

## SYSTEM 33

### 20, 15, 10 METERS TRIBANDER

Band MHz:	14-21-28	Longest element:	27'4"
Maximum power input:	legal limit	Turning radius:	15'9"
Gain (dbd):	up to 8 dB	Maximum mast diameter:	2" O.D.
VSWR at resonance:	1.3:1	Surface area:	5.7 sq.ft.
Impedence:	50 ohms	Wind loading at 80 mph:	114 lbs.
F/B ratio:	up to 20 dB	Assembled weight (approx.):	37 lbs.
Boom (O.D. x length):	2" x 14'4"	Shipping weight (approx.):	42 lbs.
No. elements:	3	Direct 52 ohm feed, no balun required	
		Maximum wind survival:	100 mph

### PRELIMINARY INSTRUCTIONS

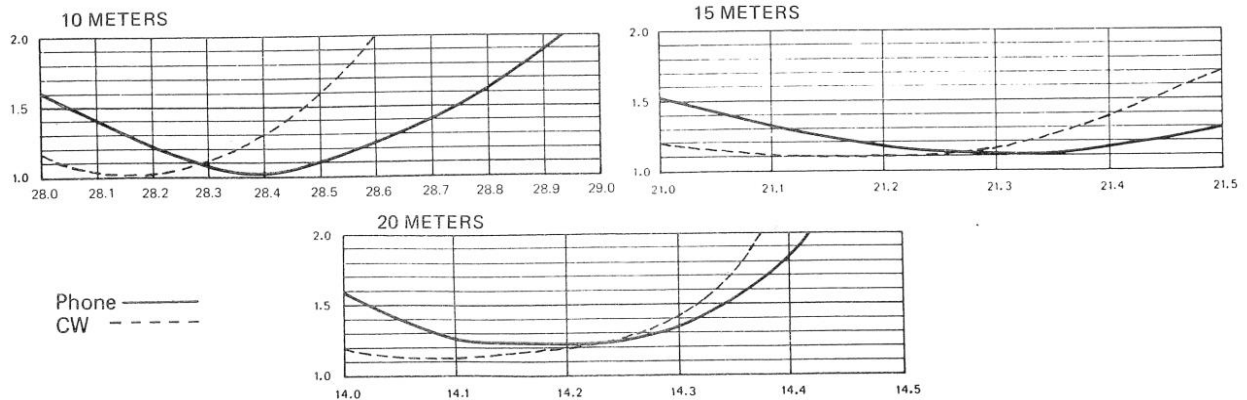
For the best results and the best use of your time, familiarize yourself with all parts and instructions before beginning assembly.

Begin assembly by unpacking everything and checking all your parts against the parts list. Do not proceed until you have determined that you have everything on the list, and each item in the quantity specified. If anything is missing, contact the Customer Service Dept. at Wilson Systems immediately, and tell us exactly what is missing. Do not begin assembling your antenna until you have all parts in hand.

Read your instructions completely, and be sure you understand them, before you start. Do not begin assembly until you are sure you have ample time to finish - a partially completed antenna is especially prone to damage, and parts scattered around are easily lost.

If you lose or damage any parts, or have any problems you cannot work out by yourself, call us!! We have experienced dedicated people who understand your problems and are anxious to help you.

### ACTUAL SWR CURVES



**PARTS LIST**

**SYSTEM 33**

PART	QTY.	O.D.	SIZE	LENGTH	DESCRIPTION	CHECK LIST
T95P	1	2"	.057"	80"	Alum. Tubing swaged 4 1/2" both ends to fit itself	<input checked="" type="checkbox"/>
T53	1	1.845"	.060"	80"	Swaged inside T95P	<input checked="" type="checkbox"/>
T96P	2	2"	.057"	50-1/2"	Alum. Tubing slotted one end	<input checked="" type="checkbox"/>
T27P	6	1-1/4"	.049"	36"	Alum. Tubing slotted one end	<input checked="" type="checkbox"/>
T20P	6	1-1/8"	.049"	54"	Alum. Tubing swaged and slotted one end to accept 7/8" O.D. Tubing	<input checked="" type="checkbox"/>
T97P	2	7/8"	.049"	36"	Alum. Tubing slotted one end	<input checked="" type="checkbox"/>
T98P	2	7/8"	.049"	26"	Alum. Tubing slotted one end	<input checked="" type="checkbox"/>
T66P	2	7/8"	.049"	17"	Alum. Tubing slotted one end	<input checked="" type="checkbox"/>
T72P	6	5/8"	.049"	32"	Alum. Tubing	<input checked="" type="checkbox"/>
PO2P	1		5" x 1/4"	5"	Boom-to-Mast Plate	<input checked="" type="checkbox"/>
BE6P	2				Boom-to-Element Plates for insulators	<input checked="" type="checkbox"/>
BE7P	4				Boom-to-Element Mounts for 1 1/4" O.D. Tubing	<input checked="" type="checkbox"/>
TA1P	2				Reflector Traps (Blue)	<input checked="" type="checkbox"/>
TA2P	2				Radiator Traps (Red)	<input checked="" type="checkbox"/>
TA3P	2				Director Traps (Green)	<input checked="" type="checkbox"/>
SY33	1				Set of Instructions	<input checked="" type="checkbox"/>
PE1	1				Bag Penetrox (Inside Instruction Manual Envelope)	<input checked="" type="checkbox"/>

**HARDWARE BAG NO. 1**

N01	12		5/16-18		Hex Nuts	<input type="checkbox"/>
N21	24		1/4-20		Hex Nuts	<input type="checkbox"/>
N25	2		12-24		Hex Nuts	<input type="checkbox"/>
N23	6		1/4-20		Square Nuts	<input type="checkbox"/>
N13	26		12-24		Square Nuts	<input type="checkbox"/>
N02	12		5/16"		Lockwashers	<input type="checkbox"/>
N22	24		1/4"		Lockwashers	<input type="checkbox"/>
N14	2		No. 12		Lockwashers	<input type="checkbox"/>
S49	24		1/4-20	7/8"	Hex Bolts	<input type="checkbox"/>
S39	6		1/4-20	1/2"	Hex Bolts	<input type="checkbox"/>
S32	2		12-24	3/4"	Machine Screws	<input type="checkbox"/>
S27	24		12-24	1/2"	Machine Screws	<input type="checkbox"/>
L02	2		1/4"		Lugs	<input type="checkbox"/>

