

SAFETY NOTICE

WARNING! POWER LINES CAN KILL.

DO NOT ERECT THIS ANTENNA NEAR ANY OVERHEAD WIRES, UNDER ANY CIRCUMSTANCES. READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY:

- 1) Do not erect this antenna near any overhead wires. Assume all such wires to be power lines and deadly.
- 2) Do not transport this antenna from an assembly location to the installation site, if you must travel near or under overhead wires.
- 3) Request advice from your local power company, if power wires are anywhere near the proposed installation.
- 4) If the antenna falls, do not try to stop it. Get out of the way.
- 5) **If any part of the antenna should touch overhead wiring, DO NOT TOUCH IT! Call the power company immediately for help.**
- 6) **In the event of an accident involving power wiring: DO NOT TOUCH THE VICTIM DIRECTLY.** Send someone for help.
- 7) Select a site which limits public access to the antenna. During operation the lower tuner rods can be at High RF potential. If any possibility exists that people or pets could touch the antenna, place a small wooden fence around the antenna after installation.
- 8) Choose a calm, dry day to erect the antenna.
- 9) Always enlist the aid of at least one person in erecting the antenna.
- 10) Do not use or stand on a ladder in the process of erecting your GAP Antenna. A ladder is not needed and could be dangerous.
- 11) Do not connect the antenna coax until the antenna is firmly mounted.

Before beginning assembly, take a few minutes to read through the site selection chapter and to review the SAFETY notices. Please refer to Figure 1, the Mono GAP Antenna, as you proceed with the assembly and locate the parts from Figure 2.

The Mono GAP Antenna has been designed to operate efficiently on the band specified. For example a 20m Mono GAP is designed to run on the 20m band. The Mono GAP Antenna will run 1500 PEP on this band.

The use of an antenna tuner is not required. Tuners will not improve the performance of the Mono GAP Antenna, however they may permit a solid state transmitter to put out increased power. Operation of an antenna tuner when the VSWR without the tuner is 2:1 or less is permitted. High power operation outside the specified band using a tuner can damage the antenna and should not occur.

CHAPTER 1: SITE CONSIDERATIONS

SAFETY, nearby structures, buildings, guying

CHAPTER 2: ANTENNA MOUNTING

Pole, tower, or chimney

CHAPTER 3: MAST ASSEMBLY

Space required, Mast Assembly, Step by Step

CHAPTER 4: TUNER ROD AND STANDOFF ASSEMBLY

Top, Mid, Lower and Extensions

CHAPTER 5: INITIAL TEST

First operation...a place to record VSWR data

CHAPTER 6: TIPS AND TROUBLE SHOOTING

READ THE SAFETY NOTICE ON PAGE 1 BEFORE CONTINUING

CHAPTER 1: SITE CONSIDERATIONS

General

Ideally, it is best to locate the Mono GAP Antenna in a clear area, away from wires, metal buildings, fences and trees. As a practical matter, many amateurs must compromise in locating their antennas. This section contains specific guidelines to assist in making those compromises.

Site Safety

- A) If you have not read the safety notice, do so now. Stay away from power lines, they are life threatening.
- B) Choose a site that it is not easily accessible to people or pets.

CONTACT WITH THE ANTENNA IS DANGEROUS AND CAN BE FATAL.

The counterpoise and the rest of the Mono GAP Antenna may be at high RF potential during operation. If it is not possible to site the Mono GAP Antenna to prevent access, then it should be placed high enough such that people cannot reach it or surround it with a non conductive fence.

Nearby Wires and Antennas

- A) In general, any vertical antenna can exhibit mutual coupling with any other vertical metal structure or wire if placed within a few wavelengths or the structure approaches resonance at the operating frequency.
- B) Try to avoid metal objects which may be within 30' of the proposed GAP installation site. These may include wires, towers, downspouts, screened porches, feedlines from other amateur antennas or TV antennas, metal pipes on your property or adjoining properties. Naturally, if these metal objects are short you can get closer than 30'.
- C) Nearby horizontal wires or structures may affect the performance of a vertical antenna, but they are not as likely to, as a vertical structure is.

