

LK-500Z
SERIES AMPS

INTRODUCTION

The Amp Supply LK500ZB Linear Amplifier is a compact 2500 Watts PEP 160-15 meter amplifier of modern design. It is a high performance piece of equipment requiring a minimum of maintenance through years of operation. The LK500ZB was engineered conservatively, with American components and ingenuity. The unit is field-tested and rated for 2500 Watts PEP input continuous in SSB service and 2000 Watts DC input along with many MARS operating frequencies, without modifications.

Two EIMAC 3-500Z triodes are employed, operating in grounded grid in conjunction with a solid state power supply capable of either 117V or 234V operation. The LK500ZB uses a double duty cooling system which allows cooling of not only the tubes, but the power supply as well.

Tuning the LK500ZB is a simple procedure, since the unit is designed for long-term stability in virtually any operating situation. Tuned input and standard relay switching circuitry makes the LK500ZB compatible with any solid state or tube transceiver or transmitter available. The LK500ZB, despite its straight-forward design and minimal user required adjustment, is nonetheless a sophisticated electronic instrument. Therefore, if the unit is operated outside the parameters outlined in this owner's manual, it is possible that damage can result.

Please read this manual carefully before putting your LK500ZB on the air.

WARNING

TO TAKE FULL ADVANTAGE OF THE LK500ZB COOLING SYSTEM, IT IS REQUIRED THAT THE AMPLIFIER BE OPERATED WITH AT LEAST 2-1/2" CLEARANCE ON BOTH SIDES AND TOP OF THE UNIT.

CAUTIONS

1. Make no attempt to put the LK500ZB in service outside of the cabinet. Contact with high voltages in this Amplifier can be FATAL TO THE HUMAN BODY.
2. Never attempt to operate the LK500ZB with drive power of more than 125 Watts!
3. Never attempt to operate the LK500ZB without first connecting it to an antenna with an SWR of less than 2:1, or a 50 Ohm dummy load of sufficient power handling capacity or serious damage may result to the amplifier.

4. Do not, under any circumstances, operate the LK500ZB from a 117 Volt lighting circuit because the circuit conductors are not large enough to safely carry this load.
5. Never run Amplifier from an extension cord.
6. Do not attempt to change jumper connections on primary of Amplifier without first removing power from the LK500ZB.
7. Do not cover the top of the LK500ZB with books, papers or other pieces of equipment or overheating may result.
8. Do not use different tuning procedures other than indicated in this manual.
9. When cleaning the LK500ZB never blow high pressure air directly into the fan blades. Spinning the fan at higher speeds than it was designed for can cause damage and freeze the rotor assembly of the fan. Use a brush in cleaning the fan assembly.

S P E C I F I C A T I O N S

FREQUENCY COVERAGE: Ham bands 160 through 15 meters*. Non-amateur frequencies between 1.8-4.0 and 6.5-24MHz may be covered with adjustment of the tuned input.

TYPICAL OUTPUT: 1500 Watts on SSB, 1200 Watts CW and 900 Watts on SSTV, RTTY

DRIVE REQUIREMENTS

FOR TYPICAL OUTPUT: 100 Watts PEP SSB, 75 Watts CW, 60 Watts RTTY, SSTV

INPUT IMPEDANCE: 50 Ohms - tuned input on each band

OUTPUT IMPEDANCE: Adjustable Pi-network matches 50 Ohm load with SWR not to exceed 2:1

INTERMODULATION

DISTORTION PRODUCTS: In excess of -33dB below PEP

HARMONIC SUPPRESSION: In excess of -45dB

POWER REQUIREMENTS: 117 Volts 50/60 Hertz 25 Amps or 234 Volts 50/60 Hertz 12.5 Amps

DIMENSIONS: 9" H x 15" W x 15" D
WEIGHT: 54 LB

*OPTIONS: Ten Meter Modification Kit -- for licensed
 US amateurs
 XPort Model, factory built-in 10 meter band

Specifications are subject to change without notice or obligation.

FRONT PANEL CONTROLS

ON-AC ROCKER SWITCH - Turns power on and off.

XMIT-STBY ROCKER SWITCH - Turns the amp from standby to operate mode.

BAND-SWITCH - Selects desired bands.

PLATE AND LOAD KNOBS - Tuning adjusts Pi-Network capacitors in tank circuit for proper resonance and loading on all bands.

PLATE CURRENT METER - Continuously monitors plate current of 3-500Z tubes.

GRID-VOLT METER - By use of the meter switch can monitor plate volts (0-3500 V or grid current 0-350 mA.

