



ASSEMBLY MANUAL

TRI-BAND YAGI BEAM ANTENNA

318Jr

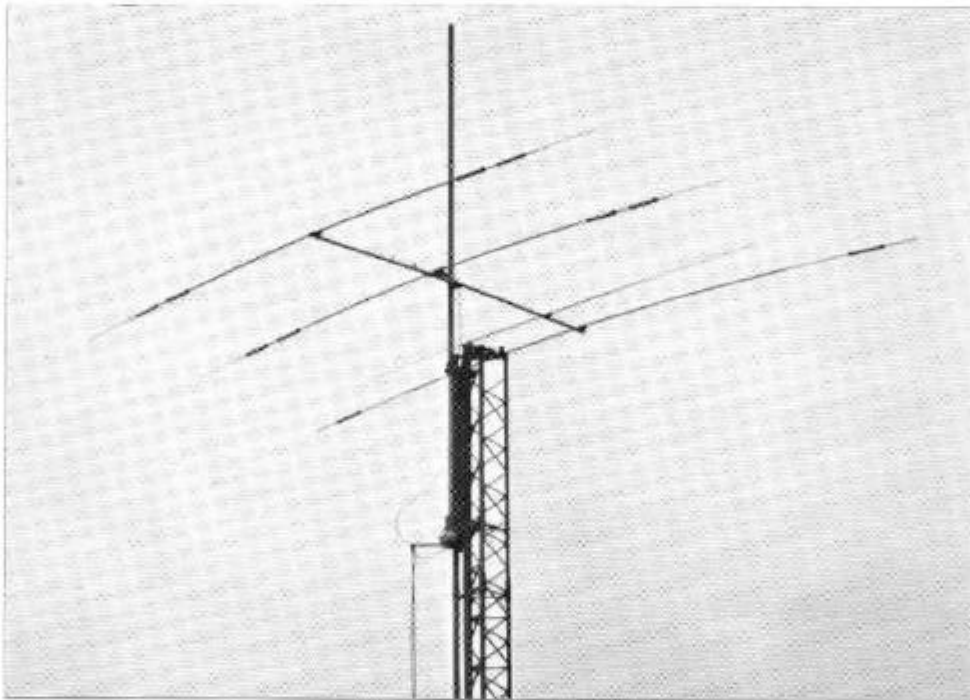


Figure 0. Model 318Jr.

The model 318 is outstanding DX Tribander for 10, 15 and 20 meters bands. It uses three full-spaced elements on all bands CD's high precision high-Q traps that deliver nearly full sized performance. Model 318 is light enough to mount on a roof top or light weight tower and can easily rotate with a standard ham rotator. It is equipped with high efficient balun for maximum transfer of RF Energy. It is constructed durable taper swaged aluminum construction with massive die-cast clamp and iriditreated hardware are used.

1st edition 1986-1

Creative Design Co., LTD. Kanagawa Japan.

1. GENERAL DESCRIPTION

The 'CREATE' antenna, model 318Jr is a narrow spaced 4 elements Tri-band Yagi beam antenna. IT is designed for those dedicated DX'ers who wanted to operate 3 bands 10,15 and 20 meters at using one antenna without sacrifice of the performance. Model 318Jr has many features. Through the use of CD's Trap we can assure that multi-banding with high efficiency is guaranteed, the characteristics of the trap itself have been designed as high Q and adjusted for minimum loss of RF energy to provide the best performance. Furthermore only the finest materials are used to assure the well construction and performance. As trap-type antennas are generally considered as a narrow banded, therefore 318Jr has alternatively divided into two major frequency selections operable either on CW or PHONE band. It is equipped with CD's exclusive Hair-Pin stub matching section with efficient CD's balun transformer, CB2F series which insures maximum transfer of RF energy from the feeding point to the antenna. It is constructed of durable, lightweight taper-swagged elements which are made of high quality aluminum tubes and mast clamp with high tension hardware that are unique in design and practical shape for maintaining its durability and maneuverability of antenna components.

1-1 Element Feature

The CD 318Jr is a 4 elements Yagi beam designed for operation on 10 15 and 20 meters. It has 2 reflectors consisting of 10 meter full-sized reflector and one dualbanding trapped element activating on both 15 and 20 meter band. High power traps are used in driven element.

2. SPECIFICATIONS

Electrical;

Frequency MHz:	14	21	28
Front Gain:	9 dB	9.5 dB	9.7 dB
F/B Ratio:	18 dB	18 dB	18 dB
F/S Ratio:	30 dB	35 dB	35 dB

Power Capability:

CW/PEP. kW 0.6/1.2 1/2 1/2

CW: 50% Duty

Impedance:

50 Ohms

Mechanical;

Element Length Max.

