

# BASE STATION

**Maddol**  
ANTENNA

## HS-VK5Jr

3.5/7/14/21/28MHz

HF 5-BAND GROUND PLANE ANTENNA

### \*\*\*\*\* INSTRUCTION MANUALS \*\*\*\*\*

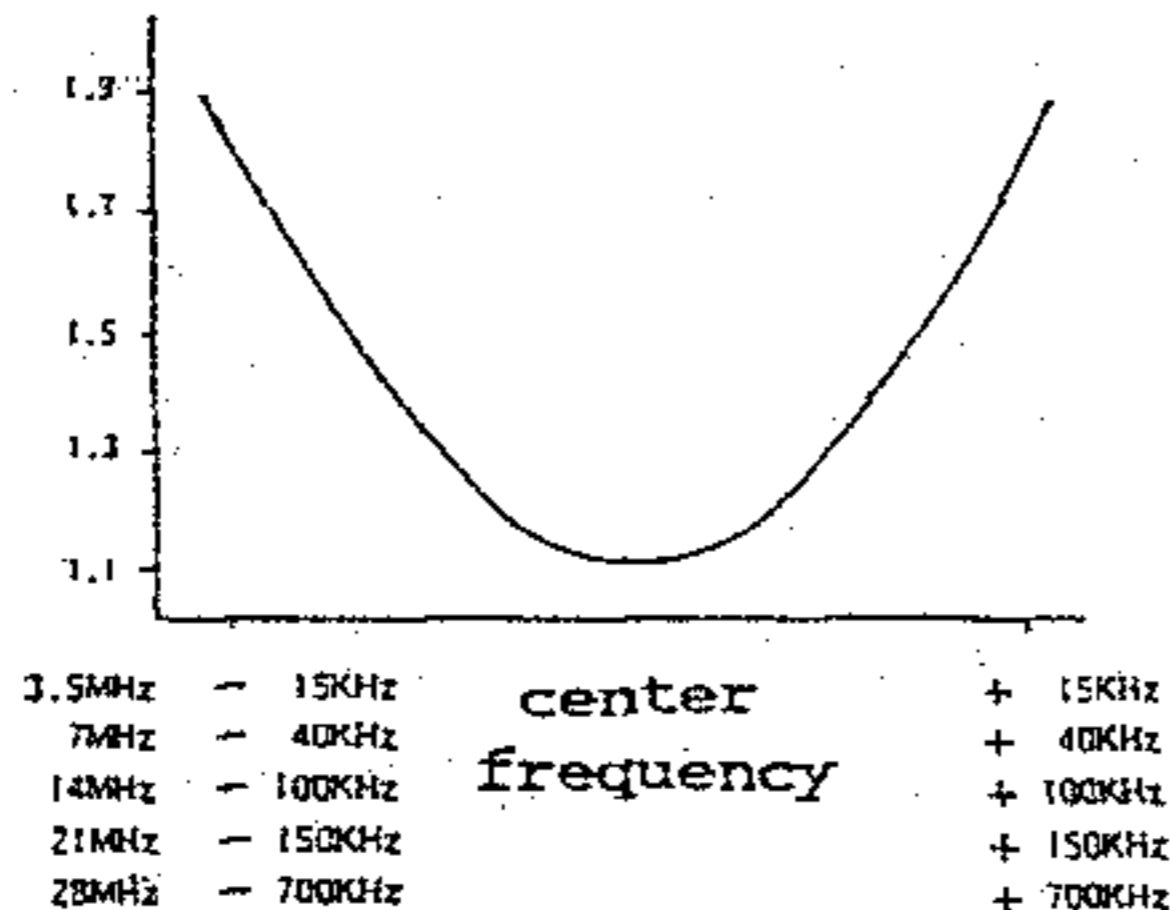
### FEATURES

- 1) Compact ground plane antenna for HF 5bands - 3.5/7/14/21/28MHz.
- 2) Low loss traps, with newly designed coil bobbin, accept operation of 500W/SSB.
- 3) Angles of radials are adjustable. You can fix them to omni-directional or to one-side, when mounting to narrow space.
- 4) Easy frequency adjustment, changing length of elements, and intervals between each traps.