**HARDWARE BAG NO. 2**

W14P	8		1-1/4"		Alum. Clamps	<input type="checkbox"/>
W10P	6		1"		Alum. Clamps	<input type="checkbox"/>
W78P	6		7/8"		Alum. Clamps	<input type="checkbox"/>
W34P	6		3/4"		Alum. Clamps	<input type="checkbox"/>
PL3	6		5/8"		Plastic Caps, Black	<input type="checkbox"/>
PL5	1		2"		Plastic Cap, Black	<input type="checkbox"/>
PL5R	1		2"		Plastic Cap, Red	<input type="checkbox"/>
F02	2		2"		Insulator Sleeves	<input type="checkbox"/>
LWL	1				Electrical Warning Label	<input type="checkbox"/>

**HARDWARE BAG NO. 3**

U01	6		2"		U-Bolts	<input type="checkbox"/>
S01	6		2"		Saddles	<input type="checkbox"/>

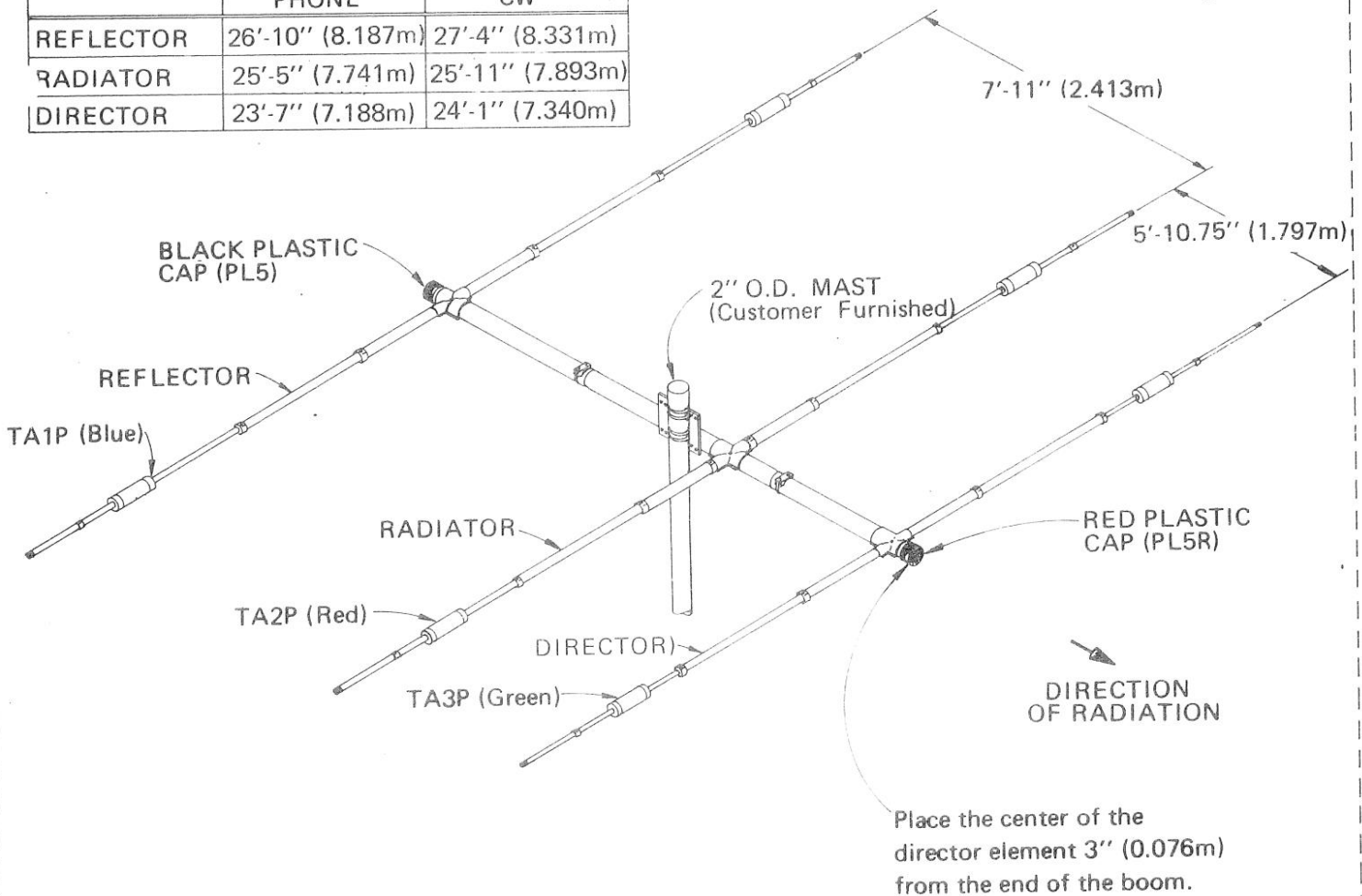
NOTE: Check all Tubing for parts telescoped inside.

