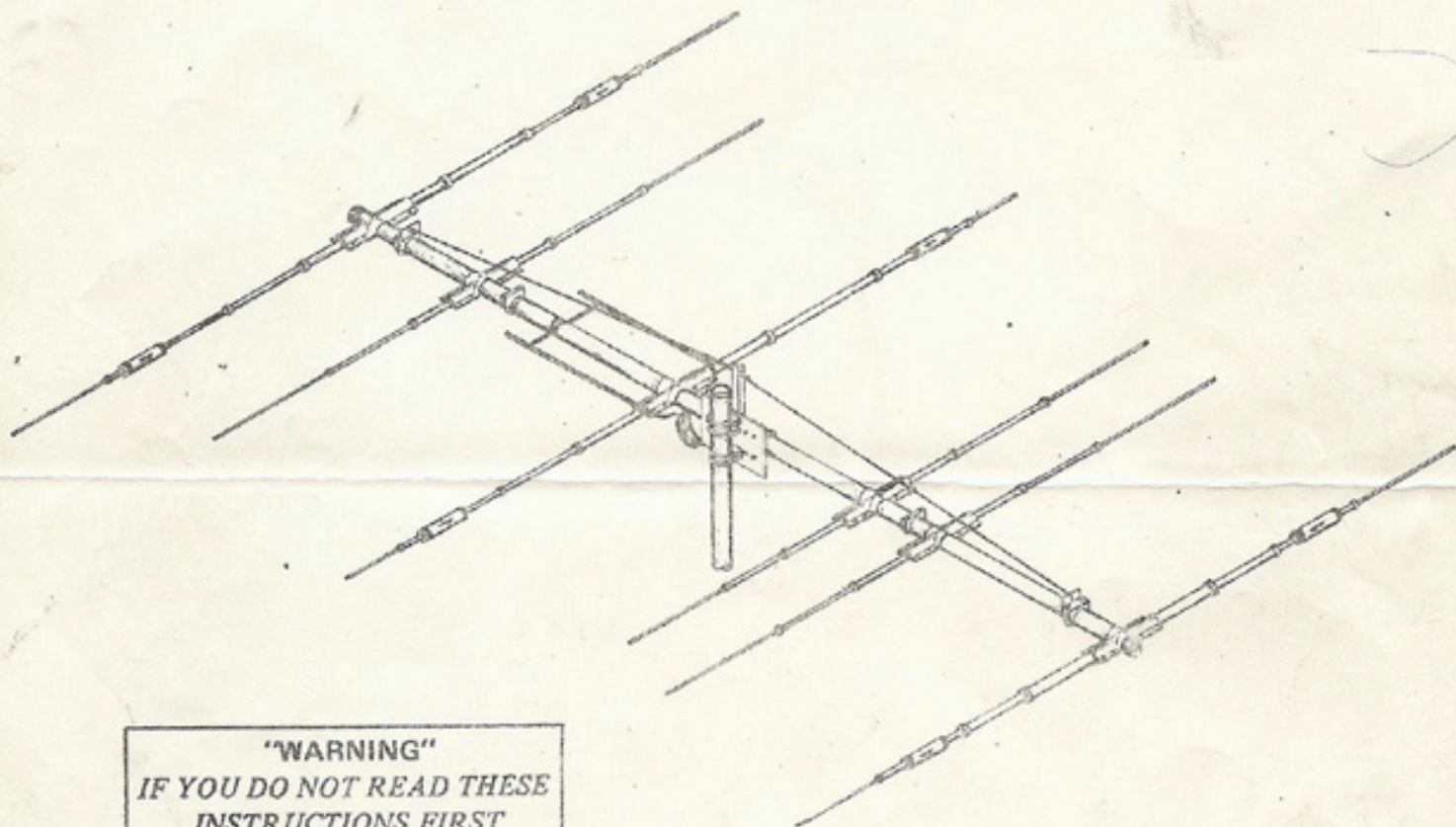


ASSEMBLY INSTRUCTIONS



6 Element Tribander
10, 15, 20 Meters



"WARNING"
IF YOU DO NOT READ THESE
INSTRUCTIONS *FIRST*
ALL WILL GO WRONG!

SY36

"WARNING"
INSTALLATION OF THIS PRODUCT NEAR POWER
LINES IS DANGEROUS. FOR YOUR SAFETY, FOLLOW
THE INSTALLATION DIRECTIONS.

Maco Manufacturing Co. - Division of Majestic Communications, Inc.

4091 Viscount - Memphis, Tennessee 38118 (901) 794-9494

Congratulations!

You are the owner of the finest amateur antenna available. Before beginning assembly, please check all parts against the Parts List.

As this antenna was packaged, it went through a complete quality control check. The final step in this process is a weight check to assure that all parts are present. With all this, mistakes can be made. In the unlikely event you receive an antenna with a defective or missing part, please contact us for a quick replacement.

After all parts are accounted for, you will need the following tools for assembly:

1. A pencil or other marker.
2. A carpenter's level.
3. A standard blade screwdriver.
4. A 3/8" wrench or ratchet with 3/8" socket.
5. (2) 7/16" wrenches or one 7/16" wrench and one ratchet with 7/16" socket.
6. A 1/2" wrench or ratchet with 1/2" deep socket.
7. A good metal tape measure at least 16 ft. long.

In some areas corrosion is a problem. In this event there is a corrosion inhibitor sold by electrical supply houses to enhance conductivity of aluminum wire (Koolohm etc). Caution---mating parts must be shining clean or it won't work.

This product when applied to mating telescoping surfaces which are mechanically shining clean will prevent corrosion. Apply like grease just prior to assembling. Caution---clean with wire brush or sandpaper before assembly.

We recommend that all Maco amateur antennas have 5/16" poly rope installed inside the elements. When installed inside an element, the rope absorbs vibrations caused by continuous ground vibrations and winds. (Trapped elements do not require the rope since these vibrations are absorbed by the traps.)

We would like to know what you think of our antennas! Of prime importance to us is your valued opinion as to quality of materials used and workmanship. We would also appreciate your comments on performance. Towards the end of this manual you will find a graph for plotting SWR curves with room for any additional notes you may wish to make. You will also find a questionnaire. We would appreciate it if you would fill it out and return it to us. Remember! Any comments which will improve the product are especially welcome. We want to give you a top quality product and comments towards that end are helpful and appreciated by Maco. Your problems are ours---your answers will help other amateurs.

