

SERIAL NUMBER: **268 185**



ANTENNAS, INC.

**40M-4**



ANTENNAS, INC.

## **40M-4**

### 40 METER "BIG STICKER" ANTENNA

KLM's 4 element 40 meter "Big Sticker" has constant gain and low VSWR across the entire 40 meter band. Its broad band characteristics and the clean pattern are achieved through two properly phased driven elements. The load impedance is 200 ohms and can be matched to 52 ohm coax with a 4:1 balun.

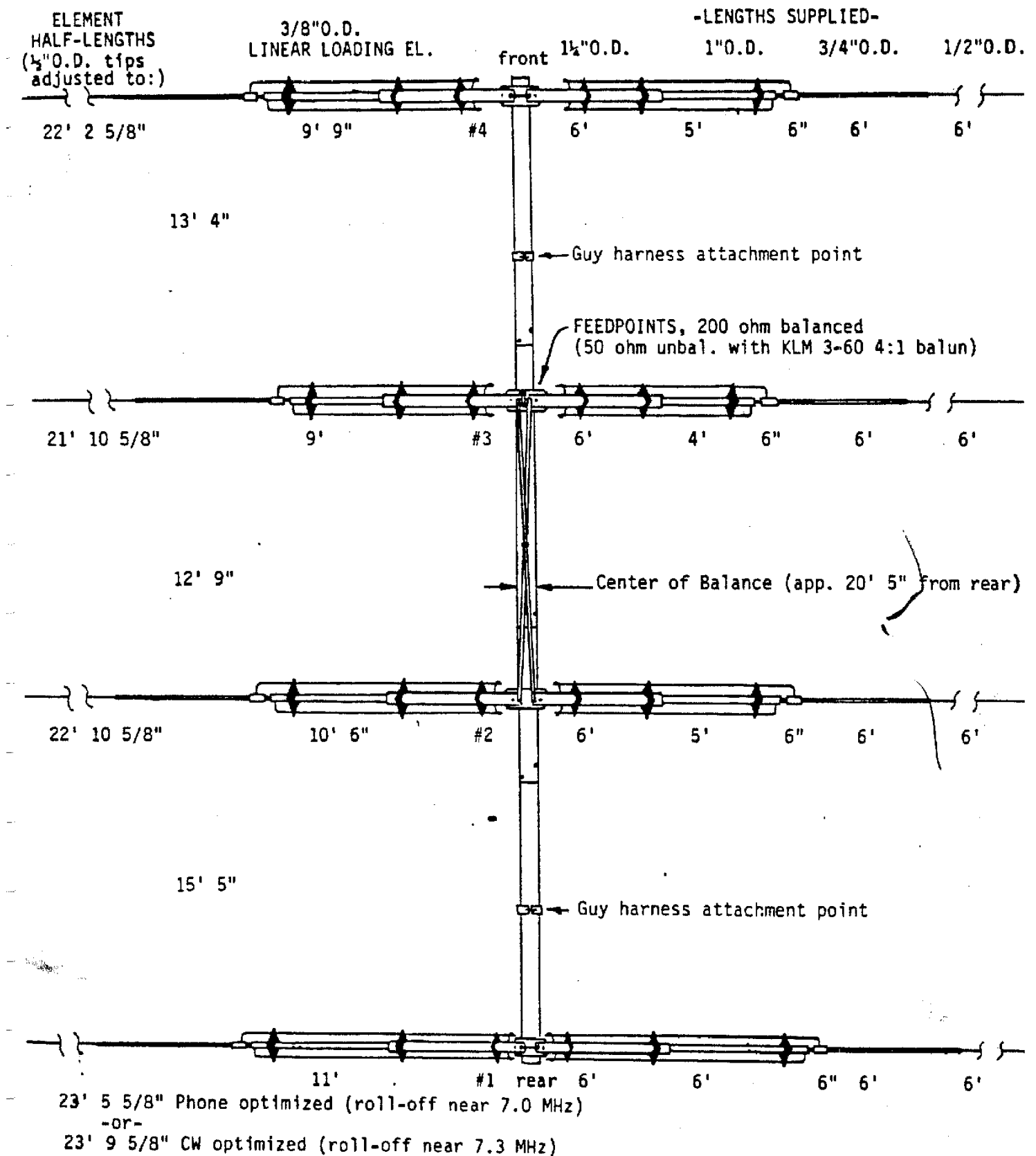
Element shortening (maximum length of any element is 47 feet ) is achieved through use of tubular linear loading sections with permanent, low loss characteristics. The folded-back loading sections are positioned on either side of an element and extended out about half way either side of center. Outer element sections bear no extra weight so can be smaller in diameter, lighter, and have less tendency to droop. Because of the unique positioning of the linear loading, extremely close stacking may be used with 20 meter beams without degrading performance of either antenna.

#### SPECIFICATIONS:

Frequency of Operation:	7.0-7.3 MHz
Gain:	7.2 dBd
F/B Ratio:	20 dB, typical
VSWR:	Less than 1.5:1 across band
Feed Impedance:	200 ohms balanced
Wind Area:	12 square feet
Boom:	42' x 3" O.D.
Turning Radius:	32 feet
Weight:	85 pounds
Mast:	2" standard; others available
Elements:	4
Maximum Element Length:	47'

Revised: 5/93

-----DIMENSION SHEET-----



## H.F. ANTENNA ASSEMBLY GUIDE:

### BEFORE YOU BEGIN .....

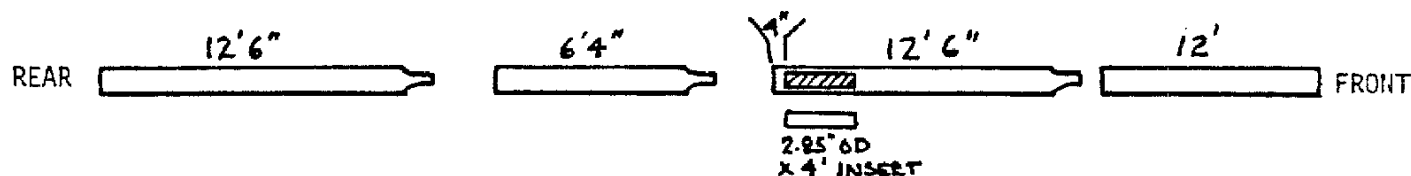
1. Select an assembly area large enough to comfortably accommodate overall antenna dimensions. A shallow box is handy for holding and sorting the smaller hardware, as is a marking pen for identifying components.
2. Some simple tools are required: A tape measure, screwdriver, and a set of spin-tite, and socket or end wrenches. Common nut sizes are:

3/8" .... 10-32 Hdwe	1/2" .... 5/16-18 Hdwe
7/16" .... 1-20 Hdwe	9/16 .... 3/8-16 Hdwe

To avoid damage to antenna components, be aware that most hardware need only be moderately hand tightened with screwdriver or spintite to be secure. When using tools with mechanical leverage such as socket or end wrenches, care must be taken not to over-torque nuts and damage components.
3. Thoroughly unpack shipping box and check components and hardware against the Parts List. If there is a difference, look for a "Factory Update/Change" sheet accompanying the assembly instructions prior to contacting KLM.
4. For easiest and fastest assembly, take a few moments before starting to familiarize yourself with the assembly guide and the antenna components.

### \* BOOM ASSEMBLY

1. Lay out 3" O.D. boom sections on the ground as shown in the sketch below:



2. Slide the 2.85" x 4' insert into the second from front 12'6" section until it is 4 1/2" inside. Light oil or silicone spray may ease a tight fit. If the insert binds, do not force it. Remove and inspect for nicks or bumps. Lightly file these off and reinsert.

