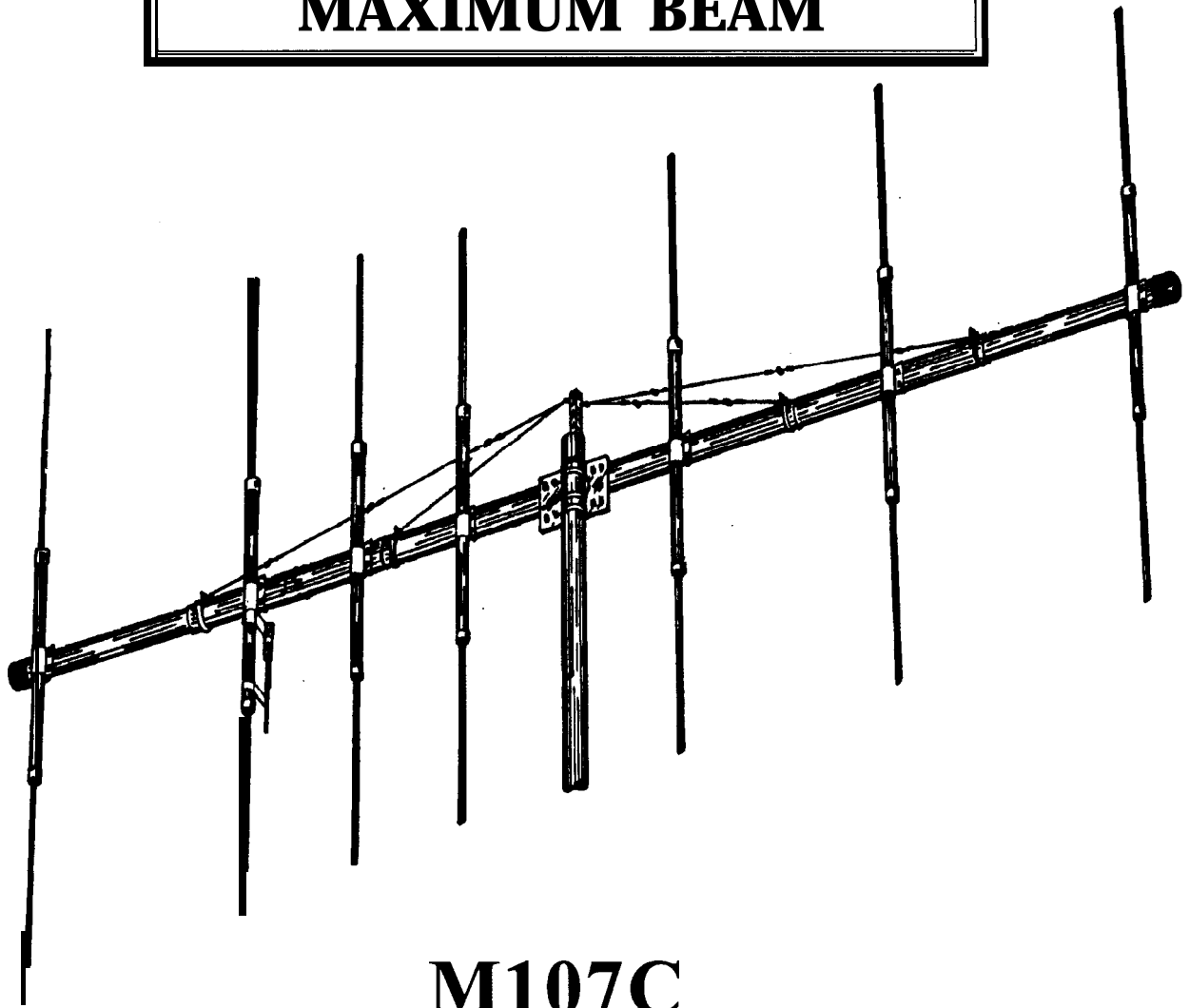


ASSEMBLY INSTRUCTIONS



7 ELEMENT - 11 METER MAXIMUM BEAM



M107C

*Maco Manufacturing Co. - Division of Majestic Communications, Inc.
4091 Viscount - Memphis, Tennessee 38118 (901) 794-9494*