### SPECIFICATIONS

Type..... 5-Band Ground plane  
 Frequencies..... 3.5/7/14/21/28MHz.  
 VSWR..... Less than 1.5 (at the center frequency)  
 Impedance..... 50  $\Omega$   
 Input Power..... 500W(SSB), 250W(CW), 120w(Continuously)  
 \*But, the followings are available for only 3.5MHz.  
 ..... 200W(SSB), 100W(CW), 50W(Continuously)  
 Max.Wind speed.. 35m/sec. (80MPH)(Instantaneous)  
 Mast Diameter... 30 $\emptyset$  - 62 $\emptyset$   
 Connection..... SO-239  
 Radial Length... 2,000m/m (80in.)  
 Total Length ... 6,100m/m (20.3ft.)  
 Weight..... 6.0 kgs.

### VSWR CHARACTER



### NOTES:

- 1) Before assembling, check the numbers of parts, according to the Parts List.
- 2) Always use high quality coax. cable of 50 ohm, and connectors.
- 3) Be sure the connector is properly secured and water-proofed by using adhesive vinyl take.
- 4) Install antenna so that no other antenna nor metallic objects are closer than 2meters, to avoid any possible influences from them.
- 5) Please refrain from transmitting with power levels greater than the specified.

# ADJUSTMENT

Adjustment should be done by using a VSWR Meter with proper capacity, frequency range and impedance. Transmitting for adjustment should be carried out in a short time with a lower power of under 50W to avoid a possible disturbance to others.



(1) Table (A) shows the standard radial length and the center frequency change per 1cm adjustment of the radials.

**TABLE A**

	Standard Length (m/m)		Center frequency change per 10m/m Radials adjustment
	Ommi	One-Side	
3.5MHz	1180	1145	6 KHz
7 MHz	1250	1115	11 KHz
14 MHz	1270	1205	18 KHz
21 MHz	1180	1150	28 KHz
28 MHz	1150		50 KHz

(2) Set your transceiver On at a desired band and confirm the center frequency.

The adjustment should be done from the highest band (28MHz) to the lower one.

(3) According to the TABLE A, adjust the length of the radials to get a desired frequency.

When you fix the radials longer, the center frequency becomes lower.

Conversely, when the radials shortened, the center frequency becomes higher.

(4) When the V.SWR of center frequency is not sufficiently low enough, further tunig can be done by adjusting the length of vertical Radiator Elements.

Frequency change per each 10m/m is just same as TABLE A. You can find each adjustable Spaces at below each Traps and Element(A)(o2).

(5) After elements adjustment, kindly confirm tight fastening of each Screws.

