

ASSEMBLY INSTRUCTIONS

-HB34D- TRIBAND BEAM

1.0 GENERAL

1.1 The TET HB34D is a high performance triband beam antenna designed to provide wideband operation on the 20, 15 and 10 meter amateur bands.

1.2 The antenna consists of two parasitic Directors (D1 and D2) and two phased driven elements (Radiator RA and Reflector REF). The driven elements are capacity fed, providing proper impedance match and extremely broad bandwidth.

1.3 Each band is tuned by Hi-Q trapped elements, resulting in high radiation efficiency, maximum legal power handling capability and low VSWR.

1.4 The antenna is manufactured in Norman, Oklahoma, by TET U.S.A., Inc., with other facilities in Yokohama, Japan. Materials used in the manufacture of this antenna are imported from Japan.

1.5 Your new antenna is warranted against defects in materials and workmanship for a period of six months from the date of shipment from the factory. During this period TET will provide replacement parts at no charge to the original purchaser. In case of difficulty, technical consultation is available at either of the above telephone numbers.

2.0 ASSEMBLY OF THE HB34D ANTENNA

2.1 In order to obtain maximum performance, the instructions and measurements for assembly must be followed as closely as possible.

2.2 Select a clean level area large enough to accommodate the full antenna span.

2.3 Tools required:

- A. #2 Phillips screwdriver
- B. 10mm and 13mm metric sockets or open end wrenches
- C. Measuring Tape, 12 foot or metric 3 to 4 meters long
- D. Felt tipped marking pen

3.0 BOOM ASSEMBLY

3.1 Lay out the parts for the boom. The boom consists of two sections of 50mm (2") diameter tubing 2000mm (78 3/4") long, one section 1000mm (39 3/8") long and two internal sleeves 300mm (12") long by 1 12/16" diameter (46mm)

3.2 Insert a sleeve into one end of a boom section. Align the drilled holes and secure with 4 x 10mm self tapping screws and lockwashers. Insert the exposed sleeve end into another boom section and again secure with self tapping screws and lockwashers. In a similar manner join all three boom sections. End caps are supplied with the two outer sections. The completed boom is 5 meters (16'5") long.

3.3 Refer to Figure 2. Using a felt tipped pen, place marks on the boom where the clamps holding the various elements are to be attached. Start with element REF. REF centerline is 25mm (1") away from one boom cap.

4.0 ASSEMBLY OF ELEMENTS

4.1 Identify and separate parts for the four elements. All, except for the MAIN element sections are labelled as D2, D1, RA or REF. There are two types of MAIN element sections. The 22mm tubing with a small drilled hole at each end is used for elements D2 and D1. The 22mm tubing with end caps and factory installed 9mm capacitor tubing is used for elements RA and REF. Refer to Figure 2 and Table 1 for element lengths. Refer to Figure 1 and 2 for assembly detail.

4.2 Locate eight BR22 element mounting brackets. Place two of these brackets over each RA and REF MAIN element section. Position one BR22 against the short sleeve which holds the element cap. The other BR22 will be positioned later.

4.3 Locate two sections of square element support tubing 800mm (31 $\frac{1}{2}$ ") long. Position them side by side and note the hole pattern. Four holes are drilled off center. When assembling the element bracket by certain the off center holes are located toward the outside of the bracket. Mount one MAIN element section to the bracket using 32UM U Bolts, lockwashers and nuts. The second BR22 bracket is positioned to mount over holes located at the end of the bracket. Do not tighten U Bolt hardware at this time.

4.4 Install a 7 x 40mm insulating spacer into the 9mm tubing at the inner end of the MAIN element just installed. Reinstall the screw to hold the spacer in place. Now mount another MAIN element section to the opposite end of the element bracket. The insulating spacer must be inserted into the second MAIN element section as it is mounted to the bracket. Complete 4.3 and 4.4 for elements RA and REF. Install two 60U U Bolts to the underside of each bracket. The completed assembly will appear as shown in Figure 1.

