SECTION 1

GENERAL INFORMATION

1.1 INTRODUCTION

This manual provides installation and service information for the Dukane Model IA729 60-Watt In-Wall Amplifier, and the Dukane IA731 120-Watt In-Wall Amplifier. These amplifiers are manufactured by Dukane Corporation, St. Charles, Illinois 60174.

This manual is divided into three sections, as follows:

1. General Information.
2. Installation Information.
3. Service Information.

1.2 GENERAL DESCRIPTION

The Dukane Models IA729 and IA731 transistorized in-wall amplifiers are designed for use as complete sound distribution systems providing standard 25-Volt or 70-Volt speaker line output, input facilities for up to eight microphones, a radio tuner and phono input. These amplifiers have a power output of 60-Watts and 120-Watts respectively. An Octave Filter (438-496), Compressor (436-408). Dual Microphone Expander (438-407). and Remote Volume Controls may be installed as options at the output for improved sound reproduction. Terminals are provided for each option.

1.3 TECHNICAL SPECIFICATIONS

Power Output:
MODEL IA729: 60-Watts (RMS)
MODEL 1A731: 120-Watts (RMS)

Distortion:
Less than 2% at rated power output, from 40 to 20 kHz.

Frequency Response:
40 to 20 kHz ± 2dB. Envelopemeasured at -6 dB from full output on 70 V line.

Power Source:
105-125VAC. single phase, 50-60 Hz.

Power Required:
MODEL 1A729: 150 Watts at rated output, 30 Watts at idle.
MODEL 1A731: 240 Watts at rated output, 40 Watts at idle.

Fuse:
MODEL 1A729: (1) 1.5 Ampere Slo-Blo
MODEL 1A731: (1) 3 Ampere Slo-Blo

Noise Level:
Microphone: Better than 60dB down from 300 uV reference input.
Auxiliary: 75 dB below output.

Inputs:
(4) microphone, low impedance
(4) optional microphone inputs
(2) auxiliary high impedance inputs

Input Sensitivity:
Microphone: 300 uV maximum.
Auxiliary: 0.4 V rms.

2.3.2 Option Mounting

The option packages available have complete instructions and hardware included for mounting and connections. See individual packages for related literature.

2.3.3 Amplifier Mounting

Mount the amplifier chassis into the backbox using the four #10-24 studs and nuts supplied (Figure 2-l). DO NOT install the Front Door Panel at this time.

2.4 ELECTRICAL CONNECTIONS

Cut all wires to length and strip wire ends as required. Make all external connections to screw terminals on strips inside this unit (Figure 2-2).

CAUTION

Connect AC power to this amplifier AFTER all connections have been completed.

2.4.1 Grounding

It is good practice to ground this amplifier to the backbox which is, in turn, connected to the conduit and electrical ground (street-side of meter, cold water pipe). To be sure grounding exists between the unit and the backbox, place an outside toothed lockwasher under each mounting nut.

2.4.2 Balanced Microphone Inputs

Connect microphone center wire to MIC 1 and the shield side of the wire to the center terminal marked SH (Figure 2-3). Connect the second microphone to MIC 2, and the shield to the center terminal. Use only shielded wires for microphone connections.

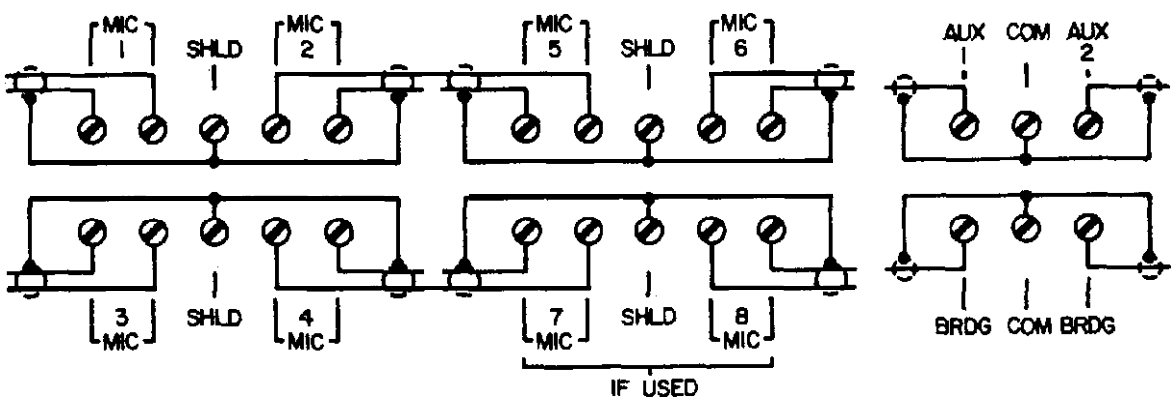


Figure 2-3. Balanced Mic Center Connections.

2.4.3 Single~ended Microphone Inputs

Connect the microphone center wire to a microphone input MIC "N" and the shield to the SHLD center terminal with a jumper wire from SHLD to the unused MIC terminal (Figure 2-4).

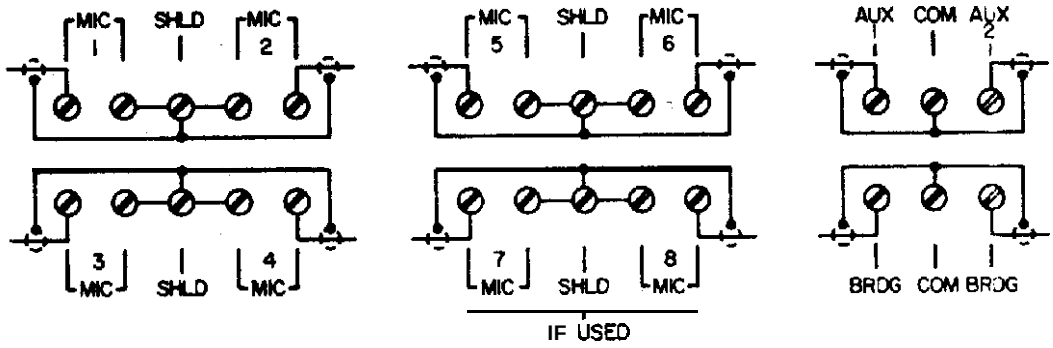


Figure 2-4. Single-Ended Mic Connections.

Connect all unused microphone inputs to the shield common terminal (Figure 2-5).

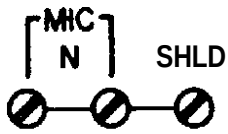


Figure 2-5. Unused Mic Connections.

2.4.4 Auxiliary Program Input

Connect the auxiliary program input (from AM/FM tuner, phono, or tape player: to AUX 1 Connect the shield to the center terminal (Figure 2-3, 2-4).

