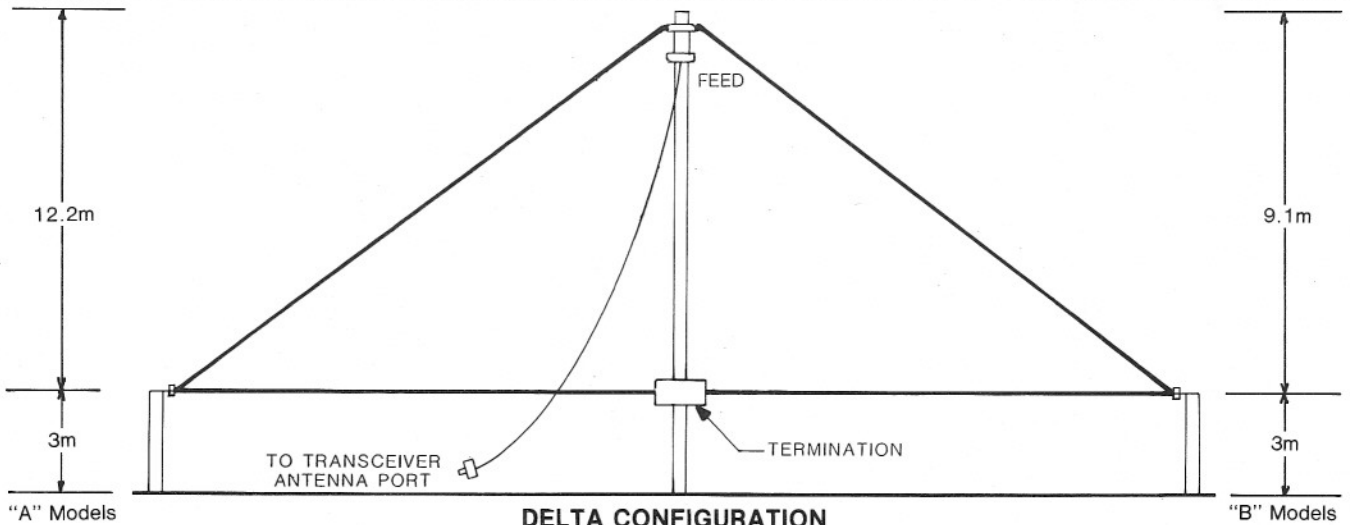


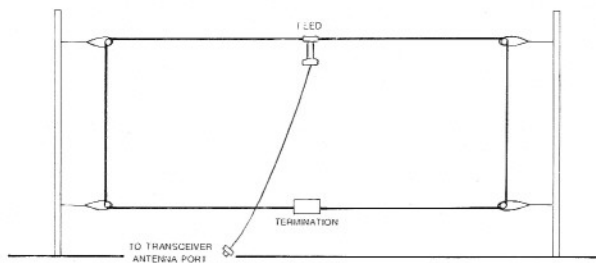
TRANSWORLD ABB SERIES

BROADBAND ANTENNAS

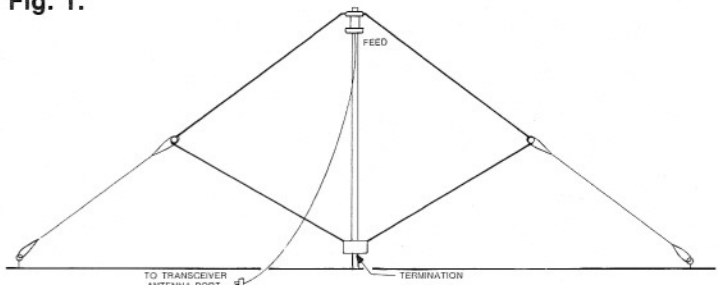


DELTA CONFIGURATION

Fig. 1.



RECTANGULAR CONFIGURATION



DIAMOND CONFIGURATION

Fig. 2.

- **Broadband 2-30 MHz**
- **100W and 1KW Models**
- **Flexible Mounting Configurations**
- **Heavy Duty Construction**
- **Low VSWR**
- **Continuous Duty Rated**

The Transworld ABB Series of HF Antennas is designed to offer broadband coverage over the entire HF spectrum and is optimized for short and medium ranges up to 2500 Km.

The following models are available:

MODEL	POWER	LENGTH (DELTA CONFIGURATION)
ABB100A	100W Average	43.3M
ABB100B	100W Average	34.1M
ABB1000A	1000W Average	43.3M
ABB1000B	1000W Average	34.1M

The frequency range for all models is 2 to 30MHz. However, the longer "A" models are recommended for improved efficiency below 3MHz. When installed in the Delta configuration, the VSWR is less than 2:1 over 95% of the frequency range and does not normally exceed 2.5:1.