MACO M107C

PARTS LIST

| <u>QTY</u> | <u>O.D.</u> | <u>SIZE</u> | <u>LENGTH</u> | <u>DESCRIPTION</u> | <u>CHECKLIST</u> |
|------------|-------------|-------------|---------------|---------------------------------------------|------------------|
| G01P | 1 | 2" | | GAMMA MATCH | _____ |
| T52P | 2 | 2" | .057" | 80" ALUM. TUBING SLOTTED ONE END | _____ |
| T63P | 2 | | .047" | 80" ALUM. TUBING SLOTTED ONE END | _____ |
| | | | | TO1.835", SWAGED OTHER END TO 1.615" | |
| | | | | & SLOT | |
| T53P | 1 | 1.845" | .060" | 80" ALUM. TUBING | _____ |
| T28 | 2 | 1 1/2" | .047" | 72" ALUM. TUBING | _____ |
| T11P | 7 | 5/8 | .047" | 72" ALUM. TUBING SLOTTED BOTH ENDS | _____ |
| T04L | 2 | 1/2" | .041" | 80.5" ALUM. TUBING | _____ |
| TO1 | 12 | 1/2" | .041" | 72" ALUM. TUBING | _____ |
| V03P | 1 | | 1"x1" | 24" GUY SUPPORT | _____ |
| P01P | 1 | | 1/2"x5" | 8" PLATE | _____ |
| WD5P | 1 | | 6/18" | 60" STEEL GUY CABLE | _____ |
| | | | | <u>HARDWARE BAG #1</u> | |
| U01 | 16 | | 2" | PLATED U-BOLTS | _____ |
| uo2 | 4 | | 1 1/2" | PLATED U-BOLTS | _____ |
| | | | | <u>HARDWARE BAG #2</u> | |
| SO1 | 16 | | 2" | PLATED SADDLES | _____ |
| so2 | 4 | | 1 1/2" | PLATED SADDLES | _____ |