REAR JACKS

RF-IN - For connecting to exciter RF output.

RF-OUT - For connecting the LK500ZB to an antenna.

RLY - For connecting to exciter auxiliary jack to activate T/R Relay in the LK-500ZB.

KEY IN - QSK ONLY-station key, must be a bug, hand key or a keyer with a reed relay.

KEY OUT - QSK ONLY - hooks to the key in jack on a QSK transceiver.

QSK VOX SWITCH - place in the QSK position when operating QSK CW.

INSTALLATION

1. Make no attempt to put the Amplifier in service outside of the cabinet -- contact with voltage in this Amplifier CAN BE FATAL!!!!!!!!!!!!!!!!!!!!!!

2. **Unpacking** - Carefully remove your LK500ZB from its packing carton, and examine it closely for signs of shipping damages. Should any damage be apparent, notify the delivery carrier immediately, stating the full extent of the damage.
3. **Install 3-500Z Tubes.** W A R N I N G The LK500ZB has been shipped from the factory without the tubes. These are packed separately. Be sure to install these items before turning on the LK500ZB.

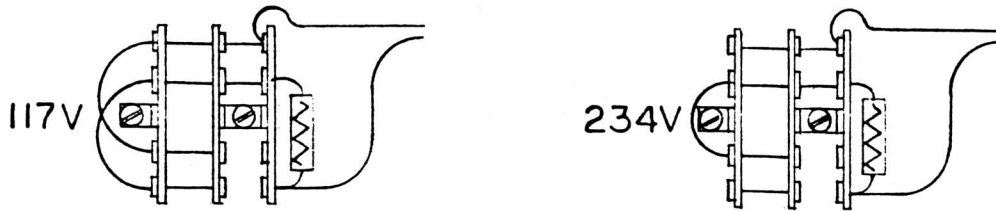
Tube Installation. Carefully remove the EIMAC tubes from their boxes. Carefully move the two parasitic chokes in the tank compartment of the LK500ZB out of the way and install tubes. When tightening down the plate caps, only tighten screws snug--overtightening may damage tubes. Remove packing from under the tuned input board.

4. Fill out the enclosed warranty registration card and return to Amp Supply.
5. **Location.** In general, the location of the LK500ZB is not critical, however, there are certain considerations which must be given to insure optimum performance. Extremely hot locations, such as near radiators or heating units should be avoided. Do not cover the top of the Amplifier case with books, papers, or other pieces of equipment, or overheating may occur. The sides of the Amplifier case must not be obstructed and should not be placed closer than 2-1/2 inches from a wall or the air inlet and outlet for the blower will be blocked and overheating of the Amplifier tubes may occur.
6. **Power Requirements.** The LK500ZB has a built-in continuous-duty power supply which can be operated from either 234 V AC or 117 V AC 50/60 Hz. A jumper network is provided inside of the Amplifier.

The LK500ZB is shipped from the factory with jumpers connected to operate on 234 V AC. It is highly recommended that the LK500ZA be operated from its own 234 - 15 A (or greater) circuit. If a 117 V circuit is all that is available, it should be fused for 30 A and circuit conductors should not be less than #10 and no other equipment should be operated from this circuit. Never run Amplifier from an extension cord.

On the next page are pictorials of jumper connections located in the left rear corner of the chassis for both 234 V and 117 V operation. The jumpers must be connected as shown or severe damage to the LK500ZB components may result. Remove existing jumper before installing the new ones.

JUMPERS



WARNING

COMPLETELY REMOVE POWER FROM LK500ZA BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS ON BACK OF AMPLIFIER.

