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12847
10M-6

13363

Welcome to the antenna line of the KLM communications family. Your antenna kit features hi-grade materials and workmanship. It requires no additional drilling or machine work. The design has been optimized for maximum performance and durability. Altering or modifying the antenna is not recommended.

This packet contains basic assembly instructions for the 10M-6 antenna. Also included are the specific Dimension Sheet, Assembly Pictorial and Parts List for the antenna you ordered.

I. PREASSEMBLY

Select an assembly area large enough to accommodate boom and element lengths. Two sawhorses or large boxes are useful for holding antenna boom at a comfortable working height. A shallow box is handy for holding and sorting the small hardware. The following tools are required: Tape measure, screwdriver, spintites, socket or end wrench. Common nut sizes encountered are:

11/32".....8-32 HDWE.	1/2".....5/16-18 HDWE.
3/8".....10-32 HDWE.	9/16".....3/8-16 HDWE.
7/16".....1/4-20 HDWE.	

PLEASE NOTE: With the exception of U-bolts, most small nuts and screws can be considered "tightened securely" when moderately hand tightened with screwdriver or spintite. When using tools with additional leverage on any hardware, care must be taken to avoid overtightening and damage to components.

For the best results and the best use of your time, we strongly commend familiarizing yourself with all parts and instructions before beginning assembly.

II. ASSEMBLY INSTRUCTIONS

1. Thoroughly unpack shipping box and check all components and hardware against the attached Parts List supplied for your particular antenna model. In the event a difference is apparent, please check a factory "up-date/changes" list accompanying this instruction sheet prior to contacting your KLM dealer or the factory.

2. A conductive zinc paste is supplied with this antenna kit. Apply it lightly between ALL aluminum to aluminum and aluminum to copper joints. This includes element tubing over laps, phasing straps, balun leads, stud connections, etc. Use of Penetrox insures long lasting electrical connections and ease in mechanical assembly (and disassembly, should it be necessary).

A. BOOM ASSEMBLY:

A1. The ends of each boom section are letter marked in felt pen. Assemble the boom sections matching like letters ("A to A", etc.). Rotate sections as necessary to align all holes. Secure the joints with two 10-32 x 2½" screws, lockwashers, and nuts.

A2. Slide the 2" I.D. cast aluminum boom support ring clamps onto boom about 31" from rear and 76" from boom front (splits-up).

B. ELEMENT ASSEMBLY:

See Dimension Sheet and Assembly Pictorial

B1. Beginning with element #1, attach the 5/8" O.D. x 72" element sections to the insulator. Insert 8-32 x 1½" screws through bottom of insulator and secure above tubing butts with 8-32 lockwashers and nut. (Screws are extra long to provide mounting studs for jumpers, phasing straps and balun leads). Repeat for all the elements.

B2. The 3/8" O.D. tip sections can be tuned to maximize performance in the 28-29, 28.5-29.5 or 29-30 MHz portions of the band. Refer to the Dimension Sheet.

Elements #1 and #2 each use 39" long tip sections. Determine insertion depth according to the half length desired and coat this area with paste. Reinsert into 5/8" tubing and secure with M-6 compression clamps (prepared and installed as shown in sketch at right). Tighten clamp until tubing cannot be rotated or pulled

Elements #3 through #6 use the 26 inch long tip sections. Prepare and install these as described above for elements 5 and 6.

When all the elements are completed, check each one again for the correct half lengths given on the Dimension sheet. Make sure each element is numbered or otherwise identified.

B4. Attach assembled elements to boom according to spacing shown on the Dimension Sheet. Check again for correct tip lengths as you go. On element #3, the offset hole on insulator (for balun clip) should face the rear.

Secure with 10-32 x 3" screws inserted down through insulator and lockwashers and nuts applied beneath boom.

B5. Attach $\frac{1}{2}$ " x $3\frac{1}{4}$ " jumper straps to elements #1, 4, 5, and #6. Secure with additional 8-32 lockwashers and nuts.

B6. Slide the 40 5/8" phasing straps through two black plastic standoffs until centered (crossover point). Attach to elements #2 and #3 (driven) onto studs formed by element half mounting screws. Secure on element #2 with additional 8-32 lockwashers and nuts.

