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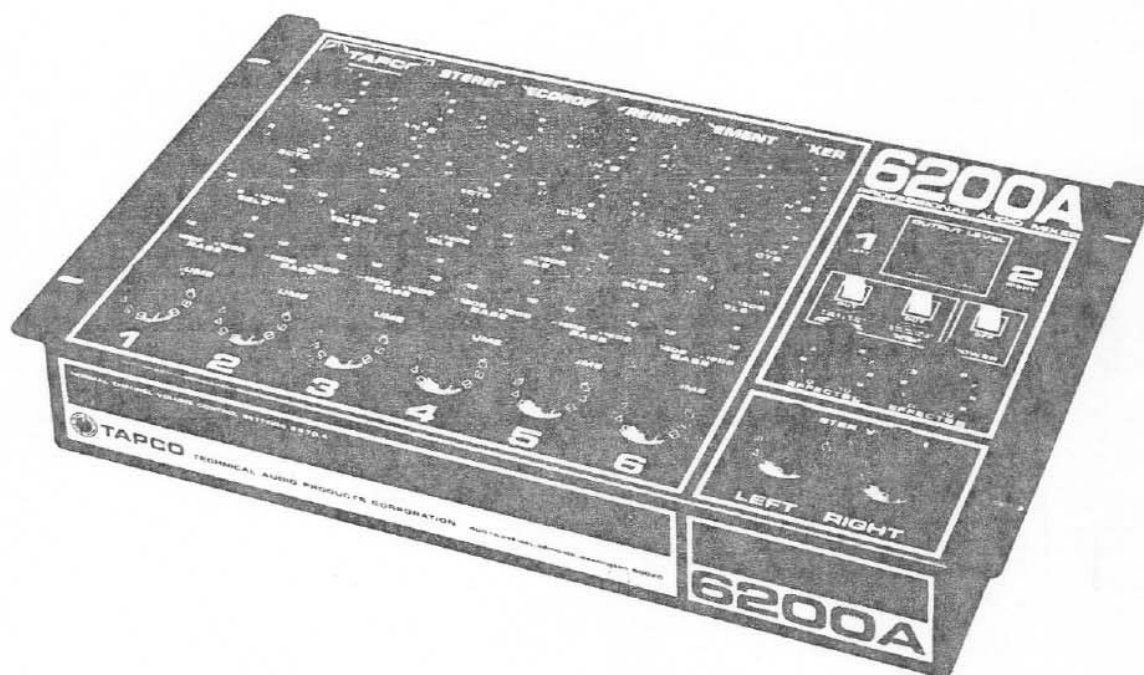
TAPCO

