

# Tripod Setup Guide (M-TPx)

**Items needed:** 1/2 inch wrench, mast level (M-MLA), medium size wire cutters, crescent wrench, all-purpose grease, tape measure, tie wraps, redi-mix cement (optional), shovel (optional), sledge hammer (for stakes and ground rod), cable cutters (for ground wires and guy wires), and safety glasses.

**⚠ WARNING:** Severe shock hazard. Before installing the tripod or mounting poles, ensure that there are no electrical power lines overhead. Do not install the system during any atmospheric electrical activity. Do not assemble or transport tripods, mounting poles, or other structures unless there is sufficient clearance from potential electrical sources or other obstructions.

**⚠ WARNING:** Do not climb on or around the tripod. The tripod and any of its associated hardware, towers, poles, etc. are not designed to support the weight of a person. Injury may result.

**⚠ WARNING:** If using stakes to stabilize the tower, ensure that there are no underground wires or pipes underneath the tripod.



**2-Meter Tripod (M-TPB)**



**3-Meter Tripod (M-TPA)**

## Guidelines

- It is recommended that two people set up most tripod systems. Some assemblies are heavy and are easier to handle with two people.
- Be sure to stabilize, level, and secure the tripod on firm ground. It may be necessary to adapt the installation to the existing site conditions as necessary (for example, if mounting the tripod on ice or rock, you may need to use a masonry clamp to secure it).

## 2-Meter Tripod (M-TPB) Installation Instructions

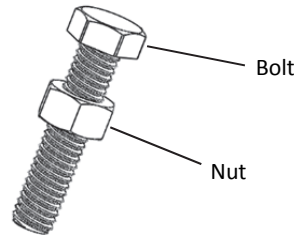
Set up the tower on level ground; there should be no ground slope. The legs on the 2-meter tower are non-adjustable for uneven surfaces. If the site you are using is not level, then you will need to either level it or use shims to level the tripod. Be prepared to dig if necessary.

### Optional Mounting Accessories

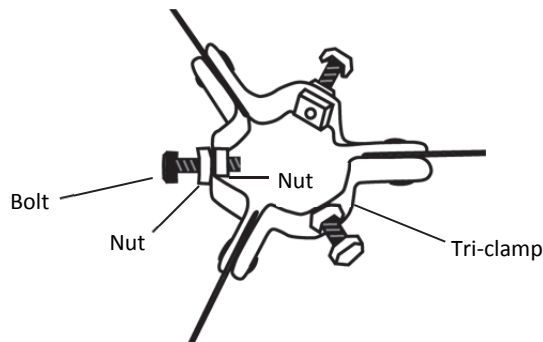
- 1/4 inch stake kit (M-SKB)
- Guy wire kit (M-GWA) with 1/2 inch stake kit (M-SKA)
- Grounding kit (M-GKA)

### Steps

1. Open the 2-meter tripod and place it in an upright position.
2. Using a 1/2 inch wrench, build six nut and bolt assemblies (5/16-18) like the one shown below with one nut partially screwed on the bolt.

