



YOUR ONE SOURCE FOR CONCRETE FASTENERS



PRODUCT CATALOG

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THUNDERSTUD®

The ThunderStud® wedge anchor consists of two pieces, permanently pre-assembled into a single unit. The carbon steel rod is threaded for a portion of its length. The extreme end of the threaded portion is rounded to protect the threads from damage while the anchor is being driven into the hole drilled in the concrete. The other end of the rod has a necked down diameter, which runs for a short distance, at the end of which it tapers outwardly to the full diameter of the rod. A precision formed universal clip made of carbon steel is permanently assembled around the necked down diameter to complete the anchor. Each package contains the correct number of nuts and washers.

TECHNICAL INFO

Approvals: Listed by Underwriters Laboratories (UL), International Conference of Building Officials (ICBO) carbon steel only, Board of Standards and Appeals (BSA), City of L.A. Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group 11, Type 4, Class

Applications: Medium to heavy duty into concrete.

Installation: (1) Drill hole into concrete with a carbide tipped masonry drill bit conforming to ANSI B94, 12-77, the same size as the ThunderStud® wedge anchor. If the fixture being fastened is in place and being used as a template to locate the ThunderStud® anchor, the mounting hole in the fixture should afford clearance for the universal wedge clip on the stud. (2) Clean hole, place the ThunderStud® wedge anchor through the hole in the fixture or directly into the concrete and hammer it in to the drilled hole until the threads are below the surface of the fixture/concrete. (3) Turn the nut by hand until the unit is snugged up. Tighten the nut with a wrench, approximately three or four full turns, to complete the fastening.

Anchor Length: Minimum embedment, plus fixture, plus nut and washer. The ThunderStud® wedge anchor requires no maximum hole depth. The depth of the hole in the concrete should be the length of the wedge anchor minus the thickness of the material being fastened. This will result in some extra depth to accommodate a minor amount of concrete cutting which may not be able to be cleaned out of hole

Anchor Spacing: The forces on a ThunderStud® wedge anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the concrete anchor industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. When vibration or sudden impact are part of the load condition anchor spacing should be increased.

ANCHOR MATERIAL COMPOSITION

MATERIAL	STEEL	STAINLESS	SPECIFICATION	STEEL	STAINLESS
Stud	AISI C12L14	303 304 316	ASTM	A108 A510	A276 A479
Clip	AISI C1010-10181037	304 316	FEDERAL	FF-SS325 GROUP II TYPE 4 CLASS 1	A581 A582 FF-S-325
Washer	AISI C1010-1018	TYPE 18-8 316	PLATING	ZINC QQ-Z-325C	GROUP II
Nut	LOW CARBON ASTM A 563 GRADE A	TYPE 18-8 316	GALVANIZED	TYPE II CLASS 3 ASTM A 153 CLASS C	TYPE 4 CLASS 1 PASSIVATED


THUNDERSTUD®
**LENGTH IDENTIFICATION SYSTEM
TECHNICAL DATA**

ANCHOR DIAMETER (in.)	EMBED. DEPTH (in.)	Torque Ft/Lb	2000 PSI		4000 PSI		6000 PSI	
			Tension (LB)	Shear (LB)	Tension (LB)	Shear (LB)	Tension (LB)	Shear (LB)
1/4	1-1/8	5-10	1170	1443	1771	1813	2773	2635
	1-3/4		1841	1443	2408	1813	2773	2635
	2-3/4		1975	1443	2748	1813	2830	2635
3/8	1-1/2	25-30	1631	4318	3636	5121	4448	6232
	3		3229	4318	5653	5121	5975	6232
	5		4075	4318	6328	5121	6360	6232
1/2	2-1/4	50-60	3999	7419	6714	9377	9616	9888
	4		6336	7419	8942	9377	10192	9888
	6		6902	7419	10175	9377	12064	9888
5/8	3-3/4	75-90	4999	8264	8747	12928	9760	16373
	5		8854	8264	15590	12928	19802	16373
	7		9381	8264	16710	12928	17732	16373
3/4	3-1/4	150-175	6638	12504	11314	17050	16230	22965
	6		10084	12504	18408	17050	21092	22965
	8		11170	12504	19805	17050	22522	22965
7/8	3-7/8	200-250	8392	18250	16354	20234	16801	23980
	5-3/4		12064	18250	18250	20234	23404	23980
	8-3/4		12784	18250	16850	20234	25575	23980
1	4-1/2	250-300	9773	23617	18250	27605	27460	28909
	7-1/2		11890	23617	26726	27605	34960	28909
	10		15590	23617	30491	27605	37840	28909
1-1/4	5-1/2	400-450	17550	32275	22971	42690	32368	55566
	7		21050	32275	27845	42690	48366	55566
	10		27893	32275	34788	42690	61272	55566

ANCHOR SIZE	HOLE SIZE	MINIMUM EMBEDMENT	STANDARD THREAD LENGTH	EXTRA THREAD LENGTH
1/4" all sizes	1/4"	1-1/8"	3/4"	
3/8" x 2-1/4"	3/8"	1-1/2"	7/8"	
3/8"	3/8"	1-1/2"	1-1/8"	
1/2" all sizes	1/2"	2-1/4"	1-1/4"	
*1/2" x 7"	1/2"	2-1/4"	1-1/4"	4"
5/8" all sizes	5/8"	2-3/4"	2"	
*5/8" x 7"	5/8"	2-3/4"	2"	4"
*5/8" x 8-1/2"	5/8"	2-3/4"	2"	5"
3/4" all sizes	3/4"	3-1/4"	2"	
*3/4" x 7"	3/4"	3-1/4"	2"	3-1/2"
*3/4" x 8-1/2"	3/4"	3-1/4"	2"	4-1/2"
7/8"	7/8"	3-7/8"	2-1/4"	
1"	1"	4-1/2"	2-1/4"	
1-1/4"	1-1/4"	5-1/2"	3-1/4"	