TECHNICAL AUDIO PRODUCTS CORPORATION

6200A & 6200B SERIES SERVICE MANUAL

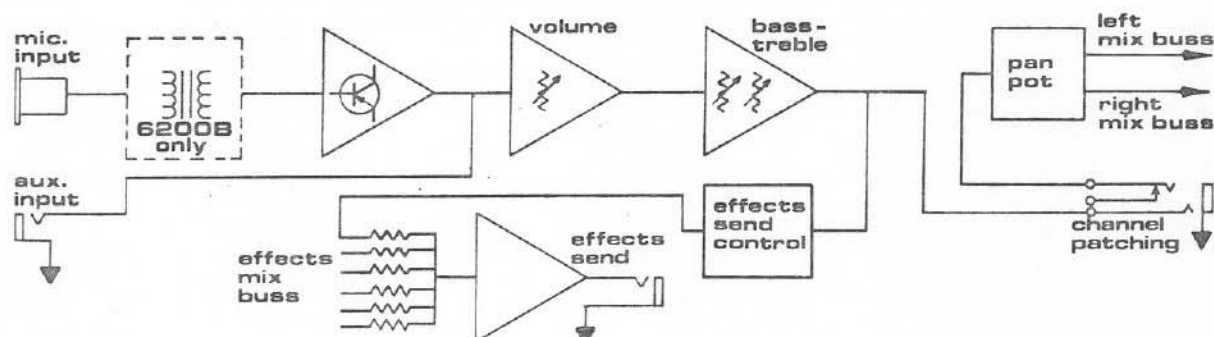
INTRODUCTION

The Tapco models 6200 A and 6200 B are stereo microphone mixers which can amplify and equalize up to six low impedance microphones (or high-level sources) and send them through either of two identical output sections by means of a continuously variable pan pot. In addition, each channel can be fed to an external effects device such as a reverberation unit or echoplex, or to a monitor amplifier by means of the Effects Send control on each channel. Effects can also be added selectively to each individual channel by means of the Channel Patching jack on the rear panel. The output sections contain the rumble filter and high-boost functions, effects return, and output metering.

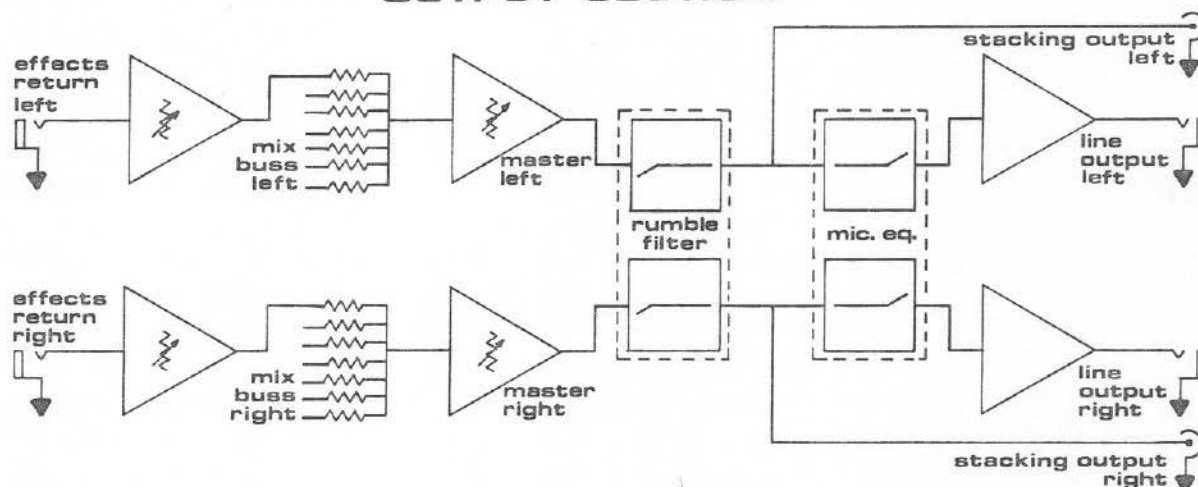


BLOCK DIAGRAMS

SINGLE CHANNEL



OUTPUT SECTION



DISASSEMBLY

ALWAYS unplug the mixer from 117 volt power before attempting any service operations.

The bottom is removable by taking out six black phillips head screws. It is not necessary to remove the feet. Once the bottom has been removed, it will be seen that all integrated circuits have been mounted on the foil side for easy replacement. Should replacement be necessary, please note that the IC's are to be inserted in a specific direction. An index dot on the printed foil pattern corresponds to the indexing notch on the IC case.

TAPCO products are designed with the foil side of the circuit board easily accessible, so that if a part should need replacement, all that is necessary is to unsolder the old part and mount a new one on the foil side. However, if circuit board removal is required, refer to the following steps:

1. remove bottom as outlined above.
2. unsolder the wires coming through the board from the VU meter.
3. remove all control knobs from the top.
4. remove all pot nuts, and the spacer near the meter.
5. swing out the circuit board, being careful not to lose any of the lockwashers between the pots and the chassis.

Assembly is the reverse of these steps. Be sure that all lockwashers have been placed between the pots and the chassis. When replacing the bottom, do not over-tighten the six sheet metal screws.

