OMNIANGLE OA-222
1.25M HORIZONTALLY POLARIZED OMNIDIRECTIONAL ANTENNA

PARTS LIST

PART NO.	QTY	DESCRIPTION
SUB22201	1	1.25 METER MATCHBOX
22202	1	3/4" SQUARE RADIATOR LEFT
22203	1	3/4" SQUARE RADIATOR RIGHT
SUB22202	2	1/4" ALUMINUM ROD ASS'Y
14404	1	FIBERGLASS ANGLE
14405	2	PLASTIC END CAPS
14406	2	4-40x3/8" STAINLESS SCREW
14407	1	ALUM. BACKUP PLATE
14408	2	S.S. 10-32X1 1/2" SCREW
14409	2	S.S. 1/4-20X2" HEX HEAD BOLT
14417	2	#10 S.S. SPLIT RING LOCKWASHER
14410	2	S.S. 1/4-20 HEX NUT
14411	2	S.S. 1/4" FLATWASHER
14418	2	S.S.1/4" SPLIT RING LOCKWASHER
14412	1	5/8" X4" SQ. DIELECTRIC SPACER
22213	1	OA-222 INSTRUCTION SHEET

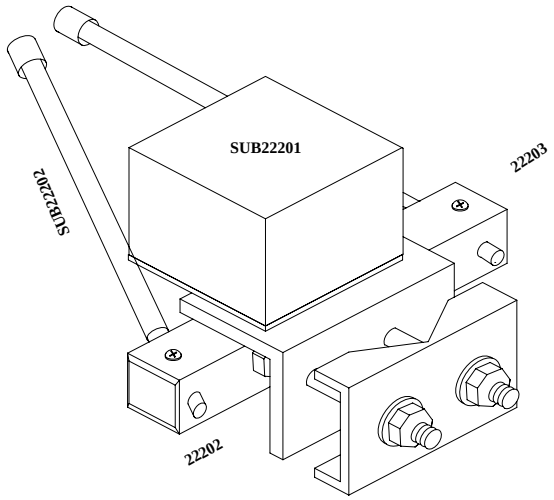


FIG. 1

ASSEMBLY

1. Refer to Fig. 2 . Select the fiberglass angle (14404) and the (2) 2 ” hex head bolts (14409). Insert the bolts through the 1/4” holes in the direction shown.
NOTE: The supplied bolts are satisfactory for support masts up to 1 1/4” diameter. Substitute 2 1/2” stainless bolts for a larger mast up to 1 1/2”.

2. Locate the (2) 3/4” square radiators (22202) and the dielectric spacer (14412). Refer to Fig. 3 and Fig. 4. Insert the spacer into the the radiators and line up the holes. Place #10 lockwashers onto each #10 screw.Use the (2) 10-32 screws to join the radiators, angle and matchbox in that order. Tighten the screws in equal steps. Screws should turn in easily. Securely tighten the screws but avoid overtightening.

3. Locate (2) 12”X1/4” rod assemblies (SUB22202). Refer to Fig. 1. Loosen the (2) 4-40 screws that are at the ends of the square radiators enough to allow the rods to pass through. Insert the rods from the same side the matchbox is on. Allow approximately 5/8” of 1/4” rod to extend out the back side. **Lightly** tighten each screw just enough to hold the rods in place.

4. Refer to Fig 1 and Fig. 4. Assemble the back plate (14407) onto the 1/4” bolts with (2) flatwashers (14411), (2) lockwashers (14418) and (2) 1/4-20 hex nuts (14410). Slip the backup plate over the support mast and tighten the nuts equally. As you tighten, adjust the antenna and backup plate square to the mast. **Do not** overtighten, this will only warp the fiberglass angle and backup plate.

TUNEUP

1. Mount the antenna in the clear. If mobile mounting, try to mount the antenna 20” or more above the vehicle roof. This will ensure maximum gain close to the horizon and an impedance match close to that of free space. Connect an antenna analyzer, VHF V.S.W.R. bridge or VHF 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.

Note: All horizontal omni antennas we are familiar with tend to detune when subjected to rain or even foggy conditions. Those tested became unusable under these conditions because of high V.S.W.R. The Omniangles have virtually eliminated this problem by virtue of their wide bandwidth and plastic coatings. However, a small amount of detuning may still occur. We suggest that the antenna be tuned 200 to 300 KHz **above** the normal operating frequency. As an example, if operation at 222.100 MHz is the most used frequency , tune the antenna to 222.4 MHz. This will result in a match of perhaps 1.25:1 at 222.100 MHz.- this will not affect antenna performance and will allow wet weather use with a low V.S.W.R.

