

Anchor Bolts and Construction Fasteners

The expression ANCHOR BOLT refers to a big variety of studs, that are all gripped in one end inside a fixed substance, and are threaded on one end, to tighten equipment, or secure a construction.

Different types of Anchor Bolts are used in the various industries, for different applications.

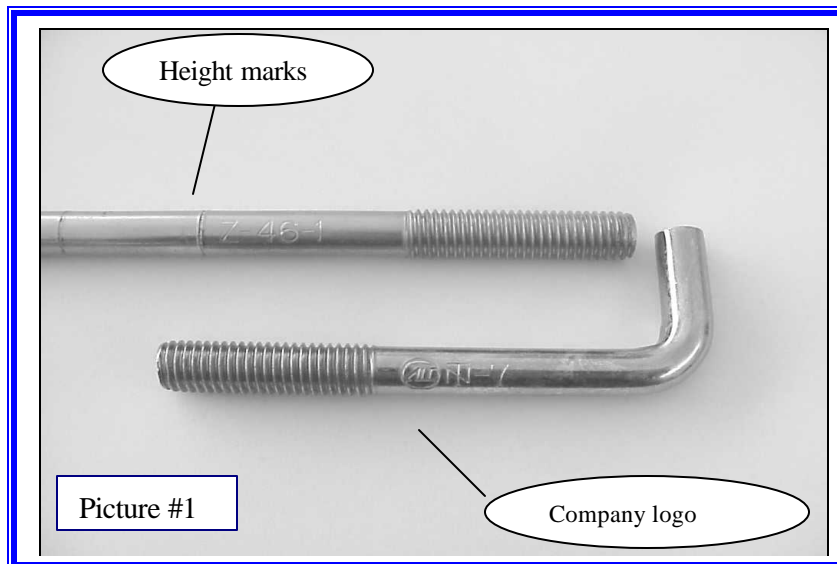
For almost 30 years, Videx has been involved in the design and manufacturing of Anchor manufacturing equipment.

Following is a description of some of the more popular anchors, with a description of their applications, problems and solutions:

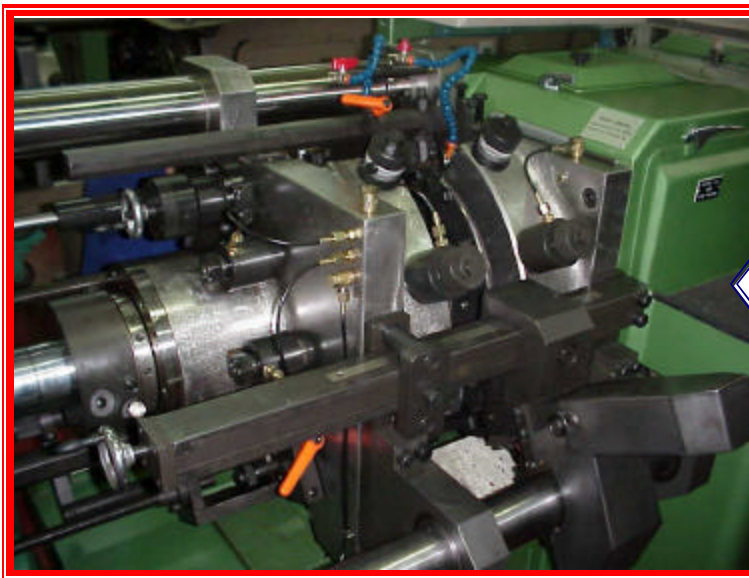
The most widely used Anchor Bolts are "L" shaped (picture 1). Most Anchor Bolts are in the diameter range of ½" to 1". The short leg in the "L" shape Anchor Bolts varies in length from 1-½" in the ½" Anchor Bolts, up to 3" in the 1" Anchor Bolts. The long leg varies in length from 6" to 30".

The Anchor Bolts are manufactured on a fully automatic machine (picture 2), that performs the following operations:

- ◆ Pulling the wire from coil.
- ◆ Straightening the wire.
- ◆ Cutting to length.
- ◆ Thread rolling on one end of the part.
- ◆ Bending to the final shape.