*These anchors come with the standard thread length or with the extra thread length

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. *Tested by ATEC in accordance with ASTM E488-90 and ICBO Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



SLEEVE ANCHOR

The Sleeve Anchor is constructed of high quality steel parts. Each part is zinc plated and assembled into a complete ready-to-use anchor. The anchor consists of a threaded stud with an outwardly flared cone-shaped end. A tubular expander sleeve is assembled over the stud and butted against the small diameter of the cone. A washer and hex nut are then assembled on the stud to complete the anchor. The anchor works on a true expansion principle: Tightening of the nut pulls the cone-shaped stud end into the expander sleeve, wedging it outward and locking the anchor into the base material.

TECHNICAL INFO

Approvals: Listed by Underwriters Laboratories (UL), International Conference of Building Officials (ICBO), Board of Standards and Appeals (BSA), City of L.A., Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325, Group II, Type 3, Class 3.

Applications: Medium duty into concrete, block and brick. **Installation:** (1) Drill hole through mounting holes in fixture or directly through material to be fastened and into the base material, using a carbide bit conforming to ANSI B94, 12-77 with the same size bit as anchor diameter. (2) Clean hole with wire brush. (3) Make sure nut is flush with the top threaded part of anchor. Insert anchor assembly through mounting holes in fixture and into the base material. Push anchor assembly until washer is snug against the fixture. (4) Turn nut by hand until snugged up. Tighten the nut with a wrench (use a screwdriver for flat/round heads), approximately three or four full turns or until anchor is tightly secured to the base material.

Anchor Length: The length of an anchor should equal minimum embedment, plus fixture, plus nut and washer. The Sleeve anchor requires no maximum hole depth. The depth of the hole in the base material should be at least the length of the sleeve anchor minus the thickness of the material being fastened. This will provide some extra depth to accommodate a minor amount of concrete cuttings which may not be able to be cleaned out of hole.

Anchor Spacing: The forces on a Sleeve Anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion anchor industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. When vibration or sudden impact are part of the load conditions, the spacing should be increased.

TECHNICAL DATA

SIZE	BOLT DIA.	HOLE SIZE	HEAD STYLE	MIN. EMBED	PULL-OUT	SHEAR
1/4"	3/16"	1/4"	Acorn	1/2"	500 lb.	952 lb.
5/16"	1/4"	5/16"	Hex	1"	2522 lb.	1675 lb.
3/8"	5/16"	3/8"	Hex	1-1/4"	2314 lb.	3793 lb.
1/2"	3/8"	1/2"	Hex	1-1/2"	3008 lb.	5344 lb.
5/8"	1/2"	5/8"	Hex	2"	3404 lb.	5625 lb.
3/4"	5/8"	3/4"	Hex	3-1/2"	8433 lb.	9413 lb.
1/4"	3/16"	1/4"	Flat	1"	1364 lb.	952 lb.
5/16"	1/4"	5/16"	Flat	1"	2522 lb.	1675 lb.
3/8"	5/16"	3/8"	Flat	1-1/4"	2314 lb.	3793 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made in applicable codes for specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



DROP-IN

A Drop-In anchor consists of a zinc plated steel tubular expansion shield and a solid, cone-shaped expander plug. The expander plug is case hardened and tempered to prevent galling and binding during expansion. The shield has four equally spaced slots for a portion of its length, the bottom part may be knurled. The shield also has a smooth, flangeless top that allows either flush or countersunk installation. The bottom lip of the shield is tapered to allow maximum depth and holding power.

TECHNICAL INFO

Approvals: Listed by Underwriters Laboratories (UL), International Conference of Building Officials (ICBO), Meets or exceeds U.S. government G.S.A. Specification FF-S-325 Group VIII, type 1.
Applications: Medium duty into concrete.

Installation: (1) Drill hole into concrete with a carbide tipped masonry drill bit conforming to ANSI B94, 12-77, matching the bit size with the outside diameter of the drop-in anchor being used. Make sure hole depth exceeds minimum embedment. (2) Clean out concrete dust from hole using a wire brush, compressed air or a blow out bulb. (3) Drive anchor into hole flush with the surface of the concrete. (4) Using the proper setting tool for the anchor, expand anchor by inserting the setting tool into the anchor and set with several solid hammer blows. The anchor is set properly when shoulder of setting tool is flush with the top of anchor. To set anchor below surface: Drill hole deeper than anchor length. Thread bolt into anchor. Hammer anchor into hole until bolt head is a desired depth. Remove bolt and set anchor with setting tool as described above.

Anchor Spacing: The forces on a Drop-In Anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. When vibration or sudden impact are part of the load condition, spacing between anchors should be increased.

Bolt Length: Bolt length equals thread length of anchor plus thickness of material to be fastened.

TECHNICAL DATA

SIZE	LENGTH	DRILL BIT	THRD. LENGTH	BOLT DIA.	PULL-OUT
1/4"	1"	3/8"	7/16"	1/4"	2300 lb.
3/8"	1-9/16"	1/2"	5/8"	3/8"	4100 lb.
1/2"	2"	5/8"	1-3/16"	1/2"	6000 lb.
5/8"	2-1/2"	7/8"	1-3/16"	5/8"	8300 lb.
3/4"	3-3/16"	1"	1-3/16"	3/4"	13600 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made in applicable codes for specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



MACHINE SCREW ANCHOR

The Machine Screw Anchor is made up of an antimonial lead alloy sleeve and a zinc alloy (Zamak 5) internally threaded cone with a series of integral ribs or lugs. The ribs prevent the cone shaped nut from turning in the sleeve. All size anchors, except the 3/4" size, are pre-assembled into a single, self contained unit. All units are made of 100% rust proof material.

