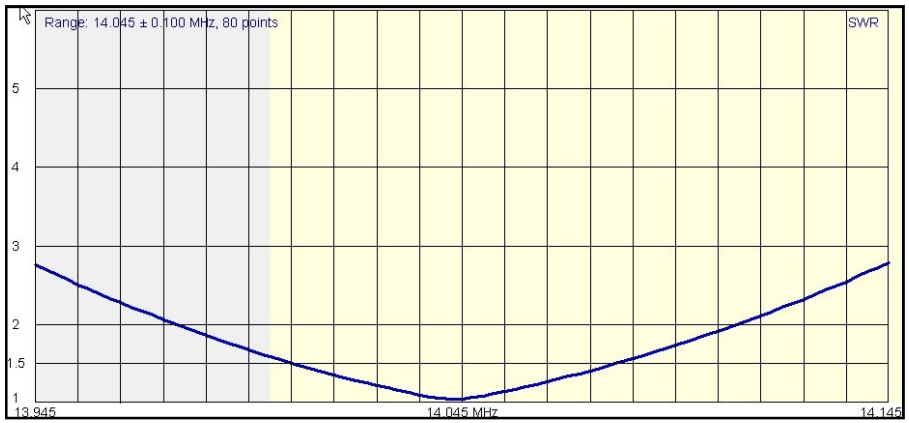
TYPICAL V.S.W.R. PLOT



SPECIFICATIONS

Polarity:	Horizontal
Pattern:	Within +/- 3dB of omni
Design Z:	50 Ohms
V.S.W.R. Bandwidth:	130KHz Between 2.0:1 Points
Power Handling:	200W PEP
Weight:	2.5 lbs
Size:.	Rectangular; 96”X59”
Materials:	6061-T6 Aluminum, Fiberglass
Hardware:	Stainless Steel

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20M HORIZONTAL OMNI
MODEL HF-14

PARTS LIST

PART NO.	QTY	DESCRIPTION
SUB1402	1	20 METER MATCHBOX
2817	2	3/4” SQUARE ALUMINUM RADIATOR
2818	2	5/16 ROUND TUBES TAPPED BOTH ENDS
2816	1	FIBERGLASS ANGLE
14405	2	SQUARE PLASTIC END CAPS
14407	2	ALUM. BACKUP PLATE 2 HOLES
14408	2	S.S. 10-32X1 1/2” SCREW
14410	2	S.S. 1/4-20X2 1/2” HEX HEAD BOLT
5018	2	S.S. 1/4-20 STAINLESS HEX NUT
14411	2	S.S. 1/4” FLATWASHER
14412	1	5/8” X4” SQ. DIELECTRIC SPACER
1413	1	HF-14 INSTRUCTION SHEET
5004	2	VINYL CAP PLUGS
SUB2804	1	WIRE ASSEMBLY W/ 1/4” LUGS
5022	2	1/4-20X 3/4” ALUMINUM SCREW
14418	2	S.S. 1/4 SPLIT RING LOCKWASHER
5019	2	ALUMINUM 1/4” LOCKWASHER
14419	2	S.S. #10 SPLIT RING LOCKWASHER
1414	2	5/16” X 13” ALUMINUM EXTENSIONS

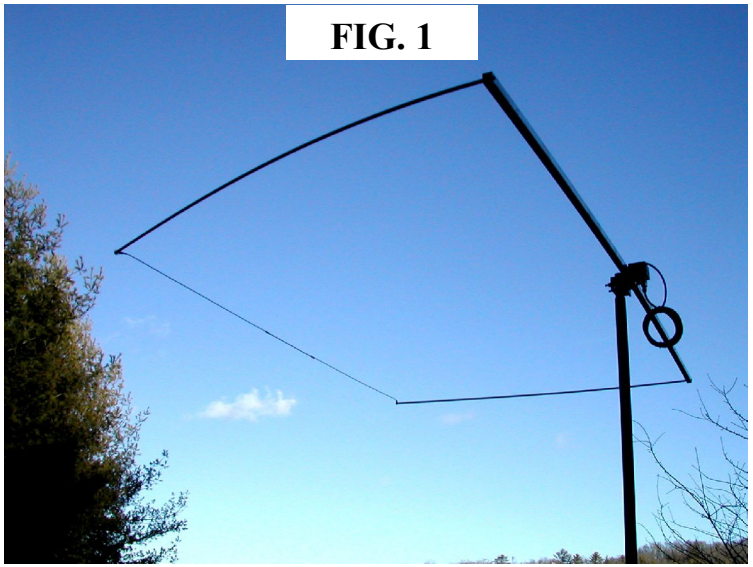

FIG. 1

ASSEMBLY

1. Locate the 2 square radiators, square fiberglass spacer, 2 10-32 X 1 1/2" phillips screws and 2 #10 lockwashers. Place the lockwashers on the screws. Insert the spacer into the ends of both square tubes and align the holes. Insert the 2 screws into the holes as shown in Fig.3.
2. Assemble the fiberglass mast bracket, and both extruded **V** clamps using the 2 1/4-20X 2 1/2" hex head bolts, lockwashers, flatwashers and hex nuts in the order shown in Fig.2, 3 and 3A.
3. Match the holes in the above assembly to the 10-32 screws installed in step 1 and assemble as in Fig. 3. Next, locate the black plastic matchbox and assemble it onto the 10-32 screws. Be certain to hold the matchbox square to the screws. Turn the screws alternately so the matchbox mounts evenly. If a screw does not turn easily, it is most likely cross threaded and should be immediately backed out and reinstalled into the matchbox. Tighten the 10-32 screws so that the lockwashers under the screw heads collapse fully.