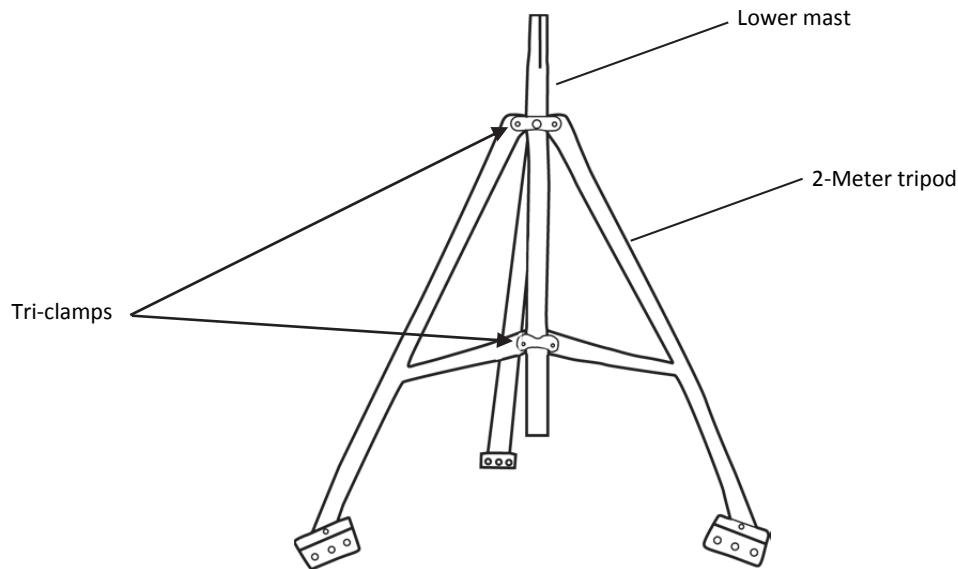


3. Take one of the nut and bolt assemblies and insert it through a tri-clamp hole with the bolt head facing outward. Loosely install a nut on the bolt to the inside of the tri-clamp.



4. Install the remaining five nut and bolt assemblies in the same manner for both upper and lower tri-clamps. Make sure the bolt assemblies on the upper and lower mast tri-clamps leave enough room for the lower mast section to slip through.

- Slide the lower mast from the top into the tri-clamps with the creased end of the mast facing up. The creases on the lower mast should face north and south.



- Tighten the tri-clamp bolts by hand so that the mast is temporarily locked into position. **Note:** The lower mast can rest on the ground at this time. You will adjust the height of the lower mast later.
- Because the tripod for the 2 meter configuration has non-adjustable legs, you must verify that the mounting surface area is level. If it is not, use shims or remove soil as needed. You can attach the mast level (M-MLA) to the mast to verify that it is vertical as you level the surface. You can also use the tri-clamp bolts to fine tune the vertical adjustment later after you adjust the height of the mast.
- Secure the tripod. Use either the 1/4-inch diameter stake kit (M-SKB) or bolt the tripod to cement pads with 1/4-inch anchors. Install a stake or bolt through one of the holes on each of three tripod feet.
- If site conditions (high winds, etc.) warrant or if you will be mounting a rain gauge or wind sensors on the tripod, use the guy wire kit (M-GWA). Instructions for installing the guy wire kit are later in this manual.
- Go to page 7 for instructions on completing the installation.

### 3-Meter Tripod (M-TPA) Installation Instructions

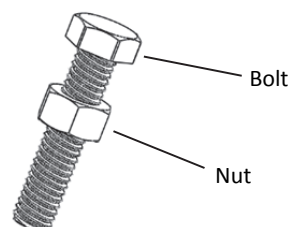
The maximum ground slope is 13 degrees. The legs on the 3-meter tower allow for limited adjustment on uneven ground. Be prepared to dig if necessary if the slope is significant.

#### Optional Mounting Accessories

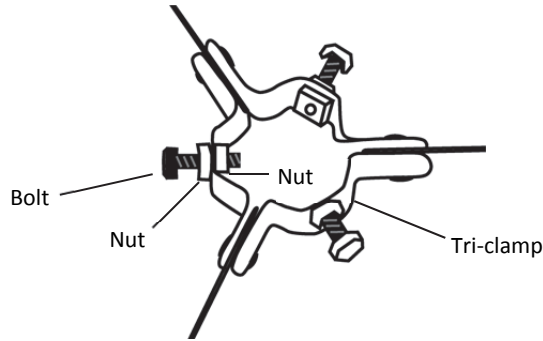
- Guy wire kit (M-GWA); attach to tripod leg or with 1/2 inch stake kit (M-SKA)
- Grounding kit (M-GKA)

#### Steps

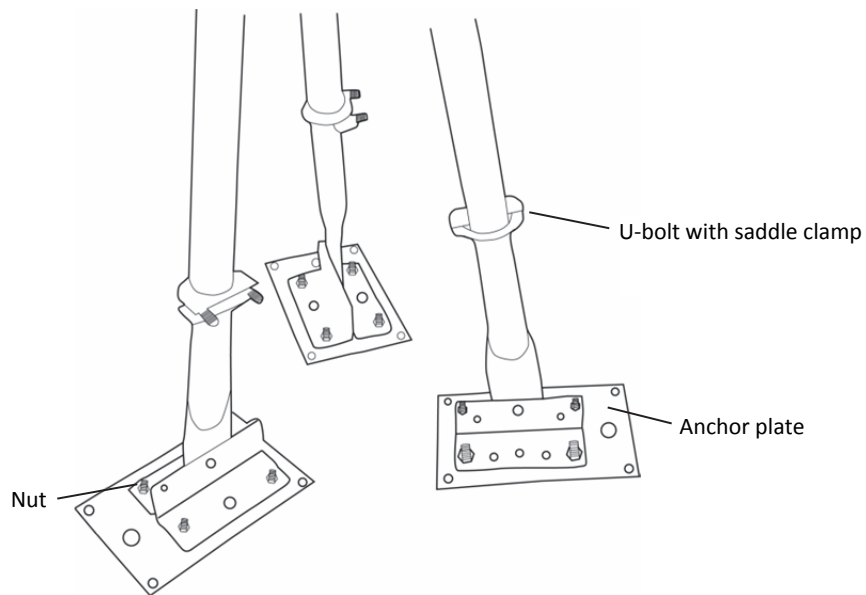
- Using a 1/2 inch wrench, build six nut and bolt assemblies (5/16-18) like the one shown below with one nut partially screwed on the bolt.