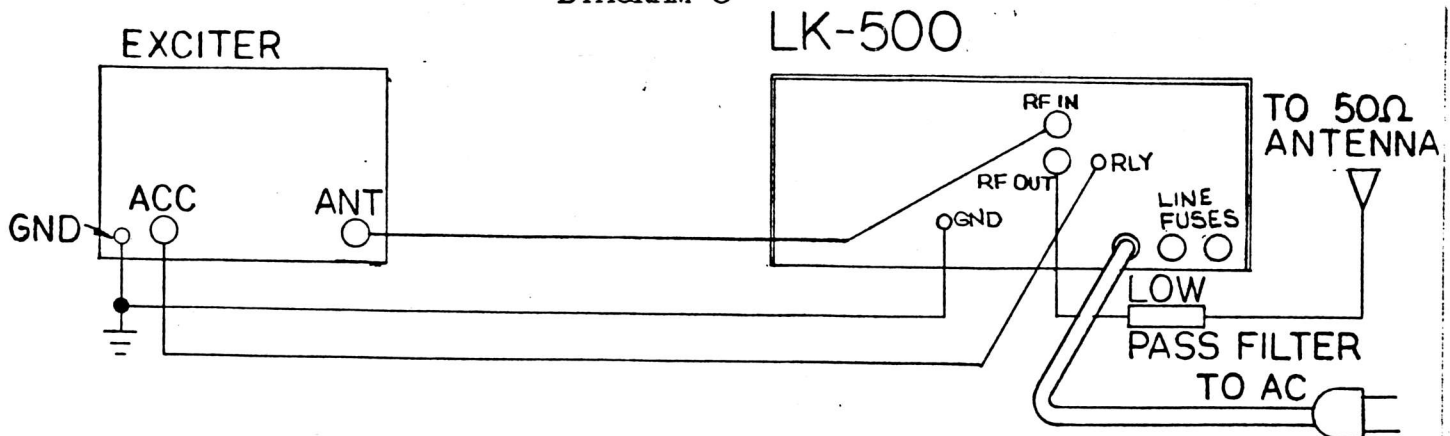
7. Amplifier Installation. After the tubes have been installed, connect your LK500ZB to your power source. Set the Amplifier Controls as follows:

AC/ON	-	OFF
XMIT/STBY	-	STBY
METER	-	VOLTS

Turn the unit on. Plate voltage will read between 3000-3300 Volts DC. Turn the unit off.

8. Cable Installation. (see Diagram C) Using 6' length, connect a 52-Ohm coaxial cable between your exciter's RF Output and the LK500ZB rear panel RF Input connector. Next connect another short length of 52-Ohm coaxial cable (RG-8U or equivalent) from the RF Output connector to a suitable Wattmeter and Antenna system. Next, a piece of shielded cable should be installed between the RCA type jack on the rear panel marked RLY and the accessory contacts of your exciter. These should be normally open contacts that are closed on TRANSMIT. (See your exciter operator's manual.) This completes hookup of the LK500

DIAGRAM C



Antenna Requirements. The LK500ZB has been designed for use with antennas resonant at the operation frequency and having approximate impedances within the limits of 30 to 75 Ohms.

The nominal output impedance of the LK500ZB is 50 Ohms and the SWR of this load should never exceed 2:1. Although there are many types of antennas which will meet these requirements, the simplest is a one-half (1/2) wave dipole center fed with 52 Ohm coax. For a detailed discussion on antennas, we suggest referring to an appropriate antenna book.

Most practical antennas exhibit an SWR range over a complete amateur band that exceeds 2:1. For this reason we recommend using an antenna matching network which will allow the LK500ZB to work into a 50 Ohm resistive load for maximum power transfer into the antenna. The new AT-3000 by Amp Supply Co. is a perfect companion tuner for the LK-500 series of amplifiers.

C A U T I O N

NEVER ATTEMPT TO OPERATE THE LK500ZB WITHOUT FIRST CONNECTING IT TO AN ANTENNA OR 50 OHM DUMMY LOAD OF SUFFICIENT POWER HANDLING CAPACITY OR SERIOUS DAMAGE MAY RESULT.

Ground Requirements. The LK500ZB should be attached to a good earth ground through as short and as large a ground strap as possible for best results. A ground post is provided on the rear of the LK500ZB chassis for this purpose. It is always a good idea to connect the chassis of all associated equipment together and ground them at one point to avoid ground loops. We recommend that all of the equipment in your station be connected together and grounded at the Antenna Tuner.

T U N I N G P R O C E D U R E

WARNING

THIS UNIT IS SHIPPED READY FOR 234 VAC OPERATION. IF YOUR APPLICATION REQUIRES RUNNING THE LK500ZB ON 117 VAC, SEE "POWER REQUIREMENTS" UNDER INSTALLATION INSTRUCTIONS.

1. Set the Bandswitch to the desired band.
2. Set the Load Control on number shown on tuning chart.
3. Set the Tune Control on number shown on tuning chart.
4. Set the On/Ac Control to ON.
5. Set the Xmit/Stby Control to XMIT.
6. Set Meter switch to grid current. (This is read on Plate/Grid Current Meter).

