



ASSEMBLY MANUAL

MULTI BAND V-DIPOLE ANTENNA

730V-x, 730V-xA

HF Band

HF & 50MHz

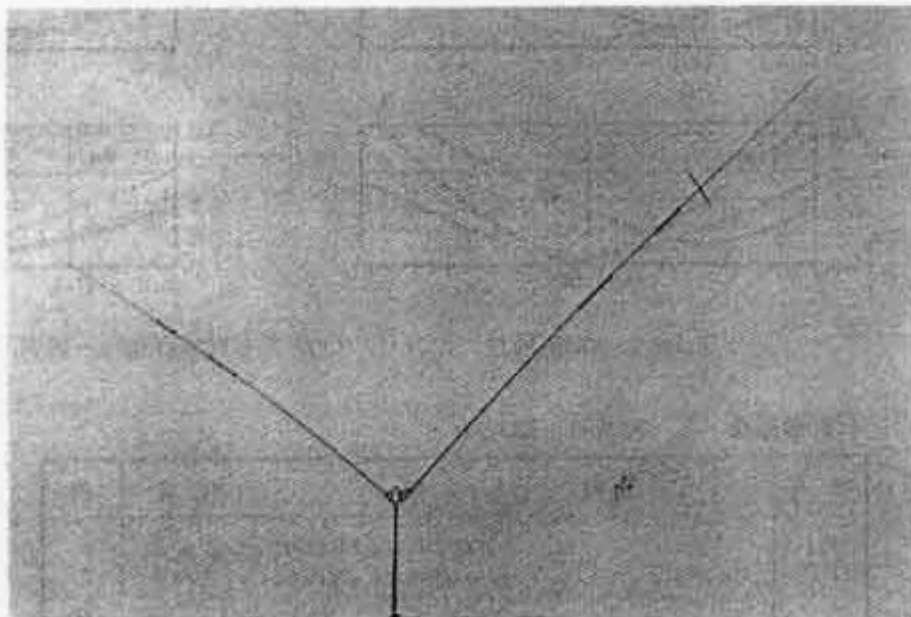


Figure 1. V-Dipole Antenna, 730V-1.

Introduction

This booklet explains the assembly and the installation for the model 730V-1,-2(HF Band) and 730V-1A,-2A(HF,50MHz). Assembling explanation on the 50MHz for both the models 730V-1, -2 are omitted due to the limited page space.

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Creative Design Corp.

1.1 GENERAL DESCRIPTION

The CREATE antenna, model 730V-x or 730V-1A is a horizontal polarization V type dipole antenna of multiband for HF band, with which is adjustable V angle. The operating frequency band contains 7, 14, 21 and 28 MHz (and 50MHz) for 730V-1 (730V-1A) in the meanwhile 730V-2 is for 7, 21 and 28 MHz (and 50MHz) for 730V-1A, which is the trap for 14 MHz is removed from 730V-1 (and 730V-1A). Trap elements of the radiator are used for frequency selection. Each band resonates with the electrical length of half Lambda(half wave). As 730V-x(A) antenna is designed for such a limited space in where the rotating radius is small, and so it is upwardly slanted either 90 or 140 degree relative to the horizontal and vertical planes at the center of radiator elements, limiting variation of input impedance due to surrounding metal objects. For those who has a better installation condition can expand its V angle wider by either 140 or 180 degree. Low loss traps and loading capacitors are employed for keeping good radiation efficiency of the antenna. A broadband balun is used at the input section of the antenna for preventing undesired radiation and for securing a good radiation pattern. (See TS7802 in attached page for details of balun transformer)

1.2 SPECIFICATIONS

	Model 730V-1 (730V-1A)	730V-2 (730V-2A)
Frequency	7/14/21/28MHz(+50MHz)	7/21/28MHz(+50MHz)
Impedance and Connector Type	50Ω -MJ-	50Ω -MJ-
VSWR	1.5:1 (See Fig 2.)	1.5:1 (See Fig 2.)
Power Capability, kW	0.6/1 7MHz	0.3/0.6 7MHz
CW/SSB	1/2 Above 14MHz	1/2 21, 28MHz
Element Length	11.6m	8.4m
Rotational Radius/ 90°	4.1m	3.0m
Weight	5.5 kg(5.9kg)	4.5 kg(4.9kg)
Wind Survival Rating	35m/s	35m/s
Wind Surface Area	0.19 m ² (0.22 m ²)	0.13 m ² (0.16 m ²)
Mast Diameter	φ42-61 mm	φ42-61 mm

Note: The parenthetic figures denote for 50MHz operable models 730V-xA.