NOTE

A second auxiliary program input can be connected to AUX 2 terminal with the shield connected to center terminal. Either auxiliary program can then be selected by the front panel controls.

2.4.5 Output

For all single-ended operation connect common to ground (Figure 2-6). Other terminals (8, 16 Ohms; 25, 70 Volt) are used for present output circuits.

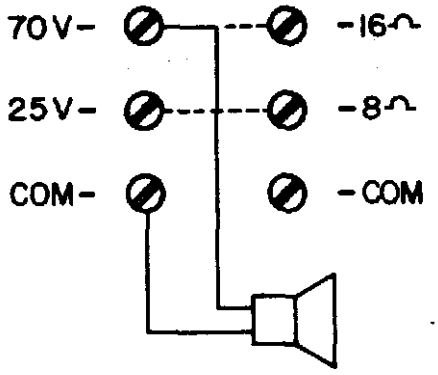


Figure 2-5. Speaker Line Connections.

2.4.6 Amplifier Modifications

Certain custom modifications to the in-wall. amplifien can be made if desired. Refer to Figure, 2-7 for information.

2.4.7 Power

CAUTION

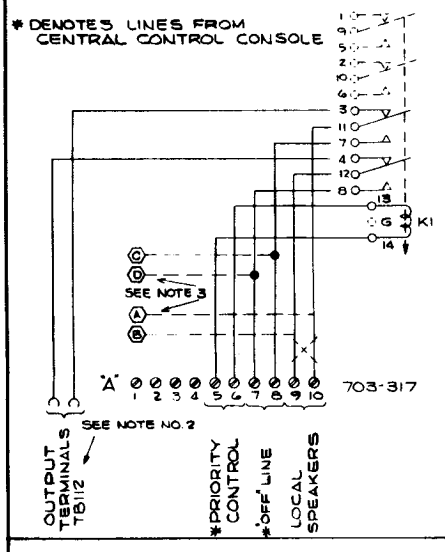
Set all volume controls to "0" before switching on AC Power. NEVER turn up the amplier without an output load; e.g.. speakers (matched).

Plug in the 3-prong AC power plug into the receptacle on the handi-box within the back-box (Figure 2-l).

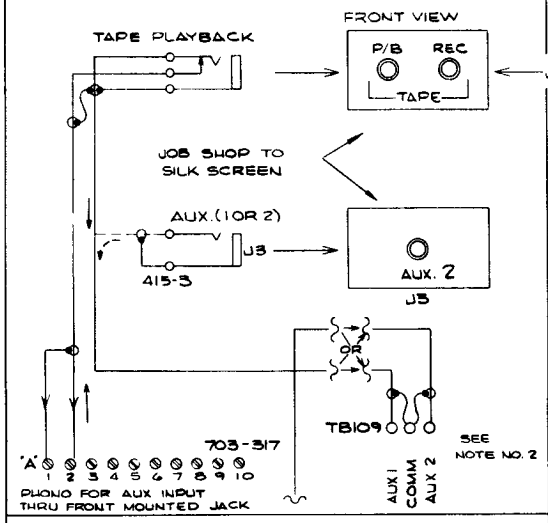
The SO-Watt amplifier is protected by an externally removable 1.5 Ampere slo-blo fuse and en internal 3 Ampere slo-blo fuse. The 120-Watt amplifier is protected by an externally removable 3 Ampere slo-blo fuse (Fig. and an internal 5 Ampere slo-blo fuse.

MODIFICATION NO.1 - PRIORITY RELAY

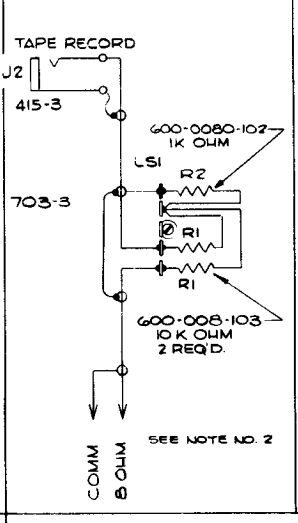
RELAY K1 NOMENCLATURE
24 VDC COIL - 4PDT 596-126
12 VDC COIL - 4PDT 596-112
SOCKET FOR K1'S 597-259
BRACKET FOR K1'S J832



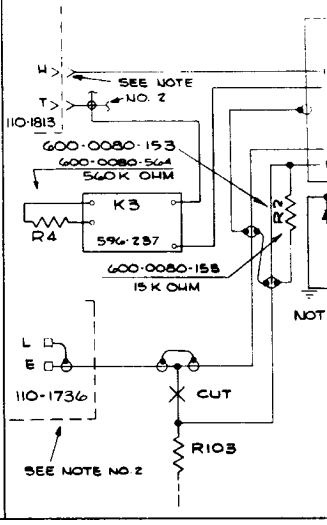
MODIFICATION NO. 2 - INPUT TAPE OR AUX. JACK



