

LK-800
SERIES AMPS

INTRODUCTION

The Amp Supply LK800A Linear Amplifier is a compact 1500 Watt output 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 LK800A was engineered conservatively, with American components and ingenuity. The unit is field-tested and rated for 3000 Watts PEP input continuous in SSB service and 2000 Watts CW input along with many MARS operating frequencies, without modifications. With the addition of the external power pack the LK-800A will operate at 1500 watts continuous output on CW, SSTV and RTTY.

Three EIMAC 3CX-800A7 triodes are employed, operating in grounded grid in conjunction with a solid state power supply capable of either 117V or 234V operation. The LK800A uses a double duty cooling system which allows cooling of not only the tubes, but the power supply as well.

Tuning the LK800A 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 LK800A compatible with any solid state or tube transceiver or transmitter available. The LK800A, 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 LK800A on the air.

WARNING

TO TAKE FULL ADVANTAGE OF THE LK800A 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. THE MOST IMPORTANT FACT TO REMEMBER IS THE COOL AIR FOR TUBE COOLING IS DRAWN IN FROM THE BOTTOM OF THE AMP!!!! NEVER PLACE THE LK-800A ON CARPETING OR ANY RESTRICTIVE SURFACE !!!!!!!!!!!!!

CAUTIONS

1. Make no attempt to put the LK800A 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 LK800A with drive power of more than 100 Watts!

3. Never attempt to operate the LK800A 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 LK800A 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 LK800A.
7. Do not cover the top of the LK800A 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 LK800A 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 6.5-22MHz may be covered with adjustment of the tuned input.

TYPICAL OUTPUT: 1500 Watts on SSB, 1000 Watts CW, The external power pac will permit 1500 watt output continuous on CW, SSTV and RTTY

**DRIVE REQUIREMENTS
FOR TYPICAL OUTPUT:** 80 Watts PEP SSB, 60 Watts CW

INPUT IMPEDANCE: 50 Ohms -pi-network tuned input on each band

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

QSK Full Break-IN: To be used with a QSK equiped transceiver

INTERMODULATION

DISTORTION PRODUCTS: In excess of -35dB below 1.5KW PEP output

HARMONIC SUPPRESSION: In excess of -45dB

POWER REQUIREMENTS: 117 Volts 50/60 Hertz 30 Amps or 234 Volts
50/60 Hertz 15 Amps

DIMENSIONS: 9" H x 15" W x 15" D

WEIGHT: 52 LB

*OPTIONS: Ten Meter Modification Kit -- for export
units

External Power Pac--1.75 Amp CCS Hipersil
transformer

Specifications are subject to change without notice or
obligation.

F R O N T P A N E L C O N T R O L S

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 3CX-
800A tubes

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

R E A R J A C K S

RF-IN - For connecting to exciter RF output.

RF-OUT - For connecting the LK-800A to an antenna.

RLY - For connecting to exciter auxiliary jack to activate T/R
Relay.

Rear Jacks Continued.....

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 jack on a QSK transceiver.