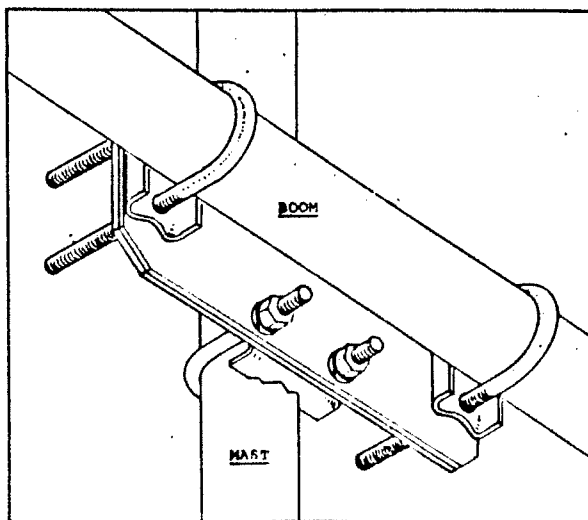
B7. Attach balun clip to top of front driven insulator (#3), with a #6 sheet metal screw in offset hole. Place KLM 3-60 4:1 balun in clip, connector pointed to boom front. Keep terminals at least 3/8" from clip. Attach balun leads to feed-points (over phasing straps) and secure with additional 8-32 flatwashers, lockwashers, and nuts.

C. BOOM TO MAST PLATE: (See Antenna Mounting Pictorial)

C1. Attach feedline to balun (use only hi-quality 50 ohm coax) and route it under boom towards center, taping or strapping it every 3 to 4 feet.

C2. With feedline attached, determine physical balance point of beam. Double-up the 1/8" x 4 x 8 boom to mast plates and center over this point. Plates lay lengthways to boom. Secure with two 2" U-bolts.

C3. Plastic boom plugs are included for the boom ends. These do not have to be used, but will keep down wind noise and prevent nest building. Cut or drill a small drain hole in each plug. Make sure the hole is down when installed.



TYPICAL BOOM TO MAST
HARDWARE ARRANGEMENT
4"x8" PLATE

E. FINAL CHECKS:

E1. Allow the beam to sit assembled at least overnight to allow for temperature cycling and for initial strains to occur. Then re-check ALL bolts, hose clamps, and hardware to be sure everything is tight.

F. ANTENNA INSTALLATION: (See Antenna Mounting Pictorial)

F1. Attach antenna to mast using two 2" U-bolts through the boom-to-mast plate. Tighten securely.

F2. Remember to allow a minimum of 36" of mast above boom for re-installation of cable support plate. Adjust until boom is fairly straight. Tighten U-bolt securely, make final straightening adjustment with turnbuckles. Be sure cables are not twisting. Block eyebolts if necessary. When boom is straight, safety-wire turnbuckles to prevent loosening.

INSTALLATION HINTS:

If possible, maintain eight to nine feet spacing from other lower frequency antenna. For vertical polarization, remember, metal towers and masts in line with the antenna elements disturb the VSWR and tend to distort the pattern. For best results, use a non-conductive mast, i.e., wood or fiberglass at least 6' beyond tips of the elements. Another way is to use two antennas supported on a metal crossboom, spaced approximately the boom length of one antenna.