Buildings

- A) It is best to locate the antenna as far from the home as possible, to minimize interaction with house wiring, and RFI to you as well as consumer electronics.
- B) Metal walled or roofed buildings can affect antenna operation. If you have no choice, your GAP should be located at a corner of the building, rather than broadside. In any case, the Mono GAP Antenna should be tested first away from the building.
- C) Stucco buildings may have metal mesh in their walls and should be viewed as a metal structure, until proven otherwise.
- D) Mobile homes or RV's are a special case, which involve individual experimentation. Test the antenna on the ground before attempting installation near or on the RV. Mounting above the roofline is preferred.

CHAPTER 2: ANTENNA MOUNTING

General

The Mono GAP Antenna will accommodate a variety of mounting situations, some of which are described below. The preferred mount is a ground mount. It is simple and avoids the hazards of a roof top installation. Electing to roof mount the antenna is solely your decision and extreme caution should be exercised.

If you elect to elevate the antenna, always pre-test the antenna on the ground first. Locating a loose connection when the antenna is on top of a 40' mast is not easy!!

Guying

The MONO GAP ANTENNA is designed to withstand substantial winds unguyed. Guys are a form of insurance, however, which we recommend. Four nonconductive guy ropes should be fastened above the center insulator. Use a stainless clamp or optional guy clamp available from GAP. Leave some slack to allow for temperature changes. Guys should be used for roof mounting. Do not rely on a chimney mount or tripod to support the Mono GAP Antenna, even moderate winds can produce enough force to damage the mount or the chimney.

TOWER and POLE MOUNTING

The MONO GAP ANTENNA may be mounted to a tower or pole. Do not clamp directly to the tower. Use the PVC insulator to insulate the Mono GAP Antenna from the tower itself or the support. Do not use the PVC insulator by itself to support the Mono GAP Antenna. The Mono GAP Antenna must be placed at the top of the tower with only the base section parallel to it. You may experience reduced bandwidth if you tower mount the Mono GAP Antenna. This is generally a result of the tower, support mast or feedline hanging down exhibiting a resonance for that frequency.

TRIPOD/CHIMNEY MOUNT

The Mono GAP Antenna may be mounted in a tripod or to a chimney mount. Use the PVC insulator to insulate the Mono GAP Antenna from the tripod or chimney mount.

CAUTION Under no circumstances should a tripod or chimney mount exist without guy ropes. Guy the antenna! It is solely your decision to mount the antenna in this fashion.

CHAPTER 3: MAST ASSEMBLY

General

Assembly of the Mono GAP Antenna requires no special tools. Plastic stand-offs that support the tuner rods are attached to the mast at their approximate proper positions to simplify assembly. Do not move these at this time. Before starting assembly, check the parts in the shipping container against the pictorial parts list in figure 2 to establish all parts are present. Next review the assembled Mono GAP Antenna in Figure 1. As you assemble your Mono GAP Antenna, refer to this drawing.

NOTE: That in the assembly instructions, when a single hole is identified on a tuner rod it is thru drilled. Thru drilled holes provide you with a backup should you accidentally strip a hole by over tightening. We found that telling you to insert a screw and washer gets repetitive; therefore whenever a screw is called for include a washer as well. When attaching jumpers and transitions, the washer should be placed between the screw head and ring terminal. When we refer to the "GAP" we are also referencing the center insulator with the yellow band. These terms are used interchangeably.

Space Required

To get started with the assembly, you will need a flat space approximately 30' in length. A driveway or patio surface is ideal. The key to an easy assembly is room to move, a surface which allows you to find the screws you drop and careful attention to the directions. Extra screws have been provided because we know how lawns like to eat screws!

Mast Assembly

Standoffs are positioned on the various mast sections at their approximate final positions. Do not loosen the clamps.

A) Locate the Center Insulator. Stretch out the coax that protrudes from the one end

B) Locate the Main section. Slide the end of the Main section with the four small holes into the Center Insulator. The Main section should go into the end of the Center insulator that does not have the coax protruding from it.

CAUTION: DO NOT PUSH THE MAIN-SECTION TUBE BEYOND THE SCREW HOLES, AS YOU CAN DAMAGE THE INTERNAL YELLOW GAP LEADS

Line up the four big holes in the center insulator with the four small holes on the Main section. Insert four screws and tighten.

C) Locate the Top section. Place the end with the four small holes into the Main section. Slide until the small holes on the Top section align with the large holes on the Main section. Insert four screws and tighten.

D) Locate the black dust cover and place it over the end of the Top section.

E) Locate the Mid section. Slide it over the coax that is protruding from the center insulator, starting with the end that has a standoff closest to it.