**PARTS LIST
SYSTEM 36**

PART	QTY.	O.D.	SIZE	LENGTH	DESCRIPTION	CHECK LIST
T113P	2	2"	.057"	69-3/4"	Alum. Tubing slotted one end	_____
T32P	2	2"	.057"	80"	Alum. Tubing swaged 4 1/2" one end	_____
T53	1	1.845"	.060"	80"	Alum. Tubing	_____
T27P	6	1-1/4"	.049"	36"	Alum. Tubing slotted one end	_____
T20P	6	1-1/8"	.049"	54"	Alum. Tubing swaged & slotted one end to accept 7/8" O.D. tubing	_____
T19P	2	7/8"	.049"	48"	Alum. Tubing swaged & slotted one end to accept 5/8" O.D. tubing	_____
T102P	4	7/8"	.049"	24"	Alum. Tubing swaged & slotted one end to accept 5/8" O.D. tubing	_____
T116P	2	7/8"	.049"	41"	Alum. Tubing slotted one end	_____
T98P	2	7/8"	.049"	26"	Alum. Tubing slotted one end	_____
T107P	2	7/8"	.049"	12-1/2"	Alum. Tubing slotted one end	_____
T14P	6	5/8"	.049"	36"	Alum. Tubing slotted one end	_____
T108P	2	5/8"	.049"	40-1/2"	Alum. Tubing	_____
T73P	2	5/8"	.049"	30"	Alum. Tubing	_____
T109P	2	5/8"	.049"	46"	Alum. Tubing	_____
T02	4	1/2"	.042"	60"	Alum. Tubing	_____
T03	2	1/2"	.042"	46"	Alum. Tubing	_____
T115P	2	3/8"	.035"	48"	Alum. Tubing flattened & pierced one end	_____
P01P	1		1/4" x 6"	8"	Boom-to-Mast Plate	_____
V03P	1		1" x 1"	24"	Guy Support	_____
BE6P	2				Boom-to-Element Plates (for insulators)	_____
BE7P	4				Boom-to-Element Plates (for 1 1/4" tubing)	_____
BE8P	6				Boom-to-Element Plates (for 7/8" tubing)	_____
TA6P	2				Radiator Traps (orange)	_____
TA7P	2				Reflector Traps (brown)	_____
TA8P	2				Director Traps (yellow)	_____
WD2P	1			25'	6/18 steel guy cable	_____

HARDWARE BAG NO. 1

N01	34		5/16"-18		Hex Nuts	_____
N21	49		1/4"-20		Hex Nuts	_____
N25	2		12-24		Hex Nuts	_____
N06	3		10-24		Hex Nuts	_____
N02	30		5/16"		Lockwashers	_____
N22	49		1/4"		Lockwashers	_____
N14	2		No. 12		Lockwashers	_____
N26	5		No. 10		Flatwashers	_____
N12	3		No. 10		Lockwashers	_____
S49	49		1/4" x 7/8"		Hex Bolts	_____
S39	12		1/4" x 1/2"		Hex Bolts	_____
S32	2		12-24 x 3/4"		Machine Screws	_____
S27	30		12-24 x 1/2"		Machine Screws	_____
S21	9		10-24 x 1/2"		Machine Screws	_____
N23	12		1/4-20		Square Nuts	_____
N13	32		12-24		Square Nuts	_____
N11	6		10-24		Square Nuts	_____
PL3	6		5/8"		Plastic Cap, black	_____

HARDWARE BAG NO. 2

PL2	6		7/16"		Plastic Cap, black	_____
PL5	1		2"		Plastic Cap, black	_____
PL5R	1		2"		Plastic Cap, red	_____
F02	2		1-1/4"		Insulator Sleeves	_____
C01	2		3/8"		Alum. Clamps-D6	_____
W14P	8		1-1/4"		Alum. Clamps	_____
W10P	6		1"		Alum. Clamps	_____
W78P	5		7/8"		Alum. Clamps	_____
W34P	12		3/4"		Alum. Clamps	_____
W58P	6		5/8"		Alum. Clamps	_____
Z14P	1		1/2" x .060"	11"	Beta Rod Strap	_____
C19P	1		2"		Boom Strap	_____
N18P	4		5/16" x 4"		Eye Bolts (welded)	_____
LWL	1				Electrical Warning Label	_____

HARDWARE BAG NO. 3

S01	13		2"		Saddles	_____
BG2P	2		2"		Boom Guy Support Mounts	_____

HARDWARE BAG NO. 4

U01	13		2"		U-Bolts	_____
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NOTE: Check all Tubing for parts telescoped inside.
02-01-80 Rev.

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

SYSTEM 36 OVERALL DIMENSIONS

20, 15, 10 METERS TRIBANDER

Band MHz	14-21-28	Longest Element:	29' 6 1/2"
Maximum power input	legal limit	Turning radius:	19' 1"
Gain (dBd)	up to 9 dB	Maximum mast diameter:	2" O.D.
VSWR at resonance	1.1:1	Surface area:	8.6 sq. ft.
Impedance:	50 ohms	Wind loading at 80 mph	215 lbs.
F/B ratio	up to 20 dB	Assembled weight (approx.)	53 lbs.
Boom (O.D. x length)	2" x 24' 2 1/2"	Shipping weight (approx.)	62 lbs.
No. elements	6	Maximum wind survival:	100 mph

PRELIMINARY INSTRUCTIONS

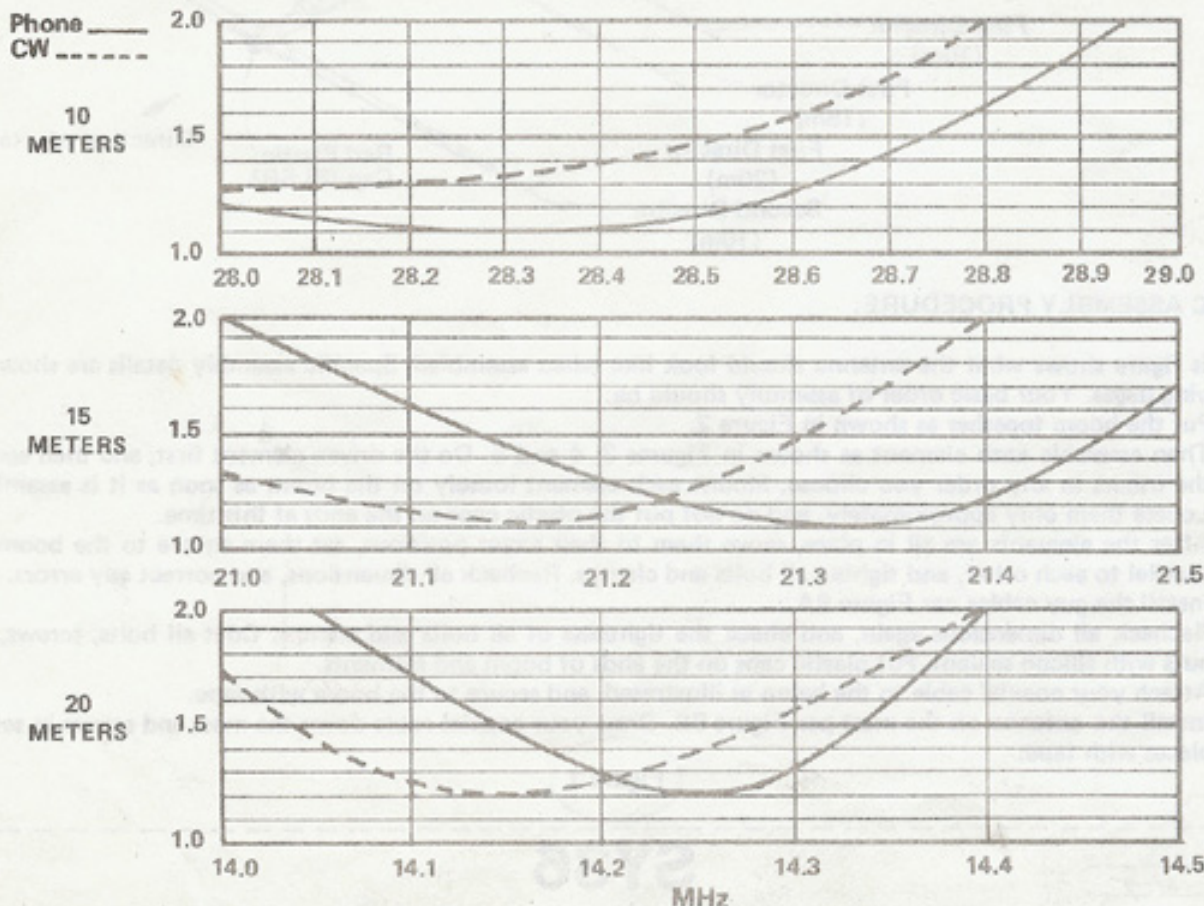
For the best results and the best use of your time, familiarize yourself with all parts and instructions before beginning assembly.