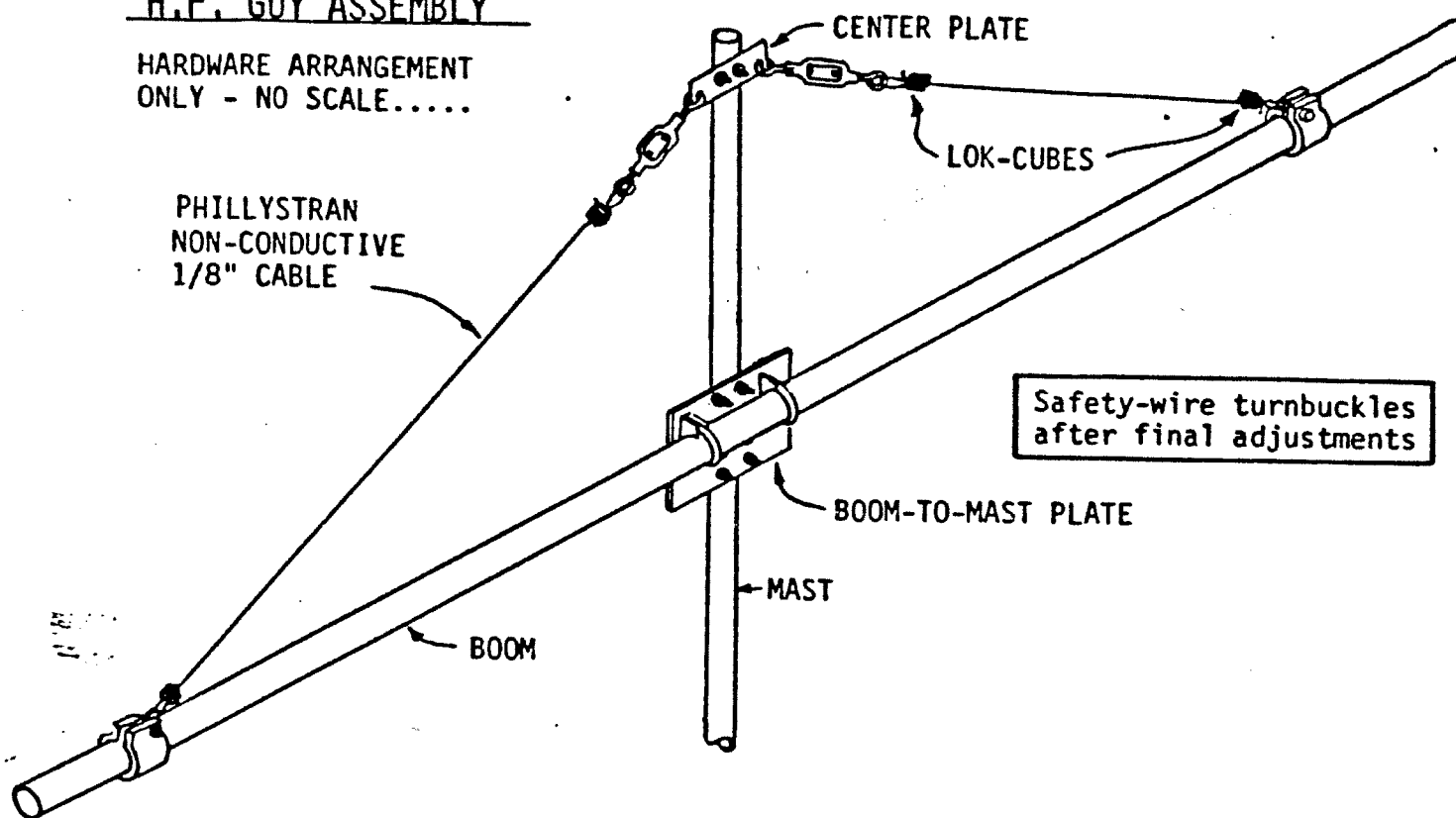
H.F. ANTENNA:

BOOM TO MAST PLATE AND GUY ASSEMBLY

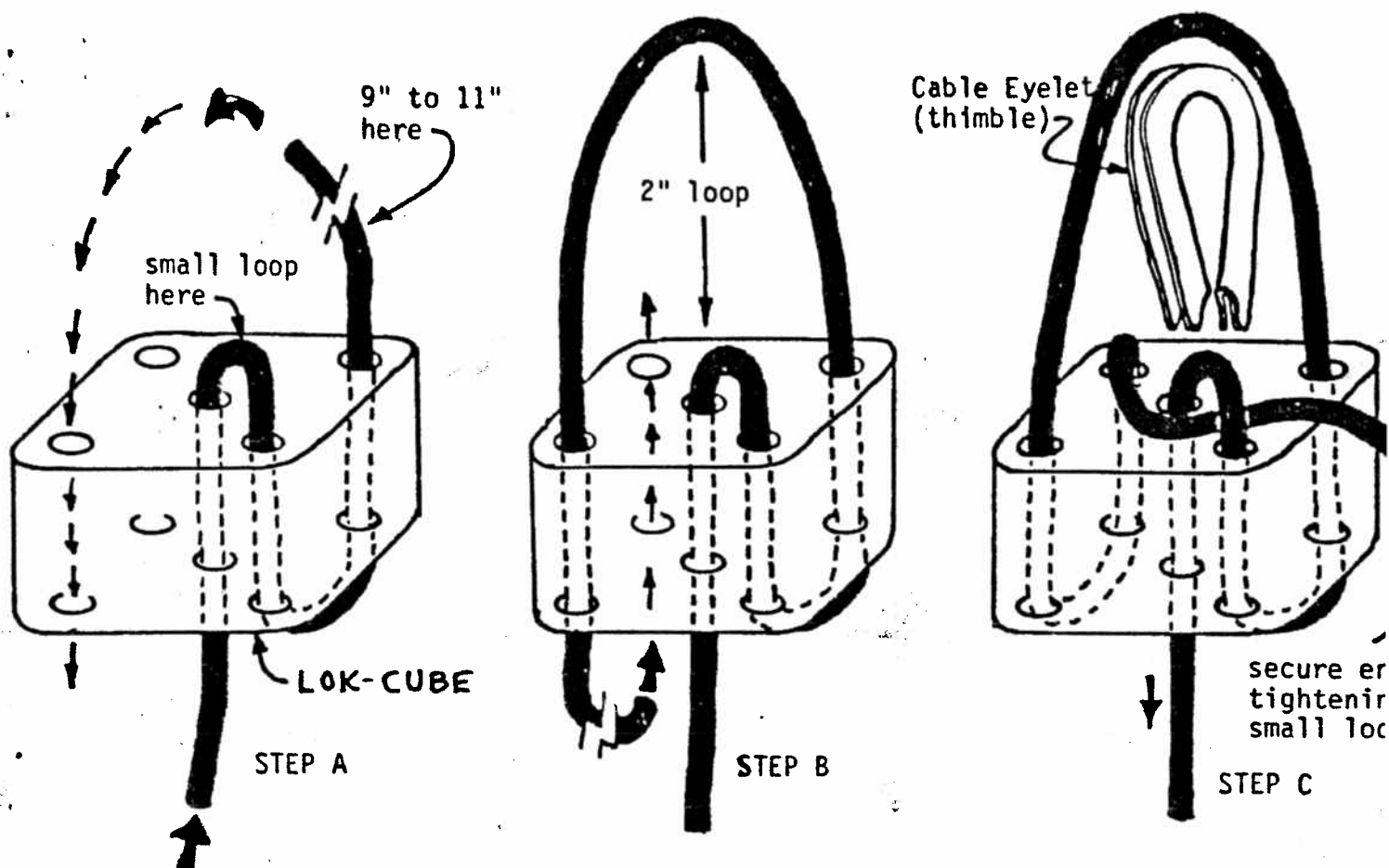
The antenna is attached to the mast via a 4" x 8" x 1/8" plates (2) located at the physical balance point. The boom is supported front and rear by an adjustable overhead guy harness. The cables, made of superstrong Phillystran (are non-conductive to prevent any possible interaction with other nearby antennas. The cables tie to cast aluminum ring clamps near each end of the boom and to a pair of turnbuckles mounted on the mast above the antenna.

H.F. GUY ASSEMBLY

HARDWARE ARRANGEMENT
ONLY - NO SCALE.....