8.7 m

Boom Length:

4 m

Mast Diameter:

φ50-60 mm

Weight:

13 Kg

Wind Survival Rate:

38 m/s

Rotational Radius:

4.7 m

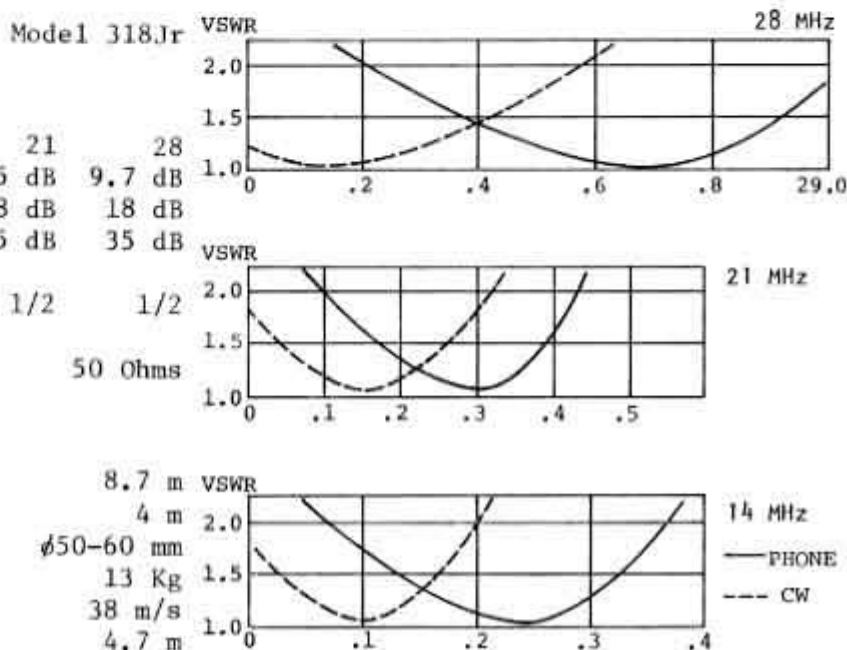


Figure 1. 318Jr, VSWR Charts.

3. CW-FONE OPERATION

Determine which mode of transmission you wish to operate, either PHONE or CW. The typical VSWR chart is shown in Figure 1 will help you to decide which mode is preferable for your application. This resonant frequency can be determined by sliding both tip elements P9 of driven element on 20 meter band. In the meanwhile for both 10 and 15 meter band, select either two screw holes of traps T1 and T3 as shown in Figure 2.

NOTE: IF YOU SET YOUR ANTENNA AT PHONE PORTION,
TOTAL ELEMENT LENGTH BECOME LESS SHORTEND
THAN IT IS SETTED IN CW PORTION.

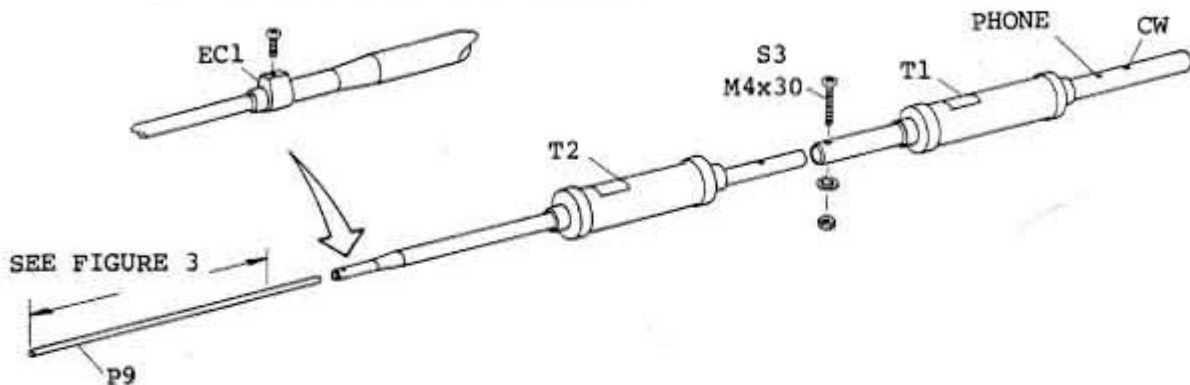


Figure 2. Frequency Selecting.

4. ASSEMBLY

4-1 Equipment Supplied

The Model 318Jr antenna is supplied complete and corresponds to the drawings contained in the manual. Refer to the PARTS LIST, for a complete breakdown of parts after unpacking.