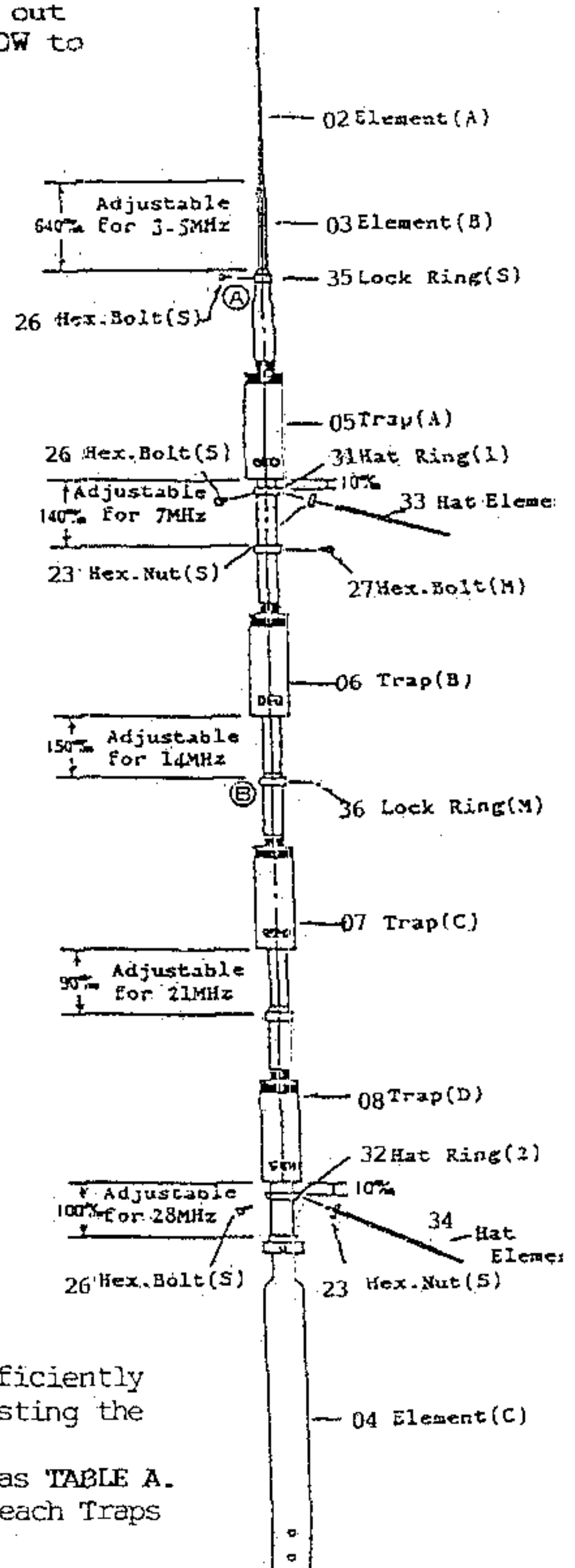


DIAGRAM E

# ASSEMBLY

(Refer to DIAGRAM B)

- 1) Attach Mount Pipe(20) to your mast. There should be at least 150m/m interval between the top of the mast and the top of the Mount Pipe.
- 2) Pass your coax. w/connector through the Mount Pipe.
- 3) Attach the waterproof coax. w/connector to Matching Section (10).  
Firmly fasten each Set Screws by Hex. wrench.
- 4) Attach the Insulator to the Matching Section, with Hex Bolts (29).
- 5) Using Lock Ring (35) and Hex Bolt-S(26), insert Radial Elements(16) into each Radial units. Refer to TABLE A for elements length. 28MHz Coil is shortest, while, 3.5MHz is longest.
- 6) Refer to DIAGRAM C for setting the radials angle, omni or one side.  
Then, attach each Radial units with Hex Nut(25). The Drain Holes of the radial units are to be faced downward.

