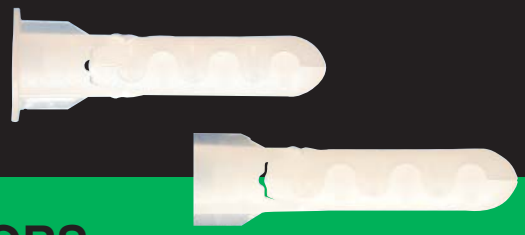
TOGGLER® ANCHOR SYSTEM

Technical Bulletin



ALLIGATOR® SOLID-WALL ANCHORS

The latest generation of the ever-evolving TOGGLER solid-wall anchor technology...

ALLIGATOR anchors are designed to hold high loads in solid walls, ceilings, and floors ... but also hold securely when they encounter an unexpected cavity, such as in hollow brick or hollow block, or even in drywall or, especially, in tile over drywall. The specially formulated polypropylene body flows into and locks up with any undercuts in the hole, bonding the screw to the wall and sealing the hole to prevent moisture from entering.

Optimal holding values [measured in tons] are obtained in highly dense substrates by using a screw diameter and a drill diameter of the same size as the anchor diameter.

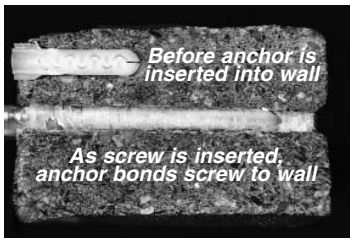
The anchor is available both **unflanged** for push-through mounting and **with a flange** for use where a cavity is anticipated (drywall, hollow brick, etc.).

Benefits:

- Strongest—holds up to ***2x more*** than metal, adhesive, epoxy and chemical anchors with the same screw diameter and embedment depth
- Anchor ***bonds*** screw to concrete, brick & stone—**sealing** the hole against moisture
- Versatile—holds securely even in hollow walls / ceilings
- Uniquely shaped head **prevents spinning & countersink**
- Accepts **greatest range of screw sizes** in each anchor
- High holding strength even with deviations in screw size and hole diameter, where other anchors fail entirely
- **Resists vibration & shock** • Non-toxic • Sets instantly
- Screw can be **removed and reinserted** in same anchor without loss of holding power
- **Corrosion-proof** when used with stainless steel screws

ULTIMATE TENSILE PULL-OUT VALUES [lb]

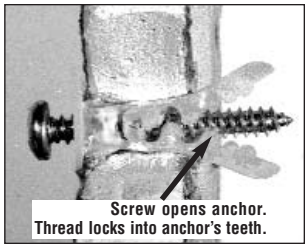
Anchor	Anchor dia.	Drill dia.	Screw Size	1/2" Drywall	3500 psi Concrete	Screw Size	4000 psi Concrete
A5/AF5	**3/16"**	3/16"	#8 SMS	57	544	#10 SMS	2,316
A6/AF6	**1/4"**	1/4"	#10 SMS	69	675	#14 SMS	2,633
A8/AF8	**5/16"**	5/16"	#12 SMS	85	1,025	5/16" Lag	3,083
A10	**3/8"**	3/8"	#14 SMS	N/A	1,168	3/8" Lag	3,570

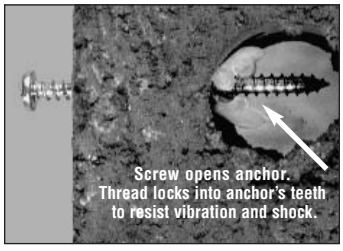


*In solid walls (concrete, masonry, brick, etc.) the ALLIGATOR anchor extrudes up to **2x its original length** & **bonds the screw to wall***

ULTIMATE SHEAR [lb]

Anchor	Anchor dia.	Drill dia.	Screw size	1/2" Drywall
AF5	**3/16"**	3/16"	#8 SMS	125
AF6	**1/4"**	1/4"	#10 SMS	153
AF8	**5/16"**	5/16"	#12 SMS	171
A10	**3/8"**	3/8"	N/A	N/A





*In hollow walls (drywall, tile over drywall, hollow block, hollow brick, etc.), as the screw enters the hollow space, it opens the jaws of the ALLIGATOR anchor. The screw thread **locks** into the teeth of the anchor to resist vibration and shock.*

