



LAFAYETTE®

MODEL HA-250

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Stock No. 40-0106WX

50-WATT MOBILE LINEAR AMPLIFIER



INSTALLATION AND OPERATING
MANUAL

TECHNICAL SPECIFICATIONS

FREQUENCY COVERAGE.....20-54 Mc.
AMPLIFICATION MODES.....AM, FM, SSB, DSB, CW.
ANTENNA IMPEDANCE.....40-600 Ω (50 Ω Nominal).
PLATE POWER INPUT.....50 watts (100 watts PEP).
MINIMUM RF DRIVE.....1 watt.
TUBE COMPLEMENT.....(2) 12JB6.
TRANSISTOR COMPLEMENT.....(2) CQT-1110.
POWER REQUIREMENTS.....12v. DC (Neg. ground only).
POWER CONSUMPTION.....12 w. idling (1 amp at 12 v.)
96 w. at full input (8 amps
at 12 v.).
DIMENSIONS.....7" D. x 9" W. x 2" H.
NET WEIGHT.....2-1/2 lbs.

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• 111 JERICHO TURNPIKE, SYOSSET, L. I., N. Y.

GENERAL DESCRIPTION

The Lafayette HA-250 is a completely self-contained 50 watt (100 watts PEP) mobile linear amplifier covering the 6, 10 and 15 meter amateur bands, and the 11 meter Citizens Band (illegal on Citizens Band in U.S.A.). The unit is designed to operate with any signal input... AM, FM, SSB, DSB and CW... over the entire operating spectrum (20-54 Mc). The "Pi" network will effectively match loads from 40 to 600 ohms. The linear employs an RF sensing relay which automatically actuates the B+ and antenna circuits whenever the transmitter is activated. The tuning meter measures relative RF current and provides an indication of when the antenna is properly loaded and the final is tuned. The meter also reads relative RF antenna current when the linear's circuits are not energized, thus permitting the transmitter to be matched to the antenna "through the linear". The unit is broadband, hence when set to a desired band, it is possible to operate over the entire band without retuning. The power supply is fully transistorized while signal amplification is accomplished with two 12JB6 tubes operating in the parallel grounded grid mode. The unit was designed to operate from 11.5 to 14.5 volts DC, negative ground only.

MOBILE INSTALLATION

Before installing the linear in a vehicle, be sure to choose a location which is convenient. Some typical locations are as follows: under the dash, the underside of a transmitter or transceiver, in the trunk. The linear has holes in both the top and bottom covers on the left and right sides to facilitate mounting with the brackets and hardware supplied.

Figure 1 illustrates top mounting; for installations utilizing the bottom mounting (trunk, etc.), simply invert the mounting brackets and attach them to the bottom of the linear's chassis as illustrated in Figure 2.

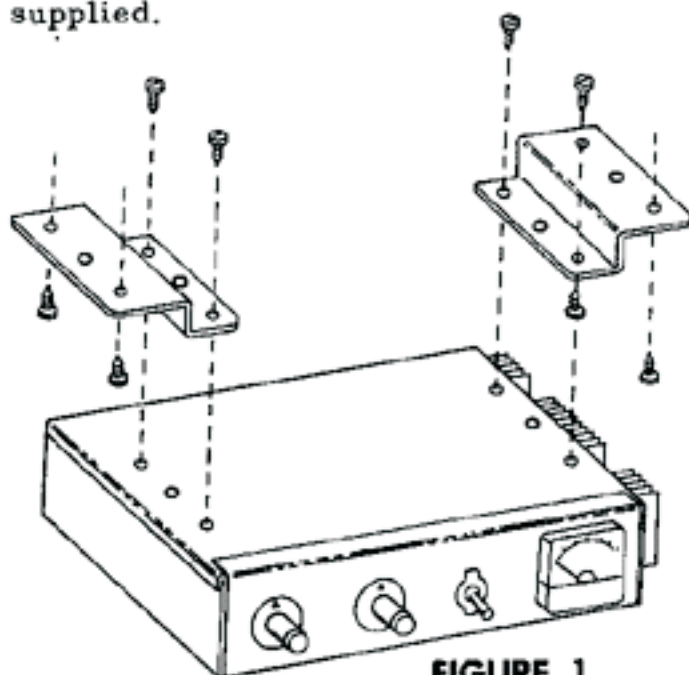


FIGURE 1

DC POWER CONNECTIONS

CAUTION: This unit is designed for use only in vehicles employing a negative ground system. **DO NOT USE IN POSITIVE GROUND VEHICLES.**

The fused lead of the linear (positive) should be connected to a 12 volt positive battery source. Since the linear will draw up to 8 amps, it is recommended that the lead be connected directly to the positive battery terminal in the vehicle or the battery terminal on the voltage regulator.