- Take one of the nut and bolt assemblies and insert it through a tri-clamp hole with the bolt head facing outward. Loosely install a nut on the bolt to the inside of the tri-clamp.

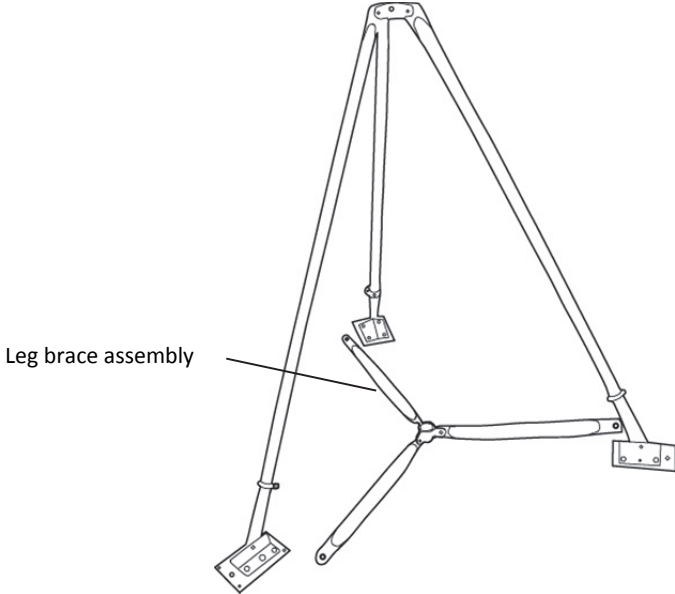


- Install the remaining five nut and bolt assemblies in the same manner for both upper and lower tri-clamps. Make sure the bolt assemblies on the upper and lower mast tri-clamps leave enough room for the lower mast section to slip through.
- Using 5/16 inch nuts, attach the three anchor plates to the three tripod foot brackets with the large holes to the outside. Tighten the nuts securely.
- Attach the three leg U-bolts with saddle clamps, one each onto the outer legs about 20 cm (8 inches) up from the anchor plates.

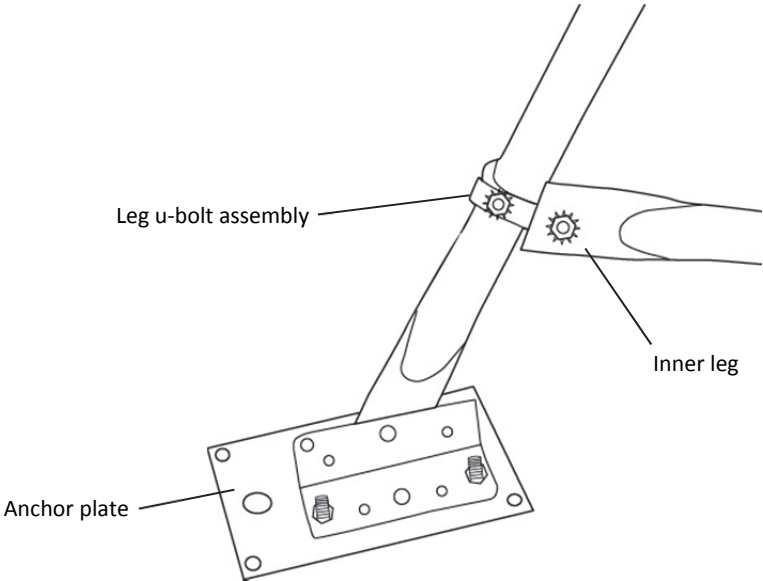


- Open the 3-meter tripod and place it in an upright position.