1.2.1 VSWR Characteristic

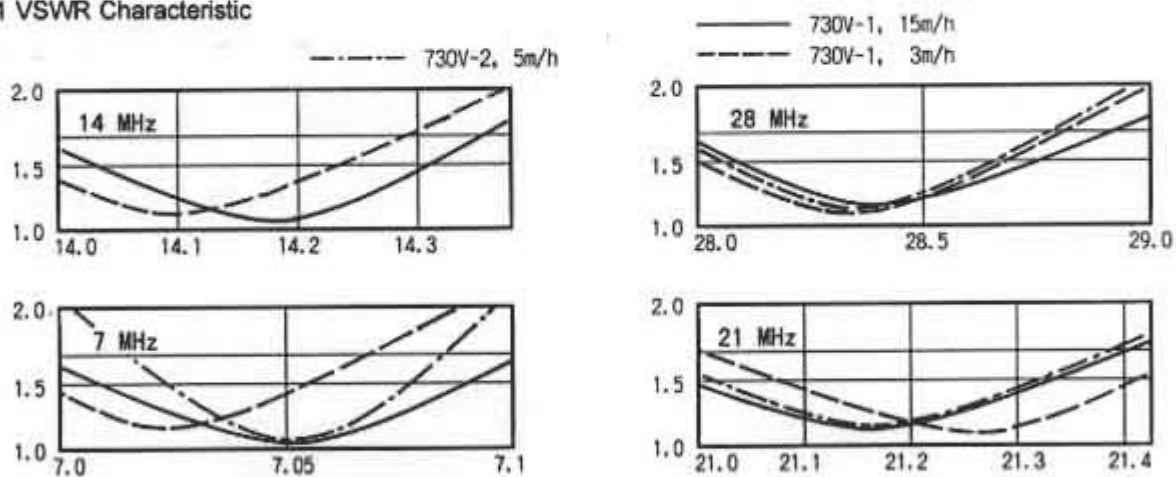


Figure 2. VSWR Characteristic 730V-1, 730V-2.(730V-xA/HF) V Angle: 90°

1.3 PARTS LIST 730V-1, 730V-2

ITEM	DESCRIPTION	Q'TY
P 1	TUBING: φ 30x2000 (φ 30x1900)	Alum. 2
P 2	TUBING: φ 10x1500 (φ 10x1100)	Alum. 2
P 3	CAP: φ 12x15	Vinyl 2
T 1	TRAP: 21, 28MHz (28MHz)	Alum. 2
T 2	TRAP: 14MHz (21MHz)	Alum. 2
C 1	MAST CLAMP MC300V	Galv. 1
C 2	SOCKET: DA30	AAS 2
C 3	HOLDER: DB30	AAS 2
C 4	TUBE CLAMP: EC-1	Alum. 2
C 5	CAPACITY BAR 35x390	Alum. 4
S 1	SCREW: φ 4x10 W.	SUS. 4
S 2	SCREW: M4x15 W.N.	SUS. 4
S 3	SCREW: M4x30 W.N.	SUS. 4
S 4	SCREW: M6x50 W.N.	SUS. 2
U 1	U-BOLT: M6-25A W.N.	SUS. 2
U 2	U-BOLT: M6-50A W.N.	SUS. 2
F 1	BALUN ASSY.: CB5M/2K, M6-50A	H86 1

Notes:

1. The parenthetical figures denote supplied parts for 730V-2.
2. In couple of these parts listed in this parts list, 730V-xA includes 50MHz kit (786C).