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

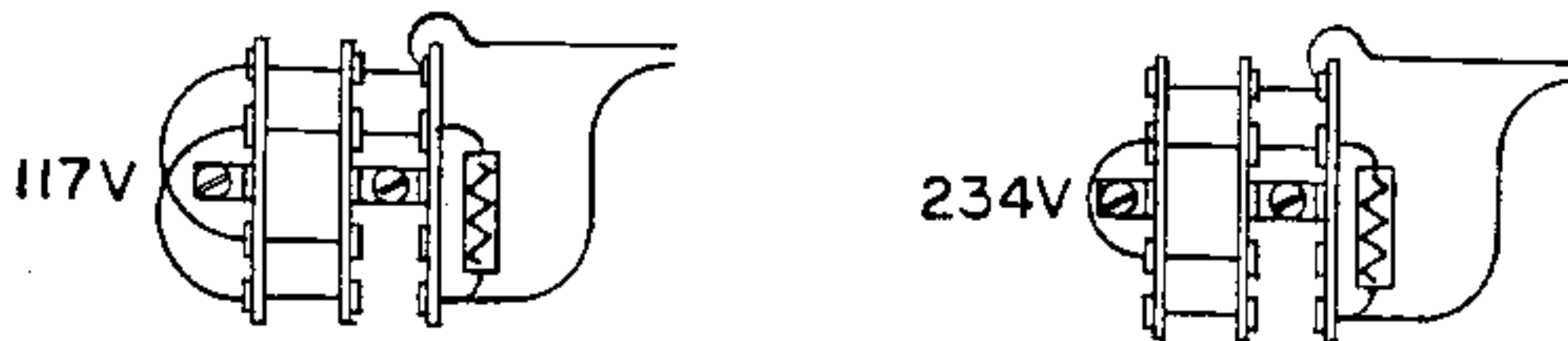
I N S T A L L A T I O N

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 LK800A 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.
4. Fill out the enclosed warranty registration card and return to Amp Supply.
5. Location. In general, the location of the LK800A 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. **THE BOTTOM OF THE LK-800A MUST BE CLEAR OF ANY OBSTRUCTIONS, AND REMEMBER NEVER PLACE AMPLIFIER ON CARPETING. THE AIR INLET FOR THE TUBE DECK IS ON THE BOTTOM!!!!!!**
6. Power Requirements. The LK800A 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 LK800A is shipped from the factory with jumpers connected to operate on 234 V AC. It is highly recommended that the LK800A be operated from its own 234 - 20 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.

Below 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 LK800A components may result. Remove existing jumper before installing the new ones.

JUMPERS



WARNING

COMPLETELY REMOVE POWER FROM LK800A BEFORE ATTEMPTING TO CHANGE JUMPER CONNECTIONS ON BACK OF AMPLIFIER.

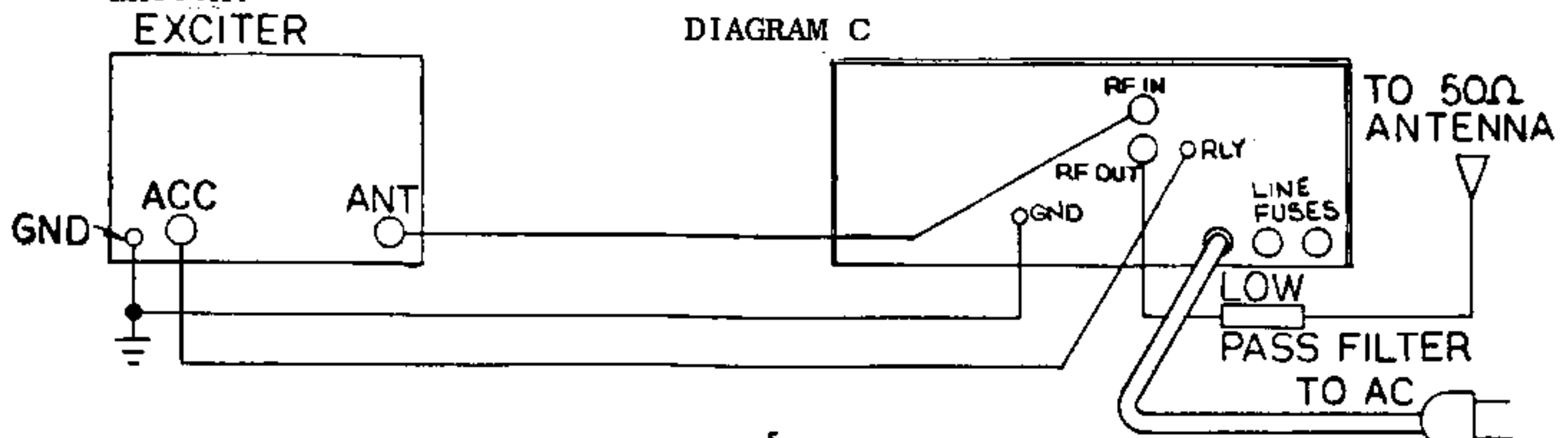
7.

Set the amplifier controls as follows:

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

Turn the unit on. Plate voltage will read between 2300-2400 Volts DC. Turn the unit off.

8. Cable Installation. (see Diagram C) Using a 6' length, connect a 52-Ohm coaxial cable between your exciter's RF Output and the LK800A 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 LK800A.



Antenna Requirements. The LK800A 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 LK800A 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 LK800A 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-800 series of amplifiers.