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.

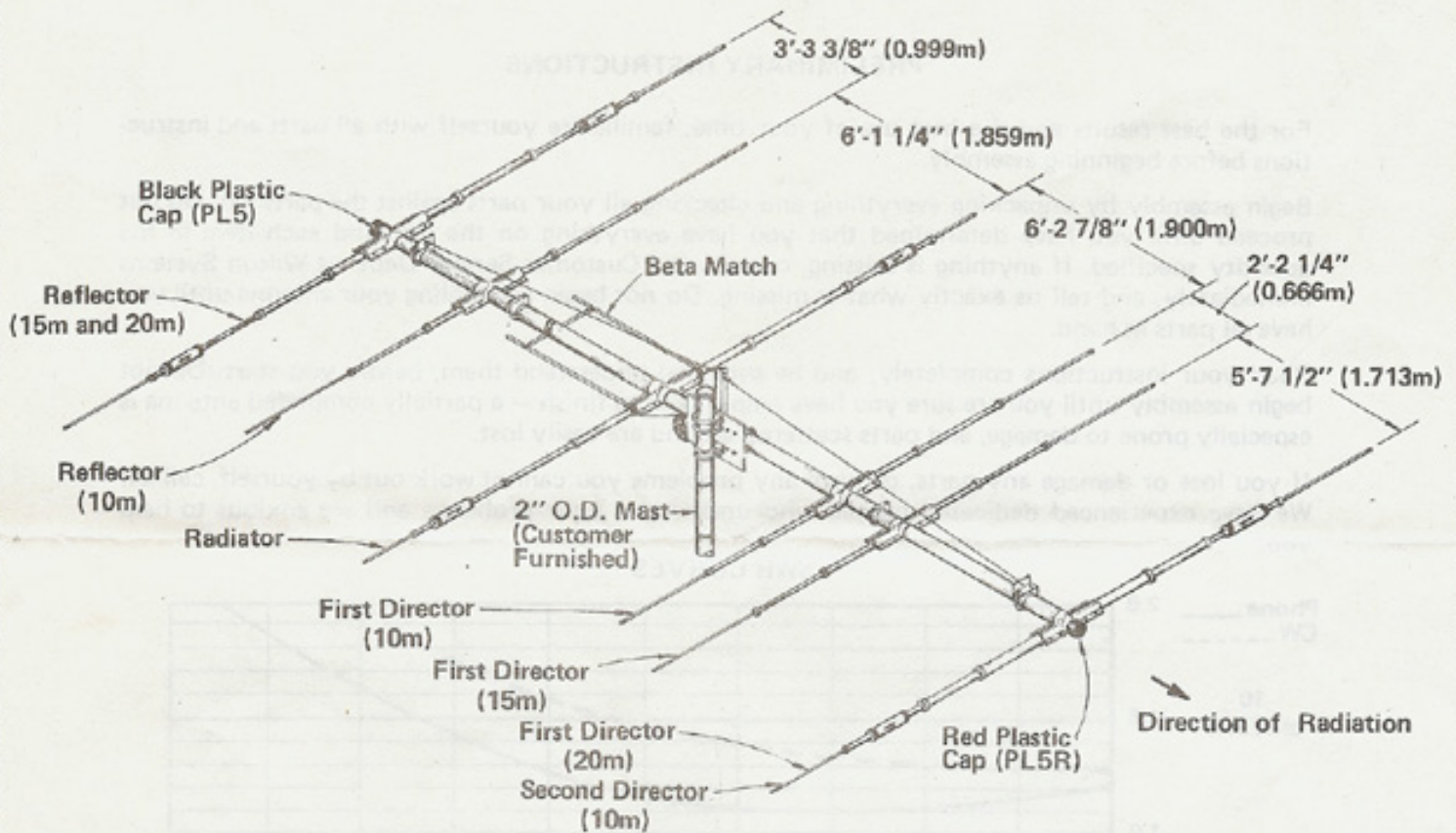
SWR CURVES



OVERALL DIMENSIONS

	Phone	CW
Reflector (15m and 20m)	29'-2 1/2" (8.896m)	29'-6 1/2" (8.997m)
Reflector (10m)	17'-10" (5.431m)	17'-10" (5.431m)
Radiator	24'-6" (7.461m)	24'-8" (7.513m)
1st Director (10m)	16'-7" (5.050m)	16'-7" (5.050m)
1st Director (15m)	21'-1" (6.420m)	21'-1" (6.420m)
1st Director (20m)	25'-6 3/4" (7.785m)	25'-6 3/4" (7.785m)
2nd Director (10m)		

For exact element dimensions see Figure 4.



BASIC ASSEMBLY PROCEDURE:

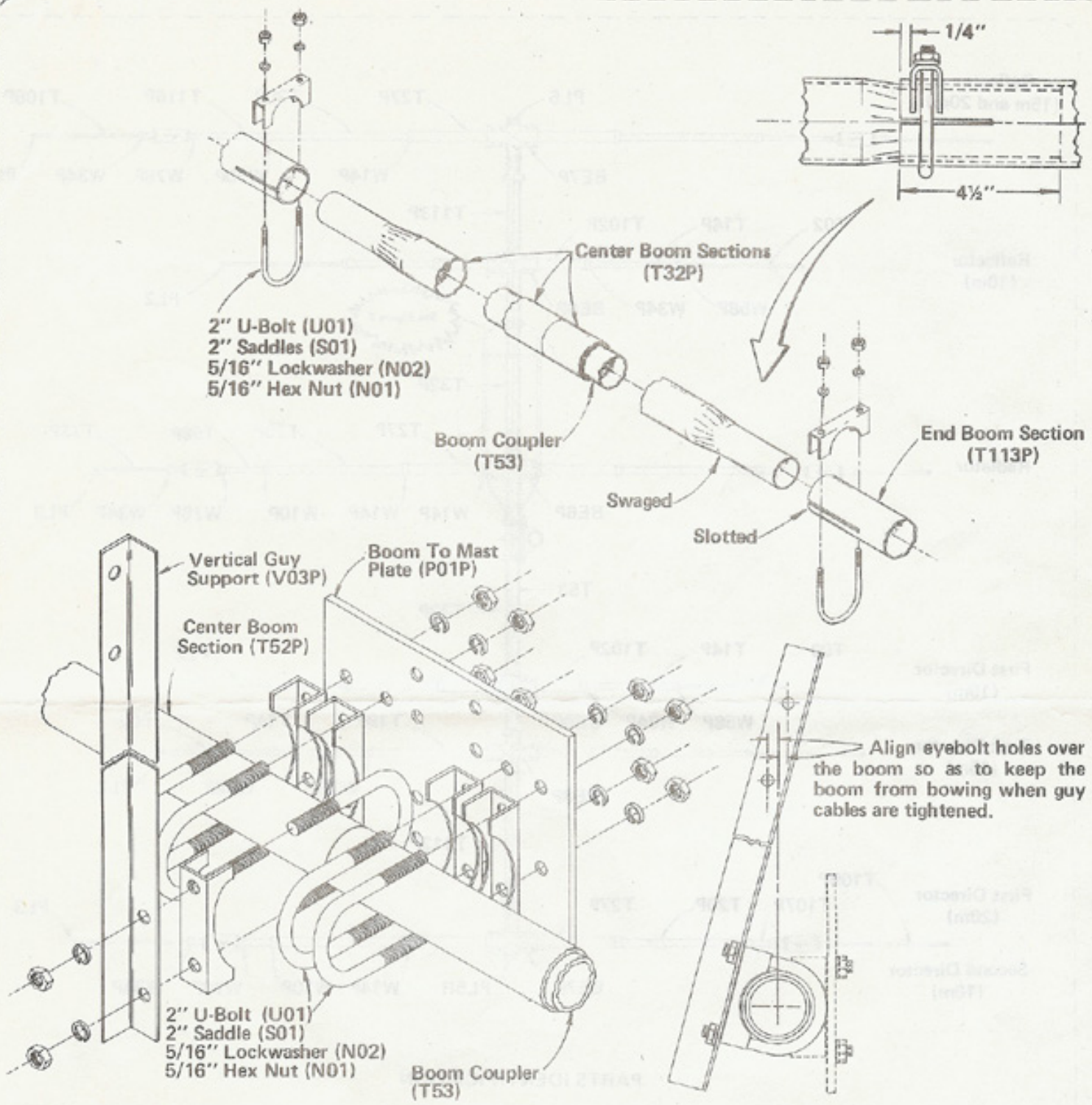
This figure shows what the antenna should look like when assembled. Specific assembly details are shown on following pages. Your basic order of assembly should be:

1. Put the boom together as shown in Figure 2.
2. Then assemble each element as shown in Figures 3, 4 and 5. Do the driven element 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. Install the guy cables per Figure 8A.
5. Recheck all dimensions again, and check the tightness of all bolts and clamps. Coat all bolts, screws, and nuts with silicon sealant. Put plastic caps on the ends of boom and elements.
6. Attach your coaxial cable to the balun as illustrated, and secure to the boom with tape.
7. Install the antenna on the mast per Figure 8B. Dress your coaxial cable down the mast and secure in several places with tape.

Figure 1

DRAWN WJW
 APPROVED WJW

SY36



BOOM ASSEMBLY:

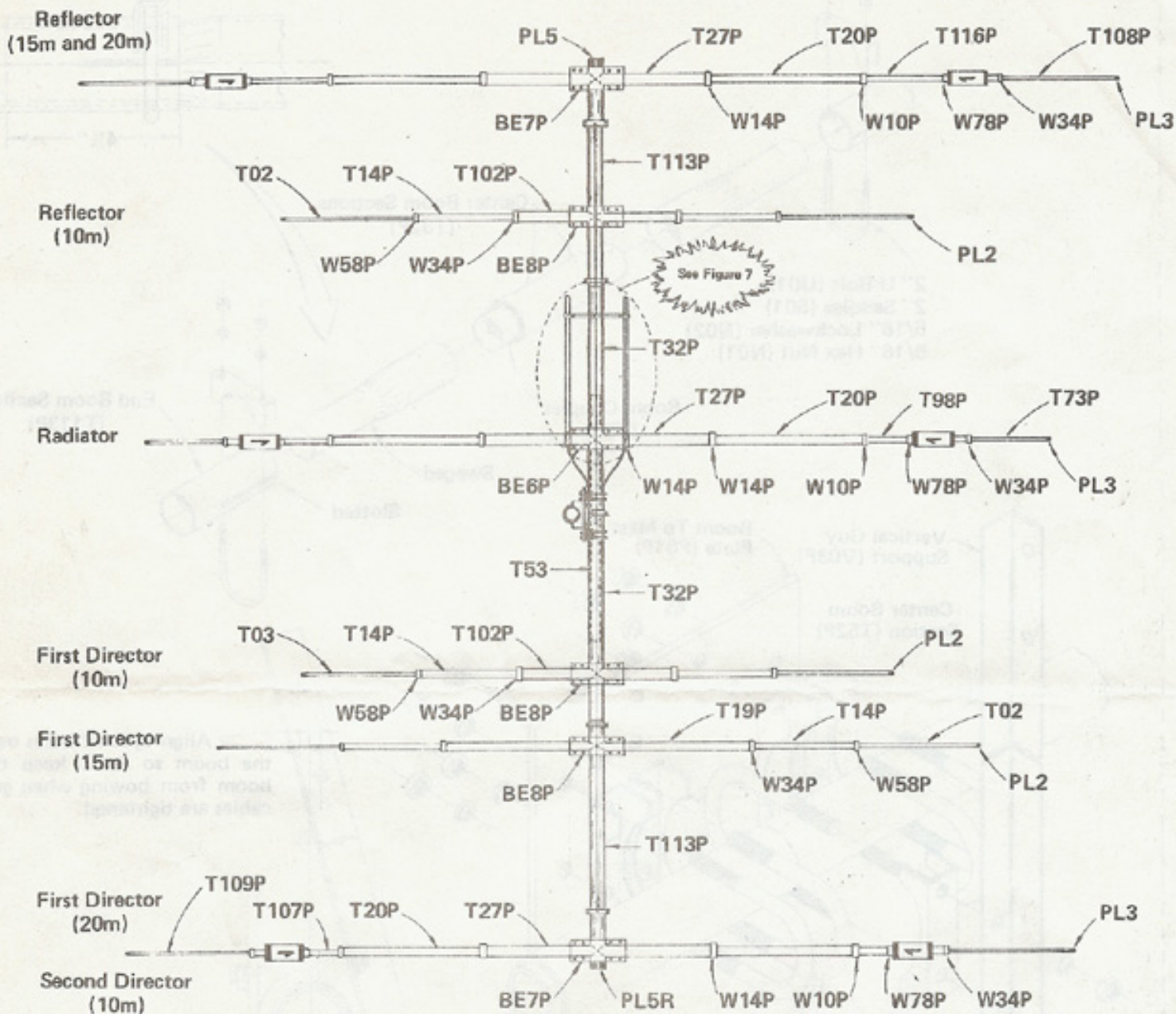
First mark the center of the 80" (2.032m) alum. tubing (T53). Slide the unswaged ends of the center boom sections (T32P) over each end of the coupler so that they butt in the center. Attach the boom-to-mast plate (P01P) and the vertical guy support (V03P) at the boom center using 2" u-bolts, saddles and hardware as shown above. Be sure to slip the 2" u-bolt for attaching guy support over boom before securing mast plate.

Slide the slotted ends of the end boom sections (T113P) 4 1/2" (0.114m) over the swaged ends of the center boom sections and secure in the same manner as above. The overall length of the boom should be 24' 2 1/2" (7.373m).