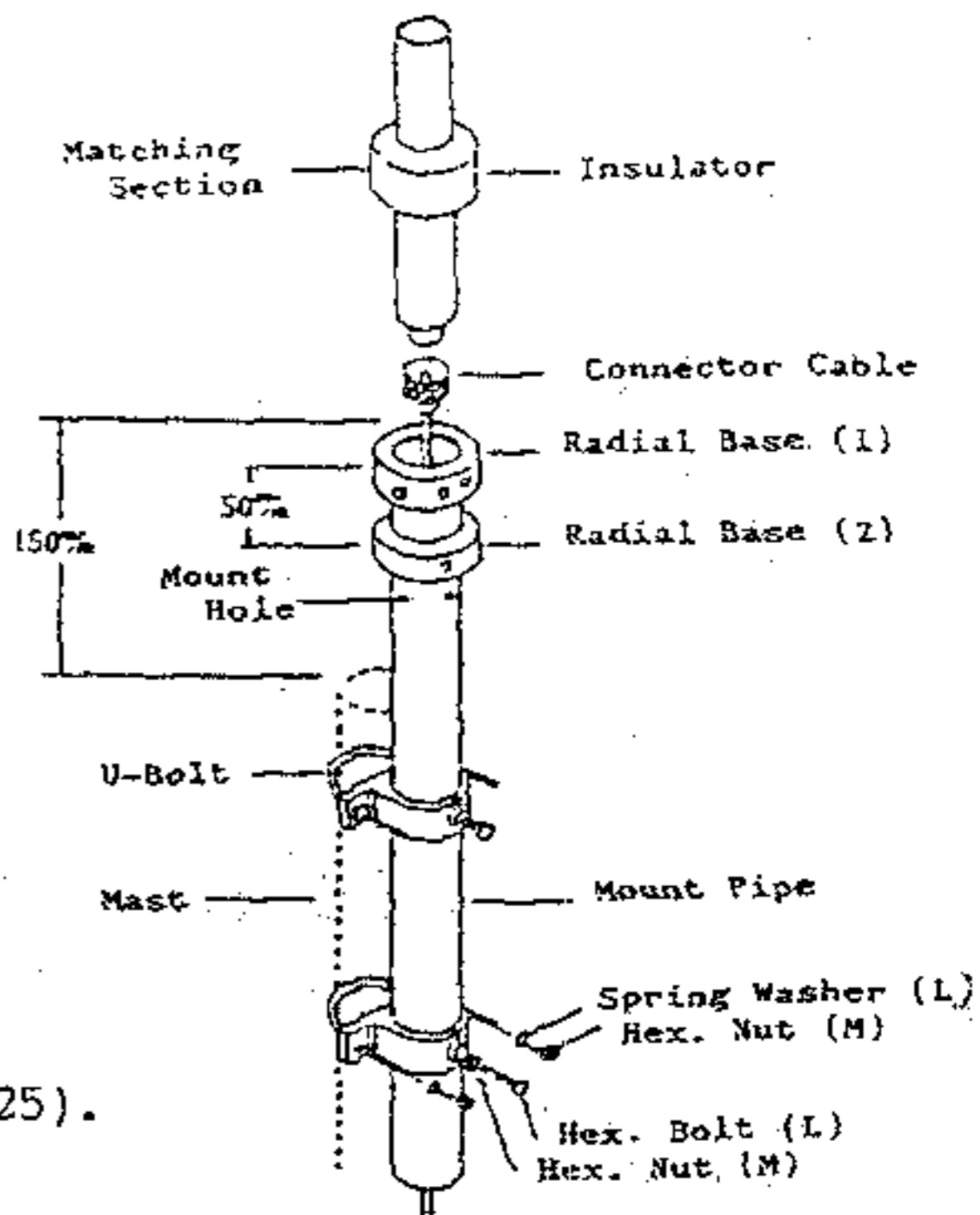
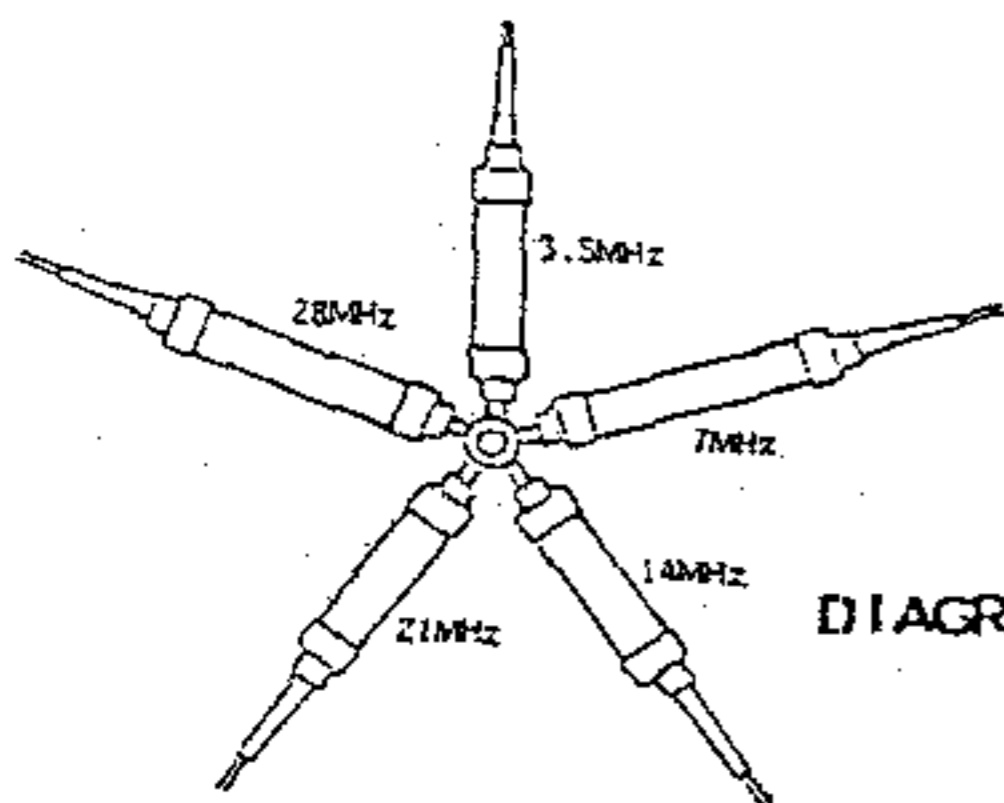