1.4 INSTALLATION SITE

A variety of installing conditions are available for CD 730V-x(A) antenna when compared with a general horizontal dipole antenna. To ensure satisfactory performance of the antenna, better installation condition is required that its installing site must carefully be selected. Some preferable examples of such installation is illustrated in Figure 3. Installing on the ground or the building surrounded adversely a tiled wall or roof influences a little to the antenna performances, if it is set up near it, good performance can be secured. When the antenna is set up on the roof top of concrete steel building, adjustment is needed so as to have the best directionality.

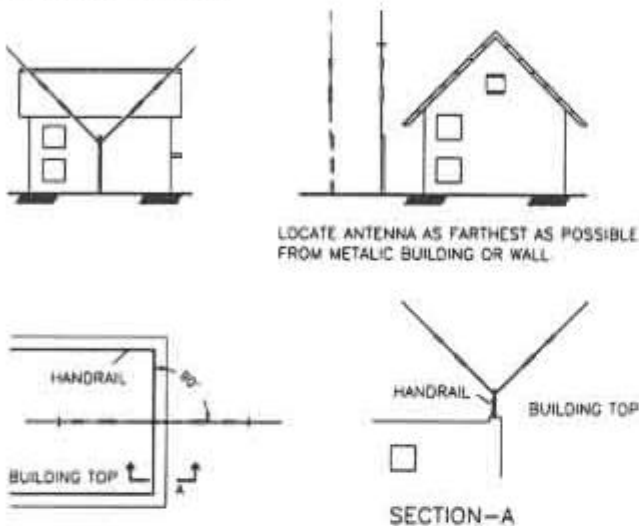


Figure 3. INSTALLATION SAMPLE

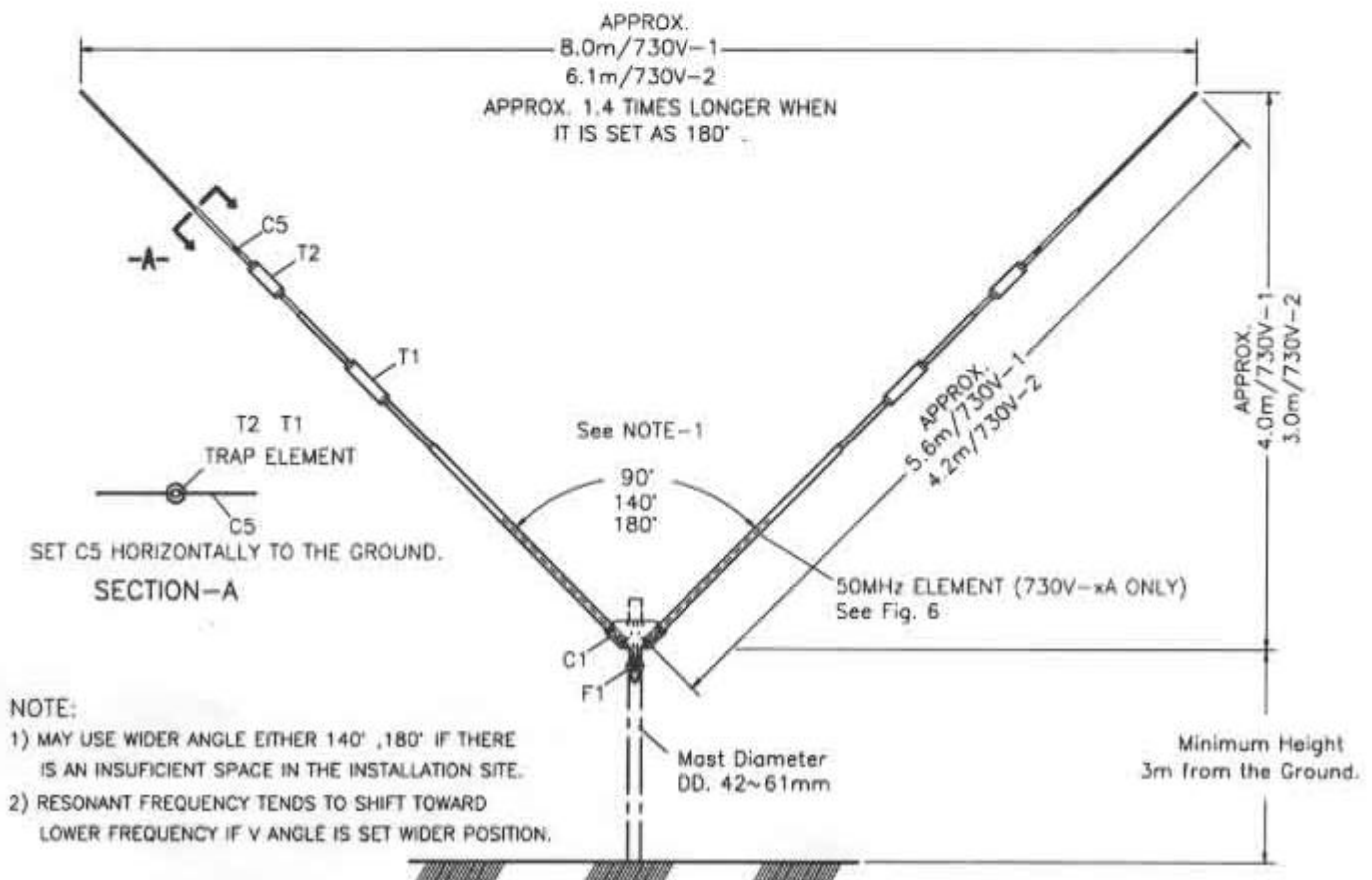
1.5 REQUIRED EQUIPMENT, BUT NOT SUPPLIED