C A U T I O N

NEVER ATTEMPT TO OPERATE THE LK800A 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 LK800A 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 LK800A 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 LK800A 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 400-500mA.
8. Rotate the Tune Control for maximum output on your station wattmeter.
9. Go between Tune and Load for maximum output.
 (Plate Voltage x Plate Current = Power Input)
 Example: Plate Current = 600mA
 Plate Voltage = 2200 V DC
 .6 x 2200 V = 1320 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 1500 MA.
- Grid Current .. . under tune up, RTTY, or SSTV, never to exceed 150 mA.
 - .. . on SSB voice peaks should average less than 100mA while operating.
 - . . . on CW between 80 and 100mA, 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 LK800A.

Removing Top Cover. After completely disconnecting the LK800A 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 LK800A 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 LK800A 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

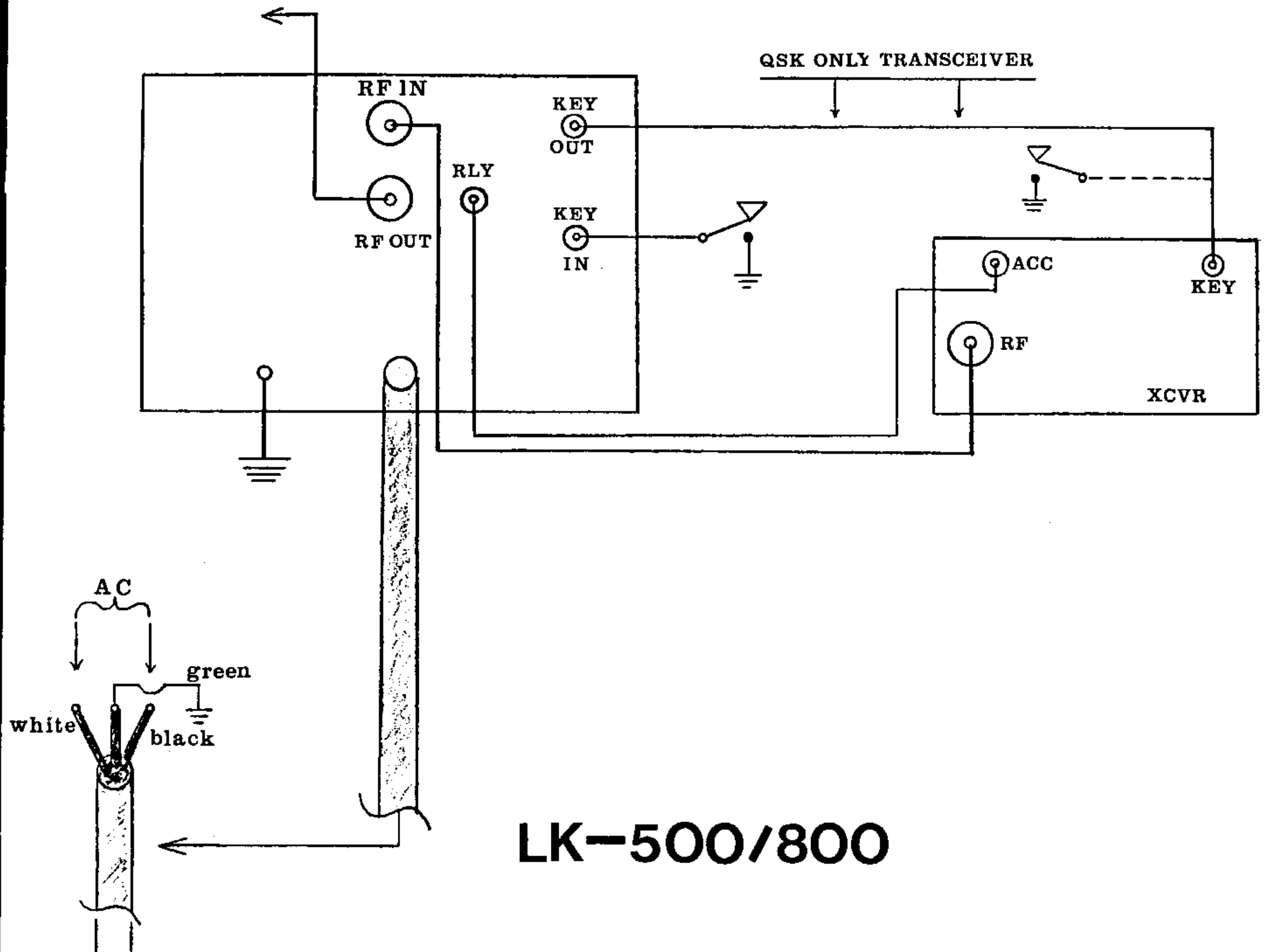
DO NOT BLOW AIR DIRECTLY INTO THE FAN BLADES. USE A BRUSH IN CLEANING THE BLADES OF THE FAN.