CIRCUIT DESCRIPTION

A. The input sections utilize a single common-emitter transistor amplifier (Q1), which is operated at relatively low gain for optimum overload characteristics and low noise. The model 6200 B is also equipped with a low-ratio input transformer for broadcast and other professional applications. The primary of this transformer is center-tapped, and the user may wish to utilize this feature for application of phantom microphone power if it is so desired.

The input stage is followed by an operational amplifier (Z1), whose feedback loop resistance is varied to control the channel volume. This stage is then followed by an additional op amp which provides gain for the Baxendall-type tone controls. From here, the signal travels into the pan pot circuit via the Channel Patching jack. Here the signal may be interrupted for insertion of an external equalizer or effects device. Also it will be noted that when a plug is only inserted part way into the channel patching jack, the signal path is not broken, but the channel signal is available to be fed into a multitrack tape deck or separate monitor mix. This eliminates the need for an external "Y" cord which most other portable mixers require.

Thirdly, each channel signal can be sent, via the Effects Send control, to a separate mix buss. All six Effects Send controls are summed, and the output of this buss is available at the Effects Send jack.

B. An additional note about the AUX-IN jacks is in order. These jacks are intended to be used with a single conductor $\frac{1}{4}$ " phone plug such as the Switchcraft 270 or 280. Looking at the schematic, it will be seen that when the plug is inserted, the barrel will ground the ring terminal of the jack. This does two things: it shorts out any residual noise that may be coming from the mike preamp stage and it forms the basis for a voltage divider to attenuate the incoming signal. This incoming high-level signal then sees an input impedance somewhat greater than 82K ohms since it is applied to the tip contact of the jack. Also, since the signal is being applied directly to the input of the opamp volume control stage, proper use of the channel volume control will make this input virtually overdrive-proof. This jack can also be used as a pre-fader cue output. For more information see owners manual.

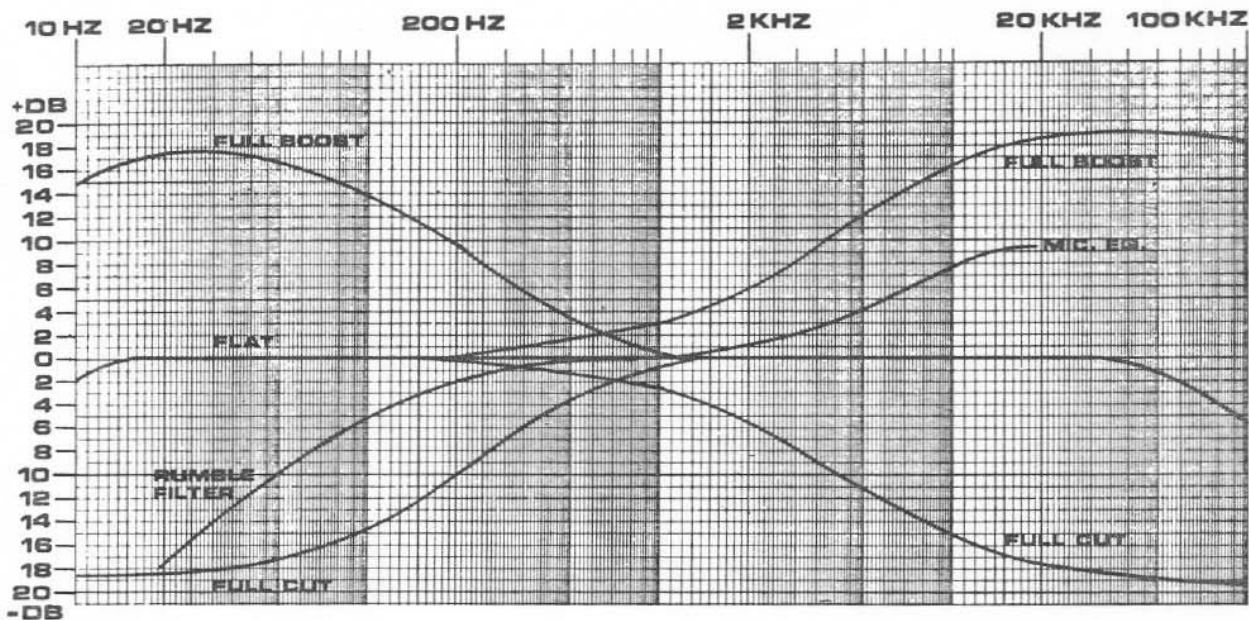
C. The pan pots are continuously variable shunt faders which route the channel output signals into the left and right main mix busses. These mix buss signals are summed by identical amplifier stages which insure no channel interaction. Also note that the Effects Return amplifiers are also summed into the main mix busses.