The following listed equipments are required for assembling model 730V-x(A):

- 1) Philip Head Screw Driver
- 2) Spanner Wrench, for O.D. 7, 10, 13mm Screw
- 3) Measurement Ruler
- 4) Coaxial Cable and M-Connectors
- 5) Adhesive Vinyl Tape
- 6) 42~61mm Steel Tube for Antenna Mast

1.6 ASSEMBLY

Please see the parts list in paragraph 1.3A for the details of antenna parts supplied. Check if all of the parts are supplied completed. If any defective parts or missing are found, follow the instructions for the warranty. The completed 730V-x(A) is shown in Figure 4. and the details of the assembling of each portion in Figure 5. It is recommended to apply an silicone grease of machinery grease in tubing insertions for protect the rust from electrolytic corrosion and for improving the durability of the antenna. There is a proper directivity in the trap installation, be sure that train hole of the trap is facing downward. Securely tighten the screws and bolts but do not overtighten them till tubing is getting deformed as it will make reduce the mechanical strength of antenna as a result. Mount the balun F1 after antenna is mounted and fixed on the mast tubing for protecting balun from accidental strike damage during hoisting process. Wrap vinyl tape around the input connector for water protecting.

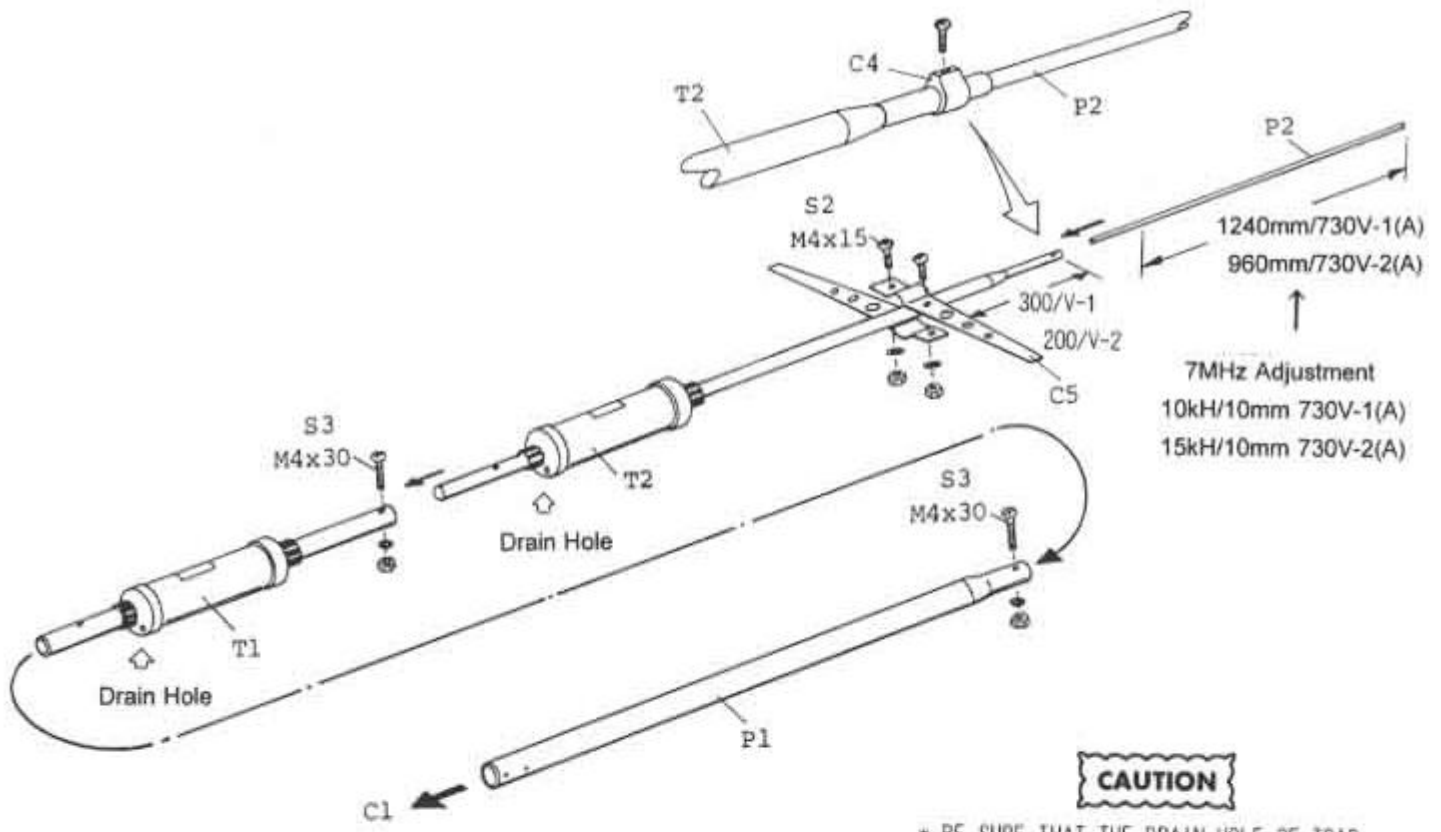


NOTE:

- 1) MAY USE WIDER ANGLE EITHER 140° ,180° IF THERE IS AN INSUFFICIENT SPACE IN THE INSTALLATION SITE.
- 2) RESONANT FREQUENCY TENDS TO SHIFT TOWARD LOWER FREQUENCY IF V ANGLE IS SET WIDER POSITION.

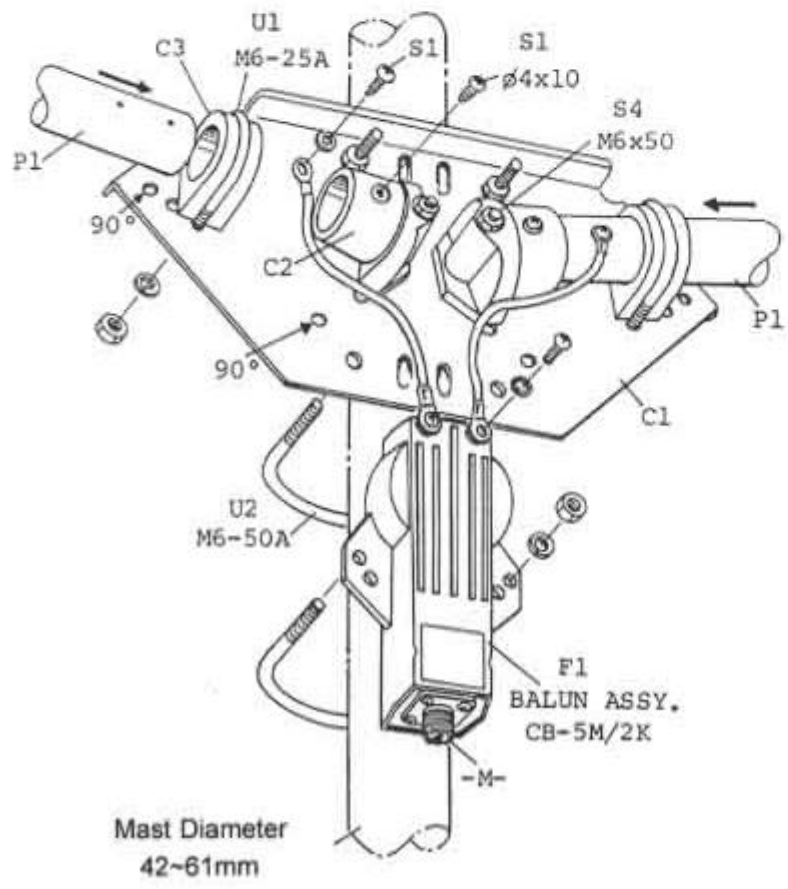
Figure 4. DIPOLE ANTENNA, 730V-x, 730V-xA