TECHNICAL INFO

Approvals: Meets G.S.A. Specification FF-S-325, Group II, Type 2, Class 1.

Applications: Light to medium duty into concrete, block and brick.

Installation: (1) Drill hole of recommended diameter (see chart below) into the base material to a depth equal to the length of the anchor. Place the Machine Screw Anchor, base end of the conical nut first, into the hole. The anchor should be flush or slightly deeper than the surface of the base material. A deeper hole should be used when making attachments to poor masonry or when additional holding power is needed. (2) Position the pilot end of the setting tool into the threaded bore of the anchor and press firmly against the lead alloy sleeve of the anchor. Using a hand hammer, strike the end of the setting tool with repeated sharp blows. Anchor is set when the sleeve cannot be further tamped or caulked down around the conical nut. (3) Position the object to be fastened over the anchor and bolt into place. The length of the screw or bolt should equal the thickness of the material being fastened, plus the additional length required to ensure that the screw engages a major portion of the internal threads of the anchor.

Bolt Length: Thickness of material to be fastened plus anchor length equals bolt length.

Anchor Spacing: The forces on a Machine Screw Anchor are transferred to the base material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from the edge. When vibration or sudden impact are part of the load conditions, spacing between anchors should be increased.

TECHNICAL DATA

ANCHOR SIZE	ANCHOR LENGTH	HOLE SIZE	PULL-OUT 6000 PSI CONCRETE
#10	5/8"	3/8"	1180 lb.
5/16"	1"	5/8"	2200 lb.
1/4"	7/8"	1/2"	1340 lb.
3/8"	1-1/4"	3/4"	2840 lb.
1/2"	1-1/2"	7/8"	3120 lb.
5/8"	1-3/4"	1-1/8"	4940 lb.
3/4"	2-1/4"	1-1/4"	5860 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made in applicable codes for specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



LEADWOOD SCREW ANCHOR

The cavity of the Leadwood screw anchor tapers and is designed to facilitate proper expansion in masonry. The anchor is split from the bottom up for most of its length and has longitudinal ribs for a portion of its length. The top end of the anchor tapers outward from the anchor diameter into a tubular thin section cone. The tapered diameter at the outer end of the anchor, in combination with the longitudinal split, facilitates ease of initial expansion and prevents the anchor from turning in the masonry. As the screw progresses deeper into the anchor, the longitudinal ribs bite into the masonry, preventing the anchor from twisting and allowing the screw to form its own threads.

TECHNICAL INFO

Approvals: Meets G.S.A. Specification F-S-325, Group IV, Type 1.

Applications: Light duty into concrete, block and brick.

Installation: (1) Drill hole into the base material (see chart below for recommended hole size) to a depth equal to the anchor length, plus one-quarter inch (1/4") or more. (2) Clean out hole of all dust and cuttings. (3) Place anchor into hole and with light hammer blows, tap anchor flush with surface of base material. (4) Insert screw through fixture into anchor and tighten.

Screw Length: Thickness of material to be fastened plus anchor length plus 1/4" for complete expansion of anchor equals screw length.

Anchor Spacing: The forces on a Leadwood screw anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. When vibration or sudden impact are part of the load condition anchor spacing should be increased.

TECHNICAL DATA

ANCHOR SIZE	HOLE SIZE	SCREW SIZE	PULL-OUT 3000 PSI CONCRETE
6-8 x 3/4"	1/4"	1/8" - 3/16"	174 lb.
6-8 x 1"	1/4"	1/8" - 3/16"	316 lb.
1/4" 6-8 x 1-1/2"	1/4"	1/8" - 3/16"	168 lb.
10-14 x 1"	5/16"	3/16" - 1/4"	720 lb.
10-14 x 1-1/2"	5/16"	3/16" - 1/4"	720 lb.
16-18 x 1"	3/8"	5/16"	690 lb.
16-18 x 1-1/2"	3/8"	5/16"	1617 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



SINGLE EXPANSION ANCHOR

The Single expansion anchor consists of a nut, a cone and a tubular shield pre-assembled as a single unit. The two piece tubular shield is bound together with one spring band. It contains a wedge shaped nut at one end. Integral lugs on the nut and cone keep the wedges from turning in the tubular shield during expansion. The anchor are of precision die-cast zinc alloy commonly known as Zamak 5. the expansion action at one end of the anchor distributes the anchored load throughout the length of the anchor. This expansion anchor is recommended for shear loads or where the bolt is subjected to side pressure or vibration. Once fastened, the object may be unbolted, removed, and/or refastened.

TECHNICAL INFO

Approvals: Meets Zamak 5 Zinc Alloy: A.S.T.M. Specification 24 (AC41A) and S.A.E. 925.

Applications: Medium duty in concrete, block and brick.

Installation: (1) Drill hole of recommended diameter, see chart below, into the base material to a depth equal to, or slightly deeper than the length of the expansion shield. Clean out the hole of all dust and cuttings. (2) Place the Single Expansion anchor, nut end first, into the hole. The top end of the anchor should be flush or slightly below the base material surface. (3) Place the object to be fastened over the anchor in the base material and bolt into place. The bolt should engage 2/3 of the threads of the anchor.

Anchor Spacing: The forces on a Single expansion anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. When vibration or sudden impact are part of the load condition anchor spacing should be increased.

Bolt Length: Thickness of material to be fastened plus length of anchor equals bolt length.

