


# **DG Prospector™**

Owner 's Manual  
and Installation Guide

3-CMLT-1414 Rev B

Assembly  
Installation  
Maintenance

 **Made in the USA**

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## **XZERES Wind**

**Congratulations on your purchase and welcome to our family!**

Dear DG Prospector Owner,

Congratulations! You have just received the simplest tower and renewable energy predictor system available. This kit is designed to be easy to assemble and erect.

The DG Prospector is comprised of a simple and lightweight guy supported tower, an integrated instrument for sensing wind direction, wind speed, solar insulation and temperature, and a self-powered data acquisition and recording system. Assembly of the tower and data acquisition system will take two persons approximately two hours to build and erect with basic hand tools. No excavation or lifting equipment is necessary.

The tower for the DG Prospector includes a simple yet effective tower base and anchoring system, which eliminates the need for a concrete pad. It is important to read this manual first and understand your soil conditions before you begin construction.

**Read this manual thoroughly before beginning assembly**, XZERES assumes no responsibility for inaccuracies or omissions. The user of this information and product assumes full responsibility and risk. All specifications are subject to change without notice.

If you have any questions on siting, proper installation or operation, please contact XZERES or your dealer before installation.

Please call during working hours (Monday-Friday 8:00 am to 5:00 pm - Pacific Time Zone).

Our phone number is **503-388-7350 or Toll Free: 1-877-404-9438.**

For technical support, contact [SkystreamTechnicalSupport@xzeres.com](mailto:SkystreamTechnicalSupport@xzeres.com)

Sincerely,

XZERES Wind

**TABLE OF CONTENTS**

Important Safety Instructions ..... 4

Arrival Kit and Tower parts.....5-6

Site Selection.....7-8

Tower Base and Earth Anchor Layout .....9-11

Soil Type and Recommended Anchors..... 12

Tower Assembly ..... 13-16

Attaching the Power Predictor..... 17

Tower Maintenance ..... 18

# Important Safety Instructions

Read these instructions in their entirety before installing or operating.



**SAVE THESE INSTRUCTIONS.** Enclosed are important instructions that must be followed during installation and maintenance.



Obtain all required permits and engineering certifications for your tower and tower location.



Install DG Prospector on a calm day - no wind at ground level.



**Two people must be present when the tower is raised.** Have at least two people available during assembly and erection of tower.



## In this Manual



**IMPORTANT:** Please take note



**TIP:** Helpful information



**Warning:** Risk of injury or death - proceed with extreme caution



**Locate your tower well away from occupied buildings and power lines; a minimum of 76 m (250 ft) is recommended.**



Prevent tower climbing by unauthorized persons or children. Never climb without proper safety equipment.



If the guy wires appear loose, or if the tower is making an unusual sound, correct the condition immediately. A loose guy wire or component will incur further damage.



Soil and wind conditions vary; towers and tower foundations must be designed for your specific location.



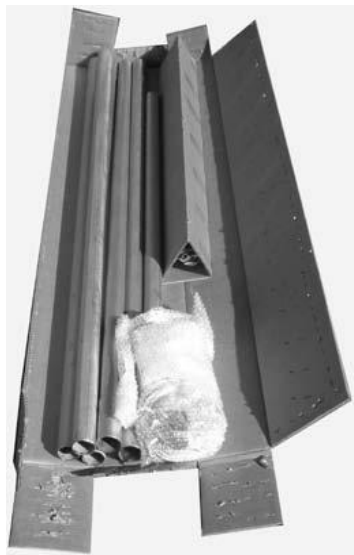
## Recommended Tools, Equipment and Materials for Installation

Description	Quantity
100 ft (30.5 m) Measuring Tape	1
Small Adjustable Spanner Wrench	2
10 kg Hammer	1
Mallet	1
Pliers	1
Carpenters Level	1
Safety Glasses	1 pair/person
Protective Gloves	1 pair/person
#1 Phillips Head Screwdriver	1



## ARRIVAL KIT and TOWER PARTS

### Tower Kit



### Not Shown

Description	Quantity
Power Predictor Data Logging Module	1
Integrated Wind Speed, Wind Direction And Solar Isolation Sensor	1
Instrument Boom	1
Instrument Boom Bracket	1
Instrument Boom Isolating Clamping u-Bolts	2
Instrument Boom Tower Clamping u-Bolts	2
Sensor extension Cable	1
Nylon Wire Ties	10
Owner's Manual	1

### DG Prospector Tower Parts (Images Not Shown to Scale)



**IMPORTANT:** Before you begin installation of your DG Prospector be sure to have all parts and required tools. If any parts are missing, call XZERES.



