

Easier Conversion of Surplus Transmitter AN/ART-13

120V ac Power Supply

Earlier conversions of the ART-13 transmitter used the 24V dc relays from the separate dynamotor. In Fig. 1, I used no power supply relays because, like most buyers of this rig, I received no dynamotor. Two ac power supplies are

controlled by primary 120V SPST switches.

The VFO supply is fixed with a voltage between 400 and 450V filtered dc. The 813 power supply is 0–3500V. A 20 Ω 1W resistor added to the negative lead of the



Front view of rig shows tuning knob of C3, dynamic mike, speaker for sidetone, and tuning chart.

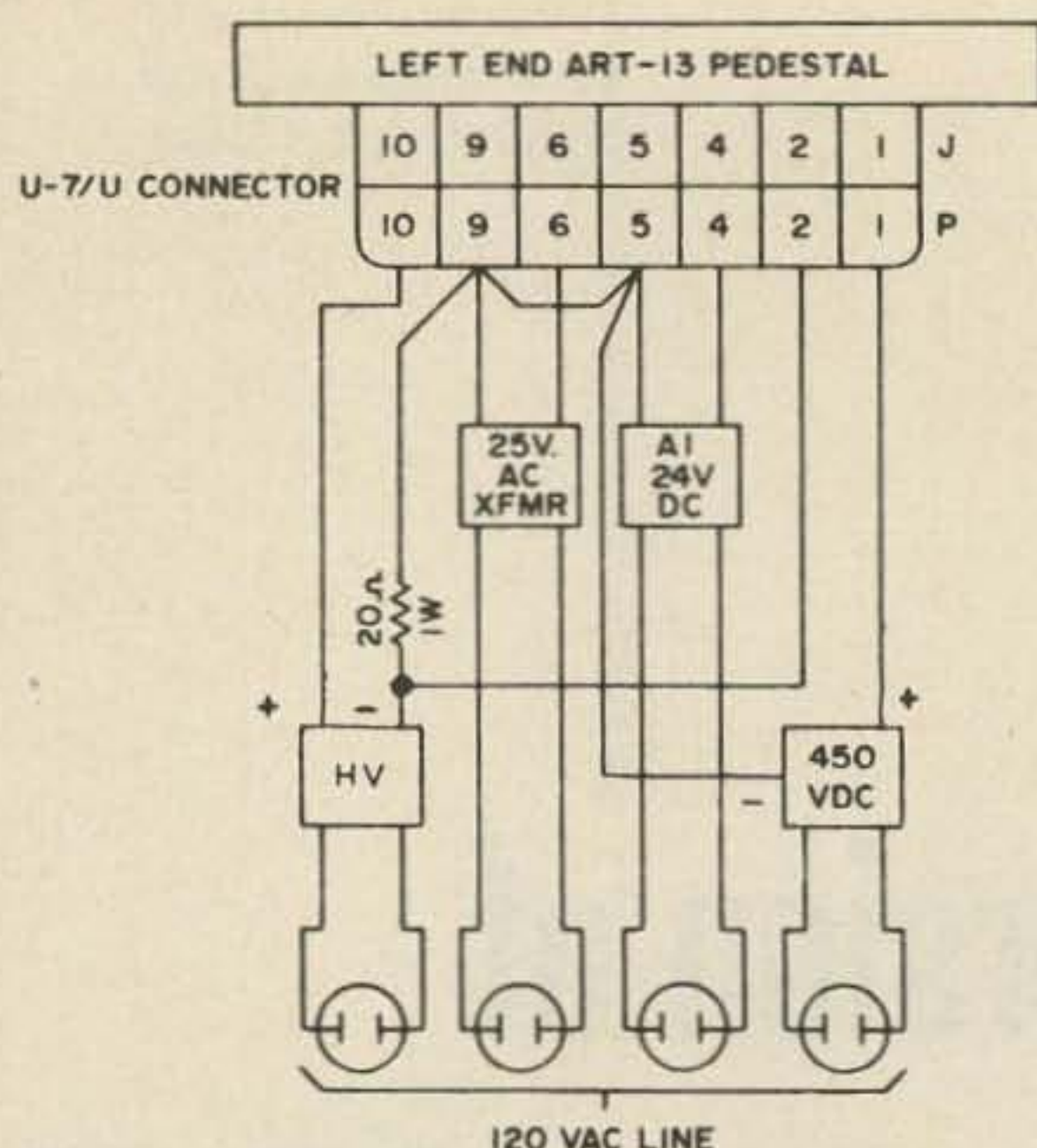


Fig. 1. Power supply arrangement. Parts are: 25V transformer: 100W Lionel Corp. (or 2 12.6V, 4A); 24V dc: Two 10A 12V dc battery chargers; 450V dc PS: 225 mA minimum, 300 mA max. (see text); HV PS: 1200V to 3000V, 200 mA (4 866 rectifiers); Resistor: 20Ω (20.1Ω) 1 to 10W (on left end).

larger supply gives instrumentation like the original. The existing panel meter reads 0–200 mA of 813 plate current in the CW position of the emission switch. Plate volts may go to 3000 on CW. in the VOICE position, plate volts should not exceed 1250 because the plates of the 811As go pink and the percentage of modulation is lowered. The OFF position of the emission switch is not used. Neither is the cover interlock used (only 7 of the 10 pins in the U-7/U connector are used). Two 12V automotive battery chargers at 2 amps continuous duty operate the auto tune motor, etc., without filter or hum.

10 and 15 Meter Output

There are no soldering changes nor drilling of the basic Collins rig. The 813 tube becomes a doubler. Figure 2 shows the change of the plate circuit by changing the plate cap. Existing antenna terminal, RF ammeter and C, D, and E front panel controls are not used on 10, or 15 meters. The 813 doubler operates from the 450V power supply drawing 80 mA at resonance raising the 450V power supply current requirement to 300 mA. In the space left