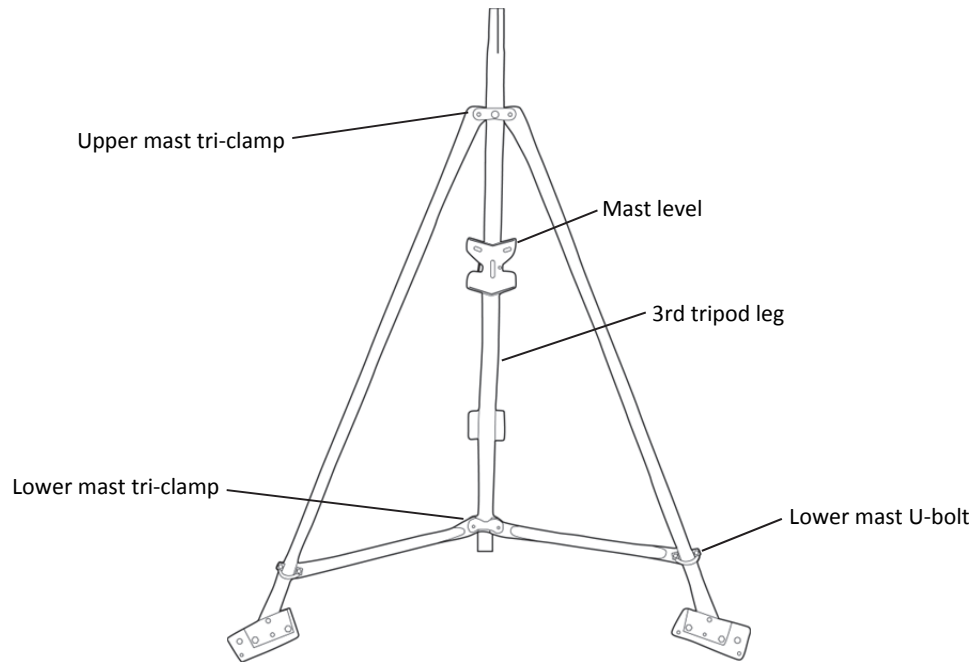
7. Unfold the leg brace assembly and place the assembly flat on the ground.



8. Attach each of the three inner legs to each of the leg U-bolt assemblies (5/16-18 inch) using the inner stud of the U-bolt. To attach each inner leg, remove the nut from the inner stud, slide the leg over the stud, and then tighten the nut finger tight.



9. Loosen the three lock nuts on the bolts on the upper and lower mast tri-clamp assemblies. Back the three bolts out of the upper and lower mast tri-clamp assemblies so that the lower mast section can be slipped down through the upper mast tri-clamps and into the lower mast tri-clamp with the creased end of mast facing up. When the lower mast section is installed, hand-tighten the upper and lower mast tri-clamps.



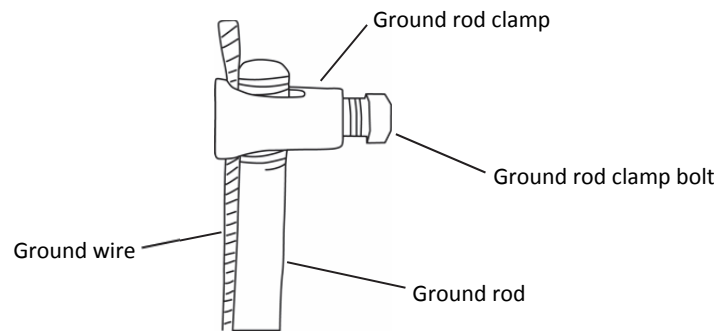
10. Install the mast level (M-MLA) on the lower mast as shown in the previous figure.
11. When the tripod is oriented on the site, secure one of the three tripod legs to its mounting location and tighten the U-bolts on this leg.
12. Adjust the second leg to level in one direction and secure this leg.
13. Use the third leg to adjust the mast close to level.
14. When the mast is close to being level, secure the third leg.
15. Fine tune the mast level by sliding the U-bolts slightly up or down. Tighten all three leg tri-clamps using a 1/2 inch wrench. Again, verify that the mast is level.
16. After checking level and orientation, tighten all upper and lower mast U-bolts and lock nuts.
17. Orient the lower mast creases so they face north and south.
18. Secure the tripod. Use either the 1/2-inch diameter stake kit (M-SKA) or bolt the tripod to cement pads with 1/2-inch anchors. Install a stake or bolt through one of the holes on each of three tripod feet.
19. Tighten the tri-clamp bolts so that the mast is locked into position. Note the lower mast should be about 8 inches (20 cm) above the ground at this time (assuming that if you are using the wind sensor, you want it to end up at 3 meters or almost 10 feet).
20. If site conditions (high winds, etc.) warrant or if you will be mounting a rain gauge or wind sensors on the tripod, use the guy wire kit (M-GWA). Instructions for installing the Guy Wire Kit are later in this manual.