(1) Tower Base



(1) Lower Guy Cable  
Wire: 6.4 m (21 ft)



(1) Upper Guy Cable Wire:  
9.1 m (30 ft)



(2) Guy Wire Attachment Plates:  
(1) For Lower Guy Wire Cable  
(1) For Upper Guy Wire Cable



(16) Cable Clamps

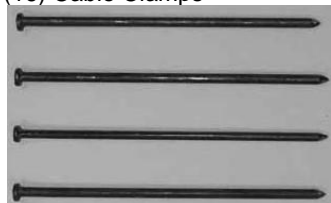


(8) Cable Thimbles



(4) Arrowhead Earth Anchor

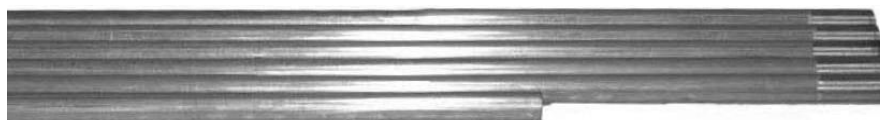
**Not shown:**  
(1) M10 x 65 mm Bolt  
(1) M10 Locknut



(4) Tower Base Earth Spikes



(1) Earth Anchor Driving Rod



## Site Selection

The information in this section gives specifics about the ideal siting of the DG Prospector. If your area does not have an ideal location, find the best location possible.

The DG Prospector is a predictive tool that can enable you to determine if you have sufficient wind and solar resource to justify the investment in renewable energy conversion systems. It is important therefore that you install the DG Prospector tower in a location that will be representative of the site at which you will intend to also install your wind turbine and/ or solar panels. The site should avoid obstacles to the wind, including vegetation, buildings etc. and with respect to the prevailing or general wind direction to minimize the turbulence and lower wind velocities that those obstructions will create. Although the data acquisition system is self-powered keep in mind the future requirement for electrical service to support the installation of your renewable energy system when sighting the DG Prospector. Avoid locations that unnecessarily increase the distance from your electrical interconnection (to minimize the amount of wire that will be needed) and areas that will require a difficult route to the point of interconnection (a trench that conflicts with exiting below grade features such as sewer and water lines).

## Surface Roughness

Rough ground is land covered with small bushes, trees or other obstructions. Smooth land is an area covered only by grass or earth.

- The smoother the ground, the less the friction.
- The rougher the ground the greater the friction, thereby requiring the tower to be higher.



**IMPORTANT:** It is important to locate your DG Prospector in an area where you might intend to install a wind generator.

## Topography



**TIP:** Place your tower on the highest land practical.

If your location is basically flat, topography is not an issue when deciding where to place your DG Prospector.

There are circumstances where the highest land available may not be the best place for your wind generator. Highest land nearby may be awkward to get to, may be too far away from where you need the power, or may be a site that would expose your wind generator to potentially damaging turbulent conditions.

## Barriers

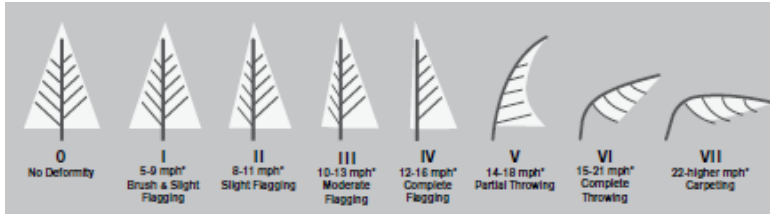
Barriers (buildings, trees, etc. that impede flow of wind) produce wakes that may extend far downwind of the barrier and to a height considerably above the barrier. These wakes are areas of decreased wind speed and can cause potentially damaging turbulence. Barriers near the DG Prospector may affect its performance.

## PRIOR TO INSTALLATION

### Siting Tips



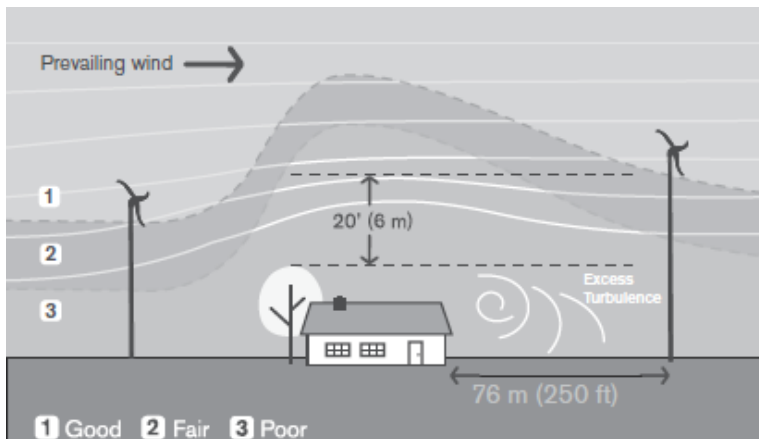
**PROPER SITING** = Better Performance & Increased Longevity Look at vegetation deformation to determine best area and prevailing wind direction.



Griggs-Putnam Index. \*Probable mean annual windspeed. Data prepared by E.W. Hewson, J.E. Wade, and R.W. Baker of Oregon State University



**EXCESSIVE TURBULENCE** = Fatigue Damage and Shorter Turbine Life



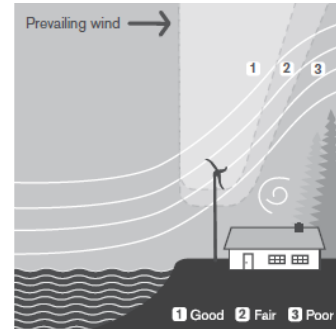
Turbine should be a minimum of 76m (250 ft) away from and 6 m (20 ft) above obstacles.