N/A = Not Applicable

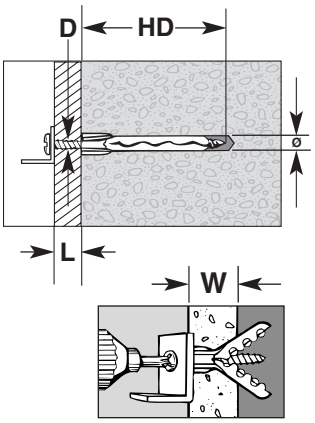
SMS = Sheet Metal Screw / **Lag** = Lag Screw or Bolt

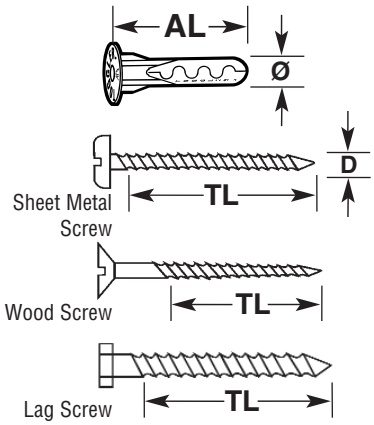
- Holding strength for an ALLIGATOR solid-wall anchor varies directly with the strength and condition of the substrate, the screw size, and the extent of the screw engagement—and inversely with variations in hole diameter and the distance of the load from the wall.
- All figures in pounds. Pull-out values based on independent laboratory tests done according to U.S. Government standards. They should be used as guides only and cannot be guaranteed. The age, condition, and capacity of the substrate must be considered.
- **Industry standards recommend 1/4 of ultimate test load.**

ALLIGATOR® SOLID-WALL ANCHORS

Specifications

Description — ALLIGATOR Solid-Wall Anchors
Material — specially formulated grade of self-lubricating, translucent polypropylene
Screw specification — see chart below
[**NOTE**: only the threaded portion of the screw should be in the anchor itself; any unthreaded shank portion of the screw may be in the fixture or item being anchored, but not in the anchor]

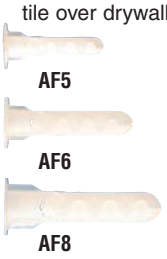




Flush-Mount
For through-the-fixture / push-through installation



Flanged
For hollow brick,drywall, or tile over drywall, etc.



Anchor description	AF5	A5	AF6	A6	AF8	A8	A10
Anchor & Drill Diameter Ø	3/16"		1/4"		5/16"		3/8"
Screw Sizes (D)	#4 - #9		#6 - #12		#8 - #14		#10-#18
Minimum Screw Thread Length (TL)	$1\frac{3}{16}$"+L	$1\frac{1}{8}$"+L	$1\frac{3}{8}$"+L	$1\frac{5}{16}$"+L	$1\frac{13}{16}$"+L	$1\frac{3}{4}$"+L	2"+L
Anchor Length (AL)	1"	$\frac{15}{16}$"	$1\frac{3}{16}$"	$1\frac{1}{8}$"	$1\frac{5}{8}$"	$1\frac{9}{16}$"	$1\frac{7}{8}$"
Minimum Hole Depth (HD)	$1\frac{1}{2}$"		$1\frac{3}{4}$"		$2\frac{1}{4}$"		$2\frac{1}{2}$"
Min. Wall Thickness (W)	1/4"	N/A	3/8"	N/A	1/2"	N/A	N/A

Maximum Strength Anchoring Guidelines

The screw diameter changes the compressive force of the anchor asembly. This allows the same diameter anchor, when used with different screw diameters, to work in all kinds of substrates. Small diameter screws should be used in low-strength, easily compressed substrates. Large diameter screws should be used in high-strength substrates. When used in porous masonry materials such as low compressive strength concrete, aerated concrete, small unsupported blocks, or brick, it is recommended that the screw size not exceed those given in the chart above. Use hardened or stainless steel screws to increase shear and tensile strength.

Screws or lag bolts used with ALLIGATOR anchors do not directly engage the surrounding masonry material. As a result, screws anchored with ALLIGATOR anchors have very high residual holding strength and low susceptibility to failure by vibration or shock loads. Even the maximum size screws do little, if any, damage when pulled out. The same hole can usually be reused without any lessening of anchoring strength.