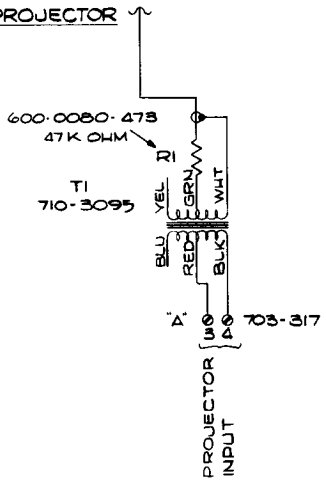
MOD. NO. 5 - OUTPUT TAPE JACK



MODIFICATION NO. 6 - PR

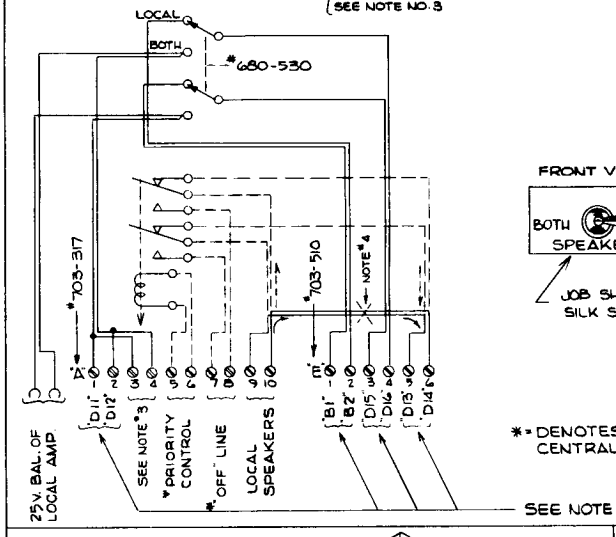


MOD. NO. 4 - PROJECTOR INPUT

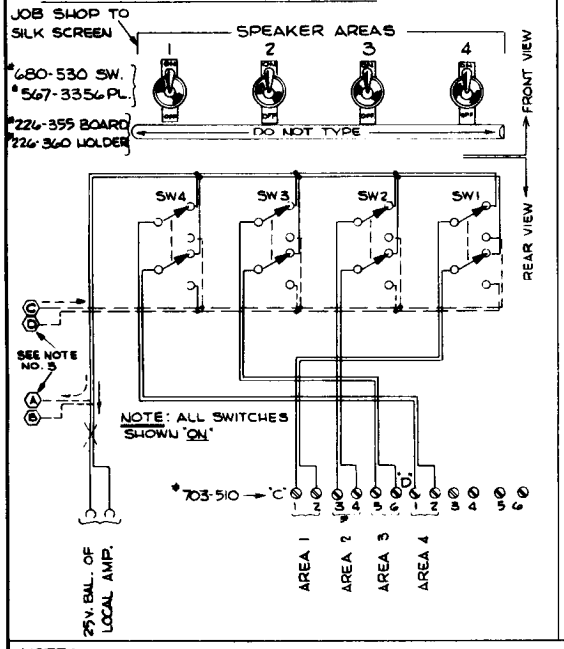


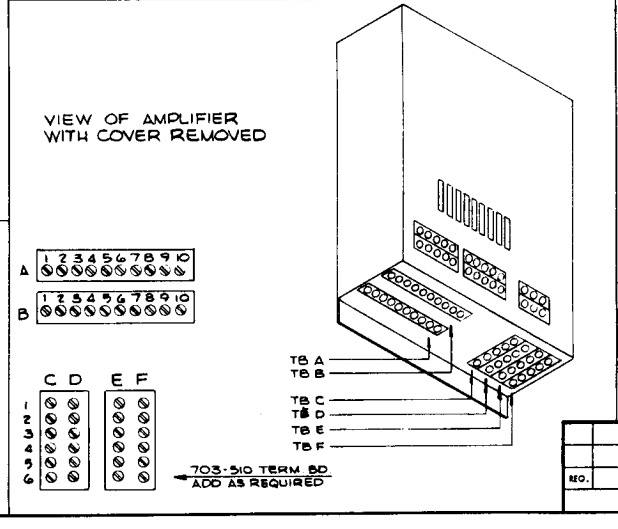
MOD.* 7 - OUTPUT COMBINING SWITCH

WITH OPTIONAL PRIORITY RELAY. SEE NOTE NO. 3



MODIFICATION NO. 3 - AREA SWITCHES (QUANTITY AS REQ'D)





NOTE:
1. CONNECT ONLY 1 REMOTE VOLUME CONTROL KIT TO EACH MICROPHONE STAGE.
2. THESE POINTS ARE ON BASIC AMPLIFIER - SEE AMPLIFIER CIRCUIT.
3. WHEN ADDING PRIORITY RELAY WITH AREA SWITCHES; BREAK-OFF AT DOTTED (X) AND WIRE PER DASHED LINES/ DESIGNATIONS (O)
4. WHEN THE PRIORITY RELAY IS TO BE ADDED, WIRE RELAY PER DOTTED LINES/ RE-ROUTE AROUND DOTTED (X). SEE MOD. 1 FOR RELAY NOMENCLATURE.
5. THESE POINTS CONNECT TO A SECOND ASSOCIATED AMPLIFIER AND VICE-VERSA.

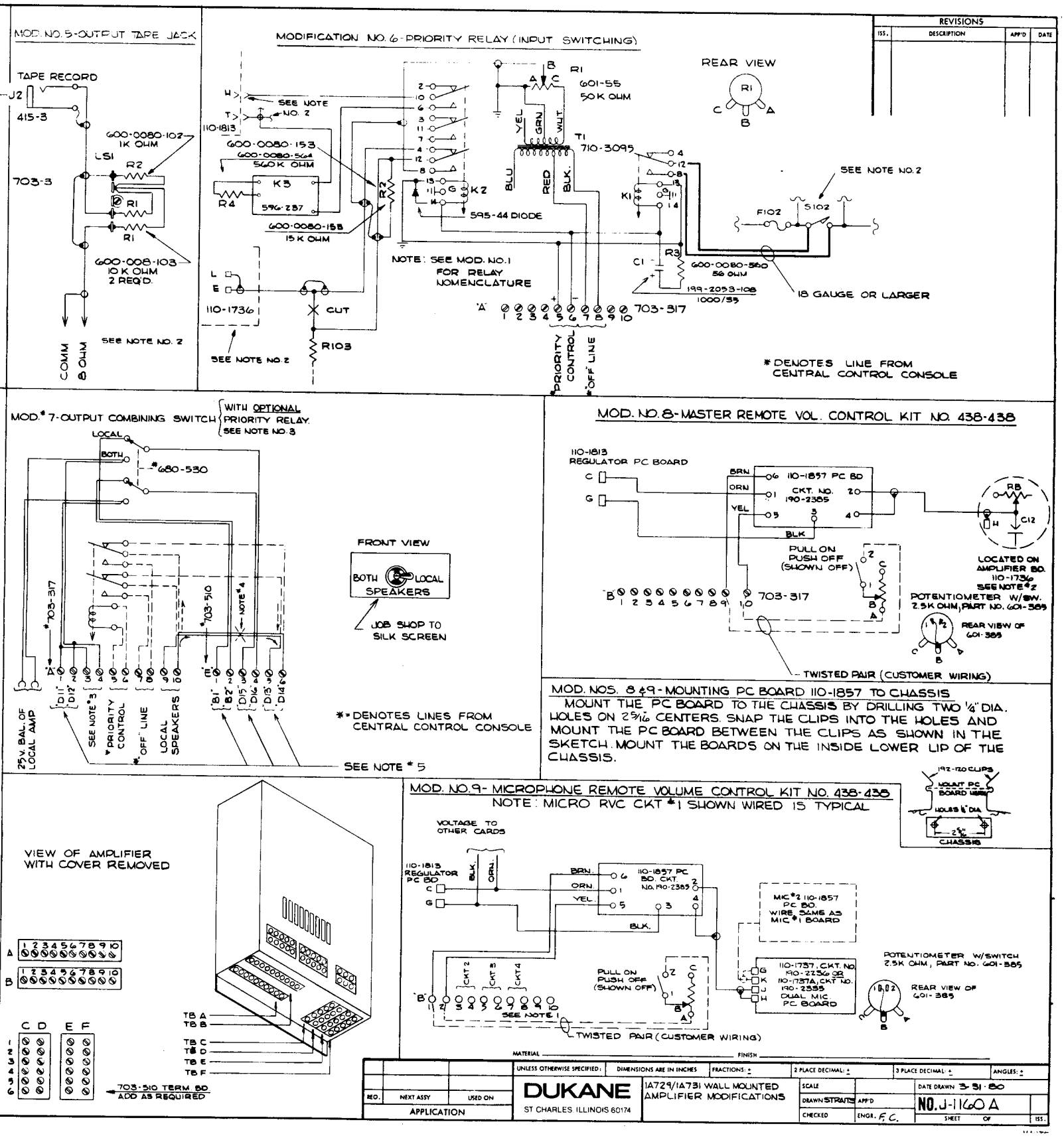


Figure 2-7. 1A729/1A731 Wall Mounted Amplifier Modifications (J-1160A).