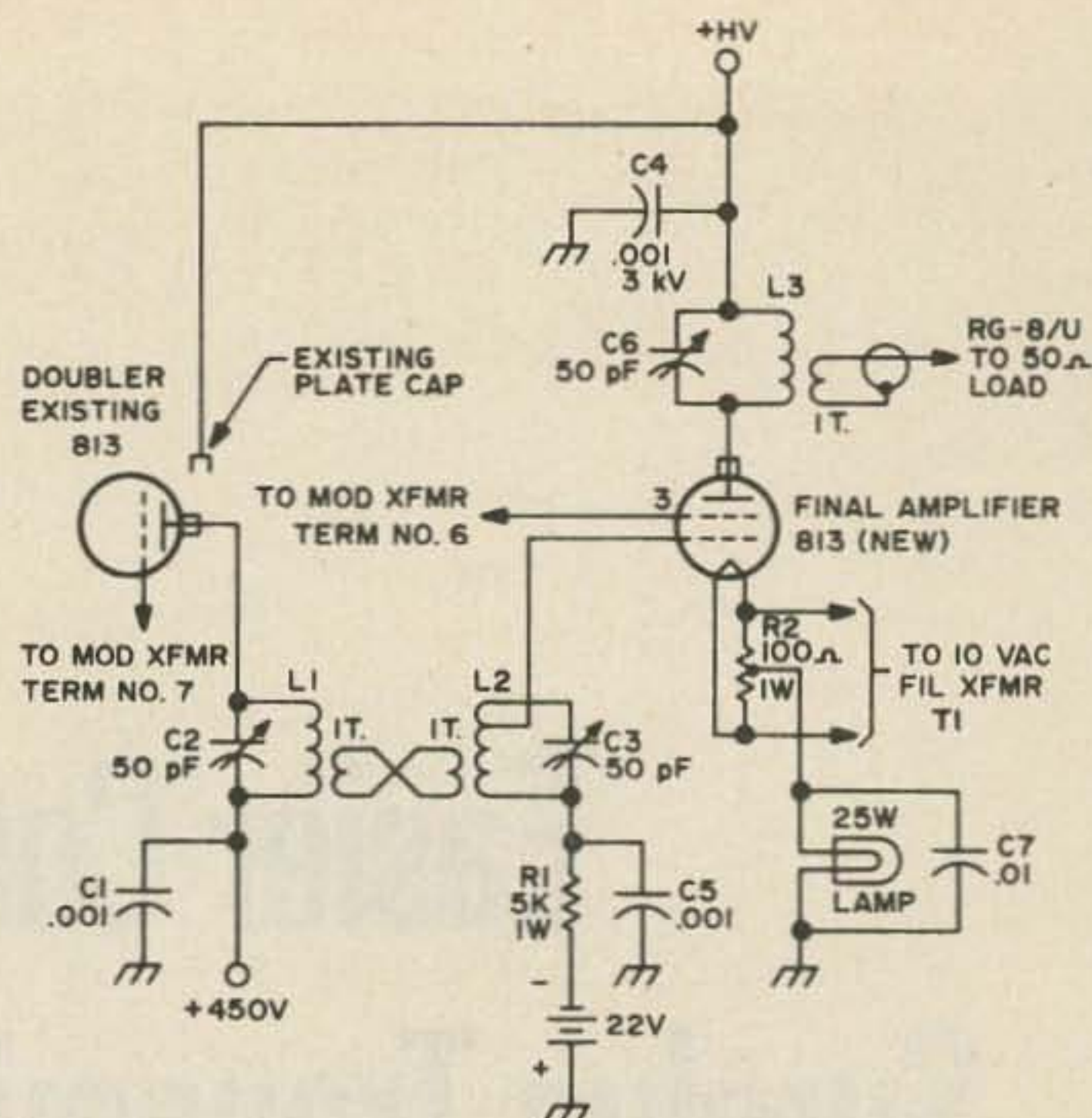