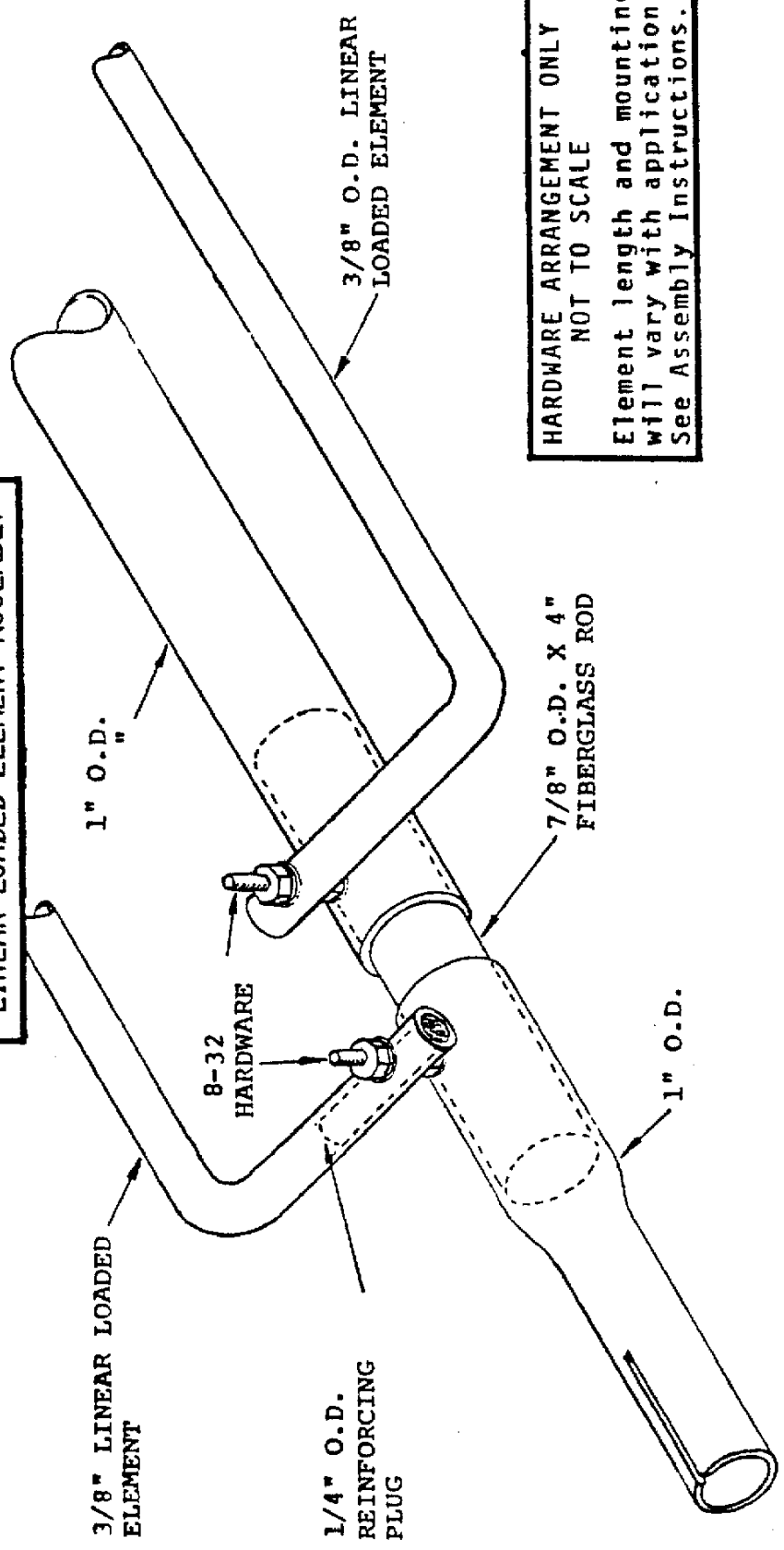
The insert provides additional strength to the boom where the boom-to-mast plate is mounted. If it is a loose fit it can be temporarily secured until the boom to mast plate is attached by drilling a small hole (#36) into boom and insert and installing a #6 x 3/8" sheet metal screw.
3. To assemble the 3" O.D. Boom sections, insert the swaged (necked-down) end into the appropriate straight end and align the bolt holes. Each boom joint is cross-bolted with two 1/2-20 x 3 1/2" bolts, lockwashers, and nuts. Torque nuts up to 10 ft/lbs.

Slide one 3" I.D. aluminum ring clamp about 6' onto the rear of the boom, and the other about 7' onto the front of the boom.

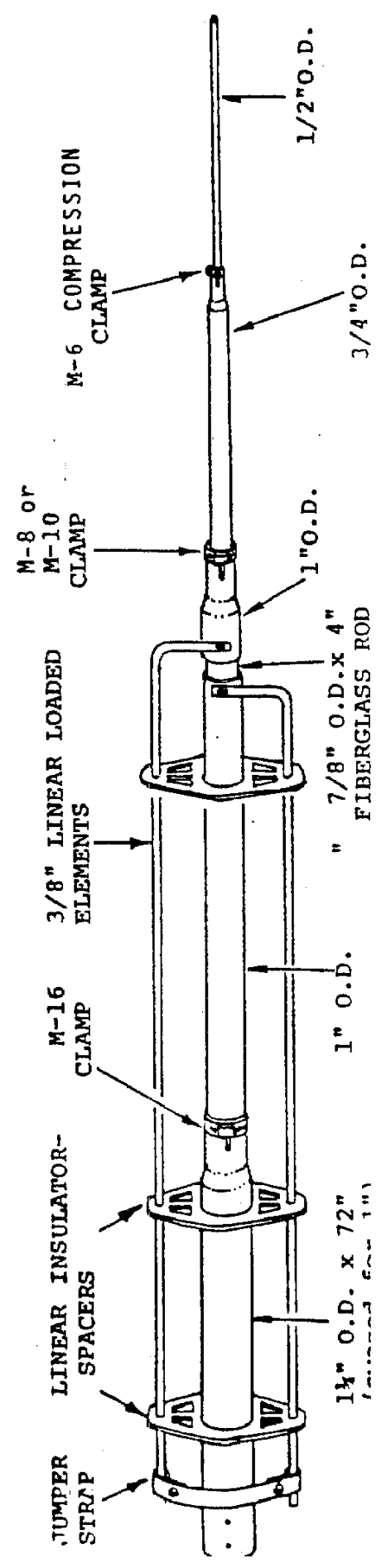
\*NOTE: For Heavy Duty Boom, See Supplemental Sheet.

# ASSEMBLY PICTORIAL

## LINEAR LOADED ELEMENT ASSEMBLY



HARDWARE ARRANGEMENT ONLY  
NOT TO SCALE  
Element length and mounting  
will vary with application:  
See Assembly Instructions.



## H.F. LINEAR LOADED ELEMENT CONSTRUCTION: (Refer to Assembly Pictorial)

### 1. Assembly of Element Halves - General Notes

Inner tubing sections on each element half are telescoped (or overlapped) three inches. Overlap of the tip sections will vary slightly because the over-all element half length is the critical electrical dimension and the tip section is adjusted as necessary to achieve it.

The smaller inside section of each telescoping joint is always coated lightly with the conductive paste provided by KLM before assembly to promote good long lasting electrical connections.

Each telescoping section is secured with a specified band or compression clamp located 1/16" back from slit end of larger tubing. See the sketch below.



#### A. Assembly of Element #1 (Reflector)

1. Insert 7/8" O.D. x 4" fiberglass rod into 1" O.D. tubing until holes align. Secure with a 8-32 x 1-3/4" screw, lockwasher, and nut. Screws are extra long to provide studs for subsequent mounting of 3/8" O.D. linear elements.

2. Add short 1" O.D. x 6" tubing section to other end of fiberglass rod and secure as in #1 above.

3. Press a 1/4" x 1" reinforcing plug into the short angled end of each 3/8" O.D. x 11' linear loading section, aligning the holes. Then lay out the 11' sections on opposite sides of the 1" O.D. tubing. Place short angled ends on the studs provided by steps #1 and #2. Secure with 8-32 nuts and lockwashers.