| | | | | <u>HARDWARE BAG #3</u> | |
| BE2P | 5 | | 2" | BOOM TO ELEMENT MOUNTS | _____ |
| BE1P | 2 | | 1 1/2" | BOOM TO ELEMENT MOUNTS | _____ |
| BG2P | 2 | | 2" | GUYMOUNTS | _____ |
| BG3P | 2 | | 1 1/2" | GUYMOUNTS | _____ |
| | | | | <u>HARDWARE BAG #4</u> | |
| NO1 | 52 | | 5/16" | HEX NUTS | _____ |
| NO2 | 42 | | 5/16" | LOCKWASHERS | _____ |
| W58P | 16 | | 5/8" | EXTRUDED ALUM. CLAMPS | _____ |
| s21 | 21 | | | MACHINE SCREWS | _____ |
| N11 | 22 | | 10-24 | 1/2" SQUARE NUTS | _____ |
| N12 | 4 | | 10-24 | LOCKWASHERS | _____ |
| N18P | 6 | | #10 | EYEBOLTS - WELDED | _____ |
| Z02P | 2 | | 5/16" | 4" GAMMA STRAPS | _____ |
| Z08P | 2 | | | GAMMA STRAPS F/COAX. CONNECTOR | _____ |
| PL2 | 14 | | .437" | PLASTIC CAPS - BLACK | _____ |
| PL4 | 1 | | 1 1/2" | PLASTIC CAPS - BLACK | _____ |
| PL4R | 1 | | 1 1/2" | PLASTIC CAPS - RED | _____ |
| S42 | 1 | | | FEMALE COAX CON. W/MOUNT NUT | _____ |
| EG1 | 10 | | | EGGINSULATORS | _____ |

WHEN ORDERING REPLACEMENT 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 cleanup 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.

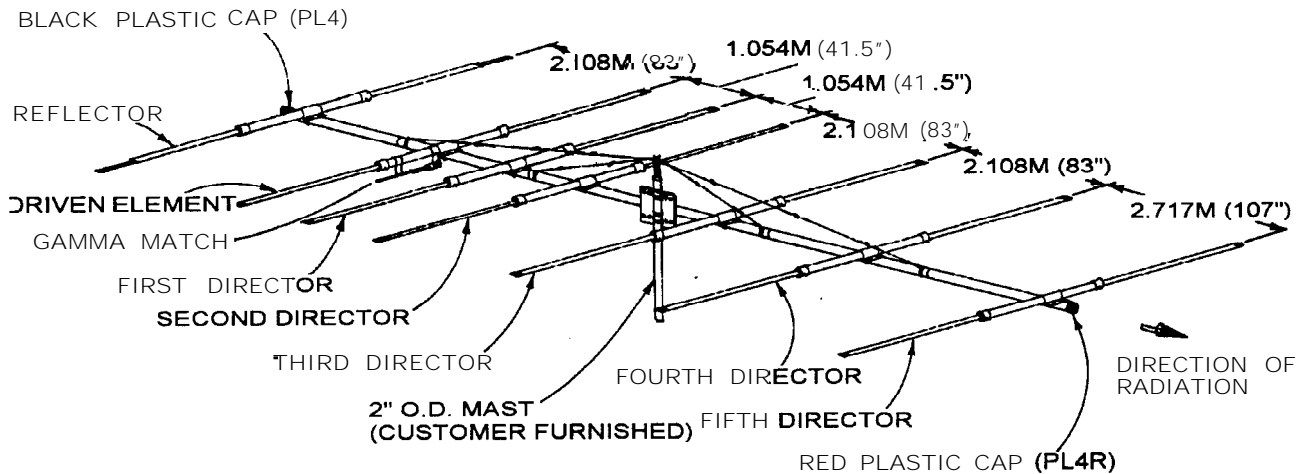
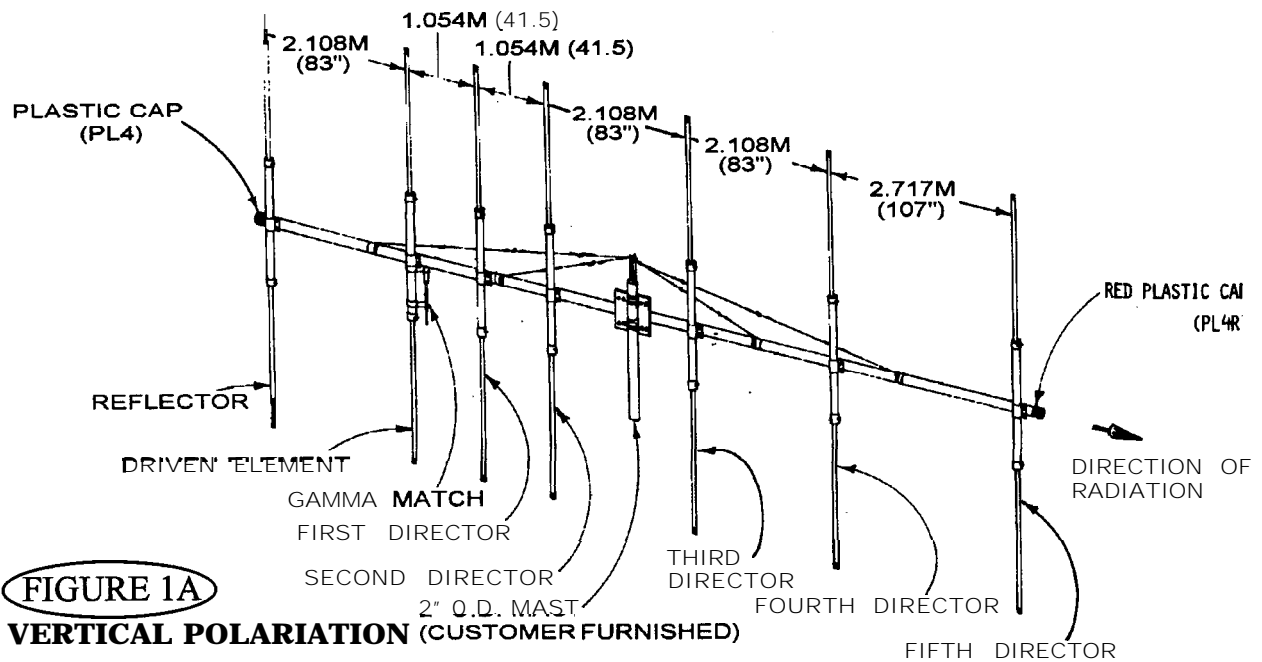