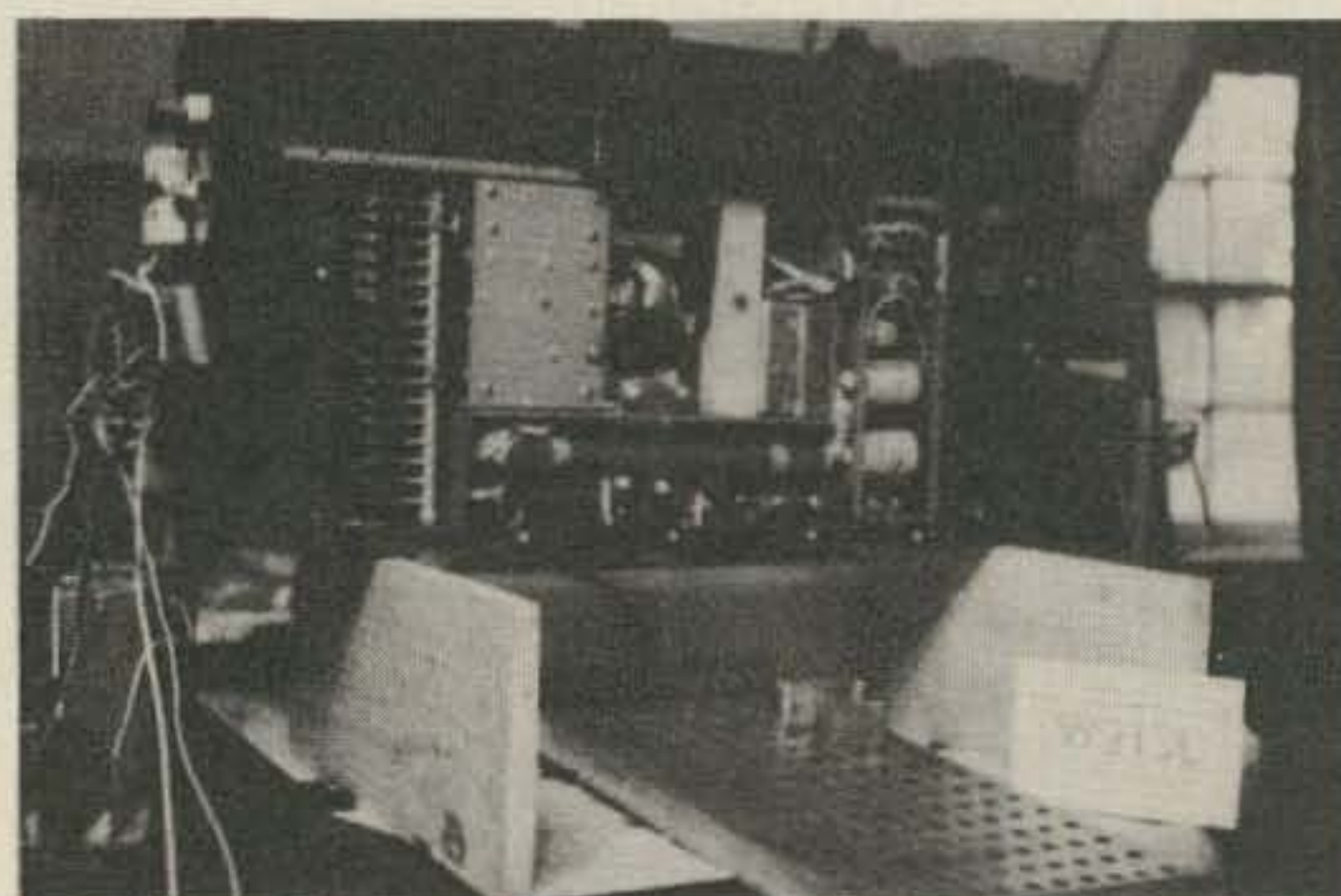