4.5 Insert RA and REF SUB element tubing (hole nearest the end of the tubing faces outward) into the MAIN element tubing. Align the drilled holes and secure with 4 x 10mm self tapping screws and lockwashers.

4.6 Insert the AUX element tubing into the longest end of the trapped coils. Align the holes and secure with self tapping screws and lockwashers. Now insert the trap, short end first, into the SUB element. Secure with self tapping hardware. Note the position of the drain holes on the traps. Rotate the MAIN element section in its bracket so that the drain holes will face downward when the element is mounted to the boom. With light wrench force, tighten the 32UM U Bolt hardware.

4.7 Locate D1 and D2 MAIN element splices and the MAIN element sections. Join two MAIN element sections together with one element splice in the same manner as the BOOM splice (3.2). Complete this step for both director elements using self tapping screws and lockwashers.

4.8 Install two BR22 brackets (one from each end) on each MAIN element. Assemble D1 and D2 MAIN elements to two sections of square element support tubing 200mm (8") long. The complete bracket is shown in Figure 1. Do not tighten the U Bolts at this time.

4.9 Assemble the remaining D1 and D2 element sections according to steps 4.5 and 4.6. Position all elements on their brackets so that the drain holes on the trap assemblies face downward. Element D1 does not have an AUX element section. Tighten all hardware.

4.10 Check all element lengths against Table 1.

SPECIFICATIONS
MODEL HB340

BANDS	14/21/28MHZ
NUMBER OF ELEMENTS	4
ELEMENTS PER BAND	4
20M	3
ANTENNA GAIN [dBd]	10.0
10/15M	8.5
20M	22
FRONT TO BACK RATIO [dB]	1.5:1 or better
VSWR	3KW PEP
POWER CAPABILITY	50 OHM
NOMINAL FEED IMPEDANCE	16'5"
BOOM LENGTH	15' 10"
TURNING RADIUS	27' 2"
MAXIMUM ELEMENT LENGTH	1½-2"
SUITABLE MAST SIZE	34 Lbs
WEIGHT	6.0 Sq Ft
WIND SURFACE AREA	120.6 Lbs
WIND LOAD AT 80 MPH	

VSWR VS FREQUENCY (TYPICAL)