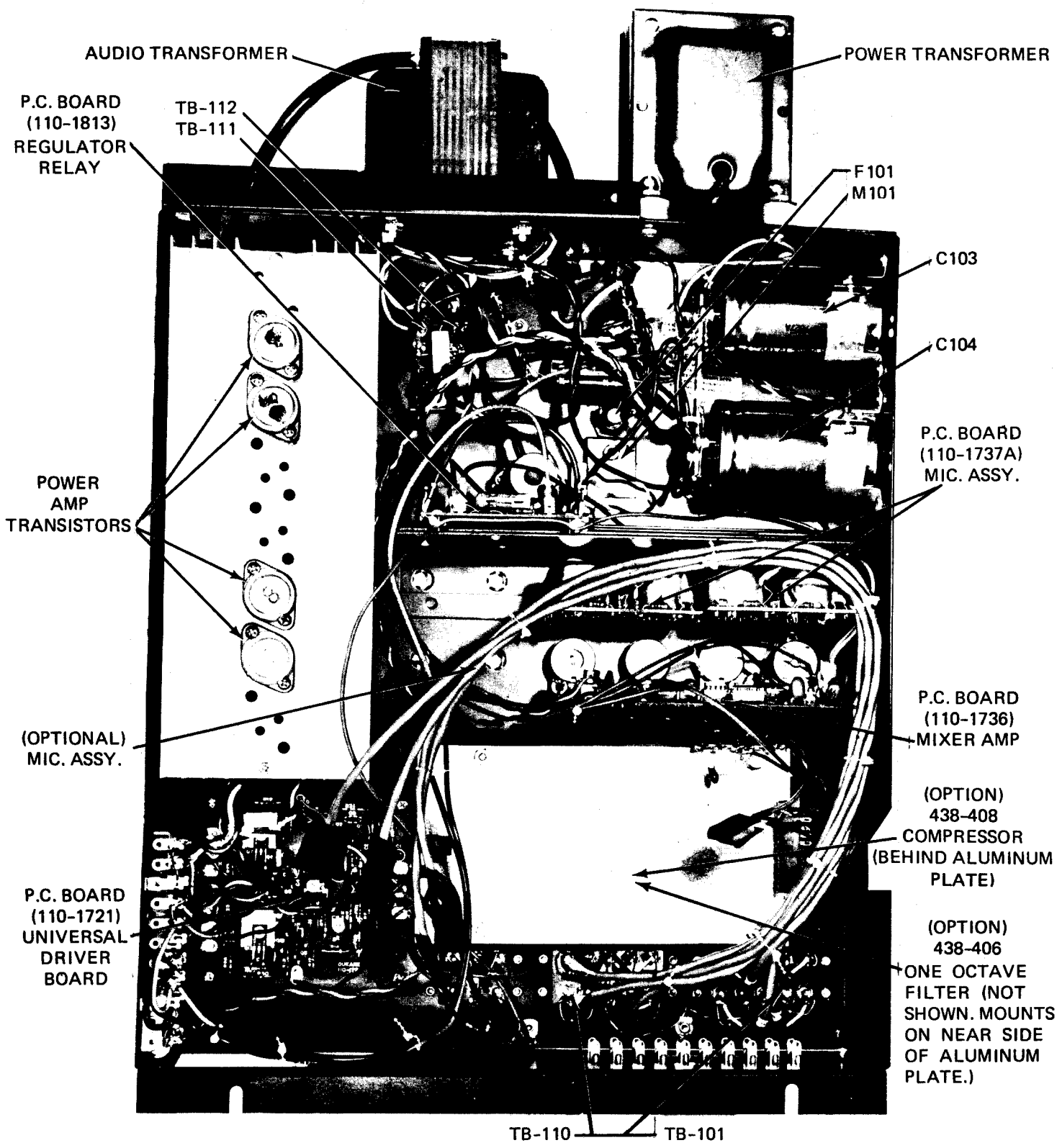
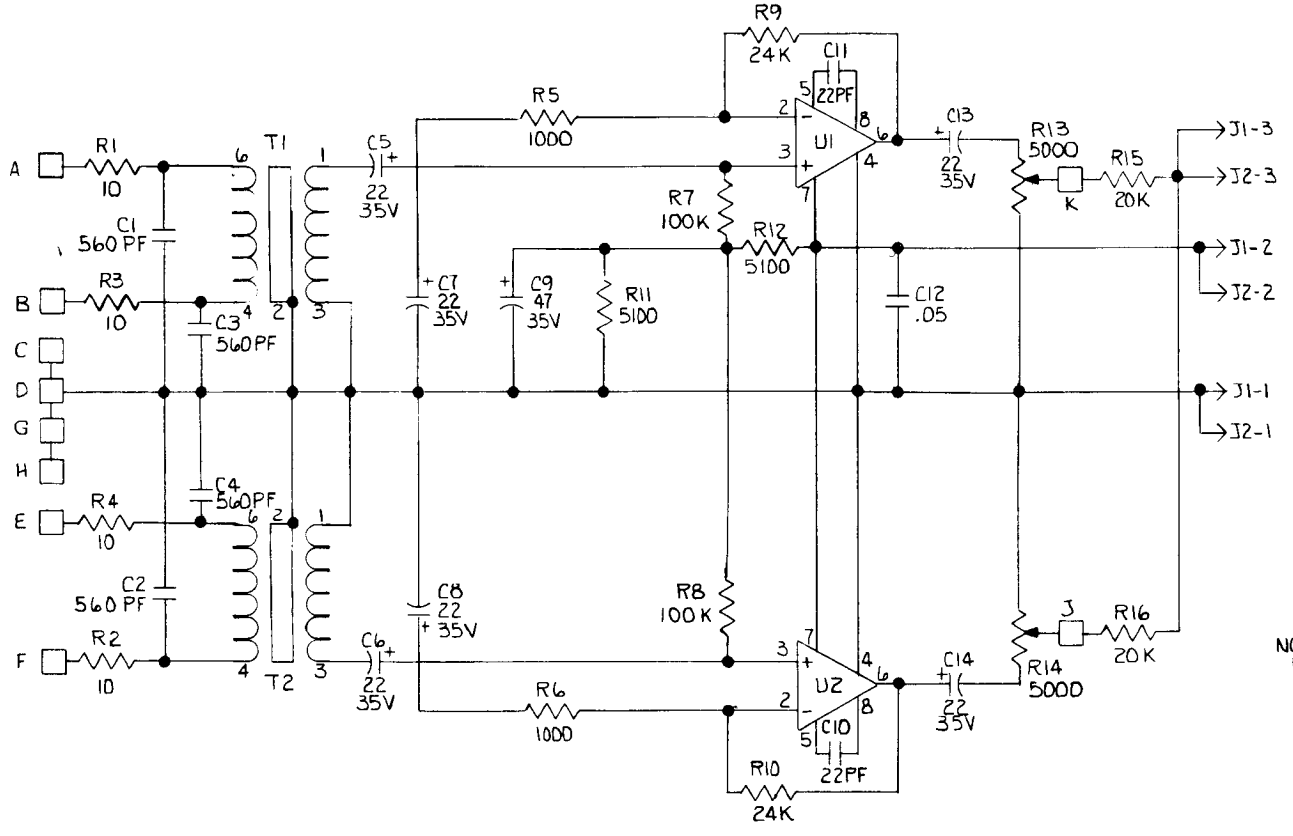