## ATYPICAL SITING CONSIDERATIONS

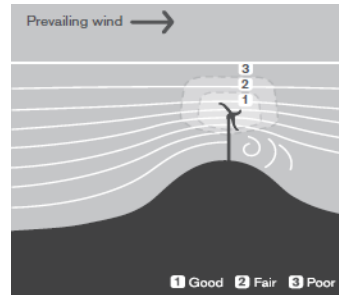
### Coastal or Lakeside

Trees and taller structures can be down-wind.



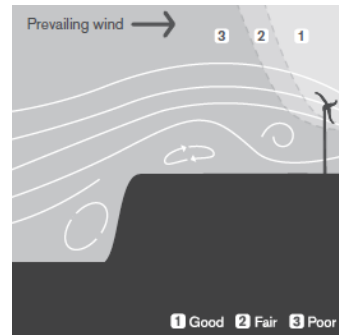
### Ridge Tops

Wind compresses as it blows over the top of a hill, increasing the wind speed.



### Plateau/Mesa

Site the generator far enough from the cliff to avoid turbulent wind.



## TOWER BASE & EARTH ANCHOR LAYOUT

### Tower Layout

The tower is assembled on the ground, then tilted into position. The tower base supports the tower on the ground, and serves as the pivot point to raise and lower the tower.



Two sets of guy wires (an upper and lower set with four wires per set) secure the tower vertically:

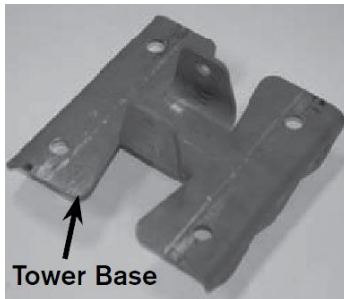
- The upper set of guy wires secure the tower at a height of approximately 8.0 m (26 ft).
- The lower set of guy wires secure the tower at a height of approximately 4.6 m (15 ft).

Four arrowhead earth anchors (located approximately 4.6 m (15 ft) from the tower base at 90° intervals) secure the guy wires to the ground. One upper guy wire and one lower guy wire attach to each earth anchor.

### Tower Assembly - Hillside

If possible, position the tower to tilt along the incline of the hill, with the top of the tower uphill from the tower base.

### Tower Base



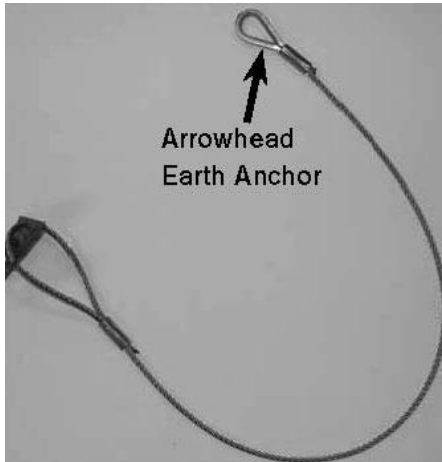
1. Locate the area where you will install the tower. Place the tower base on the ground and orient in the direction the tower will be tilted.
2. Have one person stand at the tower base holding a measuring tape.
3. The second person measures a 4.6 m (15 ft) circumference around the tower base.
  - Make sure there are no obstructions along the circumference.
  - Make sure there is sufficient room to tilt the tower into position.



**Earth Spikes**



## Arrowhead Earth Anchors



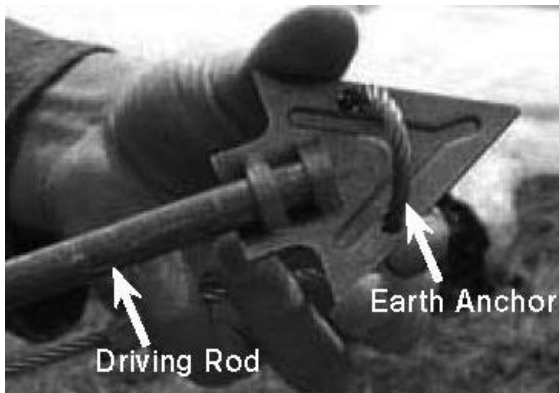
1. Position the first earth anchor on the ground along the tower tilt axis, 4.6 m (15 ft) from the tower base.
2. Place the second earth anchor along the tower tilt axis, 4.6 m (15 ft) from the tower base in the opposite direction.
  - With the tower base in the center, the first and second earth anchors should form a straight line 9.2 m (30 ft) along the tower tilt axis.

3. Repeat for the third and fourth anchors.

- With the tower base in the center, the third and fourth earth anchors should form a line perpendicular to the line formed by the first two earth anchors.

4. Each earth anchor should be 4.6 m (15 ft) from the tower base.

5. Check the position of the earth anchors to ensure that they are within approximately 15 cm (6 in) of their ideal position.



