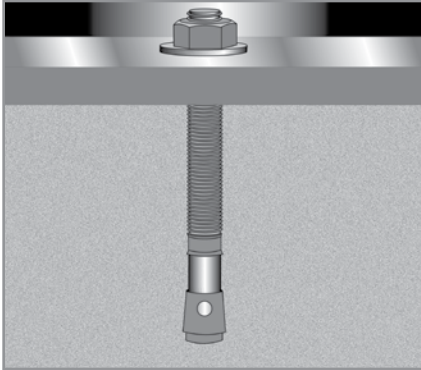


The Inside Story About Mechanical and Adhesive Anchors

Types of Anchors



Expansion Type

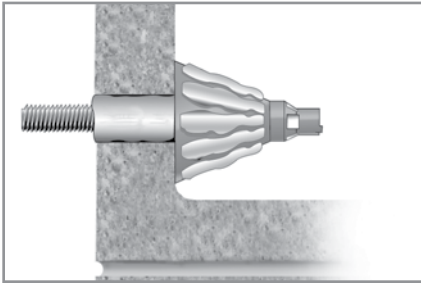
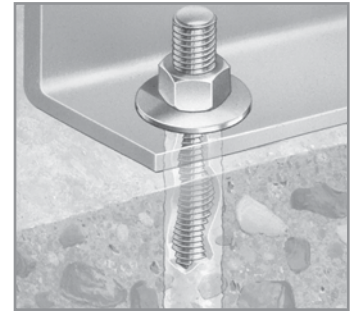
Tension loads are transferred to the base material through a portion of the anchor that is expanded inside the drill hole.

Examples: Red Head Redi-Bolts, Dynabolts, Multi-Set II Anchors and Hammer-Sets.

Adhesive Type

Resistance to tension loads is provided by the presence of an adhesive between the threaded rod (or rebar) and the inside walls of the drill hole.

Examples: Epcon A7, C6, G5, Maxima 7 Capsules and Impact Capsules



Keying Type

Holding strength comes from a portion of an anchor that is expanded into a hollow space in a base material that contains voids such as concrete block or brick.

Examples: Epcon adhesives used in screen tubes or umbrella insert

Friction Type

Load capacity is created by driving a fastener into a pre-drilled hole that is slightly smaller than the fastener itself.

Examples: Redi-Drives



Mechanical Interlocking Type

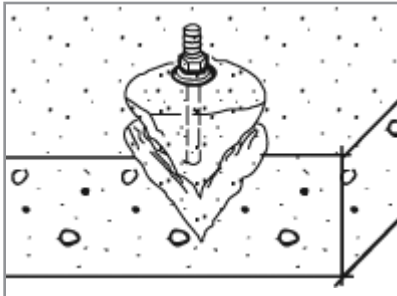
Tension loads are resisted by threads on the fastener engaging with threads cut into the base material.

Examples: LDT, Tapcon and E-Z Ancors



Modes of Failure

When anchors are loaded to their maximum capacity, several different types (modes) of failure are possible depending on the type of anchor, strength of the base material, embedment depth, location of the anchor, etc. Common modes of failure include:

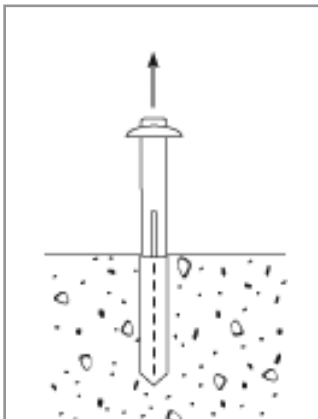
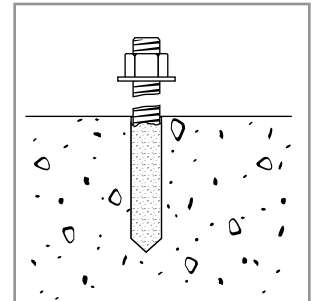


Concrete Spill Cone

Occurs at shallow embedments where the resistance of the base material is less than the resistance of the anchor and the base material fails.

Steel Breakage

The capacity of the anchorage exceeds the strength of the steel anchor or rod material.

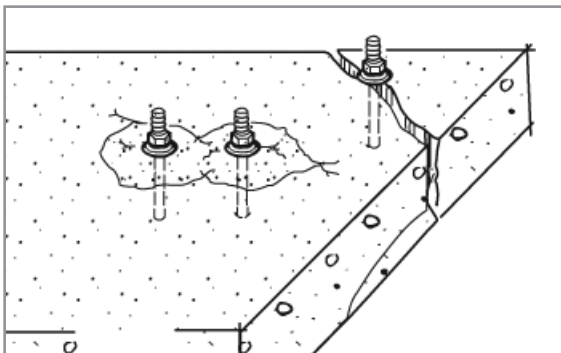
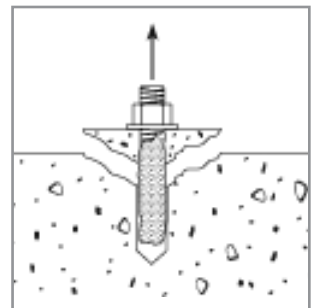


Anchor Pullout

Base material adjacent to the extension portion of an anchor crushes, resulting in the anchor pulling out of the hole until the capacity of the spill cone is reached, at which point the concrete will spill. This type of failure happens more commonly when anchors are set with deep embedment depths.

Bond Failure

Shear failure of the adhesive at rod adhesive interface or adhesive-base material interface. Occurs more commonly in deep embedments using high strength steel rods.



Edge Distance and Spacing Reduction

Reduces the holding values, when anchors are placed too close to the edge. This also occurs when two or more anchors are spaced closely together. See suggested edge distance, anchor spacing distances and reduction values in the product sections.