ASSEMBLY INSTRUCTIONS

6 ELEMENT - 11 METER MONOBANDER

FLATSIDER 6

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## MACO FLATSIDER 6
### PACKING LIST

<table>
<thead>
<tr>
<th>PART</th>
<th>QTY</th>
<th>OD</th>
<th>SIZE</th>
<th>LGTH</th>
<th>DESCRIPTION</th>
<th>CHECKLIST</th>
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<tr>
<td>T52P</td>
<td>2</td>
<td>2&quot;</td>
<td>.050&quot;</td>
<td>80&quot;</td>
<td>aluminum tubing slotted one end</td>
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<tr>
<td>T31P</td>
<td>2</td>
<td>2&quot;</td>
<td>.050&quot;</td>
<td>80&quot;</td>
<td>aluminum tubing slotted one end &amp; swaged one end</td>
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<td>.050&quot;</td>
<td>72&quot;</td>
<td>aluminum tubing slotted both ends</td>
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<td>24&quot;</td>
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<td>¼&quot;x6&quot;</td>
<td>8&quot;</td>
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<td>2&quot; boom to 2&quot; mast plate</td>
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<td>5 KW</td>
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<td>gamma match</td>
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<td>coax connector w/plastic washers</td>
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<td>Z08P</td>
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<td></td>
<td></td>
<td>gamma straps for coax connectors</td>
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</table>

**BAG #1**

| U01    | 20  | 2"   |      | plated u-bolts                                      | _____     |
| N03    | 40  | 5/16"|      | lock nuts                                           | _____     |

**BAG #2**

| S01    | 20  | 2"   |      | plated saddles                                      | _____     |

**BAG #3**

| EG2    | 4   |      |      | egg insulators                                      | _____     |
| N18    | 2   | 5/16"|      | eye bolts w/2 NO1 each                              | _____     |
| PL1    | 2   | 3/8" |      | plastic caps – black                               | _____     |
| PL2    | 10  | .437"|      | plastic caps – black                               | _____     |
| PL5    | 1   | 2"   |      | plastic cap - black                                | _____     |
| PL5R   | 1   | 2"   |      | plastic cap – red                                  | _____     |
| Z02P   | 2   |      |      | 4” gamma straps                                    | _____     |
| N11    | 19  | 10-24|      | square nuts                                         | _____     |
| S21    | 19  | 10-24| ½"   | machine screws                                      | _____     |
| W58P   | 14  | 5/8" |      | extruded aluminum clamps                           | _____     |
| N26    | 4   |      |      | No. 10 flat washers                                 | _____     |
| 3      |     |      |      | fiberglass rod kit (4 screws)                       | _____     |
| 1      |     |      |      | tip sheet                                           | _____     |
| 1      |     |      |      | warranty sheet                                      | _____     |
| 1      |     |      |      | instruction sheet                                   | _____     |

**BAG #4**

| BE2P   | 7   | 2”   |      | boom to 5/8” element mounts                         | _____     |

### WHEN ORDERING PARTS, ALWAYS GIVE PART NUMBER AND DESCRIPTION.

Please note: In an effort to keep the price on Maco Antennas down, we have decided not to clean up all the burrs and rough edges on the parts. We recommend that you deburr and clean up each part with files, sandpaper, etc. so that they go together easily. We are aware this needs to be done but have elected not to do it to save you the money we would have to add to the price of the kit for this service.

Rev: 05/09
NOTES:

▲ FOR DETAILS OF BOOM & GUY ASSEMBLY AND MAST MOUNTING, SEE FIG. 2.
▲ FOR DETAILS OF ELEMENT ASSEMBLY AND MOUNTING, SEE FIG. 3.

GENERAL ASSEMBLY  FIGURE 1
FIGURE 1  GENERAL INSTRUCTIONS
This drawing depicts an overall view of what the antenna should look like upon completion of assembly. Refer to Figures 2 thru 4 for specific assembly details. All hardware should be coated with a silicon rubber sealant or similar compound to insure that wind vibration does not cause it to work loose.

Upon completion of assembly, install the red plastic cap (PLSR) on the director end of the antenna, and the black cap (PL5) on the reflector end. This will allow you to determine at a glance the direction of transmit and receive.

