KS-16754 AMPLIFIER IDENTIFICATION, INSTALLATION, CONNECTIONS, AND MAINTENANCE

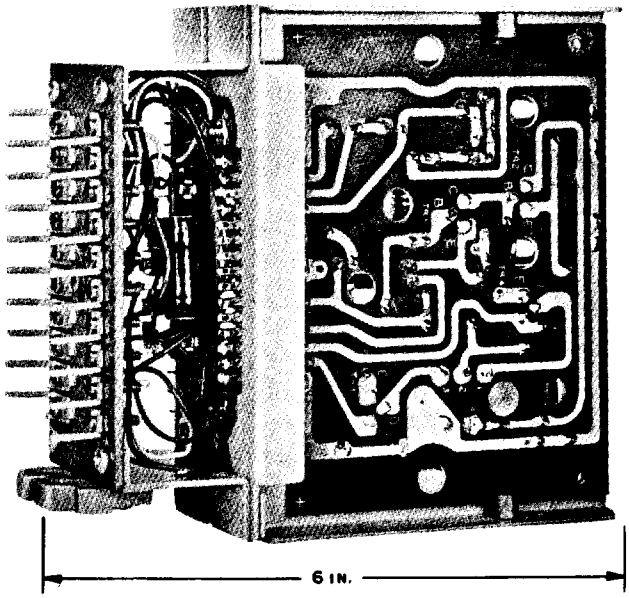
1. INTRODUCTION

1.01 This section is reissued to include information concerning amplifier current requirements with various dc voltage supplies.

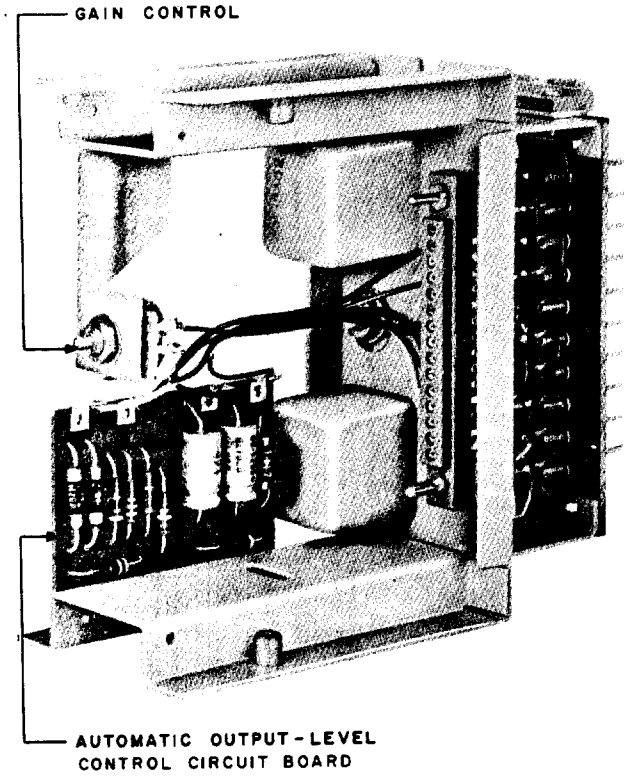
1.02 The KS-16754, List 3 and 4 amplifiers replace the KS-16754, List 1 and 2 now rated Manufacture Discontinued.

2. GENERAL

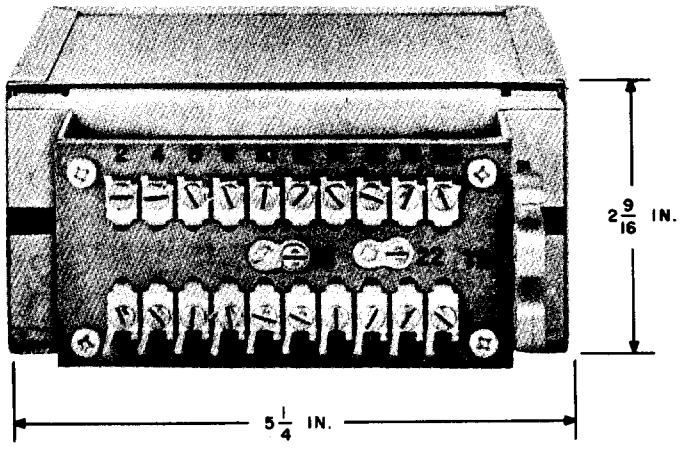
2.01 The KS-16754 amplifiers (Fig. 1) are designed for use with the following systems: station, key, switching, announcement, etc.