*When ordering replacement parts, always give part number and description.*

OVERALL DIMENSIONS

	PHONE	CW
REFLECTOR	26'-10" (8.187m)	27'-4" (8.331m)
RADIATOR	25'-5" (7.741m)	25'-11" (7.893m)
DIRECTOR	23'-7" (7.188m)	24'-1" (7.340m)

For exact element dimensions see Fig. 8



BASIC ASSEMBLY PROCEDURE:

This figure shows what the antenna should look like when assembled. Specific assembly details are shown on following pages. Your basic order of assembly should be:

1. Put the boom together as shown in Figures 2 and 3 (Page 5).
2. Then assemble each element as shown in Figures 4 thru 10. Do the radiator first; and then each of the others in any order you choose. Mount each element loosely on the boom as soon as it is assembled, locate them only approximately, and do not put the plastic caps on the ends at this time.
3. After the elements are all in place, move them to their exact positions, set them square to the boom and parallel to each other, and tighten all bolts and clamps. Recheck all dimensions, and correct any errors.
4. Check the tightness of all bolts and clamps. Coat all bolts, screws, and nuts with silicone sealant. Put plastic caps on the ends of boom and elements.
5. Attach your coaxial cable to the feed points on the radiator element.
6. Install the antenna on the mast per Figure 11. Dress your coaxial cable down the mast and secure in several places with tape.

FIGURE 1

DRAWN ETW  
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**SY33**

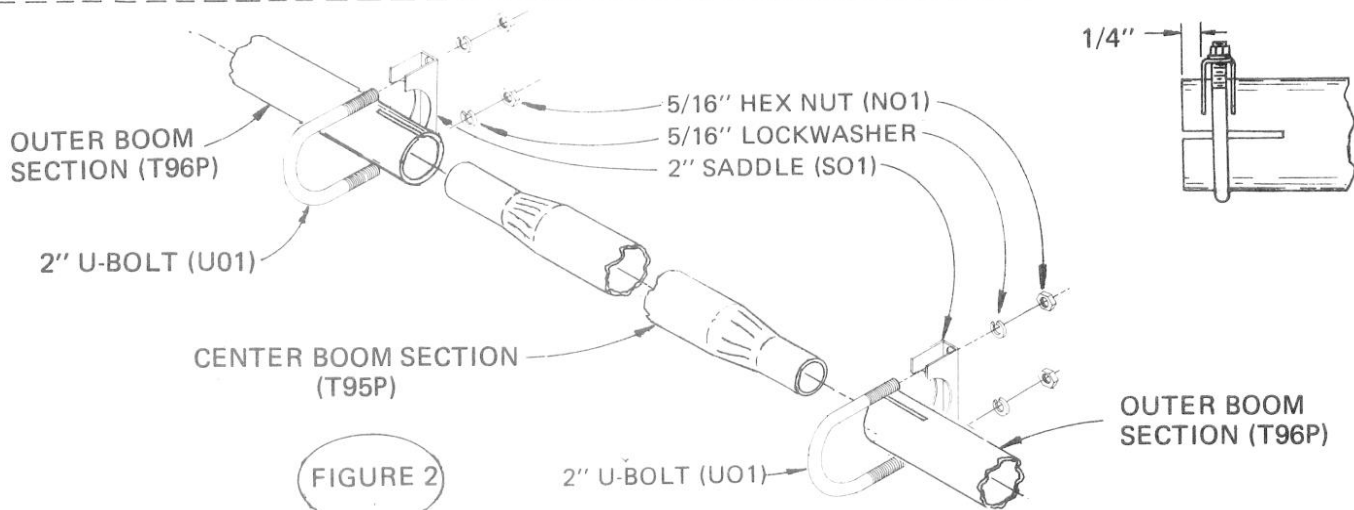


FIGURE 2

**BOOM ASSEMBLY**

- Step 1. Rub a light amount of "Penetrox" on each end of Center Boom Section (T95P)
- Step 2. Insert the swaged ends of the Center Boom Section (T95P) into the slotted ends of the two outer boom sections (T96P) as shown in above Figure 2.
- Step 3. Measure to assure the total length of the boom is 14'4" (4.368m), adjust both T96P sections equally until measurement is obtained.
- Step 4. Clamp sections together using method and hardware shown in Figure 2.
- Step 5. Re-check boom length to assure 14'4" in total length.
- Step 6. Proceed to Figure 3.