TECHNICAL DATA

ANCHOR SIZE	ANCHOR LENGTH	HOLE SIZE	BOLT DIA.	PULL-OUT 6000 PSI CONCRETE
1/4"	1-5/16"	1/2"	1/4"	800 lb.
5/16"	2"	3/4"	5/16"	1100 lb.
3/8"	2"	3/4"	3/8"	1450 lb.
1/2"	2-1/2"	7/8"	1/2"	1850 lb.
5/8"	3-5/8"	1"	5/8"	2400 lb.
3/4"	2-3/4"	1-1/4"	3/4"	3000 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



DOUBLE EXPANSION ANCHOR

The Double expansion anchor consists of a nut, a cone and a tubular shield preassembled as a single unit. The two piece tubular shield is bound together with two spring bands. It contains a wedge shaped nut at one end and a wedge shaped hollow cone at the the other end. Integral lugs on the nut and cone keep the wedges from turning in the tubular shield during expansion. The anchors are of precision die-cast zinc alloy commonly known as Zamak 5. The expansion action at both ends of the shield distributes the anchored load throughout the length of the shield. This expansion anchor is recommended for shear loads or where the bolt is subjected to side pressure or vibration. Once fastened, the object may be unbolted, removed, and/or fastened.

TECHNICAL INFO

Approvals: Meets Zamak 5 Zinc Alloy: A.S.T.M. Specification 24 (AC41A) and S.A.E. 925.

Applications: Medium duty in concrete, block and brick.

Installation: (1) Drill hole of recommended diameter, see chart below, into the base material to a depth equal to, or slightly deeper than the length of the expansion anchor. Clean out the hole of all dust and cuttings. (2) Place the Double Expansion anchor, nut end first, into the hole. The top end of the anchor should be flush or slightly below the base material surface. (3) Place the object to be fastened over the anchor in the base material and bolt in to place.

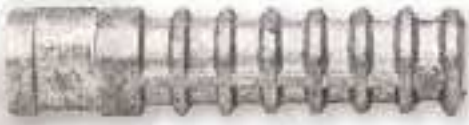
Anchor Spacing: The forces on a Double expansion anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. When vibration or sudden impact are part of the load condition anchor spacing should be increased.

Bolt Length: Thickness of material to be fastened plus length of anchor equals bolt length.

TECHNICAL DATA

ANCHOR SIZE	ANCHOR LENGTH	HOLE SIZE	BOLT DIA.	PULL-OUT 5000 PSI CONCRETE
1/4"	1-3/8"	1/2"	1/4"	1100 lb.
5/16"	1-3/4"	3/4"	5/16"	1450 lb.
3/8"	2-1/16"	3/4"	3/8"	1750 lb.
1/2"	2-1/2"	7/8"	1/2"	2200 lb.
5/8"	3"	1"	5/8"	6500 lb.
3/4"	4"	1-1/4"	3/4"	4600 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



LAG SHIELD ANCHOR

This two-part expansion shield is pre-assembled into a self-contained single unit. The shell-like unit has tapered internal threads for a portion of its length. The outside of the anchor has a series of circumferential ribs starting at the bottom and running for a major portion of its length. The back end of the anchor has two equally spaced ribs that protrude beyond its diameter and run for a portion of its length. Precision internal threads permit easy turning of the lag screw without lubrication. Once fastened, an object may be easily unbolted and removed. All parts of the completed unit are made of zinc alloy commonly known as Zamak 5, a rust-proof material. The anchor comes in two lengths, short or long. The short lag shield is for anchoring in high grade concrete or where thickness of base material prohibits the use of a longer length shield. The long Lag shield is for use in lower grade base material or where extra anchoring strength is required.

TECHNICAL INFO

Approvals: Meets G.S.A. Specification FF-S-325, Group II, Type 1, Class 1 & 2. Zamak #5 Zinc Alloy meets the A.S.T.M. specification XXV (AC41A) and S.A.E. 925.

Applications: Light to medium duty into concrete, block and brick.

Installation: (1) Drill hole of recommended diameter, into the base material equal to the length of the expansion anchor plus one half inch (1/2") or more. (2) Clean the hole of all dust and cuttings. (3) Place the expansion anchor, ribbed end first, into hole. Tap with a hammer until flush with the surface of base material. (4) Position the material to be fastened over the shield in the base material and screw in the lag screw. (5) If the lag screw begins to torque-up or tighten before the head of the lag screw mates up against the object being fastened, the shield should be driven deeper into the hole by hand hammering the head of the lag screw until flush to the object being fastened. Re-tighten the lag screw to complete the expansion of the shield and to secure the material being fastened.

Screw Length: Thickness of material to be fastened plus Lag Shield length plus 1/2" equals Lag Screw length.

Anchor Spacing: The forces on a Lag Shield anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. When vibration or sudden impact are part of the load condition anchor spacing should be increased.

TECHNICAL DATA

ANCHOR SIZE	HOLE SIZE	ANCHOR LENGTH	PULL-OUT 6000 PSI CONCRETE
1/4" Short	1/2"	1"	400 lb.
5/16" Short	1/2"	1-1/4"	800 lb.
3/8" Short	5/8"	1-3/4"	1300 lb.
1/2" Short	3/4"	2"	2100 lb.
5/8" Short	7/8"	2"	3400 lb.
3/4" Short	1"	2"	5000 lb.
1/4" Long	1/2"	1-1/2"	500 lb.
5/16" Long	1/2"	1-3/4"	1000 lb.
3/8" Long	5/8"	2-7/16"	1600 lb.
1/2" Long	3/4"	3-1/2"	2800 lb.
5/8" Long	7/8"	3-1/2"	4400 lb.
3/4" Long	1"	3-1/2"	6500 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



TAPCON® CONCRETE SCREWS

The TapCon brand concrete screw cuts threads in a predrilled hole in concrete, brick or block. The screw has alternating raised and lowered threads with diamond cut notches which provide exceptional holding power and stability. The TapCon brand concrete screw is available in both 3/16" or 1/4" diameters with either a flat phillips #3 countersunk or a 5/16" hex washer head. All screws are plated using the Stalgard coating which provides extended life and additional lubricity for ease of installation. TapCon screws are also available in 410 stainless steel finished with a silver Stalgard. The stainless steel screws have shown no red rust in salt spray test performed at a certified A2LA laboratory per ASTM B117 specifications.