Side View



Rear View



Terminal View

Fig. 1 – KS-16754, List 3 and 4 Amplifiers

3. DESCRIPTION

3.01 The KS-16754 amplifier unit consists of a KS-16728, List 1 amplifier (transistorized, printed circuit, plug-in type, Fig. 2), a gain control, and input and output transformers.

3.02 The KS-16754 type amplifier is designed to operate from either 48 volts dc, 24 volts dc, or the J87202, List 1 rectifier which operates from commercial 117-volt 60-Hertz power.

3.03 A terminal strip with 22 combination screw and solder-type terminals (Fig. 1) provides termination for input and output line, battery supply, and strapping for various options. Terminal 21 is for termination of the ground wire.

3.04 The detailed description is covered in CD-95281-01. SD-95281-01 is the application schematic for the KS-16754 amplifiers.

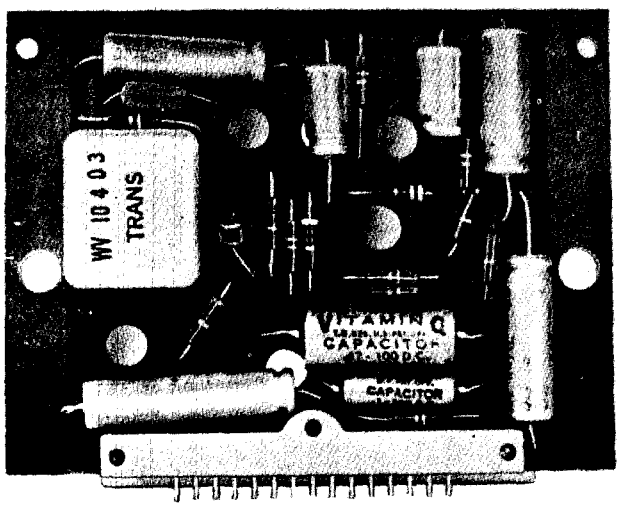


Fig. 2 – KS-16728, List 1 Amplifier

4. ELECTRICAL CHARACTERISTICS

4.01 The typical electrical characteristics of the KS-16754 type amplifiers are outlined below.

4.02 ***Gain*** — 66 db between nominal source and load impedances.

4.03 ***Power Output*** — 0.5 watt into rated resistive load for maximum of 5 percent harmonic distortion (rms).

4.04 ***Automatic Output Level Control Circuit*** — This feature is provided in the List 1 and 3 amplifiers only. With maximum gain, the automatic output level control (compression) starts at an input level of −42 dbm.

4.05 A change of 35 db in input level changes the output level 3 db (from +20 to +23 dbm). The level at which compression starts can be raised by reducing the gain of the amplifier.

4.06 ***Maximum Permissible Input Level*** — +18 dbm. Use external input pad for higher levels to prevent overloading of the input transformer.

The input circuit is not designed to carry direct current.

4.07 The List 2 and 4 amplifiers have an input pad for the 10,000-ohm bridging input. The input level can be +30 dbm for this connection.

4.08 ***Frequency Response*** — ±2 db, 200 to 6000 cycles.

4.09 ***Output Noise*** — Signal-to-noise ratio, 62 dbm. Minimum noise level, 55 dbrn. Flat weighting (independent of input gain control setting).

4.10 ***Input Impedances*** — List 1, 2, 3, and 4 amplifiers have a nominal input impedance of 1.5, 600, and 2400 ohms. The input circuit is normally balanced but may be operated with one side grounded (terminal 4). The List 2 and 4 amplifiers have a 10,000-ohm balanced bridging input available with an 0.2-μf blocking condenser.