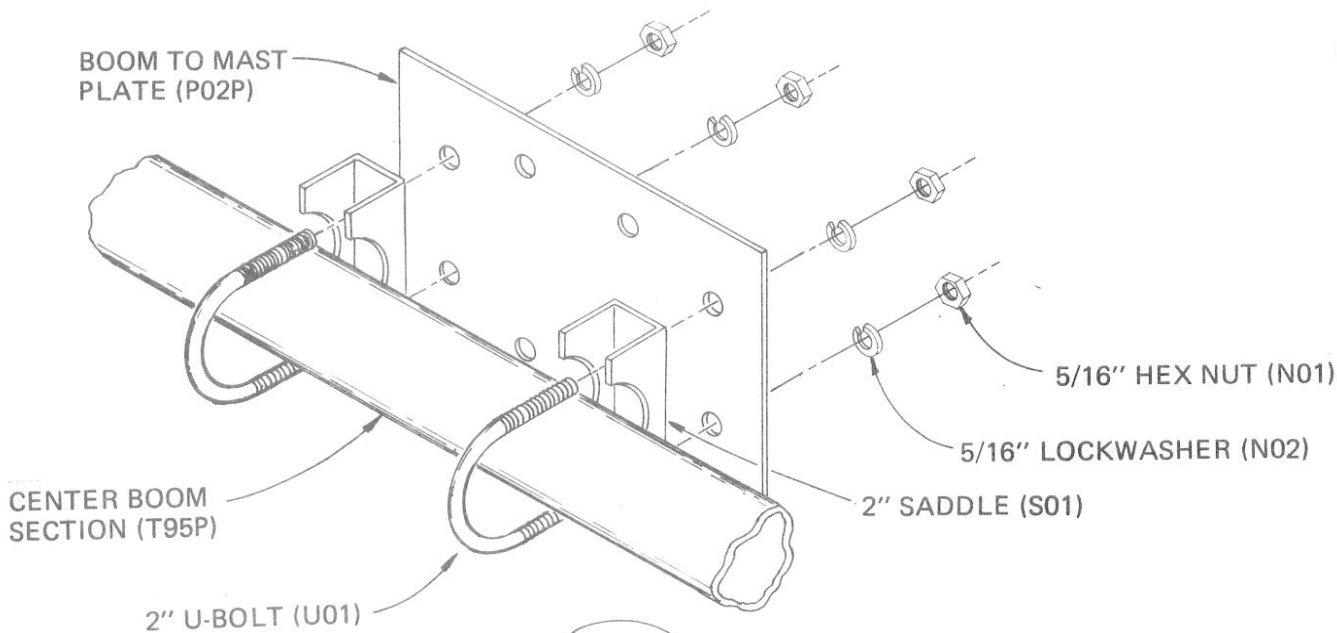


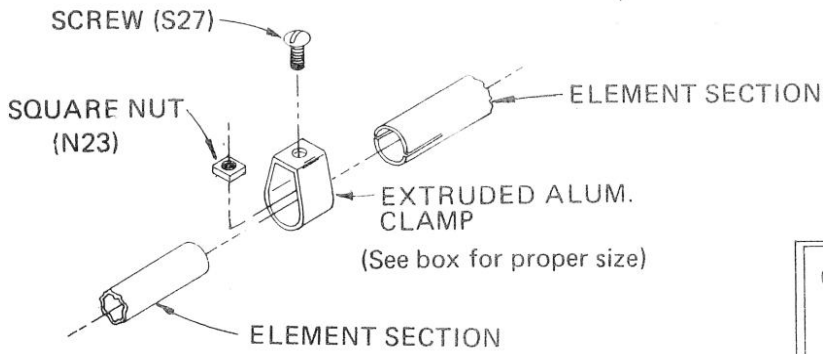
FIGURE 3

**BOOM-TO-MAST PLATE ASSEMBLY**

- Step 1. Mark the center of the boom previously assembled from Figure 2.
- Step 2. Attach the Boom-to-Mast Plate (P02P) (centering it on the center mark of the boom), using the hardware in the arrangement shown in above Figure 3.
- Step 3. Tighten all hardware.
- Step 4. Re-check for centering.
- Step 5. Proceed to element assembly.

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**SY33**

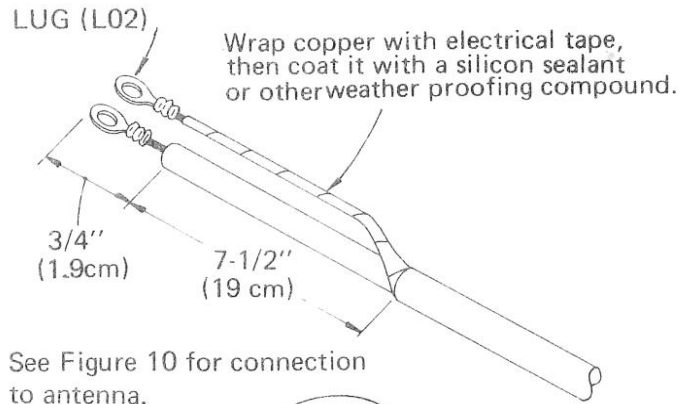


W-CLAMP-TYPICAL

CLAMP	SCREW	NUT
W14	12-24 x 1/2"	12-24
W10	12-24 x 1/2"	12-24
W78	12-24 x 1/2"	12-24
W34	12-24 x 1/2"	12-24

FIGURE 4

Assemble trap to element by inserting the machine screw through the hole in the trap.



See Figure 10 for connection to antenna.

FIGURE 5

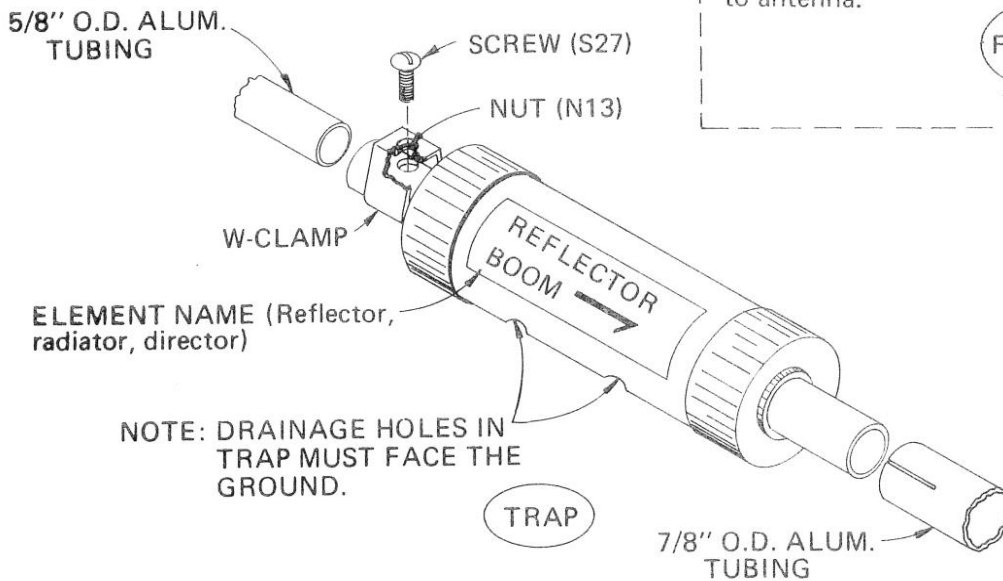
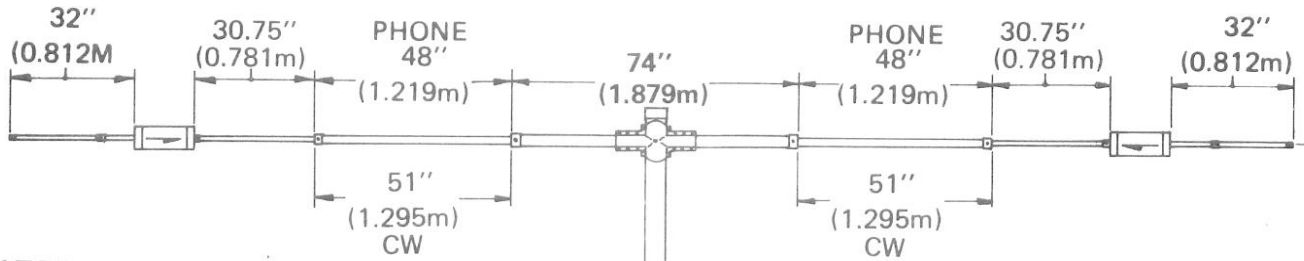