FIGURE 1 GENERAL INSTRUCTIONS

This drawing shows a view of the antenna assembled. The M107C may be used vertically or horizontally. These instructions and FIGURES 2 through 4 show the correct assembly instructions. It is highly recommended that rope be put in the elements to prolong their life. All hardware should be tightened securely, and then coated with silicon rubber sealant or similar compound to prevent loosening from wind vibration.

Take care to locate all parts accurately per dimensions given. Complete each step as instructed before going on to following steps.

Upon completion of assembly, install the red plastic cap (PL4R) on the director end of the antenna, and the black plastic cap (PL4) on the reflector end. This will allow you to determine at a glance the direction of transmit and receive.

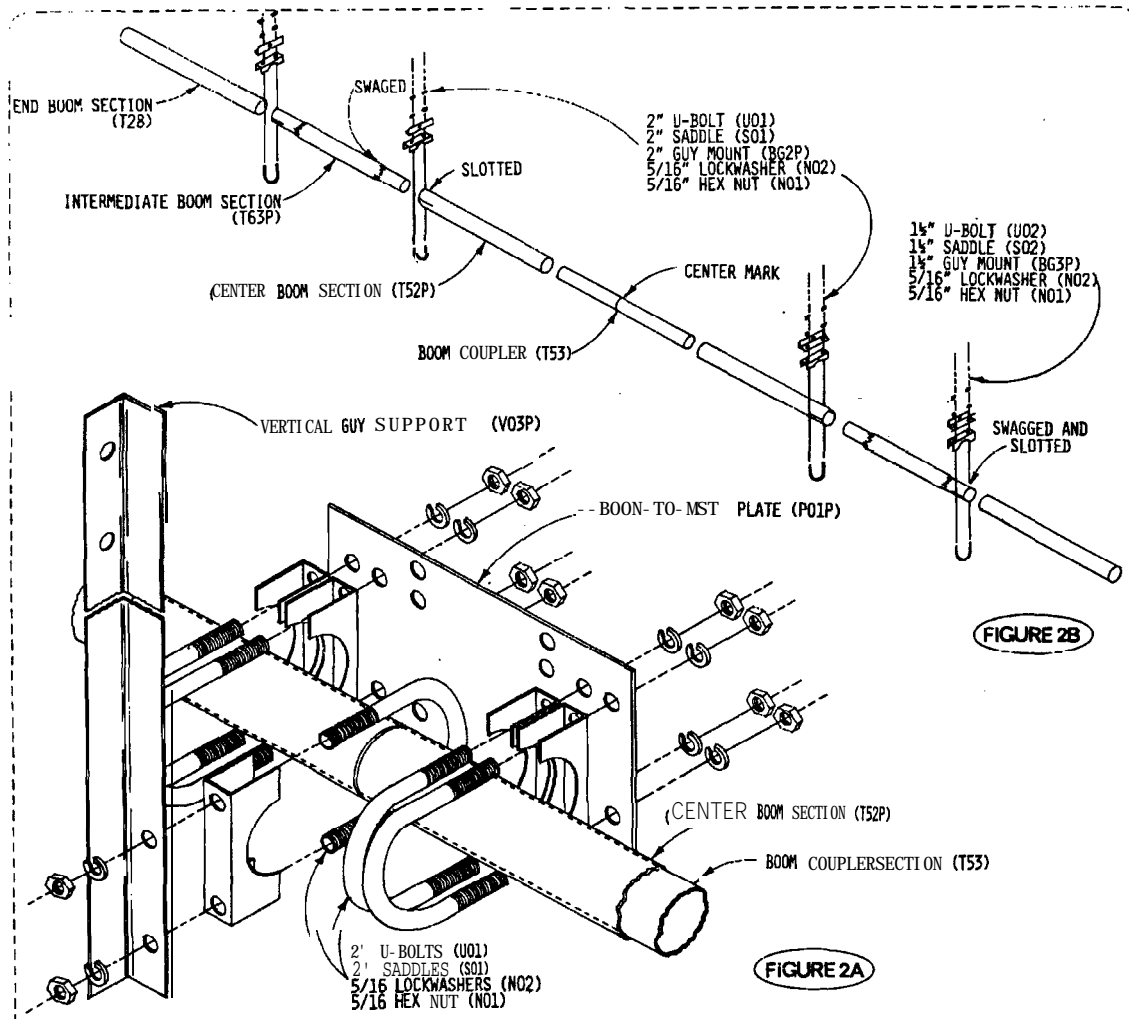


FIGURE 2 BOOM ASSEMBLY

First mark the center of the boom coupler (T53), then slide the unslotted ends of the center boom sections (T52P) over each end of the coupler so they butt at the center mark.

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 in Figure 2A. Be sure to slip the 2" U-bolt for attaching the guy support over the boom before securing the mast plate (P01P).

Slide the **swaged** ends of the intermediate boom sections (T63P) 6" into the slotted ends of the center boom sections. Secure with 2" U-bolts, saddles and hardware as shown in Figure 2B.

Slide the **swaged** ends of the end booms sections (T28) 5" into the slotted ends of the intermediate boom section and secure in the same manner as above. The overall length of the boom should be approximately 443". If not, adjust the end sections equally until the overall length is at least 443".

Please read the **Assembly and Troubleshooting Tips** at the end of this instruction booklet before assembling elements.

