

FAQSHEET3: Ground Anchors

Ground anchors are an essential component in a mast installation. It is important to ensure that you use appropriate anchors and that they have sufficient holding capacity. Before installation, the type of ground at the proposed site should be ascertained, so that the correct anchors can be selected. Unfortunately this is rarely done and it may be necessary to take a range of anchors to site.

As anchor standards vary so much Nexgen only stock a limited selection. This FAQ sheet gives links to other sources of information on anchor performance and installation, but it is recommended that a local anchor supplier be used whenever possible – they will know what works for your ground conditions. We cannot make any comment other than provide manufacturers specifications, Nexgen does NOT warranty masts against ground anchor failure, this is the responsibility of the installer.

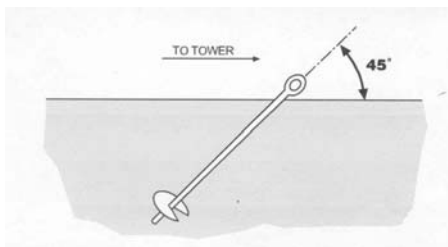
Beware that ground anchor holding loads will reduce dramatically in areas prone to ground freezing or water logging. If in doubt install more anchors than the minimum. Always attempt to keep these in line, increasing the radius. There is a limit to side guy length so it is worth laying the guys out first out if radius increases are likely to be significant.

Rock Pins



These are multi-purpose “spikes” that can be used as temporary anchors or for permanent installation in very solid ground. Intended for solid rock when grouted into a drilled hole.

Screw-in Anchors



These consist of a helical plate welded to a shaft. If it's possible to use screw-in anchors then they are usually the best solution. They can get an excellent hold and are removable.

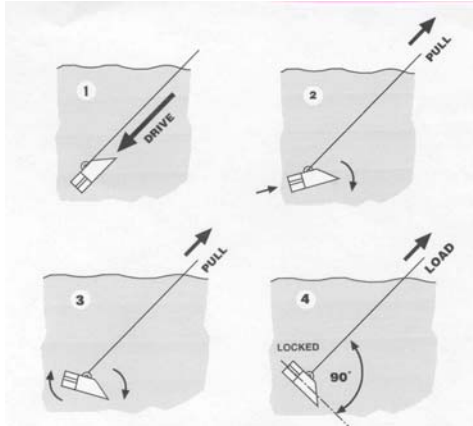
They are not much use in very soft conditions, although installers have drilled holes in railway sleepers or steel sheets and passed the shaft of a screw-in through, giving a much bigger bearing area when buried.

The main problem is usually with rocky sites where the helix will simply not screw-in or “pans” on a rock below the surface.

Drive-In Anchors

For harder or stony ground, another option is the use of the 'drive-in' type anchor.

These anchors are driven into the ground with a suitable drive rod at an angle of approx. 45deg, facing towards the mast. The anchor should be driven in until it can either be driven no further, or there are 150mm of cable left above the ground.



A load must then be applied to the free end. This will cause the anchor to move back up the hole towards the surface, turning as it goes. Finally the anchor will 'lock' into position, having turned as fully as it will in the ground concerned. The optimum rotation of 90deg will not always be achieved, and is not absolutely necessary.

The anchor is now ready to attach to the mast guys. If you have load-testing equipment, you should attach it during the turning and locking process, so that you have the final load-bearing figure for the anchor.

Load Testing Anchors

When Nexgen installs masts for customers, we load-test each anchor. Load-testing anchors will ensure that the mast fully meets design conditions and will prevent any possible damage and loss from premature anchor failure to the mast and monitoring equipment. It is strongly recommended and the only way to check adequate load capability.



Screw-in types



Hand-driving duckbills



Power driver



Load cell on Tirfor



Load cell on truck winch



"Duckbill" drive-in anchor

Sources of Information

Screw-In
 AB Chance
<http://www.abchance.com>
 Try the design software. Large diameter earth screws are available for 'softer' soils.

Drive-In
 Duckbill
http://www.duckbill-ground-anchors.co.uk/AS_home.htm

Rock Anchors
www.fosroc.com

see also FAQ SHEET 8 : Anchoring in Peat