4-2 Assembly

Read carefully "ASSEMBLY AND INSTALLATION IM7601" in later page of this instruction. Assembling of this antenna in accordance with the following steps is recommendable.

- () 1. Joint the boom tubes, mount the stub and Mast and element clamp materials to the boom. (See Figure 4.)
- () 2. Joint parastic element tubes and traps.
- () 3. Joint driven element tubes and traps. (See Figure 6.)
- () 4. Mounting each elements and balun to the boom. (See Figure 5.)
- () 5. Check all the components are properly assembled and joined and connected.
- () 6. Connect of coaxial cable shall be done after mounting on the tower. (See Figure 5.)

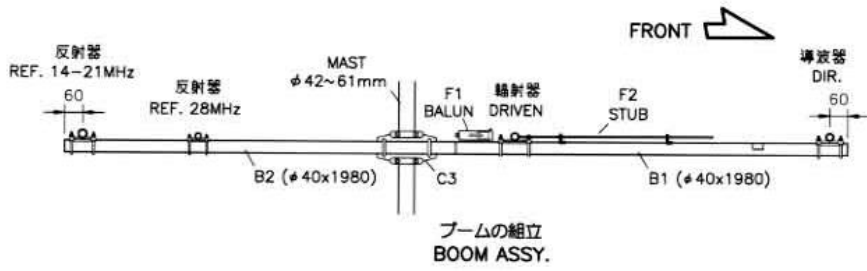
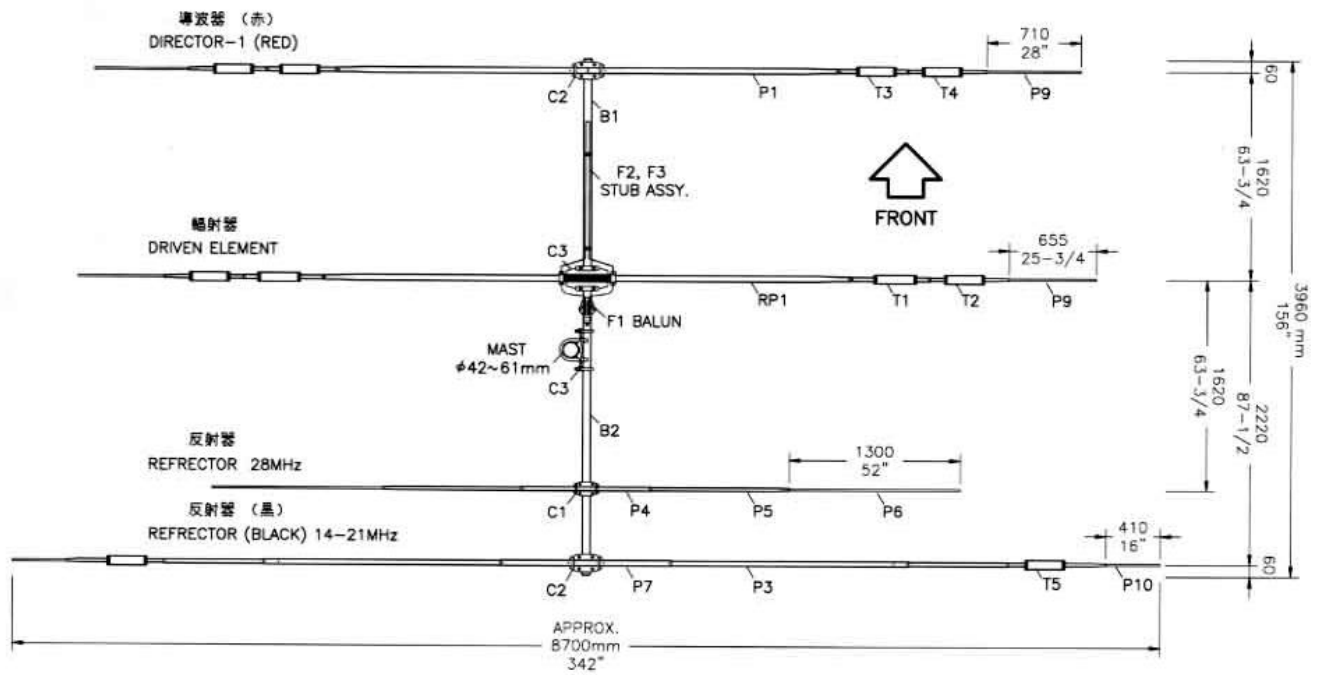
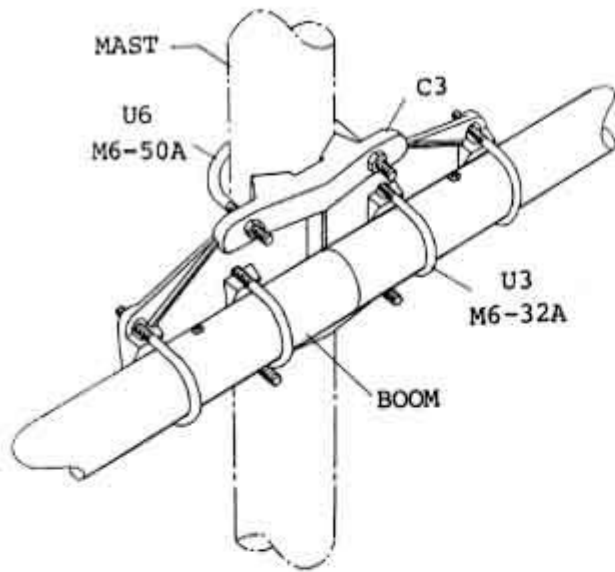