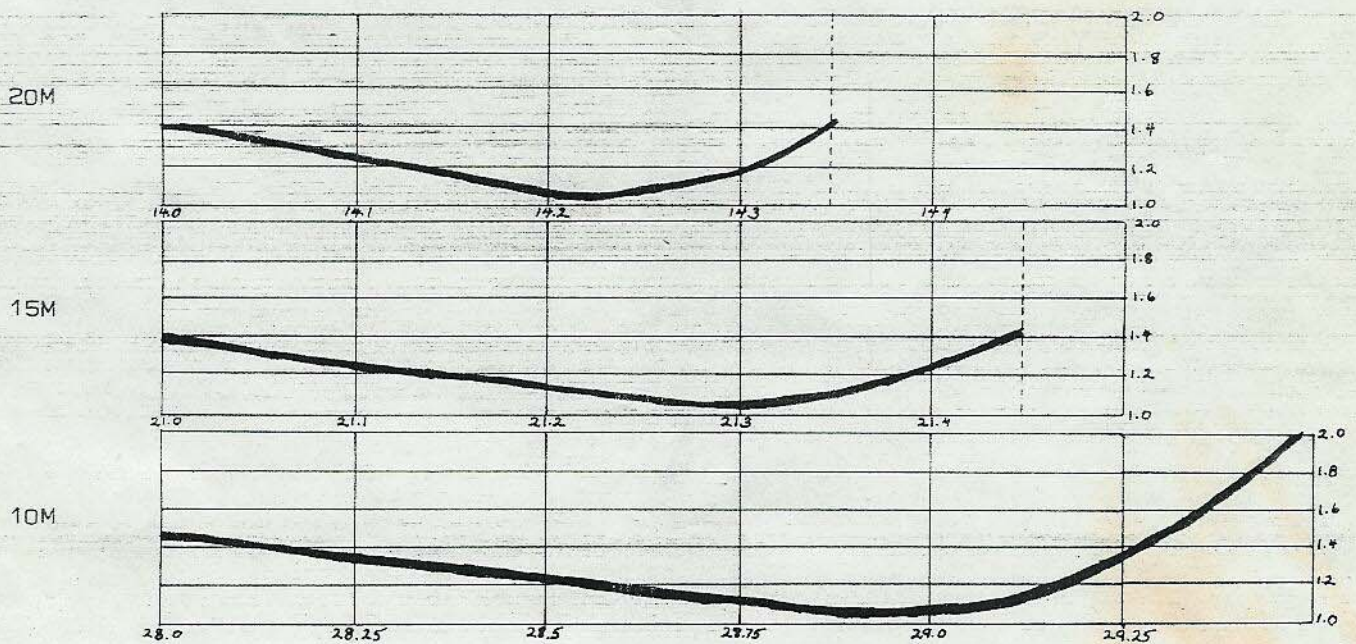
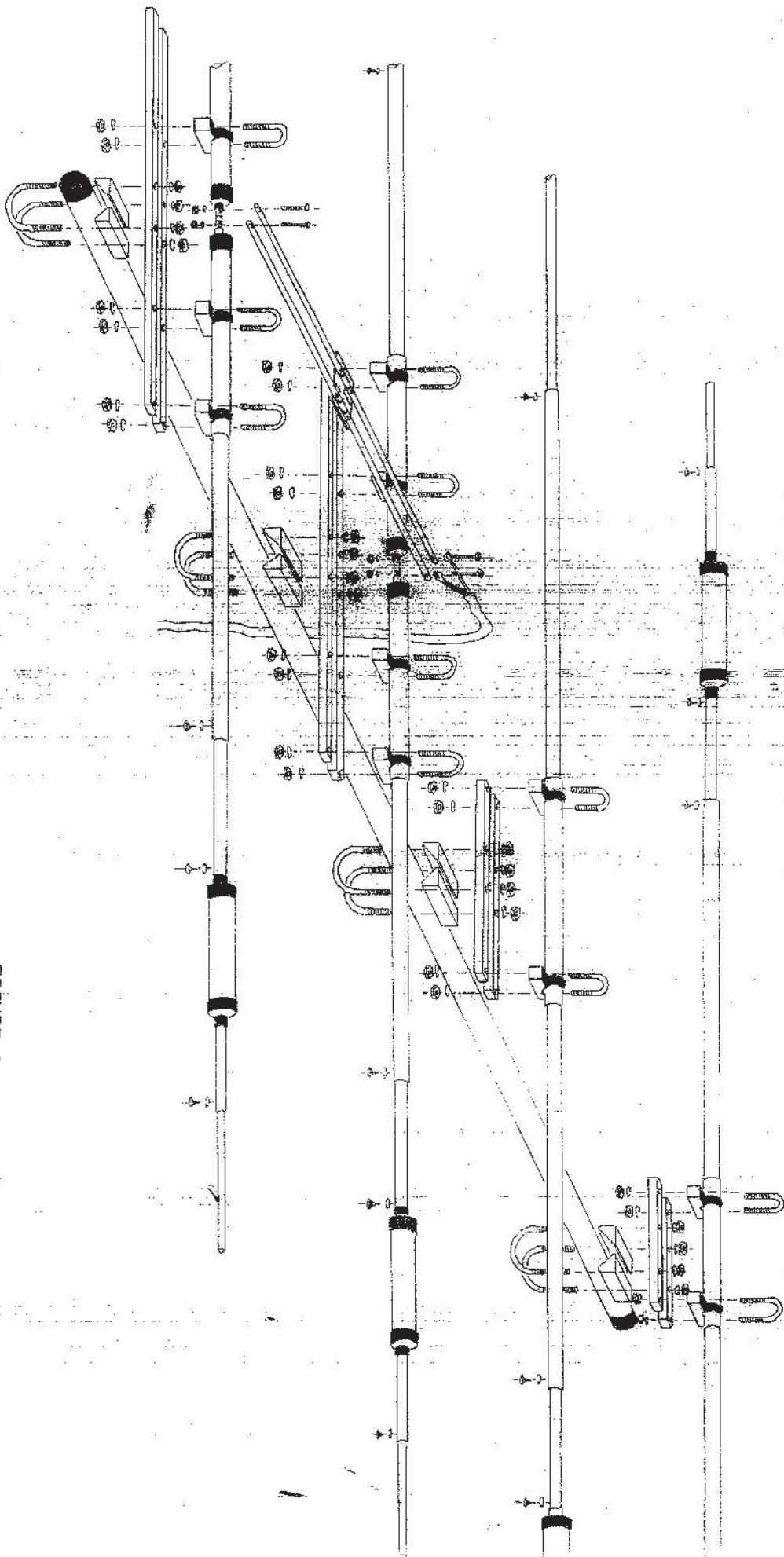