The other lead (negative) should be connected to the metal fire-wall or any other point that is connected to the vehicle chassis.

IMPORTANT. The solid-state DC power supply circuit is designed to operate within an input voltage range of 11.5 to 14.5 volts DC. To avoid possible failure of the transistors, you should make sure that the vehicle supply voltage does not exceed 14.5 volts at any time. If necessary, adjust the voltage regulator to cut out at this voltage (14.5).

INPUT AND OUTPUT CONNECTIONS

The linear is equipped with two standard female coaxial connectors (SO-239). Connections to these should be made with 52 ohm coaxial cable terminated in standard male coaxial connectors (PL-259). The coaxial connectors are available from Lafayette Radio Electronics under the stock number 32-2006. Connect the coaxial lead from the transmitter/transceiver to the RF input jack. Connect the coaxial line from the antenna to the RF output jack.

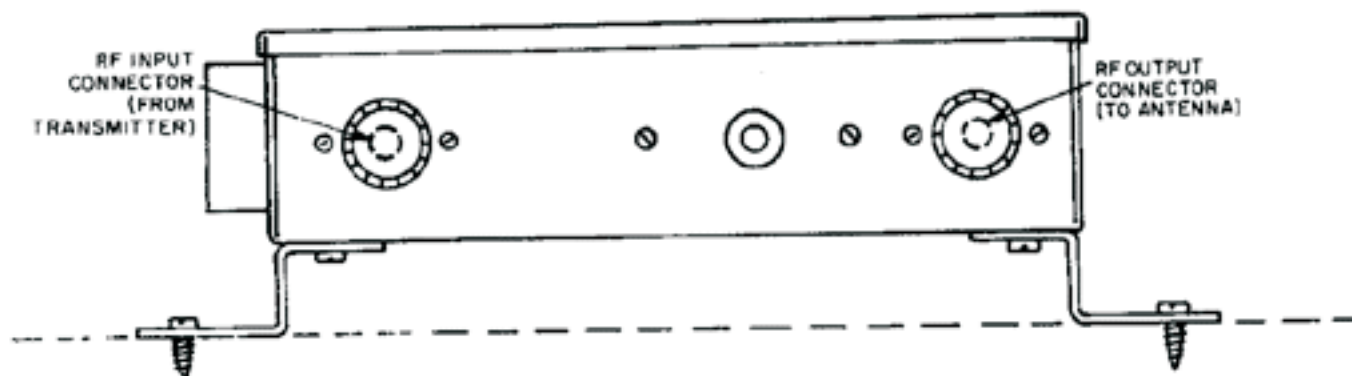
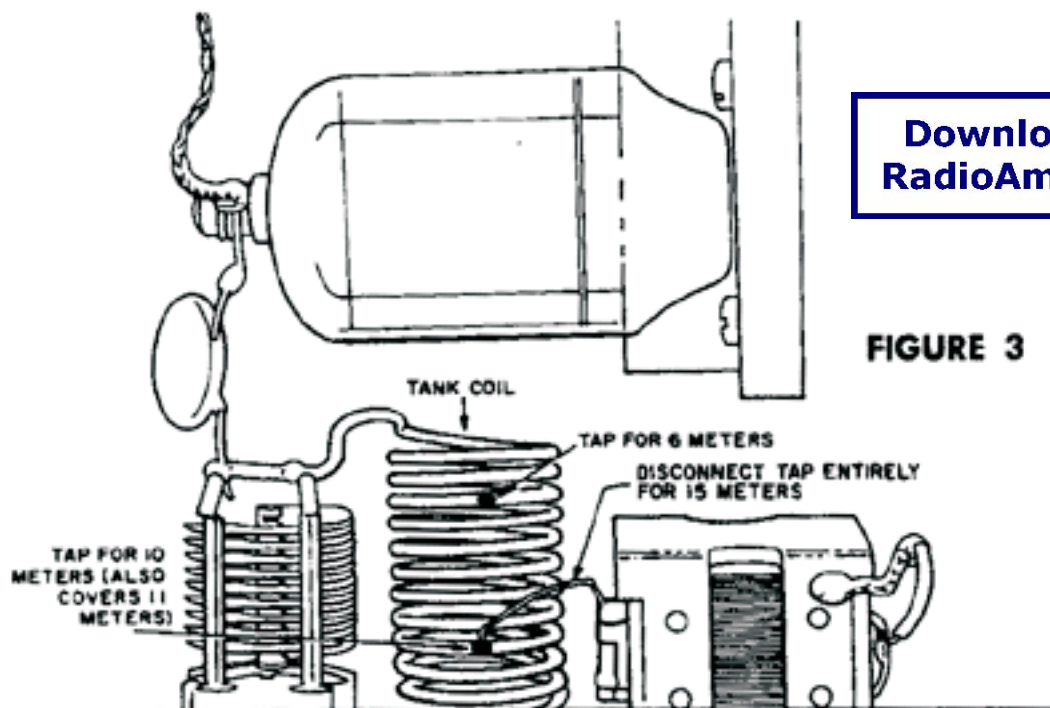