D. Signals from the two mix busses and the Effects Return stages are each fed to an active volume control amplifier stage (Z2B). This controls the master volume. It will be noted that the technique of controlling negative feedback to vary volume results in an optimum signal-to-noise ratio under all operating conditions and provides virtual immunity from overdrive distortion. At the output of these stages, a switchable RC network (C18, R57) provides low frequency rolloff to lessen rumble and subsonic pickup. Following this, an isolation network (R41-42) has been inserted so that mixers may be paralleled without causing undue loading or interaction. After this, another RC network (C19, R44) provides a high frequency boost so that compensation for poor microphone response can be added at the operator's discretion. The final amplifying stage (Z3C) is operated at fixed gain, thus insuring sufficient output power to drive all types of loads including 600 ohm program lines.

E. The VU meters read relative levels at the mixer output. They are adjustable by means of internal trimpots (R61, R64) on the edge of the circuit board. When setting these trimpots, it is a good idea to be absolutely sure that identical signal levels are indeed present at each output. If not, the meters will indicate an erroneous stereo balance.

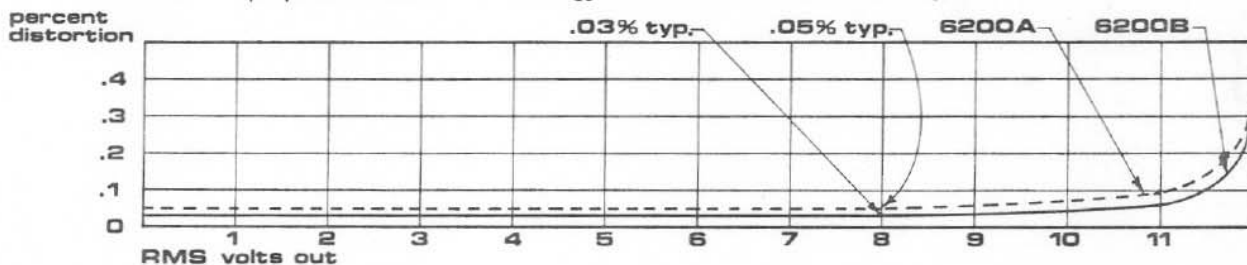
F. The power supply consists of three sections: a 6 volt AC winding for the meter lamps, a full wave zener regulated supply to provide plus/minus 18 volts to the opamps, and a bridge rectified supply to provide -38 volts to the microphone preamp stages. The regulator transistors (Q2, Q3) in this supply act to "amplify" the constant voltage placed at their base by the zener diode/capacitor filter network. This provides essentially ripple-free voltage to the class-A amplifiers. A fuse link of #34 wire protects the primary circuit. This fuse link is mounted on the foil side of the PCB.

EQ. CURVES

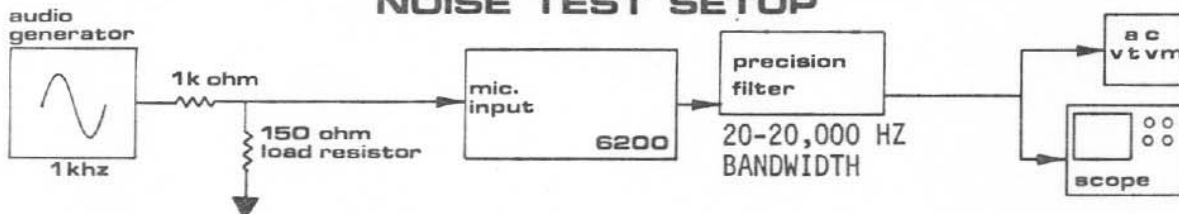


DISTORTION CURVES

30 mV (-30 DBV) input signal at mic. input.
 Channel volume controls set at 2.5.
 All equalization set flat.
 Output signals taken from line output.
 Test equipment: Sound Technology 1700 A distortion analyzer.