TECHNICAL INFO

Applications: Light to medium duty in concrete, brick and block.

Installation: (1) Drill hole into base material using the drill bit provided with the screws. The depth of the hole must be at least 1/4" deeper than the TapCon embedment. (2) Place object to be fastened over hole. (3) Insert point of Tapcon into hole and drive screw in using a nut drive or #3 bit tip. Do not over torque the screw.

Screw Length: The length of the TapCon fastener to be used is determined by combining the thickness of the material to be attached with the desired depth of embedment in the base material. It is recommended that a minimum of 1" and a maximum of 1-3/4" embedment be used in determining fastener length. The diameter of the fastener and the depth of embedment affect pullout strengths. A carbide-tipped drill bit is supplied with each box of TapCon fasteners. The correct hole must be drilled for the screw to obtain holding values. In all cases the hole must be at least 1/4" deeper than the depth of the fastener embedment.

TECHNICAL DATA PULL-OUT VALUES

SIZE	EMBEDMENT	CONCRETE 3725 PSI	HOLLOW BLOCK
3/16"	1"	380 lb.	229 lb.
3/16"	1-3/4"	1090 lb.	521 lb.
1/4"	1"	800 lb.	490 lb.
1/4"	1-3/4"	2100 lb.	801 lb.

SHEAR VALUES

SIZE	EMBEDMENT	CONCRETE 3725 PSI	HOLLOW BLOCK
3/16"	1-3/8"	875 lb.	690 lb.
1/4"	1-3/4"	1924 lb.	1059 lb.

All pullout values are based on close-tolerance holes drilled with Elco carbide tipped drill bits. Designated holding power depends on the quality of the masonry material, depth of embedment, and proper hole size. These figures are offered only as a guide and are not guaranteed by Elco Textron. The figures indicate average pullout and shear failure values. A safety factor of 4:1, or 25% of ultimate pullout value, is generally accepted as a safe working load, however, reference should always be made to applicable codes for the specific safe working ration.



NYLON NAIL-IT

This Nylon Nail-It is injection-molded, thermoplastic-formula polyamide resins. The nylon anchor consists of two parts, a cylindrical nylon shank or body and a steel pin expander. The shank is split a major portion of its length from the bottom up and has a series of circumferential ribs running for a portion of its length. The anchor body has a concentric cavity, or bore, which runs through the head thickness and into the shank for a depth just beyond the point where the slit terminates in the body. The steel pin expander is similar to a nail except for the specially designed thread in a section of its shank and the screwdriver slot in the head. It is made of high carbon steel, properly heat treated and heavily plated with bright zinc for maximum corrosion resistance. The specially designed threads and head on the expander pin lock the assembly.

TECHNICAL INFO

Approvals: Meets G.S.A. Specifications FF-S-325, Group V, Type 2, Class 4.

Applications: Light duty in concrete, block and brick.

Installation: (1) Drill hole in base material using a carbide tipped bit matching the diameter of the Nylon Nail-it being used. Make sure hole is 1/4" deeper than expected embedment. (2) Clean out the hole of all dust and cuttings. (3) Push Nylon Nail-It through the material to be fastened and base material until head of anchor body is snug up to the fixture. (4) Drive the expander pin home to complete the fastening. To remove the fastener, simply insert a screwdriver into the slot in the head of the expander pin and unscrew.

Anchor Length: Thickness of material to be fastened plus minimum embedment equals anchor length.

Anchor Spacing: The forces on a Nylon Nail-It are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. When anchoring into low-density materials, the holding power will no be greater than that of the material. As a rule of thumb, anchors should be spaced 18 to 24 inches from center to center to get maximum holding power in low-density materials. Depending on the type of high density material, spacing may be closer. When vibration or sudden impact are part of the load condition, the spacing should be increased.

TECHNICAL DATA

SIZE	DRILL BIT	MINIMUM EMBEDMENT	CONCRETE 3000 PSI
3/16" x 3/4"	3/16"	1/2"	200 lb.
3/16" x 1"	3/16"	1/2"	225 lb.
3/16" x 1-1/2"	3/16"	1/2"	265 lb.
1/4" x 1"	1/4"	1/2"	210 lb.
1/4" x 1-1/2"	1/4"	1/2"	250 lb.
1/4" x 2"	1/4"	1/2"	265 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



METAL HIT ANCHOR

The Metal Hit Anchor is a precision die-cast, light-duty concrete anchor combining unusual toughness and remarkable strength. The Metal Hit anchor consists of a cylindrical zinc alloy body and a zinc plated steel pin expander. The shank, from the bottom up, is split a major portion of its length. The anchor body has a bore which runs through the head thickness and into the shank for a depth just beyond the point where the slot terminates in the body. The steel pin expander is made of high carbon steel, properly heat treated, and heavily zinc plated for maximum corrosion resistance.

TECHNICAL INFO

Approvals: Meets G.S.A. specifications FF-S-325, Group V, Type 2, Class 3.