Tube Replacement. If it becomes necessary to replace the tubes in the LK800A 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 Lk800A 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 LK800A. Do not return equipment to the factory without prior authorization.

Returning the LK800A 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.

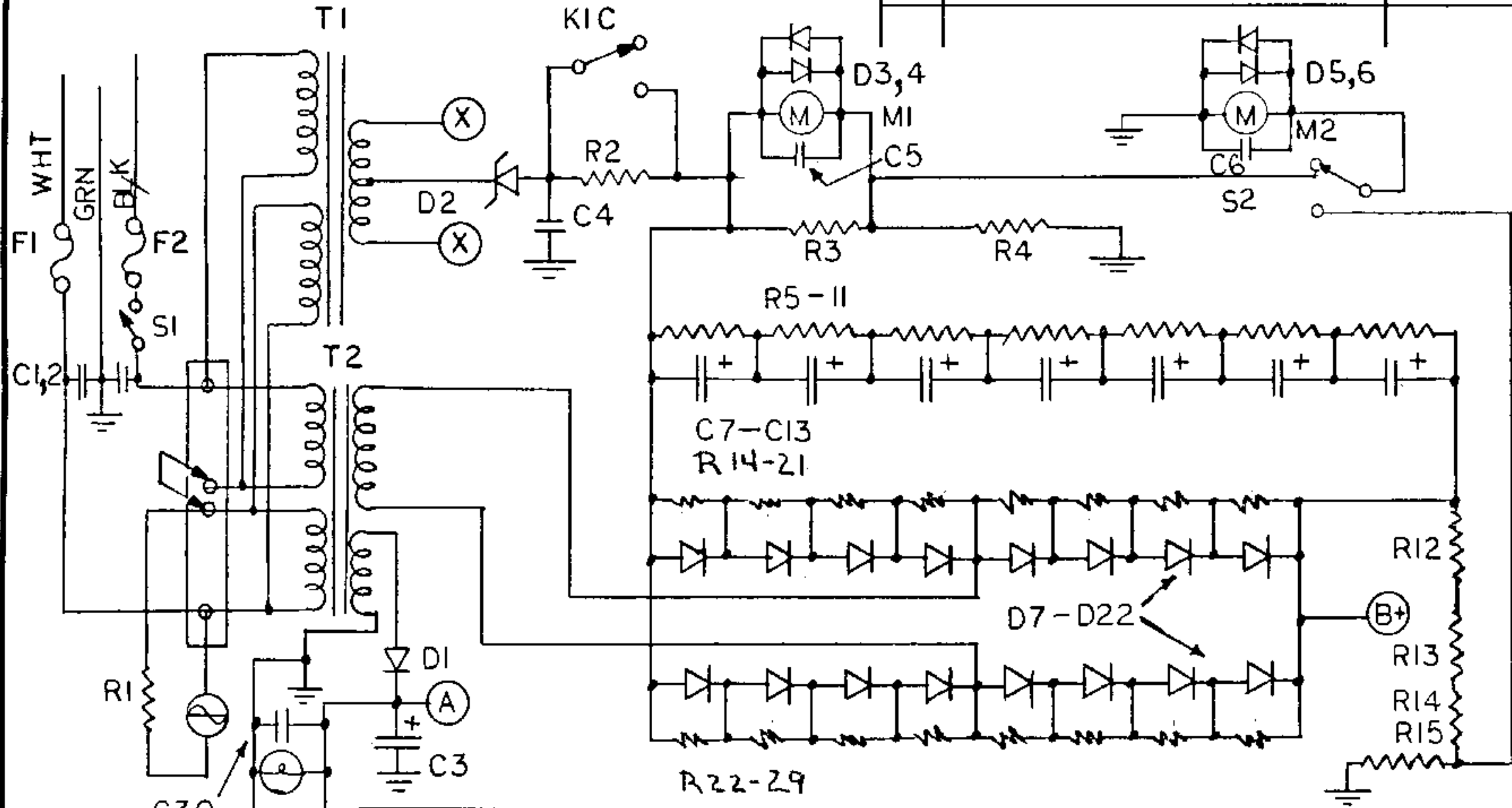
NOTES



LK-800 PARTS LIST

Drawing Symbol	Description	Drawing Symbol	Description
B1	Tube Blower	ATI-6	Tuned input
B2	Power Supply Fan	FU1	15 Amp Fuse
		FU2	15 Amp Fuse
C1	.01 1kv disc	J1	RCA Jac
C2	.01 1kv disc	J2	RCA Jac
C3	.01 1kv disc	J3	RCA Jac
C4	.01 150 vac disc		
C5	.01 150 vac disc		
C12	.01 1kv disc	K1A..C	TPDT Relay on Standard Units
C13	.01 1kv disc		
C14	.01 1kv disc		
C15	.01 1kv disc	L1	Low Frequency Coil
C22	1000 pf 1kv mica	L2	High Frequency Coil
C24	.01 1kv disc		Silver Plate Tubing
C25	.01 kv disc	L3-7	Toroids Factory Select
C26	100 pf 12kv ceramic disc, teflon		
C28	470 pf 6kv disc	M2	Plate Voltage Grid Current Meter
C29	A-250-75 Variable		
C30	2x100 pf 2.5kv disc N1500		
C31	2x100 pf 2.5kv disc N1500	R1	100K 2 Watt