FIGURE 2

SY36

DRAWN EPW
 APPROVED MT



PARTS IDENTIFICATION

ELEMENT ASSEMBLY:

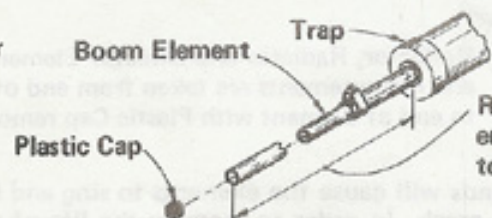
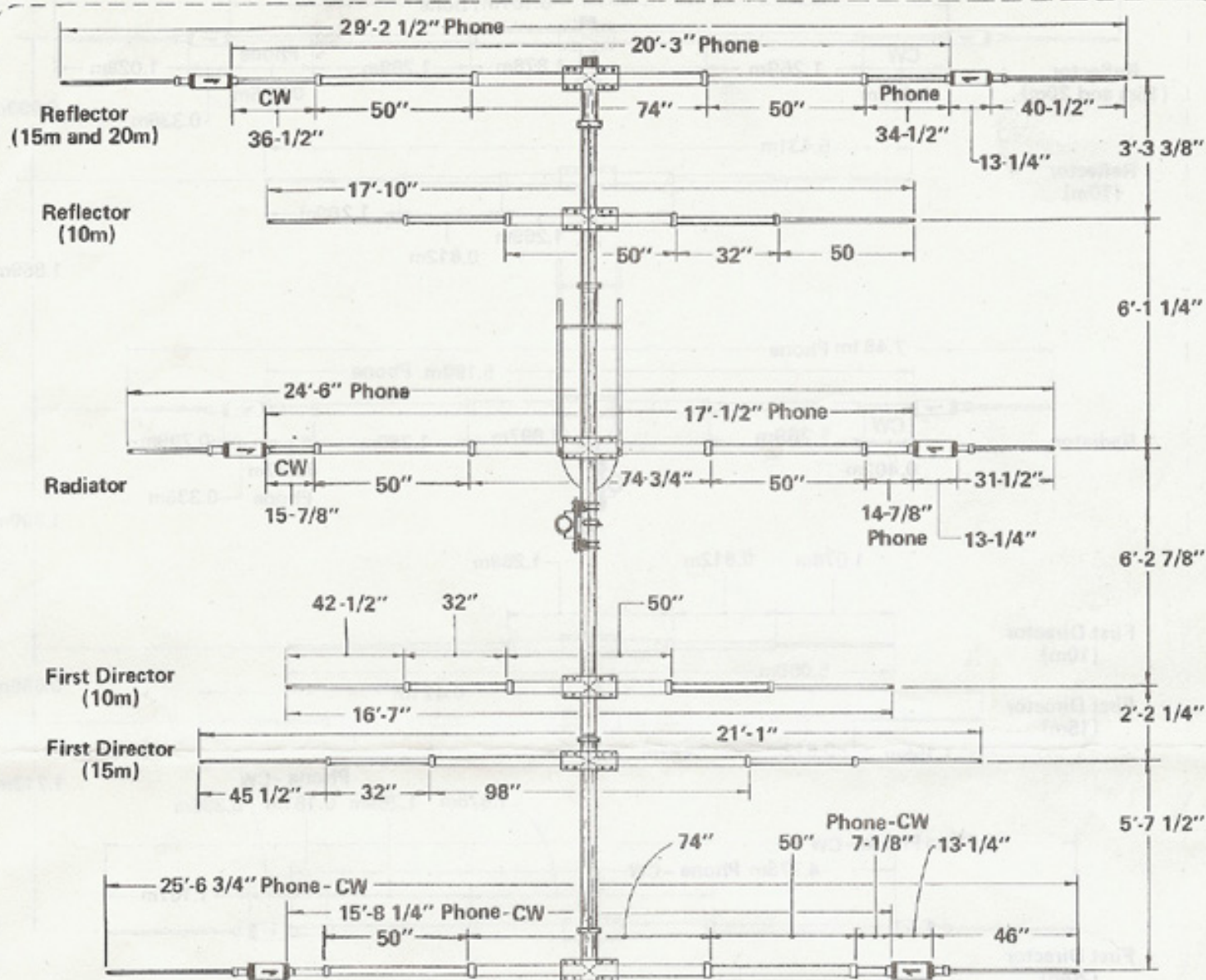
Figures 3 and 4 show a top view of the assembled antenna, and gives part numbers and principal dimensions for assembling and installing the elements. Refer to the parts list (sheet 2) for complete descriptions and specifications and to Figures 5 and 6 for specific assembly details and hardware call outs.

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.

FIGURE 3

SY36

DRAWN SPW
APPROVED CU



Reflector, Radiator and Director Element end measurements are taken from end of Trap to end of Element with Plastic Cap removed.

Vibrations in your antenna due to light winds will cause the elements to sing and harden. If the elements over-harden they will become brittle and crack. In order to increase the life of your antenna, we recommend the use of 5/16" polypropylene rope threaded through the elements as described below.

Thread the rope through the 7/8" O.D. tubing. Epoxy glue the rope to the inside of the tubing which will have the mounting plates attached. After the glue has set, thread each piece of the assembly onto the rope (clamp, tubing, clamp, tubing, etc.). When the entire element is assembled, dimensioned, and all hardware tightened, epoxy the other end of the rope to the end tube. Cut the end of the rope flush with the tube and place the plastic cap on the end.

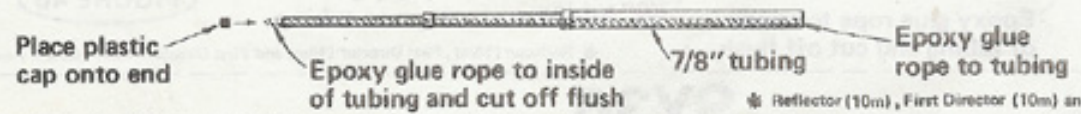
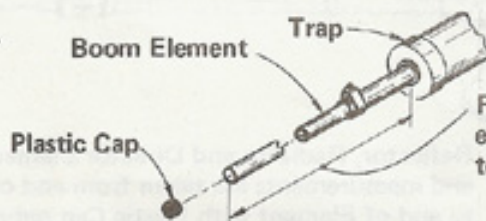
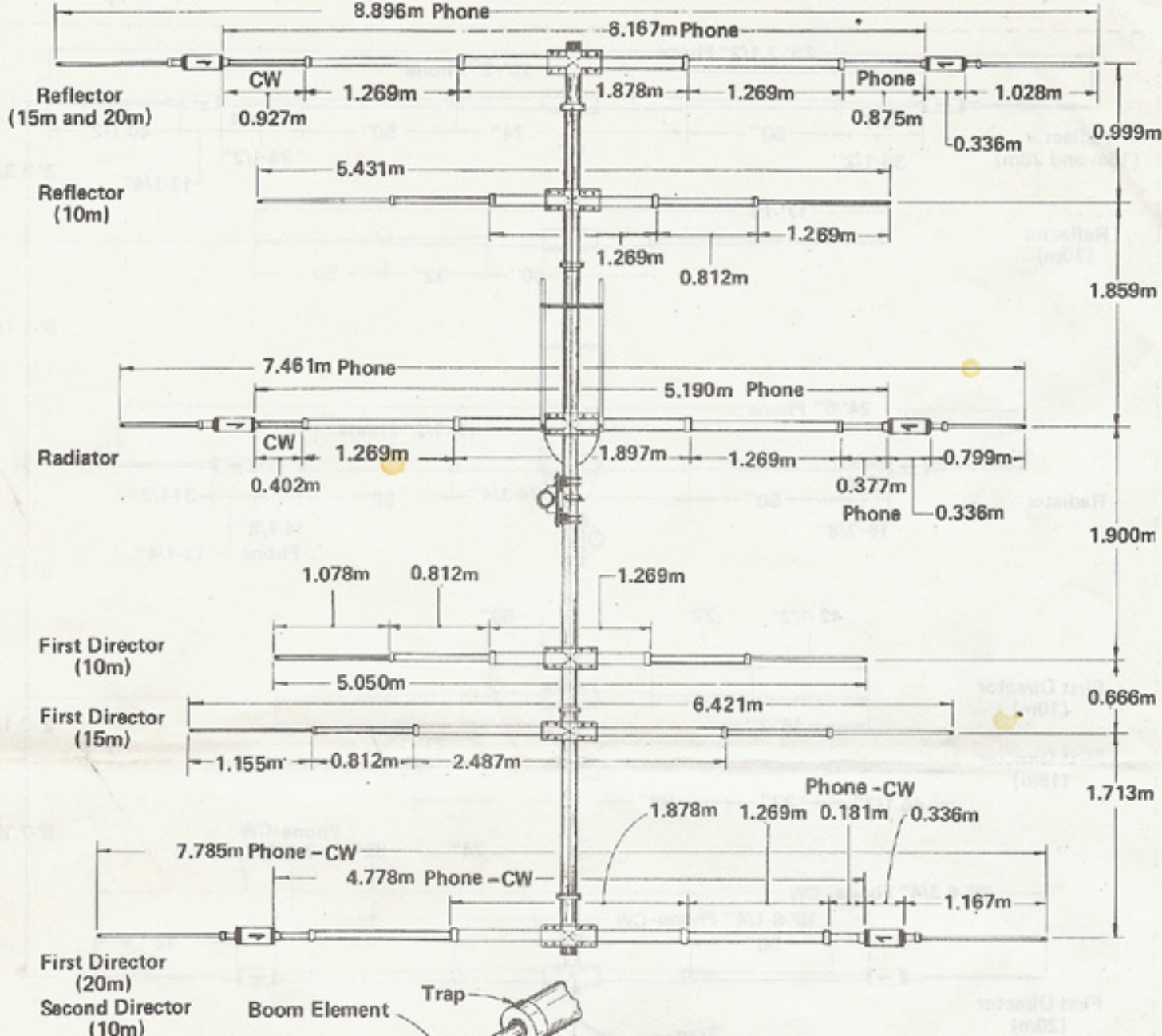