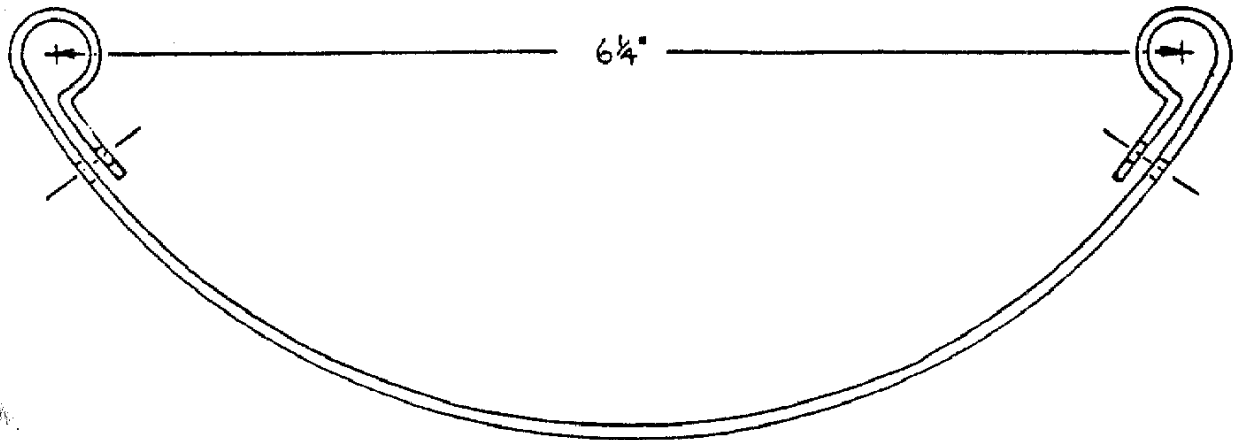
4. From the butt ends of the 3/8" O.D. linear loaded sections, slide on a diamond shaped insulator with a 1" central hole. Work up the tubes until it is about 6" from the "L" bends.

5. Slide the swaged end of a 1-1/4" O.D. x 72" section 3" onto the butt end of the 1" O.D. tube and secure with M-16 clamp.

6. Slide linear loading insulator with 1-1/4" central hole onto the butt end of the 1-1/4" tubing and then onto the 3/8" linear sections. Position about 6" inside the swaged end of the 1-1/4" section. Slide on another linear insulator and position about 1-1/2 feet from the butt ends of the 3/8" linear sections.

\* For extended insulator life in high winds, a loose fit on the 3/8" O.D. tubing is recommended. Maintain insulator position with a band of black electricians tape around main element on either side of insulator.

7. Bend one of the  $\frac{1}{2}$ " x 12" linear loading jumpers into the arc shown below and attach it to the butt ends of the linear loading sections (a small stub will extend beyond the jumper on one side). Secure the jumper with 8-32 x  $\frac{1}{2}$ " screws, lockwashers, and nuts.



8. Slide a  $\frac{3}{4}$  O.D. x 6' section 3" into the swaged end of the 1" O.D. x 6" section and secure with an M-8/M-10 clamp.
9. The  $\frac{1}{2}$ " tip section on element #1 is adjustable to improve the antenna's VSWR for different areas of the band. Insert it into swaged at tip of  $\frac{3}{4}$ " section and set according to your needs.
- Secure with a M-6 compression clamp.

7.035 - 7.30 MHz = 5'5" of  $\frac{1}{2}$ " tip section showing  
 7.0 - 7.265 MHz = 5'9" of  $\frac{1}{2}$ " tip section showing

10. One reflector element half is now complete. Repeat preceding steps for the other half.

#### B. Assembly of Elements #2, #3, and #4

1. Steps 1 through 10 are repeated for the remaining elements. The dimensions of some element sections and jumper settings will vary for each element; so follow the chart below. It lists the correct tubing lengths, proper clamp sizes, overlaps, and element half lengths (adjust the  $\frac{1}{2}$ " tip sections!). Remember to use paste at all the electrical junctions (overlaps, straps, studs, etc.). Securely tighten clamps until tubing cannot be pulled out or rotated. Pair up and identify element halves as they are completed to avoid mixups.

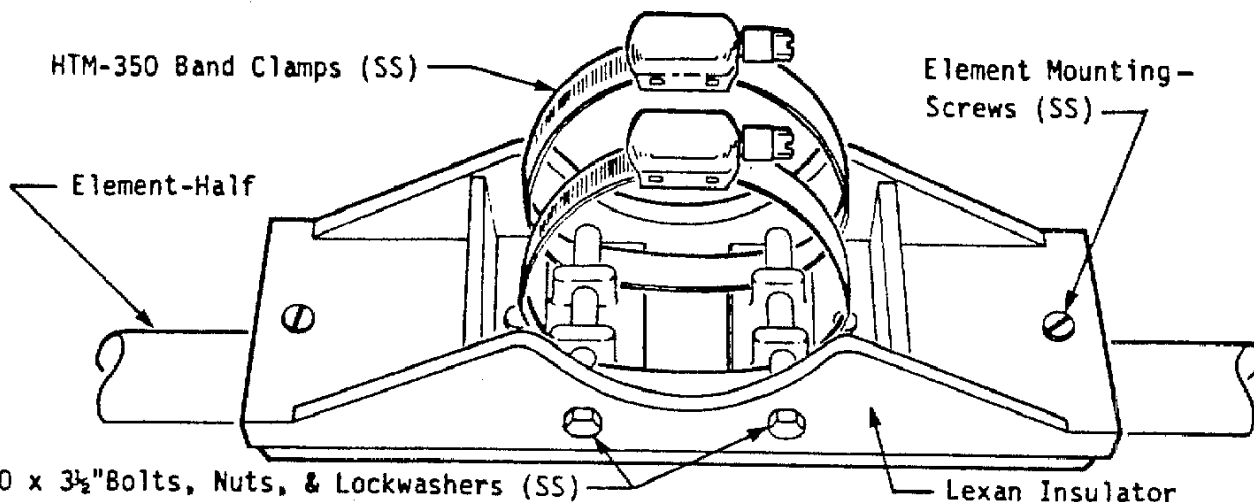
ELEMENT NUMBER	3" OVERLAPS						SET				ELEMENT** ½-LENGTH
	1½" O.D.	CLAMP TYPE	1" O.D.	7/8" FIBERGLASS	1" O.D.	CLAMP TYPE	¾" O.D.	CLAMP TYPE	½" O.D.	¾" O.D. SET JUMPER	
#1 REFLECTOR	6'	M-16	6'	4"	6"	M-8/10	6'	M-6 COM.	5'5" TO 5'9"	11'	13½" 23' 5 5/8"
#2 REAR DRIVEN	6'	"	5'	4"	6"	"	6'	"	5' 10"	10'6"	6½" 22' 10 5/8"
#3 FR. DRIVEN	6'	"	4'	4"	6"	"	6'	"	5' 10"	9'	13½" 21' 10 5/8"
#4 DIRECTOR	6'	"	5'	4"	6"	"	6'	"	5' 2"	9'9"	15½" 22' 2 5/8"

\*DISTANCE FROM 1½" O.D. BUTT TO JUMPER

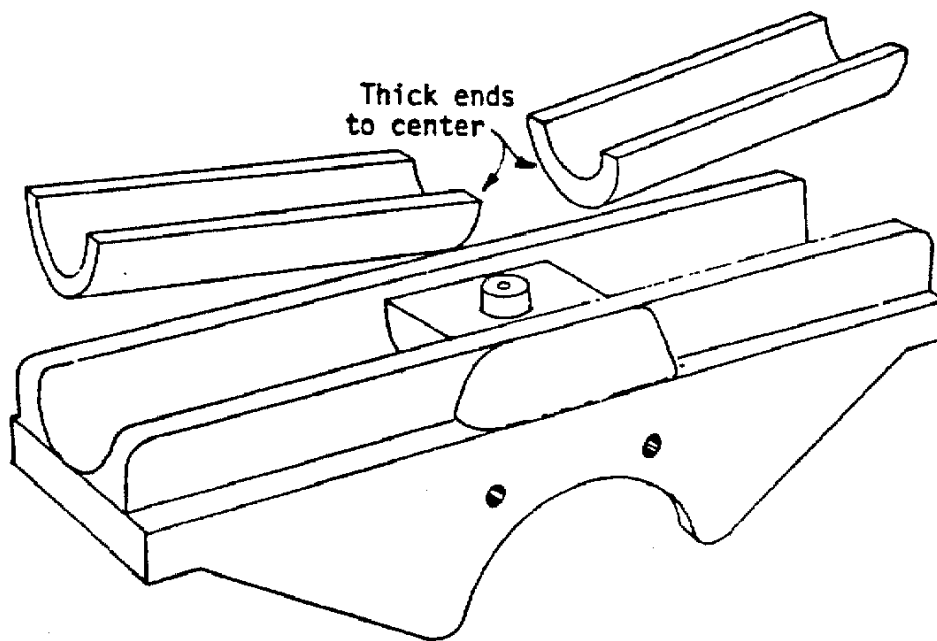
\*\*1½" O.D. BUTT TO ½" O.D. TIP

## 2. Preparing the Insulator

A. The large HTM-350 band clamps are bolted into the underside of the Lexan insulators with  $\frac{1}{4}$ -20 x  $3\frac{1}{2}$ " bolts, lockwashers, and nuts (stainless steel) as shown in the drawing below. Install in all the insulators.