Applications: Light to medium duty in concrete block and brick.

Installation: (1) Drill hole in base material equal to diameter of anchor being used. Hole depth should be at least 1/4" deeper than the anchor embedment. (2) Clean out hole of all dust and shavings. (3) Insert Metal Hit Anchor, slit end first through material to be fastened and into hole. The bottom of the head must be sitting flush with the fixture plate. (4) Hammer nail flush into head of anchor body. The Metal Hit Anchor is now set.

Anchor Length: Thickness of material to be fastened plus minimum embedment plus 1/4" equals anchor length.

Anchor Spacing: The forces on a Metal Hit Anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. When vibration or sudden impact are part of the load condition anchor spacing should be increased.

TECHNICAL DATA

SIZE	MINIMUM EMBEDMENT	DRILL BIT	PULL-OUT
3/16" x 7/8"	1/2"	3/16"	500 lb.
1/4" x 1"	1/2"	1/4"	750 lb.
1/4" x 1-1/4"	1/2"	1/4"	960 lb.
1/4" x 1-1/2"	1/2"	1/4"	1100 lb.
1/4" x 2"	1/2"	1/4"	1150 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



SPLIT DRIVE ANCHOR

Split Drive anchors are a one-piece, all steel concrete anchor. Split drive anchors are manufactured with through hardened, heat treated carbon steel. The anchor has two sheared, pre-expanded halves at the base. When driven into the concrete hole, these halves are compressed. Once an anchor is set, the two halves will continually try to regain their original shape. This exerts tremendous force upon the inside walls of the hole, resulting in low "slip" rates and increased vibration resistance. The positive expansion compensates for poor grade or old concrete. Split Drive Anchor can come with either a flat counter sunk head or a round head.

TECHNICAL INFO

Approvals: Meets G.S.A. Specification FF-S-325, Group VI.

Applications: light to medium duty in concrete.

Installation: (1) Drill hole in concrete with carbide tipped bit meeting ANSI standards. Hole should be drilled minimum embedment or deeper, plus 1/4" (2) Clean dust out of hole. (3) Insert anchor through fixture and into hole. (4) Hammer anchor into hole flush with the top of fixture.

Anchor Length: Thickness of material to be fastened plus minimum embedment plus 1/4" equals anchor length.

Anchor Spacing: The forces on a Split Drive Anchor are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. As a rule of thumb, the expansion industry has established a minimum standard of ten (10) anchor diameters for spacing between anchors and five (5) anchor diameters from an unsupported edge. Where vibration or sudden impact are part of the load condition anchor spacing should be increased.

TECHNICAL DATA

SIZE	MIN. EMB.	DRILL BIT	3000 PSI PULL-OUT	3000 PSI SHEAR
1/4" x 1-1/2"	1-1/8"	1/4"	1050 lb.	5400 lb.
1/4" x 2"	1-1/8"	1/4"	1050 lb.	5400 lb.
1/4" x 2-1/2"	1-1/8"	1/4"	1050 lb.	5400 lb.
1/4" x 3"	1-1/8"	1/4"	1050 lb.	5400 lb.
1/4" x 3-1/2"	1-1/8"	1/4"	1050 lb.	5400 lb.
1/4" x 4"	1-1/8"	1/4"	1050 lb.	5400 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio. Minimum embedment for satisfactory anchor performance is 4-1/2 bolt diameters. Deeper embedments will yield higher tension and shear capacity.



STRIKE ANCHOR

The strike anchor is an impact-expansion type concrete anchor. The body of the anchor is carbon steel with an interior hole extending the length of the anchor. The hardened drive pin comes inserted in the interior hole of the anchor. The anchor is threaded on the top end where the drive pin is inserted. The other end of the anchor has four equally spaced slots for a portion of its length, with ribs extending the circumference of the anchor for a portion of its length. The entire anchor is yellow dichromate over zinc plating.

TECHNICAL INFO

Approvals: Meets I.C.B.O. standards report #4194, Meets City of Los Angeles Approval #25109, Meets or exceeds G.S.A. Standards G.S.A. FF-S-325, Group V, Type 2 Class 2, Meets load factors in compliance with A.N.S.I. A58-1, Meets plating standard in compliance with A.S.T.M. E488488.

Applications: Medium to heavy into concrete.

Installation: (1) Drill hole of sufficient depth using a carbide bit the same diameter as the anchor being installed. (2) Place washer and nut on anchor, turning nut on to anchor as required. May be flush with top or turned on fully to provide stud finish. (3) With nut, washer, and set-pin in place, insert anchor through the material to be fastened and in to the concrete base material. (4) Using a proper sized hammer, set pin with several sharp and square strikes on head of pin until pin is flush with top of anchor. Anchor is now properly set. (5) No need to torque nut to set anchor.

Warning: Wear eye protection.

