

SAFETY IN THE DESERT SANDS



LOOSE, DRY SAND IS A POOR CONDUCTOR.



THAT MEANS YOU'LL HAVE TO PUT IN *EXTRA* TIME AND EFFORT TO GET A SOLID EARTH GROUND IN THE DESERT.



A GOOD GROUND IS A MUST TO PREVENT ELECTRICAL SHOCK TO YOU AND DAMAGE TO YOUR EQUIPMENT.

Before You Drive a Ground Rod

Give your ground rod a thorough cleaning. Grease, oil, tar, paint and corrosion on the rod make it a poor conductor.

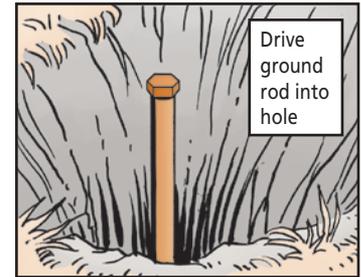
Often a sledgehammer is used to drive in the rod. The hammer striking the rod creates flying metal fragments. So, wear safety gloves and goggles to protect your hands and eyes.



Wear safety goggles and gloves

Rods In a Hole

Before you drive, dig a hole at least 12 inches deep and 36 inches across. Then drive the rod into the hole until the rod's top is below ground level. Far too many ground rods are left sticking above the ground, where they can be a safety hazard.



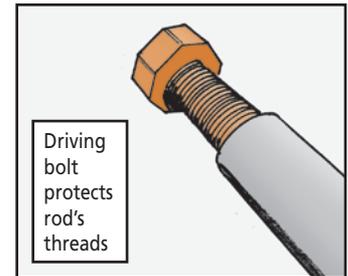
Drive ground rod into hole

Drive the rod in the center of the hole. Drive it straight. If the soil won't permit the rod to go in straight, drive it in at an angle, but no more than 45 degrees from vertical.

It's good practice to drive the ground rod down into the water table. The soil there has less resistance to electrical current. That's how to get a dependable earth ground. If you can, locate your equipment near an oasis or subterranean water.

Use a sectional ground rod. Add extensions to reach deeper into the soil until you can no longer drive the rod. When adding extensions, make sure each section is tightly connected to the next one. If they're not tight when you drive in the rod, you'll damage the coupling sleeve threads.

Don't hit the threaded end of the rod with the hammer. That damages the threads, too. Instead, screw a driving bolt on the top section. Make sure it's tight. A loose bolt will break off, or damage the threads.



Driving bolt protects rod's threads

If you have a slide hammer, NSN 5120-01-013-1676, use it when installing a sectional ground rod. A slide hammer makes it easier to drive rods, and easier to get them out, too.

Try to reach the water table with a single ground rod or one with extensions. If you can't, use multiple grounds. Also, use a salt-and-water mixture. The salt and water make the soil more conductive. See "Soil Preparation" on page 52 for details.

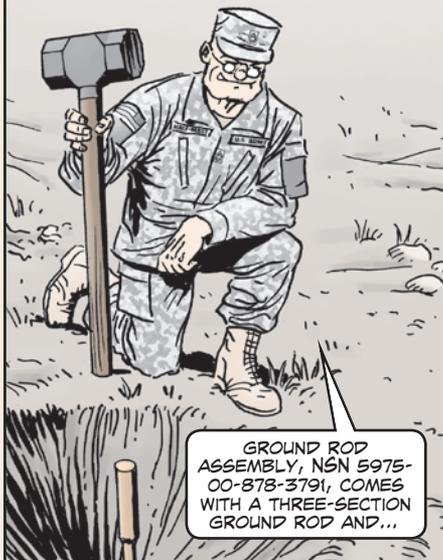
Ground Rods: How Far Apart?

If you drive in multiple ground rods, give them lots of space to get a good earth ground. Separate the rods by a distance of at least two times the depth of the rod. In other words, if you're using 8-ft rods, space them at least 16 feet apart. Space 10-ft rods at least 20 feet apart.

If three rods are used, drive them in a triangular pattern. If four or more rods are used, put them in a straight line or a star pattern. When using multiple rods, always connect all the rods together with ground wires or cables. Connect the final rod to the equipment to be grounded.

If you can't drive a ground rod more than 4 feet deep, bury the rod horizontally 1 1/2 feet deep. Then add a salt-and-water mixture before backfilling the hole.

Ground Rod Assembly



GROUND ROD ASSEMBLY, NSN 5975-00-878-3791, COMES WITH A THREE-SECTION GROUND ROD AND...

Three section ground rod



Item	NSN
3 couplings	5975-00-794-2523
1 clamp	5999-00-186-3912
1 driving bolt	5975-00-924-9927
1 terminal lug	5940-00-271-9504
No.6 AWG wire issued by the foot	6145-00-395-8799

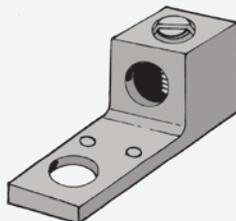
Coupling



Clamp



Terminal lug



Soil Preparation

One way to get a good ground in the desert is by preparing the soil. You can make the soil more conductive by keeping it moist and by adding a salt-and-water mixture to the area around the ground rod.

Mix a pound of salt with each gallon of water. NSN 6810-00-227-0439 brings an 80-lb bag of salt. Start with 5 gallons of the mixture.

Slowly pour the mixture into the hole you dug for the ground rod so it soaks in.

Use the salt-and-water mixture often. It may take a daily 5-gal mix and several pours.

Ground Plates

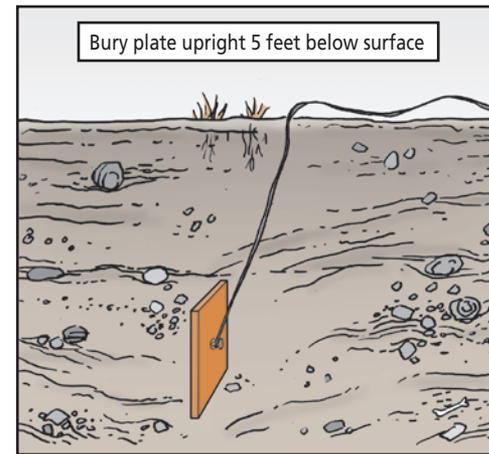
Because sand is easy to move, ground plates are well-suited for use in the desert. They give you a large, metallic area in contact with the soil. Use two to four ground plates and space them at least 10 feet apart.

To make a ground plate, start with a clean, bare steel plate or sheet that's 1/4 inch thick. Cut the plate so that it measures at least 1 3/4 feet x 1 3/4 feet. **Do not use aluminum.** It quickly oxidizes, corrodes and increases resistance to earth. The plate should have at least 3 square feet of surface contact with the ground. The larger the plate, the lower the resistance and the better the ground.

Along with the plate, you'll need a metal bolt, nut and lock washer to attach the ground wire. Drill a hole in the center of the plate just large enough for the bolt.

Bury the plate standing upright with the top edge about 5 feet below the sand's surface. Burying the plate upright ensures good soil contact on both sides of the plate. Pour your mixture of water and salt into the soil around the plate to make the soil more conductive.

Bury plate upright 5 feet below surface



FOR MORE INFORMATION, GET CECOM PAMPHLET TR 98-6, EARTH GROUNDING AND BONDING.

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