B. The KLM Lexan insulator has been designed to accommodate up to  $1\frac{1}{2}$ " o.d. elements. Antennas using smaller o.d. elements are supplied with half-round reduction sections. These are placed in the two element channels on the top of the insulator with the thicker ends toward center as shown in the drawing below. Prepare all insulators.



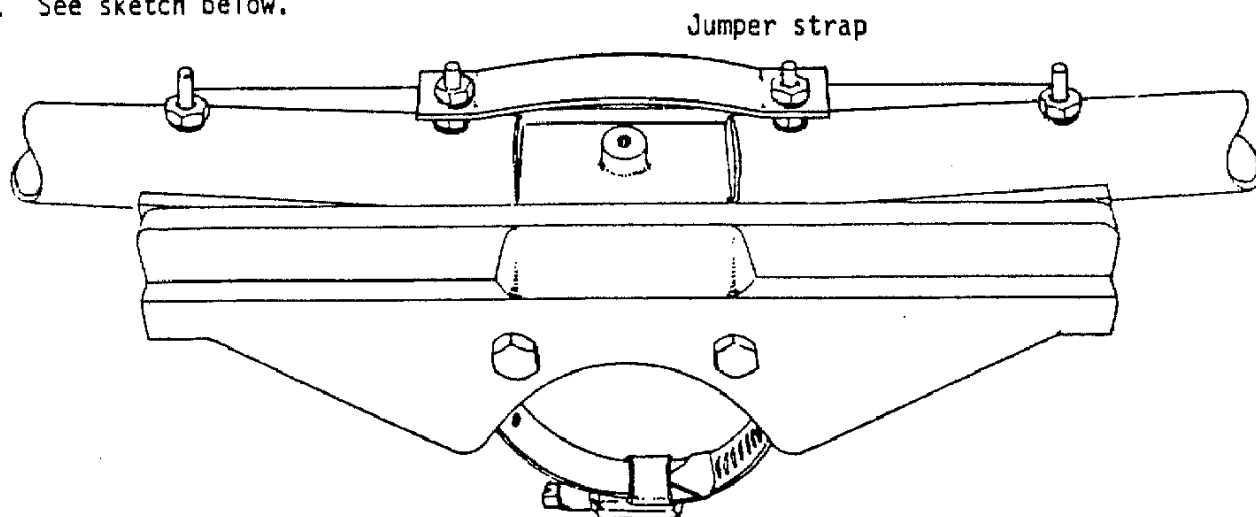
## 3. Mounting the Element Halves

A. Take each pair of element halves, in sequence, and attach them to insulators. Check that reinforcing inserts in element half butts are flush and mounting holes are aligned. Lay the element half butt into the insulator channel. Insert 10-32 x  $2\frac{1}{2}$ " screws from bottom of insulator and secure above element butt with 10-32 nuts and lockwashers. Holes in element half butt will align one way only (drilled slightly off square to compensate for element "lift" designed into insulator). If screws are not an easy fit, rotate element half butt 180 degrees and repeat.



B. Assemble all element halves to insulators and set each completed element aside, in order.

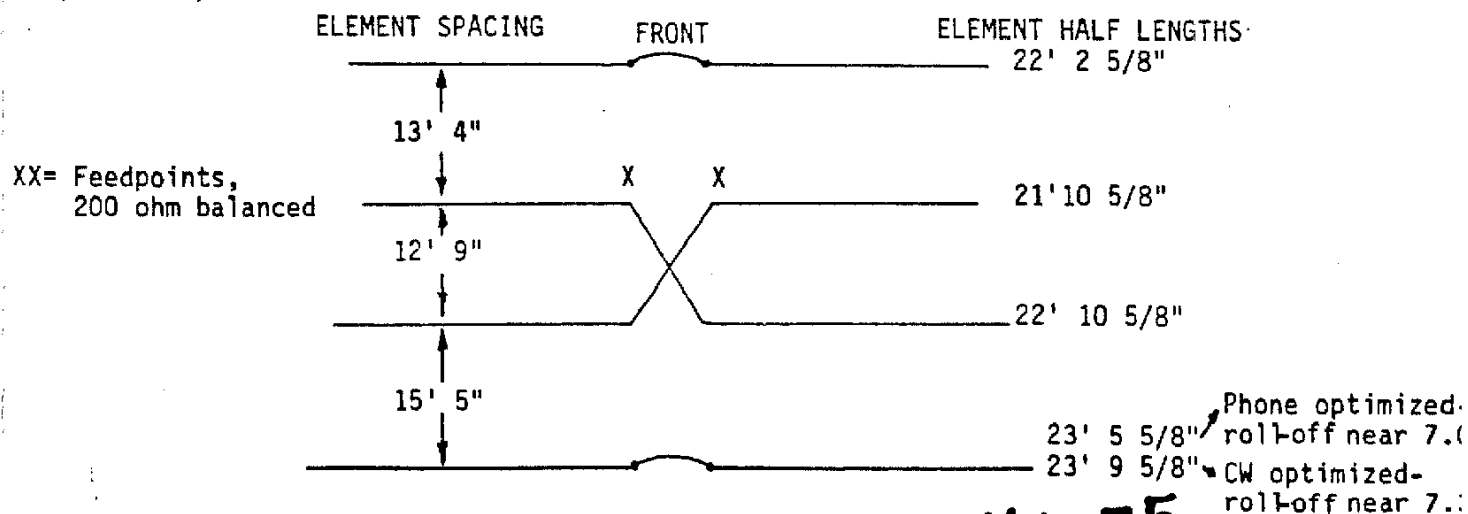
C. The reflector and director elements (#1, 4,) will each require a  $\frac{1}{2} \times 3 \frac{3}{4}$ " jumper strap between element halves. Bow the strap slightly, as needed, to fit the two inner most element mounting screw studs and secure with additional lockwashers and nuts. See sketch below.



#### 4. Mounting the Element to the Boom

A. Roll the boom until assembly bolts are  $45^\circ$  from vertical with bolt heads "up." Center element #1 at two inches from the rear of the boom (about  $\frac{1}{2}$ " of boom should extend beyond insulator) and securely tighten the HTM-350 clamp. Install the remainder of the elements on the boom according to the dimensions on the drawing below. Align each element to element #1, with the help of another person if possible, by sighting down boom from rear end. When each element is aligned and properly spaced, tighten the clamp.

B. Leave the front driven element (#3) clamp loose to allow for fitting phasing straps in Step 5.



#### 5. Driven Element Connections

A. Assemble Phasing strap 6'5" half sections together with 8-32  $\times$   $\frac{3}{8}$ " screws, lockwashers, and nuts. Use Paste on strap overlaps and screws.