The Videx Fully Automatic machines are producing 1" Anchor Bolts at a rate of 70 PPM, and ½" Anchor Bolts at a rate of 120 PPM. The internal radius of the Anchor bolt is usually about ½ of the thread diameter. Smaller radius may cause cracks in the part, and premature wear of the bending fixture, while a bigger radius will require excessive bending force.



Picture #2:
Videx Fully
Automatic Anchor
Bolt
and
Hanger Bolt
machine, model
VAS-20-DBH

In some countries, like Japan, it is common to mark the Anchor Bolts, to identify the manufacturer, and mark the penetration depth of the long leg. Picture #1 shows Anchor Bolts with the manufacturer name and logo, as well as the penetration marks. The part marking is done fully automatically, without slowing down the process.

The “L” shaped Anchor Bolts should, in some case, be supplied with long threads. Videx has recently increased the machines’ thread length capacity, and is able to offer now machinery with thread length up to 8”.

Picture #3 shows another two types of construction element, called “Separator Studs” and “Tie Rod”.

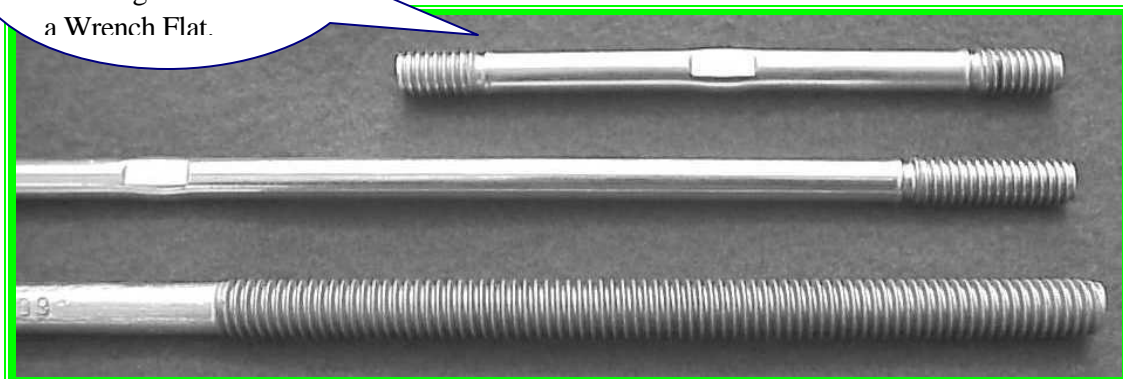
The “separators are hi-tensile studs with a flat for a wrench and two breaking grooves close to the threads on both sides of the part. The “separators” are used for support of concrete cast walls until the cement dries. The flat in the center is used while the nuts are tightened, and the two breaking grooves are used for breaking the threaded part from the stud, to remove the walls.

The Tie rods are typically long, double end studs, with long threads (5” to 8”). The popular thread range is 3/8” and 1/2”, but bigger sizes can also be found in the market.

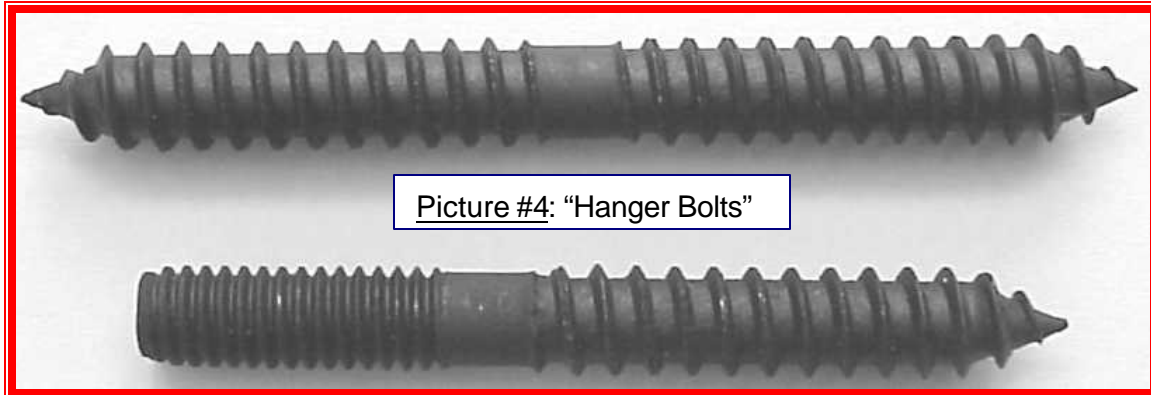
Tie Rods are used for tensioning and support of large constructions.