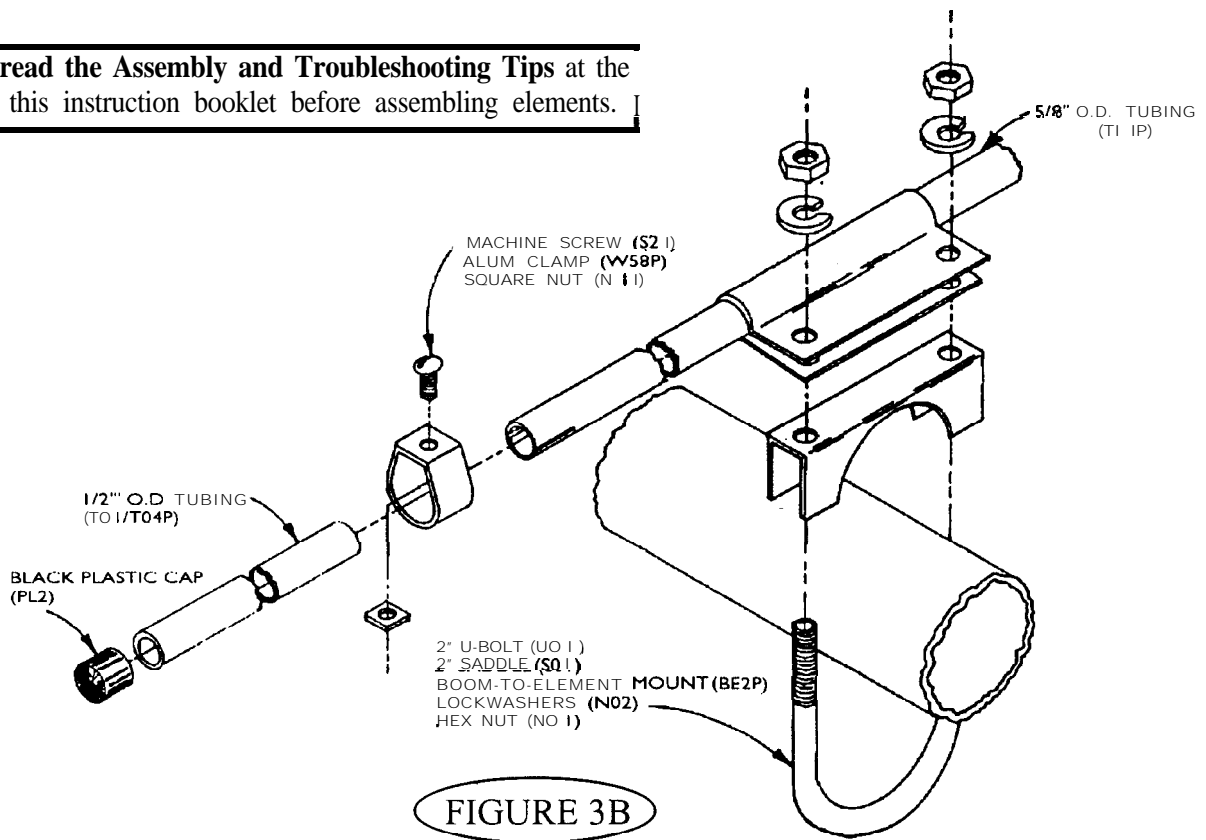


FIGURE 3B

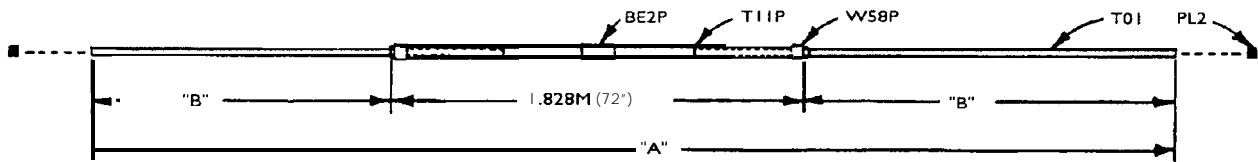


FIGURE 3A

FIGURE 3 ELEMENT ASSEMBLY AND MOUNTING

Select a frequency in the center of where you work from the chart on pages 6 or 7 and follow across for element dimensions "A" & "B". To assemble the elements, slide a piece of 1/2" O.D. tubing (T01) into each slotted end of the 5/8" O.D. center section (T11P). Allow equal lengths on each end to arrive at the specified overall length (Dimension "A") as shown in Figure 3B. Be Accurate! Verify the overall length.

Slide a boom-to-mast mount (BE1P, BE2P) to the center of each element before securing the joints with clamps and hardware as shown in Figure 3A.

Install elements on boom per dimensions in Figure 1, with U-bolts, saddles, and hardware as shown in Figure 3B. Be accurate as possible, and be sure the elements are exactly centered on boom before tightening clamps.