Figure 3. 318Jr. Overall View

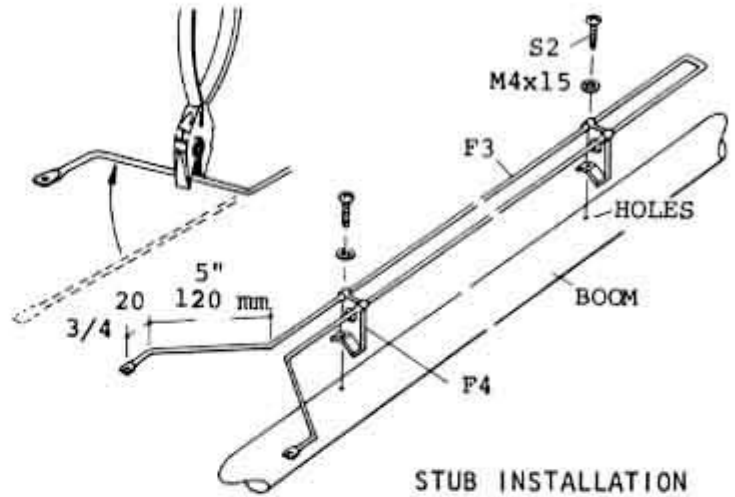
全体構成図
 NOTE: DIMENSIONS ARE IN MILLIMETERS WITH INCHES.
 記:寸法はミリメートル

4-3 Boom Assembly

Couple two tubings for boom together with a boom joiner to the mast. Set the mast clamp C3 at its setting position.



BOOM-TO-MAST



STUB INSTALLATION

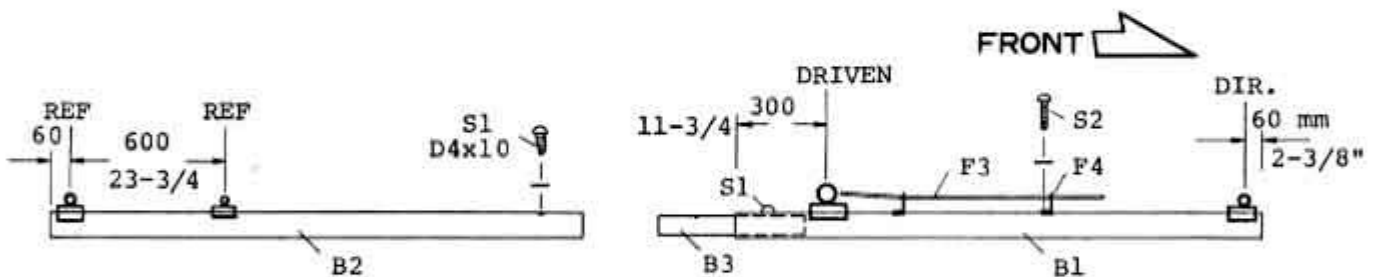
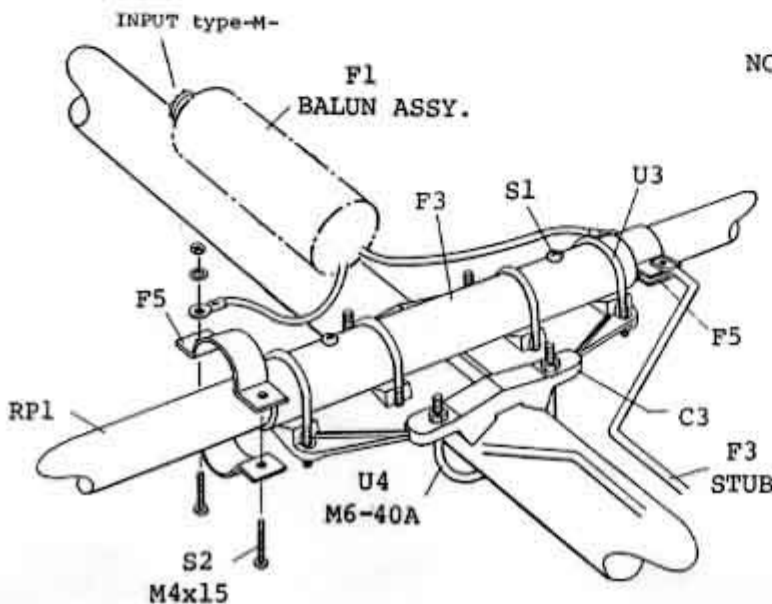


