

FIG. BOOM ASSEMBLY

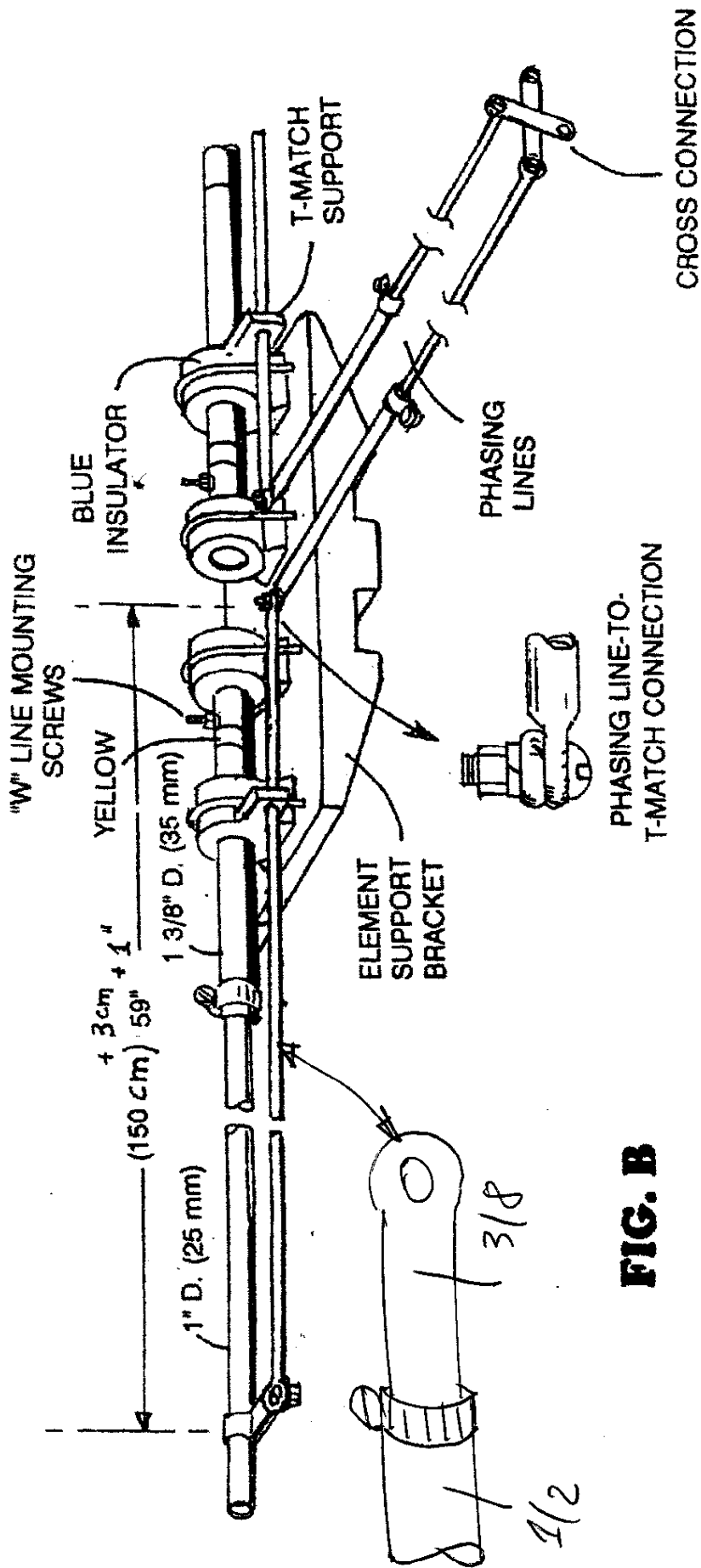


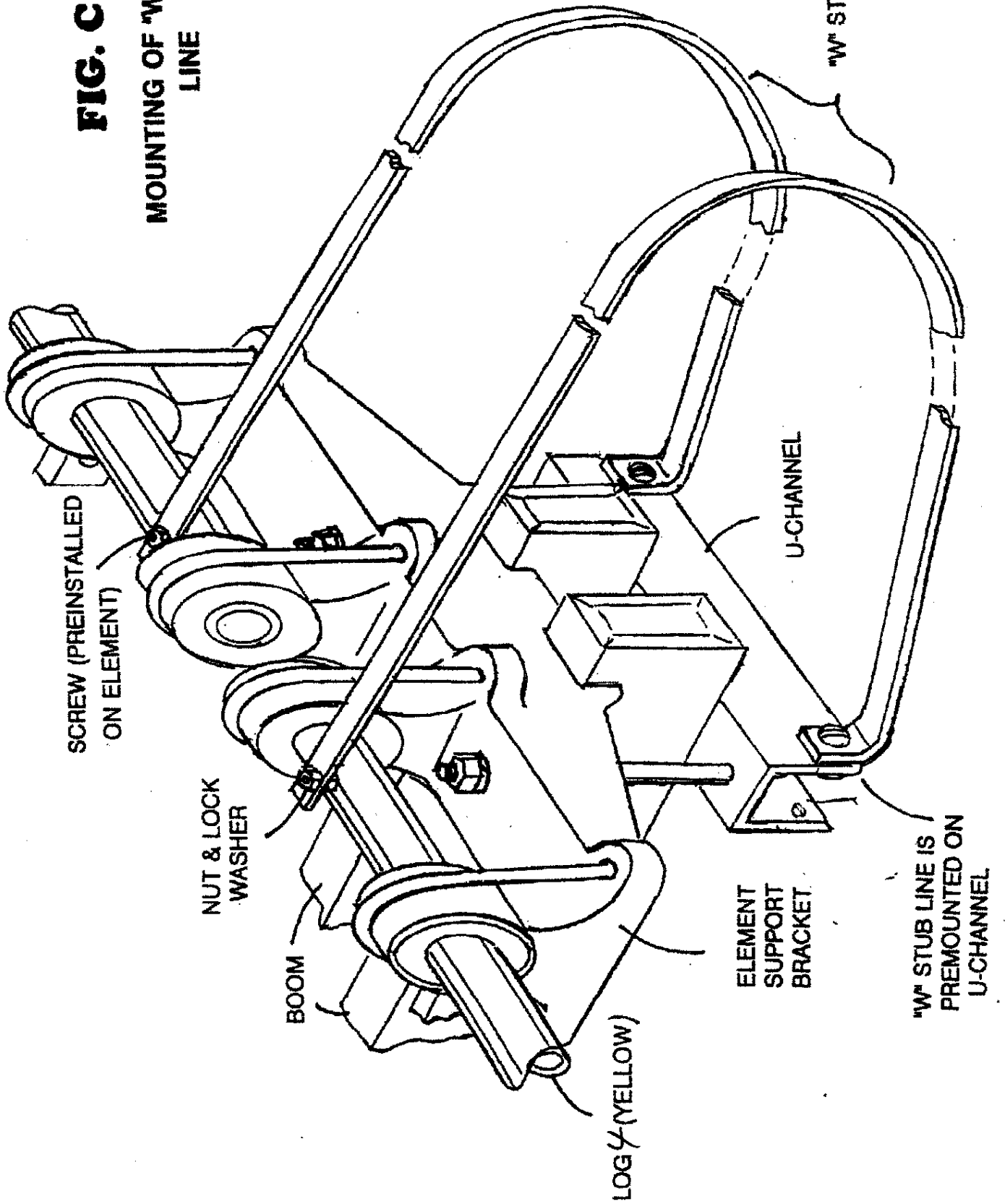
FIG. B

**MOUNTING T-MATCH & PHASING LINE TO
YELLOW LOG ELEMENT**

(Not to scale)