CMNS310 DWA.005A



CAUTION

- * BE SURE THAT THE DRAIN HOLE OF TRAP IS FACING DOWNWARD.
- * SET C5 CAPACITY BAR HORIZONTALLY TO THE GROUND.



NOTES:

- 1) THE FEED SECTION ILLUSTRATED HERE IS THE CASE THAT V-ANGLE OF ELEMENT IS SET AT 180°
- 2) RESONANT FREQUENCY IS TO SHIFT TOWARD LOWER SIDE IF V-ANGLE IS SET IN WIDER POSITION.

CAUTION

- * MAKE SURE TO PROCESS A PROPER SOLDERING THE COAXIAL CABLE AND CONNECOTR FOR NOT TO MAKE A LOOSE CONTACT.
- * TIE THE COXIAL CALBE TO THE MAST TUBE WITH A BINDING WIRE OR TIE TAPE. DO NOT HANG COXIAL CABLE DIRECTLY FROM THE BALUN FOR NOT TO GIVE THE BALUN SELF WEIGHT OF CO-AXIAL CABLE.

Figure 5. Antenna Assembly

786C

50MHz Element Kit

730V-1A 7-14-21-28-50MHz
730V-2A 7-21-28-50MHz

1st Edition 1997-7

1.1A GENERAL

This 730V-xA is the antenna in which radiator element for 50MHz is built in in the HF V-dipole antenna model 730V-x. Refer to Section 1.1-1.6 regarding characteristic for HF band. The characteristic of this antenna for 50MHz is a figure 8 directivity pattern and is horizontally polarized. The construction of the element for 50MHz is that the 50MHz of radiator element is horizontally mounted in parallel in the HF radiator element, and is separated from HF element DC electrically (does not contact with each other electrically). The characteristic of the VSWR in the both bands are independent with each other, therefore the performance of HF is consequently not interfered with 50MHz either.

1.2A ASSEMBLY

Fig. 6 shows construction of 50MHz section of 730V-xA. The radiator element for 50MHz shall be mounted to the proper position of HF element (near balun) with insulator kit. Before mounting it to the element, select an appropriate frequency you wish most since band determination either Low (50.0~51.7MHz) or High (50.5~52.0MHz) is selectable for your application.

- ASSEMBLING STEP:**
- 1) Assemble the insulator kit and mount them(1)-(4) on the HF elements (Refer Sec-A, Drawing)
 - 2) Insert element tube (6) into tubing hole of insulator (3). In this stage, let insulator remain free (Do not fit mounting sciew (S2) yet in the insulator (3).
 - 3) Fix center section with the element strap (5) and screw as shown in Sec-B, drawing. Either Low or High band frequency is selectable at this stage.

NOTE: TIGHTEN MOUNTING THE SCREWS FOR INSULATORS (1) AND (2) AT AN APPROPRIATE STRENGTH. DO NOT OVERTIGHTEN THEM TILL BOTH ARE TWEISTED.