TECHNICAL DATA

ANCHOR SIZE	THREAD LENGTH	MIN. EMB.	BIT SIZE	SPACE BETWEEN	EDGE DISTANCE	PULL-OUT 2000 PSI	SHEAR 2000 PSI
1/4" x 1-3/4"	5/8"	1"	1/4"	3-1/2"	1-3/4"	900 lb.	1600 lb.
1/4" x 2-3/8"	3/4"	1"	1/4"	3-1/2"	1-3/4"	900 lb.	1600 lb.
1/4" x 3"	3/4"	1"	1/4"	3-1/2"	1-3/4"	900 lb.	1600 lb.
5/16" x 2-3/4"	1"	1-1/4"	5/16"	3-1/2"	1-3/4"	1400 lb.	3000 lb.
5/16" x 4"	1-1/4"	1-1/4"	5/16"	3-1/2"	1-3/4"	1400 lb.	3000 lb.
3/8" x 2-3/8"	1"	1-1/2"	3/8"	4-3/8"	2-3/16"	2200 lb.	3400 lb.
3/8" x 3-1/2"	1-1/8"	1-1/2"	3/8"	4-3/8"	2-3/16"	2200 lb.	3400 lb.
3/8" x 5"	1"	1-1/2"	3/8"	4-3/8"	2-3/16"	2200 lb.	3400 lb.
1/2" x 2-3/4"	1"	2"	1/2"	5-1/4"	2-5/8"	3600 lb.	7200 lb.
1/2" x 3-1/2"	1-1/8"	2"	1/2"	5-1/4"	2-5/8"	3600 lb.	7200 lb.
1/2" x 4-3/4"	2"	2"	1/2"	5-1/4"	2-5/8"	3600 lb.	7200 lb.
1/2" x 6"	2"	2"	1/2"	5-1/4"	2-5/8"	3600 lb.	7200 lb.
5/8" x 4"	1-5/8"	2-1/2"	5/8"	6-1/8"	3-1/16"	5400 lb.	9200 lb.
5/8" x 6"	2"	5/8"	5/8"	6-1/8"	3-1/16"	5400 lb.	9200 lb.
3/4" x 5"	2"	3"	3/4"	7"	3-1/2"	7500 lb.	13500 lb.
3/4" x 6"	2"	3"	3/4"	7"	3-1/2"	7500 lb.	13500 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for specific working ratio. Critical applications laboratory, shock loads, overhead installations, etc. may require a safety factor of as much as 10:1, or more.



HANGAR MATE

HangerMate is an anchoring/fastening system that allows fast and reliable attachment of 1/4" or 3/8" threaded rod into concrete, steel and wood. All HangerMates are made of a solid, one-piece, cold-formed and machined alloy steel, with either a precision cross-drilled or straight drilled and tapped head. All anchors are yellow chromate zinc plated.

TECHNICAL INFO

Approvals: Each different HangerMate has specific approvals and specifications, please call 1-888-498-5747 for all current code approvals.

Material Specifications: Each type of HangerMate anchor is made from different steel specifications. These specifications are available upon request.

Applications: HangerMate anchors are ideal for overhead vertical or horizontal support applications in wood,, concrete and steel beams or joists.

Installation: For Metal or Wood (1) Insert HangerMate recessed drive socket ZE215 into corded screw gun (min. 4.5 amps) or appropriate cordless screw gun. (2) Insert appropriate HangerMate anchor into drive socket. (3) Position the self-drilling point of the anchor at the intended point of installation and with the screw gun operation at approximately 1800 rpm, install the HangerMate anchor. The drive socket's safety set feature will set the anchor flush and then automatically disengage to prevent over driving anchor. (4) The HangerMate anchor is now installed and ready to accept a threaded rod or component. For Masonry/Concrete (1) Insert appropriate HangerMate matched tolerance carbide-tipped drill bit into hammer or rotary hammer drill. For SDS-drive drills use bit ZE380; for keyed chuck-type drills use bit ZE360. (2) With the drill in the hammer mode, drill the full length of the bit. (3) Slide drive sleeve ZE220 over drill bit, locking its external hex recess with the hex collar of the drill bit. (4) Insert appropriate HangerMate anchor into the drive sleeve. disengage hammer mode and engage drill-only mode. (5) Place tip of the HangerMate anchor into drilled hole and drive until the safety set feature seats the anchor and disengages. (6) The installed HangerMate anchor is now ready to accept a threaded rod or component.

TECHNICAL DATA

ITEM	CONCRETE	WOOD	16 GA	16 W/NUT	14 GA	14 W/NUT	12 GA	12 W/NUT	1/8"	3/16"	1/4"
ZE405	N/A	N/A	516	N/A	N/A	N/A	1433	N/A	2783	3948	4304
ZE455	2181	1694	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ZE560	2181	1694	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ZE605	N/A	N/A	735	N/A	1044	4065	1655	N/A	1889	3255	4545
ZE609	N/A	N/A	735	2801	1044	4065	1655	4925	1889	3255	4545
ZE655	N/A	N/A	735	2801	1044	4065	N/A	N/A	N/A	N/A	N/A
ZE710	N/A	2353	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ZE800	N/A	N/A	735	2801	1044	4065	N/A	N/A	N/A	N/A	N/A
ZE815	N/A	N/A	735	N/A	N/A	N/A	1655	N/A	2783	3255	4545
ZE819	N/A	N/A	735	2801	1044	4065	1655	4925	2783	3255	4545
ZE830	N/A	1889	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ZE845	N/A	1889	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* Is a registered trademark of Elco Industries.

TECHNICAL INFO

Applications: Light duty into wallboard. Do not use overhead.

Installation: (1) Insert #2 Phillips bit tip into head of wall driller. (2) Press point into wallboard, while turning the anchor clockwise until it is seated flush with the wall. (3) Place fixture over hole and tighten the proper size sheet metal screw. A one inch 1" minimum thread engagement is recommended.

Screw Length: Thickness of material to be fastened plus 1" penetration into anchor equals screw length.

Anchor Spacing: The forces on a Wall Driller are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. When anchoring into low-density materials, the holding power will no be greater than that of the material. As a rule of thumb, anchors should be spaced 18 to 24 inches from center to center to get maximum holding power in low-density materials. Depending on the type of high density material, spacing may be closer. When vibration or sudden impact are part of the load condition, the spacing should be increased.

Potential Uses: Small pictures, lightweight bathroom fixtures, lightweight appliances, small signs, conduit clips, smoke detectors.