6. Insert the beveled end of the earth anchor driving rod into the arrowhead earth anchor, as shown here.

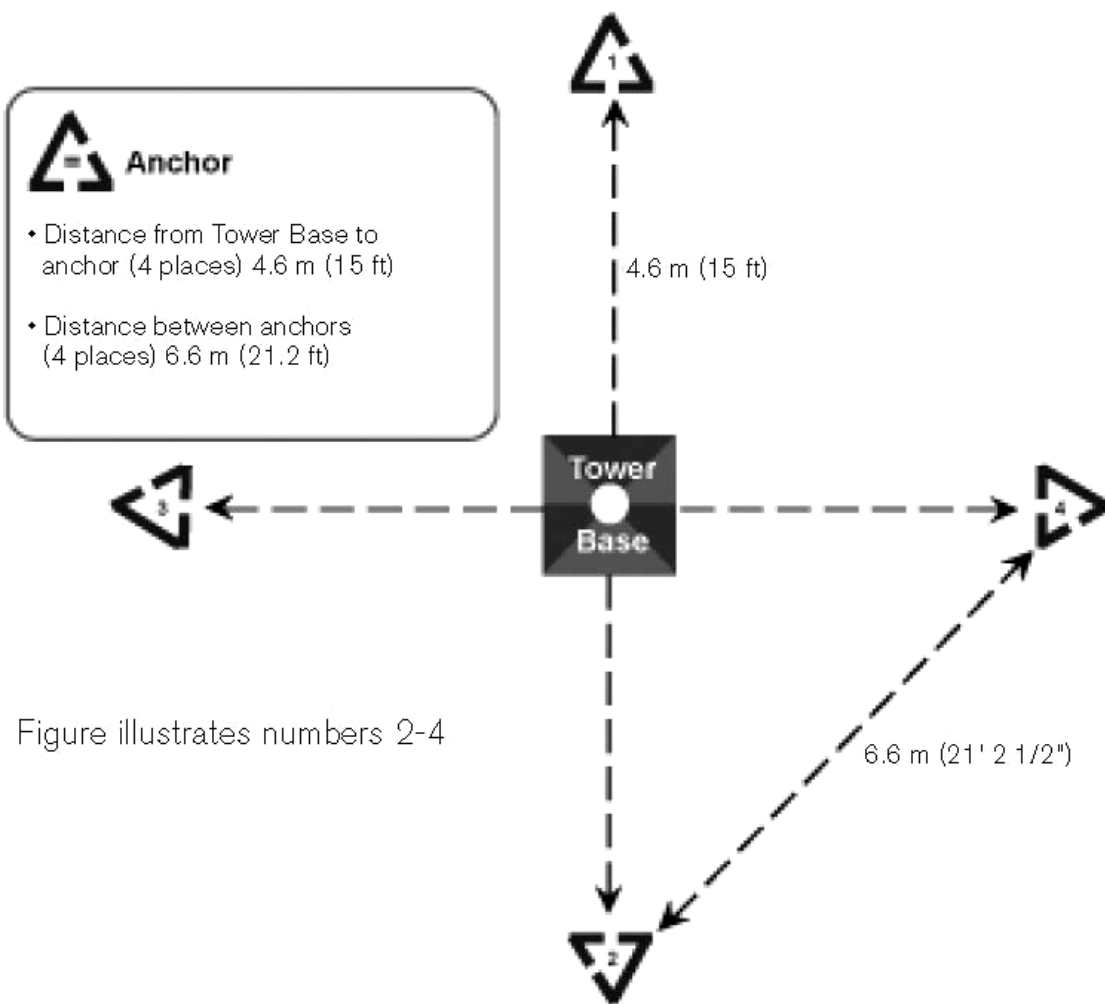
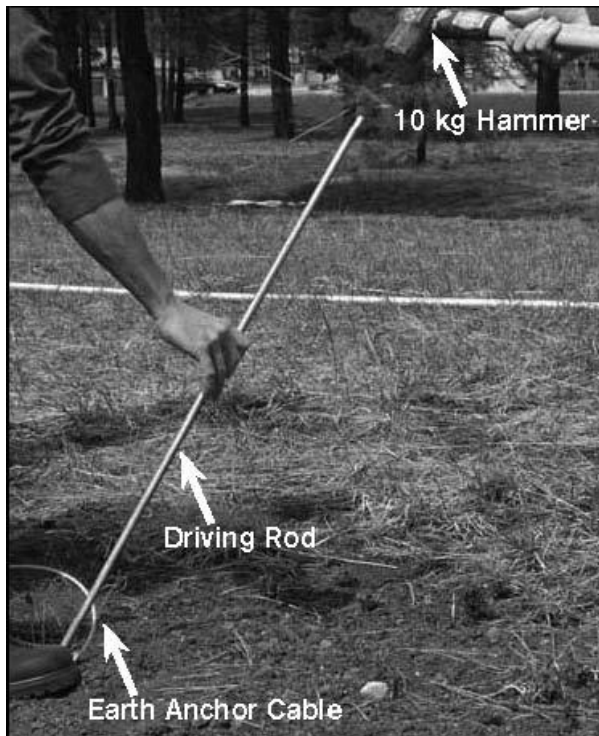