FIGURE 6

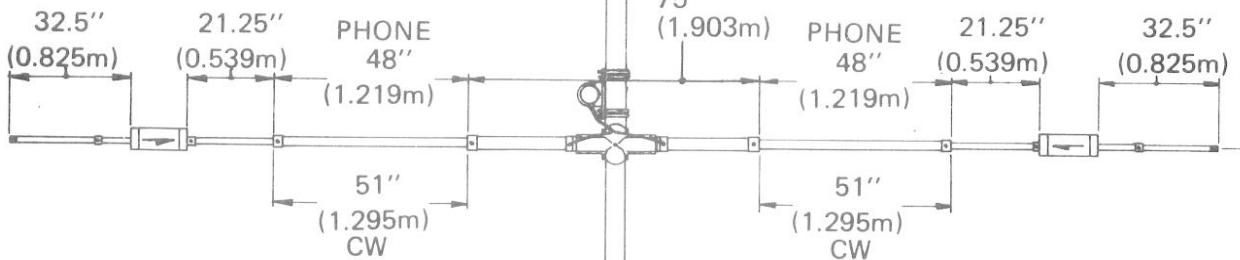
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**SY33**

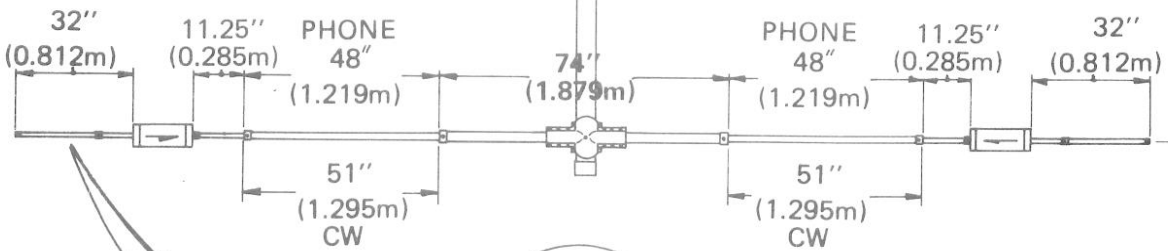
REFLECTOR



RADIATOR



DIRECTOR

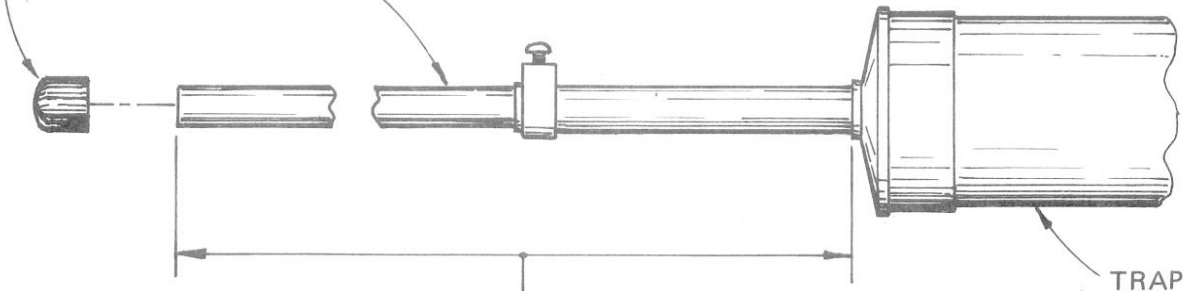


95" (2.413m)  
70.75" (1.797m)

FIGURE 7

PLASTIC CAP

BOOM ELEMENT



TRAP

REFLECTOR, RADIATOR AND DIRECTOR ELEMENT  
END MEASUREMENTS ARE TAKEN FROM  
END OF TRAP TO END OF ELEMENT  
WITH PLASTIC CAP REMOVED.

