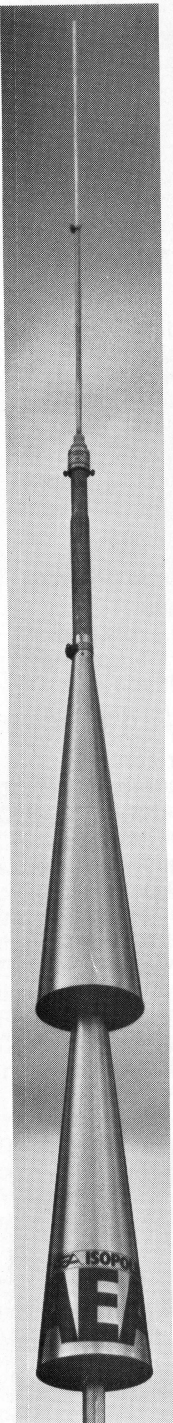


# ISOPOLE™ Antennas

## by AEA



ISO-144  
ISO-220

MASTS  
NOT SUPPLIED

The IsoPole has built a strong reputation for quality in design and superior performance. Patented IsoPole conical sleeve decouplers offer many design advantages.

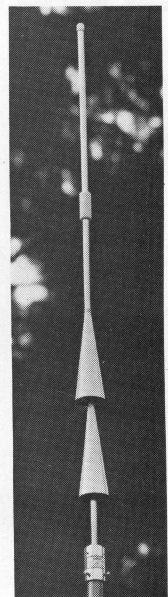
All IsoPole antennas yield the **maximum gain attainable** for their respective lengths and a zero degree angle of radiation. Exceptional decoupling results in simple tuning and a significant reduction in TVI potential. Cones offer greater efficiency over obsolete radials which radiate in the horizontal plane. The IsoPole is also more esthetically pleasing to the eye than older obsolete ground plane designs.

The IsoPoles have the broadest frequency coverage of any comparable VHF base station antenna. This means no loss of power output from one end of the band to the other when used with SWR protected solid state transceivers. **Typical SWR is 1.4 to 1, or better, across the entire band!**

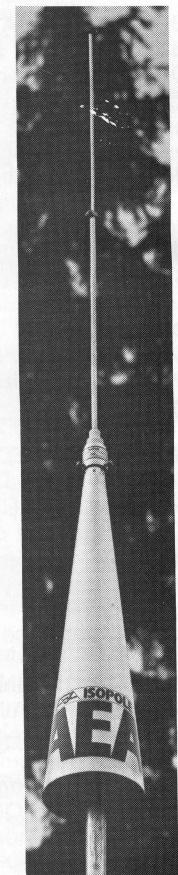
A standard Amphenol 50 ohm S0-239 connector is recessed within the base sleeve of all VHF IsoPoles and is fully weather protected. With the factory-tuned matching network located at this connector, we are able to cancel out the impedance lump effects of this so called "UHF" connector. The UHF IsoPoles use type "N" connectors. Additionally, all IsoPole antennas are D.C. grounded. With the IsoPole, you will not experience aggravating changes in SWR with changes in weather. The impedance matching network is weather sealed and designed for maximum legal power. A new insulating material offers superb strength and dielectric properties, plus excellent long-term ultra-violet resistance. All mounting hardware is stainless steel. The decoupling cones and radiating elements are made of corrosion resistant aluminum alloys. The aerodynamic cones are the only appreciable wind load and are attached directly to the support (a standard TV mast which is **not supplied**). The IsoPole has even survived 140 mph storms unscathed. You can buy a mast from your local hardware or Radio Shack store, for less than the shipping cost of a single 10' mast!

Operating on MARS or CAP? The IsoPole and IsoPole Jr. antennas will typically operate at least  $\pm 2$  MHz outside the respective ham band without retuning. However, by simple length adjustment, the IsoPoles can be tuned over a wider range outside the ham bands as shown in the SWR charts.

The IsoPole antennas are all impedance matched in the factory so that no field tuning is required. Instead of the typical 25-40 screws, the IsoPole has no more than 5 stainless steel screws to fasten, thereby significantly decreasing the time necessary for assembly and reducing the chance for errors.