Figure 4. 318Jr, Boom Assembly.



NOTE: BE SURE TO SET THIS INSULATOR AT ITS SCREW S1 FACING UPWARD.

Figure 5. 318Jr, Feed Section.

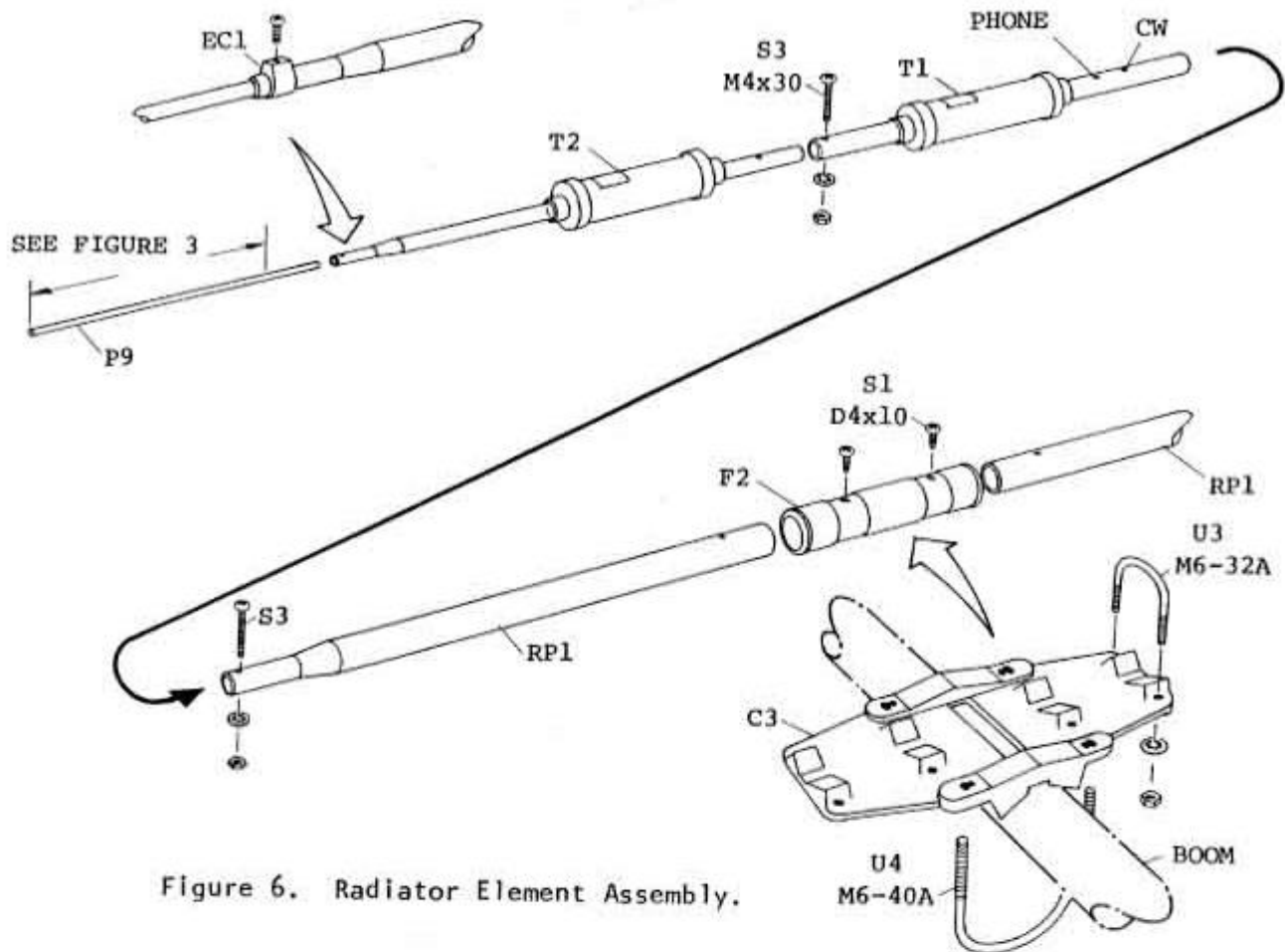


Figure 6. Radiator Element Assembly.