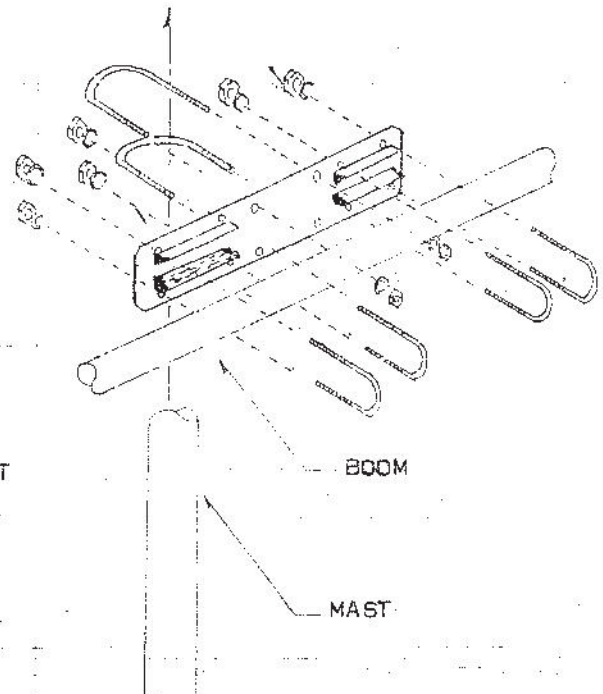
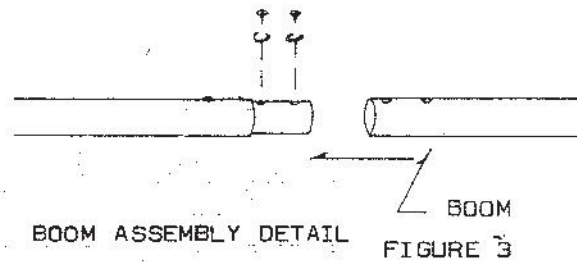