ISO-440



ISO-144JR  
ISO-220JR

### ISOPOLE™ SPECIFICATIONS

MODEL	144 SR	144 JR	220 SR	220 JR	440
Frequency Coverage (MHz)	135-160	135-155	210-230	210-230	415-465
2:1 VSWR bandwidth	> 12 MHz @ 146 MHz	> 10 MHz @ 146 MHz	> 15 MHz @ 220 MHz	> 12 MHz @ 220 MHz	> 22 MHz @ 435 MHz
Impedance	50 $\Omega$	50 $\Omega$	50 $\Omega$	50 $\Omega$	50 $\Omega$
Power Rating	1 kw	1 kw	1 kw	1 kw	1 kw
Gain	3 dbd	0 dbd	3 dbd	0 dbd	3 dbd
Length of radiating elements	125.5" (3.2m)	76" (1.9m)	79.25" (2m)	51.75" (1.3m)	46" (1.2m)
Wind Area*	< 1 sq. ft.	< .75 sq. ft.	< .75 sq. ft.	< .6 sq. ft.	< .20 sq. ft.
Maximum Mast OD	1 1/4" (32mm)	1 1/4" (32mm)	1 1/4" (32mm)	1 1/4" (32mm)	1 1/4" (32mm)
Maximum Mast Length**	8 ft. (2.4m)	3 ft. (1m)	5 1/2 ft. (1.6m)	28" (.7m)	6" (150mm)
Weight (shipping)	5 lbs.	2 lbs.	4 lbs.	1 3/4 lbs.	2.5 lbs.
Coax Connector	PL 259	PL 259	PL 259	PL 259	Type N.

dbd — db gain over a dipole in free space

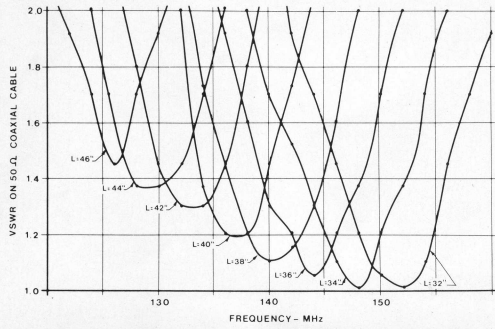
\*estimated

\*\*mast not included

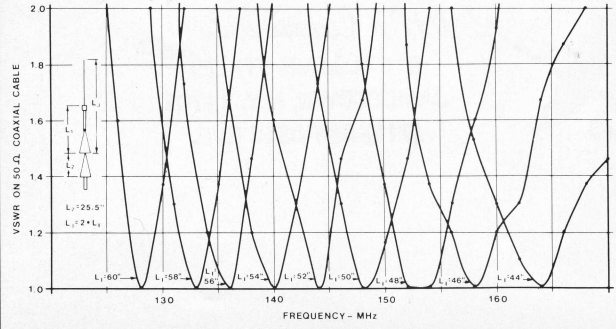
Specifications subject to change without notice or obligation.

