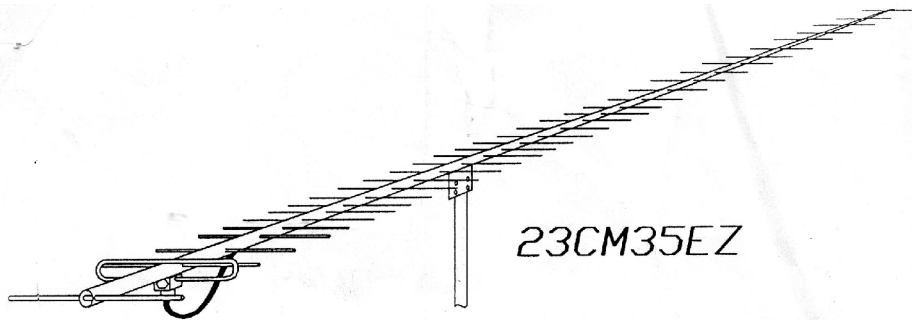
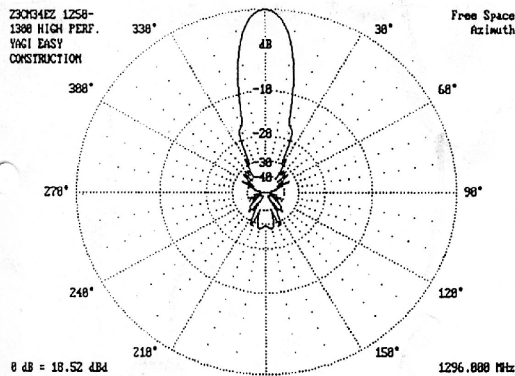




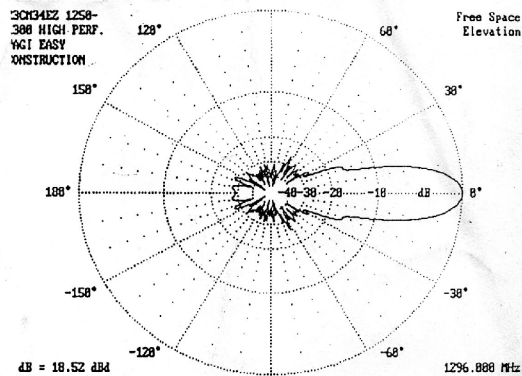
23CM35EZ

23CM35EZ 1250-
1300 HIGH PERF.
YAGI EASY
CONSTRUCTION



Free Space
Azimuth

23CM35EZ 1250-
1300 HIGH PERF.
YAGI EASY
CONSTRUCTION



Free Space
Elevation

SPECIFICATIONS

Model number
Frequency
Gain over a dipole
Front to back
Beamwidth
Vswr
Input Imp. / Connector
Power handling
Boom length/ dia.
Mast size
Stacking distance
Stacking gain (2 antennas)
Wind area
Wind survival
Weight / ship wt./ by:

23CM35EZ
1250 to 1300 mHz
18.4 dBd
25 dB (see patterns)
17 deg.. E, 18 deg.. H
1.2: typical (see plots)
50 Ohms / 'N' female
600 watts
120 in. (13 wl) / .75 in.
1-1/2" other-specify
28" wide 26" high
21.3 dBd
0.6 sq.. ft..
100 mph
2.5 lbs/ 3 lbs/UPS

FEATURES

The 23CM 35EZ is the result of all the latest computer technology and the last word in optimized driven element design. Perfect balance is achieved with balun 'inside' the folded dipole itself. This eliminates connectors and cable and as always with M2 products the whole assembly is sealed. When other designs will have 'given it up' the 'EZ' will be as good as new and still performing to 'spec'!

Because of this unique new driven element and the two part boom the 'EZ' is an outstanding performer for 'hill-topping or base. Great for ATV, Repeaters and Oscar. Gain peaks in the weak signal Tropo and EME part of the band and tops any other antenna of comparable boom length! The directivity, gain and the clean pattern will astound you. Phasing cables, power dividers and stacking kits available.

