

CP6A 6 Band Trap Vertical 75-6m

Instruction Sheet

The CP6A is a multi-band trap-vertical antenna for HF bands, covering the 75*, 40, 20, 15, 10m & 6m amateur bands. Made from heavy duty aluminum, the CP6A is easily assembled, yielding excellent performance and reliability from a compact base station antenna.

Specifications

| | L |
|---------------------|---|
| FREQUENCY: | $75^* - 40 - 20 - 15 - 10 - 6m$ |
| POWER: | 200 Watts P.E.P. |
| IMPEDANCE: | 50 Ohms |
| VSWR: | 1.8:1 (Nominal). See table A for tuning. |
| ELEMENT PHASING: | 1/4 Wave trap vertical groundplane. |
| GROUNDING: | Direct Grounding. Antenna element & radials connected to mounting pipe. |
| MAX WIND RATING: | 80 MPH (no ice) |
| MAX DIA ACCEPTANCE: | 1.2 - 2.4 inches |
| OVERALL LENGTH: | 15.10 feet (4.9kg) |
| WEIGHT: | 9.9 lbs. (130 g) |
| CONNECTOR: | SO-239 female UHF |
| WARRANTY: | 90 Days limited waranty against defects in material and workmanship. |
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Antenna Location & Mounting

The CP6A is a compact vertical antenna using loading-coil radials. The compact size offers many options on mounting location. When choosing a mounting location, keep the following factors in mind:

(1) Resonant frequency of HF antennas can change based on location. Antenna should be mounted away from trees, buildings and other antennas.

(2) If mounting near house or balcony, best performance will be achieved if mounted at least 15 feet away from structure.

(3) To avoid unsafe conditions, do not install near electrical or power lines.



Antenna Assembly Instructions

(1) Before assembly, verify all parts are included for proper assembly. The following tools will be required for assembly: tape measure, phillips screwdriver, and two crescent wrenches or metric open-end wrenches.

(2) *Radial Assembly*. Assemble each radial trap coil (part #: 15210-15215) to a radial element (part #: 15216) using fastener ring (part #: 15217); see figure A. Adjust for proper radial length. See table A (page 3). Lightly tighten setscrew at this time, as later adjustment may be required for VSWR tuning.

(3) Assemble mast pipe #1 (part #: 15205); double element trap coil assembly (part #: 15206); single element trap coil assembly (part #: 15207); and mast pipe #2 (part #: 15208) together with self-tapping screws & washers enclosed (part #: 15211 & 15222). Align holes in each joint section and fasten.

(4) Assemble capacity hat assemblies (part #: 15223) with radials (part #: 15209). Assemble 75m capacity hat (top) with standard radials (13-3/4"). Assemble 40m capacity hat with 2 standard radials (13-3/4") and 2 longer radials (20").

Note: some applications will require adding additional longer radials to tune 40m bands to desired frequency. See #12 below for additional tuning info.

Secure radials with lock nut fasteners. Attach capacity hat assemblies in proper location.

<u>Note:</u> capacity hat holder is located 9.4" (24cm) below the top end of single element trap coil assembly. See figure B. The lower holder is located 3.1" (8cm) below the top end of double element trap coil assembly. Align capacity hat assemblies for proper appearance.

(5) Attach support pipe to mast with brackets and U-bolts. Support pipe's bolt hole must be above brackets and pointed away from mast (see figure C). Support pipe must be 4.7" (12cm) above tip of mast; this provides adequate clearance for radial assemblies.

(6) Lightly attach element holders on support pipe.
 <u>Note:</u> Damage may occur to support pipe if fastened too tight, as matching network will not fit into support pipe.

(7) Insert coax-cable through support pipe and attach to matching network (part #: 15204). Align threaded hole with matching network and fasten bolt.

(8) Place assembled vertical elements on matching network with fasten bolts.

(9) Attach radials to element holders (see figure D).

Note: Position of radials is not critical, but 80m and 40m radials should be positioned further from surrounding objects or structures.

If mounting radials in one direction, 80m and 40m must mount on opposite ends from each other. You must lower element holder 0.8" (2cm). See figure E.

(10) Thread radial until snug and reverse until water drain hole is in downward position (see figure D). Secure radial with lock nut attached to trap.

(11) After antenna assembly is complete, securely faten all screws and fastener bolts.

(12) Check VSWR (see figure F) with quality meter (Bird, Coaxial Dynamics, Diamond, etc. MFJ Analyzer is not recommended for this antenna) and adjust each radial to desires center frequency. Refer to table A for tuning adjustments.

<u>Note:</u> VSWR tuning may vary based on mounting location and obstructions. 40m tuning can be adjusted by adding additional longer capacity hat radials. The longer radials will have the effect of raising the center frequency. Once adjustment range is achieved, 40m tuning radial can be adjusted for best VSWR.