## Complete the Installation

To finish the tripod assembly, follow these sections.

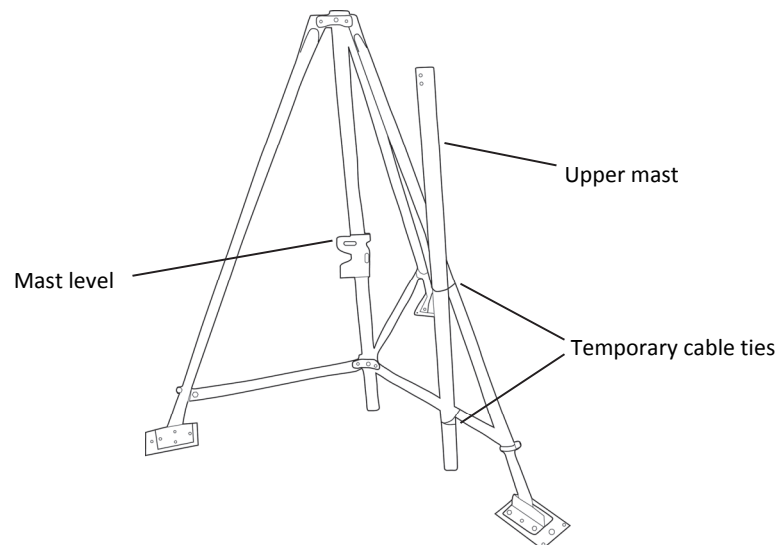
### Install the Grounding Kit (M-GKA)

1. Attach the ground wire to the lower mast of the tripod using the U-bolt assembly delivered with the grounding kit.
2. Slide the ground rod clamp over the ground rod prior to driving it into the ground. This allows you to work with the clamp before the top of the rod is damaged from impact.
3. Using a sledgehammer, drive the ground rod into the ground as close as possible to the lower mast of the tripod.
4. Attach the ground wire to the ground rod. Cut off excess cable length and discard or recycle.
5. Tighten the clamp bolt.



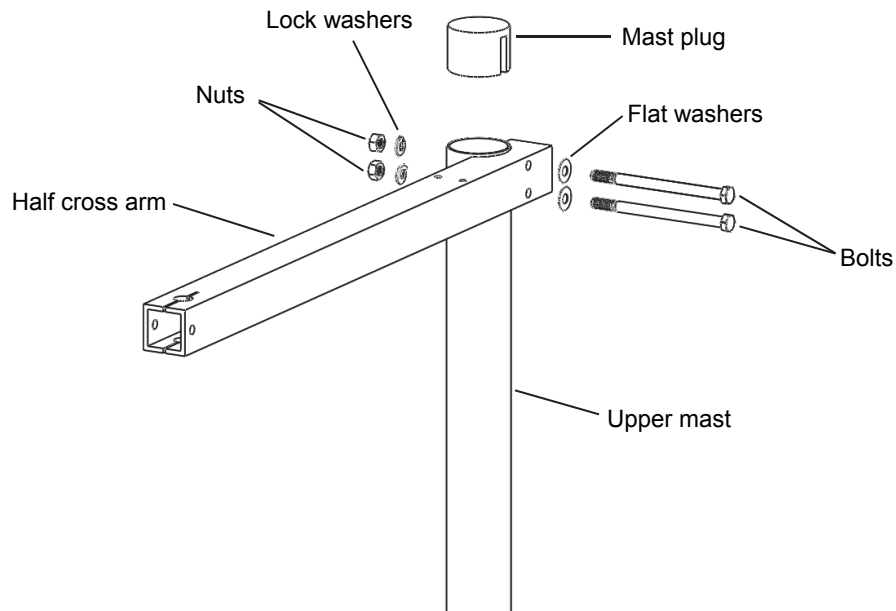
### Install the Cross Arm (if used) and Sensors

Install the cross arm using the instructions in this section and mount the sensors per the instructions in the sensor manuals. While installing these, consider temporarily attaching the upper mast to the tripod base so that you can work on the upper mast while it is resting on the base of the tripod as shown below. Stand the upper mast upright and tie a cable tie to one leg brace and one leg of the tripod using the cable ties supplied. Remove the cable ties when the upper mast is ready for mounting.