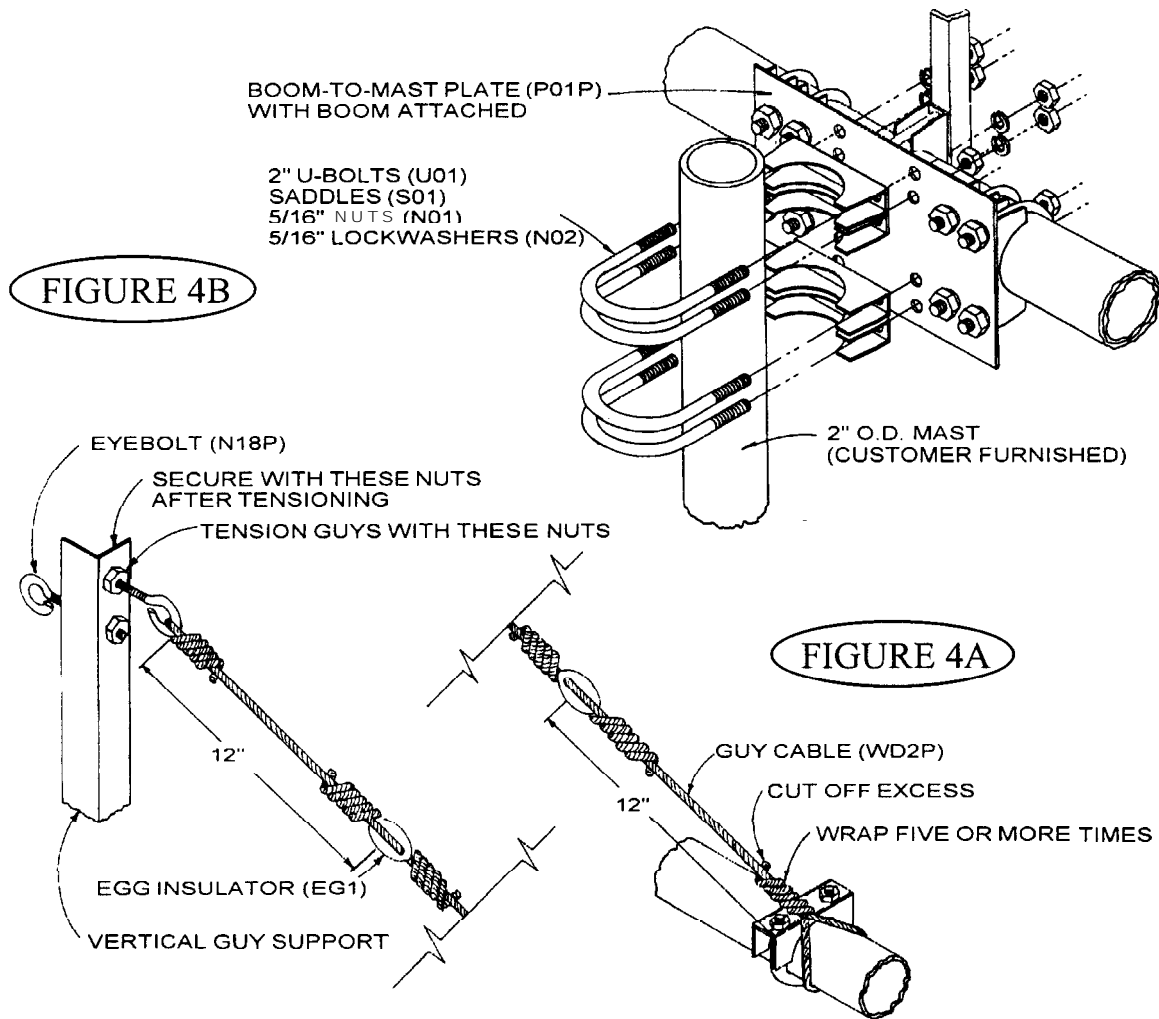


FIGURE 4 GUY ASSEMBLY

Cut eight pieces of guy cable .609M (24"), two pieces 2.286M (83"), and two pieces 2.286M (90"). Assemble 5/16" hex nut (NO 1) onto each of the eyebolts (N18P). Turn the nut all the way to the eye; as far as it will go with light pressure only. These will be used to secure the eyebolts after guy tensioning.

Install eyebolts into the top holes of the vertical guy support (V03P)- one eye each direction. Install one eyebolt in the top hole of each of the four guy mounts (BG2P, BG3P) with the eyes towards the center of the boom. Thread a hex nut about six turns onto each eyebolt.

Thread four .609M (24") guy cables-2-each into the upper eyebolts, wrap five or more times and cut off the excess. Thread remaining four cables 609M (24") guy cables into each of the lower eyebolts, wrap it five or more times and cut off the excess. Install an egg insulator (EG1) on each .609M (24") guy cable leaving only .304M (12") between eyebolt and egg insulator. Wrap and cut off excess.

Using the remaining 2.108M (83") guy cable, thread one end through the top egg insulator of the inner cable. Wrap and cut off excess. Thread the remaining end through the insulator on the cable nearest the center of the boom. Pull tight enough to remove slack only. Wrap. DO NOT cut off excess. Ref. Figure 5.

Using the 2.286M (90") cable, thread one end into each insulator of the remaining .609M (90") cables, wrap and cut off excess. Install an egg insulator onto the lower 2.286M (90") cable, wrap and cut off excess. Using the upper 2.286M (90") cables, thread it through the insulator of the lower 2.286M (90") cable. Pull tight enough to remove slack only, , wrap and cut off excess.

Return to inner cable, unwrap the uncut cable and retighten to remove any slack only wrap and cut off excess. Tension guys by tightening the nuts on the ends of the eyebolts. Secure with the nuts on the opposite end near the eye.

Line the elements up with the use of a level or any other workable method. Double check the spacing dimensions and make sure the elements are centered in the boom-to-element clamps. Tighten all hardware taking care to line the elements up with the use of a level. Check your measurements and make sure the elements are centered on the boom.

CB FREQUENCIES (11 METER BAND)