CAUTION

1. NO COLOR IS COATED ON THE DRIVEN-ELEMENT TRAP
2. SET THE TRAP WITH ITS DRAIN HOLE FACING DOWNWARD.

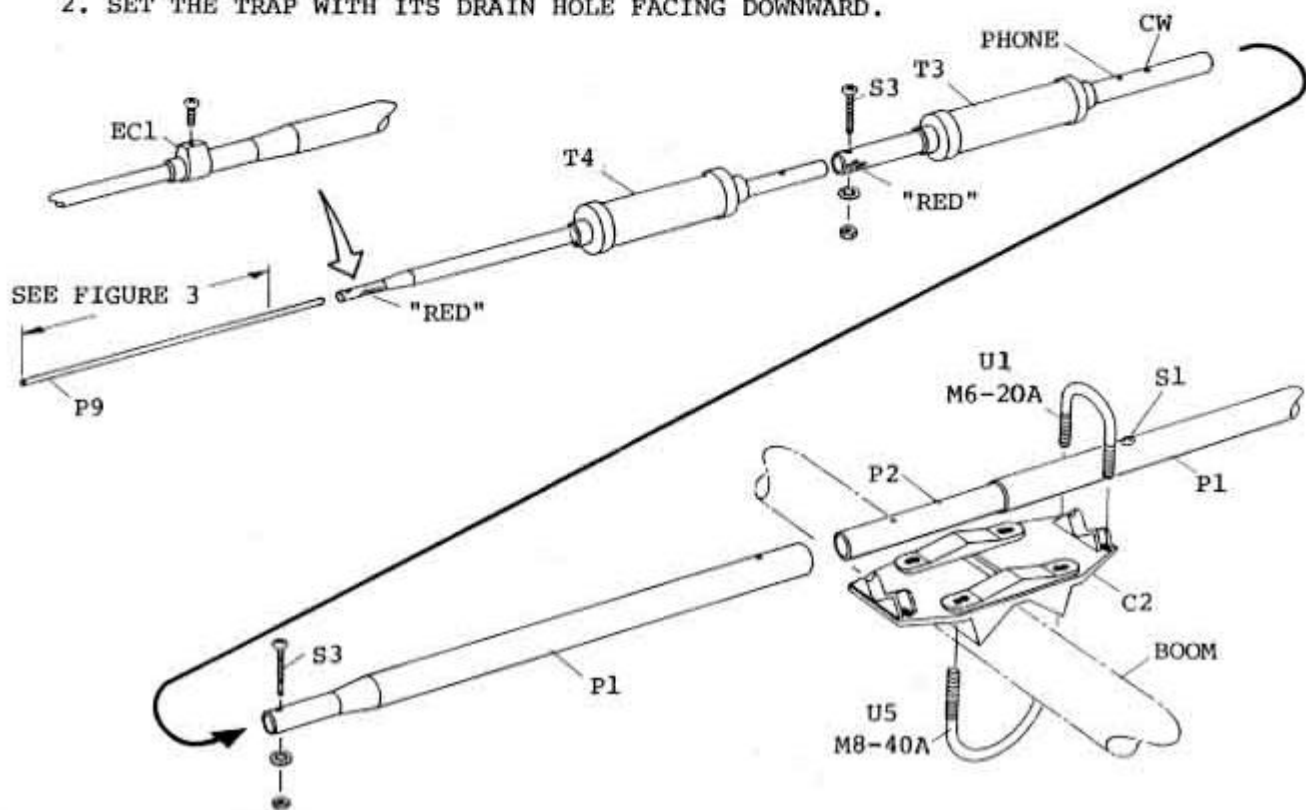
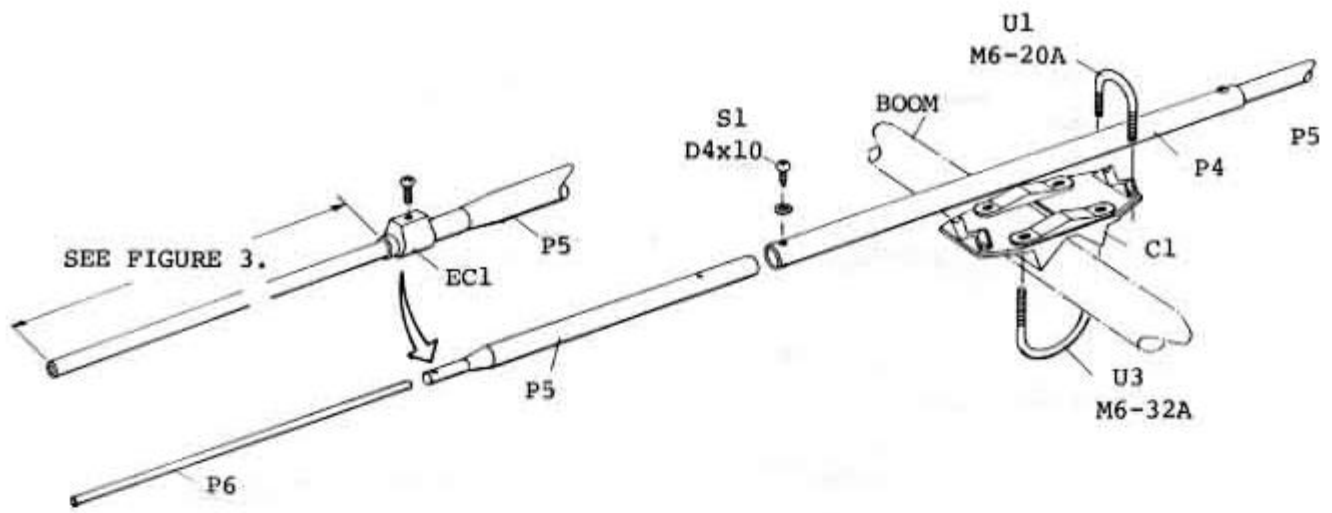