FIG. C

MOUNTING OF "W" STUB LINE



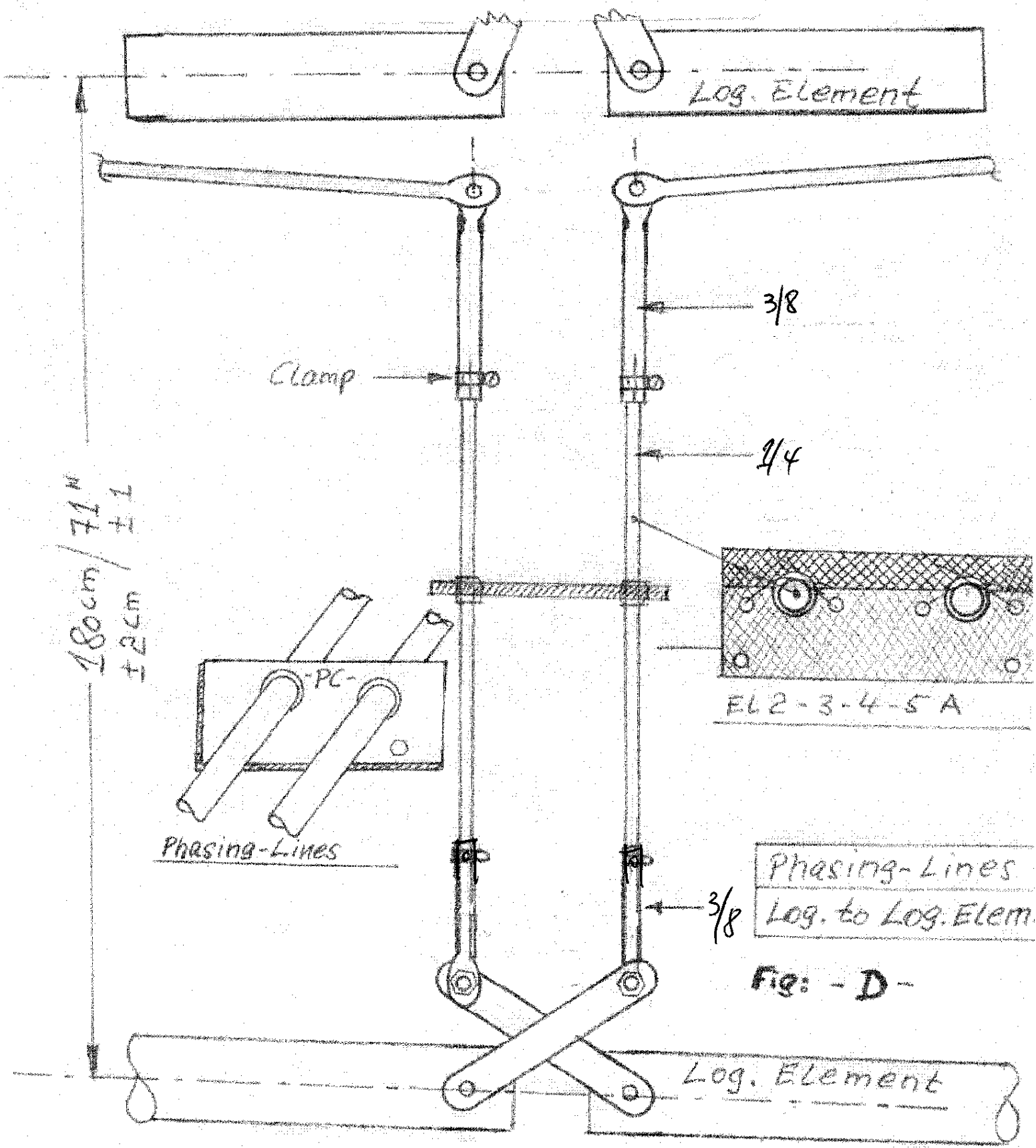
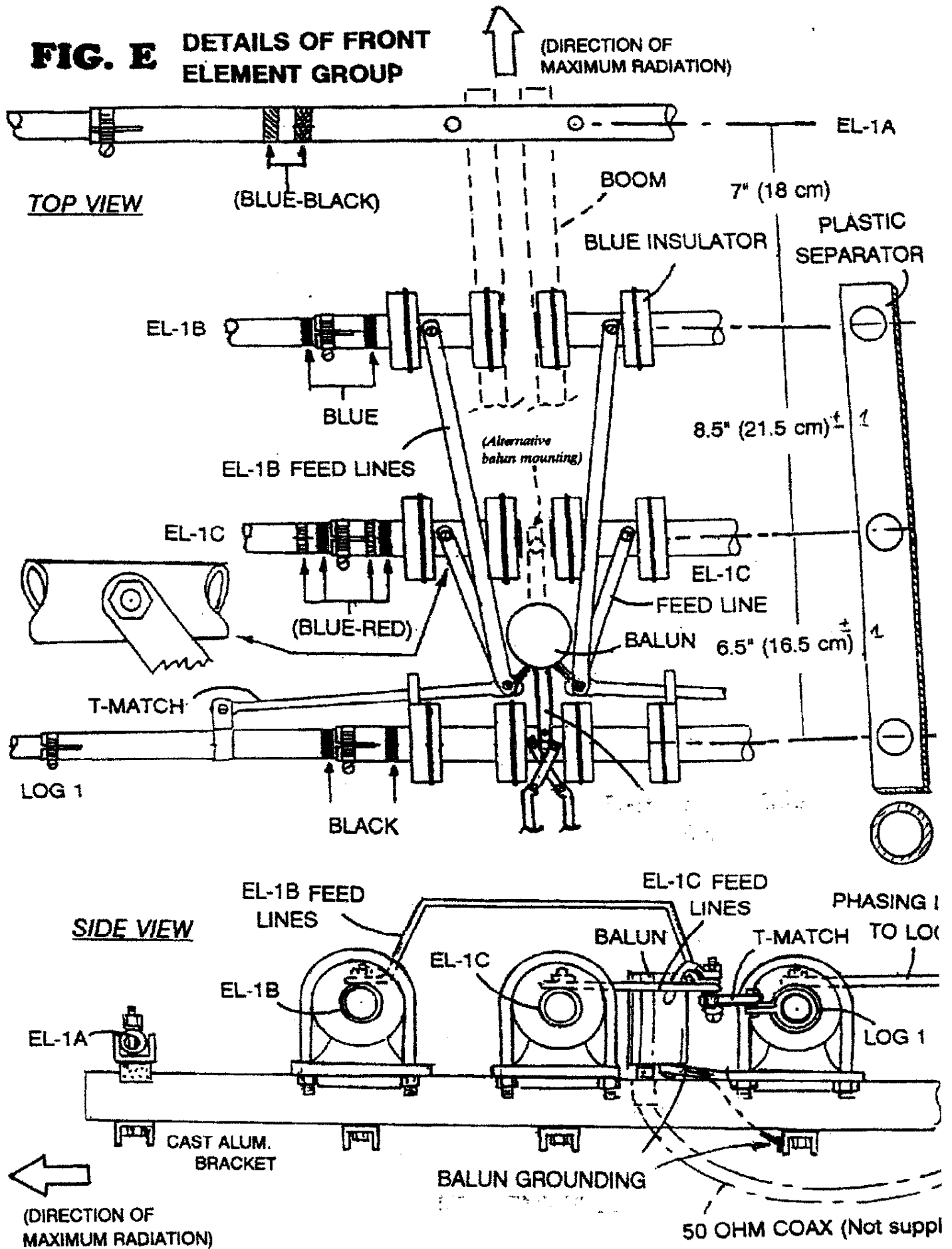