1.3A PARTS LIST (EQUIPMENTS SUPPLIED)

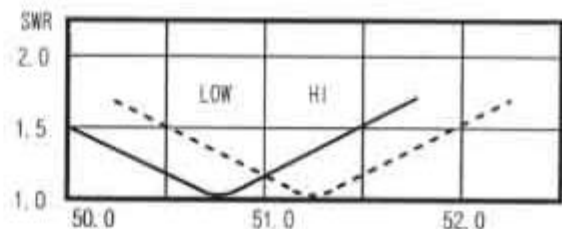
730V-xA and 786C(50MHz Kit) is equipped or supplied standard with the following parts:

Item	Description	Materials	Q'ty
1	Insulator	Plastic	4
2	Insulator	Plastic	4
3	Insulator	Plastic	4
4	Strap 20x 92	Alum.	4
5	Strap 12x 156	Alum.	1
6	Tubing $\phi 10 \times 1300$	Alum.	2
S1	Screw, M4x10 W	SUS	2
S2	Screw, M4x20 W,N.	SUS	10
S3	Screw, M4x30 W,N.	SUS	8

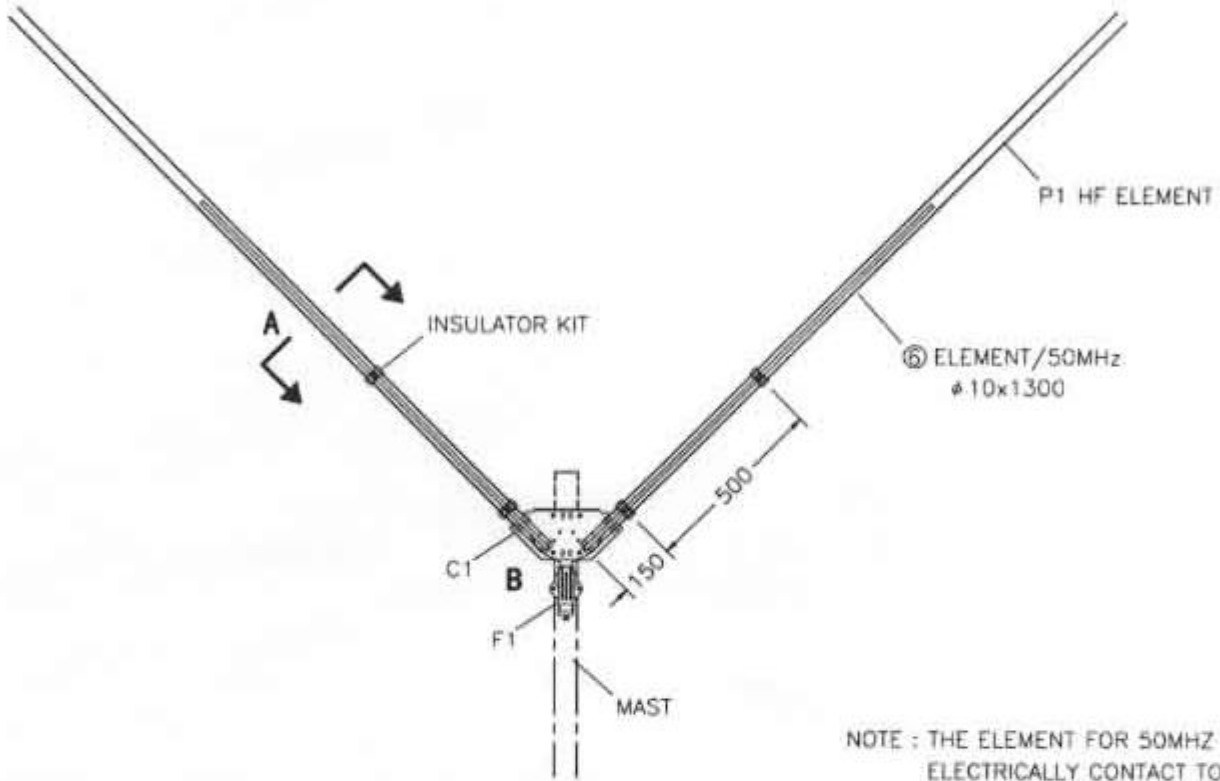
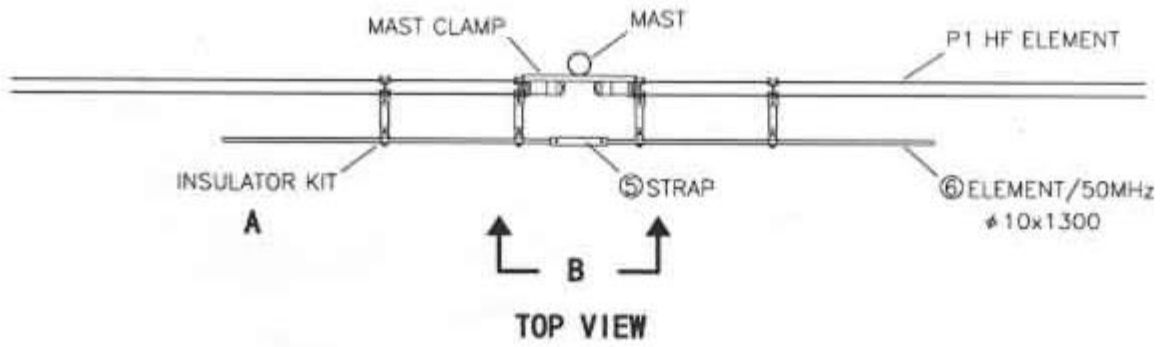
1.4A CHARACTERISTIC