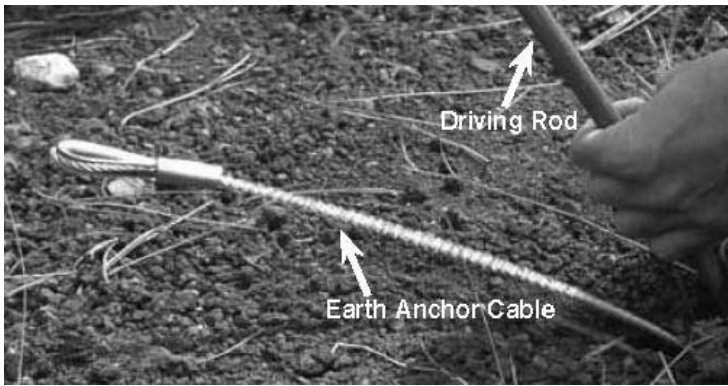
Figure illustrates numbers 2-4



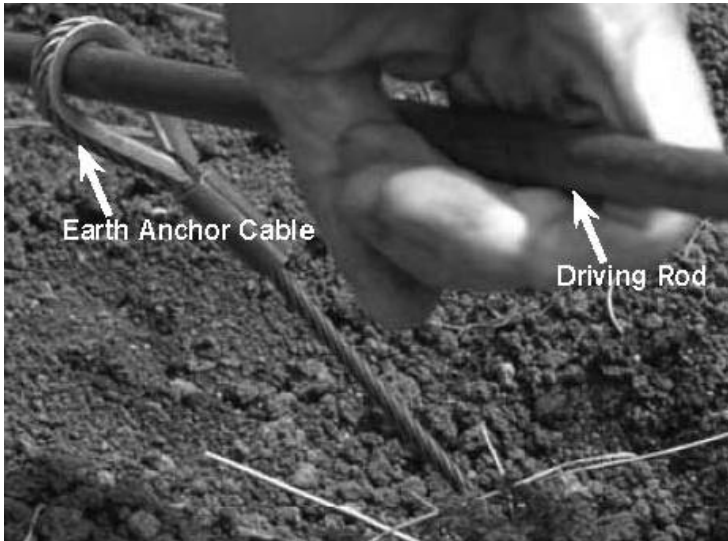
- Drive the earth anchor into the ground using the earth anchor driving rod and a 10 kg hammer.
  - Notice the angle at which the earth anchor is being driven. This angle is important for maximum pull strength. The angle should be in line with the angle of the guy wire (i.e. the angle should be pointing towards the tower base).



**IMPORTANT:** Earth anchors must be installed in soil that has been undisturbed.



8. Drive the earth anchor into the ground until 15 cm (6 in) of cable remains above ground.



9. Insert the earth anchor driving rod through the cable eye and pull up with force. You will notice the earth anchor cable pulling out of the ground slightly. This will lock the earth anchor in the ground.

**Note:** No more than 30 cm (12 in) of earth anchor cable should be out of the ground once it has been locked into place.

10. Finish installing the remaining three earth anchors as described above.



**IMPORTANT:** Although the earth anchor is designed to break through rocks, if there is a rock or obstruction that is too large, remove and relocate the anchor. The depth of the anchor is critical to its effectiveness.

## SOIL TYPE AND RECOMMENDED ANCHORS

What anchor to be used depends on the soil type. Refer to the Soil Type and Anchor Recommendations table below for suggestions.

Soil Type	Recommended Anchor
Loose Sand	Arrowhead
Loose Gravel	Arrowhead
Loam	Arrowhead
Clay	Arrowhead
Rocky Soil	Arrowhead
Gravelly Soil	Arrowhead
Solid Rock (Soft)	Large/Long expansion Bolt
Solid Rock (Hard)	Smaller expansion Bolt