C32	A-800-32 Variable	R2	Factory Select
C33	470 pf 2.5kv teflon	R3	Factory Select
C34	1000 pf 12kv teflon disc	R4	2x250 ohm 10 Watt
C35	1000 pf 12kv teflon disc	R5	100K 2 Watt
C36-40	Trimmers		
C41-45	Trimmers	R12	2 meg 3 Watt
C46-48	Factory Select	R13	1.5 meg 3 Watt
C47-51	Factory Select	R10-17	100K 2 Watt
C52	1000 pf 12kv ceramic disc, teflon	RFC3	Torroid Cathode Choke
C53	1000 pf 12kv ceramic disc, teflon	RFC4	Plate Choke
C52-57	160 MFD 450 VDC Computor Grade	RFC5	2.5 mhy Choke
		RFC6	Special Plate Choke
D1	1N4007	S1-5	Band Switch Ceramic
D2	1N4007	T1	13 VAC Filament Transformer
D3	1N3308 Zener Diode 50 Watt		
D5-8	1N5408	T2	Hipersil Power Transformer
D9-12	1N5408		
D12-20	1N5408	V1-3	3CX800 A7 Triode Tubes
D13-16	1N5408	V4	180 Second Time Delay Tube
FU1	15 Amp Fuse	X1	12 V Transmit Light
FU2	15 Amp Fuse		

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED



QTY REQD	FSCM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION
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PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
 FRACTIONS DECIMALS ANGLES
 = .XX ± = °

CONTRACT NO.