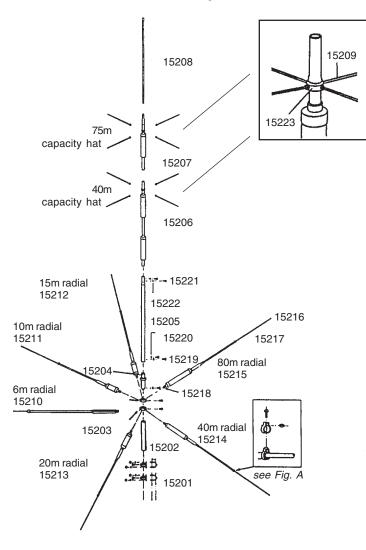
(13) After antenna VSWR adjustment, an antenna tuner may be utilized to extend useable bandwidth.

We suggest mounting immediately beneath the antenna a one-turn choke coil of approximately 6-10" diameter. This will act as an isolation choke, and release strain on connector. The coil diameter is not critical.

Note: Some cables require a larger diameter coil to prevent movement of center conductor. Tape coil to mast (see figure G).

DIAMOND

Antenna Description



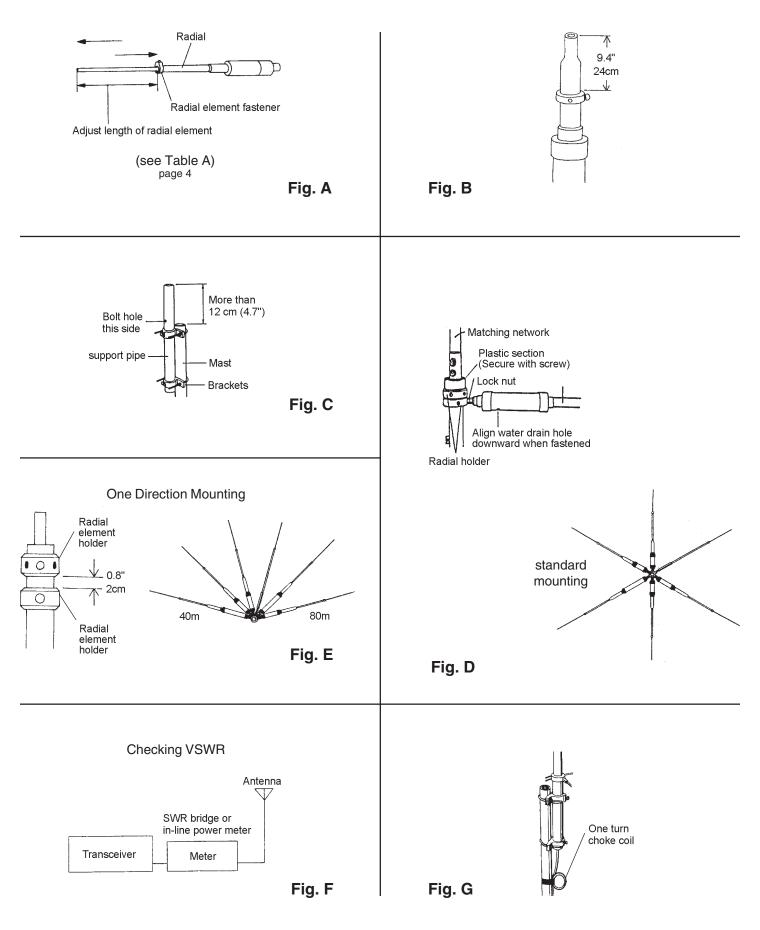
Part Description

| Part # | Description | Quantity |
|--------|------------------------------------|----------|
| 15201 | Mounting clamps w/u-bolts | 2 |
| 15202 | Support pipe | 1 |
| 15203 | Radial element holders (CP-6) | 2 |
| 15204 | Matching network | 1 |
| 15205 | Assembly pipe #1 | 1 |
| 15206 | Double element trap coil assembly | / 1 |
| 15207 | Single element trap coil assembly | 1 |
| 15208 | Assembly pipe #2 | 1 |
| 15209 | Capacity hat radials w/lock nuts | 8 |
| 15209A | 40m capacity hat radials (long) | 4 |
| 15210 | 6m radial assembly | 1 |
| 15211 | 10m radial assembly | 1 |
| 15212 | 15m radial assembly | 1 |
| 15213 | 20m radial assembly | 1 |
| 15214 | 40m radial assembly | 1 |
| 15215 | 75m radial assembly | 1 |
| 15216 | Radial elements w/lock nut (CP-6) | 6 |
| 15217 | Radial element fastener rings (CP- | 6) 6 |
| 15218 | Radial lock nut (CP-6) | 6 |
| 15219 | Heck head bolts M6X8 | 5 |
| 15220 | Lock washers M6 | 3 |
| 15221 | Self tapping screws M4X8 | 6 |
| 15222 | Internal tooth lock washers | 6 |
| 15223 | Capacity hat radial holders | 2 |