4.11 ***Output Impedances (See Table I)***

TABLE I

NOMINAL LOAD IMPEDANCES

AMPLIFIER	FIG.	OHMS
List 1	6A	3.2 and 12
List 2	7A	3.2 and 600
List 3	6B	3.2, 12, and 600
List 4	7B	

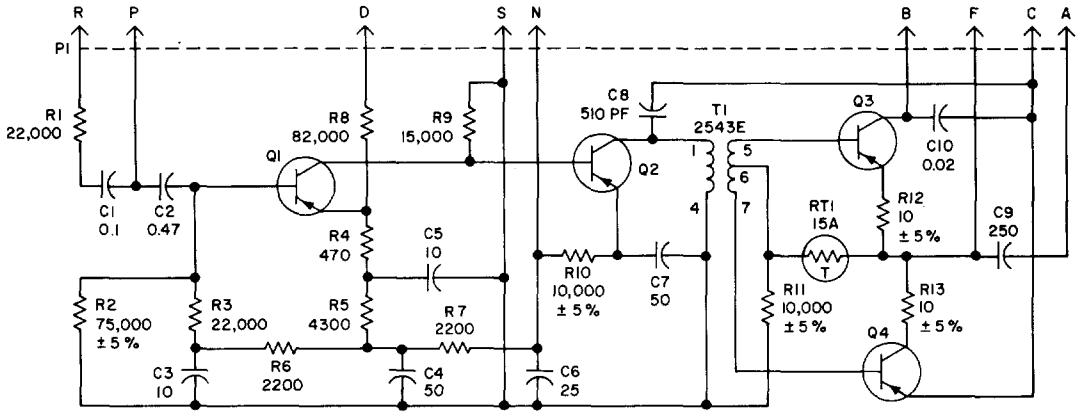


Fig. 3—KS-16728 L1 Amplifier, Schematic

4.12 ***Gain Control***—The gain control is a screwdriver-type control. Terminals are provided for disabling the control provided with the amplifier so that an external gain control can be used at a remote console.

4.13 ***Operating Temperature Range***—0 to 125°F ambient.

4.14 ***External Connections***—Screw and solder-type terminals are provided on terminal board TB1 for all external connections.

5. INSTALLATION AND CONNECTIONS

5.01 The KS-16754 type amplifiers may be installed on a 23-inch relay rack or cabinet mounting.

5.02 Use two apparatus mounting bars (P-41K451 per ED-69404-01) to secure amplifier to relay rack. Up to eight amplifiers may be installed on one set of mounting bars.

5.03 Connect input and output lines and battery to terminal strip with station wire or cable. Refer to connection data in Fig. 4.

5.04 Strap the terminal strip for 24, 48, or a combination of 12 and 30 volts dc from the J87202 L1 rectifier (Fig. 4).

5.05 When remote gain control is required, remove straps 5 to 7 and 6 to 8 (*V* option). Connect remote gain control to terminals 7, 8, and 12 with adjustable arm to terminal 7 (*W* option). (See Fig. 5.)