Figure 3-1. 1A729 and 1A731 Component Layout – (Chassis Mounted Parts).

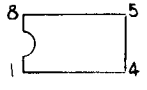
Repair Parts List – Chassis Mounted Parts (1A729)

Legend	Description	Dukana Part No.
C103, C104	Capacitor, 65OOuF. 50WVDC, Lytic	199-2030-658
C105, C106, C107	Capacitor, .OluF, 14OOWV. Disc Car.	199-9255
C108, C109	Capacitor, 25OuF. 5OWVDC, Lytic	199-2048-257
C110	Capacitor, .015uF, lOOWVDC, Mylar	199-4043-I 53
C111	Capacitor, 2OOOuF. 5OV. Lytic	199-2048-208
C112	Capacitor, .033uF, lOOV, Mylar	199-4043-333
C113	Capacitor, 6.8uF. 35V, Tant. Lytic	199-2036-685
CR101	Rectifier	595-74
F101	Fuse, 1.5 Ampere, 125V	320-010-0150
F102	Fuse, 3.2 Ampere, 125V, 3AG	320-019-0320
LED101	Diode Light Emitting	230-8004-001
MI01	Meter VU	485-2014
cl101	Transistor, Power; 2N5882	720-39
Q102	Transistor, Power; 2N5880	720-109
R101, R102	Resistor, 1OOK Ohm, I/2 Watt, 5%	600-0073-104
R103, R104	Resistor, 750 Ohm, 1/2 Watt, 5%	600-0073-751
R105	Resistor, 910 Ohm, I/2 Watt, 5%	600-0073-911
R107, R109	Resistor, .22 Ohm Wire, 5 Watt, 5%. WW	600-1050-R22
R108	Resistor, 20 Ohm Wire, 3 Watt, 10%	600- 1050-200
R112	Resistor, 15 Ohm, 5 Watt, 5%	600-1050-150
R113	Resistor, 100 Ohm, 5 Watt, 5%	600-1050-101
R114	Resistor, 1800 Ohm, 1 Watt, 5%	600-01 IO-182
R115-R122	Resistor, 620 Ohm, I/2 Watt, 5%	600-0073-621
R123, R124	Resistor, 51 Ohm, I/2 Watt, 5%	600-0073-510
S101	Switch, Toggle SPDT	680-733
S102	Switch, AC Output	680-720
S103	Thermostat	702-I
T101	Transformer, Power	710-4239
T102	Transformer, Audio Output	710-2163
	Power Cord	200-204
	Knob	440-303
	Receptacle, Crimp Style, 3 Terminal	597-240-0003
	Receptacle	597-240-0004



REVISIONS			
ISS.	DESCRIPTION	APP'D	DATE

NOTES:
UNLESS OTHERWISE SPECIFIED:
1. RESISTORS ARE IN OHMS (K=1000), 1/2 WATT, ±5%.
2. CAPACITORS ARE IN MICROFARADS.
3. ← DENOTES MALE CONNECTIONS ON J1 & J2.
4. □ DENOTES TAPER PINS.

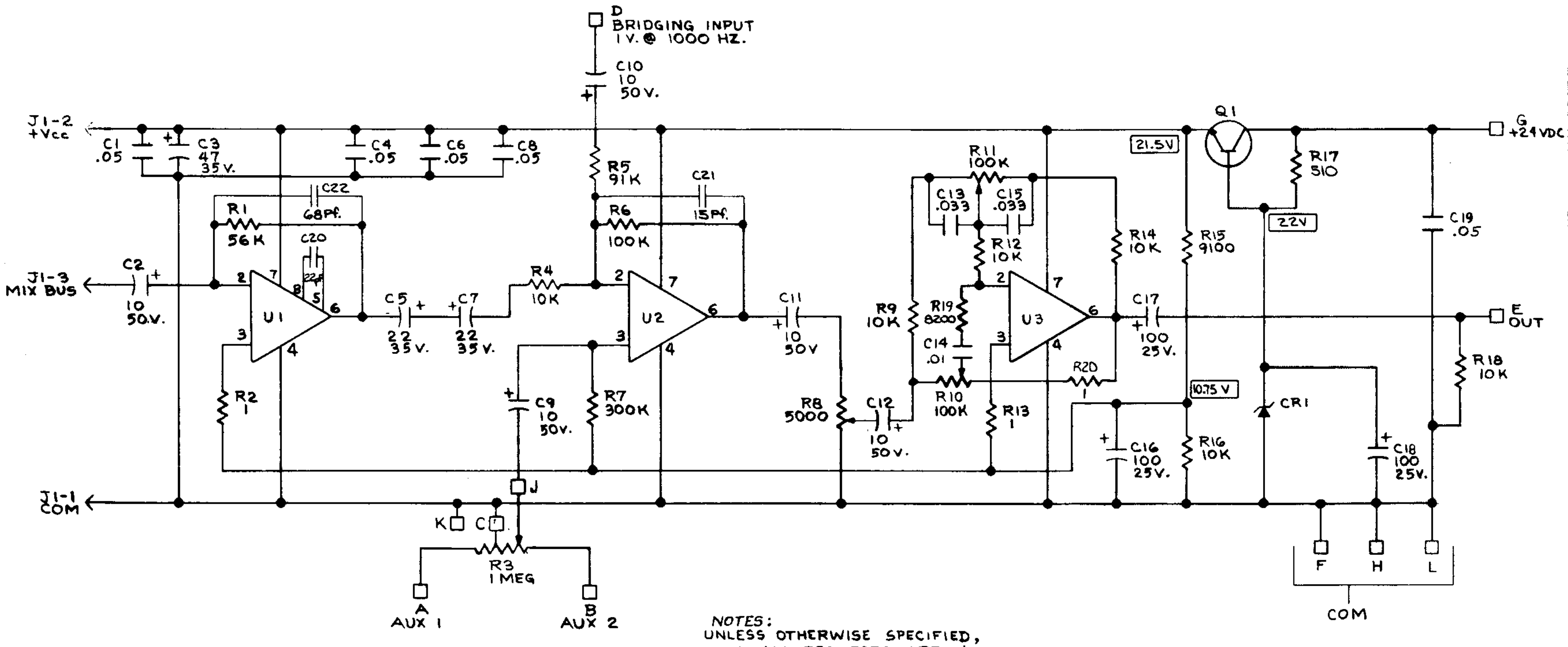


TOP VIEW
U1 & U2 408-36 (NE5534)