FIGURE 2

BAND CHANGING

WARNING: HIGH VOLTAGES ARE PRESENT IN THIS UNIT. BE SURE TO REMOVE ALL POWER BEFORE ATTEMPTING TO MAKE ANY WIRING CHANGES.

The HA-250 is supplied with the final tank coil tapped for operation on the low end of 10 meters (this will also cover the 11 meter Citizens Band, but is illegal for this use in the U. S. A. Refer to Figure 3 for the proper setting of the tap for 15, 10, or 6 meters. If your band of operation requires that a wiring change be made on the final coil, be sure to resolder the tap to the point indicated, using NON-corrosive solder.



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FIGURE 3

TUNING INSTRUCTIONS

The transmitter and the linear can both be tuned using the linear's RF power meter as an accurate indication of maximum power. Switch the linear off and tune transmitter for maximum deflection on the linear's RF power meter. This is made possible by the switching circuits in the linear which allow the transmitter output to be fed directly to the antenna circuit in the linear (which contains the meter). Now switch the linear on and, after warm-up, adjust the Plate Tune and Ant Load controls for maximum output reading. The linear is sufficiently broadband to permit operation over each amateur band without retuning. This completes the tuneup procedure. To calculate the DC input power (quiescent conditions), refer to the following section.

MEASURING DC INPUT POWER

WARNING: HIGH VOLTAGES ARE PRESENT IN THIS UNIT. BE SURE TO REMOVE ALL POWER BEFORE ATTEMPTING TO MAKE ANY WIRING CHANGES.

Connect a $50\ \Omega$ dummy load to the RF output jack. Tune the plate control until a maximum value is indicated on the relative RF meter. Adjust the antenna loading control until a maximum is indicated on the relative RF meter. To determine the actual DC plate input, refer to Figure 4. Open the plate circuit temporarily by removing the red lead from the end terminal of the strip (as shown) and place an ammeter in series to read plate current. The plate voltage may be obtained by measuring between the end terminal of the strip and ground. The product of plate voltage and plate current is the DC input power to the final.