6. POWER SUPPLY

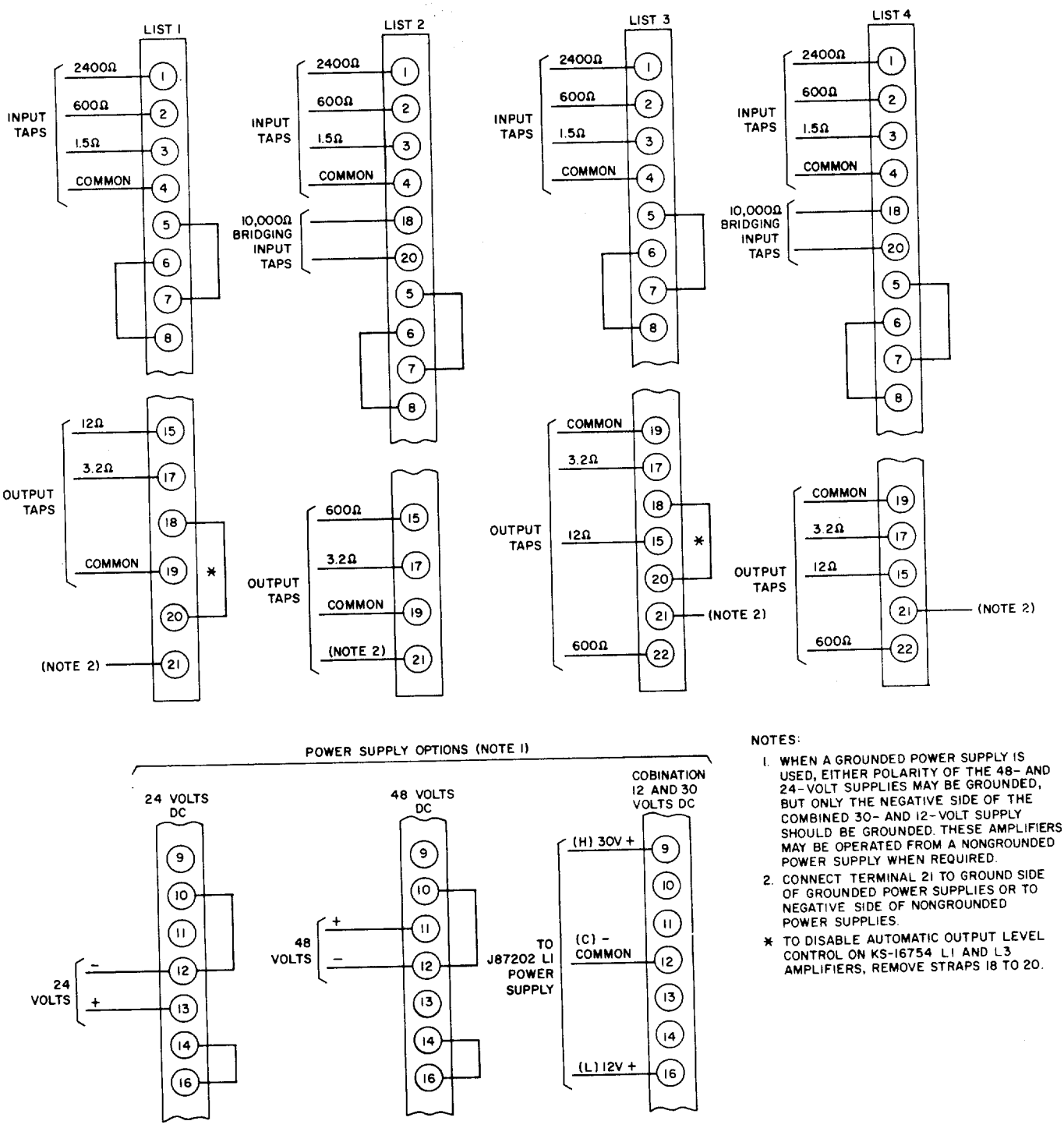
6.01 Power may be obtained from central office, PBX, or some other station power supply.

6.02 The J87202 L1 rectifer was designed for use with the KS-16754 type amplifiers. The rectifier operates on nominal 117-volt 60-Hz commercial power. This is a small compact unit which will provide 12 and 30 volts dc for one amplifier.

TABLE II

VOLTAGE	AMPLIFIER CURRENT
12 volt dc	2 mA standby 70 mA maximum
30 volt dc	5 mA

6.03 The KS-16831 L4 power supply is also available for use with the KS-16754 type amplifiers. This power supply operates on nominal 117-volt 60-Hz commercial power. The KS-16831 L4 power supply provides 24



NOTES:

1. WHEN A GROUNDED POWER SUPPLY IS USED, EITHER POLARITY OF THE 48- AND 24-VOLT SUPPLIES MAY BE GROUNDED, BUT ONLY THE NEGATIVE SIDE OF THE COMBINED 30- AND 12-VOLT SUPPLY SHOULD BE GROUNDED. THESE AMPLIFIERS MAY BE OPERATED FROM A NONGROUNDED POWER SUPPLY WHEN REQUIRED.
2. CONNECT TERMINAL 21 TO GROUND SIDE OF GROUNDED POWER SUPPLIES OR TO NEGATIVE SIDE OF NONGROUNDED POWER SUPPLIES.

* TO DISABLE AUTOMATIC OUTPUT LEVEL CONTROL ON KS-16754 L1 AND L3 AMPLIFIERS, REMOVE STRAPS 18 TO 20.