INSTALLATION CONFIGURATIONS

The recommended mounting configuration is a Delta Loop as shown in Figure 1. Alternative configurations such as shown in Figure 2 may also be used. The efficiency with alternate mounting arrangements remains essentially the same as long as the total wire length is maintained and the aperture of the antenna is kept as large as possible. For example, we do not recommend erecting the antenna in the Delta Loop configuration with shorter center masts than those shown in the diagrams. Because of the reduced aperture at the two ends, the radiation efficiency would be much lower.

Regardless of the mounting configuration, the recommended feed point for the antenna is at the top center. This keeps the maximum current and maximum radiation at the highest point in the antenna. The load is located at the bottom and can be mounted on the center mast.

EFFICIENT DESIGN

One of the secrets of the new antennas is the special balun that transforms the 50 ohm coaxial feed impedance to 800 ohms over the entire HF range. A special dual transformation balun is used that provides an efficient broadband transformation and is rated for

continuous operation at 1000W. The load resistance is 800 ohms and the 100W load is constructed from series connected 5W non-inductive resistors mounted in a weatherproof tube. The kilowatt load uses three 250W 17 ohm non-inductive wire wound resistors mounted on a heatsink and a second balun is used to make the down transformation to 50 ohms.

We have been able to use the 50 ohm down transformation on the kilowatt antenna to make direct efficiency measurements. A wattmeter was connected in series with a 50 ohm load so that the power dissipated in the load could be measured directly. If the small losses in the balun and wire resistance are neglected, this gives us a direct measure of the efficiency of the antenna system. We found that the maximum loss (at 2MHz) was 5.6dB for the shorter antennas and 4.5dB for the longer model. At 8MHz the efficiencies of both models were similar with losses of about 3dB. Above 10MHz losses are very small, ranging from 0.5 to 2dB.

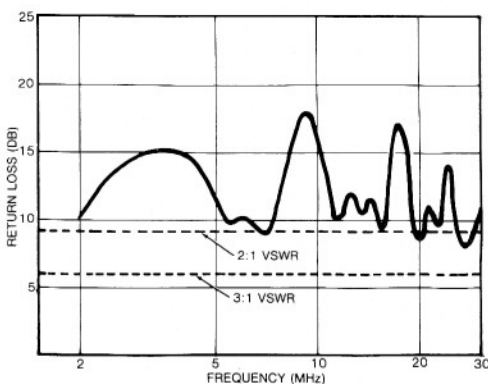
The high impedance of the antennas has enabled the use of 1/16 inch (1.6mm) stainless steel cable in place of copper wire. The additional resistance introduces negligible losses but the resulting antenna is

exceptionally strong and should not deteriorate even under severe environmental conditions.

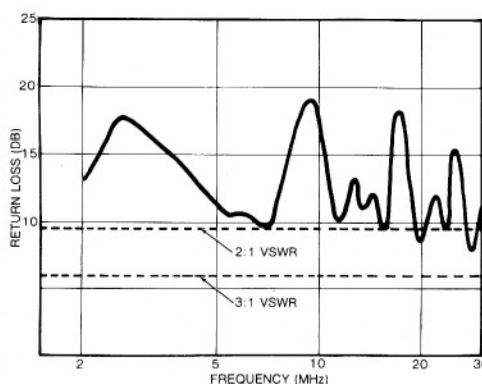
RADIATION CHARACTERISTICS

Our field tests show that the antenna is an excellent performer for short or medium ranges. When the antenna length is close to a half wave dipole, the performance and radiation pattern is very similar to the dipole. As the frequency increases the radiation pattern will change from broadside to end-fire with some gain and directivity when compared with a dipole. While a half wavelength resonant dipole will outperform this antenna, the difference in performance will be difficult to measure over short to medium distances. We recommend the new antennas for ranges up to 2500 Km.

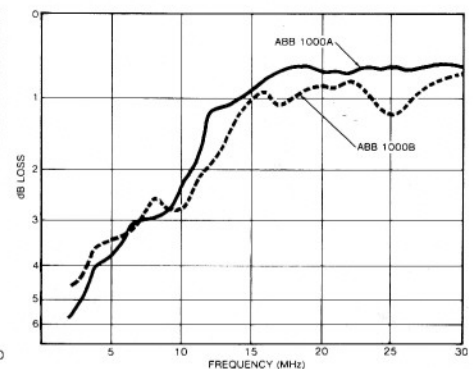
The antennas are supplied partially assembled (for ease in shipping) and are complete with all material except masts. All antennas are supplied complete with 30m (100 ft.) of RG213 coaxial cable and the appropriate connector installed (PL259 or Type N, as required). An optional mast kit is also available.



VSWR ABB 100



VSWR ABB 1000



EFFICIENCY ABB 1000 A & B

Specifications subject to change without notice.