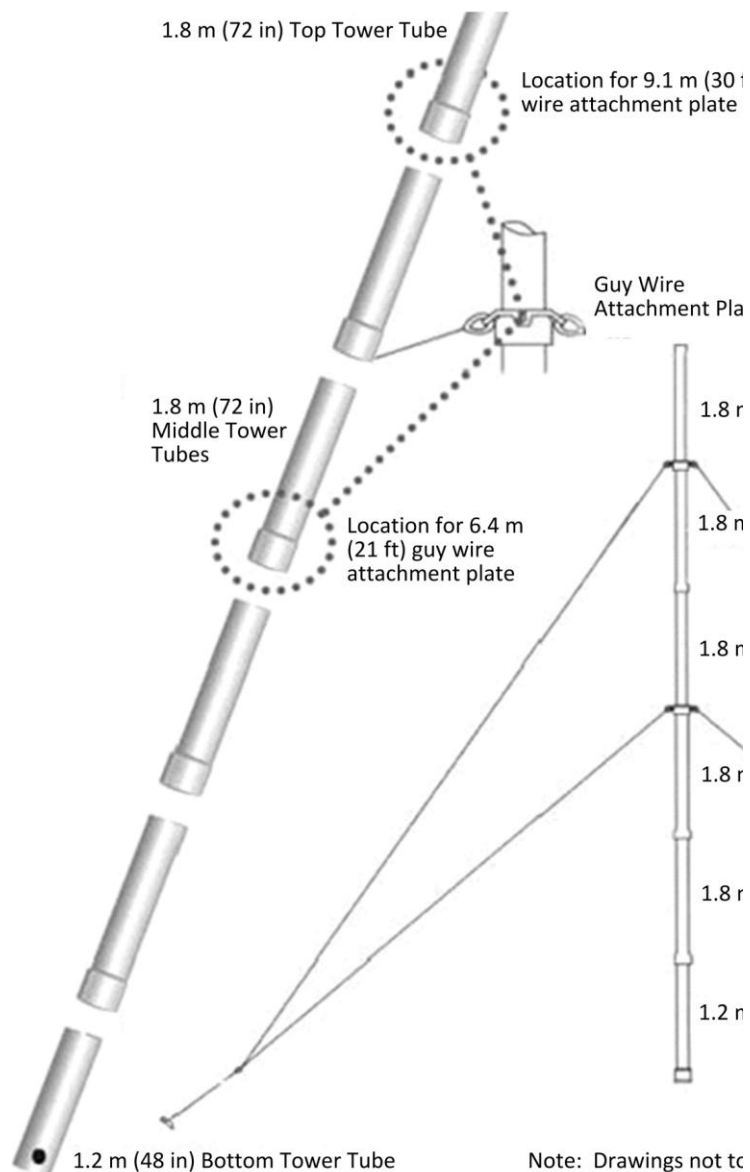
**IMPORTANT:** If the arrowhead earth anchors included with the DG Prospector do not work with your soil conditions, contact XZERES for assistance with an alternative anchor.

## TOWER ASSEMBLY

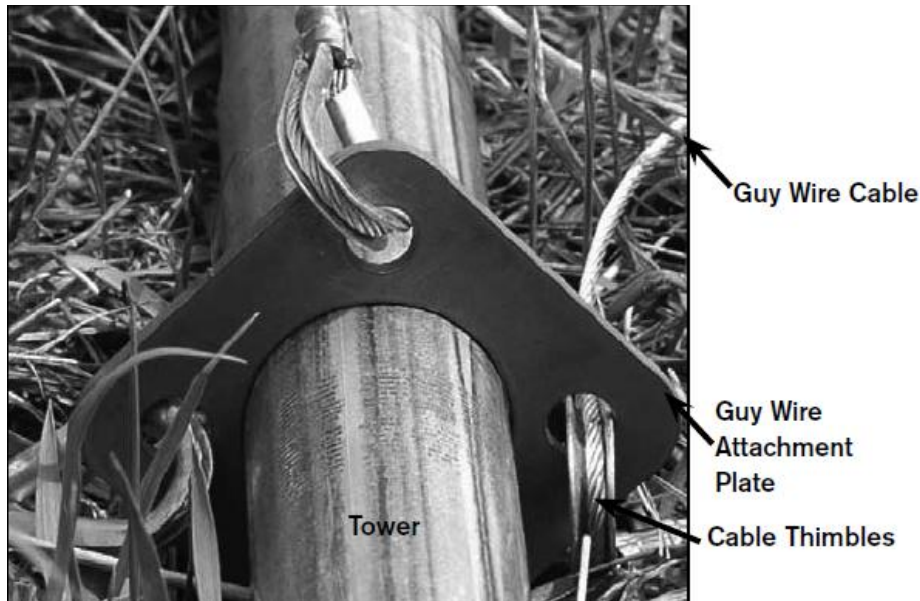
The tower is assembled in several easy steps.

### Tower Tube Layout

1. Lay out the six tower tubes on the ground as shown. Leave approximately 15 cm (6 in) between each tube.



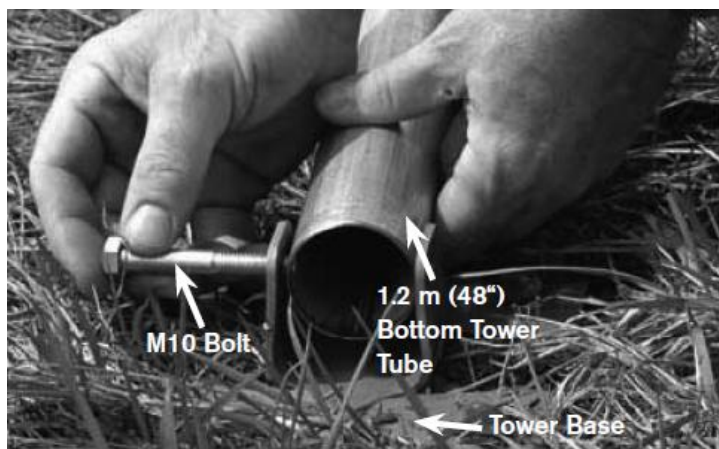
2. With the tubes laid out as shown on the preceding page, slide the guy wire attachment plates over the corresponding tower tubes.
- Slide the 9.1 m (30 ft) guy wire attachment plate over the top tower tube.
  - Slide the 6.4 m (21 ft) guy wire attachment plate over the fourth tower tube from the bottom.