CAUTION: DO NOT PUSH THE MID-SECTION TUBE BEYOND THE SCREW HOLES, AS YOU CAN DAMAGE THE INTERNAL YELLOW GAP LEADS

F) Align the small holes in the Mid Section with the large holes in the center insulator. Take a screw and put it in the ring terminal on the yellow wire that comes out from the center insulator and is closest to the Mid section just inserted. Place this screw in the hole just below the yellow tape and tighten. Insert the remaining three screws and tighten.

G) Locate the Lower section. Slide the Lower section, starting with the end that DOES NOT have a notch, over the coax and then over the Mid section until the four large holes in the Lower section align with the four small holes in the Mid section. Insert four screws and tighten.

H) Base Section

1) Using a cable stripper or sharp knife, remove 1.5" of the outer plastic covering, from the end of the coaxial cable that extends from the notched end of the Lower section exposing the coax braid..

- 2) At the point where the exposed braid now meets the plastic outer jacket, bend the coax to form a 90 degree angle.
- 3) Find the double-walled Base Section. You will notice it steps down in size on one end. Grasp the coax with the 90 degree bend. Position the coax so the 90 degree bend points upward. Position the Base section so the large hole is facing upward. Slide the Base section over this bent end of coax, starting with the end of the Base section that is NOT stepped.
- 4) Insert the bent coax into the Base Section and slide it toward the large hole in the Base section. When the bend reaches the large hole it will pop through.
- 5) Gently pull the coax through the hole as you slide the Base Section into the Lower Section. Continue to pull carefully on the cable. Stop when the cable is taught, and the four large holes in the Lower section align with the four small holes in the Base section. At this point the notch in the Lower section should also align with the large hole in the Base section. When everything is aligned, insert 4 screws and tighten.

CHAPTER 4: TUNER ROD AND STANDOFF ASSEMBLY

GENERAL

There are two tuner rods one is long the other is short. The long one will be held in place with the two long standoffs located on your Mid section and the shorter tuner rod will be held in place with the two short standoffs located on your Lower section. The standoffs have been positioned at the factory for your convenience. When orienting these standoffs you should not have to move them along the mast, but will have to lever the long ones out so they are no longer parallel with the tube they are attached to but are now perpendicular. If you should slightly shift their relative position along the mast don't despair. Slight movement is not critical.

- A) Locate the two short standoffs on the Lower section. Locate the short tuner rod.
- B) Locate the drill hole at the one end of this short tuner rod. Slide this rod into the standoffs so the end with the hole is closest to the center insulator or facing away from the base section.
- C) Locate the two long standoffs on the Mid section. They are currently parallel with the Mid section. Loosen the clamps that hold these two standoffs so that they can be positioned perpendicular to the Mid section without changing their relative position along the Mid section. Tighten the clamps.
- D) Take the long tuner rod and remove the screw that is holding the black jumper wire to it. Slide this rod through the two standoffs that were just adjusted. Place the end of the tuner rod that held the black jumper through the standoff closest to the center insulator first and then through the next standoff. Reattach the black jumper. Take the other end of the black jumper and using another screw attach it to the end of the short tuner rod already in place. Remove the screw above the yellow tape and place it in the ring terminal from the other yellow wire protruding from your center insulator as well as the ring terminal coming from the other end of yellow wire attached to the long tuner rod. Reinsert this screw with the accompanying ring terminals. If your antenna looks like the one in figure 1 Congratulations.
- E) Locate the PL259 connector and solder it on to the end of the coax. If you are unsure how to do this the ARRL handbook offers an in depth explanation.
- F) Locate the PVC ground mount. The mount can simply be buried in the ground or for added stability cemented in place. Once the mount is secure you can lift your Mono GAP up and place it in the PVC ground mount. The Base section has been stepped to make it easier for you to line it up with the PVC and no you don't have to worry about cutting the coax. The Lower section's outer diameter is 1-3/8" the inner diameter of the PVC and the outer diameter of the Base section are 1-1/4".
- G) With the Mono GAP in the PVC mount remove one of the two lowest screws you used to attach the Base section to the Lower section. Place the ring terminal, on the supplied counterpoise, under this screw and reinsert it.

CHAPTER 5: INITIAL TEST

GENERAL

PRETEST PROCEDURE

It is always best to test the Mono GAP Antenna at ground level if you elect to mount the antenna in a

manner than otherwise previously outlined. Pretesting is not difficult and may save time and effort in the total process. This is particularly true if the antenna is to be significantly elevated.

