CAUTION: NEVER REMOVE THE CABINET OR BOTTOM PLATE WHEN POWER LINE VOLTAGE IS CONNECTED. HIGHLY LETHAL VOLTAGE IS USED IN THIS AMPLIFIER. ALLOW AT LEAST ONE MINUTE FOR CAPACITORS TO DISCHARGE AFTER TURNING THE AMPLIFIER OFF AND PULLING THE PLUG.

## INSTALLATION

(a) Remove the cabinet, and install a pair of Eimac 3-400Z tubes.

(b) Connect a short length of coaxial cable (RG-58 or RG8) from the transceiver or exciter to the input jack on the Mark I. This cable should be as short as practical, and preferably not more than 5 feet long. NOTE: Swamping the exciter or driver power with an attenuator is not normally required with drivers up to 400 watt PEP input rating. After proper tuning procedures have been followed, the Mic. Gain control will be used to set the level of drive. If the driver is called on for less than its maximum power, distortion products will be less, and over all performance improved.

(c) Connect a 2 conductor line from auxiliary switching contacts on the driver to the Relay Control jack on the Mark I. When using the Swan-250, ~~Heathkit SB-200~~ as a driver, the 2 conductors connect to "C" and "T" terminals on back of the transceiver. OR TERMINALS 5 AND 9 ON RELAY (C)

(d) Connect the antenna coax. or dummy load to the output jack. If a low-pass filter is to be installed to reduce TVI, connect it between the output jack and the antenna.

(e) Connect a ground lead to the Mark I chassis. A water pipe or ground rod will be suitable.

(f) Power Line Connections — The Mark I is shipped from the factory for 230 volts operation. The white and black power cord wires go to 230 volts, with the green wire going to neutral-center, (ground). A plug is not supplied because of the many different types being used. To operate from a 117 volt source, remove the bottom cover and find the 4 screw terminal strip located near the power transformer. Remove the jumper wire which connects the two center screws, B and C. Connect a jumper wire from A to B and another jumper wire from C to D. Refer to the schematic for clarification. Then connect the white and black power cord wires to 117 volts, and the green wire to ground. Finally, remove the 20 amp. line fuses, and replace with 30 amp. fuses. NOTE: When the Mark I is used with 117 volts, current drain will exceed most outlet ratings, particularly in OPERATE position. It may be necessary to use only the TUNE-CW position, which will reduce power input, but will keep circuit breakers from kicking out. If it is necessary to operate with 117 volts try to run the Mark I on a separate circuit, and if possible, on the opposite side of the primary house circuit from the side used for the rest of the station. Always use 230 volts for the Mark I, when possible.

## TUNING INSTRUCTIONS

1 — Always tune the exciter or transceiver first, with the Mark I turned OFF. Exciter output will be by-passed around the linear amplifier by the internal relay, and will go to whatever antenna or load is connected. The "Output" position of the Mark I meter circuit will indicate exciter output, and may be used conveniently as a tuning meter. Simply adjust the exciter controls for maximum output, using whatever tuning procedure is prescribed for the particular exciter. Then switch the exciter to standby or receive.

2 — Turn the Mark I to the ON position and allow several seconds for filament warm up. Leave the Meter switch in "Output" position. Set the Function Switch to TUNE-CW position. The green "Standby" light will be on, and the 3-400Z tube filaments will be lit brightly. The tubes are biased to cut-off in standby position, so IP and IG will read zero. EP will read approximately 1600 volts, depending on line voltage.

3 — Switch the exciter to TRANSMIT position, but with Mic. Gain turned down, and the carrier balanced out, so there is no R. F. output. (With the Swan 250 transceiver this is done by pressing the push-to-talk button). The Mark I will now be switched to TRANSMIT mode by the closing of the auxiliary contacts, and the red indicator light will come on. The 3-400Z tubes will now be drawing idling current, so IP will read approximately .1 amperes and EP approximately 1500 volts. IG should still read zero.

4 — Switch the Exciter to its "TUNE" position, and quickly adjust P.A. TUNE on the Mark I for maximum output. Then go back to the Exciter and adjust its P.A. TUNE for maximum output. (It may have changed slightly when switched into the Mark I). Next, adjust P.A. LOAD on the Mark I for maximum output, and then alternate between adjusting P.A. TUNE and P.A. LOAD until maximum output is reached. Set the Output Level Control as required to keep the meter from going off scale. The output reading is a relative indication, only. CAUTION: DO NOT KEEP THE EXCITER OR TRANSCEIVER IN TUNE POSITION FOR LONGER THAN 30 SECONDS AT A TIME. This caution note concerns the exciter more than the Mark I, but since the power