TECHNICAL DATA

SIZE	WALL THICKNESS	PULL-OUT TEST IN WALLBOARD		
		3/8"	1/2"	5/8"
#6 Plastic	3/8" to 5/8"	25 lbs.	40 lb.	85 lb.
#8 Plastic	3/8" to 5/8"	25 lbs.	40 lb.	85 lb.
#8 Zamak	3/8" to 5/8"	25 lbs.	40 lb.	85 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio.

WALL DRILLER

The Wall Driller is injection molded of engineered plastic or long lasting Zamak. Its unique, slim design allows the fastener to make a small hole that does not disrupt the consistency of the drywall. The anchor has a single point that drills a clean hole and prevents paper damage. The deep cutting threads provide strong engagement and resists stripping out. The tapered, oversized head seals the hole with a flush mount.



TOGGLER BOLT

The patented TOGGLER brand toggle bolt operates like no other. Each anchor has a one-piece steel anchoring channel pivoted on durable installation legs. The sliding cap ratchets down the legs to securely "capture" the wall between the channel and the cap. The legs snap off easily, flush with the wall. The Toggle bolt is also available with a stainless steel channel.

TECHNICAL INFO

Applications: light to medium duty in hollow block, hollow brick, wall board, paneling, plaster, fiberglass and composite panels.

Installation: (1) Drill appropriate sized hole. Hold metal channel flat alongside plastic straps and slide channel through hole. (2) With one hand, pull ring so metal channel rests flush behind wall as you slide plastic cap along straps with other hand until flange of cap is flush with wall. (3) Place thumb between plastic straps, Push side to side snapping off straps flush with wall. (4) Insert bolt through item to be fastened and tighten until flush with fixture. Minimum clearance behind wall is 1-7/8"

Screw Length: Thickness of material to be fastened plus thickness of base material equals screw length.

Anchor Spacing: The forces on a Toggle brand toggle bolt are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. When anchoring into low-density materials, the holding power will no be greater than that of the material. As a rule of thumb, anchors should be spaced 18 to 24 inches from center to center to get maximum holding power in low-density materials. Depending on the type of high density material, spacing may be closer. When vibration or sudden impact are part of the load condition, the spacing should be increased.

TECHNICAL DATA

SIZE	GRIP RANGE 1	PULL-OUT VALUES 2		
		5/8" WALL BOARD	CONCRETE BLOCK	STEEL PLATE
3/16" - 24	3/8" to 2-1/2"	356 lbs.	714 lb.	918 lb.
1/4" - 20	3/8" to 2-1/2"	306 lbs.	925 lb.	1283 lb.
3/8" - 16	3/8" to 2-1/2"	576 lbs.	1167 lb.	1425 lb.
1/2" - 13	3/8" to 2-1/2"	N/A	2038 lb.	2392 lb.

(1) Long strap toggler bolts are available that cover a range from 2" to 9-1/2" (2) Values shown are average ultimate values and are offered only as a guide and are not guaranteed in any way. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio.



PLASTIC TOGGLER

The plastic Toggler consists of four legs and a body. The four legs are joined by hinges to form a diamond shape which attaches to the side of the body. The body has a hole through the center and webs on the sides to resist spinning during installation. The legs collapse to form a tonjue, which allow them to be inserted in to the hole. As the screw passes through the body, it draws in and expands the legs for double holing power. The key-activated positive locking action allows the anchor to become a rigid, weight-distributing truss. Anchors can be used in any material (masonite, plywood, paneling, concrete, drywall, etc.) of any thickness above the minimum wall grip range. Anchors will perform as wedge or solid wall anchors in materials with thicknesses above wall grip range, without modification.

TECHNICAL INFO

Applications: Light to medium duty in concrete, brick, block, drywall, masonite, plywood and paneling.

Installation: Hollow Wall - (1) Drill 5/16" hole. (2) Fold anchor, insert anchor in hole and tap flush with wall. (3) Insert key to pop anchor open behind hollow wall (not necessary for thick or solid walls). (4) Place item over anchor, insert screw and tighten until screw is flush with fixture. Solid Base Material - (1) Drill 5/16" hole. (2) Clean out hole. (3) Fold anchor, insert anchor in hole and tap flush with base material. (4) Place item over anchor, insert screw and tighten until screw is flush.

Anchor Length: The anchor chosen is based on the thickness of the base material. The TA toggler is for material thickness of 1/8" to 1/4". The TB is for material thickness of 3/8" to 1/2" and the TC is for material thickness of 5/8" to 3/4". All Sizes can be used in solid base material such as concrete.

Anchor Spacing: The forces on a Plastic Toggler are transferred to the material that it is installed in. If the anchors are installed too close together, it can cause an interaction of the forces, thus reducing the holding power of the anchor. When anchoring into low-density materials, the holding power will no be greater than that of the material. As a rule of thumb, anchors should be spaced 18 to 24 inches from center to center to get maximum holding power in low-density materials. Depending on the type of high density material, spacing may be closer. When vibration or sudden impact are part of the load condition, the spacing should be increased.

TECHNICAL DATA

SIZE	PULL-OUT LBS. 1/4" PLYWOOD	PULL-OUT LBS. 3/8" DRYWALL	PULL-OUT LBS. 1/2" DRYWALL	PULL-OUT LBS. 5/8" DRYWALL
TA	124 lb.	N/A	N/A	N/A
TB	175lb.	97 lb.	143 lb.	102 lb.
TC	N/A	N/A	N/A	159 lb.

Values shown are average ultimate values and are offered only as a guide and are not guaranteed in any way. A safety factor of 4:1 or 25% is generally accepted as a safe working load. Reference should be made to applicable codes for the specific working ratio.