23CM35EZ DIMENSIONS

0.0		4.625 REFLECTOR
1.0		DRIVEN ELEMENT
1.937		4.25
3.562		4.062
5.937		3.937
8.25		3.875
10.875		3.813
13.937		3.75
17.188		3.75
20.437		3.75
23.937		3.688
27.625		3.625
31.375		3.625
35.188		3.625
38.937		3.625
42.875		3.562
46.875		3.562
50.875		3.562
54.875		3.50
59.0		3.50
63.063		3.50
67.188		3.50
71.25		3.50
75.25		3.437
79.25		3.437
83.313		3.437
87.25		3.437
91.125		3.375
95.125		3.313
99.125		3.313
103.25		3.25
107.375		3.188
111.375		3.313
115.375		3.25
119.25		3.313

23CM35EZ ASSEMBLY MANUAL

SEPT. 16, 1991

This antenna can be assembled from the DIMENSION SHEET. We do recommend you read over the written instructions to pick up HINTS AND KINKS for easier assembly and also to note the order in which we have found is the easiest.

1. Assemble the boom by first identifying the ends that mate together. Two small holes near one end of each boom section are the ends that join. Mate the boom splice sleeve with its mating section and insert the outer screw. Use 8-32 x 1-1/4" pan head screw and add a lockwasher and nut. DON'T tighten yet. Next couple the other boom section and insert the outer screw. If all looks right and the element hole in the splice matches the hole in the boom, then add the BOOM TO MAST BRACKET at the splice using the two inner screws to attach the bracket. Now tighten the hardware.

2. One end of the boom has many holes close together. This is the REAR of the boom and the first hole is for the REFLECTOR. Note that The elements TAPER in length until the last THREE (3) where the lengths jump around a bit. We suggest you first sort the elements by length by laying down a piece of masking tape about 12 inches long, sticky side up. Place the longest element across the tape and continue until all thirty four (34) elements are laid out. Then consult the DIMENSION SHEET and adjust the last FIVE (5) elements to match the DIMENSION SHEET. Now begin installing elements by sliding a black button insulator on the longest element and inserting the element into the first hole at the rear of the boom. Add the second button insulator and roughly center the element.

3. Continue removing the elements from the tape one by one and inserting them into the boom. Once they are all installed, return to the reflector and center it. Use a common tape measure as a guide and simply EQUALIZE the amount of element sticking out on each side of the boom. This should only take a few seconds per element once you get going. If you are taking longer, then you are probably MEASURING and not EQUALIZING! Center to within 1/32 of an inch. Centering is not terribly critical since the elements "FLOAT" in the boom.

4. Once the elements have been centered, sight down the ends of the elements from the rear and look for any obviously off center elements. Correct if found.

5. To install the keepers, first, using a pocket knife or large drill bit, countersink one end of the 3/8 X 3" PUSH TUBE. This allows ONLY the outer rim of the push tube to come in contact with the dished keeper. The fingers of the keeper are then free to spread out and making insertion onto the rod element easier.

6. To install a keeper we find that by holding the push tube in your palm and placing the countersunk end between your thumb and forefinger, You can place a keeper on this end and hold it there as you feed the keeper onto the end of each element. WITH YOUR OTHER HAND, grasp the element and boom firmly while pulling the element sideways against the button insulator. This PRELOADS the element and helps prevent it from slipping as you insert the first keeper. Slide the keeper on right up against the button insulator. Repeat for the other side. IF THE ELEMENT SLIPS during the first few attempts, SIMPLY remove the element from the boom, push the keeper off and start over.

7. Locate the mounting hole in the FOLDED DIPOLE mounting block. Orient this hole so it is toward the reflector and maneuver the element over the reflector and into position on the boom. Fasten the block with an 8-32 x 1" screw with a lockwasher under the head. Tighten the screw. Now bend the dipole so it tilts forward toward the directors. Adjust for best match.

8. Add the U-bolts to the bracket. NOTE: when mounted correctly, the mast should not pass up through the elements as it WILL CAUSE GREAT PERFORMANCE DEGRADATION.

9. When attaching the feedline, either form a small DRIP LOOP in the coax as it leaves the block or if hardline is used, it can be angled down to the mast directly. Just be careful not to put undue up or down on the boom when attaching the hardline.

10. GENERAL COMMENTS. It is always a good idea to check out the antenna with a little RF prior to installing it in some inaccessible location. DO NOT use any PL-259 fittings or adapters at these frequencies. Very small problems in coax and in connectors may cause MAJOR VSWR problems. Even a loose connector will affect the VSWR noticeably. Review the VSWR curve in this manual to confirm you are working as designed. VSWR can be adjusted slightly for your particular part of the band by actually tilting the driven element slightly forward toward the first director.

