

# ARES Tripod Modifications

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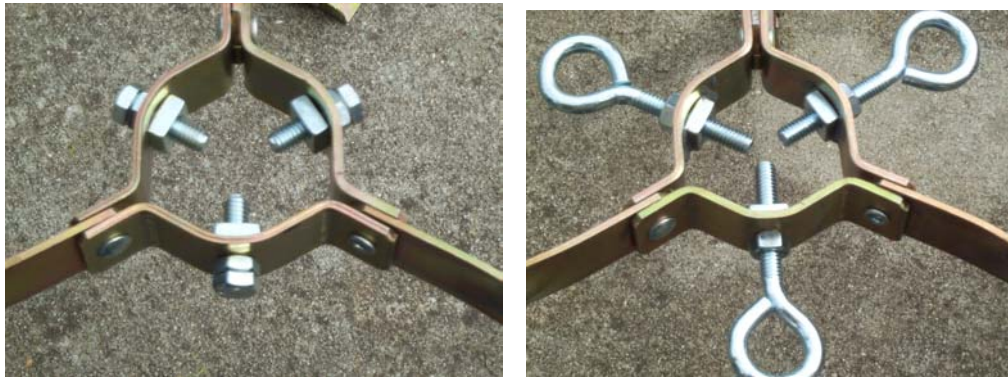


This article documents the modifications made to the antenna tripod purchased from NM Novelties of Santa Fe, New Mexico. The tripod was originally offered on eBay, but can be purchased directly from Phillip Montoya of NM Novelties ([nmnovelties@msn.com](mailto:nmnovelties@msn.com)).

The tripod is available in both three foot (3') and five foot (5') tall models. I chose the five foot model to allow for a taller mast to be used. Speaking of masts, this tripod will accommodate a mast with a maximum outside diameter of up to 1 5/8". The tripod folds for easy transport.

After receiving my tripod, I saw several modifications that would make it more functional and versatile when used for emergency or portable deployments. The tripod, as originally received, is shown at left.

The first modification was to replace the 5/16" hex bolts on the two rings that hold the mast in place. I chose an eye bolt to allow the bolt to be tightened by hand and eliminate the need for tools in the field. A closeup view of the original hex bolts is shown below at left and the new eye bolts on the right. The eye bolts added another benefit allowing a tie down or guy wire to be attached for additional stability.



I noticed that the bolts and nuts were always shaking loose and falling off in the back of my truck so I came up with a way to secure the inside square nut to the ring. I first thought of having a welding shop tack-weld each nut in place, but decided to use a metal epoxy such as JB Weld to place a small bead on each side of each nut to bond the nut to the ring. I don't think the nut will be coming loose since the epoxy creates a solid bond and the pressure of tightening the eye bolt will press the nut against the retaining ring. Allow the epoxy to cure overnight to obtain full bonding strength.



A closeup view of the nut is shown at left. You can see a little of the JB Weld epoxy on the left and right side of the square nut where it is in contact with the surface of the ring.

I left a hex nut on the outside of the ring so that it can be tightened against the ring for storage and transit. A 5/16" lock washer can be added between the hex nut on the outside and the ring for additional locking.

The other modification was to the foot attached to each leg of the tripod. The unit is originally supplied with a standard hex bolt and nut as shown in the picture at right. You want the foot to remain slightly loose to be able to rotate for varying ground conditions. However, anything other than a tight fit will rattle loose resulting in a lost nut or bolt. My solution was to replace the 1/4" hex nut supplied with a nut with a nylon insert. This allows you to snug the foot to the leg, but allow it to rotate for adjustments without the nut falling off.



To complete the tripod for portable use, I needed a mast that was lightweight and easy to transport. My solution was to use two six foot long sections of electrical CPVC conduit (available from Lowe's or Home Depot) that would fit inside the other. I like the six foot length because that would easily fit in the back of my truck with the tripod. I chose 1 1/4" I.D. CPVC (the gray pipe) for the outer section because it's the largest outside diameter (O.D.) that would fit inside the tripod. Conveniently, the 1" I.D. CPVC will fit perfectly inside the 1 1/4" pipe to form the telescoping sections.

CPVC comes in 10' long sections so each pipe was cut to a 6' length. On the 1 1/4" pipe, I cut four slits about 1 1/2" long in one end of the pipe as shown in the picture above. This allows the pipe to compress slightly against the 1" pipe inside with a compression clamp. I chose a 1 5/8" diameter muffler clamp (available from most auto parts stores). I replaced the hex nuts on the clamp with wing nuts to allow for tightening in the field with no tools. The telescoping pipes and clamp are shown in the photo on the right.



The finished tripod is shown here fully deployed. The two 6' mast sections extend to about 11 feet to allow about one foot inside the outer pipe. When set up, raise the bottom of the large pipe to the lower retaining ring of the tripod and tighten the eyebolts. This gives about three more feet of elevation for a total of about 14 feet above ground level to the base of the antenna.

The tripod can be secured a number of ways. I purchased some of the tent spikes to drive through the holes in the foot mount for securing in the ground. Another option is to attach the tripod to a square section of plywood or to short sections of 2x4s and sandbag each leg.



For storage or travel, loosen the eyebolts to allow the mast to lower to ground level, collapse the telescoping top mast section and tighten the eyebolts and muffler clamp for one-piece storage of the mast and tripod together. The completed assembly fits easily in the back of my truck for storage and transport.

A variety of light or medium weight antennas can be used with this setup. The tripod, mast, antenna and coax are now a part of my "Go Kit" for ARES use.