Fig: - D -

FIG. E DETAILS OF FRONT ELEMENT GROUP



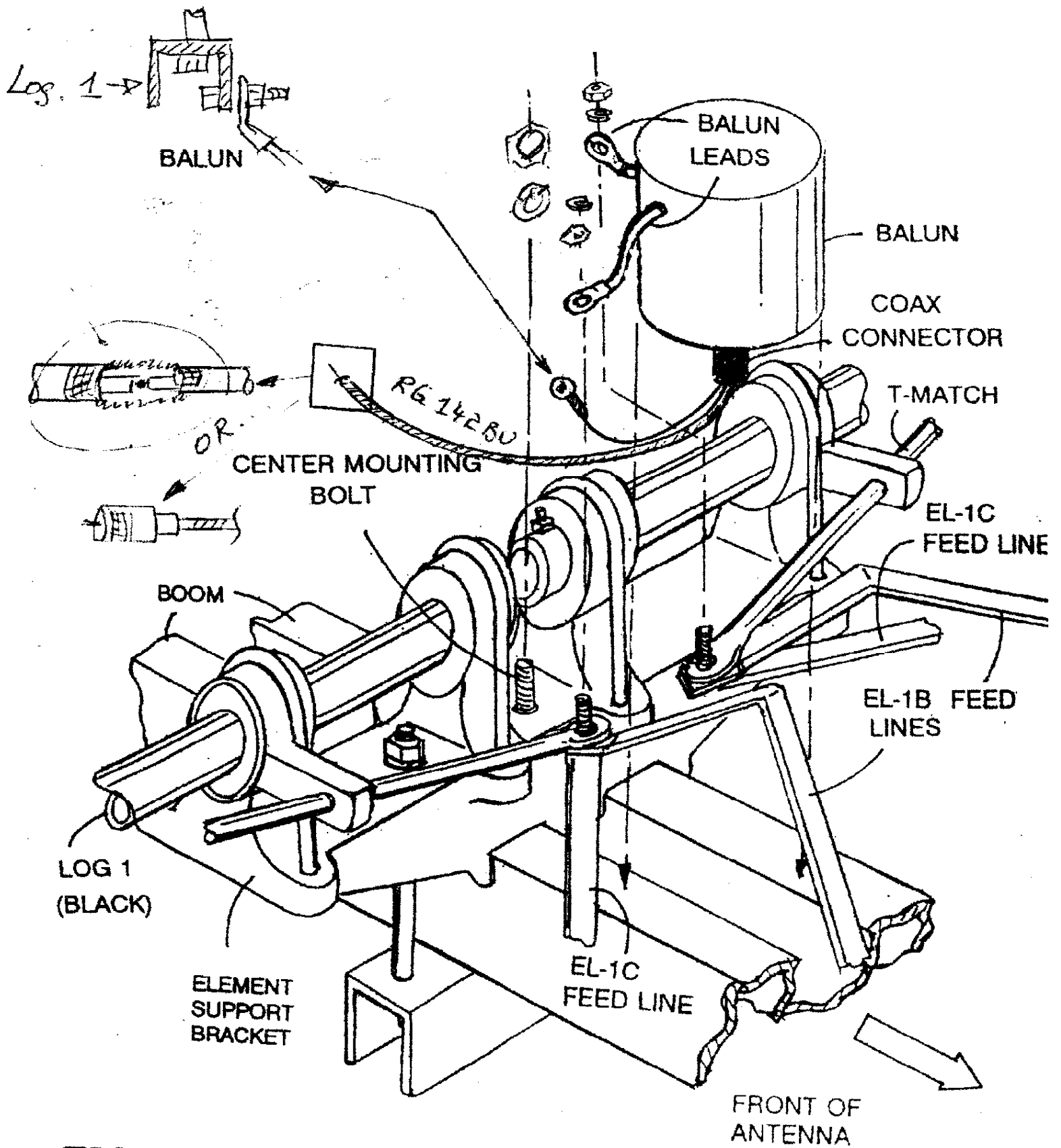
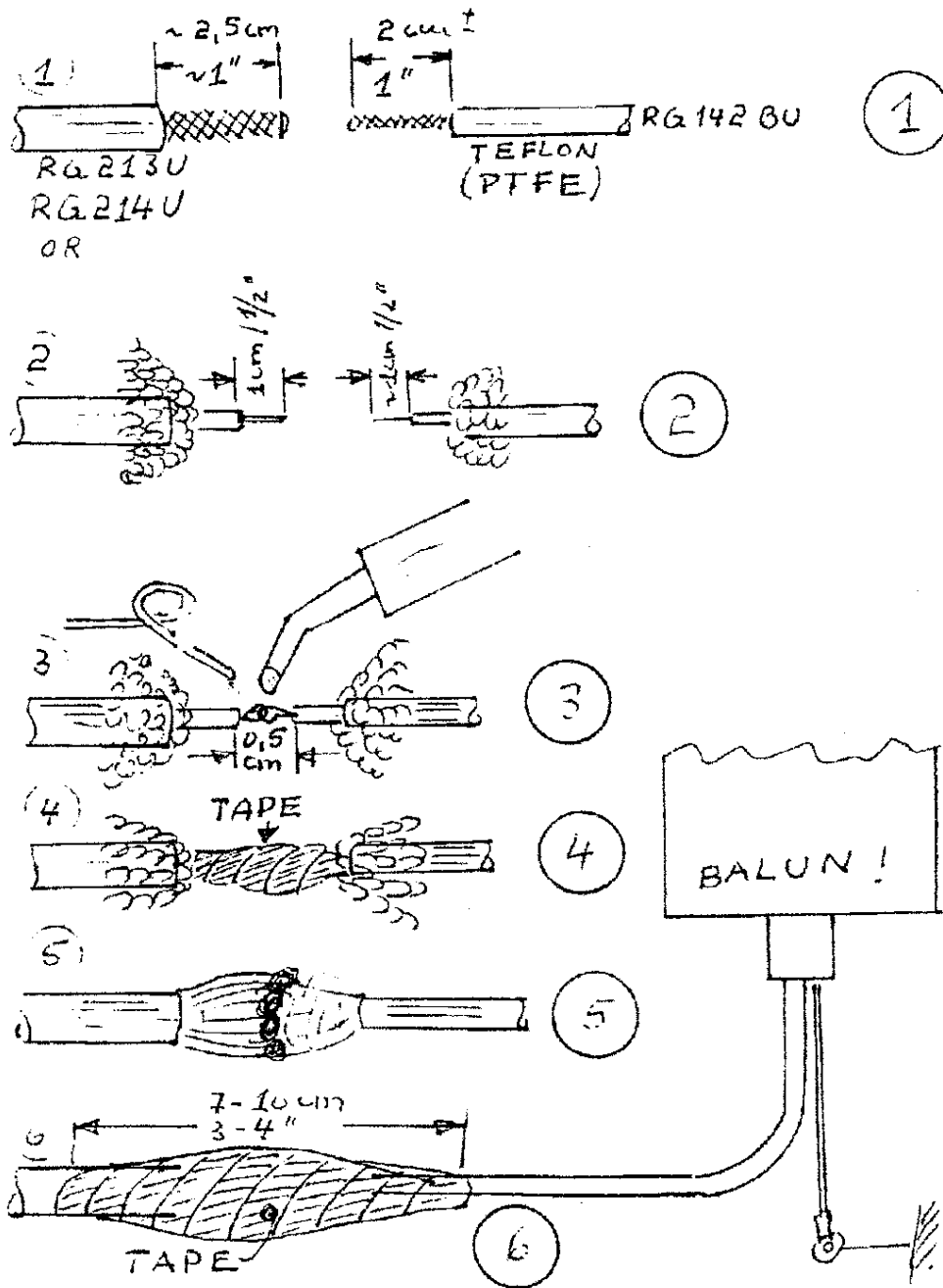