Fig. 4—Connection Data for KS-16754 Amplifier

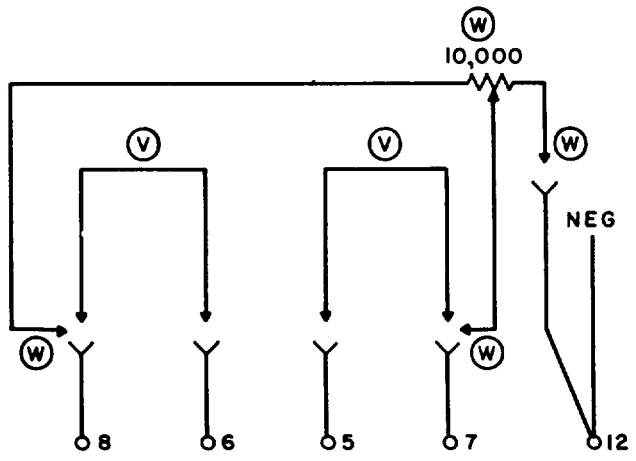


Fig. 5 – Connection Data for Remote Gain Control for KS-16754 Amplifier

and 48 volts dc which may be used to power one amplifier.

TABLE III

VOLTAGE	AMPLIFIER CURRENT
24 volt dc	85 ma continuous
48 volt dc	85 ma continuous

6.04 Connect power supply as shown in Fig. 4.

7. TEST AND ADJUSTMENTS

7.01 Test the KS-16754 amplifier with a signal applied to the input. (For example: dialing the central office milliwatt supply test line.) Monitor the incoming line with a test receiver. The signal level should be comparable to that in the receiver of a telephone set.

7.02 Using a KS-6854 screwdriver, or equivalent, turn gain control (Fig. 1) completely counterclockwise to obtain minimum gain.

7.03 If external volume control is provided turn it completely clockwise.

7.04 Turn gain control clockwise until maximum loudness is reached or up to a point just before crosstalk is heard. If the amplifier tends to howl when a telephone transmitter is connected to the line, reduce the amplifier gain until howling is eliminated.

7.05 Loudness of signal can now be adjusted by the external volume control.

Note: The volume control may not cut off signal entirely.

7.06 The KS-16754, List 1 and 3 amplifiers have automatic output level control. The level at which compression starts can be raised by reducing the amplifier gain.

8. MAINTENANCE

8.01 Schematics for List 1 through 4 amplifiers are found in Fig. 6 and 7, respectively.

8.02 To check amplifier, use the following procedure:

(1) If output of amplifier fails, check power supply and input signal.

(2) Check setting of gain control. Full counterclockwise position will cut off input signal. Completely readjust if necessary.

(3) If power supply, input signal, and gain control are satisfactory, replace the KS-16728, List 1 plug-in amplifier. This is done by removing the cover and pulling circuit board out of pin-jack socket.

(4) If unit fails after replacement of KS-16728, List 1 amplifier, replace complete KS-16754 amplifier unit.

8.03 When replacing existing L1 and L2 amplifiers with L3 and L4 amplifiers for maintenance reasons, be sure to restrap the terminations in accordance with Fig. 4.