11. We have provided antenna patterns at both 1296 and 1269 MHz as well as the pattern when two are stacked. A GAIN curve, VSWR curve, FRONT TO BACK curve and an IMPEDANCE curve are given so you can see the antennas response across the 1250 to 1300 mHz range. If you need patterns at other frequencies, we can provide them within reason. We can also provide the basic dimensions generated by Brian Beezleys YOC program if you wish to examine the antennas characteristics in more detail.

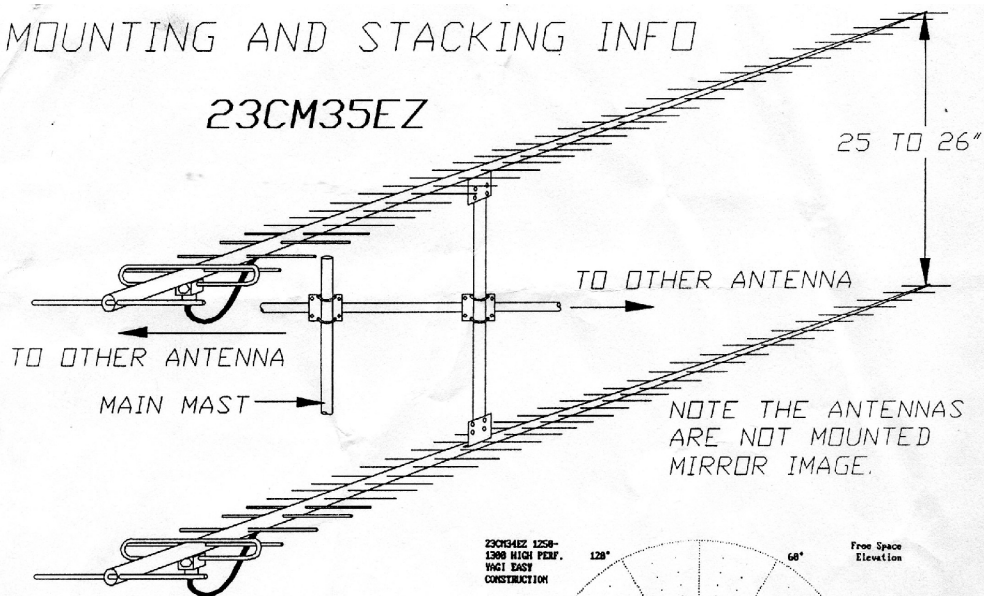
CAREFULLY DESIGNED AND MANUFACTURED BY:

M² Enterprises
7560 N. Del Mar Ave.
Fresno, Ca. 93711
209-432-8873 FAX 209-432-3059

PART #	DESCRIPTION	23CM35EZ	PART QTY
	Boom, 0.75 x .049 x 60 alum.		2
	Boom splice, 0.875 x .058 x 6" alum		1
	Element, 0.188 x see dims. 6061-T6 alum.		34
	Boom to mast bracket, 4 x 4 x 0.125" alum.		1
	Driven Element assy.		1
	Microblock, 1 x 1 x 1 " mach. alum		1
	'N' connector, female single hole w/ O'ring		1
	Tube, 0.25 x 0.028 x 5" formed in U shape		2
	Wire, RG-303 centerconductor, 5.5"		1
	insert, 0.188 rod, alum. slit and crimped		1
	Acces cover, 5/8-24 alum. w/ O'ring		1
	Assembly manual		1
	HARDWARE		
	U-bolt, 1-1/2" w/ cradel		2
	Nut, 5/16-18 ss		4
	Lockwasher, 5/16" split ring ss		4
	Screw, 8-32 x 1-1/4" pan head ss		4
	Screw, 8-32 x 1" pan head ss		1
	Nut, 8-32 ss		4
	Lockwasher, #8 split ring ss		5
	SUB-BAG		
	Keeper, element, 3/16" ss		72
	Button insulator, polyethylene, molded, black		70
	Push tube, 3/8 x 3" alum.		1