FIG. F DETAILS OF BALUN MOUNTING
(Not to scale)

CONNECTION BALUN TO FEEDLINE

or Tuning-Transformer / Feeder-Transformer

(T-25, T-33, T-50 only)



1. Remove the jackets of both cables. See FIG. 1
2. Push the shield back as FIG. 2 shows and remove the inner conductor's insulation.
3. Connect the wires of the inner conductor together and solder the connection. FIG. 3
4. Wrap PVC tape around the inner conductor as FIG. 4 shows.
5. Connect both shields and solder. FIG. 5
6. Wrap with plenty of tape! FIG. 6

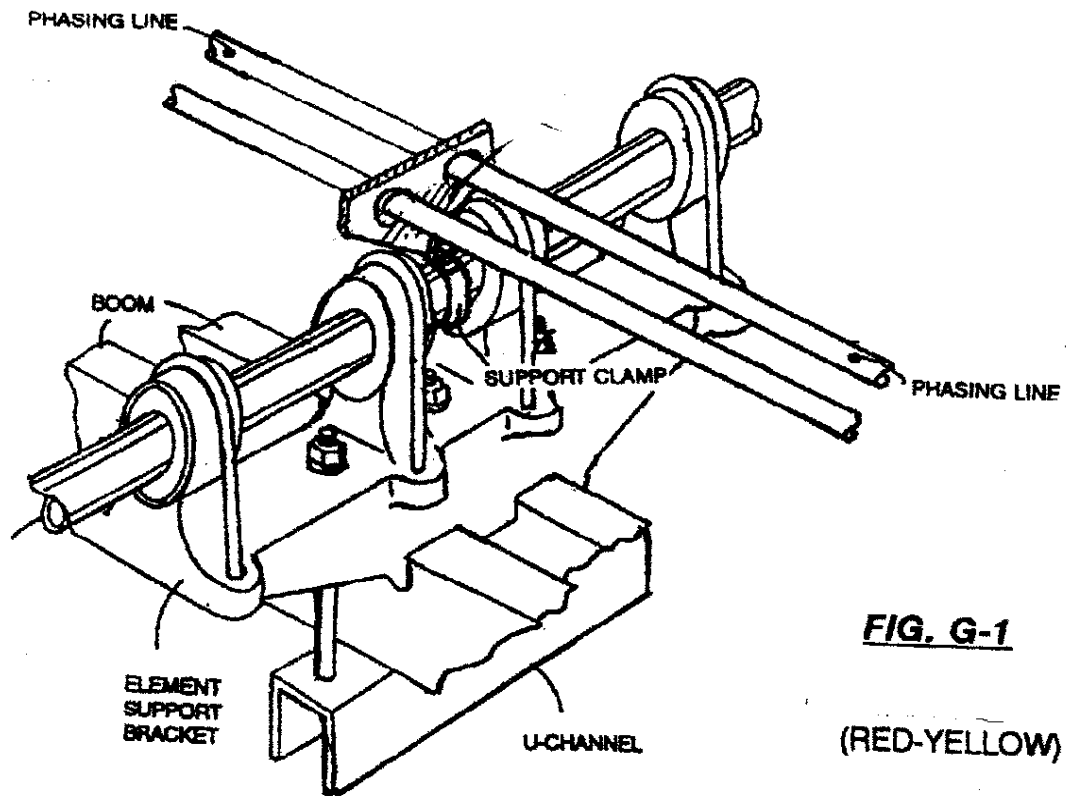


FIG. G-1

(RED-YELLOW)