| CHANNEL | FREQUENCY | REFLECTOR | | DRIVEN | | 1st DIRECTOR | | 2nd DIRECTOR | | 3rd DIRECTOR | | 4th DIRECTOR | | 5th DIRECTOR | |
|---------|---------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|-------------------|
| | | "A" | "B" | "A" | "B" | "A" | "B" | "A" | "B" | "A" | "B" | "A" | "B" | "A" | "B" |
| 1-3 | 26.965/26.985 | 5.664M (223") | 1.712M (75.5") | 5.359M (211") | 1.765M (69.5") | 5.156M (203") | 1.663M (65.5") | 5.130M (202") | 1.651M (65") | 5.054M (199") | 1.612M (63.5") | 5.029M (198") | 1.600M (63") | 5.029M (198") | 1.600M (63") |
| 4-7 | 27.005/27.035 | 5.638M (222") | 1.699M (75") | 5.359M (211") | 1.765M (69.5") | 5.156M (203") | 1.663M (65.5") | 5.105M (201") | 1.638M (64.5") | 5.054M (199") | 1.612M (63.5") | 5.029M (198") | 1.600M (63") | 5.029M (198") | 1.600M (63") |
| 8-11 | 27.055/27.085 | 5.638M (222") | 1.699M (75") | 5.334M (210") | 1.752M (69") | 5.130M (202") | 1.638M (65") | 5.105M (201") | 1.638M (64.5") | 5.029M (198") | 1.600M (63") | 5.003M (197") | 1.587M (62.5") | 5.003M (197") | 1.587M (62.5") |
| 12-15 | 27.105/27.135 | 5.613M (221") | 1.686M (74.5") | 5.334M (210") | 1.752M (69") | 5.130M (202") | 1.638M (65") | 5.105M (201") | 1.638M (64.5") | 5.029M (198") | 1.600M (63") | 5.003M (197") | 1.587M (62.5") | 5.003M (197") | 1.587M (62.5") |
| 16-19 | 27.155/27.185 | 5.613M (221") | 1.686M (74.5") | 5.334M (210") | 1.752M (69") | 5.130M (202") | 1.638M (65") | 5.080M (200") | 1.625M (64") | 5.029M (198") | 1.600M (63") | 5.003M (197") | 1.587M (62.5") | 5.003M (197") | 1.587M (62.5") |
| 20-25 | 27.205/27.245 | 5.613M (221") | 1.686M (74.5") | 5.308M (209") | 1.739M (68.5") | 5.105M (201") | 1.625M (64.5") | 5.080M (200") | 1.625M (64") | 5.003M (197") | 1.578M (62.5") | 4.978M (196") | 1.574M (62") | 4.978M (196") | 1.574M (62") |
| 26-29 | 27.265/27.295 | 5.588M (220") | 1.674M (74") | 5.308M (209") | 1.739M (68.5") | 5.105M (201") | 1.625M (64.5") | 5.054M (199") | 1.612M (63.5") | 5.003M (197") | 1.578M (62.5") | 4.978M (196") | 1.574M (62") | 4.978M (196") | 1.574M (62") |
| 30-34 | 27.305/27.345 | 5.588M (220") | 1.674M (74") | 5.283M (208") | 1.727M (68") | 5.080M (200") | 1.625M (64") | 5.054M (199") | 1.612M (63.5") | 4.978M (196") | 1.574M (62") | 4.978M (196") | 1.574M (62") | 4.978M (196") | 1.574M (62") |
| 35-39 | 27.355/27.395 | 5.562M (219") | 1.661M (73.5") | 5.283M (208") | 1.727M (68") | 5.080M (200") | 1.625M (64") | 5.054M (199") | 1.612M (63.5") | 4.978M (196") | 1.574M (62") | 4.953M (195") | 1.562M (61.5") | 4.953M (195") | 1.562M (61.5") |
| 40 | 27.405 | 5.562M (219") | 1.661M (73.5") | 5.283M (208") | 1.727M (68") | 5.080M (200") | 1.625M (64") | 5.029M (198") | 1.600M (63") | 4.978M (196") | 1.574M (62") | 4.953M (195") | 1.562M (61.5") | 4.953M (195") | 1.562M (61.5") |

AMATEUR FREQUENCIES (10 METER BAND)

| FREQUENCY | PHONE 28.60 MHz | | CW 28.100 MHz | | OSCAR 29.500 MHz | | FM 29.600 MHz | |
|---------------|--------------------|-------------------|------------------|-----------------|---------------------|-------------------|------------------|-----------------|
| | "A" | "B" | "A" | "B" | "A" | "B" | "A" | "B" |
| REFLECTOR | 5.232M (206") | 1.496M (67") | 5.334M (210") | 1.547M (69") | 5.080M (200") | 1.420M (64") | 5.080M (200") | 1.420M (64") |
| DRIVEN | 4.978M (196") | 1.574M (62") | 5.080M (200") | 1.625M (64") | 4.826M (190") | 1.498M (59") | 4.826M (190") | 1.498M (59") |
| 1 st DIRECTOR | 4.800M (189") | 1.485M (58.5") | 4.876M (192") | 1.524M (60") | 4.648M (183") | 1.409M (55.5") | 4.622M (182") | 1.397M (55") |
| 2nd DIRECTOR | 4.699M (185") | 1.435M (56.5") | 4.775M (188") | 1.473M (58") | 4.546M (179") | 1.358M (53.5") | 4.521M (178") | 1.346M (53") |
| 3rd DIRECTOR | 4.699M (185") | 1.435M (56.5") | 4.775M (188") | 1.473M (58") | 4.546M (179") | 1.358M (53.5") | 4.521M (178") | 1.346M (53") |
| 4th DIRECTOR | 4.699M (185") | 1.435M (56.5") | 4.775M (188") | 1.473M (58") | 4.546M (179") | 1.358M (53.5") | 4.521M (178") | 1.346M (53") |
| 5th DIRECTOR | 4.699M (185") | 1.435M (56.5") | 4.775M (188") | 1.473M (58") | 4.546M (179") | 1.358M (53.5") | 4.521M (178") | 1.346M (53") |