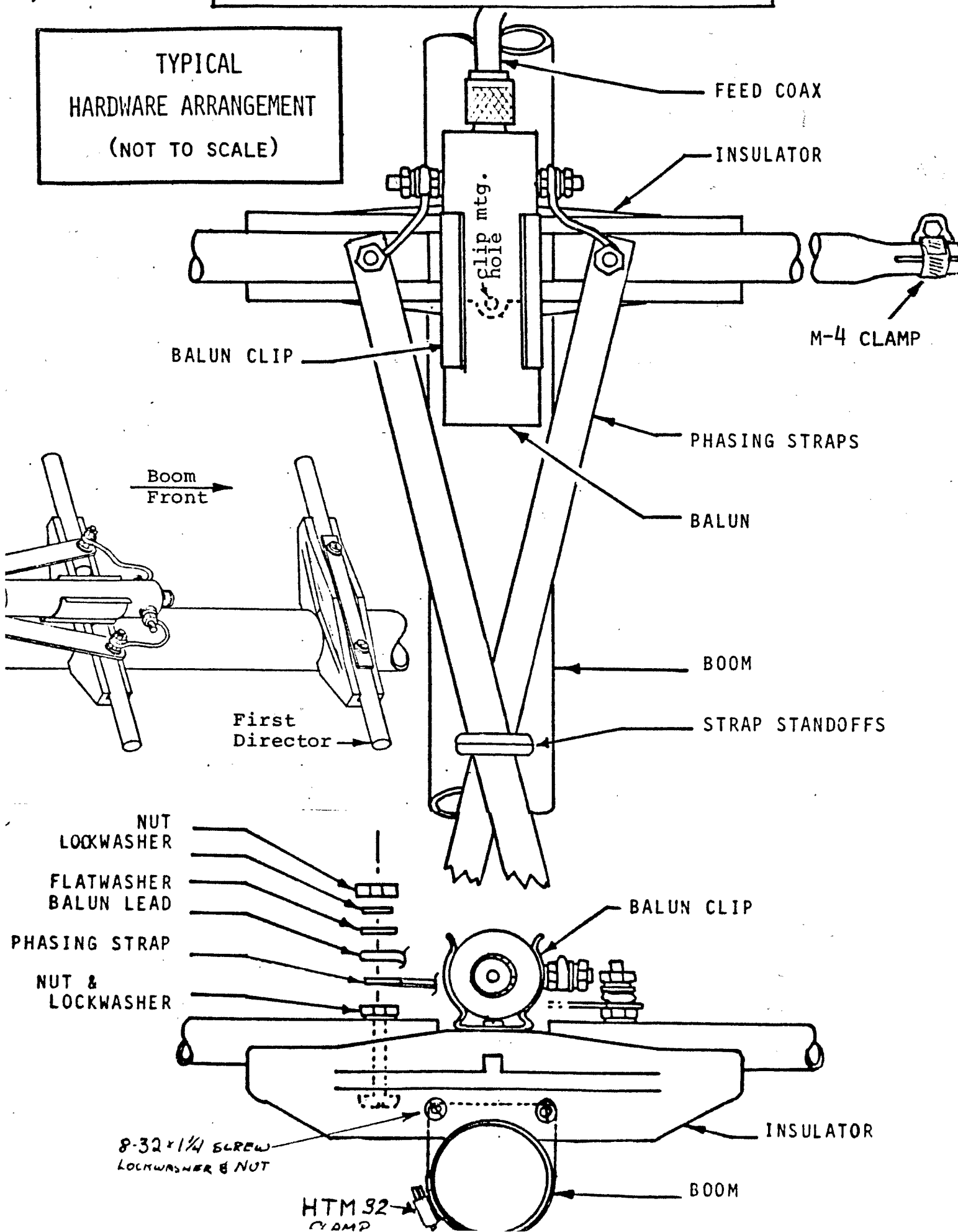
1. Center the boom-to-mast plate at the physical balance point of the antenna with the feedline attached. Loosely secure with two 3" U-bolts.
2. Mount a temporary 3 or 4 foot mast (not supplied) to the mounting plate, the main length extending above the boom. Secure with two 2" U-bolts.
3. Using the temporary mast as a guide, sight down the boom from either end and rotate mounting plate until mast is perpendicular to the elements. Then tighten the 3" U-bolts.
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 mast about 3 to 4 feet up the mast. Secure with 2" U-bolt.
5. Place supports under the boom at regular intervals so that it lays as straight as possible. This will aid in rigging an accurate and balanced guy harness.