FIGURE 8

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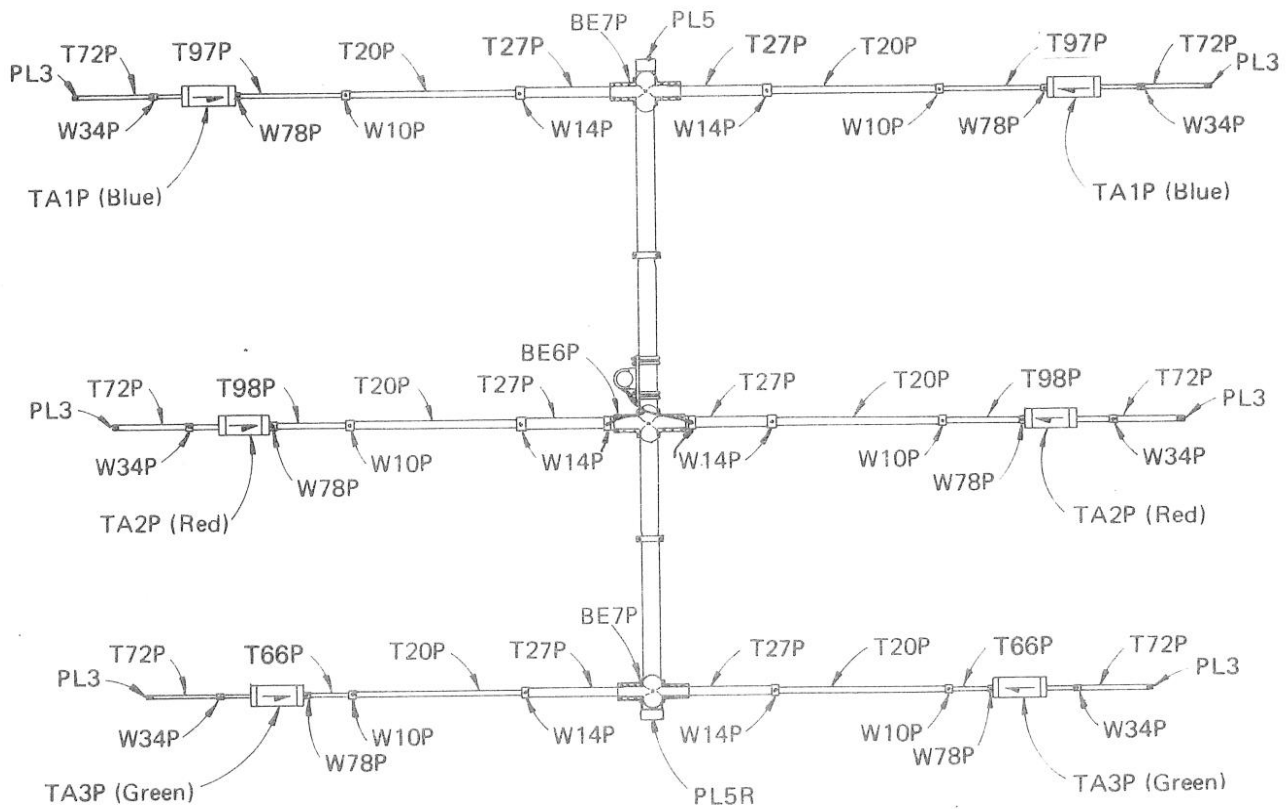


FIGURE 9

PARTS LOCATION

ELEMENT ASSEMBLY:

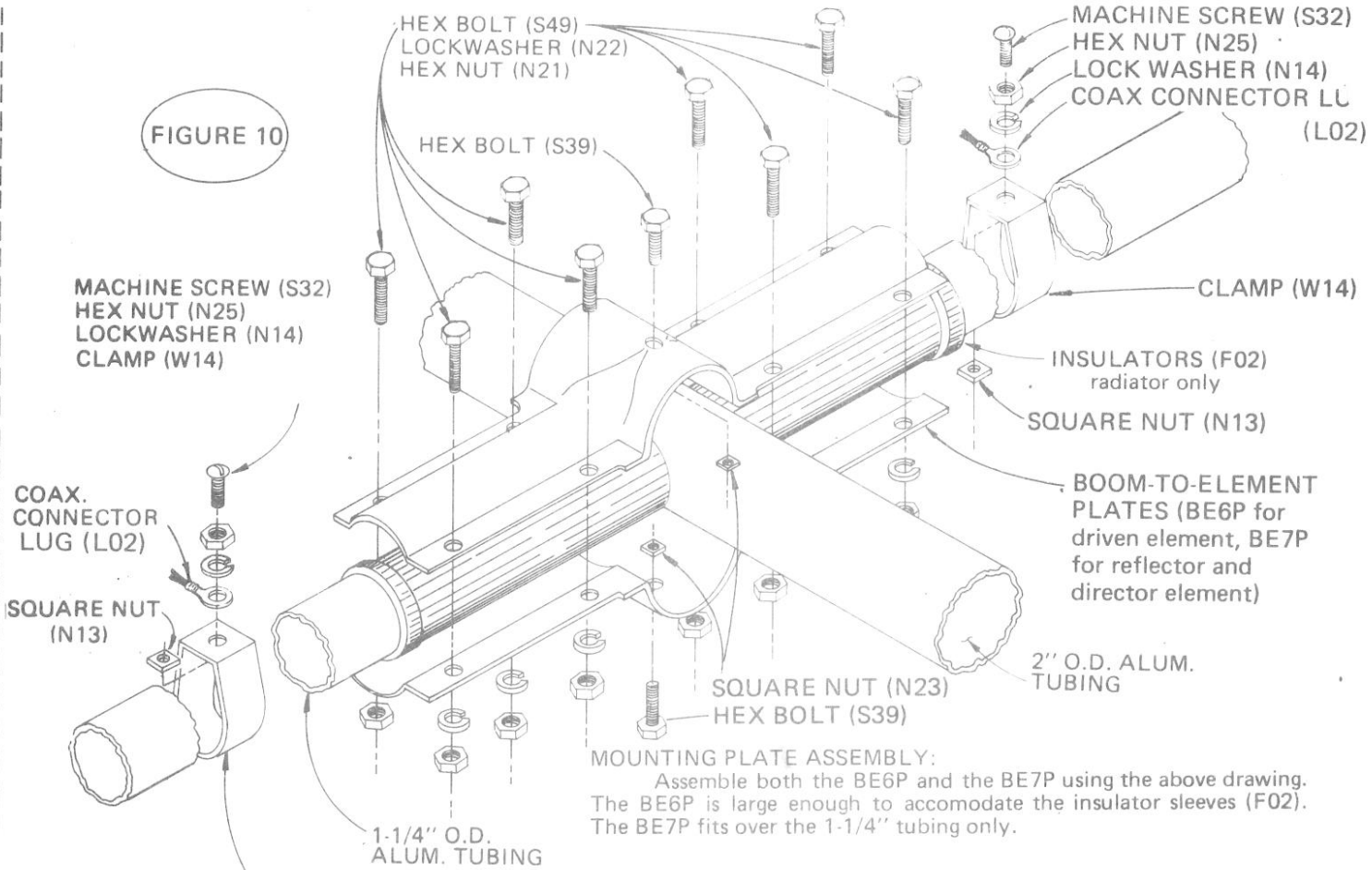
Figures 8 and 9 show a top view of the assembled antenna, part numbers and principal dimensions for assembling and installing the elements. Refer to the parts list (sheet 1) for complete descriptions and specifications and to Figures 2-6 for specific assembly details and hardware call outs.