## 5. Driven Element Connections

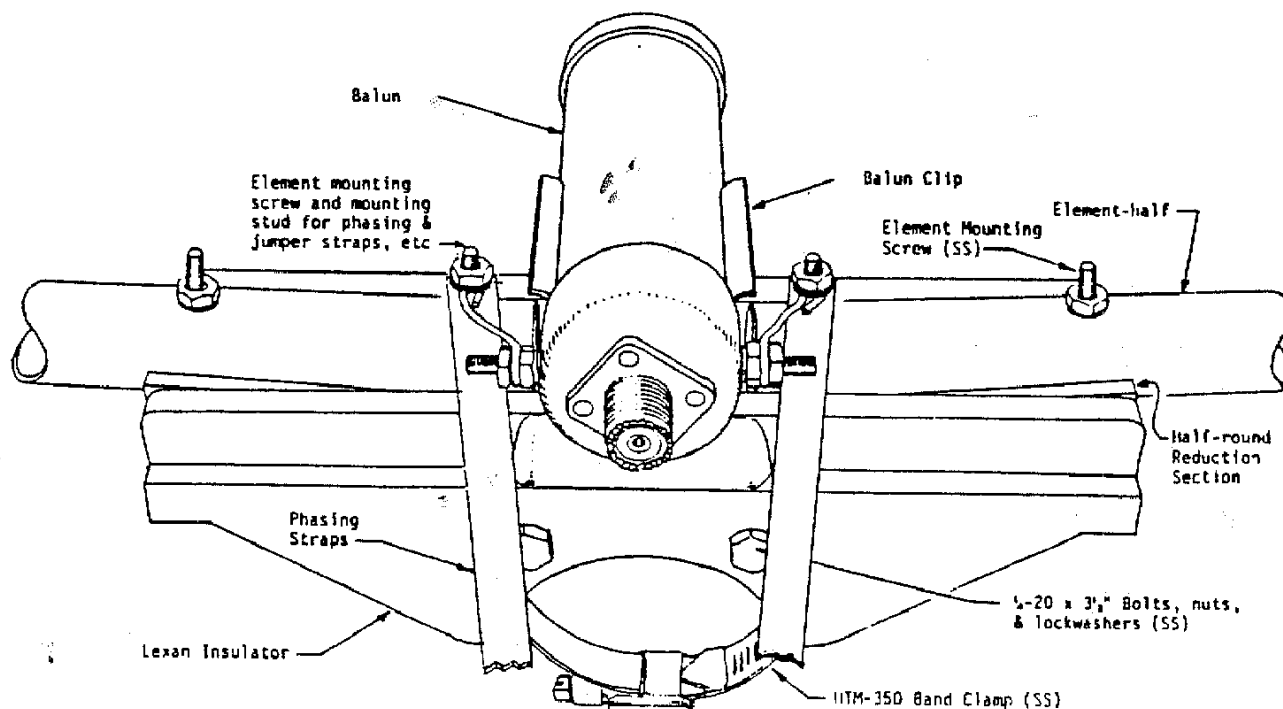
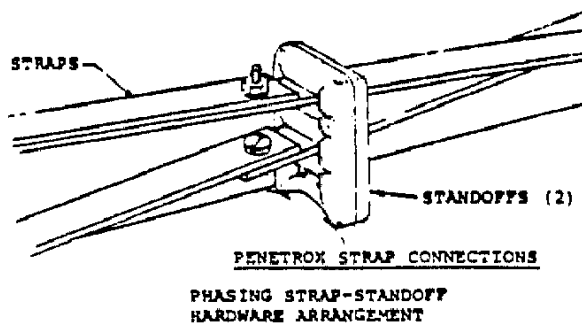
A. Slide two standoffs onto the assembled phasing straps until they butt on the screws. To prevent shorts, orient screw heads between phasing straps (see sketch).

B. Support boom so area between driven elements is as straight as possible. Paste strap ends and mount on innermost screw studs on element #2. Secure with 10-32 lockwashers and nuts. Run straps, crossed to the studs on element #3.

C. Attach balun clip to top center of element #3 with a #6 x 3/8" sheet metal screw. Place balun in clip, connector pointing to boom center. Keep balun terminals as close as possible to feedpoints but a minimum of 3/8" from balun clip. (See last page for details on making your own coax balun)

Penetrox balun leads and place over phasing straps. Secure with #10-32 flatwashers, lockwashers, and nuts.

See sketch below for correct assembly of hardware.

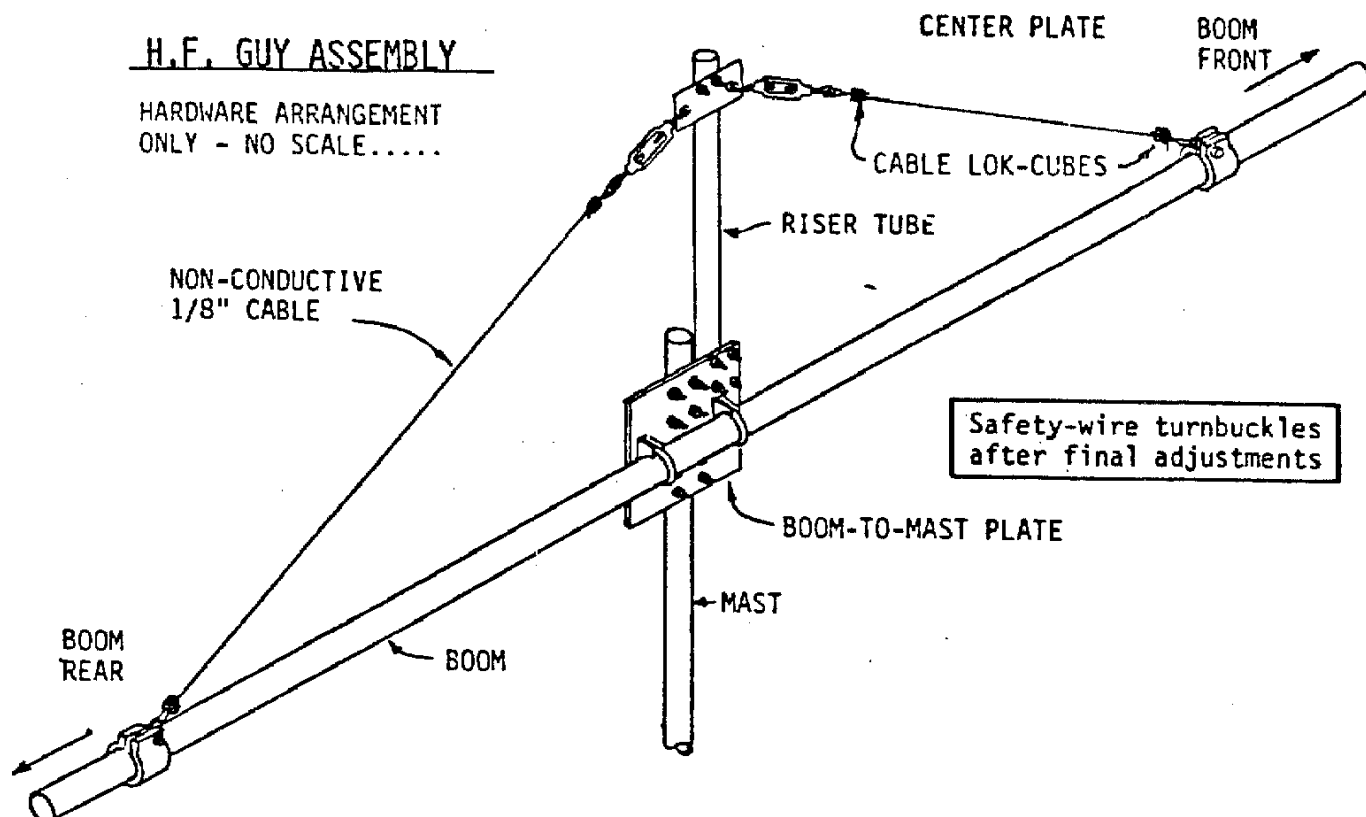


D. Take up any slack in phasing straps by tapping element #3 away from #2. When straps are taut, align element #3 with the rest and tighten clamp.