DIAGRAM B



(Omni-Directional)  
(Radials at 72°)

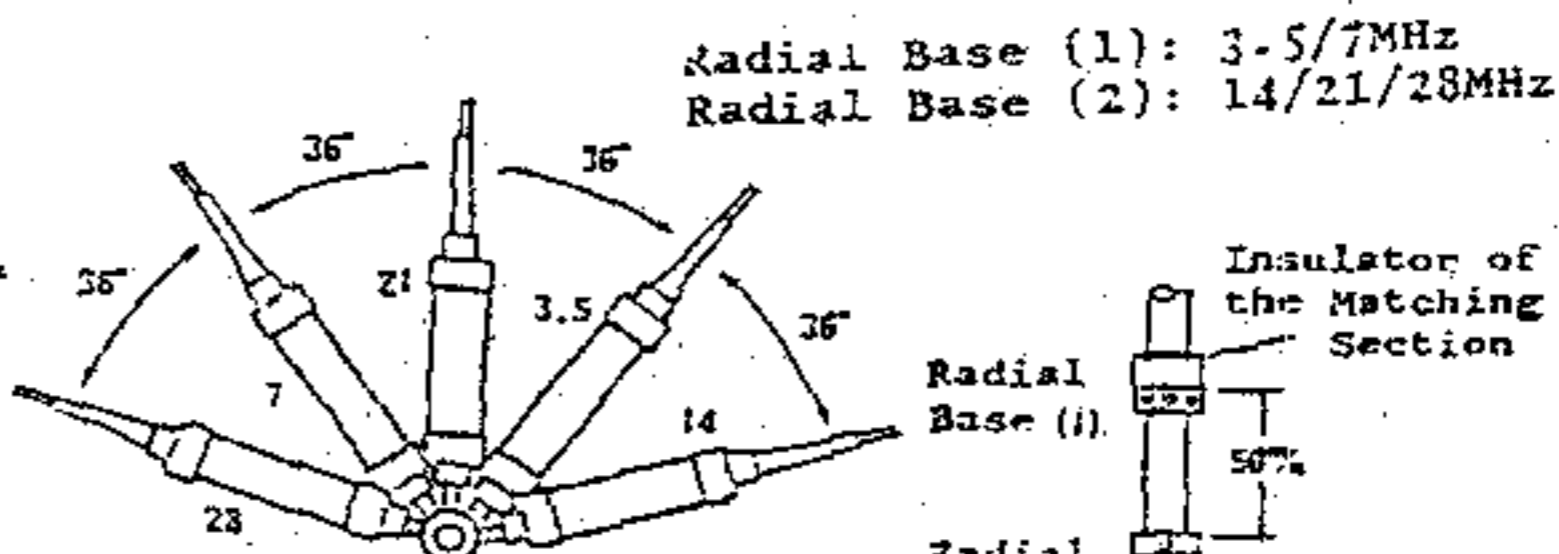
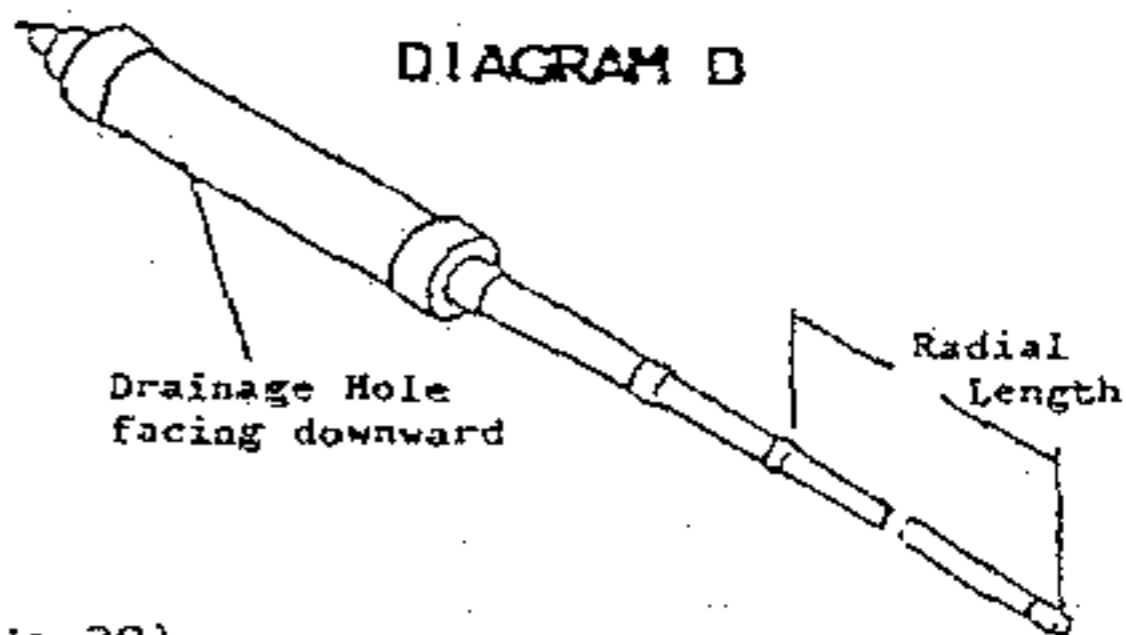