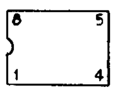
MATERIAL _____ FINISH _____

			UNLESS OTHERWISE SPECIFIED:	DIMENSIONS ARE IN INCHES	FRACTIONS: ±	2 PLACE DECIMAL: ±	3 PLACE DECIMAL: ±	ANGLES: ±
			DUKANE CORPORATION ST. CHARLES, ILLINOIS U.S.A.	SCHEMATIC DIAGRAM DUAL MIC P.C.BD. 110-1737A	SCALE		DATE DRAWN 8/21/78	
REQ.	NEXT ASSY	USED ON			DRAWN B.B.	APP'D	NO. 190-2335	00
APPLICATION					CHECKED	ENGR. RH	SHEET 1 OF 1	ISS

ISS.	DESCRIPTION	APP'D	DATE
01	ADDED TAPER PINS N.J.L.	[illegible]	10/7/77
02	ADDED C20, U1 WAS 408-18	[illegible]	2/4/78
03	ADDED C21, C22; R19 8200Ω WAS 2000 Ω	[illegible]	12-12-78

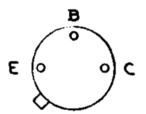


NOTES:
UNLESS OTHERWISE SPECIFIED,
1. ALL RESISTORS ARE 1/2 WATT.
2. TOLERANCE ON FIXED RESISTORS ±5%.
3. RESISTANCE VALUES IN OHMS; K=1000 MEG=1,000,000.
4. CAPACITANCE VALUES IN MICROFARADS.
5. ⟶ DENOTES MALE CONTACT FINGER ON P1.
6. □ DENOTES TAPER PIN.



TOP VIEW

U2, U3 408-18 (MC1741SCP1)
U1 408-36 (NE5534AN)



BOTTOM VIEW

Q1 720-37 (2N3053)

3-11

		1A729
		1A731
		2A68
		2A69
REQ.	NEXT ASSY	USED ON
APPLICATION		

MATERIAL ____ FINISH ____

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES | FRACTIONS: ± | 2 PLACE DECIMAL: ± | 3 PLACE DECIMAL: ± | ANGLES: ±

DUKANE
ST. CHARLES, ILLINOIS 60174

SCHEMATIC DIAGRAM
AMPLIFIER BOARD
110-1736

SCALE — DATE DRAWN 8-3-77
DRAWN RAN APP'D RH
CHECKED [illegible] ENGR. [illegible]

NO. 190-2235 ISS. 03
SHEET 1 OF 1

404-1038

REVISIONS			
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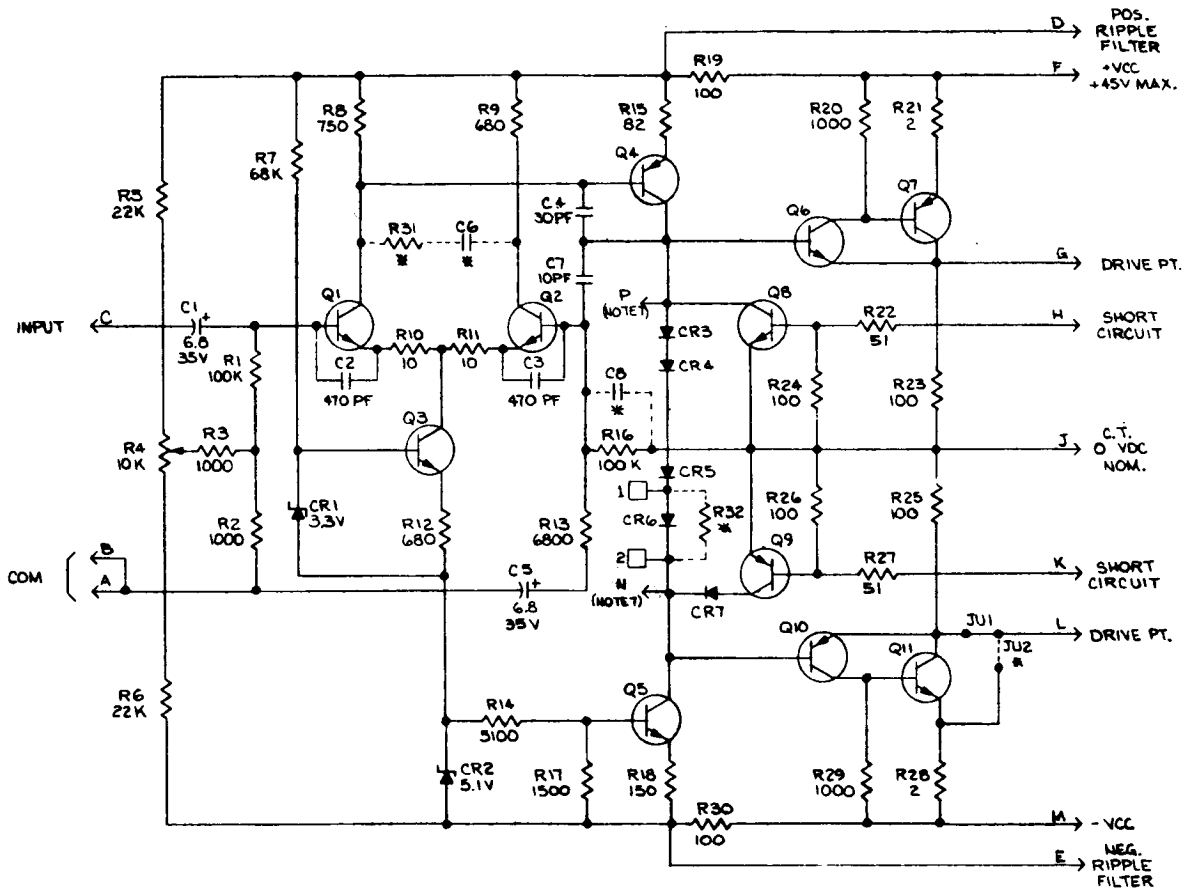
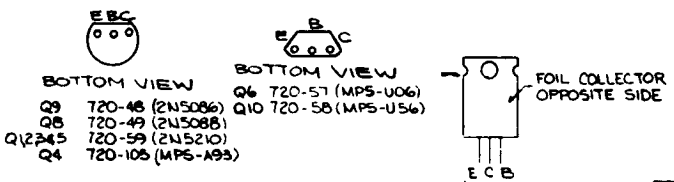
03	C5 6.8uf WAS 47uf		12-12-78