Fig. 2. Ten meter diagram. Parts include: Medium base porcelain 25W lamp holder; L2 — 4 turns No. 18 on 1¼ in. form-tap third turn; L3 — 3½ turns No. 14 on 1½ in. Hammarlund ribbed 4 pin plug-in form; T1 — transformer 10V, 4A, Zenith 7.5V and 2.5V series to add.

by removal of the LOW FREQ Oscillator, the 10 meter final is installed using a second 813. The plate current in this tube is read by the existing meter. Doubler resonance is found when the final plate current is peaked. A grid drive of 3 mA (external meter for initial tuneup) is sufficient to produce normal plate current on the 813 final. The PA GRID meter switch setting continues to read the input to the 813 doubler.

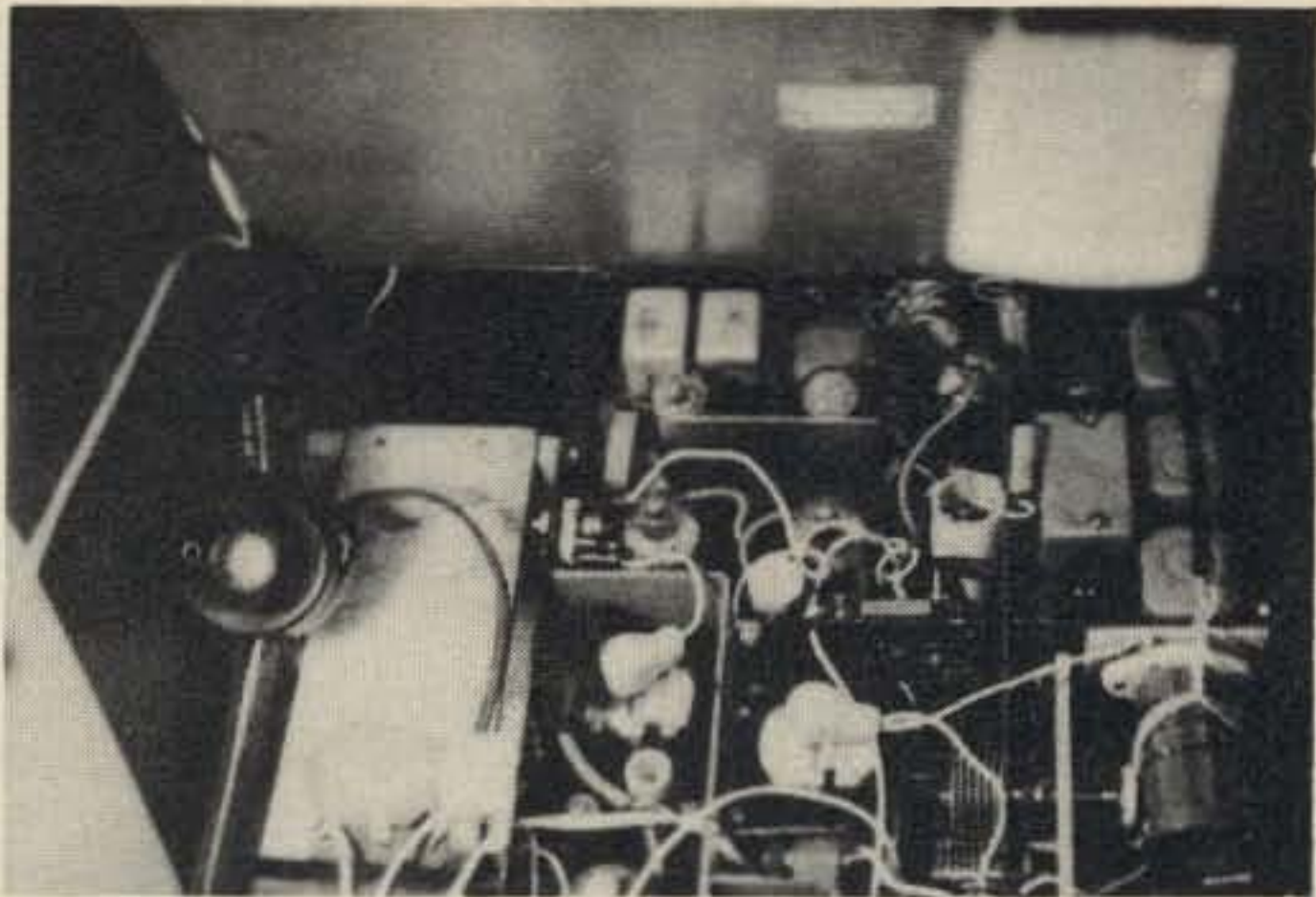
The aluminum bottom of the rig must be removed to peak the 1625 multipliers