FIGURE 2  BOOM & GUY ASSEMBLY
To assemble the boom, first mark the center of the boom coupler (T53) and slide the unslotted ends of the center boom sections (T52P) over the each end of the coupler so that they butt in the center. Next attach the boom-to-mast plate (P01P) and the vertical guy support (V03P) at the boom center using 2” U-bolts, saddles and hardware as shown. (Refer to Detail 2A.)

Now, slide the swaged ends of the intermediate boom sections (T31P) into the slotted ends of the center boom sections. Secure with 2” U-bolts, saddle and hardware as shown. (Refer to Detail 2B.) Next, slide the swaged ends of the boom sections and secure in the same manner. (Refer to Detail 2B.)

The first step in assembling the guy cable is to cut four lengths of 2 feet each off the roll of cable. Take two 2 foot lengths and attach one end of each to an egg insulator (EG1) and the other end to an eyebolt (N18) so that the distance between the eyebolt and the insulator is 1 foot. Attach both eyebolts to the vertical guy support with 5/16” hexnuts as shown in detail 2C. Run the outside hex nuts only a couple of turns onto the ends of the eyebolts and leave the inside nuts loose so that you can take the slack out of the cable later.

Now take two 2 foot lengths and attach an egg insulator to one end of each in the same manner. (At this point, it is necessary to go on to element assembly and mounting, before completing the guy cable assembly. Take both 2 foot cable lengths with the egg insulators attached and fasten one to the boom and the driven element and the other at the 3rd director. Wrap as shown in Detail 2D so that the distance between the boom and insulator is 1 ft.

Now take the remaining cable and allowing approximately 9” at each end for wrapping, stretch it between the insulators one end of the boom and cut it off. Leaving as little slack as possible, wrap each end of the cable around the insulators as shown in details 2C and 2D.

Do the same thing for the cable on the other end of the boom. Take the rest of the slack out of the cables by tightening the outside hex nuts on the eyebolts. Lock them in place by tightening the inside hex nuts. This antenna is designed for mounting on a 2” O.D. heavy duty mast. Mount using 2” U-bolts, saddles and hardware as shown in Detail 2E.

FIGURE 3  ELEMENT ASSEMBLY
Prior to assembling elements slide a boom-to-element mount (BE2P) onto each of the (6) element center sections (T11P). Assemble each element as shown using the clamps and hardware specified. Refer to the element table to determine dimensions for each element. Install a black plastic cap (PL2) onto both ends of each element. Assemble the reflector elements in the same manner, sliding the fiberglass arms approximately 6 inches into the ends of the center sections (T11P). Snug the clamps but don’t tighten at this time because the arms will have to be adjusted after installing the reflector wire.
FIGURE 3B  ELEMENT MOUNTING

Mark each element at the center and be sure that the boom-to-element mounts (BE2P) are centered on the elements before tightening hardware. Starting 1” from the director end of the boom, mount each element using 2” U-bolts, saddles, boom-to-element mounts and hardware as shown. Refer to Figures 1 & 3B for element spacing dimensions. (At this point go back and complete the guy cable assembly.)

FIGURE 3C  REFLECTOR ASSEMBLY

The length of the reflector wire is very critical. It must be the correct length to operate correctly. Take the wire (WO4P) and uncoil it making sure that there are no kinks; secure it to a nail. Pull the wire until it stretches an inch or so. The easy way to get the correct length for the reflector loop is as follows:

1. Drive 2 nails in a board or fence 1/2 the length of the loop apart --which is 225-1/2" between them.
2. Stretch the wire around the nails by hand as tightly as possible and splice ends together. Solder the splice. Remove one nail and remove the loop. Cut any excess wire off.
3. Loosely assemble the machine screws (S2), flatwashers (N26), low washers (N12), and hex nuts (N06) onto the lugs of the fiberglass arms, adjusting the length as shown.
4. Tighten 3 of the 4 clamps that hold the fiberglass rods.
5. Install the wire as shown.
6. Tighten the wire by pulling the fourth fiberglass rod until the wire is the same tightness as it was around the nails. The wire loop is now the correct length. Note the total length of the loop is critical, and also is the length of each side. REMEMBER: Reflectors dimensions are only preliminary. Change to get equal sides of 9’ 4-3/4". Fiberglass length is not critical, however the equal wire length of 9’ 4-3/4" is very critical.
7. Take the remaining reflector wire and thread it through the drill holes in the four spreaders pulling stung and splicing each piece. This completes the reflector assembly.