FIGURE 4a

* Reflector (10m), First Director (10m) and First Director (15m) elements only.

DRAWN ETW
APPROVED 1/1

SY36



Reflector, Radiator and Director Element end measurements are taken from end of Trap to end of Element with Plastic Cap removed.

Vibrations in your antenna due to light winds will cause the elements to sing and harden. If the elements over-harden they will become brittle and crack. In order to increase the life of your antenna, we recommend the use of 5/16" polypropylene rope threaded through the elements as described below.

Thread the rope through the 7/8" O.D. tubing. Epoxy glue the rope to the inside of the tubing which will have the mounting plates attached. After the glue has set, thread each piece of the assembly onto the rope (clamp, tubing, clamp, tubing, etc.). When the entire element is assembled, dimensioned, and all hardware tightened, epoxy the other end of the rope to the end tube. Cut the end of the rope flush with the tube and place the plastic cap on the end.

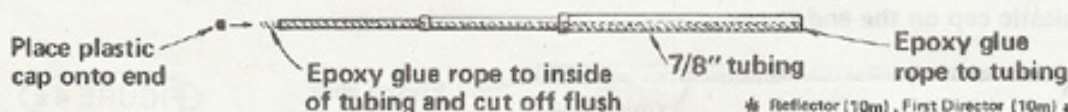


FIGURE 4b

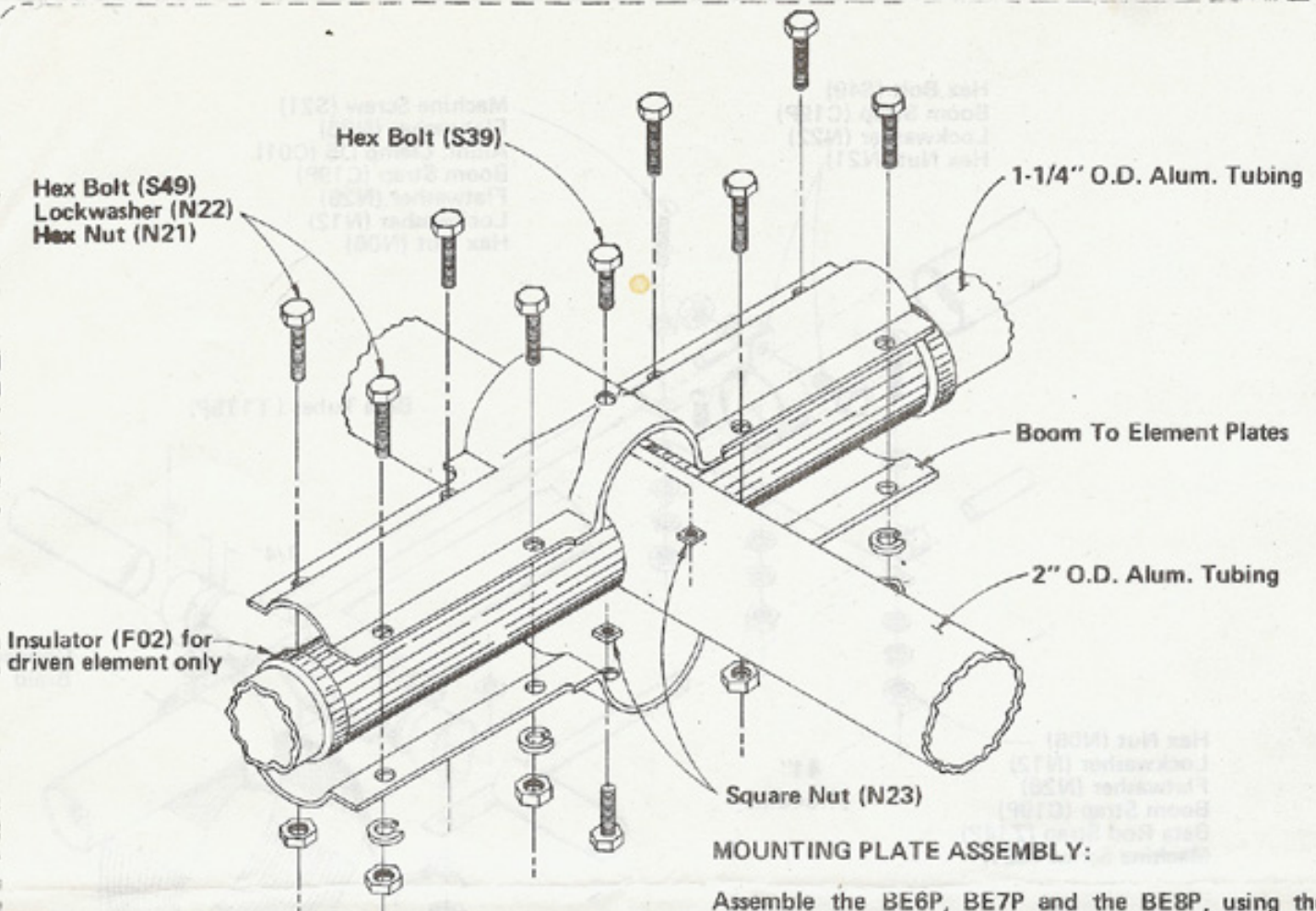
* Reflector (10m), First Director (10m) and First Director (15m) elements only.

DRAWN STW
APPROVED STW

SY36

02-01-80 Rev.

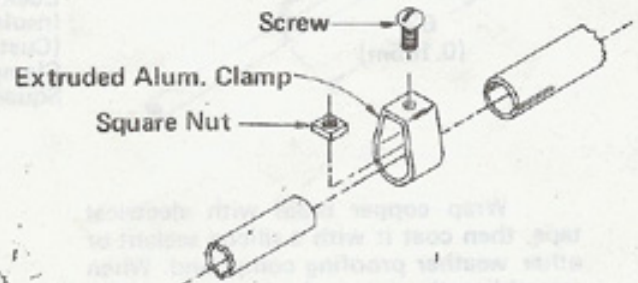
(7b)



MOUNTING PLATE ASSEMBLY:

Assemble the BE6P, BE7P and the BE8P, using the above drawing. The BE6P is large enough to accommodate the insulator sleeves (F02). The BE7P fits over the 1 1/4" O.D. alum. tubing, and the BE8P fits over the 7/8" tubing.