Bottom view shows plywood block used in place of metal bracket.

for 10.5 MHz and 14.2 MHz putting the pointer into the acceptable center scale range – 8.5 mA of grid current. A single turn loop around the 29 MHz coil couples the RG-8/U coax to a 1 kW amplifier at W2ISL.

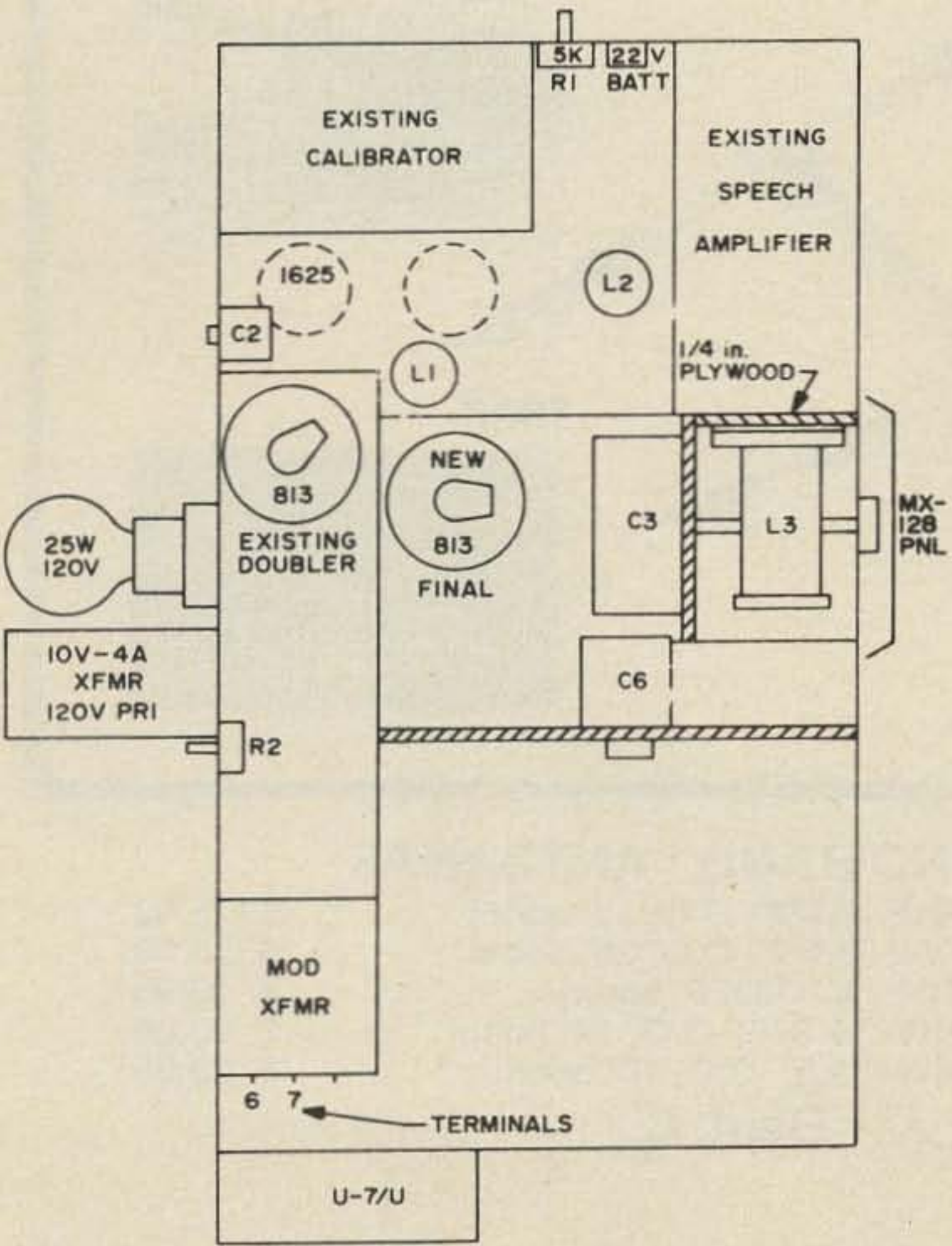
The RECEIVER terminal should be connected to the receiver antenna terminal with coax (shield goes to ground connections). The microphone used has a switch to control the entire transmitter without hash in the receiver when not transmitting. A dynamic microphone is used from a surplus MARK II 19 set (new 3 conductor shielded cable) with a PJ068 plug. Ventilation holes in the sides of the rig suit RG-8/U coax. The final tuning capacitor is mounted on ¼ in. plywood (as insulation) in the vicinity of the coil L3. The grid tuning capacitor also used plywood as insulation with an insulated flexible coupling to a 2 in. long ¼ in. shaft that passes through a new hole in the MX-128 panel (described in *Surplus Schematics* by Cowan Publishing Co.).



Close up top view shows coil location. L1 is 6½ (No. 14) turns on a 29/32 in. wood dowel. All three coils have generously spaced turns.