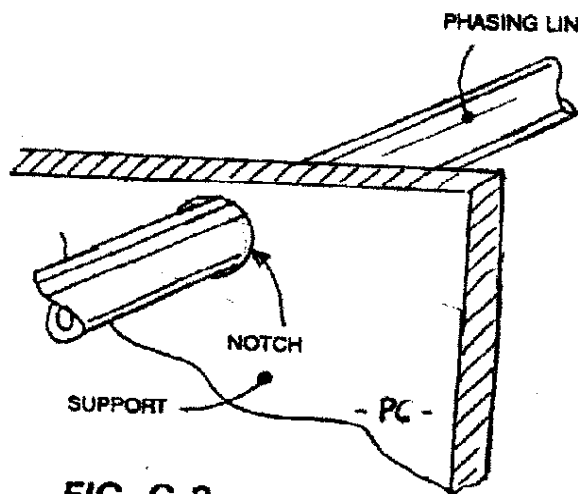


FIG. G-3

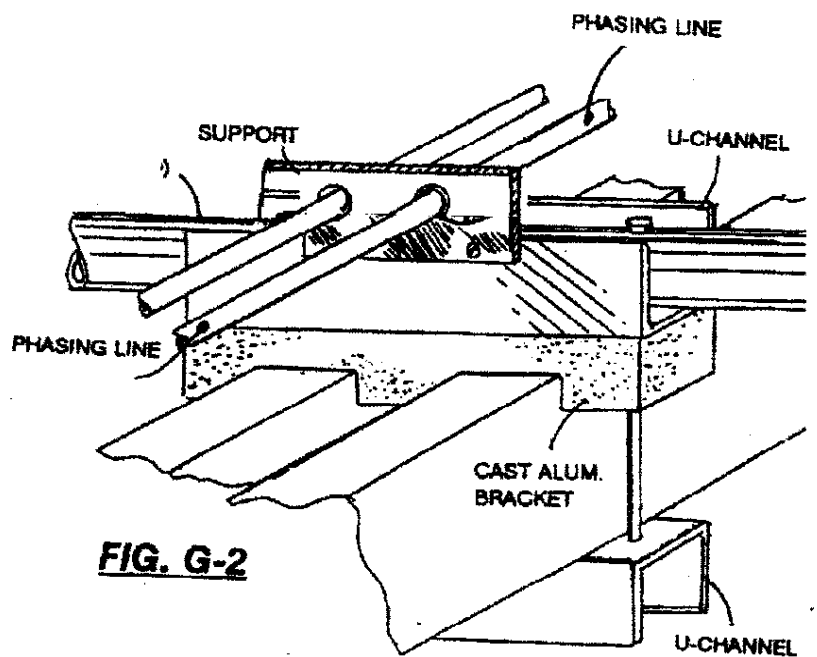
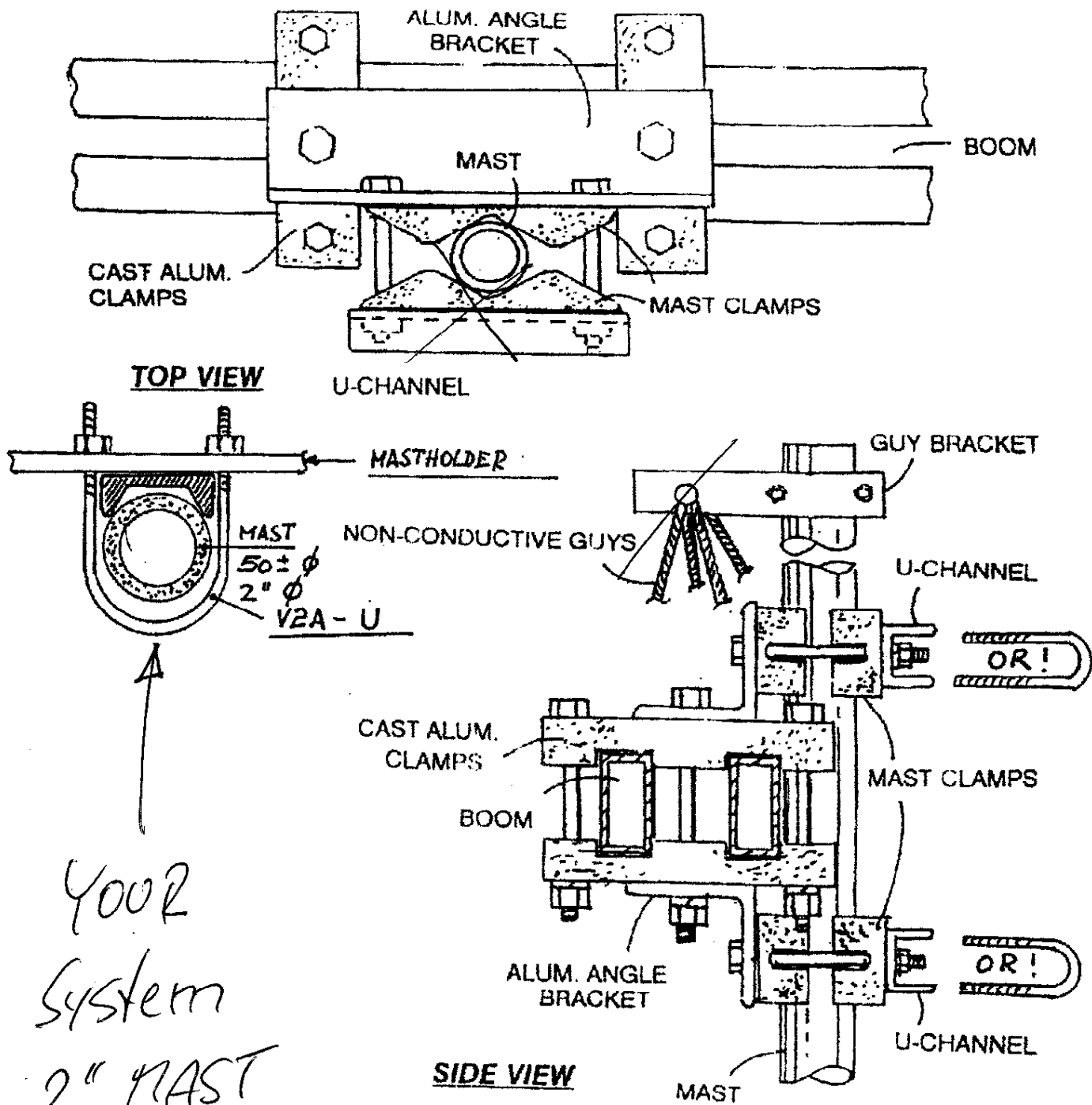


FIG. G-2

FIG. G DETAILS OF PHASING LINE SUPPORTS
(Not to scale)



Your
System
2" MAST
OR 50mm ϕ

FIG. H DETAILS OF MAST CLAMP

(Guy bracket and non-conductive guys are used only on 20 and 26 ft. booms)

FIG. I GUY LINE ARRANGEMENT FOR XP70() AND XP80()