All elements are symmetrical. Dimensions given are from end of tubing to end of tubing. See Figure 1 for the correct locations of the elements on the boom.

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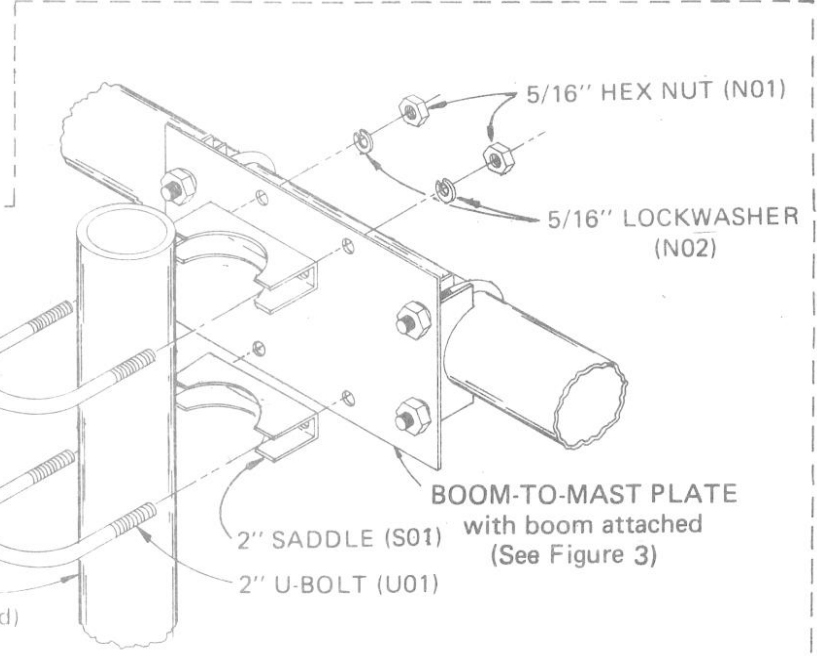
**SY33**

FIGURE 10



**MOUNTING PLATE ASSEMBLY:**  
 Assemble both the BE6P and the BE7P using the above drawing. The BE6P is large enough to accommodate the insulator sleeves (F02). The BE7P fits over the 1-1/4" tubing only.

Slide the W14 clamp onto the radiator bringing it flush with the insulators (FO2) before assembling the rest of the element



**ANTENNA MOUNTING:**  
 The complete antenna mounts to a 2" O.D. mast (customer furnished) with 2" u-bolts, saddles, lockwashers, and nuts, as shown.

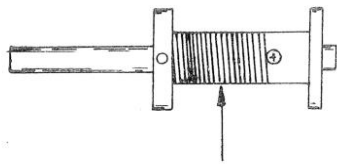
NOTE: The large warning label enclosed is to be mounted at approximately eye level on your tower or supporting structure.

FIGURE 11

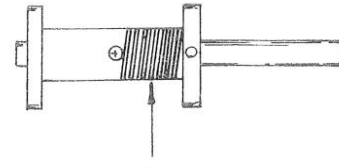
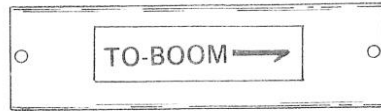
DRAWN S.T.W.  
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**SY33**





15 METER WINDING



10 METER WINDING

INSTRUCTIONS FOR DISASSEMBLING TRAP

IN THE EVENT IT IS EVER NECESSARY TO IDENTIFY THE TRAP ASSEMBLIES, PROCEED AS FOLLOWS:

REMOVE THE PLASTIC CAPS FROM ENDS OF TRAPS.  
REMOVE SCREWS FROM ENDS OF TRAPS.

	<u>15 Meters</u>	<u>10 Meters</u>
REFLECTOR .....	25 turns	15 turns
RADIATOR .....	24 turns	14 turns
DIRECTOR .....	23 turns	14 turns