E. Referring to the Dimension Sheet (P.2) recheck all elements for correct half lengths and spacing.

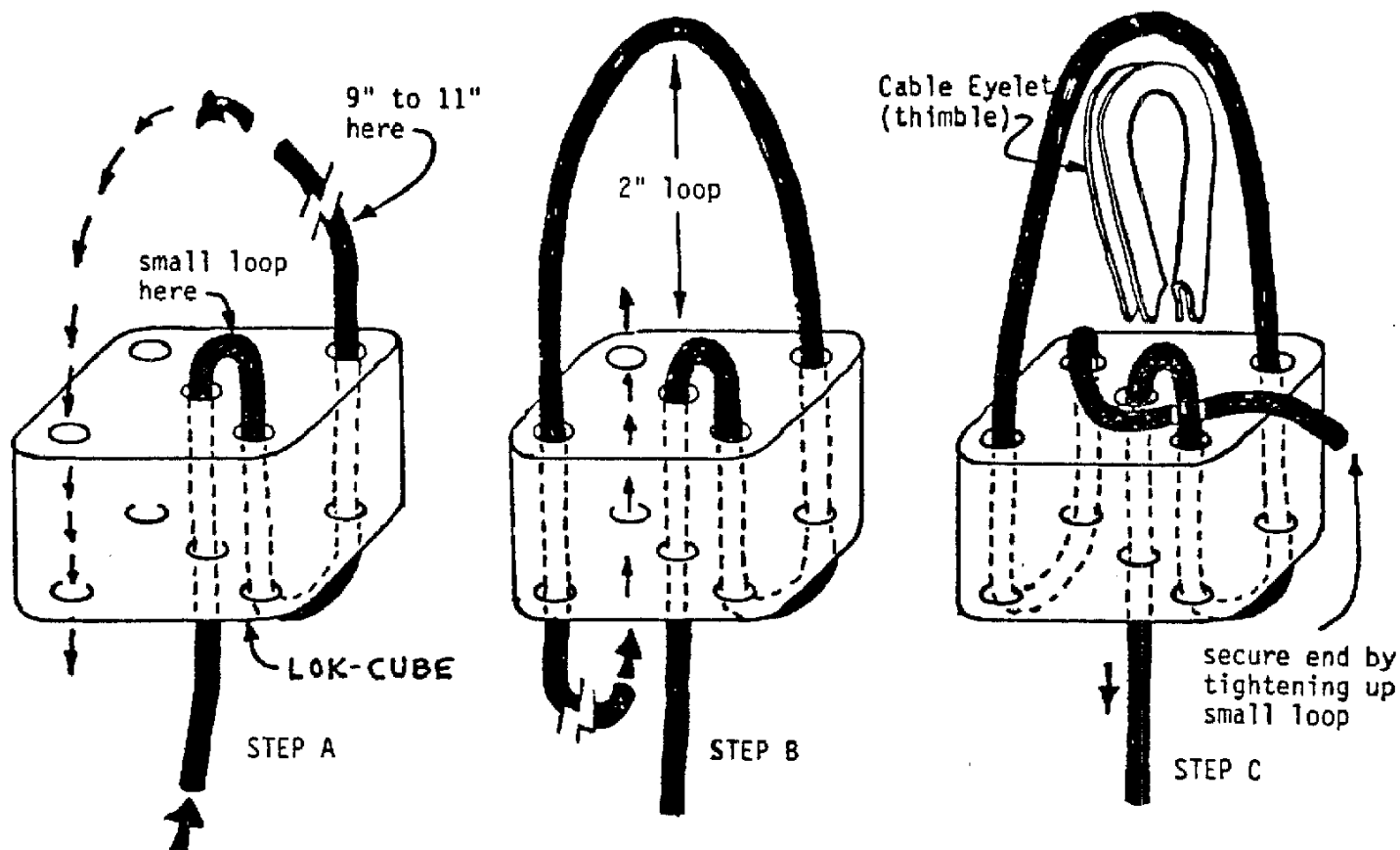
## H.F. ANTENNAS: BOOM-TO-MAST MOUNTING PLATE AND OVERHEAD GUY ASSEMBLY

The antenna is attached to the mast via a 12" x 12" plate located at the physical balance point. The boom is supported front and rear by an adjustable guy harness. The cables are non-conductive to prevent any possible interaction with other nearby antennas. The cables tie to aluminum ring clamps near each end of the boom and to turnbuckles mounted on the 48" riser tube (see the sketch below).



1. Center the boom to mast plate at the physical balance point of the antenna with the feedline attached. Lightly secure with two 3" U-bolts. Set of holes in corner of plate are for the riser tube and should be "up" and forward of mast.
2. Attach the 2" O.D. x 48" riser tube to the mast side of the mounting plate. Allow 1/2" of tubing below the lower 2" U-bolt.
3. Using the riser as a guide, sight along the beam from one end and have someone rotate the boom-to-mast plate until the riser is perpendicular to the elements. Tighten the 3" U-bolts until the boom just begins to deform.
4. Adjust the turnbuckles on the harness center plate until no threads show on the inside. Attach the center plate to the boom side of the riser about 3" or 4" from the top.
5. Rigging the guy harness is easier if the boom is more or less straight. If possible, support the boom at regular intervals.

6. Prepare one end of each cable with a 2" loop using the KLM Lok-cubes as shown in the sketch below:



7. Place a cable eyelet (thimble) into each loop and snug up cables onto eyelets. Then install loop/eyelet into splits in each ring clamp. Secure with 3/8-16 x 2" bolts, lockwashers, and nuts.
8. Prepare the other end of each cable with Lok-cubes as far as step A only. Pull each cable taut and adjust until lok-cubes until they are about 2" to 3" from the turnbuckle eyebolts. Then thread the cable ends through the eyebolt and around the eyelets. Complete rigging as shown in steps B and C, snugging up cables on the eyelets.
9. Make initial boom straightening and support adjustments by a combination of moving the ring clamps along the boom and changing, slightly, the position of the harness center plate. Keep tension on riser balanced so it is not pulled to front or rear. With the assistance of another person, balance the antenna on the boom-to-mast plate and sight down the boom, end to end, checking for straightness. When finished, resecure ring clamp bolts and center plate U-bolt.
10. If possible, allow the antenna hardware to temperature-cycle overnight. The next day, check all nuts, bolts, clamps, screws, etc and make sure they are securely tightened (good insurance to prevent accidental "disassembly" after the antenna has been installed and much easier to do while it is still on the ground).
11. The guy harness may now have taken a "set" and stretched slightly. Make any final adjustments with the turnbuckles, blocking the eyebolts to prevent twisting the cables. Whether or not any adjustments were needed, SAFETY-WIRE the turnbuckles to maintain setting.
12. Check that phasing straps are stretched taut. If they droop, loosen the front driven element clamp and lightly tap insulator away from the rear driven element until straps are taut, then retighten clamp.

13. Check that riser is perpendicular to the rear element and then align, as necessary, all other elements to the rear element. Retighten all clamps. If you live in an area with severe weather or if it is likely that elements will snag on trees, guy wires, etc, during installation, it is recommended that the elements be additionally secured in the following manner:  
Drill a #36 pilot hole into the boom through the existing hole in the HTM-350 clamp and install a #6 x 3/8" sheet metal screw (supplied). Repeat for all elements.
14. Plastic plugs are supplied for the boom ends to keep out birds and cut down wind noise. Cut or drill a small drain hole near the bottom edge before installing.
15. Connect 50 ohm coax to balun and route back to mounting plate. Tape or strap every 3-4 feet. USE ONLY QUALITY COAXIAL CABLE, such as Belden 8214, Times FM-8, RG-213, RG-214, etc, and eliminate a major cause of many so-called "antenna" problems.

#### INSTALLATION

1. The mounting plate is drilled to accept a 2" O.D. mast. Four 2" U-bolts are supplied.
2. STACKING:  
Maintain 8-9 feet spacing from lower frequency antennas  
Due to positioning of the linear loading, the 40M-4 may be stacked as close as 6 feet to a 20 meter antenna.  
When stacking with a 15 meter antenna, the booms must be at right angles to each other to prevent interaction.  
Other higher frequency antennas should be spaced by 1/4 of their wavelength.