FIGURE 7
EXPANDED VIEW





BOOM TO MAST BRACKET
FIGURE 4

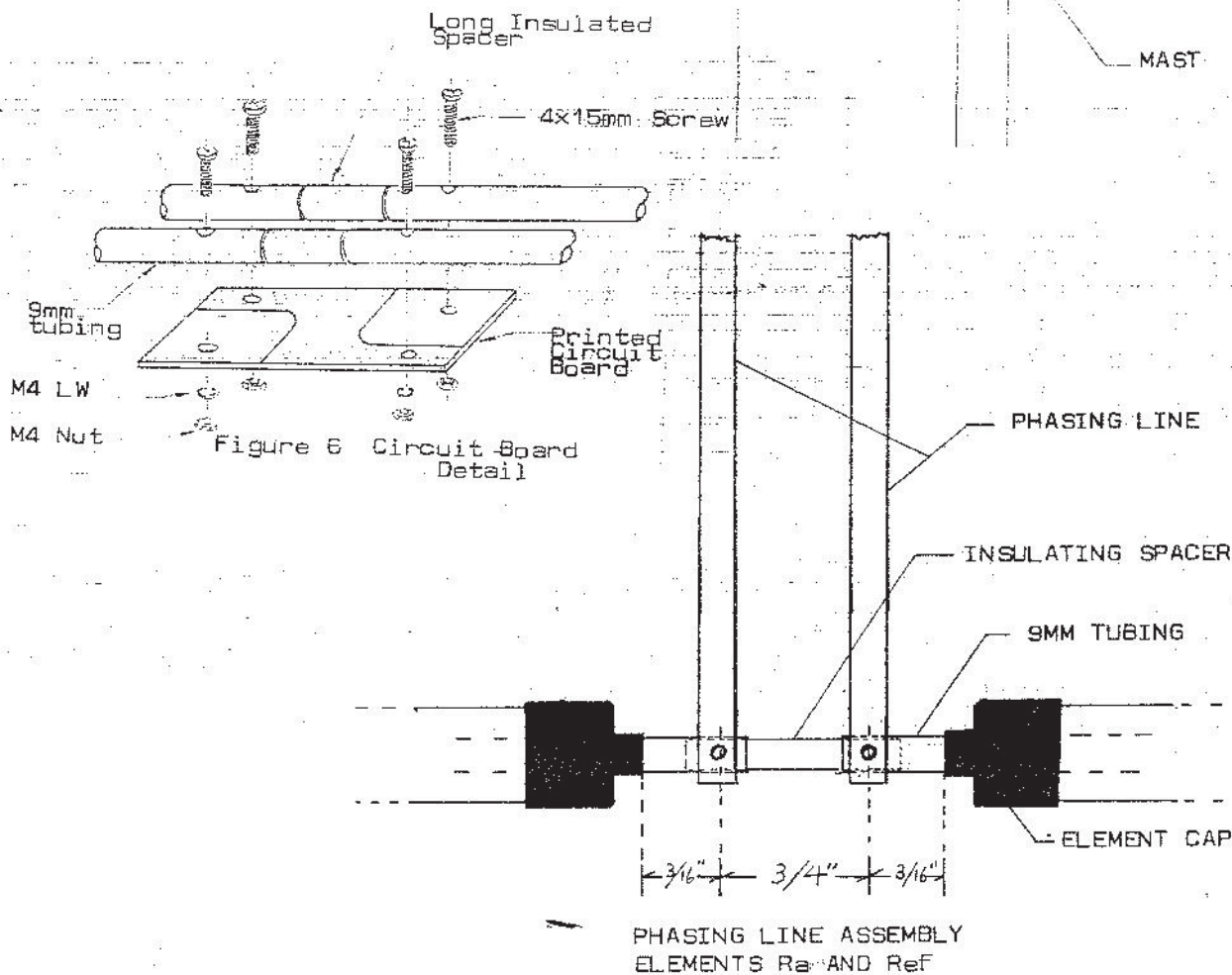


FIGURE 5

ASSEMBLY INSTRUCTIONS

MODEL HB 34D

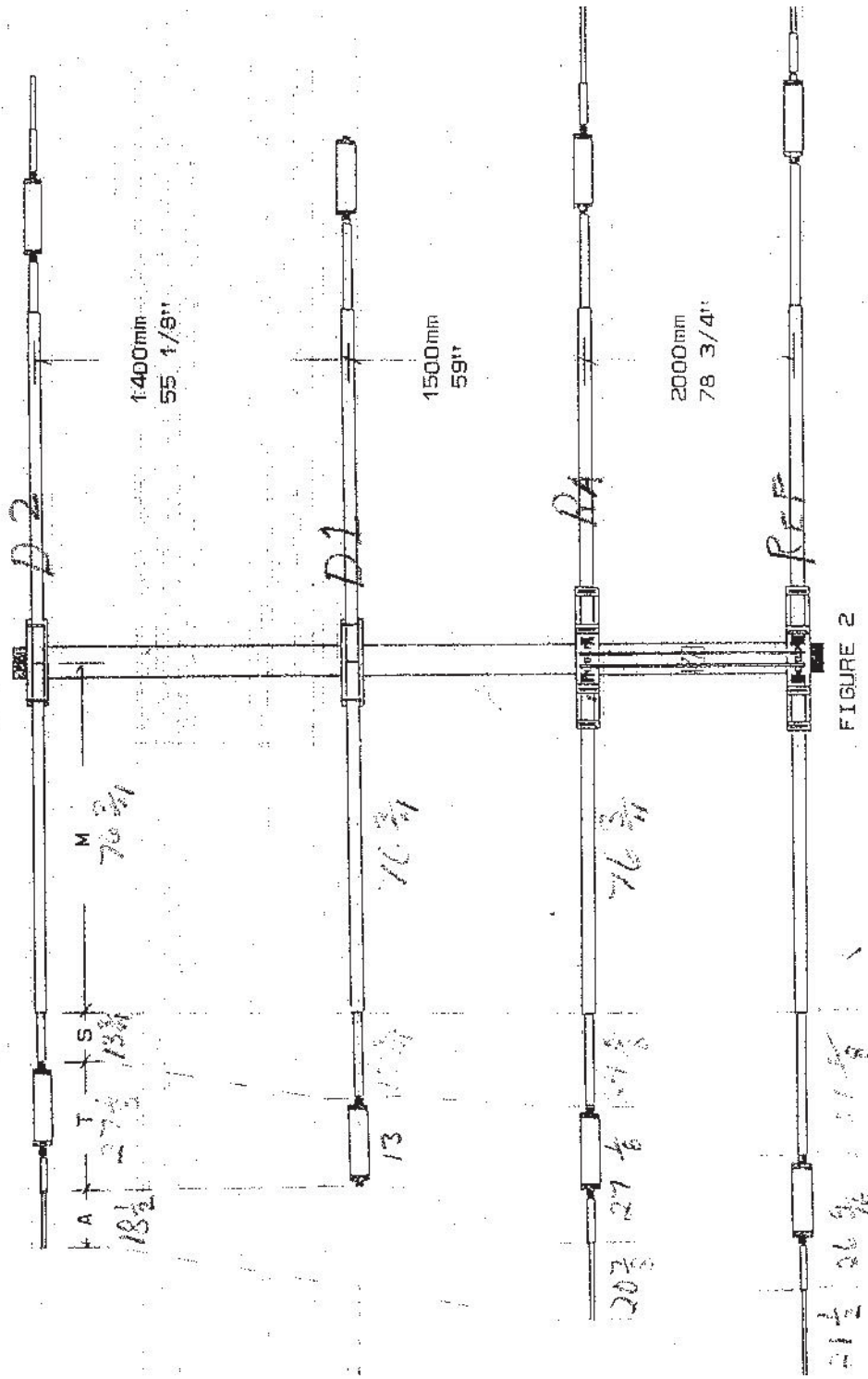


FIGURE 2

	M	S	T	A
D2	1950mm	350mm	690mm	470mm
D1	1950mm	450mm	330mm	
Ra	1950mm	625mm	690mm	530mm
Ref	1950mm	950mm	675mm	545mm

	M	S	T	A
D2	76 3/4"	13 3/4"	27 1/8"	18 1/2"
D1	76 3/4"	17 3/4"	13"	
Ra	76 3/4"	24 5/8"	27 1/8"	20 7/8"
Ref	76 3/4"	37 3/8"	26 9/16"	21 1/2"