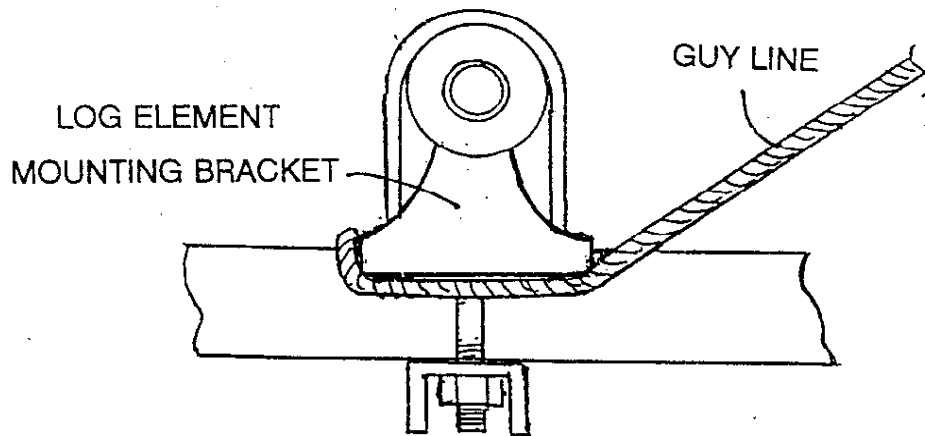
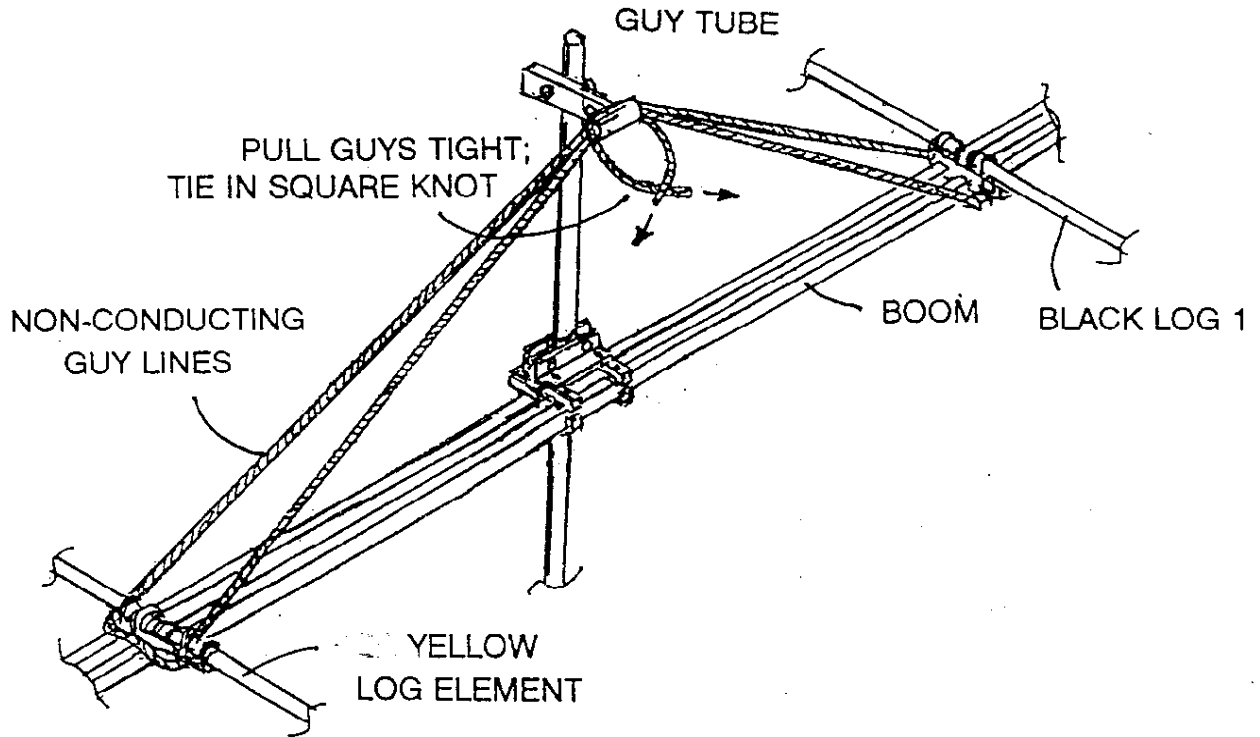
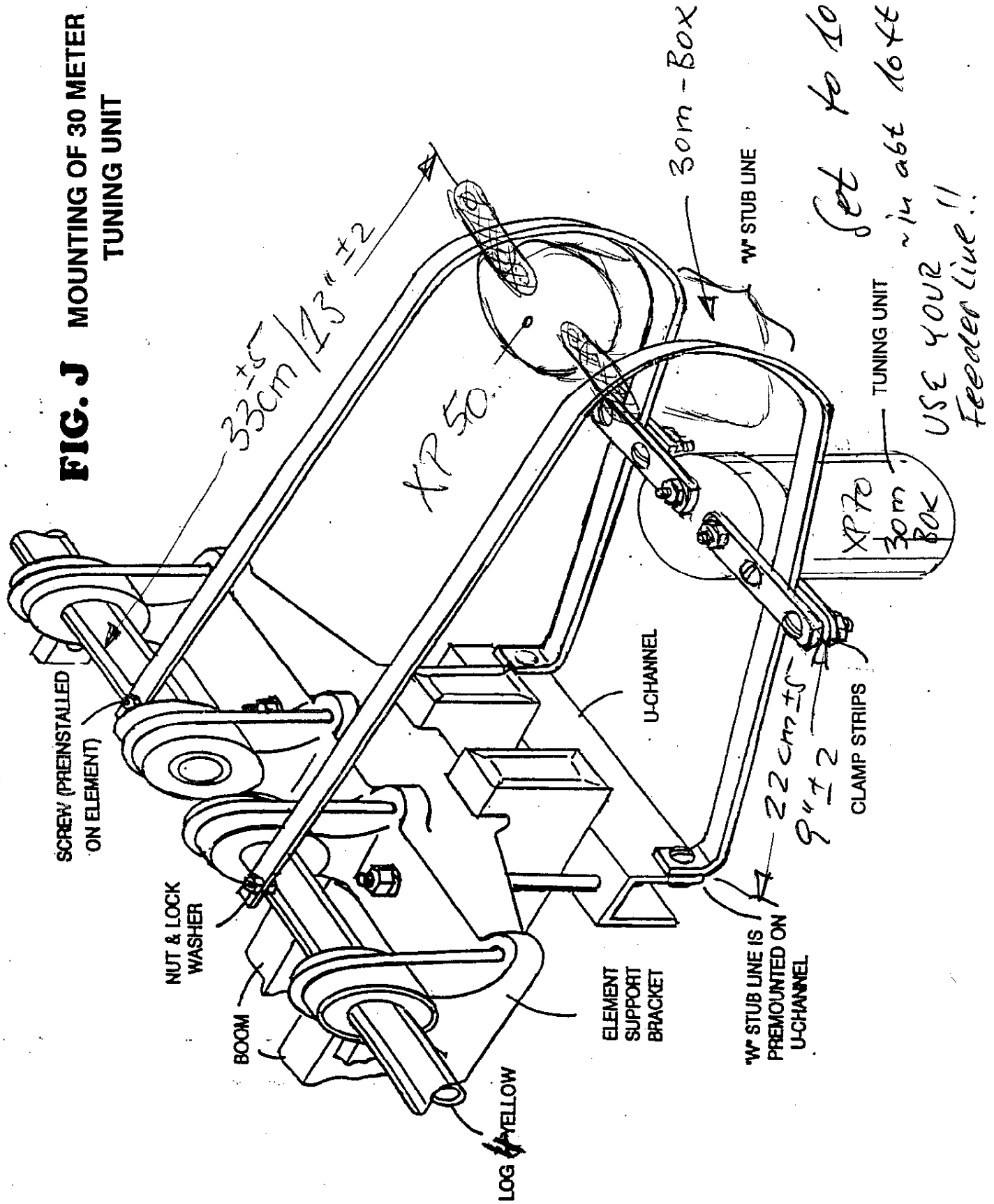


FIG. J MOUNTING OF 30 METER TUNING UNIT



Set to $7.100 \pm 6 \text{ kHz}$ in abt
No ft hight. for 1 Test. Typ. Sdr. 1.5...2.0:1