# ISOPOLE™ VSWR and Radiation Patterns

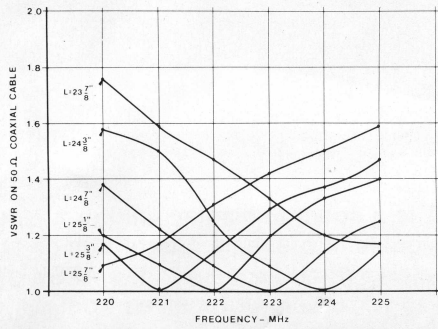
Typical ISO-144 JR VSWR Plot



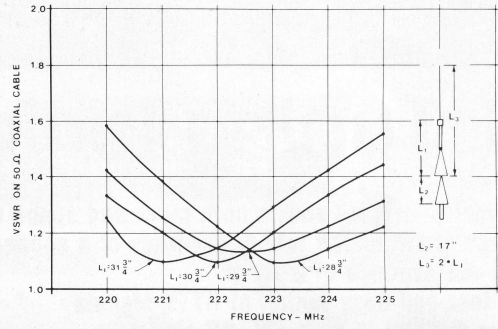
Typical ISO-144 VSWR Plot



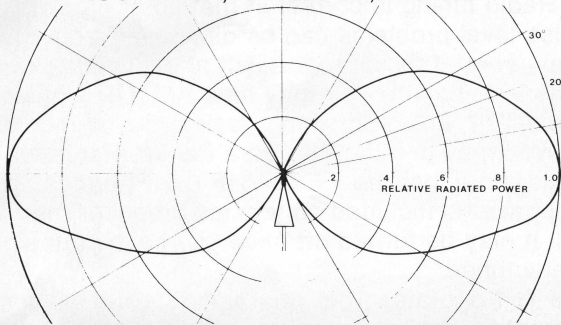
Typical ISO-220 JR VSWR Plot



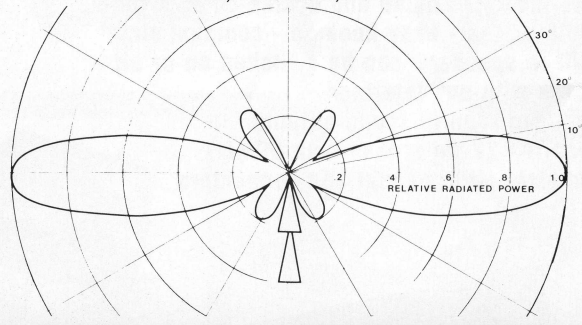
Typical ISO-220 VSWR Plot



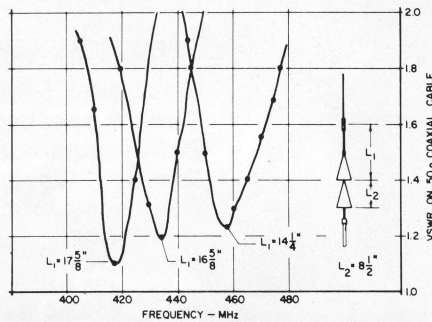
Typical Power Pattern  
ISO-144 JR, ISO-220 JR, ISO-450



Typical Power Pattern  
ISO-144, ISO-220, ISO-440



Typical 450 Mhz VSWR Plot



# AEA ISOPOLE 144 ASSEMBLY INSTRUCTION SHEET

The AEA IsoPole Antennas represent a breakthrough in vertical VHF base station antenna design. The IsoPoles offer superior decoupling and a predictable radiation pattern and the MAXIMUM GAIN POSSIBLE FOR THE LENGTH OF THE ANTENNA. The mechanical construction offers a rugged design at a very affordable price that will withstand the harshest weather.

Each IsoPole is factory tuned and only requires adjustment of the element lengths in the field.

The IsoPole antennas were designed to mount on low cost, standard 1 1/4 inch TV mast, available at most local hardware stores, TV shops, or electronic stores (including Radio Shack). Any mast with an inside diameter of at least 0.75 inches (to pass PL-259 connector) and no more than 1.275 inch outside diameter will be suitable. The maximum mast length is unlimited so far as the IsoPole is concerned, but should be no longer than good engineering practice dictates for the strength of the material used. (The 10 foot Rohn heavy duty galvanized steel mast is an excellent choice.) The minimum length of mast is approximately 8 feet for the IsoPole 144.

## ISOPOLE 144 ASSEMBLY (USE GLOVES TO AVOID SHEET METAL CUTS)

1. Slide the lower cone (the one with a decal) over the top of the mast and position a distance of L-2 (see the frequency chart below) from the top of the mast. Slide a cone stabilizing disc over the bottom of the mast below the lower cone.
2. If the mast is painted, scrape the paint off from the area where the top of the cone makes contact with the mast. Apply silicon grease or Vaseline type petroleum jelly over the scraped area of the mast to prevent possible corrosion.
3. Place the cone in position and secure with one of the two large stainless steel hose clamps provided. Hold the open end of the cone in a symmetrical position around the mast as the clamp is tightened. Slide the cone stabilizing disc up inside the lower cone to lock in position.
4. Slide the remaining cone stabilizing disc over the top of the mast and down over the mast to a position just above the lower cone. Slide the upper cone over the top of the mast and secure in a similar manner a distance of L-1 from the top of the mast. Slide the cone stabilizing disc up inside the lower cone to lock position.
5. Pass the feedline (with a PL-259 coax connector attached) through the mast and attach to the recessed connector in the base of the upper element section. It is recommended that RG-8 or RG-8U be used if the length of the coax is more than about 20 feet.
6. Place the base sleeve of the upper element tube over the top of the mast and adjust the upper element length for a proper dimension L-3 for the center frequency of operation desired. Use silicon grease or petroleum jelly in the joint of the upper element section for additional weather sealing. Secure the joint with the small stainless steel hose clamp provided.

NOTE: The IsoPole is a broad band antenna and is easy to tune simply by following the dimensioning instructions above. However, if an SWR bridge is available and it is desired to tune the IsoPole exactly to a given frequency, it is possible (but not necessary) to do so. Simply extend L-3 (by extending the upper element and upper cone equally) to decrease the resonant frequency and decrease L-3 for increasing the resonant frequency. The lower cone should always move in unison with the upper cone (the distance between the upper and lower cones should not change).

WARNING: The antenna should be mounted so as to clear surrounding objects as much as possible, but a high location is most desirable. Be sure to mount the antenna so it will neither touch nor be able to fall into nearby power wiring.