2. The resonant frequency is adjusted by lengthening or shortening the 1/4” rods- Lengthening the rods will lower the resonant frequency. Lightly tighten the 4-40 screws after each adjustment.
Note: Be sure to lengthen or shorten the rods in **equal** increments. We suggest moving in 1/16” increments.
3. When tuning is complete, tighten the 4-40 screws 1/4 turn after you feel the screw contact the 1/4” rod assembly.

HOW THE ANTENNA WORKS

Halo or loop antennas attempt to achieve an omni pattern by shortening a half wave dipole and forming it into a loop. Resonance is restored by capacity loading the far ends of the loop. The intent is to equally distribute current throughout the length of the antenna. Still, the current diminishes towards the end resulting in an egg shaped pattern. The other side effect of shortening is a severe reduction in usable bandwidth and a susceptibility to detuning with rain.

The Omniangle antennas are approximately 30% longer than a half wave. It is this electrical length in combination with the isosceles triangle shape that yields a near perfect omnidirectional pattern, much wider bandwidth, and considerably less rain detuning.

Because the antenna is longer than a half wave, it is no longer resonant. The matchbox efficiently converts the feedpoint impedance (approximately 10 +J90 Ohms) to 50 Ohms resistive. Finally, a teflon current mode balun ensures equal current to both sides of the antenna.

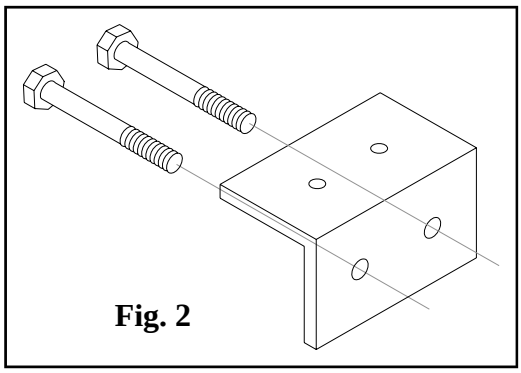


Fig. 2

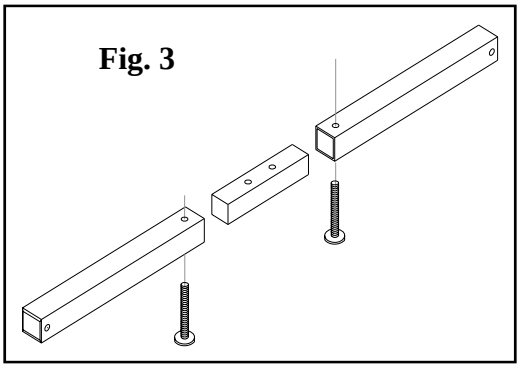


Fig. 3

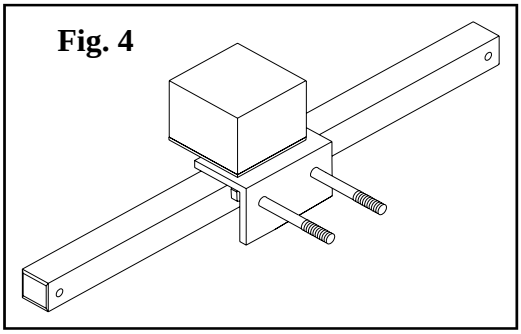
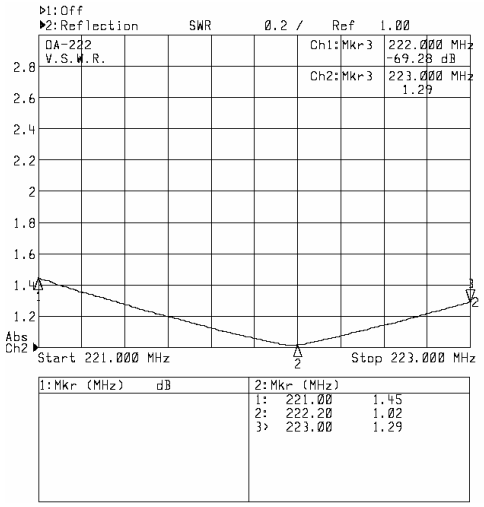


Fig. 4



V.S.W.R.

SPECIFICATIONS

Polarity:	Horizontal
Pattern:	Within +/- 0.8 dB omnidirectional
Design Z:	50 Ohms
V.S.W.R. Bandwidth:	See Analyzer Plot
Power Handling:	160W
Weight:	1 lb
Size:.	8” X 12”
Materials:	6061-T6 Aluminum, Fiberglass
Suggested Stacking Distance	36”
Hardware:	Stainless Steel
Connector:	Silver/Teflon SO-239

PAR ELECTRONICS
P.O. Box 645
Glenville, NC 28736
Voice: (828)743-1338
FAX (828)743-1219
E-Mail par@parelectronics.com