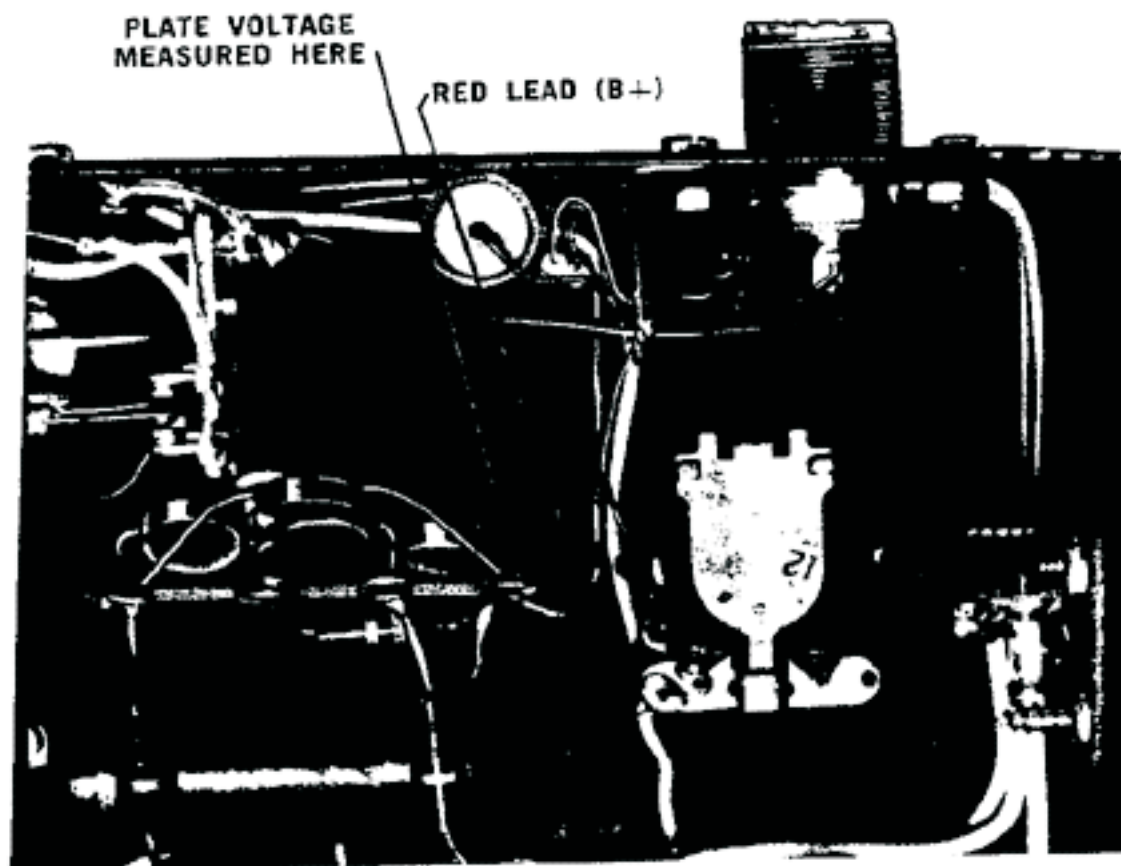


FIGURE 4

OPERATION

Operation is the same for all services. After the linear has been turned on, it will operate automatically whenever the transmitter/transceiver emits an RF signal of 1 watt or more. This is accomplished by a relay circuit which "senses" the presence of an RF input signal and automatically switches the linear's B+ and antenna circuits into operation. When the transmitter/transceiver is placed in the receive position, the B+ circuit is deactivated, but the antenna is still connected to the transceiver "through" the linear. If the linear is not energized (on-off switch in the "off" position), the output will feed directly through the linear without amplification. Thus for local work, you may operate your equipment with a minimum of interference to others using the same frequency. In this mode, the relative RF meter will still operate and may be used for rough tuneups with only the low power transmitter/transceiver in operation.