ADVANCED ELECTRONIC APPLICATIONS, INC.  
P.O. Box C2160  
Lynnwood, Washington 98036 USA  
(206) 775-7373

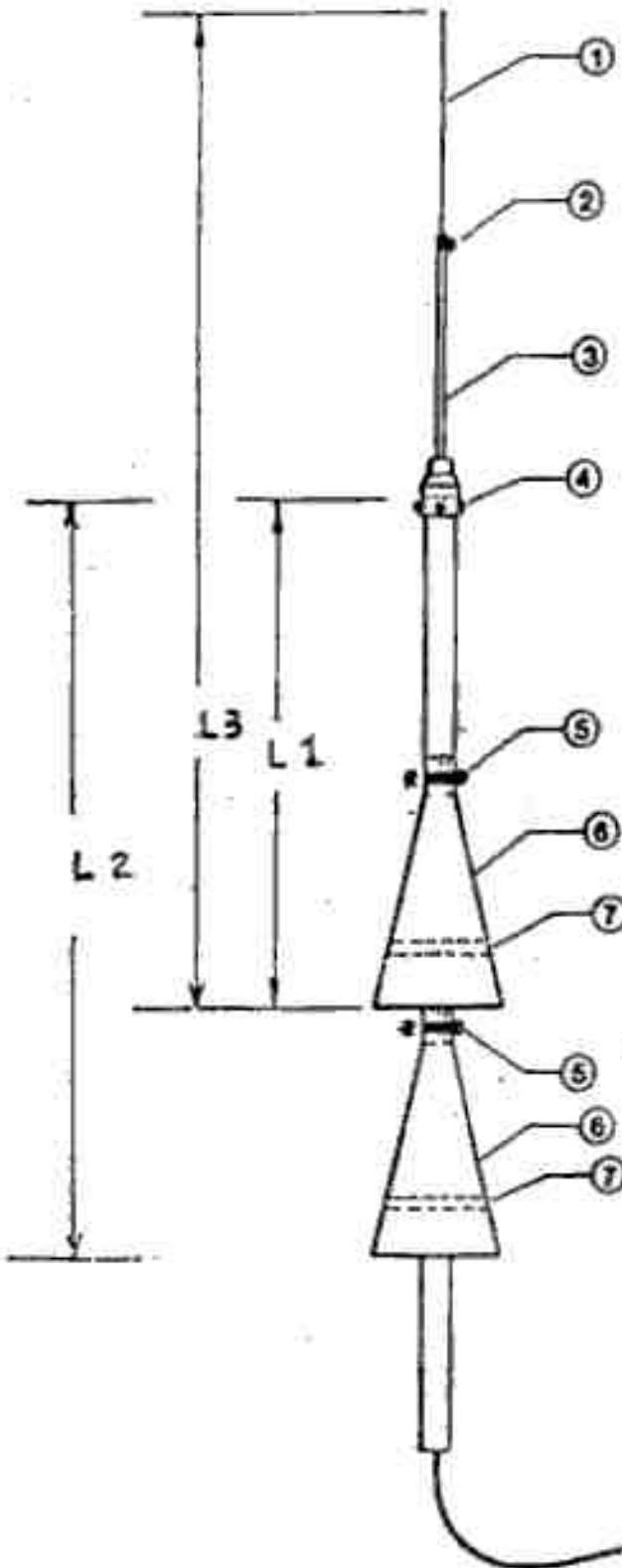
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040-902  
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### ISOPOLE 144

For MHz	L1	L2	L3
137	55" 1.40M	80.5" 2.04M	110" 2.79M
146	50" 1.27M	75.5" 1.92M	100" 2.54M
151	48" 1.22M	73.5" 1.87M	96" 2.44M
153	47" 1.19M	72.5" 1.84M	94" 2.39M
158	44" 1.12M	69.5" 1.77M	88" 2.24M



#### Parts List

1. Tip Rod
2. Small Stainless Steel Hose Clamp
3. Upper Element Tube and Matching Network Assembly
4. 1/4" x 20 Stainless Set Screws (3 ea.)
5. Large Stainless Steel Hose Clamp (2 ea.)
6. Decoupling Cone (2 ea.)
7. Expanded Polyethylene Cone Stabilizing Disc (2 ea.)

**NOTE:** The IsoPole is D.C. grounded. A short between the upper element and the mast should be evident with an ohmmeter.

\*Scrape any paint off the mast where cone comes in contact. Apply silicone grease between mast and cone to prevent possible corrosion.

\*Use standard TV hardware to mount.

**Equipment Needed:** Mast, recommend use of low cost steel 1 1/4" TV mast available at most hardware, TV shops or electronic stores, e.g., Radio Shack at less cost than shipping a single piece. Mast must be a minimum of 8' long for 144 MHz (no maximum length). Minimum inside diameter is 0.75" and maximum outside diameter is 1.275".

**Tools Needed:** Accurate measuring stick or tape; Flat bladed screw driver; nut drivers, 1/4" and 5/16"; flat file (for removing paint from mast); silicone grease or petroleum jelly.





