Drill insertions holes ***twice*** anchor length. Drilled hole length + thickness of fixture should exceed screw length by a **minimum of 1/2"**.
SMS = Sheet Metal Screw / **Lag** = Lag Screw or Bolt

ALLIGATOR Anchor	Drill Size	Screw Type	Min. Embeded Thread Length	Minimum Hole Depth
AF5 / A5 (3/16")	3/16"	#10 SMS	2"	2 1/2"
AF6 / A6 (1/4")	1/4"	#14 Lag	2 1/4"	2 3/4"
AF8 / A8 (5/16")	5/16"	5/16" Lag	2 1/2"	3 1/4"
A10 (3/8")	3/8"	3/8" Lag	3"	3 1/2"

- The anchors should be installed at least 1.5" (39mm) from an unsupported edge in high-strength materials, because of the high compression forces exerted by the screw.
- With lag bolts, do not permit the unthreaded portion to enter the anchor. Any unthreaded portion should remain in the item being anchored.
- Use hex head screws wherever possible, because of high back pressure.

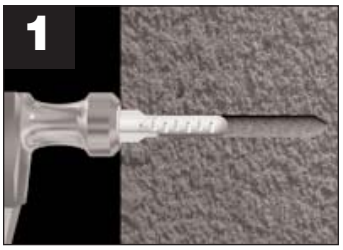
ALLIGATOR® SOLID-WALL ANCHORS

Safety

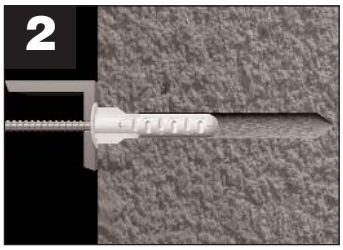
- All TOGGLER anchors are constructed completely out of inert materials.
- OSHA standard 29 CFR 1910.1200 and DOT standards are not applicable.
- No MSDS is required for any TOGGLER anchor.

Installation Instructions

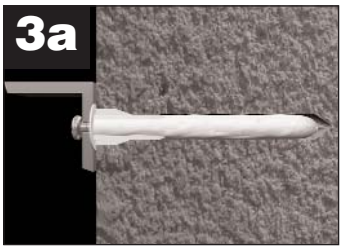
- The ALLIGATOR anchor is supplied in the closed position, ready for rapid and immediate utilization.
- The screw used to fasten the item also opens & sets the anchor in place: in both solid & hollow (cavity) walls.
- It is recommended that the screw be completely set without pause, because of the remolding of the anchor under pressure.
- Setting the screw head flush with the fixture completes the installation.
- The uniquely shaped head of the ALLIGATOR anchor prevents the anchor from countersinking into the hole, and its substanial anti-rotation fins wedge against the interior of the hole to prevent spinning even with the use of a screw gun. *NOTE*: The anti-rotation fins ***cut*** into drywall.
- Ordinary plastic plug anchors are liable to spin in a hole, preventing screw insertion. They are also very likely to be pushed to the bottom of the insertion hole, resulting in incomplete screw engagement (the screw is stopped by the bottom of the hole) and very significant loss of holding strength.
- The structure of the ALLIGATOR anchor is designed to lever and wedge open behind or in hollow walls [3b]. This provides real holding power, greater than many much larger and more specialized anchors specifically made for hollow walls, such as the ordinary wall auger type. No other solid-wall anchor provides an additional structure or capability for reliable use in hollow walls.



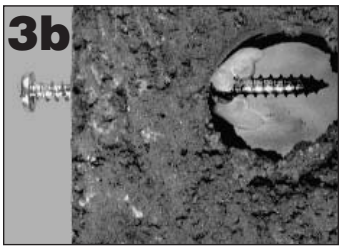
Drill hole same diameter as anchor. Push in anchor and tap flush.



Place item over anchor. Insert screw and tighten flush with item.



Anti-rotation fins prevent spinning while the ALLIGATOR anchor expands along the screw in solid walls ... up to ***2x*** its original length.



In unexpected cavities or in hollow walls (hollow brick, hollow block, tile over drywall, etc.), the screw thread and anchor teeth lock together to resist vibration and shock.