Link coupling from the doubler plate to final grid coil was used so that the doubler could be tuned to resonance at 29 MHz before and after the final was installed. An attempt to plate and screen modulate the 813 doubler was unsatisfactory. Shorting 2/3 of the turns of the final coil permits doubling in the second 813 for CW output on 6 meters. Circuit constants in the Figures are for 29 MHz because an AM carrier is feasible on 10 meters but not 15. Since the screen of the doubler 813 is not modulated, the G2 connection on terminal 6 of the 811A output transformer must be moved to terminal 7. A new insulated lead is run from terminal 6 to the screen (G2) at lug 3 of the new final 813 socket. Transformer terminals are threaded with nuts.

To save the \$5 cost of USAF-NAVY *Operating Instructions* a table lists A and B control settings for band edges and 50 kHz higher.



FREQ. (kHz)	A	B
3500	3	1333.7
3550	3	1455.7
3900	4	673.4 calibrator check point
4000	5	100.1
7000	7	1333.7
7050	7	1394.6
7200	7	1578.9 calibrator check point
10,500	9	1333.7 15 mtrs
10,525	9	1354.1 15 mtrs (advanced class)
12,500	11	407.5 WWV check and 6 mtrs
14,000	11	1333.7
14,050	11	1364.2
14,400	11	1578.9 calibrator check point

Fig. 3. 10 meter output modification.