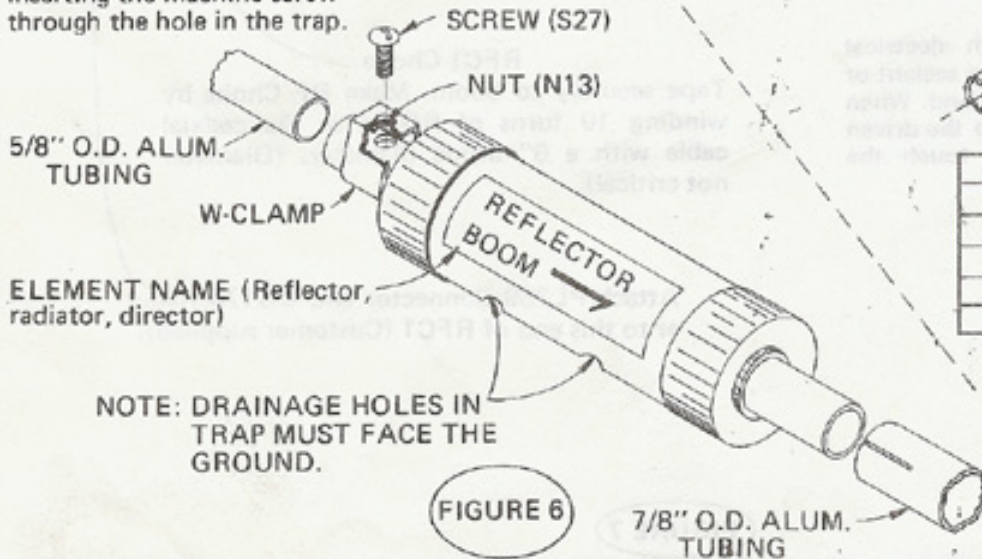
FIGURE 5



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
W58	10-24 x 1/2"	10-24

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



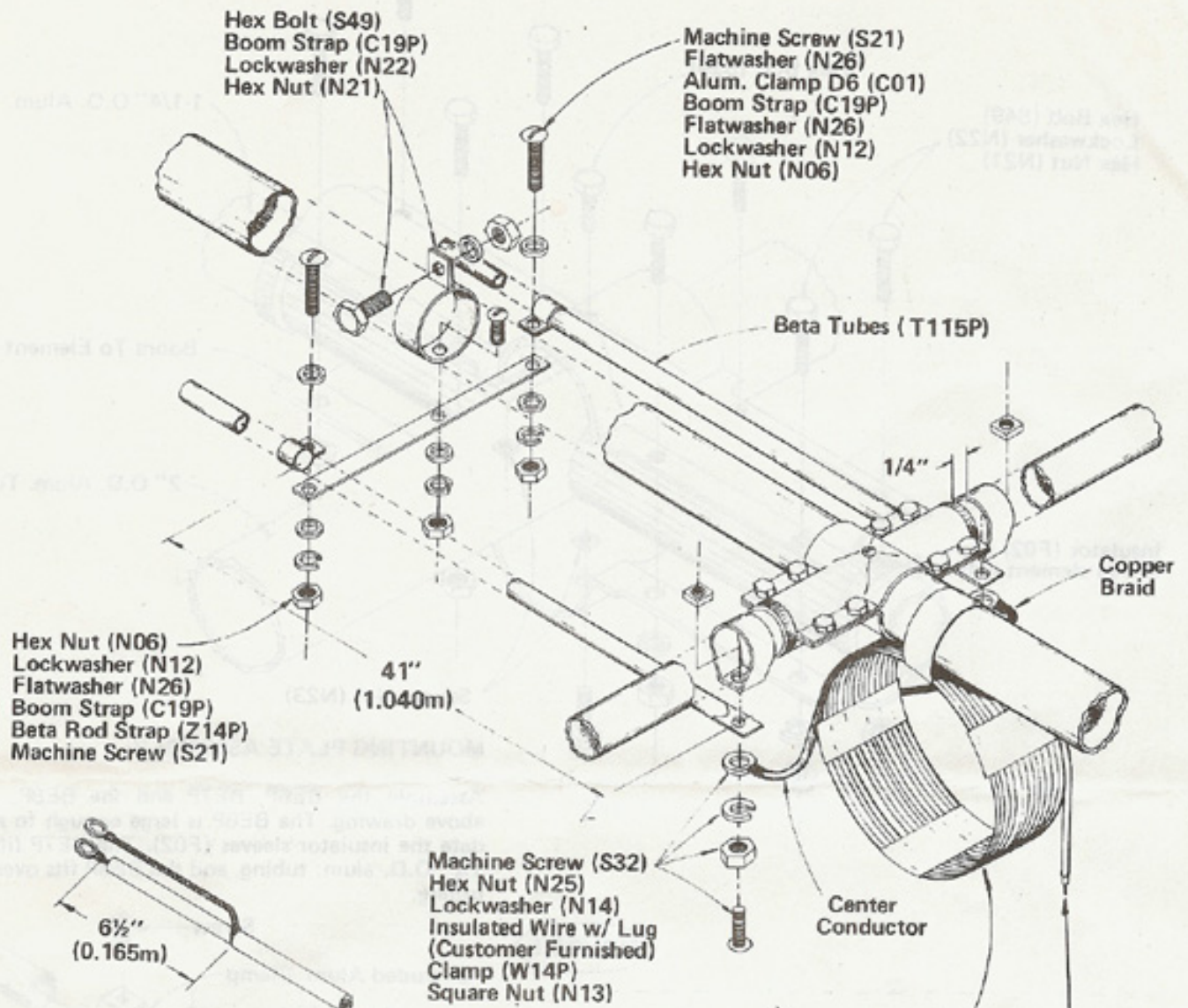
NOTE: DRAINAGE HOLES IN TRAP MUST FACE THE GROUND.

FIGURE 6

7/8" O.D. ALUM. TUBING

DRAWN _____
APPROVED _____

SY36



Wrap copper braid with electrical tape, then coat it with a silicon sealant or other weather proofing compound. When assembling the copper braid to the driven element do not allow it to touch the boom at any time.

RFC1 Choke
Tape securely to boom. Make RF Choke by winding 10 turns of RG-8x or -8u coaxial cable with a 6" inside diameter. (Diameter not critical).

Attach PL259 Connector and UG176 Reducer to this end of RFC1 (Customer supplied).

FIGURE 7

SY36

Drawn EPN
Approved KT

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

Boom to Mast Plate (P01P)
with boom attached

ANTENNA MOUNTING

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

Assemble and tighten the two inner u-bolts before assembling the outer u-bolts.