Applications

- Electrical equipment
- Lighting fixtures
- Plumbing fixtures
- Partitions
- Hand rails / grab bars
- Telephone equipment
- Shelving
- Bathroom accessorie
- Cabinets
- Awnings
- Circuit breakers
- Framing
- Alarms
- Signs
- DSS antennas
- Fire extinguishers
- Window frames
- Door framing
- Transformers
- Storefront gates
- Smoke detectors
- Clotheslines
- Hose reels
- TV mounts
- Sliding door track
- Floor door stops
- Speaker brackets
- Workshop machinery

For maximum holding in

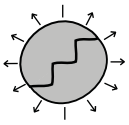
- Concrete
- Brick
- Stone
- Masonry
- Cinder block
- Aerated concrete
- Wood
- Stucco
- Plaster
- Tile
- Drywall
- Greenboard
- RTA furniture
- Tile over drywall
- Tile over greenboard
- Composite panels

ALLIGATOR® SOLID-WALL ANCHORS

The Unique Way the ALLIGATOR anchor works

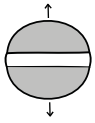
The ALLIGATOR anchor has several features that dramatically increase its holding strength in solid and thick walls as compared to other solid-wall anchors. The anchor has a circular cross-section and is completely solid. This circular cross-section causes all forces exerted by a screw threaded into the ALLIGATOR anchor to be fully transmitted around the anchor to the wall of the hole (360° and along its full length) for full compressive holding over the entire length of the screw.

360º HOLDING

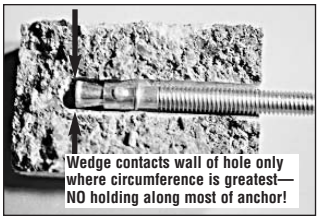


circular cross-section of solid ALLIGATOR anchor

Only 2-directional Holding



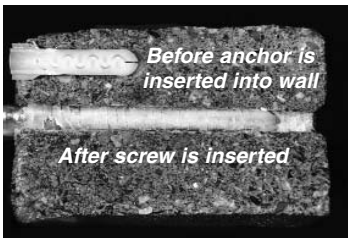
cross-section of ordinary non-solid plug anchor



Metal wedge anchor contacts wall and holds only where circumference is greatest

Many other solid-wall anchors transmit compressive forces only to the thickest portion of the anchor and unevenly against the wall of the hole. They are hollow virtually their entire length and have many ridges, lumps, or bumps on their outer surfaces allowing for extreme pressure differences along the anchor. Virtually all heavy-duty metal anchors utilize an expanding wedge that presses against only a small portion of the anchor. This force is then exerted against a short ring-shaped interval of the hole and is often so concentrated that it fractures the substrate, resulting in catastrophic failure. The wedge element is forced against the split sleeve by the action of the screw, but again the force is actually exerted against the substrate only where the circumference of the wedge is at its greatest.

Because of the solid form of the ALLIGATOR anchor, the screw extrudes and compresses all the plastic into the screw threads and outwardly against and into the wall of the hole. Under tremendous pressure, the plastic of the anchor flows to form a solid cylinder that is molded and confirmed exactly to the surface of the hole and the screw for the most complete compression holding possible. Furthermore, the ALLIGATOR anchor flows into and locks up with any undercuts in the hole. With this fully conformed cylinder of plastic, the ALLIGATOR anchor provides a high degree of safety with high residual holding power even if the anchor is partially withdrawn.



*ALLIGATOR anchor extrudes up to **2x its length** & bonds screw to wall*



Plug anchor — NO extrusion & NO bonding

Old-fashioned plastic plug anchors are usually made of a relatively hard plastic such as nylon or polyvinyl chloride (PVC), which does not readily conform & flow into the surface imperfections of the wall of the hole. Accordingly, there is no bonding of the anchor to the walls of the hole. The ALLIGATOR anchor is made of a specially formulated grade of polypropylene. The screw extrudes & molds the anchor into all the wall's imperfections, providing an additional locking bond of the anchor to the wall. Following removal of the screw, nylon and other hard plastic anchors slide right out of the insertion hole. The ALLIGATOR anchor, however, remains molded to the wall. A significant force is required for its removal, an additonal factor in its holding strength.

Old-fashioned metal wedge-type anchors, when tightened, frequently damage and tear out portions of solid walls, making the hole unsuitable for re-use (a). The ALLIGATOR anchor does not damage walls when loosened or removed. As a result, the same hole can be reused for use with another ALLIGATOR anchor of the same size.



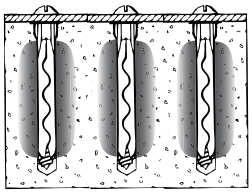
Because ALLIGATOR anchors, with their unique technology, do not concentrate their holding in a small area, they can be more closely spaced (c) for greater maximum total load on the smallest substrate surface area.

b



In additon, metal anchors that operate with a wedging action must be spaced far apart to avoid overlapping "cones of force" (b) and the consequential weakening of the wall.

c



***All* TOGGLER Anchors are proudly made in the U.S.A.**

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