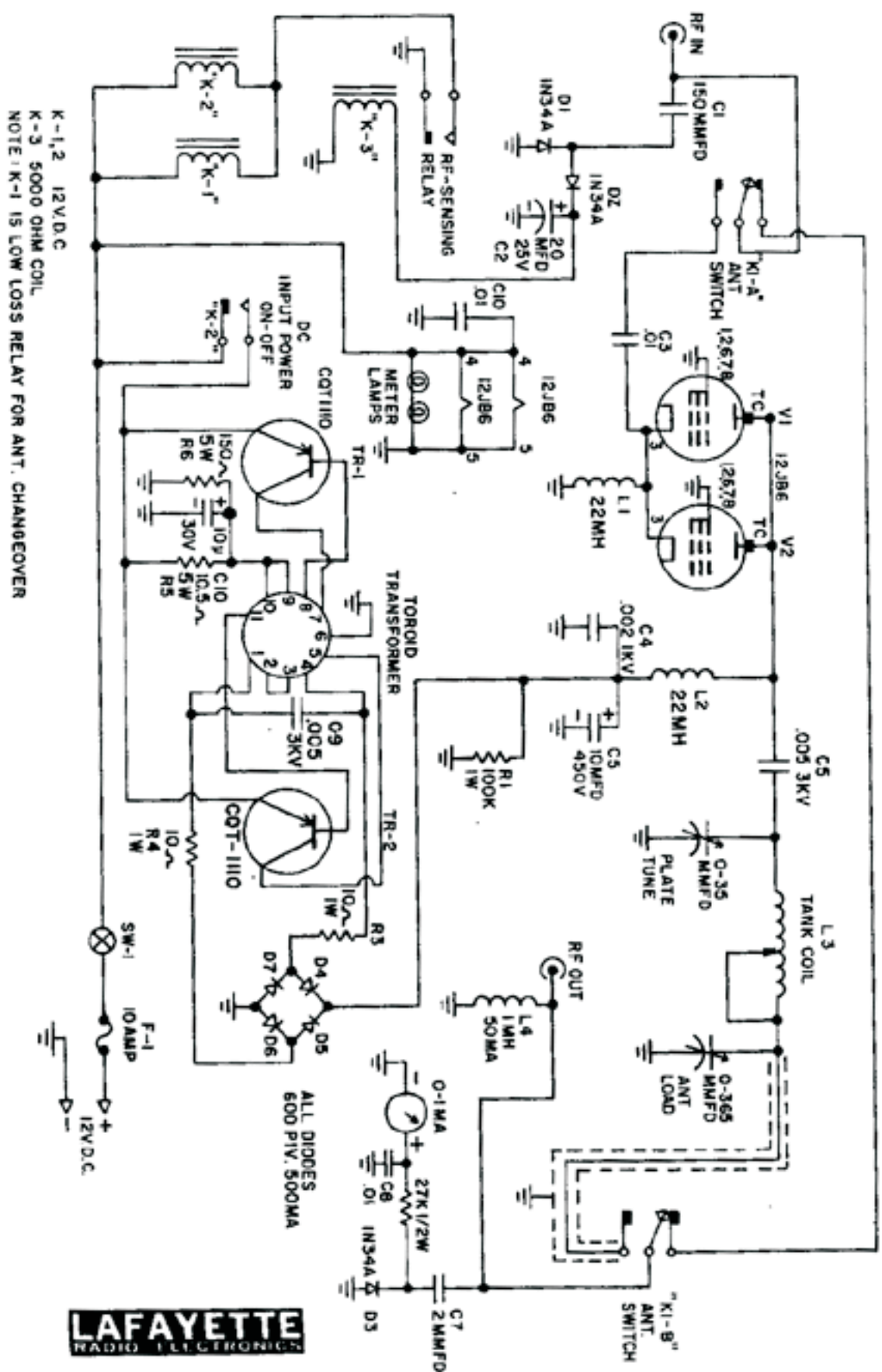
RETURNING THE UNIT FOR REPAIR

If you wish to have the unit repaired, we recommend that you return the unit to the Lafayette store from which it was purchased. If the unit is to be shipped to our main office for service, please read the instructions which follow.

SHIPPING INSTRUCTIONS

Pack the unit very carefully to avoid damage in transit, preferably in its original carton. If the original carton is not available, use a sturdy carton with at least 3 inches of shredded paper or excelsior around the unit. In the latter case, wrap the unit in paper first to avoid particles of packing material getting into it. Include with the unit a letter explaining exactly what difficulties you have encountered (remember to add an extra 5¢ postage and indicate on the outside of the carton that First Class Mail is enclosed). Ship by prepaid express if possible and mark ELECTRONIC EQUIPMENT -- FRAGILE. Clearly address the carton as follows:

SERVICE DIVISION
LAFAYETTE RADIO ELECTRONICS CORP.
111 JERICHO TURNPIKE
SYOSSET, L.I., N.Y. 11791



K-1, 2 12V.D.C.
 K-3 5000 OHM COIL.
 NOTE: K-1 IS LOW LOSS RELAY FOR ANT. CHANGEOVER

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ADDENDA

HA-250 MOBILE LINEAR AMPLIFIER

The RF sensing circuit of the HA-250 has been modified and now utilizes type IN914 diodes for D1 and D2 instead of type IN34A. Also, capacitor C1 has been changed from 20 μ f @ 25WVDC to 10 μ f @ 50WVDC. Please note this correction on the schematic diagram in your instruction manual.

LAFAYETTE RADIO ELECTRONICS CORPORATION

December 1965

MODEL HA-250

IMPORTANT

Minimum RF input power required to drive the HA-250 is 1 watt.
Maximum RF input power that can safely be applied to the HA-250
is indicated below.

BAND OF
OPERATION

15 Meters
10 Meters
6 Meters

RF INPUT POWER
MUST NOT EXCEED

10 Watts
10 Watts
5.5 Watts

Lafayette Radio Electronics Corporation