INNER CABLE DIMENSIONS

OUTER CABLE DIMENSIONS

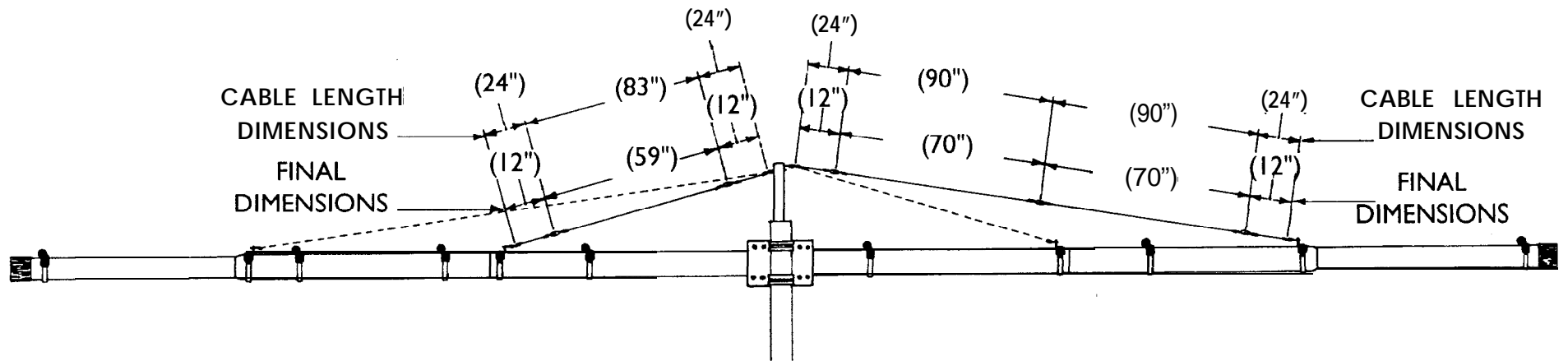


FIGURE 5

M107C

***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.

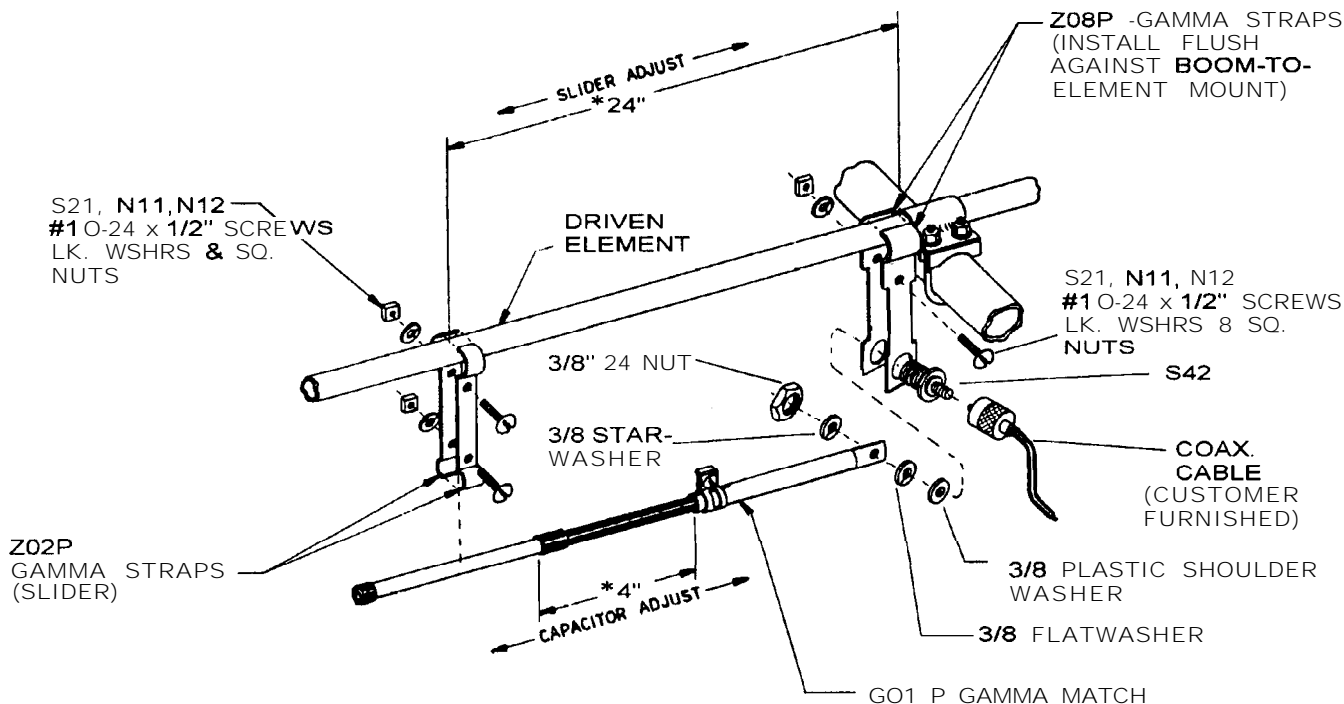


FIGURE 4 GAMMA MATCH MOUNTING

Mount the gamma match (GO1P) to the driven element, using the gamma straps (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. The gamma is shown pointing down - this is to let water out.

ADJUSTING THE STANDING WAVE RATIO (SWR)

Refer to Figure 4. The dimensions given are approximate and should be used as a starting point. * The gamma match has 2 adjustments. First is the capacitor adjust and second is the slider adjust. Connect a SWR bridge coax between your transmitter and the antenna and check the SWR. 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 one direction, then the other until a minimum SWR reading is obtained. If SWR 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" towards the boom. Now readjust the capacitor for minimum SWR. 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 SWR is obtained. Tighten all hardware. Disconnect the SWR bridge and reconnect your coaxial cable.

NOTE!

When assembling for vertical use, set antenna on a pole about 8 to 9 feet above the ground horizontally and adjust SWR to 1.7. When you turn the antenna vertical and mount it on the tower, etc., the SWR will drop to 1.4 to 1.5. This is good; QUIT! Antenna results best if vertical antenna clears the top of the tower.