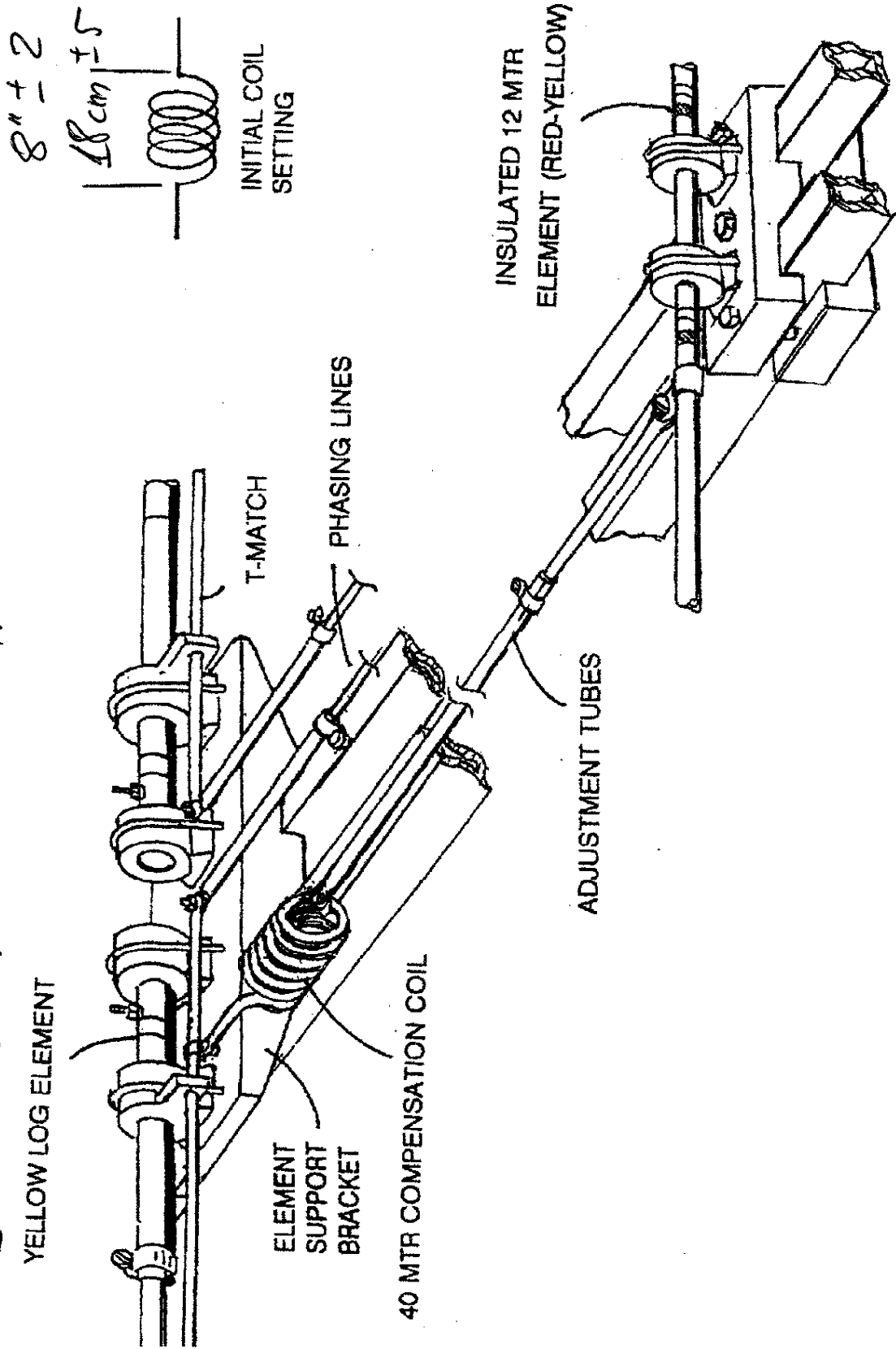


FIG. K DETAILS OF 40 METER COIL AND TUNING SYSTEM

INITIAL ADJUSTMENTS

The element lengths specified in the assembly instructions are designed for an antenna height of about 45 to 60 feet. However, as with any horizontal radiator, the feed impedance is affected by the height above actual ground. As you may note from the ARRL Handbook, the center impedance of a half wave dipole will change from a few ohms to over 100 ohms as it is raised to about 0.3 wavelengths above a perfect ground. Another factor is the environment of the antenna. All conductive and lossy materials within the near field of the antenna will have an effect on the feed impedance, and consequently, the VSWR. Other antennas, utility lines, metal structures, and trees can influence the antenna.

The Sommer antenna can be adjusted to optimize the VSWR for each band so as to place the minimum VSWR in your favorite portion of each band. After setting the element lengths to the specified nominal values, it is helpful to temporarily support the boom at a height at which you can reach the elements, and to connect your feed line. Check the VSWR for each band, and record the values at the band edges, and at the frequency of the minimum value. If any value is very high (over 3, for example), check the lengths of the elements for that band. They may have shifted, or not correctly adjusted. The adjustment of the 40 m band will be discussed later.

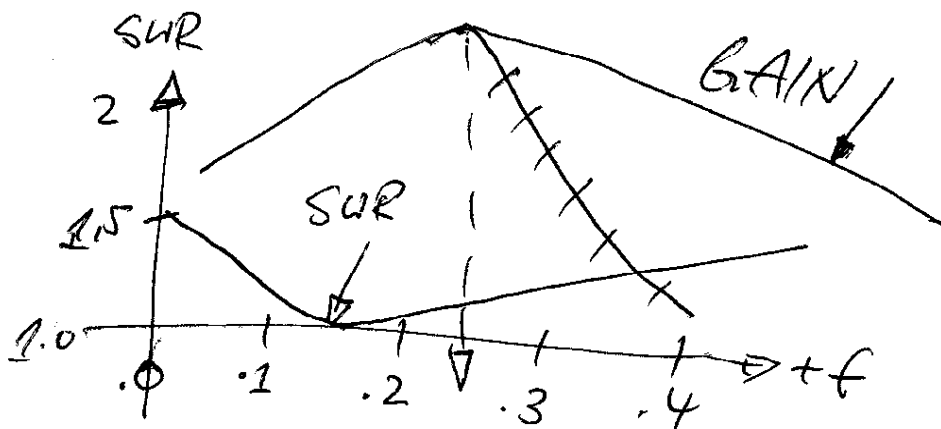
Best performance (maximum gain in band center) will be with the minimum SWR at the following frequencies:

14.000 \pm 50 KHz 21.100..150 28.300..500 18.068 \pm 24.890 \pm

As with all well adjusted yagis, the maximum gain is found about 1-2% higher than the minimum SWR. (see also antenna literature)

If all values are reasonable, and you wish the minimums to be at different frequencies, this can be achieved by adjusting the lengths of the appropriate elements. A trial adjustment can be made using the following table. Lengthen or shorten the respective elements on each side according to the following chart:

BAND	ELEMENT	FOR ± 100 KHz
10 MTRS	EL-1A (BLUE-BLACK)	+ 3/8" (1cm)
12 MTRS	EL-2A (RED)	+ 5/8" (1,5cm)
15 MTRS	EL-1B (BLUE)	+ 3/4" (2cm)
17 MTRS	EL-1C (BLUE-RED)	+ 7/8" (2,5cm)
20 MTRS	LOG-1 (BLACK)	+ 1 3/8" (3,5cm)



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Importance of your Transmission Line!

The Sommer antennas are designed to be fed by a 50 ohm unbalanced coaxial cable via a 1:1 balun. However, the selection of the line is of great importance to the best operation of your antenna. All so-called 50 ohm coax lines are not suitable, even though the seller may designate it as RG8/U! Unless it is stated that the line meets MIL SPEC, it may not. A problem with many types of coax lines is that their characteristics change drastically with age, heat, and excessive bending of the cable. For example, a line that uses foam dielectric may be desirable for low loss, the center conductor can drift toward the copper braid, under heat and excessive bending. Cable may experience bending during rotation of the beam. These problems cause changes in VSWR over that when the cable was new.