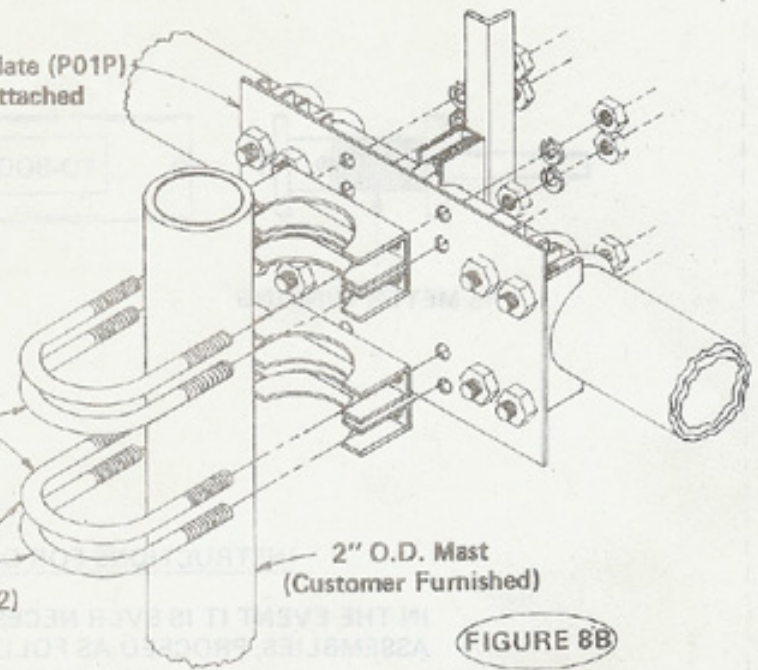


FIGURE 8B

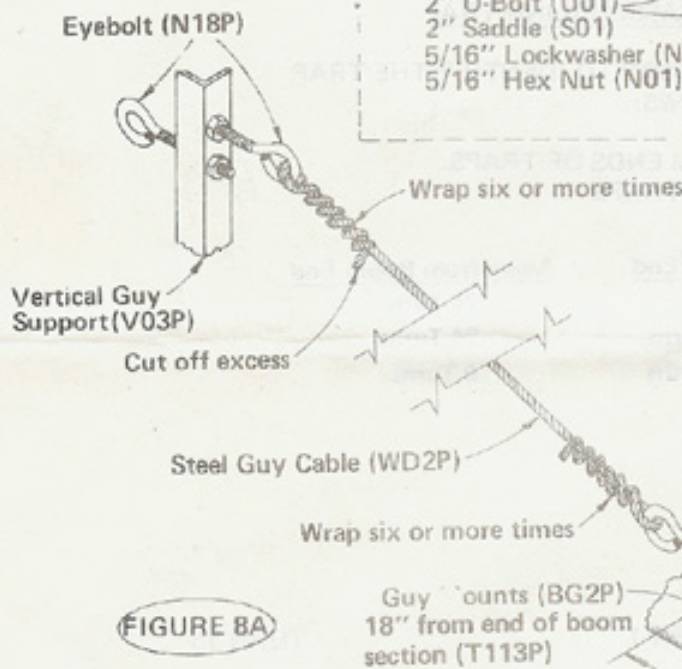
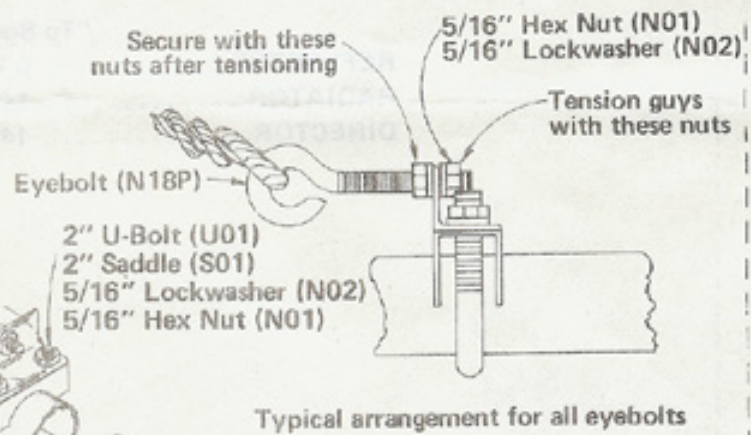


FIGURE 8A



Typical arrangement for all eyebolts

GUY ASSEMBLY:

Cut the guy cable into two equal lengths.

Assemble one 5/16" hex nut (N01) to each of the four eyebolts (N18P). Turn the nut all the way up to the eye - as far as it will go with light pressure only. These will be used to secure the eyebolts after guy tensioning.

Install two eye bolts in the top holes of the vertical guy support (V03P) - one eye in each direction. Install one eyebolt in the top hole of each of the two guy mounts (BG2P) - with the eyes towards the center of the boom. Install each bolt by inserting the end about 1/2" (12mm) through the hole, and threading a hex nut about six turns onto the end.

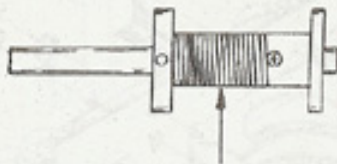
Install the guy cables between the eyes, as shown in this figure and in Figure 1. Allow approximately equal lengths of cable to extend through the eyes on each end, pull tight enough to remove the slack only, wrap six or more times, and cut off excess.

Tension the guys by tightening the nuts on the ends of the eyebolts. Tighten equally on both ends of each guy, and secure with the nuts on the opposite sides.

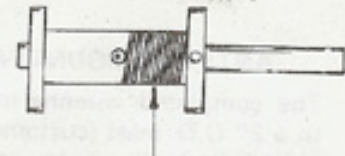
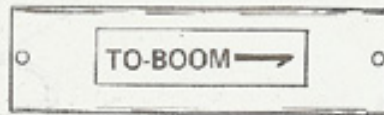
FIGURE 8

DRAWN _____
APPROVED _____

SY36



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>"To Boom" End</u>	<u>Away from Boom End</u>
REFLECTOR	0 Turns	24 Turns
RADIATOR	14½ Turns	24 Turns
DIRECTOR	14½ Turns	0 Turns

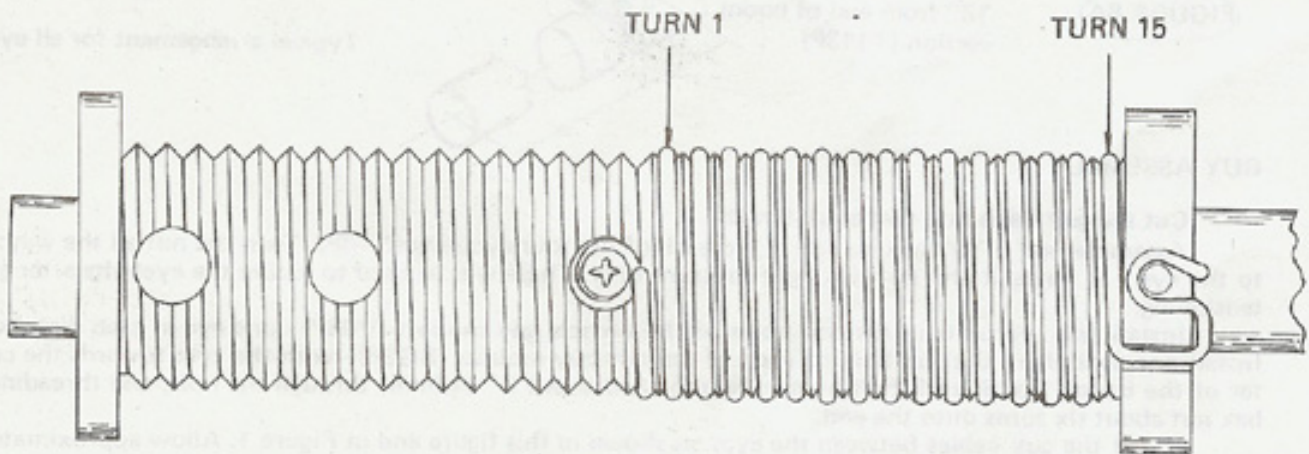


FIGURE 9

DRAWN E.T.W.
APPROVED 08-03-72 WT

SY36