6. Spread two thimbles (cable eyes) slightly and install on turnbuckle eyebolts.
7. Prepare one end of each 11' cable with a Lok-cube as far as step A. Then thread cable ends through the eyebolts and around the thimbles. Complete rigging as shown in steps B and C, snugging up thimbles to the Lok-cubes.
8. Prepare the other end of each cable with a Lok-cube and thimble as shown in steps A, B, and C. Adjust for a cable length, thimble to thimble, of about 8' 9". Adjust boom ring clamps to permit installation of thimbles into the splits. Secure in clamps with 3/8-16 x 2" hardware. Adjust clamps to balance cable tension on temporary mast, then tighten bolts.
9. When finished, disconnect harness center plate and remove temporary mast. Tape loose cables to boom so they will not interfere during installation.
10. After the antenna is installed, reattach center plate to mast with U-bolt, raising it as necessary to keep boom straight. Cable rigging usually stretches slightly as it takes its "set" and you may wish to compensate for that, particularly if the antenna is not easily accessible. Otherwise, minor straightening and tension balancing adjustments are accomplished with the two turnbuckles. Block eyebolts during adjustment so cables do not twist up. When finished, safety wire the turnbuckles so they cannot unwind.

ASSEMBLY PICTORIAL

TYPICAL
HARDWARE ARRANGEMENT
(NOT TO SCALE)



DIMENSION SHEET

BIG STICKER 10 METER ANTENNA

3/8" O.D. TUNABLE TIP SECTION

LENGTHS SHOWING

ELEMENT SPACING (in inches from rear of boom)		5/8" SECTION	28.0-29.0	MHZ 28.5-29.5
328.75	boom front #6	72" +	18.75	17.125
90.5				
238.25	#5	72" +	22.75	21.0
125.125				
113.125	#4	72" +	20.75	19.125
38.375				
74.75	x x #3	72" +	12.75	11.25
40				
34.75	#2	72" +	27.25	25.5
33.25				
1.5	jumper straps #1 boom rear	72" +	37.0"	35.0"

XX - FEED POINTS, 200 OHM BALANCED: FOR BEST PERFORMANCE USE KLM 3-60-4:1 BALUN.

MOUNTING: @ PHYSICAL BALANCE POINT, WITH 4" x 8" PLATES (2" BOOM/2" MAST), APP. 143" FROM BOOM REAR.

10M-6

KLM PART NO.	QTY	SIZE	PART DESCRIPTION
<u>BAG #1</u>			
28000	1	#6 X 3/8"	SHEET METAL SCREWS
28015	13	8-32 X 1-1/2"	SCREWS
28202	38	8-32	NUTS
28352	38	#8	LOCKWASHERS
28302	2	#8	FLATWASHERS
28014	12	8-32 X 1 1/4"	SCREW
28022	4	10-32 X 2-1/4"	SCREWS
	6	M-32	CLAMP
28203	16	10-32	NUTS
28353	4	#10	LOCKWASHERS
28206	10	5/16-18	NUTS
28356	10	5/16	LOCKWASHERS
28545	2	3/8-16 X 2"	BOLTS
28205	2	3/8-16	NUTS
28355	2	3/8"	LOCKWASHERS
<u>BOX</u>			
69010	4	1/2" X 3-3/4	JUMPER STRAPS
66118	2	2"	BOOM CAPS
66105	2		STANDOFF PHASING STRAPS
28200	12	M-6	COMPRESSION CLAMPS
66138	6	5/8" X 2"	INSULATORS
28481	2	2" I.D.	CAST RING CLAMPS
28402	5	2"	U-BOLTS & CRADLES
66128	4		LOK-CUBES
28707	4	1/8"	CABLE EYES (THIMBLES)
16001	1	10Z.	CONDUCTIVE ZINC PASTE
97311	1	3:60-4:1	BALUN
84024	1		ASSEMBLY MANUAL
69089	1	2" O.D. X 90-1/4"	BOOM
69090	2	2" O.D. X 10' 4"	BOOM SWAGED
69037	12	5/8" O.D. X 72"	TUBING SWAGED
69039	4	3/8" O.D. X 39"	TUBING
69038	8	3/8" O.D. X 26"	TUBING
69462	2	1/2" X 40-5/8"	PHASING STRAPS
60022	2	11' X 1/8"	PHILLYSTRAN CABLE
65703	1		CENTER PLATE/TURNBuckle ASSY
69702	2	4" X 8"	BOOM TO MAST PLATE
	1		BOX OF HARDWARE