The preferred cable for use with Sommer antennas is RG213/U. This cable handles 3500 watts, has at least 97% copper braid shield, and uses polyethylene dielectric. The center conductor is 13 AWG stranded copper. The loss is about 1/2 dB at 10 MHz, and the jacket is non contaminating. If you experience any deterioration in VSWR or performance from the Sommer antenna, the feedline and if used - connectors are the first things to check.

The antennas can handle the following power limits:

30 m:

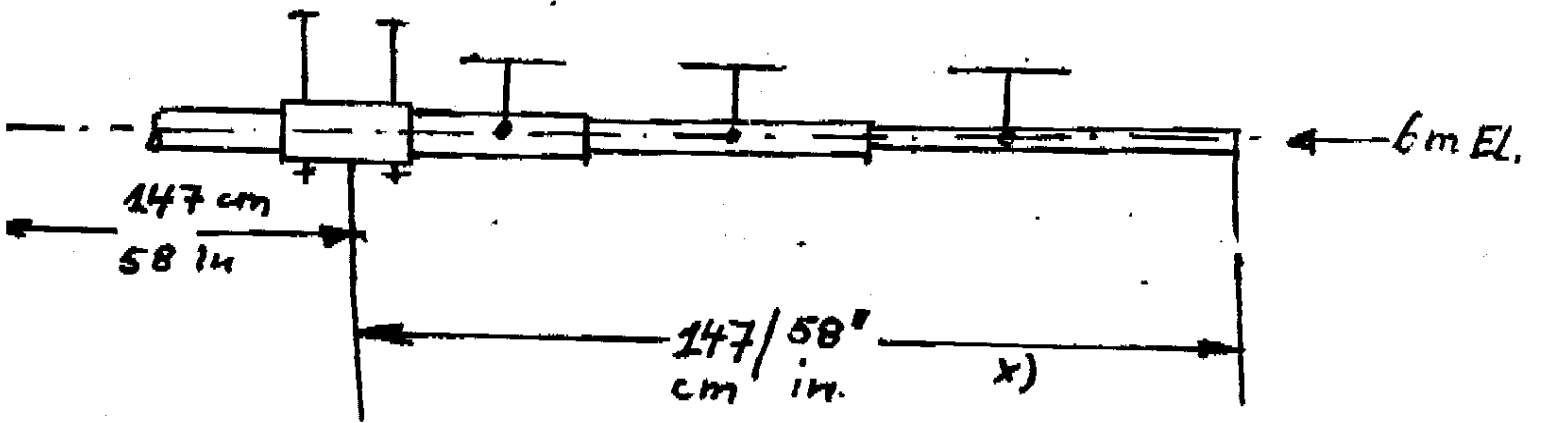
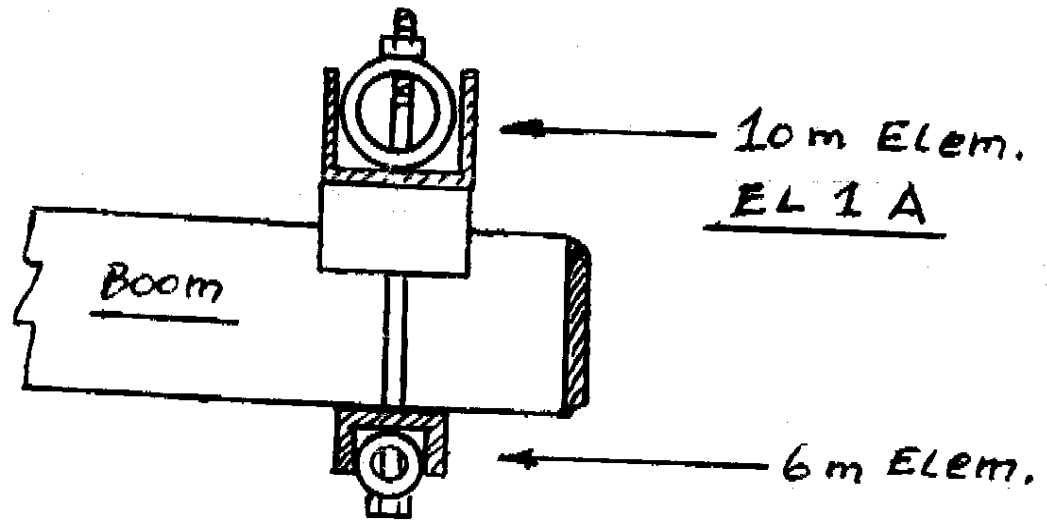
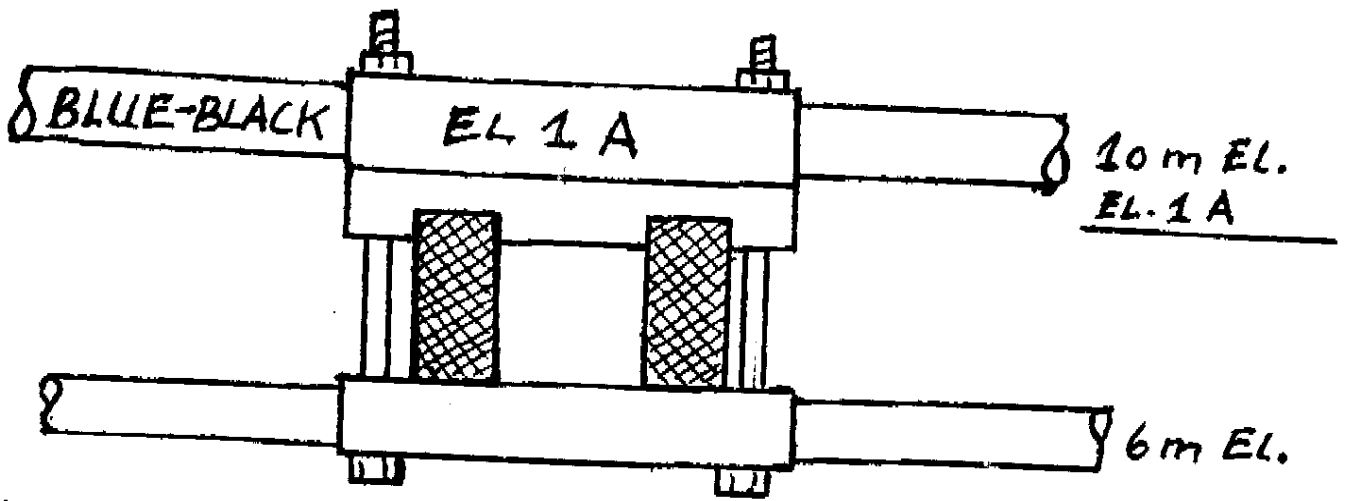
Legal power 300 W PEP out

40 m:

Legal power 1500 W PEP out

6-10-12-15-17-20 m:

Legal power or - if allowed up to 7 KW - but only if your cable connection feedline to balun is done as recommended - no plugs/connectors !



$x) \pm 1/2 \text{ in} / \pm 1 \text{ cm}$

6m-Element
2.92 W4-DJ20T