NOTES:
UNLESS OTHERWISE SPECIFIED:
1. RESISTORS ARE .5 WATT ± 5%.
2. RESISTOR VALUES ARE IN OHMS, K=1000Ω.
3. CAPACITOR VALUES ARE IN MICRO FARADS.
4. * DENOTES OPTIONAL COMPONENTS.
5. ← DENOTES SOLDER LUGS.
6. □ DENOTES TAPER PINS.
7. COMPONENTS CR3,4,5 & 6 AND R32 MAY BE EXTERNALLY MOUNTED FROM LUGS N & P.



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REVISIONS			
ISS.	DESCRIPTION	APP'D	DATE
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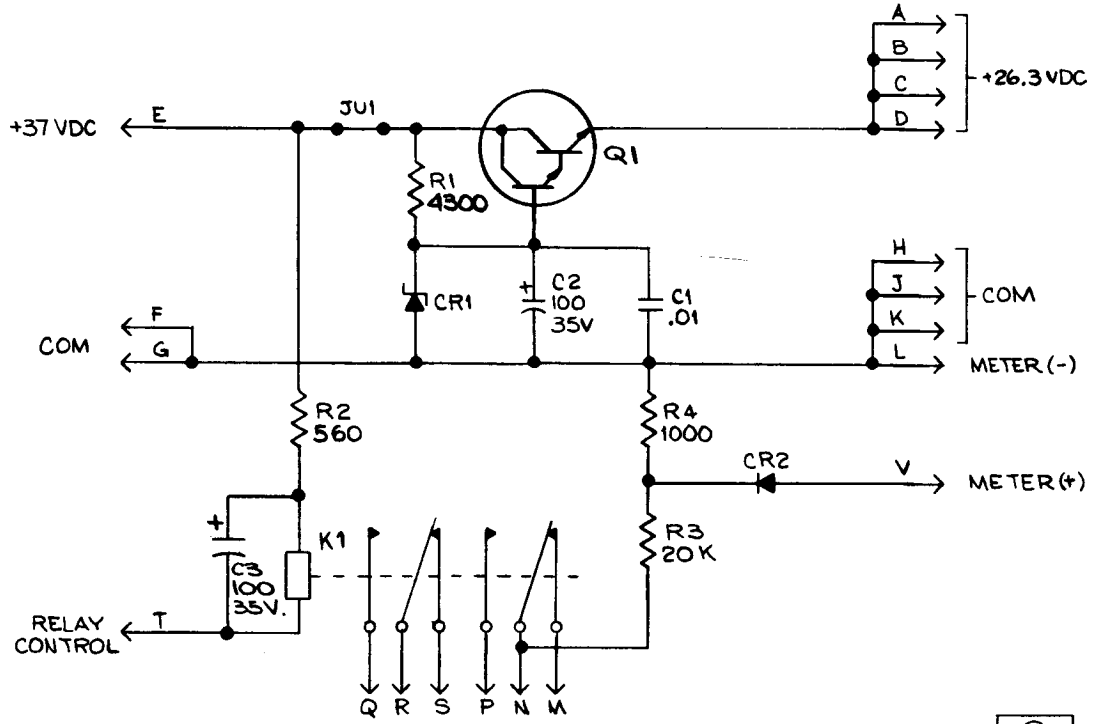
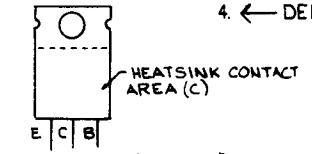


NOTES:
UNLESS OTHERWISE SPECIFIED:
1. RESISTORS ARE .5WATT, ± 5%.
2. RESISTOR VALUES ARE IN OHMS, K=1000.
3. CAPACITOR VALUES ARE IN MICROFARADS.
4. ← DENOTES SOLDER LUGS.



Q1 720-106 (TIP-122)