Table A Note: VSWR tuning varies based on mounting location. Adjust for minimum VSWR.

| Band | Approximate Radial Length for VSWR adjustment | Approx. Length/ Frequency Change | Approx. Bandwidth 1.8:1 SWR or better |
|---------------|--|-------------------------------------|--|
| 75m/3.9 MHz | 17.5 inches | 1.4 inches / 10 KHz | $\pm 20 \text{ KHz}$ |
| 40m/7 MHz | 31 inches | 0.4 inches / 10 KHz | $\pm 40 \text{ KHz}$ |
| 20m/14 MHz | 18 inches | 0.6 inches / 20 KHz | $\pm 100 \text{ KHz}$ |
| 15m/21 MHz | 17 inches | 1.25 inches / 50 KHz | $\pm 200 \text{ KHz}$ |
| 10m/28-29 MHz | 26 inches | 1.1 inches / 50 KHz | $\pm 500 \text{ KHz}$ |
| 6m/50 MHz | 13 inches | 2.0 inches / 1 MHz | $\pm 3 \text{ MHz}$ |

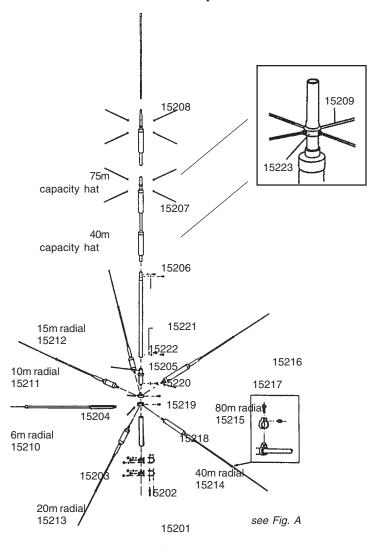






CP6

Antenna Description



Part Description

| Part # | Description | Quantity |
|--------|------------------------------------|----------------|
| 15201 | Mounting clamps w/u-bolts | 2 |
| 15202 | Support pipe | 1 |
| 15203 | Radial element holders (CP-6) | 2 |
| 15204 | Matching network | 1 |
| 15205 | Assembly pipe #1 | 1 |
| 15206 | Double element trap coil assemble | y 1 |
| 15207 | Single element trap coil assembly | [,] 1 |
| 15208 | Assembly pipe #2 | 1 |
| 15209 | Capacity hat radials w/lock nuts | 8 |
| 15209A | 40m capacity hat radials (long) | 4 |
| 15210 | 6m radial assembly | 1 |
| 15211 | 10m radial assembly | 1 |
| 15212 | 15m radial assembly | 1 |
| 15213 | 20m radial assembly | 1 |
| 15214 | 40m radial assembly | 1 |
| 15215 | 75m radial assembly | 1 |
| 15216 | Radial elements w/lock nut (CP-6) |) 6 |
| 15217 | Radial element fastener rings (CP- | -6) 6 |
| 15218 | Radial lock nut (CP-6) | 6 |
| 15219 | Heck head bolts M6X8 | 5 |
| 15220 | Lock washers M6 | 3 |
| 15221 | Self tapping screws M4X8 | 6 |
| 15222 | Internal tooth lock washers | 6 |
| 15223 | Capacity hat radial holders | 2 |

| Band | Approximate Radial Length for VSWR adjustment | Approx. Length/ Frequency Change | Approx. Bandwidth 1.8:1 SWR or better |
|---------------|--|-------------------------------------|--|
| 80m/3.5 MHz | 21.25 inches | 1.4 inches / 10 KHz | $\pm 20 \text{ KHz}$ |
| 40m/7 MHz | 18.5 inches | 0.4 inches / 10 KHz | $\pm 40 \text{ KHz}$ |
| 20m/14 MHz | 19.3 inches | 0.6 inches / 20 KHz | $\pm 100 \text{ KHz}$ |
| 15m/21 MHz | 21.2 inches | 1.25 inches / 50 KHz | $\pm 200 \text{ KHz}$ |
| 10m/28-29 MHz | 16.5 inches | 1.1 inches / 50 KHz | $\pm 500 \text{ KHz}$ |
| 6m/50 MHz | 16.5 inches | 2.0 inches / 1 MHz | $\pm 1.5 \text{ MHz}$ |

Table A