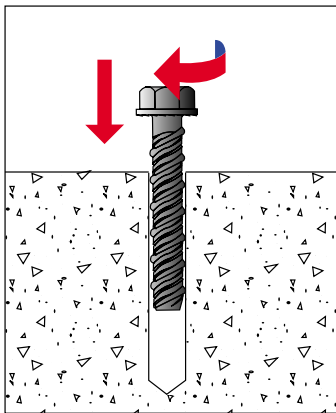
Install a Tilt-Up Brace Shoe by anchoring with the Powers Tilt Wall Wedge-Bolt



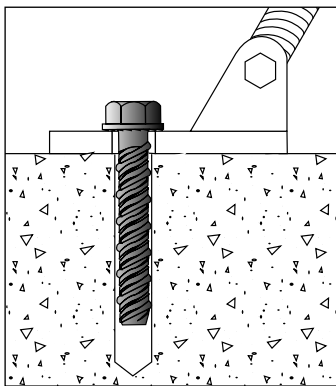
INSTALLATION PROCEDURE



Using a 3/4" diameter blue Wedge-Bit, drill a hole into the concrete base material to a depth at least 3/4" deeper than the embedment depth required. Be sure to use a 3/4" Wedge-Bit. Blow the anchor hole clean of dust and other material. Typical minimum concrete base material thickness is 5". It is acceptable to drill through the concrete base material. Choose the correct length Tilt Wall Wedge-Bolt that will maximize thread engagement with the walls of the anchor hole



Insert the anchor into the anchor hole. Using an electric impact wrench fitted with a 1-1/8" hex socket, advance the anchor by rotating clockwise while applying pressure in towards the concrete base material. The first few threads will engage the walls of the anchor hole and the anchor will continue to advance. The Tilt Wall Wedge-Bolt is installed without the brace shoe, advancing the anchor until the hex head is 1" above the surface of the concrete base material.



Slide the brace shoe onto the exposed portion of the anchor body and finish advancing the anchor until the integral hex head is firmly seated against the brace shoe.

SUGGESTED SPECIFICATION

Anchor hardware shall consist of a one-piece unit made from hardened carbon steel featuring a finished hex head formed with an integral washer, a double lead thread and a chamfered tip. Anchors are designed to be installed in an anchor hole that is pre-drilled using a special matched tolerance drill bit. The anchor shall have ratchet teeth on the underside of the hex washer head that engage the fixture's surface. Installation shall consist of screwing or tightening the anchor into the pre-drilled hole. The head of the anchor shall be stamped with both the diameter and the length of the anchor body. The anchors shall have a black oxide finish. Anchor hardware shall be the Tilt Wall Wedge-Bolt anchor as dimensioned and supplied by Powers Fasteners, Inc. The special matched tolerance, carbide tipped drill bit shall be the Wedge-Bit as dimensioned and supplied by Powers Fasteners, Inc.

VERTIGO™

ROD HANGER FASTENING SYSTEM

BASE MATERIAL

Steel, Wood, Concrete

SIZE RANGE

1/4" - 1/2"

ANCHOR MATERIAL

Carbon Steel

PRODUCT DESCRIPTION

VERTIGO is a one-piece, all steel threaded fastening system for suspending steel threaded rod vertically overhead in pipe hanging, fire protection, electrical conduit and cable-tray applications. VERTIGO can be installed in a variety of base materials including steel bar joists and beams, wood frame columns and beams, as well as concrete ceilings, beams and columns. Steel threaded rods in 1/4", 3/8" and 1/2" diameters can be vertically suspended with VERTIGO. In wood and steel base materials, VERTIGO is also offered in a side mount style for lateral installation of 1/4" and 3/8" diameter steel threaded rods onto joists, columns and trusses. For all steel and wood VERTIGO fasteners, a VERTIGO Socket Driver is recommended to provide proper installation with a screw gun or hammer drill in "rotation only" mode. Concrete VERTIGO fasteners should be installed with the appropriate size standard drive sockets and adjustable torque, battery powered screw gun or hammer drill in "rotation only" mode.

FASTENER SIZES & STYLES



VERTIGO FASTENERS FOR STEEL

CAT. NO.	FASTENER SIZE (ROD DIAM.) (IN)	MOUNT DIRECTION	DESCRIPTION (SELF DRILL/TAP SCREW) (LBS)	POINT STYLE (#)	DRILLING RANGE (IN)	STD. BOX	STD. CTN.	WT / 100 (LBS)
7155	1/4	Vertical	1/4"-20 x 1"	2	0.035 - 0.110	100	1000	5-1/4
7157	3/8	Vertical	1/4"-20 x 1"	2	0.035 - 0.110	100	1000	5-3/4
7159	3/8	Vertical	1/4"-20 x 1-1/2"	3	0.110 - 0.250	100	1000	6
7161	1/2	Vertical	1/4"-20 x 1-1/2"	5	0.250 - 0.500	100	1000	6-1/4
7183	1/4	Side	1/4"-20 x 2"	2	0.035 - 0.110	100	1000	6
7186	3/8	Side	1/4"-20 x 1-1/2"	3	0.110 - 0.250	100	1000	7-1/4



VERTIGO FASTENERS FOR WOOD

CAT. NO.	FASTENER SIZE (ROD DIAM.) (IN)	MOUNT DIRECTION (IN)	DESCRIPTION (WOOD SCREW) (LBS)	PRE-DRILL DIAM. *	STD. BOX	STD. CTN.	WT / 100
7163	1/4	Vertical	1/4" x 1"	-	100	1000	5
7165	3/8	Vertical	1/4" x 2"	1/8	100	1000	6
7167	3/8	Vertical	1/4" x 3"	1/8	100	1000	7
7169	3/8	Vertical	1/4" x 4"	1/8	100	1000	8
7184	1/4	Side	1/4" x 1"	-	100	1000	7
7185	3/8	Side	1/4" x 2"	1/8	100	1000	7-1/2

* Timber truss / joist manufacturers may require pre-drilled holes with a wood bit depending on the location of the anchor installation. Consult with the truss / joist manufacturer for details.