A ham band transceiver and SWR meter are required for these tests. It is recommended that you use the minimum necessary power for the measurement. If possible, use an SWR bridge separate from that provided in your transceiver. Using a pencil, record your data in the space provided.

FIRST OPERATION

A) If the MONO GAP ANTENNA has been assembled properly it will yield VSWR under 2:1 for the specified band. Using minimal power, determine the resonate frequency or where the VSWR reading is the lowest. Record this frequency and VSWR. Now take a reading at the two edges of the band. Record this data.

Minimum VSWR _____

Hi frequency _____

Low frequency _____

If your VSWR is under 2:1 across the specified band of operation you should be ready to operate. Have fun and enjoy!

CHAPTER 6 TIPS AND TROUBLE SHOOTING

GENERAL

The MONO GAP ANTENNA has been designed to operate as specified. Operation outside the specified band may damage the antenna.

Use of an antenna tuner is not required nor recommended. Tuners will not improve the performance of the antenna, although they may permit a solid state transmitter to put out more power.

Operation of the antenna using a tuner on any frequency where the VSWR exceeds 2:1 may damage the antenna. Use when VSWR is less than 2:1 is acceptable.

MALFUNCTION

A) If all your standing waves are high, double check the PL259 connector at the base of the antenna and make sure it is open from center pin to shield.

Other potential causes for high VSWR

B) Bad coaxial feedline. If the coax has been in use for some time, it may be contaminated. Place a 50 ohm dummy load at the far end of your feedline, in place of the antenna. Any indication of varying VSWR or a standing wave greater than 1:1 suggests defective coax.

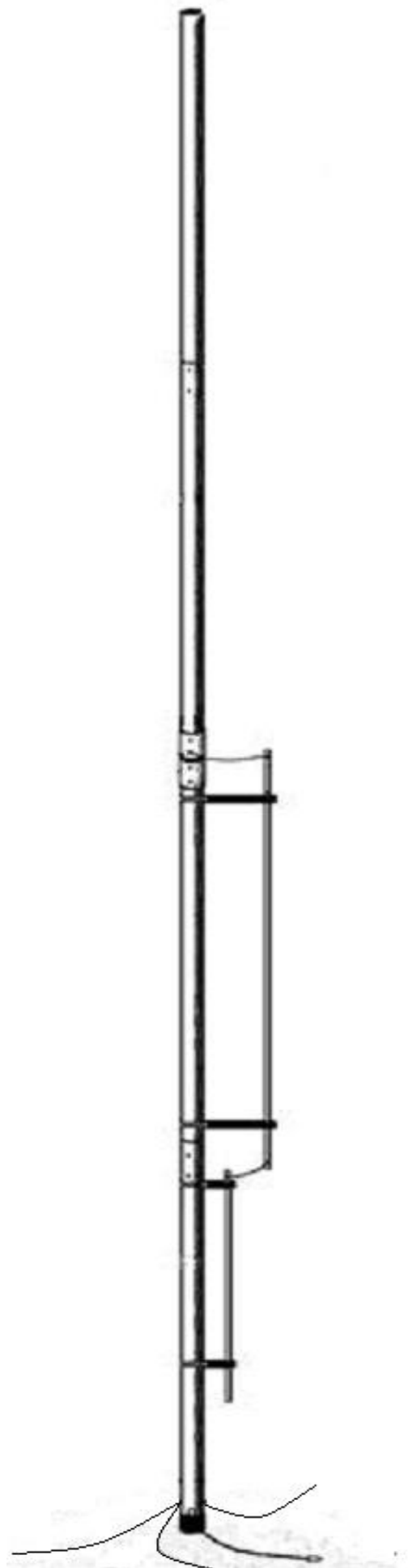
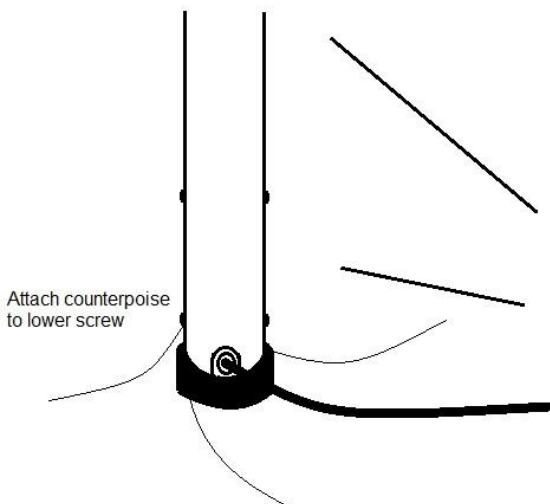
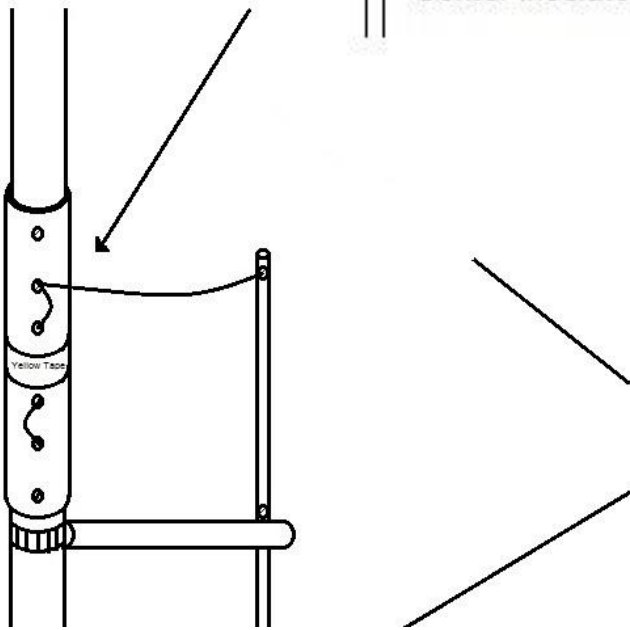
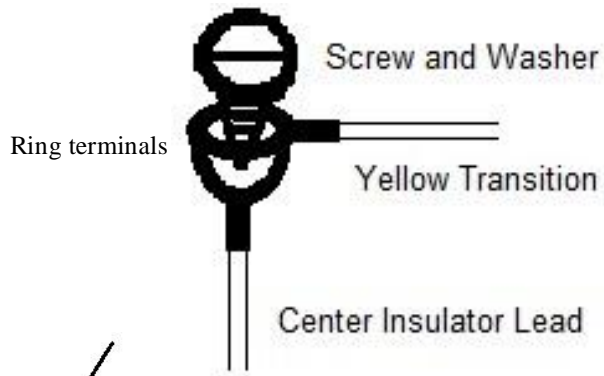
C) Mutual coupling with nearby vertical metal objects may detune the MONO GAP ANTENNA. Check to see if any of the items suggested in the site selection section apply.