### Steps for Cross-Arm Assembly

1. Attach the cross arm to the upper mast using the two 1/4-20 x 2-3/4 inch hex head bolts. Mount the cross arm on the side opposite the dimple (at the bottom of the upper mast) with the word "TOP" on the upper surface of the cross arm. Note: The diagram below shows a half cross arm. For a full cross arm, the mast is positioned in the center.
2. Pass the two bolts with flat washers on them through the two holes on the cross arm and through the two holes at the top of the upper mast. Install a lock washer and nylock nut on each bolt. Do not securely tighten the bolts yet.
3. Install the mast plug into the upper mast top with the slot facing down and going over the two bolts. **Note:** After the mast plug is installed, it should be flush with the top of the mast.
4. Tighten the two nuts equally.



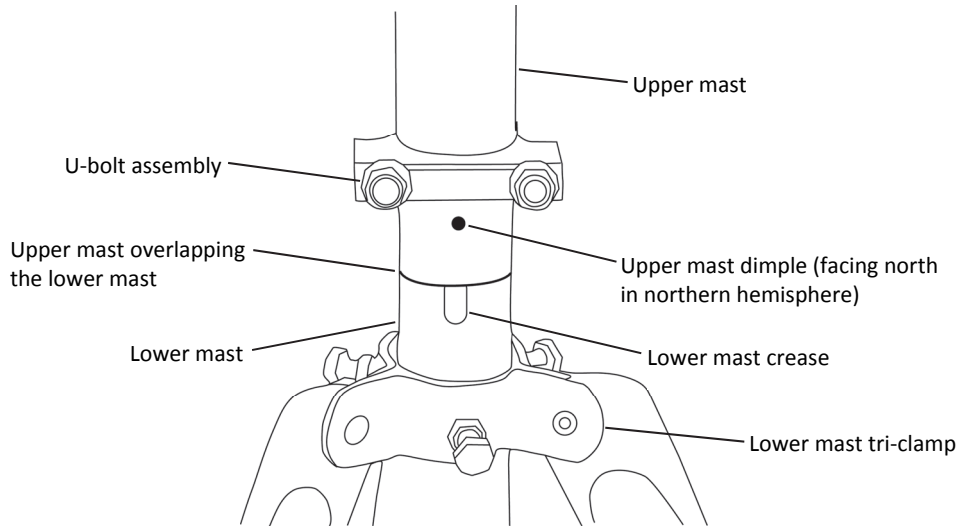
### Mount the upper mast to the lower mast

It is recommended that two people work together to attach the upper mast to the lower mast.

1. Lightly grease the creased (upper) end of the lower mast.
2. While holding the upper mast securely, cut any cable ties that were temporarily holding the upper mast to the lower mast.
3. Slide the upper mast onto the lower mast with the dimple going into the crease and oriented north if you are in the northern hemisphere, and south if you are in the southern hemisphere.



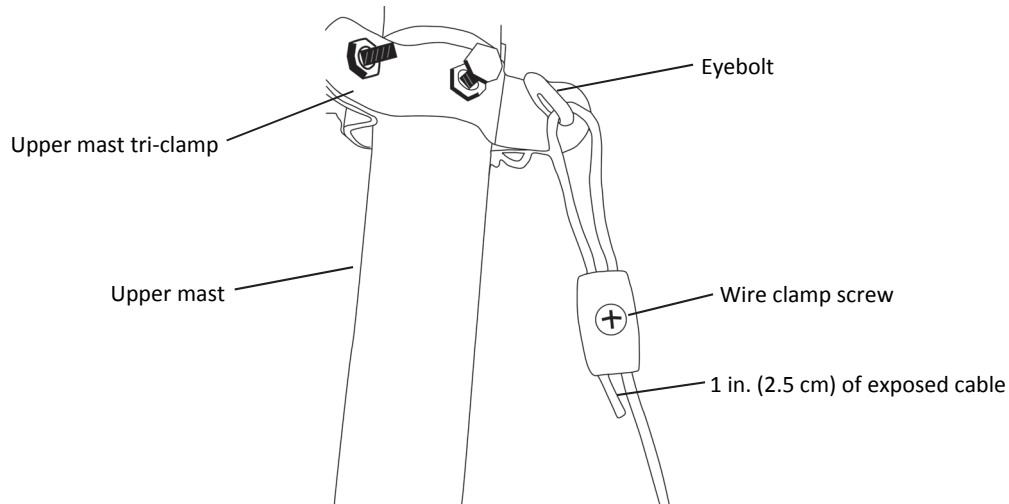
- When the upper and lower masts are aligned, install the 1-5/8 inch U-bolt assembly onto the upper mast, placing it just above the dimple (about 2.5 cm or 1 inch from the upper mast bottom). Tighten the clamp.