Concrete Wall
“Separators”, with a
Breaking Groove and
a Wrench Flat.

Picture #3: “Separator Studs” and “Tie Rods”



Other widely used construction fasteners are the Hanger Bolts, which are short studs, with lag thread on one end and machine thread on the other end. Some types of Hanger Bolts have lag thread on both ends, and many of them have a flat or hex in the center. Videx has lately developed machinery for fully automatic production of Hanger Bolts, with or without a flat in the center.



Picture #4: "Hanger Bolts"

An important, and different type of Anchors are used to support mine roofs. These are called Mine Roof Bolts.

Picture #5 shows Chemical Mine Roof Bolts, that are used for Coal mines, where the bolts are adhered to the strata by resins. Videx owns a patented process for production of Mine Roof Bolts from Pitch Diameter Rods, where the ribs are made on a round bar in selected areas, so there are no ribs at the ends where the thread is rolled.

The Mine Roof Bolt equipment is unique as it assures there are no ribs on the end of the part, so the thread can be rolled on the wire directly, without any preparation, even if the rod is hot rolled. The Mine Roof Bolts are usually between M-16 to M-24 (5/8" to 1"). The thread length is in most cases long: about 6".

In the picture below, there are 2 types of Mine Roof Anchor Bolts: the bottom one is M-24 and the upper one is the edge of a 5/8" Bolt.



Picture #5: "Mine Roof Bolts"

There is another type of Mine Roof Bolts, used for hard rock environment. This type is called Expendable Shell Mine Roof Bolts. These bolts are straight studs, with a head forged on one end and a long thread on the other end. On the threaded side, there is an Expandable Shell Nut, which expands inside the rocks.

In addition to the “standard” construction elements, there are also some unique and special elements.

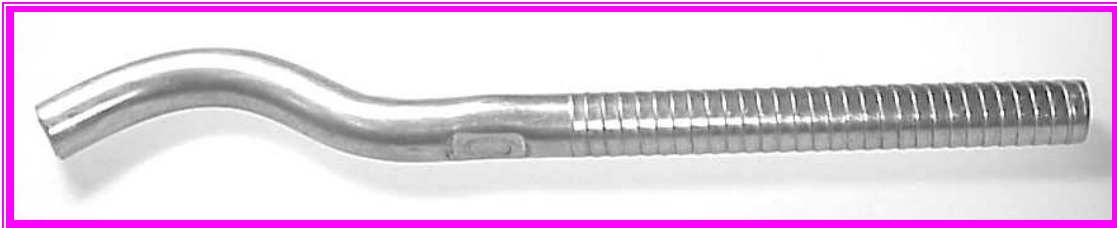
Two of the special elements are shown in the pictures below.

The upper anchor is called Radiator Hook, and it is used in Italy for support of heating radiators. The Radiator Hook has two bends, to support the radiator on one side, and has a spiral form with a conical edge on the other side, where it is anchored.

This special shape of parts was developed for an Italian company, and is run on a standard VAS-20-DBH, which is the same model shown on picture #2.

The production rate of this part is 100 PPM.

The other two anchors shown below are construction elements used for roofing and for electrics. Both were designed and manufactured for companies in the USA and in Spain, and are made on the same VAS-20-DBH, at a rate of 110 PPM.



Picture #6:
Radiator Hook (above).
Construction elements (below).