AMP SUPPLY CO
 LK 000 POWER SUPPLY

MATERIAL

APPROVALS DATE

DRAWN *[Signature]* 11/14/84

FINISH

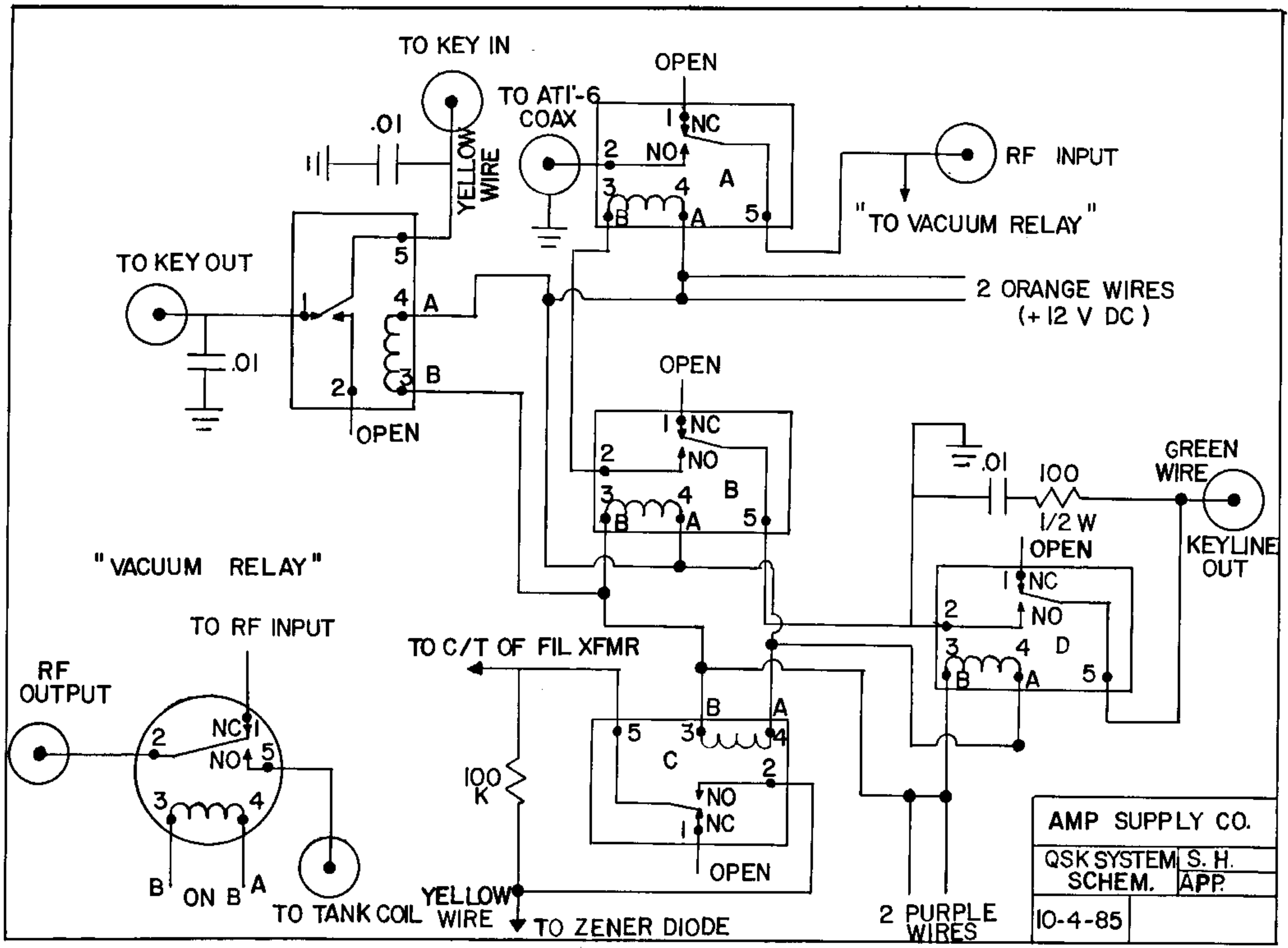