Figure 7. Director Element Assembly.



REFLECTOR, 28 MHz

CAUTION

1. NO COLOR IS COATED ON THE DRIVEN-ELEMENT TRAP
2. SET THE TRAP WITH ITS DRAIN HOLE FACING DOWNWARD.

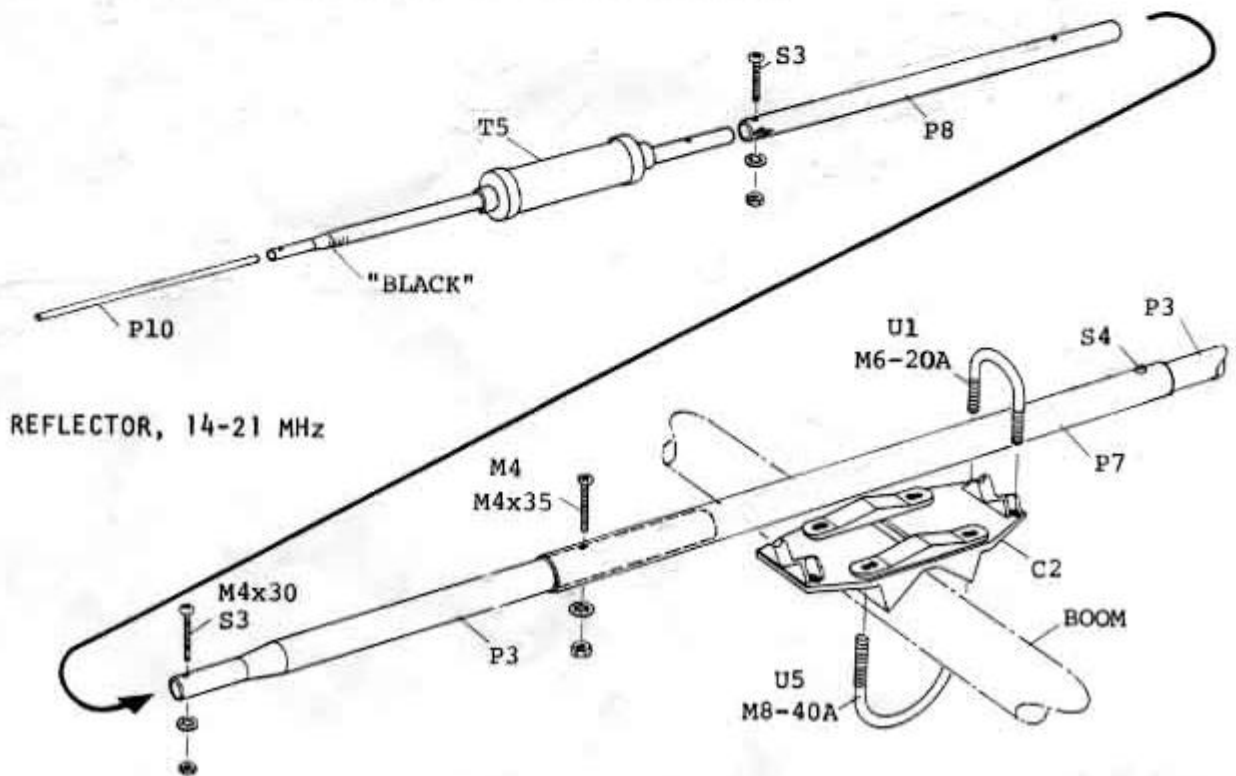


Figure 8. Reflector Element Assembly.