FIGURE 4  GAMMA MATCH MOUNTING

Mount the gamma match (GO1P) to the horizontal driven element, using the gamma strap (Z02P, Z08P) and attaching hardware as shown. Attach your 52 ohm coaxial cable to the connector (S42) and dress along boom and down the mast.

ADJUSTING STANDING WAVE RATIO

Refer to Figure 4. The dimensions given are approximate and should be used as a starting point. The following instructions cover the adjustment of one gamma match. To adjust the second gamma match, simply repeat this procedure.

The gamma match has 2 adjustments. First is the capacitor adjust and the second is the slider adjust. Connect a S.W.R bridge to the coax between your transmitter and the antenna and check the S.W.R. If adjustment is required loosen the clamp on the gamma match and the screws holding the slider (Gamma Straps Z02P). Next move the capacitor adjustment first in one direction then the other until a minimum S.W.R. reading is obtained. If S.W.R. is not yet satisfactory, move the slider out 2” away from the boom. If the reading has gone up, move the slider back to the original position and then 2” toward the boom. Now readjust the capacitor for minimum S.W.R. you should now be able to determine which direction to move the slider. Repeat the above procedure moving the slider in smaller increments until a satisfactory S.W.R. reading is obtained. Tighten all hardware. Disconnect the S.W.R. bridge and reconnect your coaxial cable.

the screws. Bring the ends together and lineup the marks that are 2” from each end. Now twist the loose ends together and solder as shown. Adjust each fiberglass arm so that the reflector wire becomes taut and each leg of the square is 9’ 4-3/4" and tighten the clamps. A slight natural bowing of the fiberglass is normal. This will not affect normal operation of the antenna as long as the lengths of wire are correct.

FLATSIDER 6
**NOTE:**
HORIZONTAL ELEMENTS ONLY ARE SHOWN FOR REFERENCE.
SEE FIGURE 3B FOR ELEMENT MOUNTING DETAILS.
Please read the Assembly and Troubleshooting Tips at the end of this instruction booklet before assembling elements.
*NOTE: THESE DIMENSIONS ARE APPROXIMATE. REFER TO THE INSTRUCTIONS ON ADJUSTING THE S.W.R. TO DETERMINE EXACT SETTINGS. THERE ARE 2 SEPARATE GAMMA ADJUSTMENTS, 1. CAPACITOR ADJUSTMENT, 2. SLIDER POSITION. DO NOT MOVE BOTH AT THE SAME TIME. MOVE THE CAPACITOR FIRST, THEN, IF NECESSARY MOVE THE SLIDER, AND GO BACK TO THE CAPACITOR.

**Figure 4**

**Gamma Match Mounting**

**Horizontal Sliders Adjust:** 23"  
**Vertical Sliders Adjust:** 17"

**Horizontal Driven Element**

**Z08P - Gamma Straps**  
(Install flush against boom-to-element mount)

**S21, N11, N12**  
#10 - 24 x 1/2" Screw  
LK. Wshr. & SQ. Nut

**CUSTOMER FURNISHED COAXIAL CABLE**

**3/8" STARWSHR.**

**3/8" Plastic Shoulder Washer**

**G01 P Horizontal/Vertical Gamma Match**

**Horizontal Capacitor Adjustment:** 1"  
**Vertical Capacitor Adjustment:** 1 1/2"
Caution:
**TAKE CARE TO AVOID ANY CONTACT WITH OVERHEAD POWERLINES WHEN Raising, installing, or REPAIRing YOUR ANTENNA, TOWER, OR ROTOR. DEATH WILL OCCur!**

Installing and rigging towers, masts and antennas require specialized skills and experience. Information supplied by MaCo assumes that all products will be installed by personnel having these skills and have installed similar products before. No one should attempt to install towers or masts without these knowledgeable skills.

MaCo assumes no liability if faulty or dangerous installation practices are used. There are available, trained and experienced personnel to assist in installation, maintenance, or disassembly. Contact your local installer if consultation or assistance is required.

All tower and antenna installations should be throughly inspected at least twice a year by qualified, experienced, and trained personnel to insure proper performance and safety standards.

**Electrical Warning**

An additional warning precaution is given to be careful of surrounding high voltage power wires and other electrical hazards during installation of your tower, rotor, or antenna.

Do not erect a tower, rotor, or antenna during an electrical storm, rainstorm, or when lightning is a possibility.

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