3. Align the guy wire attachment plate so that each guy wire is in line with the anchors.
4. Join the tower tubes together using a soft-faced mallet or hammer. Use a piece of wood between the tube and the mallet to protect the end of the tube.
- The expanded end of the tube prevents the guy wire attachment plate from sliding down the tube, and positions the guy wire attachment plate at the correct height.

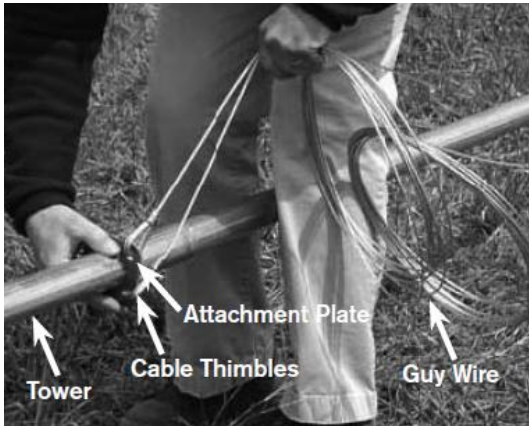


5. Secure the lower tube to the tower base with the M10 bolt and nylock nut. Tighten the nut until it just contacts the tower base.

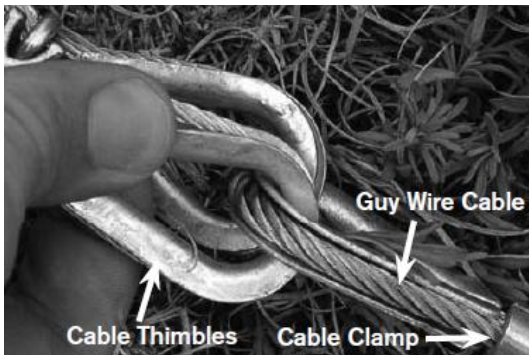


## Attaching the Guy Wires

1. Orient guy wire attachment plates with their corners pointing towards the anchors.
2. Uncoil each guy wire bundle and extend them to their respective anchoring point. The fourth anchor point is directly under the tower.



**Caution:** Be careful not to let the guy wires become twisted when the tower is erected.



3. Begin attaching the guy wires to the earth anchors at the sides of the tower.
  - Insert 2 cable thimbles in each earth anchor eyelet.
  - Thread an upper guy wire and lower guy wire around its own cable thimble.
  - Loosely attach two cable clamps to each guy wire.



**IMPORTANT:** You may need to use pliers to spread open the cable thimbles to install them on the anchors. Use the pliers to press the open end of the cable thimbles back together before attaching the guy wires.

4. Leave about 15 cm (6 in) of slack in the guy wires, and tighten the cable clamps.
- Note:** The guy wire to the tower should contact the 'saddle' side of the cable clamp. On level ground, there will be approximately 1.5 m (5 ft) of extra cable.
5. Attach two cable thimbles to the third earth anchor located directly below the tower.
  6. Measure the length of the upper and lower guy wires on the side earth anchors. Use the same length for the guy wires on the third earth anchor.
  7. Secure the cable clamps to the third guy wire.
  8. Place two cable thimbles on the fourth earth anchor. DO NOT connect the guy wires at this time.
  9. The fourth set of guy wires are used to help tilt the tower into position. Secure these guy wires after the tower is upright.

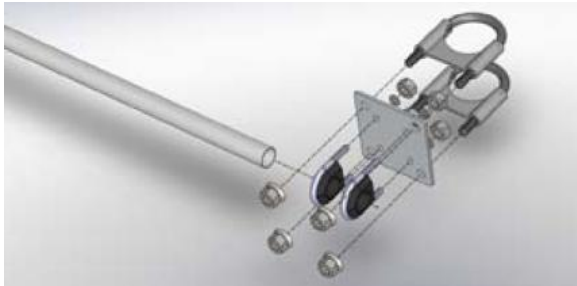


## Attaching the Power Predictor

XZERES highly recommends first tilting the tower into position without the sensor and sensor cable attached, to verify proper installation and operation of the tower.



**IMPORTANT:** Ensure that all side and rear guy wires are attached and that all cable clamps are tight before raising the tower.



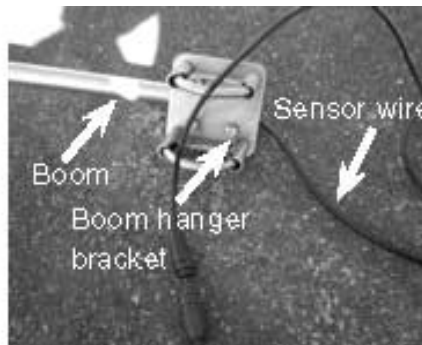
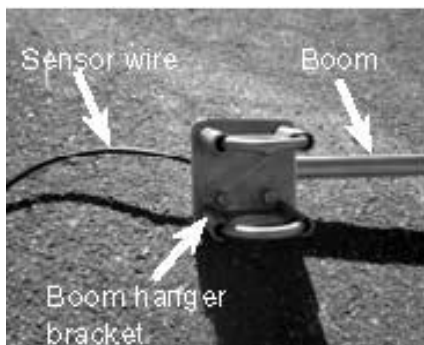
- 1 Affix the integrated instrument to the instrument boom using a small, #1, Phillips head screw driver and the screws that are in the body of the instrument.