DIAGRAM C

(One-Side)  
(Radials at 36°)



DIAGRAM D



## ASSEMBLY OF VERTICAL ELEMENT

- (1) Connect the Element(A)(No.2) and the Element(B)(No.3) by the Star Washer(M4)(No.30) and Tapping Screw(M4x6)(No.19). Fix the Hat Ring(1)(No.31) to the Trap(A)(No.5) at intervals of 10m/m(1/2inch) and install the Hat Element(1)(No.33). Also install the Hat Ring(2)(No.32) and Hat Element(2)(No.34) to the Trap(D)(No.8).
- (2) Connect each Trap(A-D) by the Lock Ring and Hex Bolts. Adjust each length according to the DIAGRAM-E.
- (3) Insert the assembled Radiator to the Matching Section and fix them by the Hex. Bolts(S)(No.26) and the Spring Washer(S)(No.39).
- (4) If you plan to install the antenna in a high wind area, the use of guy-line is recommended. Close nylon or other non-metallic guy-line, at point (A) & (B).

# PARTS LIST

Nos.	Parts Name	Qty	Remarks
01	Top Cap (S)	1	7 φ x 1400
02	Element (A)	1	10 φ x 750
03	Element (B)	1	30 φ x 14
04	Element (C)	1	
05	Trap (A)	1	
06	Trap (B)	1	
07	Trap (C)	1	
08	Trap (D)	1	
09	Top Cap (L)	5	
10	Matching Section	1	
11	Radial (A)	1	3.5 MHz
12	Radial (B)	1	7 MHz
13	Radial (C)	1	14 MHz
14	Radial (D)	1	21 MHz
15	Radial (E)	1	28 MHz
16	Radial Element	5	9.5 φ x 1370
17	Radial Base (1)	1	w/2-holes
18	Radial Base (2)	1	w/3-holes
19	Tapping screw	2	M4 x 6
20	Mount pipe	1	32 φ x 450
21	Mount bracket	2	
22	U-bolt	2	M6
23	Hex. Nut (S)	6	M5
24	Hex. Nut (M)	6	M6
25	Hex. Nut (L)	5	M12
26	Hex. bolt (S)	12	M5 x 8
27	Hex. bolt (M)	4	M6 x 10
28	Hex. bolt (L)		
29	Hex. bolt (θ) type	2	M6 x 15
30	Star washer	2	M4
31	Hat Ring (1)	1	31 φ x 9
32	Hat Ring (2)	1	34 φ x 9
33	Hat Element (1)	3	5 φ x 540
34	Hat Element (2)	3	5 φ x 500
35	Lock Ring (S)	6	22 φ x 8
36	Lock Ring (M)	3	28 φ x 9
37	Lock Ring (L)	1	33 φ x 9
38	Spring Washer (L)	4	M6
39	Spring Washer (S)	4	M5