# BALUNS

## 4:1 COAX BALUN CONSTRUCTION

1. Use only high quality 50 ohm coax. KLM research indicates some coax currently marketed will exhibit variable impedance, R.F. leakage, or other defects when in use. KLM uses only Times FM-8 or Belden 8214 for its cable assemblies.
2. Cut coax three inches longer than the electrical half-wavelength to allow for feedpoint leads. Use the formula and table below to determine the correct length with frequency and coax you intend using.

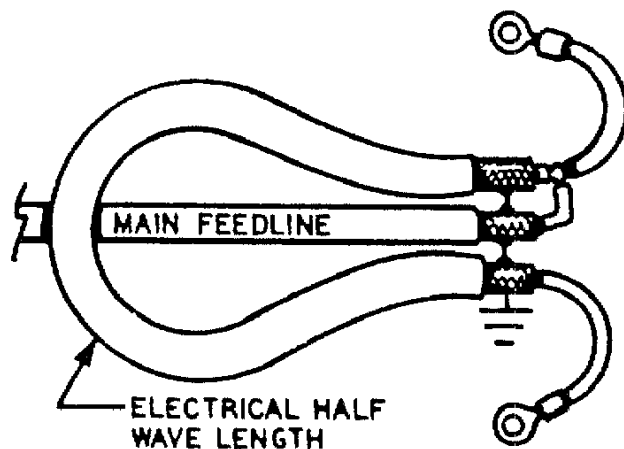
$$\frac{(\text{constant}) 5904}{\text{freq. in MHz.}} = \frac{\text{free space}}{\frac{1}{2} \text{ wavelength}} \times \frac{\text{velocity factor}}{\text{in coax}} = \frac{\text{electrical } \frac{1}{2} \text{ wavelength}}{\text{inches}}$$

Example:

$$\frac{5904}{28\text{MHz}} \times .80 \text{ (TIMES FM-8)} = 168.69" \text{ (28 Mhz } \frac{1}{2} \text{ wavelength in Times FM-8 coax)}$$

3. Fabricate balun leads as shown in sketch. Carefully solder joints. Check for shield to center conductor shorts.
4. Crimp or solder lugs are recommended for the two 4:1 leads.
5. Waterproof the exposed coax ends with RTV (or equivalent) sealant.
6. Attach leads to the antenna feedpoints. Tape balun loop and main feedline to boom.
7. Coax shielding may be grounded to boom (optional).

COAX TYPE	TYPICAL VELOCITY FACTOR
RG-213	.66
RG-214	.66
RG-58	.66
BELDEN 8214	.78
TIMES FM-8	.80
Consult manufacturers specs for other types of coax.	



# **PARTS LIST** **40M-4 "BIG STICKER" ANTENNA**

DESCRIPTION	PART#	QUANTITY
* Swaged (Drilled Sw. End) Aluminum Tubing, 3" o.d x 12'6".	T3000	1
* Swaged (Drilled Both Ends) Aluminum Tubing, 3" o.d. x 12'6"	T3000	1
* Swaged (Drilled Both Ends) Aluminum Tubing, 3" o.d. x 6'4"	T3000	1
* Straight (Drilled One End) Aluminum Tubing, 3" o.d. x 12'	T3000	1
* Insert, 2.850 o.d. x 4'	T2850	1
Riser Tube, 2"o.d. x 4'	T2000	1
Swaged Aluminum Tubing (with 1-1/8" x 34" Insert), 1-1/4" o.d. x 72"	T1140	8
Straight Aluminum Tubing, 1" o.d. x 72"	T1000	2
Straight Aluminum Tubing, 1" o.d. x 60	T1000	4
Straight Aluminum Tubing, 1" o.d. x 48"	T1000	2
Swaged Aluminum Tubing, 3/4" o.d x 72"	T0340	8
Straight Aluminum Tubing, 1/2" o.d.x 72"	T0120	8
Linear Elements with "L" Bend, 3/8" o.d. x 135"	T0380	4
Linear Elements with "L" Bend, 3/8" o.d. x 129"	T0380	4
Linear Elements with "L" Bend, 3/8" o.d. x 120"	T0380	4
Linear Elements with "L" Bend, 3/8" o.d x 111"	T0380	4
Phasing Straps, 1/2" x 77"	S0120	4
Guy Center Plate w/Turnbuckles	PA204	1
Boom-To-Mast Plate, 11-1/2" x 11-1/2"	P1112	1
Phyllistran Cable, 1/8" x 17'	H1200	2
Box of Hardware including:		
Clamps, HTM 350	28487	8
U-Bolts & Cradles, 2"	28402	7
U-Bolts & Cradles, 3"	28410	2
** Boom Caps, 3"	66133	2
Conductive Paste, 1oz.	16001	2
Ring Clamps, 3"	28482	2
Balun, 3-60 4:1	B3641	1
Assembly Manual	M4011	1
Fiberglass Rod, 7/8" x 4"	F0780	8
Insulators, 1-1/2" x 3" Lexan	66139A	4
Swaged, 1" o.d. x 6"	T1000	8

\* NOTE: FOR HEAVY DUTY BOOM, SEE ATTACHED SUPPLEMENTAL SHEET  
 \*\* FOR HEAVY DUTY BOOM PART # FOR END CAPS IS # 66131.

PARTS LIST 40M-4  
CONTINUED

DESCRIPTION	PART#	QUANTITY
Insulator Inserts, 1-1/2" x 1-1/4"	66108	8
Linear Insert, 1" Hole	66136	8
Linear Insert, 1-1/4"	66107	16
Straps, "C"	S0120C	8
Hardware Bag		
Screws, 8-32 x 1-3/4"	28016	16
Screws, 8-32 x 1/2"	28011	16
Screws, 8-32 x 3/8"	28010	2
Nuts, 8-32	28202	50
Lockwashers, #8	28352	50
Sheetmetal Screws, #6 x 3/8"	28000	6
Nuts, 10-32	28203	27
Lockwashers, #10	28353	24
Flatwashers, #10	28303	2
Screws, 10-32 x 2-1/2"	28025	16
* Bolts, 1/4-20 x 3-1/2"	28526	20
* Lockwashers, 1/4-20	28354	20
* Nuts, 1/4-20	28204	20
Phasing Straps, 1/2" x 3-3/4"	S0120	2
Phasing Spacers	66121	2
Peanuts, 1/4" x 1"	66106	16
Lockwashers, 5/16"	28356	14
Nuts, 5/16-18	28206	14
Lockwashers, 3/8"	28355	6
Nuts, 3/8-16	28205	6
Bolts, 3/8-16 x 2"	28545	2
Lok-Cubes	66128	4
Thimbles, 1/8"	28707	4
Clamps, M-6	28200	8
Clamps, M-10	28488	8
Clamps, M-16	28477	8

\* FOR HEAVY DUTY BOOM, INCLUDES (6) SIX ADDITIONAL BOLTS, NUTS, AND LOCKWASHERS.



# SUPPLEMENTAL SHEET

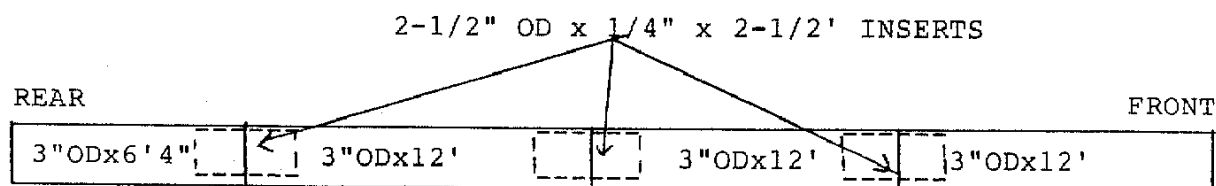
## FOR 40M-4 "BIG STICKER" ANTENNA WITH HEAVY DUTY BOOM

### HEAVY DUTY BOOM

PART NO.	DESCRIPTION	QUANTITY
T300H	3" O.D. X 1/4" X 12' BOOM	3
T300H	3" O.D. X 1/4" X 6'4" BOOM	1
T212H	2-1/2" O.D. X 1/4" X 2-1/2' INSERT	3

### BOOM ASSEMBLY

1. LAY OUT 3" O.D. HEAVY DUTY BOOM SECTIONS ON THE GROUND AS SHOWN IN THE SKETCH BELOW.
2. SLIDE THE 2-1/2" O.D. X 2' INSERTS AS SHOWN.
3. ALIGN BOLT HOLES AND SECURE WITH 1/4-20X3-1/2" BOLTS, LOCKWASHERS, AND NUTS.