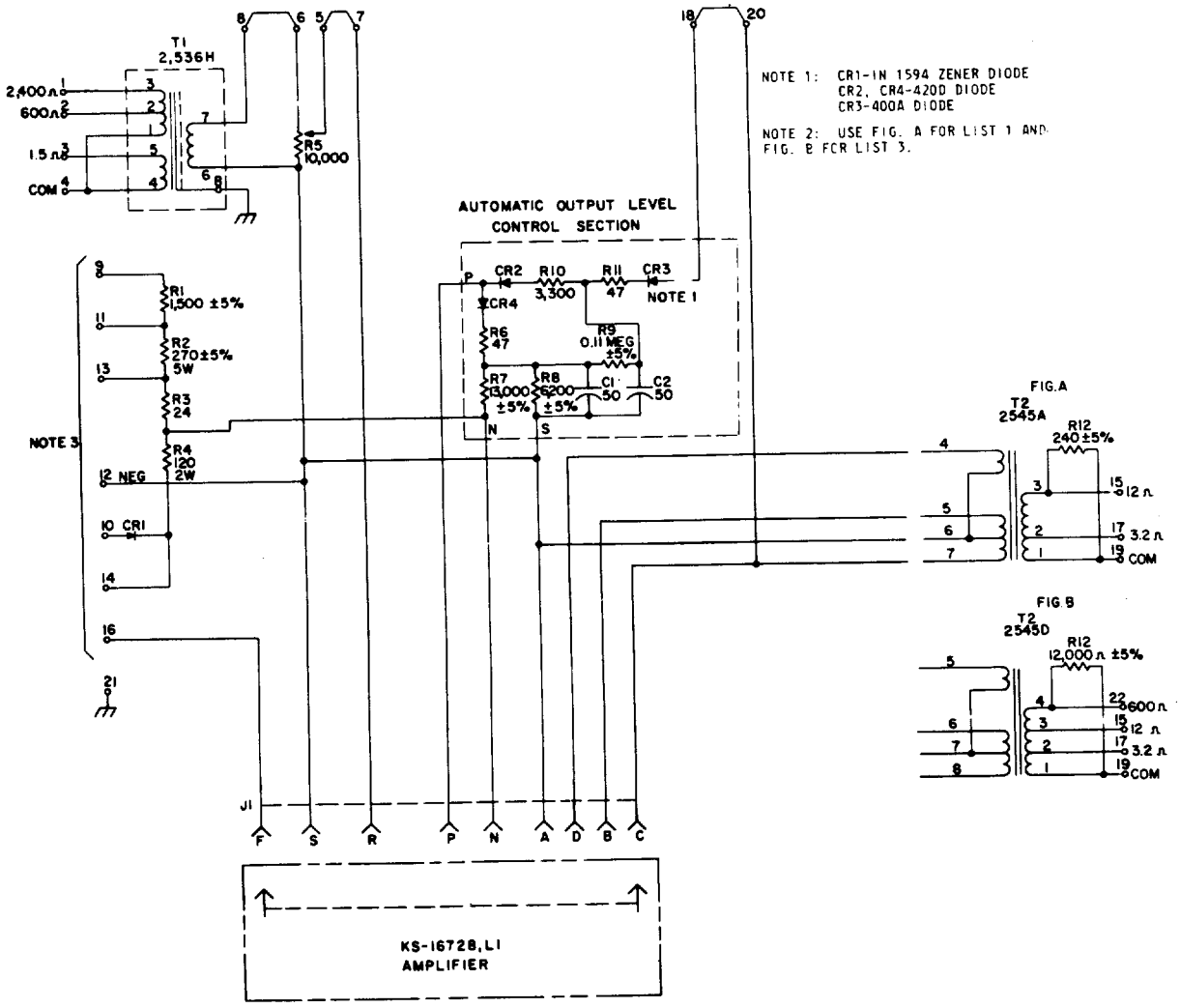


Fig. 6 – KS-16754, List 1 and 3 Amplifiers, Schematic

Note 1: Unless otherwise specified, resistance values are in ohms, capacitance values are in microfarads.

Note 2: All resistors are 0.5 watt ±10 percent unless otherwise specified.

Note 3: For 48-volt operation.

Strap terminals 10 to 12 and 14 to 16. Connect power source between terminals 11 and 12 with either polarity grounded.

For 24-volt operation.

Strap terminals 10 to 12 and 14 to 16. Connect power source between terminals 12 and 13 with either polarity grounded.

For combination 30- and 12-volt operation.

Connect 30-volt power source between terminals 9 and 12, and 12 volts between terminals 12 and 16. Terminal 12 may be grounded.