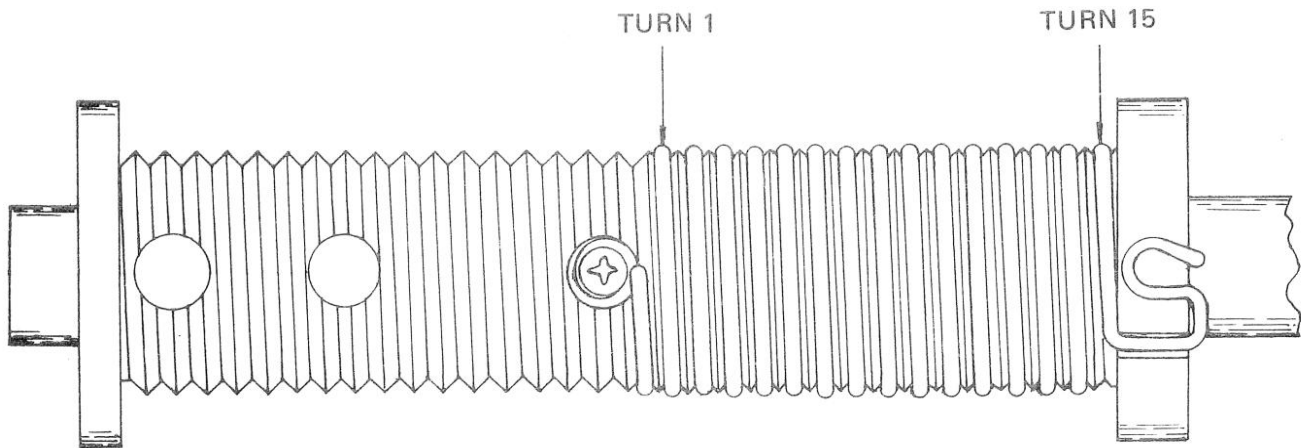
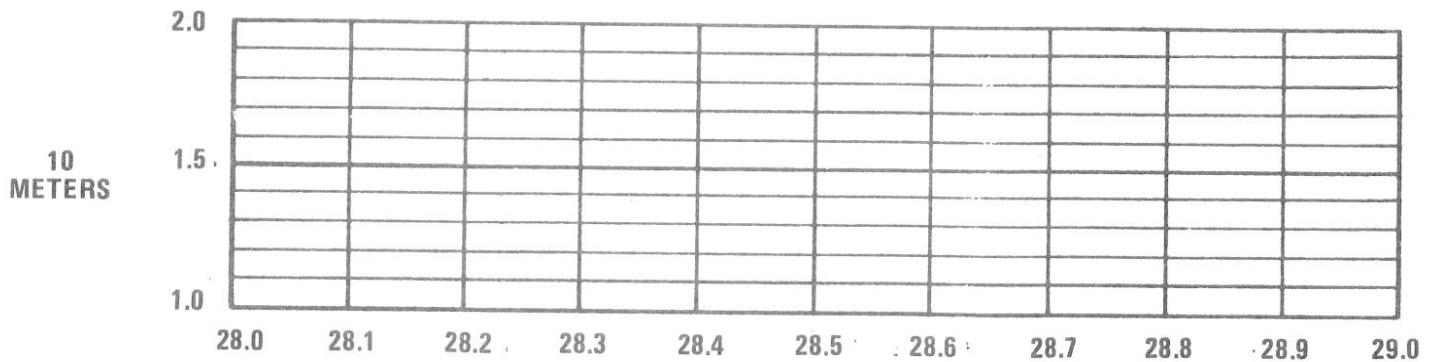
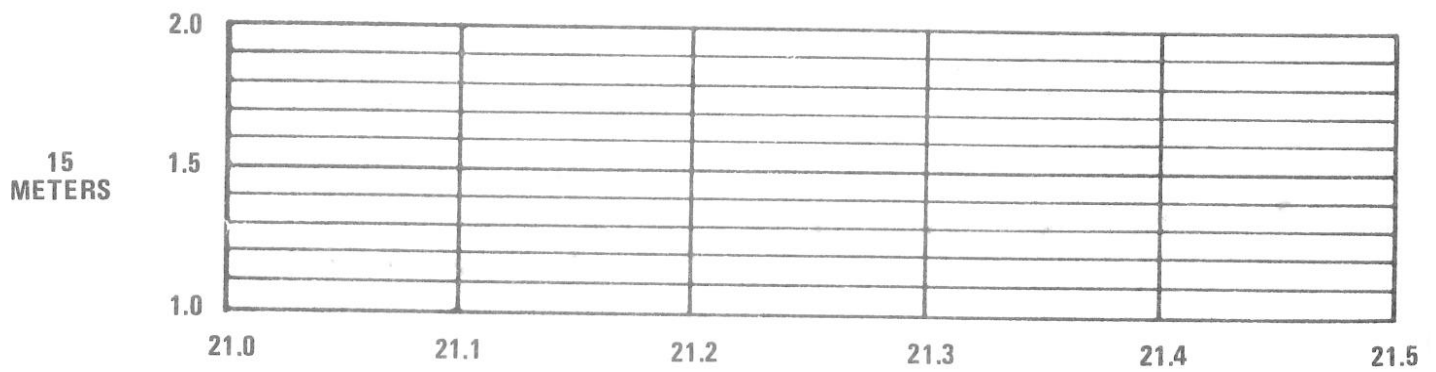
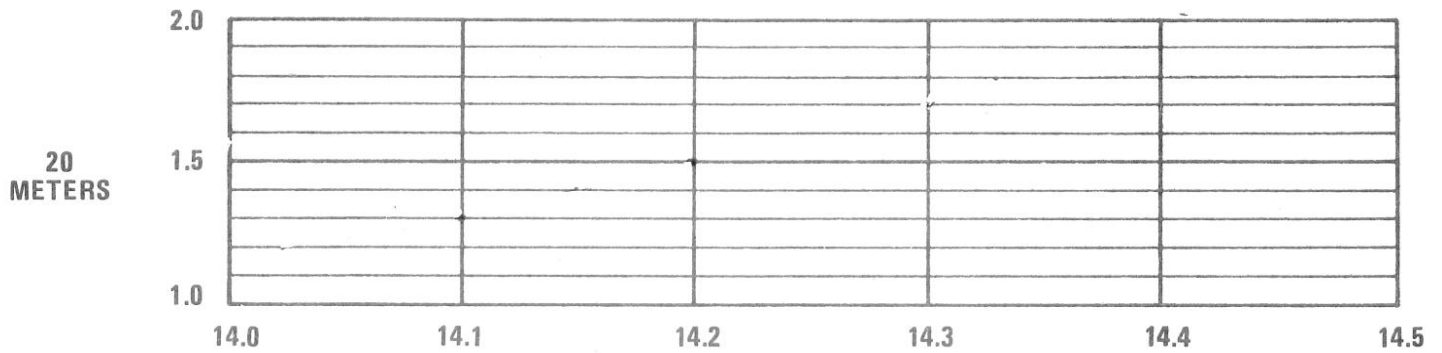


FIGURE 12

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**SY33**

# YOUR SWR CHART



MHz

NOTES:

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ADDENDUM:

REFER TO PAGE 5 FIGURE 2 OF YOUR ASSEMBLY INSTRUCTIONS.

PRIOR TO PLACING THE 5/16" LOCKWASHERS ONTO THE 2" U-BOLTS, PLACE (2) 5/16" FLAT WASHERS ONTO EACH SIDE OF THE U-BOLTS FOLLOWED BY THE LOCKWASHERS AND HEX NUTS.