D) Transceivers with built in SWR bridges may not correctly indicate when their power reduction circuits take over. Retest with a separate VSWR meter.

E) The transceiver or transmitter may be emitting a spurious signal in addition to the desired signal. Retest using the lowest possible power level. If possible try another rig.

If you are unable to solve the problem, contact the factory for assistance. Please have your readings handy when you call. We do not charge for assistance and our phone number is (772) 571-9922.

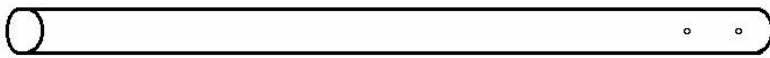
CLOSEUPS FIGURE 1



MONO GAP PARTS LIST

FIGURE 2

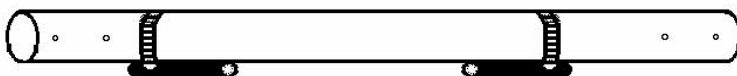
TOP SECTION



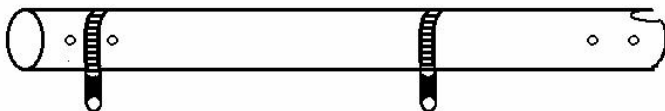
MAIN SECTION



MID SECTION



LOWER SECTION



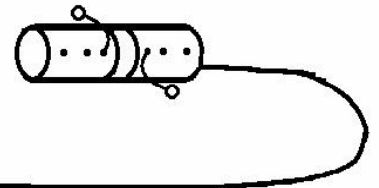
DUST COVER



BASE SECTION



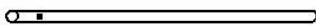
CENTER INSULATOR



MID TUNER ROD



LOWER TUNER ROD



SCREWS WASHERS



PL259 CONNECTOR



PVC GROUND MOUNT



COUNTERPOISE



ASSEMBLED MONO GAP

FIGURE 1