2. Refer to the figure for the proper orientation of the instrument on the boom.

**NOTE:** Please refer to the Power Predictor owner's manual for detailed instructions for installation of the data acquisition system.

3. Feed the sensor wire into the instrument boom.
4. Assemble the isolating clamps to the boom and boom hanger bracket and the boom hanger bracket to the tower with the stainless steel clamping U-bolts.
5. Connect the sensor extension cable to the instrument and carefully lay it alongside the tower avoiding any sharp edges or tight bends.



6. Carefully secure the sensor cable to the tower with the provided nylon wire ties.
7. Clamp the Power Predictor data logger unit to the side of the tower at convenient height but at a level that will be above snow depth (if applicable) and on the north side of the tower (in the Northern Hemisphere) to avoid overheating the enclosure in direct sunlight.
8. Connect the sensor cable to the data logger and precede with the commissioning of the data acquisition system according to the Power Predictor owner's manual.



**IMPORTANT:** When the tower is lowered to install the sensor and sensor cable, undo only the pull-side cables. When adjusting the cables, **NEVER** loosen both sets of guy wires at the same time. When the tower is re-erected, only those pull-side cables will need to be readjusted.

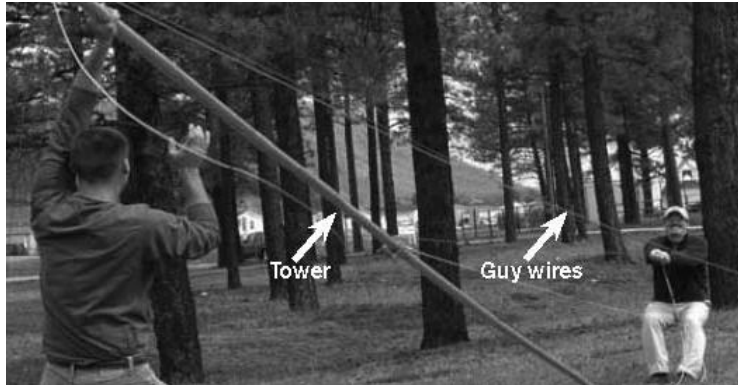
## Raising the Tower



**IMPORTANT:** Ensure that all side and rear guy wires are attached and that all cable clamps are tight before raising the tower.

1. Before raising the tower, have another person ready to assist with installation.

**Note:** Be sure to wear gloves when handling the guy wires!



2. One person should push the tower up into position. The other person should pull by the unattached upper guy wire. With the tower off the ground a few feet, make sure that all the wires are coming up cleanly.

### Adjusting the Guy Wires

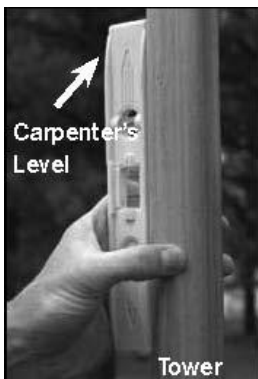
If the guy wires are too tight, they may cause the tower to bow as it is raised. If this happens, lower the tower to the ground and reduce the tension on the guy wires.

- Check to see which wire(s) are too tight (the wires act in pairs).
- Release the tension on one of the wires by loosening the 2 cable clamps until the cable can be slid through them
- Let out some cable until there is no tension in the wire.



**Caution:** It is easy to over tighten the guy wires. Wires should only have the slack taken out with no real tension.

3. Retighten the cable clamps before raising the tower.
4. Once the tower is raised to vertical, attach the last guy wires to their anchor.
5. Walk a short distance from the tower and look to see that it is straight.



6. Focus on the angle of the tower. Adjust the cables until the tower is straight up and down. Use a carpenter's level held against the tower for this.
7. To adjust the angle of the tower, relax one guy wire and tighten the guy wire opposite to it. Repeat this process until the tower is straight.
8. When the tower is straight, make sure that all cable clamps are tight.
9. After all the adjustments have been made, lower the tower.



**IMPORTANT:** When the tower is lowered to install the instrument boom, undo only the pull-side cables. When adjusting the cables, **NEVER** loosen both sets of guy wires at the same time. When the tower is re-erected, only those pull-side cables will need to be readjusted.



## **DG Prospector Maintenance**

There are no moving parts in the tower, so maintenance is minimal. However, as part of your annual maintenance, XZERES recommends that several areas are inspected to ensure long term integrity of your DG Prospector.

- Check guy wire condition. Inspect for wear and fraying at the guy wire to earth anchor connection points.
- Check guy wire tension. Guy wires should have uniform tension. Wires should be free of slack, but not overly taut.
- Check all bolts for tightness.
- Check cable clamps and pivot bolt.
- Check any unusual noises or vibrations. Investigate and correct as necessary.
- Refer to the owner's manual for the Power Predictor for maintenance requirements.



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