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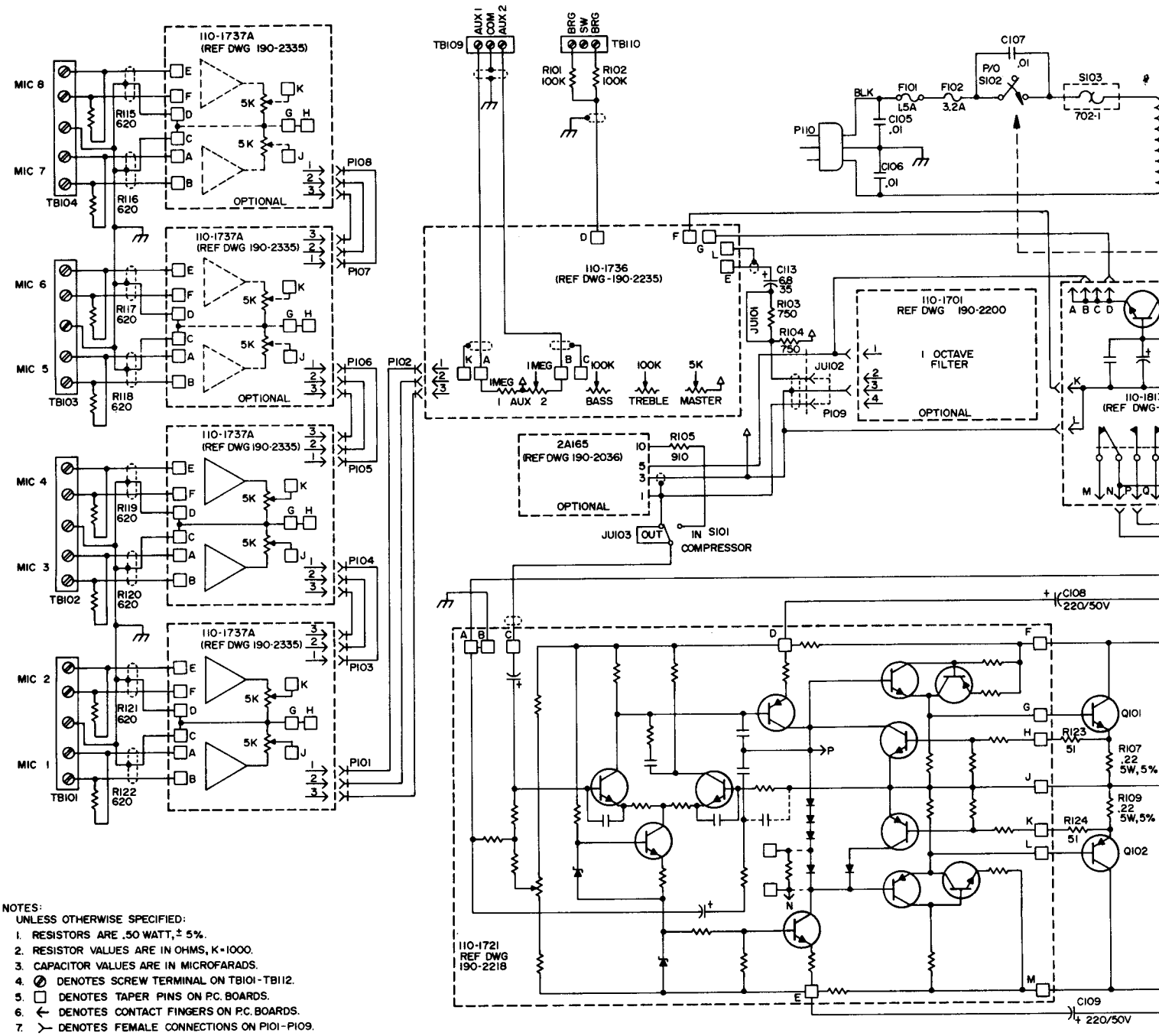
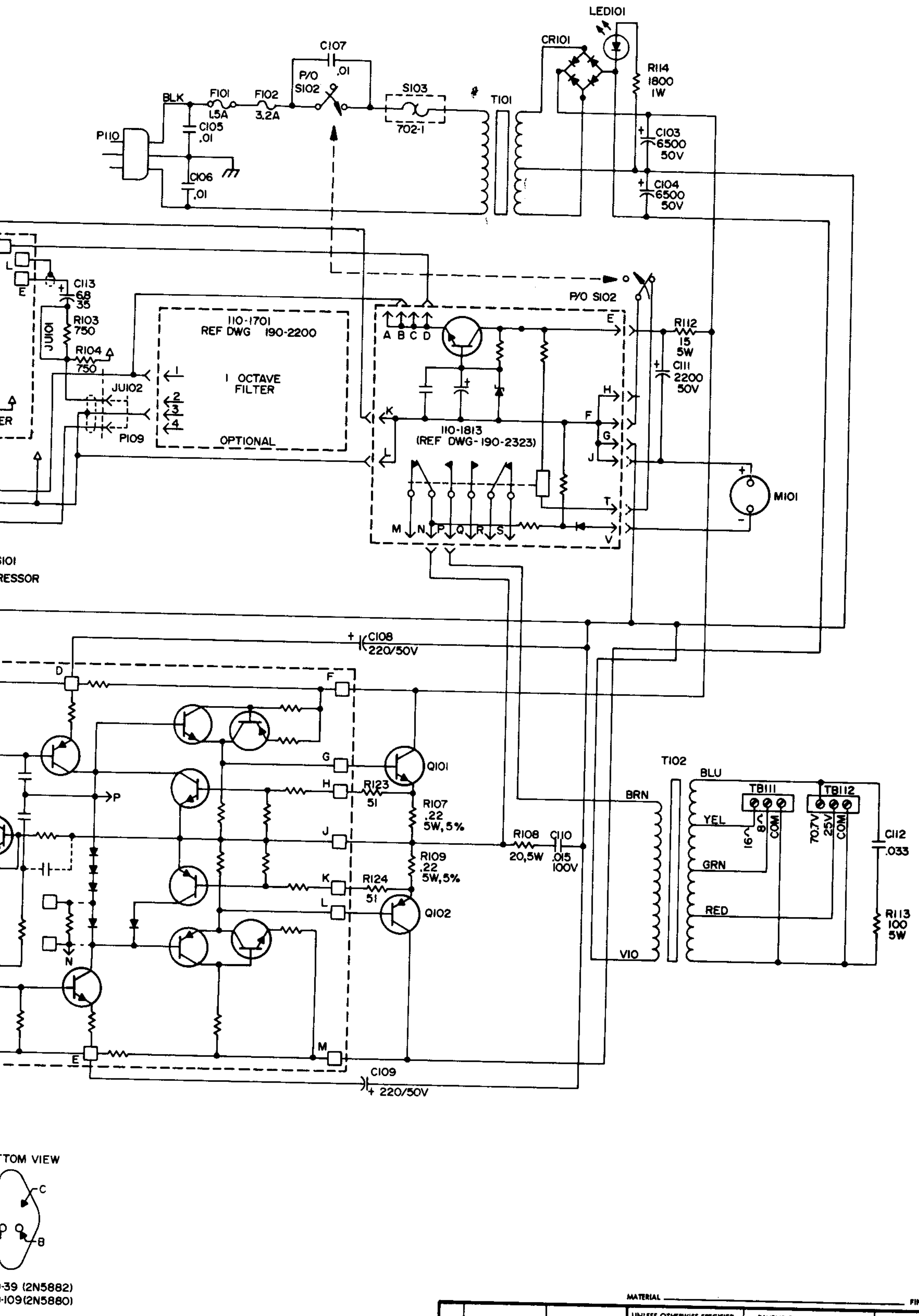
REQ.	NEXT ASSY	USED ON			DRAWN BB	APP'D RH	NO. 190-2323 01
APPLICATION					CHECKED	ENGR.	SHEET 1 OF 1 ISS.



NOTES:
UNLESS OTHERWISE SPECIFIED:

1. RESISTORS ARE .50 WATT, ± 5%.
2. RESISTOR VALUES ARE IN OHMS, K=1000.
3. CAPACITOR VALUES ARE IN MICROFARADS.
4. ⊘ DENOTES SCREW TERMINAL ON TB101-TB112.
5. □ DENOTES TAPER PINS ON P.C. BOARDS.
6. ← DENOTES CONTACT FINGERS ON P.C. BOARDS.
7. ⟩ DENOTES FEMALE CONNECTIONS ON P101-P109.
8. * DENOTES OPTIONAL COMPONENTS ON P.C. BOARDS.

Q101 720-39 (2N5882)
Q102 720-109 (2N5880)



REVISIONS

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DUKANE ST CHARLES ILLINOIS 60174	SCHEMATIC DIAGRAM IN-WALL AMPLIFIER IA729	SCALE / DRAWN RLC / APP'D / CHECKED / ENGR.	DATE DRAWN 8-31-78 / NO. 190-2338 / SHEET 1 OF 1	ISS. 03

REQ.	NEXT ASSY	USED ON
	APPLICATION	