CHECKED *[Signature]* 11/14/84

ISSUED

SIZE	FSCM NO.	DWG. NO.	REV.
A			

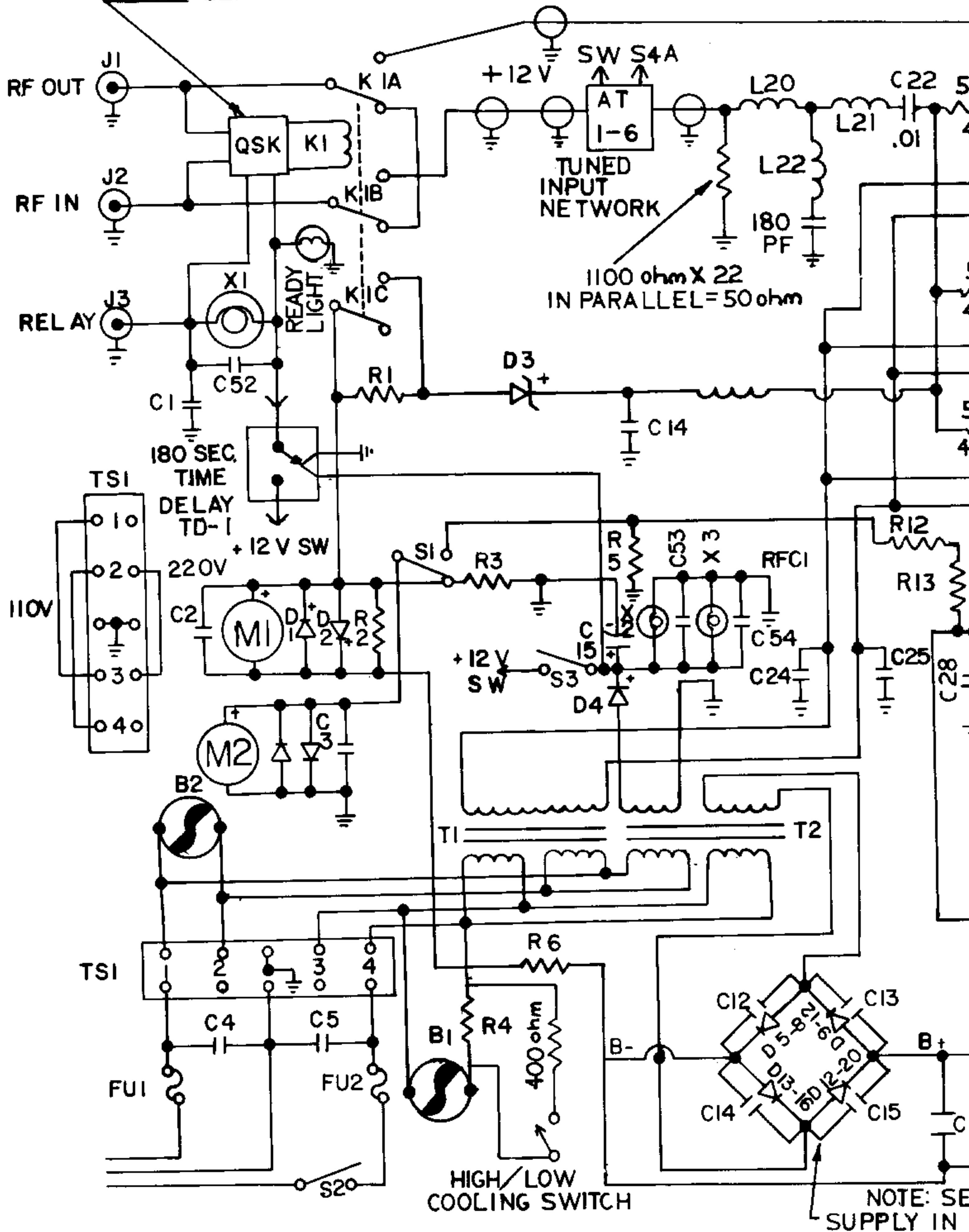
NEXT ASSY	USED ON
APPLICATION	DO NOT SCALE DRAWING

