

**OMNIANGLE OA-432
70cM HORIZONTALLY POLARIZED
OMNIDIRECTIONAL ANTENNA**

PARTS LIST

PART NO.	QTY	DESCRIPTION
SUB43201	1	70cM MATCHBOX
14404	1	FIBERGLASS ANGLE
14405	2	PLASTIC END CAPS
14406	2	4-40x3/8" STAINLESS SCREW
43202	1	3/4" SQUARE RADIATOR LEFT
43203	1	3/4" SQUARE RADIATOR RIGHT
SUB43202	2	1/4" ALUMINUM ROD ASS'Y
14407	1	ALUM. BACKUP PLATE
14408	2	S.S. 10-32X1 1/2" SCREW
43204	2	#8 INT. TOOTH LOCKWASHER S.S.
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
43205	1	5/8" X2.5 SQ. DIELECTRIC SPACER
43206	1	OA-432 INSTRUCTION SHEET
43207	1	SQUARE PLASTIC SPACER
43208	1	SHIPPING CONTAINER S3697

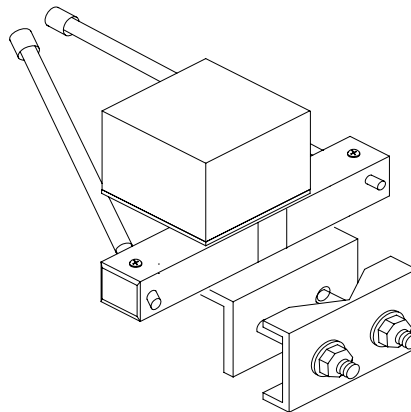


FIG. 1

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".

NOTE: The 432 antenna comes fully assembled and tuned to approximately 432.2 MHz.

3. Locate (2) 12"X1/4" rod assemblies (SUB43202). 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 1/4" 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 2. 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 15" 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, UHF V.S.W.R. bridge or UHF 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 432.1 MHz is the most used frequency, tune the antenna to 432.4 MHz. This will result in a match of perhaps 1.2:1 at 432.1 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 you move in 1/32" 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.

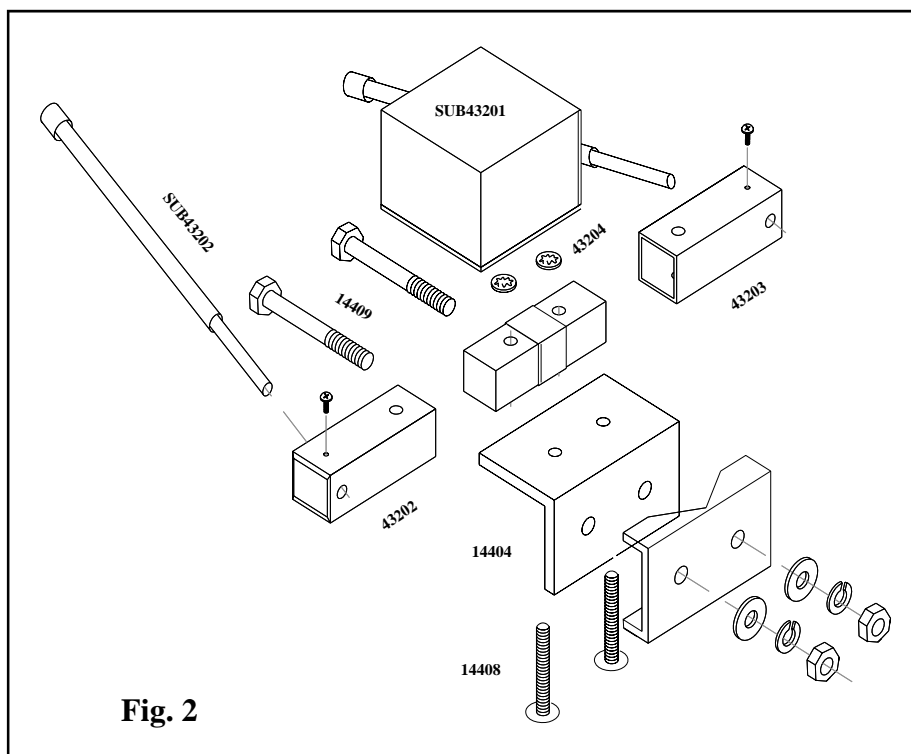


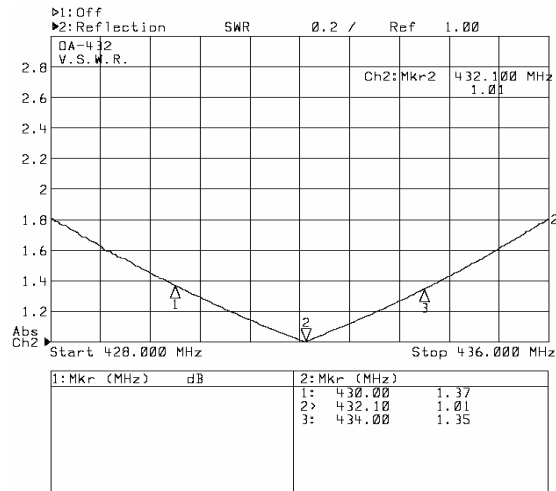
Fig. 2

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. Recent independent anechoic chamber testing confirms the superior pattern and gain over round and square style loops.

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.



V.S.W.R.

SPECIFICATIONS

Polarity:	Horizontal
Pattern:	Within +/-1dB omnidirectional
Design Z:	50 Ohms
V.S.W.R. Bandwidth:	See Analyzer Plot
Power Handling:	160W
Weight:	1 lb
Size:.	5"X8"
Materials:	6061-T6 Aluminum, Fiberglass
Suggested Stacking Distance	20"
Hardware:	Stainless Steel

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