5 INSPECTION & OPERATION

5-1 Mechanical Check

When all the assembling of this antenna is completed, quaterly check of the boom to mast clamp and boom to element clamps should be made to see that all bolts are tightened. Retighten if necessary.

5-2 Electrical Check

Perform the following steps to check the VSWR of your 318Jr antenna, using reliable VSWR meter. Connect coaxial cable and insert VSWR meter between the cable and your transmitter to measure the VSWR. It is certain that VSWR measurement shows less 0.5% capable enough to the extent of the resonance frequency defined in Figure 2. if your 318Jr is assembled in proper order. However the resonance frequency is out of the band and measured value of VSWR is not less than 2.0:1 or more means that something is mistaken in the assembling or something is wrong with components. Recheck the every part of the system and its contact points, such as stub, balun, cable connector and its soldering as well. Generally, if balun is defective, VSWR value shows more than 4.0:1. Other possible reason is the case that if your 318Jr is stacked with another antenna or antennas. Generally it will be greatly affected if an 8 to 11 elements 144 MHz beam antenna is stacked on the same mast. For proper indication on this prevention, see section 4 in IM7601. It is recomandable that the making records of VSWR measurement and measurement of beam pattern should be retained because they will be important as the basis for your future maintenance.

SECTION 3
PARTS LIST

Model 318Jr

1991-7

ITEM	DESCRIPTION				QTY
B 1	TUBE	Boom, Front	φ 40 × 1980	Alum.	1
B 2	TUBE	Boom, Rear	φ 40 × 1980	Alum.	1
B 3	TUBE	Boom	φ 36 × 300	Alum.	1
P 1	TUBE	Element	φ 25 × 1900	Alum.	2
P 2	TUBE	Element	φ 22 × 500	Alum.	1
P 3	TUBE	Element	φ 25 × 1900	Alum.	2
RP1	TUBE	Element	φ 25 × 1900	Alum.	2
P 4	TUBE	Element	φ 20 × 990	Alum.	1
P 5	TUBE	Element	φ 17 × 1200	Alum.	2
P 6	TUBE	Element	φ 10 × 1400	Alum.	2
P 7	TUBE	Element	φ 28 × 1300	Alum.	1
P 8	TUBE	Element	φ 20 × 990	Alum.	2
P 9	TUBE	Element	φ 10 × 800	Alum.	4
P10	TUBE	Element	φ 10 × 550	Alum.	2
T 1	TRAP	Driven	28 MHz		2
T 2	TRAP	Driven	21 MHz		2
T 3	TRAP	Director	28 MHz (Red)		2
T 4	TRAP	Director	21 MHz (Red)		2
T 5	TRAP	Reflector	21 MHz (Black)		2
C 1	CLAMP	Element	MC- 70	Alum.	1
C 2	CLAMP	Element	MC- 90	Alum.	2
C 3	CLAMP	Mast	MC-110	Alum.	2
F 1	BALUN Assy.		CB3F/2K		1
F 2	TUBE INSULATOR		φ 31 × 210	A.S.	1
F 3	STUB ROD		φ 5 × 1000	Alum.	1
PARTS PACK - A -					
F 4	STUB INSULATOR			P.C.	2
F 5	SADDLE		D25	Alum.	4
U 1	U-BOLT		M6-25A W, N.	Sus.	6
U 3	U-BOLT		M6-32A W, N.	Sus.	10
U 4	U-BOLT		M6-40A W, N.	Sus.	2
U 5	U-BOLT		M8-40A W, N.	Galv.	4
U 6	U-BOLT		M8-50A W, N.	Galv.	2
EC1	TUBE CLAMP		φ 12	Alum.	8
S 1	SCREW		M4 × 10 W.	Sus.	8
S 2	SCREW		M4 × 15 W, N.	Sus.	6
S 3	SCREW		M4 × 30 W, N.	Nic.	12
S 4	SCREW		M4 × 35 W, N.	Nic.	2

CMN9804