

Grounding Kit (#1993, #1995, #1996, #1997) Instructions

Introduction

Meteorological sensors, loggers, and towers accumulate static electrical charge unless they are properly grounded. High winds, low humidity, and the height of the tower above ground increase the rate of charge accumulation. Charge continues to accumulate until the developed voltage difference, sometimes thousands of volts relative to ground, causes dielectric breakdown and an electrostatic discharge (ESD). ESD will damage any scientific instrument or sensor, including NRG loggers, NRG #40 anemometers, or NRG #200P wind vanes. By attaching an NRG logger or other instrument to a properly grounded TallTower, and sensors to the logger, the logger and sensors will also be electrically grounded.

Properly grounding your system helps protect your sensors, your wind measurement instruments, and your wind data! **It is your responsibility to provide proper earth grounding for the tower, logger, and sensors. All warranties on NRG instruments and sensors are voided if your system is not properly grounded.**

For many sites, the NRG grounding kit provides all the needed parts to earth ground your TallTower™ and instrumentation. The grounding kit includes a copper-clad lightning spike, copper ground wire, and two copper-clad ground rods. Determine the soil type and classify its resistivity. The lower the resistivity, the better the earth ground.

<u>Soil Type</u>	<u>Average Soil Resistivity per cm (Ohms-cm)</u>
1. ashes, cinders, brine, waste	2370
2. Clay, shale, gumbo, loam	4060
3. Same, with varying proportions of sand and gravel	15800
4. Gravel, sand, stones with little clay or loam	94000

The NRG grounding kit will perform adequately in type 1 and 2 soils. For other soil types, or for sites with a high incidence of lightning, you will need to augment the earth grounding system. Consult NRG for more information.

Installation

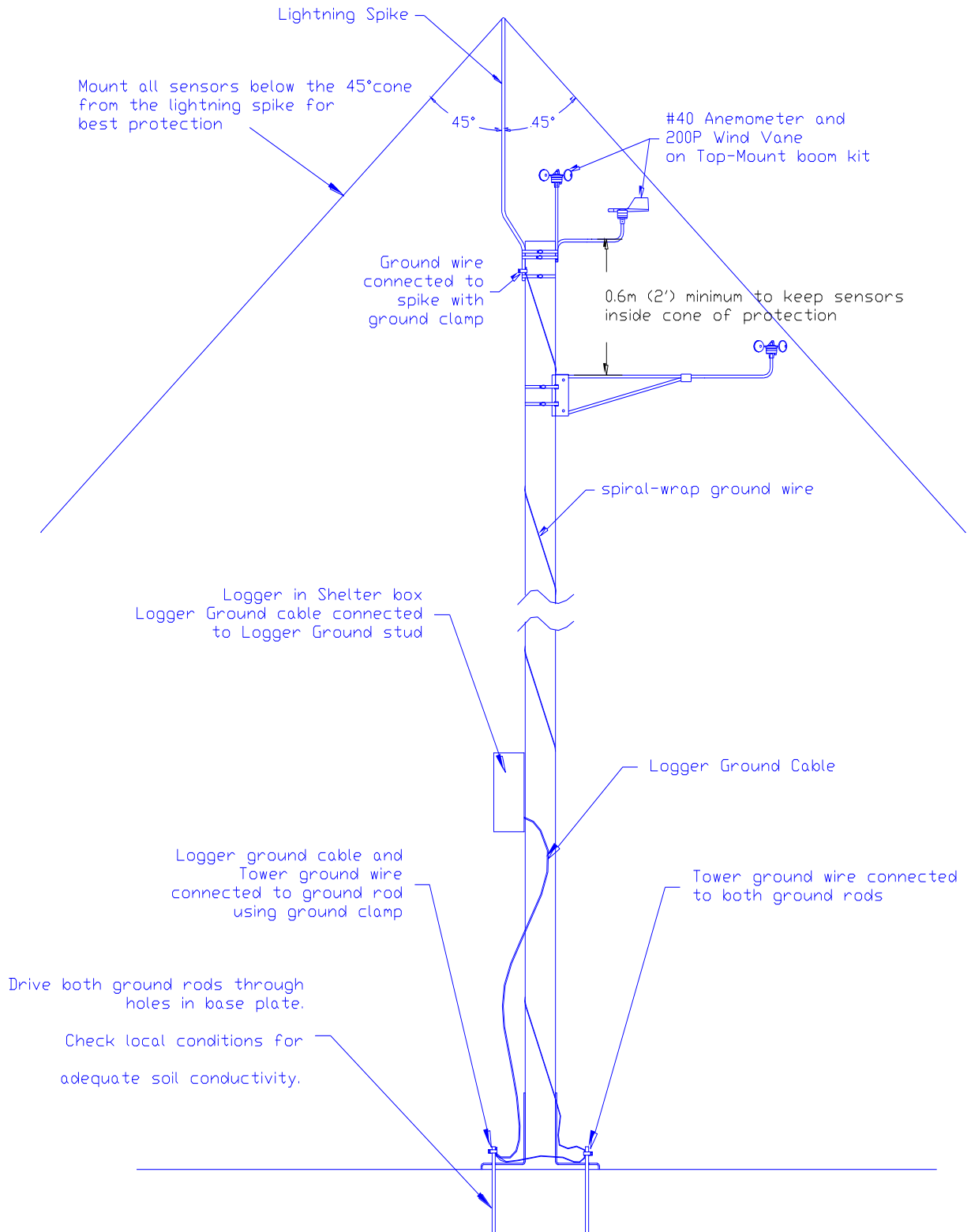
The grounding kit is usually installed before the sensors and sensor cabling in a new installation, but may also be retro-fitted to an existing tower installation. Refer to the drawing on the next page. To install the grounding kit:

1. Drive the two ground rods through the holes provided in the TallTower baseplate when laying out the tower. Leave enough of each rods above the baseplate to attach the ground wires.
2. Raise the TallTower slightly off the ground. Attach the top end of the copper ground wire to the lightning spike using one of the supplied ground clamps. Mount the lightning spike to the tower using the two supplied stainless steel band clamps.
3. Unwind the ground wire to the base of the tower, wrapping the wire around the tower in a downward spiral, 1 turn every 6 meters (20 feet) as shown in the figure. Tape the wire securely to the tower every 1 to 2 meters (3 to 6 feet) to prevent the wire being damaged by wind motion or icing.
4. For best protection, mount all sensors below a 45° cone from the lightning spike, as shown in the drawing on the next page. Sensors on top-mount or Z booms may be at the top of the tower. For sensors on side-mount booms, keep the boom at least 0.6 m (2 feet) below the top of the tower.
5. Attach the bottom end of the ground wire to BOTH ground rods using the supplied clamps. This is easiest if the first clamp is threaded over the end of the ground wire before leading the wire to the second clamp.
6. Ground your NRG logger. Connect the logger grounding cable supplied with the logger from the ground stud or terminal on the logger to one of the ground rods, using the same ground clamp as for the tower ground. Ground the logger immediately after mounting it to the TallTower and prior to connecting the sensors to the logger.

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APPLICATION NOTE



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