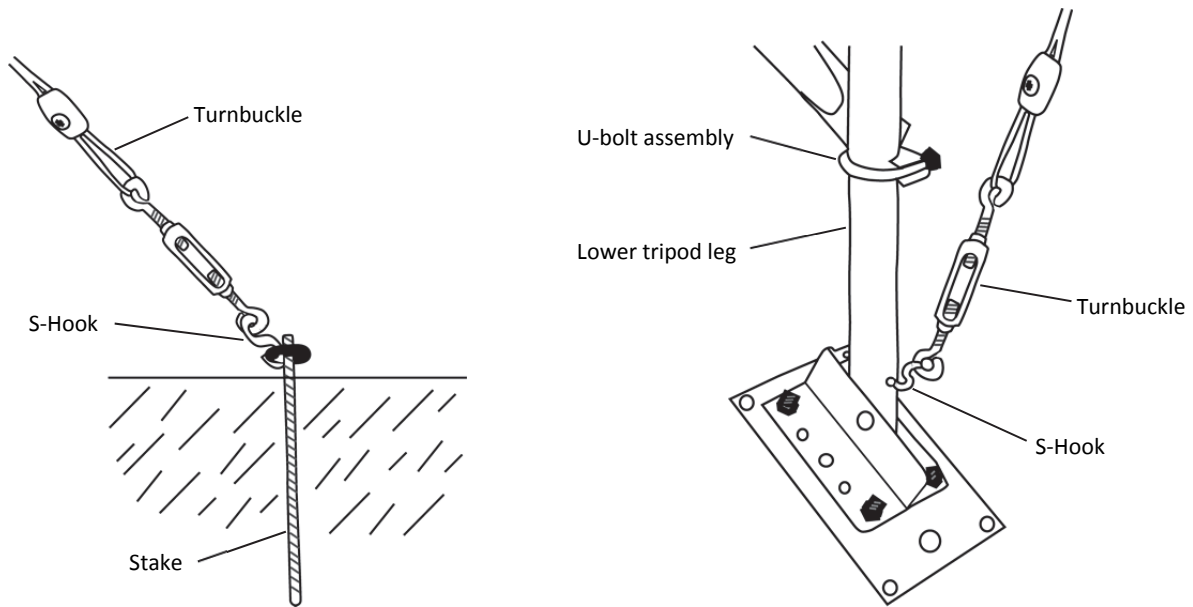
### Install the Guy Wire Kit

For the 2-meter tripod, attach the guy wires to three 1/2 inch stakes (M-SKA), which should be spaced evenly around the tripod at a distance of 3 to 4 m (10 to 13 ft) from the mast. For the 3-meter tripod, you can attach the guy wires to stakes or the tripod leg.


- Attach the upper mast tri-clamp to the upper mast. Orient the eyebolts on the upper clamp so they align with each tripod foot or a 1/2 inch stake.
- Attach one end of the guy cable to one eyebolt on the upper mast tri-clamp. Open the wire clamp by loosening the screw on it. Place the clamp over the wire and tighten. Leave 2.5 cm (1 inch) of wire protruding from the clamp.



- Hook one "S" hook and one turnbuckle onto the corresponding stake (as shown on left) or leg (as shown on right).



- Cut the guy cable so that it can be put through the loose end of the turnbuckle and the wire clamp. Make sure the turnbuckle is extended as shown in the figures before feeding the cable through.
- Install the hooks, turnbuckles, and cables onto the other two stakes or tripod legs.
- Tighten the three guy wires evenly by turning the turnbuckles.
- Attach a Mast Level (M-MLA) on the upper mast to maintain the mast at vertical.
- The guy wires should be taut when the installation is complete.

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