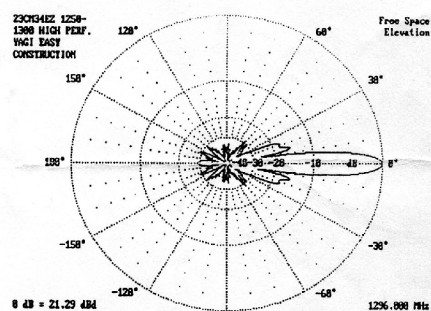
MOUNTING AND STACKING INFO

23CM35EZ



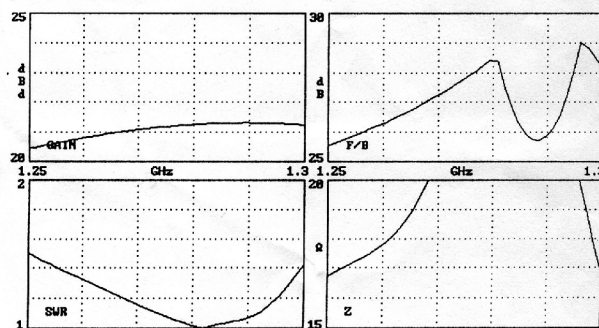
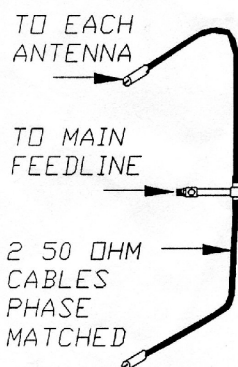
NOTE THE ANTENNAS ARE NOT MOUNTED MIRROR IMAGE.

NOTE: THE AZIMUTH PATTERN DOES NOT CHANGE WHEN STACKED ON ABOVE THE OTHER.



PHASING HARNESS AND 2 PORT POWER DIVIDER

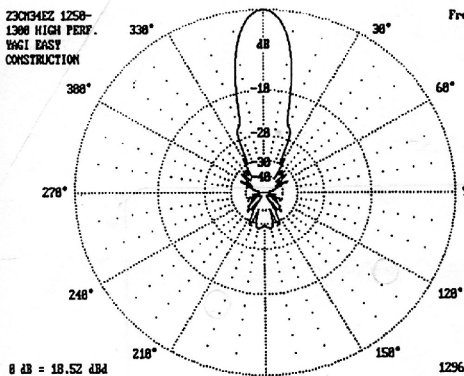
H PLANE PATTERN STACKED PAIR



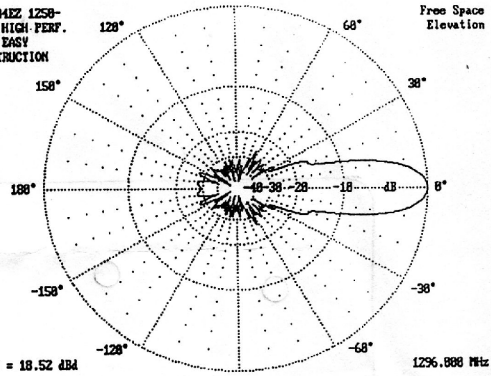
CHARACTERISTICS OF STACKED PAIR

23CMSTAK
M. STAAL
9-17-91

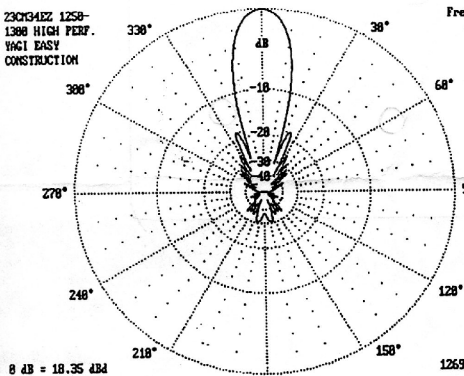
Z3CH34EZ 1250-
1300 HIGH PERF.
YAGI EASY
CONSTRUCTION



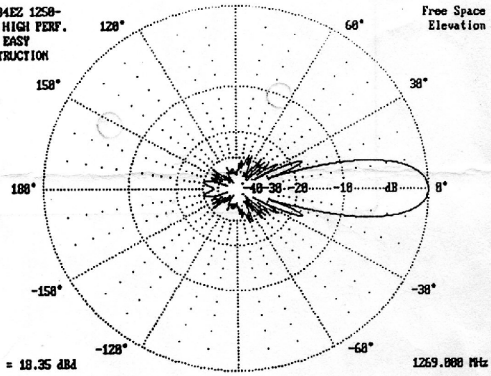
Z3CH34EZ 1250-
1300 HIGH PERF.
YAGI EASY
CONSTRUCTION



Z3CH34EZ 1250-
1300 HIGH PERF.
YAGI EASY
CONSTRUCTION



Z3CH34EZ 1250-
1300 HIGH PERF.
YAGI EASY
CONSTRUCTION



Z3CH34EZ 1250-
1300 HIGH PERF.
YAGI EASY
CONSTRUCTION