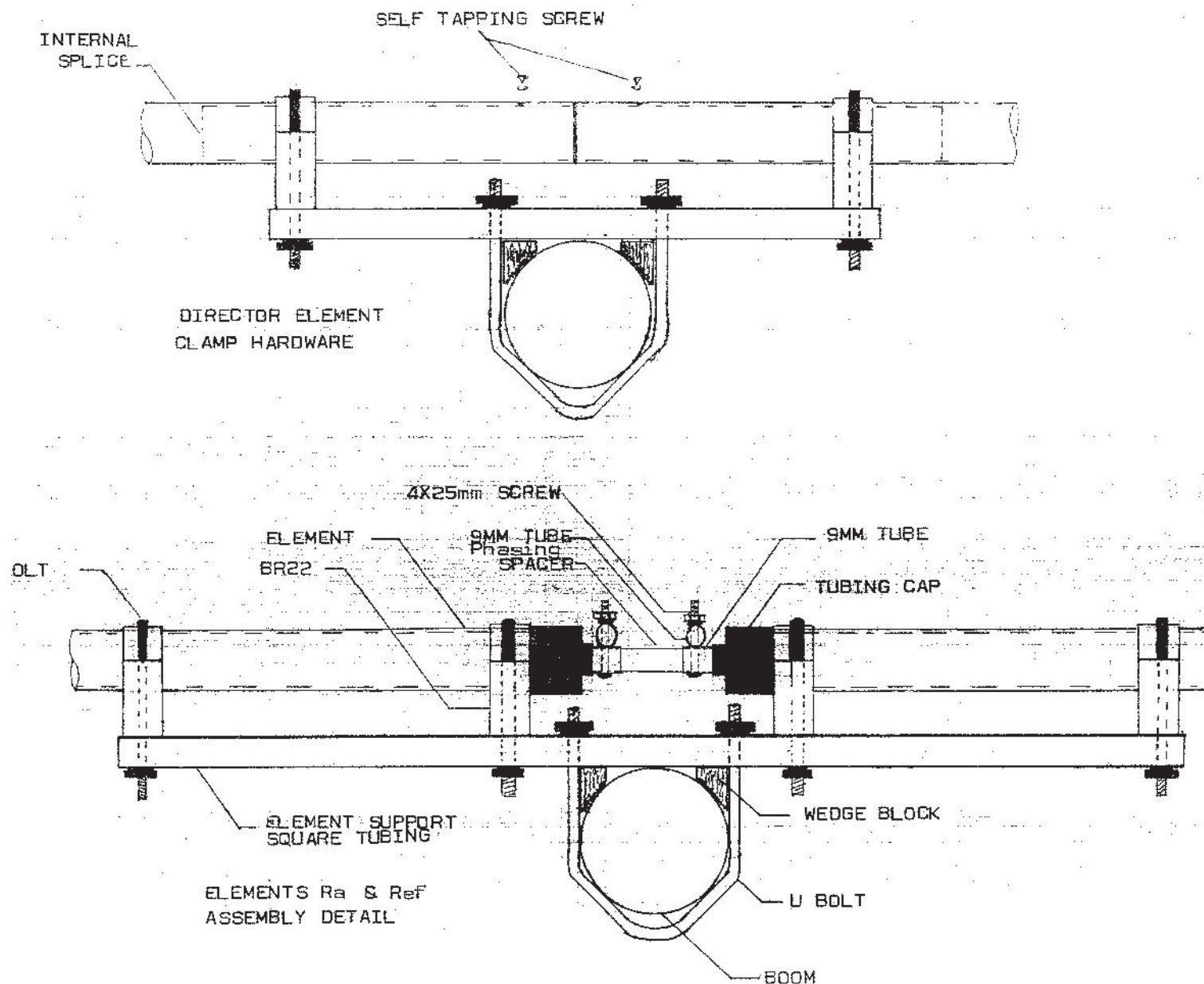


FIGURE 1

5.0 ELEMENT INSTALLATION

5.1 Attach elements REF, RA, D1 and D2 to the boom in the positions previously marked. Each element is secured with two 60U U Bolts, washers and nuts. Before tightening the assembly to the boom, slide in two NSD 50 Non Slip Wedge Blocks between the boom and the bracket. Refer to Figure 1 for detail.