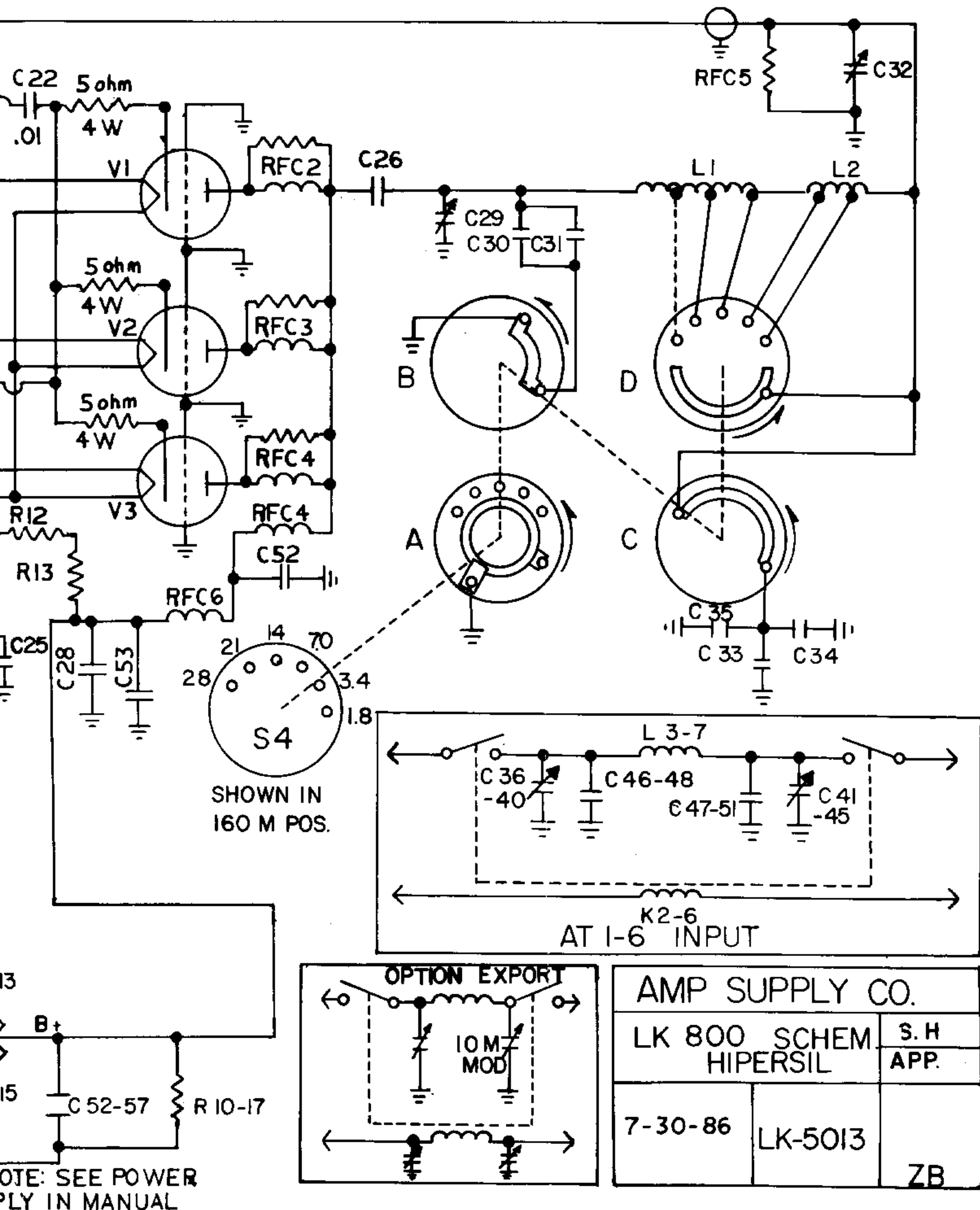
SCALE	SHEET



AMP SUPPLY CO.	
QSK SYSTEM	S. H.
SCHEM.	APP.
10-4-85	

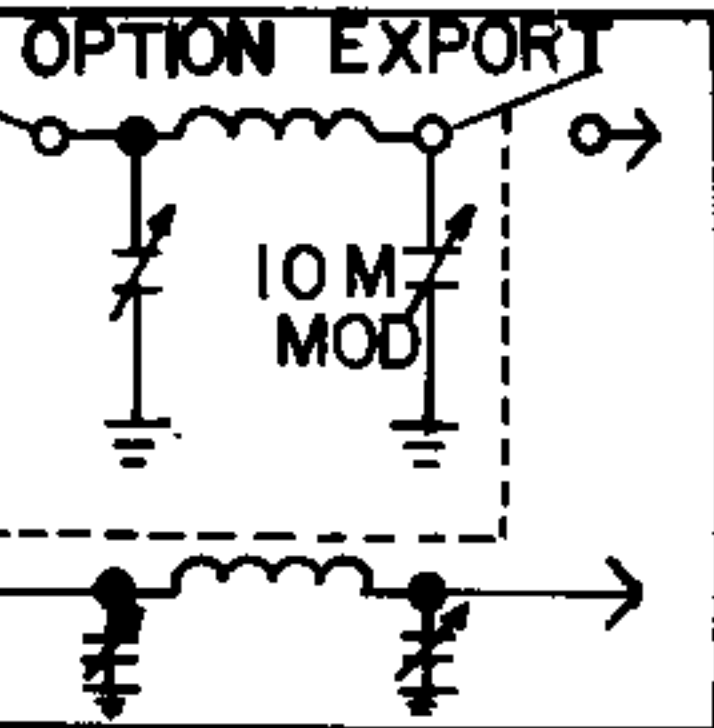
NOTE: SEE SCHEM. IN MANUAL.





SHOWN IN
160 M POS.

AT 1-6 INPUT



AMP SUPPLY CO.		
LK 800 SCHEM.	S. H.	
HIPERSIL	APP.	
7-30-86	LK-5013	
		ZB

NOTE: SEE POWER
SUPPLY IN MANUAL