The characteristic of 730V-xA in 50MHz band is as shown below, while the characteristic of 73V-xA for HF band is as the same as characteristic that of 730V-x.

Frequency	50 MHz	HI : 50.5 ~ 52.0
Input Impedance	50 Ω (Type M)	LOW : 50.0 ~ 51.5
VSWR (Within Band)	Less Than 1.7:1	
Power Capability	0.6/1kW	
CW/SSB	0.4 kg	
Weight	50MHz Section	



50MHz VSWR Characteristic



NOTE : THE ELEMENT FOR 50MHZ DOES NOT ELECTRICALLY CONTACT TO THE ELEMENT FOR HF.

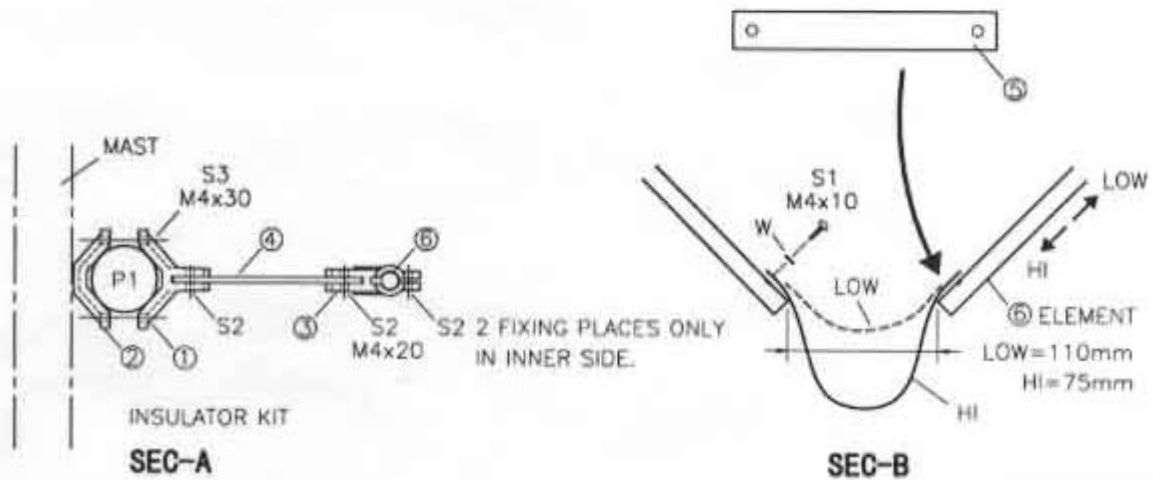


FIGURE 6. 50MHZ RADIATOR ELEMENT ASSEMBLY/730V-xA.

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