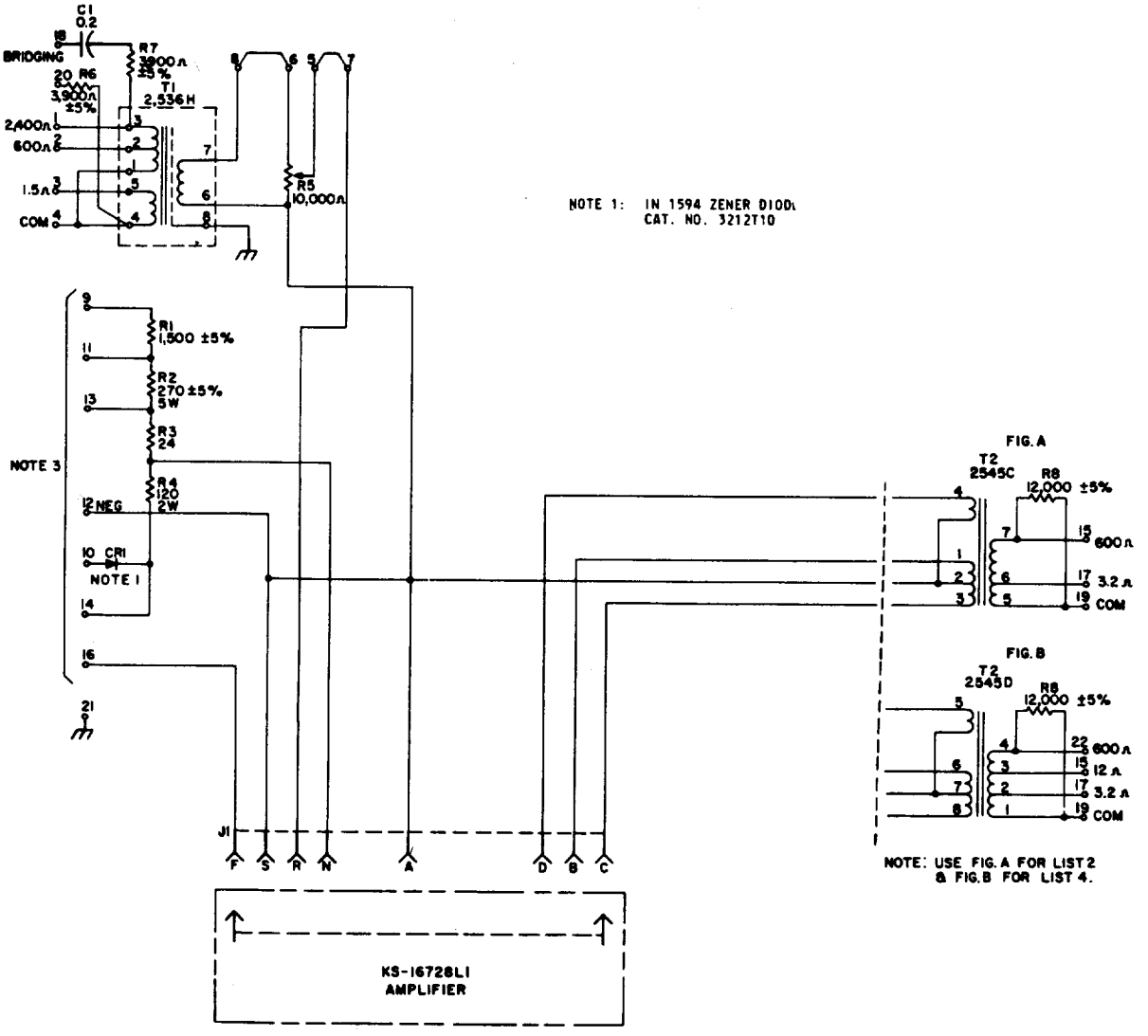


Fig. 7 – KS-16754, List 2 and 4 Amplifiers, Schematic

Note 1: Unless otherwise specified, resistance values are in ohms, capacitance values are in microfarads.

Note 2: All resistors are 0.5 watt ±10 percent unless otherwise specified.

Note 3: For 48-volt operation.

Strap terminals 10 to 12 and 14 to 16. Connect power source between terminals 11 and 12 with either polarity grounded.

For 24-volt operation.

Strap terminals 10 to 12 and 14 to 16. Connect power source between terminals 12 and 13 with either polarity grounded.

For combination 30- and 12-volt operation.

Connect 30-volt power source between terminals 9 and 12, and 12 volts between terminals 12 and 16. Terminal 12 may be grounded.