4. Locate the two 48" round 5/16" tubes. Remove the vinyl cap plugs and set them aside.

5. Locate the pair of 13" X 5/16" round tubes. Screw the 1/4-20 male end of one of the 13" tubes into end into one of the 48" 5/16" tubes. Repeat for the second 13" extension. See Fig 2A.

6. Take the above assemblies and insert the ends with the 13" extensions into the far ends of the square tubes from the side the mast bracket is on. That is, when the antenna is fully assembled, the mast bracket will be **inside** the rectangle. Leave approximately 3/4" of 5/16" tube extending beyond the square tube– Fig. 4. Reinstall the two vinyl caps.
NOTE: **These extensions are only used on the 20M model– they improve bandwidth and pattern.**
6. Locate the wire assembly bag and hardware. The lockwashers and screws are aluminum and should not be substituted with steel pieces. Place a lockwasher over each aluminum 1/4-20 screw and assemble the reflector wire onto the far ends of the 5/16" tube assemblies. See Fig. 5. Tighten just enough to collapse the lockwashers. As you assemble the 2nd end of the wire assembly the 5/16" tubes will flex inward to accommodate assembly. This feature automatically locks the 5/16" tubes into the square radiators without the need for hardware and lends strength to the completed assembly.
7. As you mount the antenna to a mast, tighten each hex nut alternately so the mast brackets remain parallel to each other.
8. In order to accommodate higher power, we have not built a balun into the antenna, as we do in our VHF/UHF Omniangle series. A current mode chokeis recommended right below the matchbox.and can be constructed by making a coil of 10 turns of your feedline coiled into a 4" diameter coil. The turns may be taped or tie wrapped together.

TUNEUP

1. Mount the antenna in the clear. Temporary tune up can be done at a height of 33'-this approximates free space. Connect an antenna analyzer, V.S.W.R. bridge or wattmeter through a short length of coaxial cable. **If using a transmitter, we suggest using low power for tuneup until you get the antenna adjusted.**

2. The resonant frequency is adjusted by lengthening or shortening the 5/16" tubes-Lengthening the rods will lower the resonant frequency. To move a rod; hold the square radiator with one hand while grasping one of the 5/16" rods close in to the square radiator. Flex the 5/16" rod to relieve pressure on the mounting hole. At the same time slide the rod in or out as required. When unflexed, the tube will stay put.
Note: Be sure to lengthen or shorten the tubes in **equal** increments. As a rough guide, changing the length by 1" will change resonance by about 40KHz

3. The antenna pattern is within +/- 3dB of being omnidirectional, so it will not matter in what direction the antenna is oriented.

NOTE:

IF YOU EXPERIENCE DIFFICULTY TUNING THE ANTENNA, CHECK YOUR COAXIAL CABLE AND CONNECTORS FOR SHORTS, OPENS AND CONTINUITY. AN EXCELLENT TEST IS TO PLACE A KNOWN, GOOD HF TERMINATION ON ONE END AND MEASURE THE V.S.W.R. WHILE FLEXING THE CABLE AND CONNECTORS. IT IS NOT AN EXAGGERATION, TO SAY THAT CLOSE TO 100% OF ANTENNA PROBLEMS CAN BE TRACED TO THIS SINGLE FAULT.

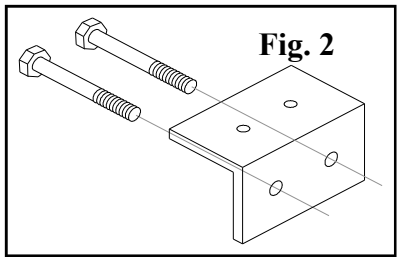
Fig. 2

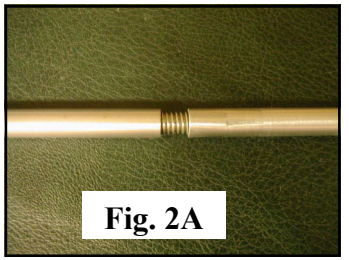
Fig. 2A

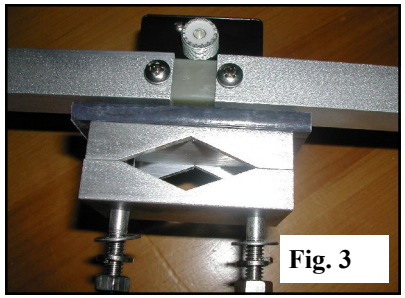
Fig. 3

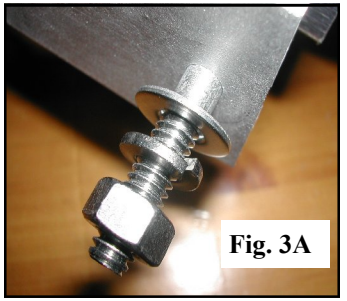
Fig. 3A

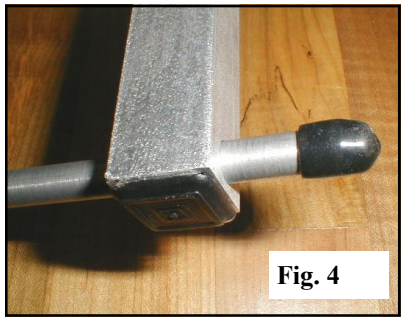
Fig. 4

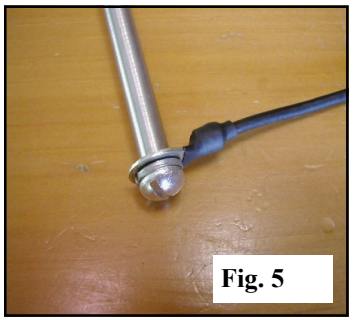
Fig. 5