7. Insert a small amount of exciter drive until the plate current begins to rise to approximately 400mA.
8. Rotate the Tune Control for maximum output on your station wattmeter.
9. Go between Tune and Load for maximum output.
 1 KW input (Plate Voltage x Plate Current = Power Input)
 Example: Plate Current = 400mA
 Plate Voltage = 2500 V DC
 .4 x 2500 V = 1000 Watts Input
10. Increase drive power. Repeat steps 8 through 10 until you obtain desired output.
11. During tune up alternately monitor Grid and Plate Current.
12. Grid current can be reduced by slightly decreasing the Load control. Turn control to right, clockwise.
13. ALWAYS TUNE FOR MAXIMUM OUTPUT !
14. TUNE FOR MAXIMUM OUTPUT AT ALL TIMES !!!!!!!!!!!!!!!!!!!!!!!

WARNING

CURRENT LIMITATIONS FOR NORMAL OPERATION:

Plate Current. . . not to exceed 950 MA. in full tune-up
 Grid Current .. . under tune up, RTTY, or SSTV, never to exceed 350 mA.
 .. . on SSB voice peaks should average less than 250mA while operating.
 . . . on CW between 100 and 250mA, depending on sending speed.

S E R V I C E D A T A

CAUTION

EXTREME CARE MUST BE TAKEN WHENEVER MAKING ANY ADJUSTMENTS INSIDE THE LK500ZB.

Removing Top Cover. After completely disconnecting the LK500ZB from power wait 30 minutes so all electrolytic capacitors have discharged through their bleeding resistors. The top cover can then be safely removed by taking out the top and side row of screws.

Cleaning Amplifier Compartment. Since the Amplifier compartment is forced-air cooled, it will collect particles of dust which must be removed periodically. The frequency of cleaning will be governed by how many hours the LK500ZB is operated, and by how clean its environment is. When the blower blade accumulates a large amount of dust, the Amplifier should be cleaned. The best way to clean the LK500ZB is to remove the top cover and blow the dust out with compressed air. If compressed air is not available, a soft-bristled one-inch paint brush can be used to brush the Amplifier clean.

WARNING

DO NOT BLOW AIR DIRECTLY INTO THE FAN BLADES. USE A BRUSH IN CLEANING THE BLADES OF THE FAN.

Tube Replacement. If it becomes necessary to replace the tubes in the LK500ZB the same brand should be used. A new tube kit is available from Amp Supply Co.

Trouble Shooting. Careful consideration has been given to the design of the Lk500ZB to keep maintenance problems to a minimum. However, it is possible that some problem will arise which cannot be cured by tube substitution. If this occurs, we suggest that you contact our customer service department, describing your problem in detail. Include full information concerning external connections, control settings, associated equipment, antenna, being sure to indicate the serial number of the LK500ZB. Do not return equipment to the factory without prior authorization.

Returning the LK500ZB to the factory for service. Obtain a return authorization from the customer service department. Amp Supply Co. will assume no responsibility if the transportation company refuses to pay a damage claim due to improper packing or lack of insurance. Be certain to remove the tubes prior to shipping and return the tubes in a separate carton.

OPEN LETTER TO LK-500 SERIES AMPLIFIER OWNERS

I would like to take this opportunity to thank you for the purchase of your new LK-500-ZB from Amp Supply Co. The entire workforce at Amp Supply, shares in my desire for your complete satisfaction and enjoyment of the LK-500. We have done our best to insure that every amplifier produced is of the highest quality.

I solicit any and all comments about your new LK-500-ZB. Amp Supply Co. is here to serve "YOU". You are the most important person in our business as a satisfied customer and we are dependent on you. I wish for you to be a part of our business. Your satisfaction is the life-blood of Amp Supply. Stated simply, customers return to and buy repeatedly from companies who satisfy and please them.

God Bless You and 73, Denny K8KXK

NEW OPTIONS

HI/LOW AIR SPEED

Your new amplifier is equipped with a high-low cooling system. The switch on the front of the amplifier labeled "H" and "L" is for this system. Operate the amp in "H" position for tune-up, and RTTY and SSTV. Operate the amp in the "L" position of CW and SSB operation.

ALO

A new circuit, AUTOMATIC LOCK OUT (ALO) is available on the 500 and 800 series amplifiers as an option. This circuit prevents excessive plate current when the amplifier is operating by putting the amp in standby mode. When the ALO circuit is activated the ALO light on the front panel will be lit and the plate current meter will read zero. The circuit is automatically reset after a one second delay. If excessive plate current still persist the circuit will oscillate on and off at one second intervals until the plate current is below the factory preset limits. On the LK-500 the limit is set at 1 amp and the LK-800 limit is set at 1.5 amps.