5.2 The phasing line consists of four sections of 9mm tubing 1000mm (39 3/8") long and a small printed circuit board.

5.3 Attach the four sections of phase line tubing to the printed circuit board together with two 7 x 50mm insulating spacers. (Refer to Figure 5) Insert 4 x 15mm screws through the tubing and spacers, pass the end of the screws through the circuit board and secure with M4 nuts and washers. The completed assembly will have two parallel runs of 9mm tubing spaced 20mm (3/4") apart mounted to the same side of the circuit board with the insulating spacers inside the tubing for mechanical support. This assembly provides an electrical crossover and should be checked for shorts.

5.4 Mount the phasing line assembly to elements REF and RA. This line is secured to the 9mm tubing extending from the center of each MAIN REF and RA element with 4 x 25mm screws, washers and nuts. Note that the 7 x 40mm insulating spacer is installed in the 9mm tubing between the MAIN element halves. Check position of all hardware as shown in Figure 5. Element RA should be positioned so that a slight strain is placed on the phasing line when the boom is laying flat. This strain is necessary to eliminate phase line sag when the antenna is installed.

5.5 Attach the 50 ohm balun to element RA under the 4 x 25mm screws just installed in step 5.4

5.6 Tighten all bracket hardware, being careful to observe element alignment.

6.0 BOOM TO MAST BRACKET INSTALLATION

6.1 Refer to Figure 4 for assembly detail. Use four 50U U Bolts to attach the bracket to the boom. Position the bracket at the balance point of the antenna between elements RA and D1. Use four Non Slip Wedge Blocks NSD100 between the boom and the mast mounting plate.

6.2 Use two 50U U Bolts with wedge blocks when securing the antenna to your mast.

6.3 This completes assembly of your TET HB340 high performance triband beam.

7.0 INSTALLATION CONSIDERATIONS

7.1 The TET HB340 antenna has no tuning adjustments. Our own tests indicate the antenna will perform well at heights above 40 feet. Below this height SWR and performance parameters may be degraded somewhat.

H8340

MATERIAL LIST

Boom 50 x 1.85 x 2000mm	2
Boom 50 x 1.85 x 1000mm	1
Boom Splice 46 x 1.85 x 300mm	2
Main Element Section 22 x 1.4 x 1950mm with C tube	4 For RA, REF
Main Element Section 22 x 1.4 x 1950mm	4 For D1, D2
Sub Element Section 19 x 1.85 x 1050mm	2 For REF
Sub Element Section 19 x 1.85 x 800mm	2 For RA
Sub Element Section 19 x 1.85 x 600mm	4 For D1, D2
Aux Element Section 12.7 x 1.0 x 600mm	2 For REF
Aux Element Section 12.7 x 1.0 x 500mm	2 For RA
Aux Element Section 12.7 x 1.0 x 400mm	2 For D2
Coil Assembly REF	2
Coil Assembly RA	2
Coil Assembly D1	2
Coil Assembly D2	2
Element Support Square Tubing 15 x 15 x 800mm	4 For RA, REF
Element Support Square Tubing 15 x 15 x 200mm	4 For D1, D2
Phase Line Tubing 9 x 1.0 x 1000mm	4
Boom to Mast Plate	1

Bagged Parts:

U Bolt 32UM	12
Element Mounting Bracket BR22	12
Nut M6	40
Lockwasher M6	40
U Bolt 60U	8
Non Slip Wedge Block NSD50	8
Printed Circuit Board	1
Insulating Spacer 7 x 50mm	2 For Phase Line
Insulating Spacer 7 x 40mm	2 For RA, REF
Machine Screw 4 x 15mm	4
Lockwasher M4	41
Nut M4	4
Self Tapping Screw 4 x 10mm	37
U Bolt 50U	6
Nut M8	12
Lockwasher M8	12
Non Slip Wedge Block NSD100	6
Balun 50 Ohm Coaxial 1:1	1
Instruction Manual	1