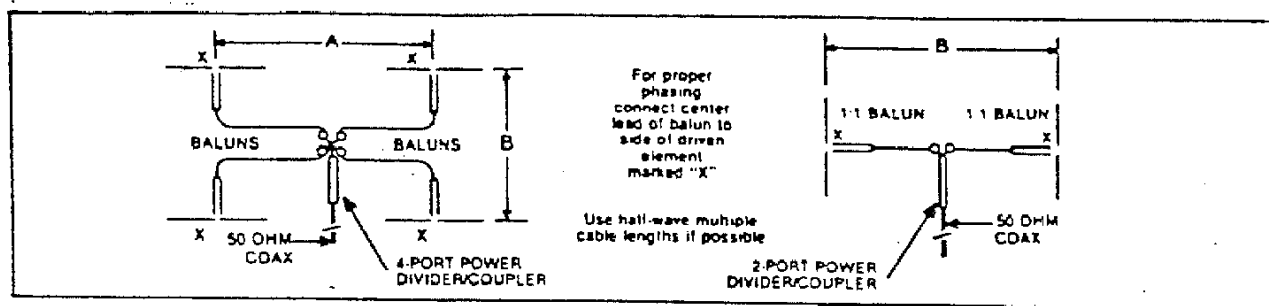


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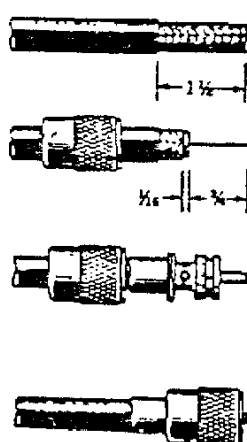


Your KLM ANTENNAS balun has been fully tested, both electrically and physically, before leaving the factory. To maximize the performance and efficiency of your balun, please note the following recommendations.

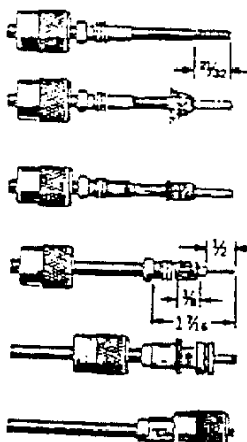
1. Keep the lead lengths from balun to feedpoints as short as possible. Unnecessary length can upset VSWR, bandwidth, etc. Solder lugs are a good idea too.
2. Be sure studs on HF balun are at least 3/8" from other antenna hardware.
3. When stacking two or more antennas, use balun stud identified with black dot on hot side on HF or center lead (VHF/UHF) as key for proper phasing (see sketch below).



4. KLM HF/VHF BALUNS ARE NORMALLY SUPPLIED WITH SO-239 TYPE CONNECTORS. USE ONLY PL-259 CONNECTORS WITH THEM. ASSEMBLY OF PL-259 CONNECTORS (FOR TWO TYPES OF COAX) ARE SHOWN BELOW.



1. Cut end of cable even. Remove jacket 1-1/8" - don't nick braid.
2. Bare 3/4" of center conductor - don't nick conductor. Trim braided shield 1/16" and tin. Slide coupling ring on cable.
3. Screw the plug assembly on cable. Solder plug assembly to braid through solder holes. Solder conductor to contact sleeve.
4. Screw coupling ring on assembly.



1. Cut end of cable even. Remove jacket 21/32" - don't nick braid. Slide coupling ring and adaptor on cable.
2. Fan braid slightly and fold back over cable.
3. Compress braid around cable. Position adaptor to dimension shown. Press braid down over body of adaptor and trim.
4. Bare 1/2" of center conductor - don't nick conductor. Pre-tin exposed center conductor.
5. Screw the plug assembly on adaptor. Solder braid to shell through solder holes.
6. Screw coupling ring on back shell.

**IMPORTANT NOTE: IF YOUR BALUN IS SUPPLIED WITH TYPE "N" CONNECTORS (HF/VHF OPTION-UHF STANDARD), PLEASE READ ON....**

Type "N" connectors are noted for their low loss and good weather seal characteristics, but they must be carefully mated and only to other cleaned and carefully assembled type "N" connectors.

KLM ANTENNAS 90 day materials and workmanship warranty does not cover type "N" center pins bent or broken during installation or field use, so please read the following application notes carefully. (See reverse page).

RG-8/U Cable Assembly to Connectors

ANTENNAS, INC. 3501 S. R. 100, BOX 344, MONROE, LA 70002 • TEL (202) 794-2923 • FAX (202) 794-0294

# FOR BALUNS WITH TYPE "N" CONNECTORS

1. Use only type "N" connectors with your balun. Do not use PL-259 (S0239) type connectors. They will ruin it.
2. Carefully mate Type "N" connectors straight on. Jamming them together at angles will damage or break the center pins.
3. Carefully assemble your own type "N" connectors. See below for step-by-step details.



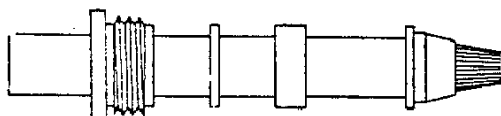
1. Cut end of cable even.



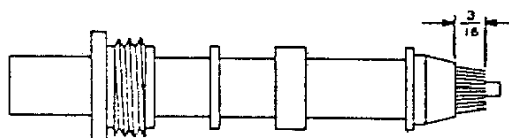
2. Remove vinyl jacket 1/2" don't nick braid.



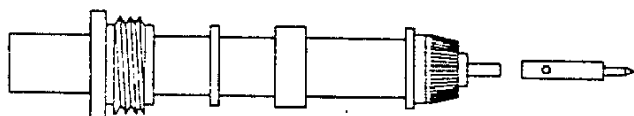
3. Comb out copper braid as shown. Bare 1/4" of center conductor - don't nick conductor.



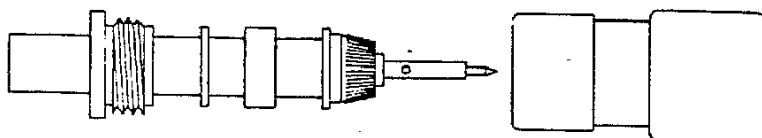
4. Taper braid as shown. Slid nut, washer and gasket on vinyl jacket. Slide clamp on braid.



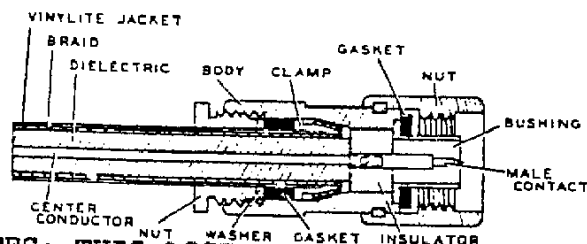
5. With clamp in place, trim braid as shown.



6. Fold copper braid back on clamp. Tin center conductor, using minimum amount of heat.



7. Holding contact with pliers soft solder contact to center conductor. It is imperative that back end of contact be flush with polyethylene dielectric. Do not use excess solder. Wipe clean - see that end of cable insulator is clean and free of solder, rosin, and foreign material.



NOTES: THIS ASSEMBLY PROCEDURE APPLIES TO TYPE "N" PLUGS. THE PROCEDURE FOR JACKS IS THE SAME EXCEPT FOR THE USE OF A FEMALE CONTACT AND A JACK BODY.

8. Slide body into place carefully so that center conductor enters hole in insulator. Face of cable dielectric must fit flush against insulator. Properly tighten body and nut with wrenches.