NOISE TEST SETUP



CONDITIONS

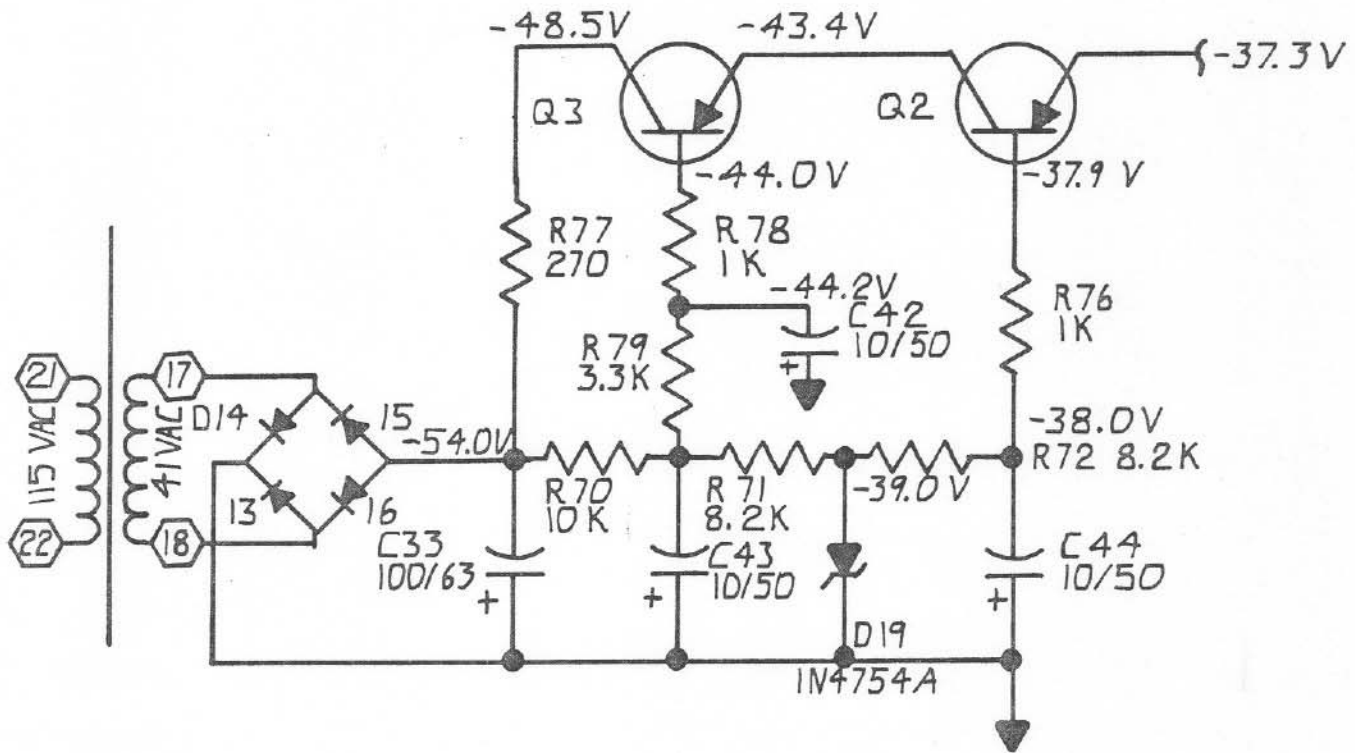
Channel volume control set at 7.5.
 Input signal level of 10 mv
 Output voltage 5 V RMS
 Note: Use a precision noise filter & a
 precision 1% metal film source resistor.

RESULTS

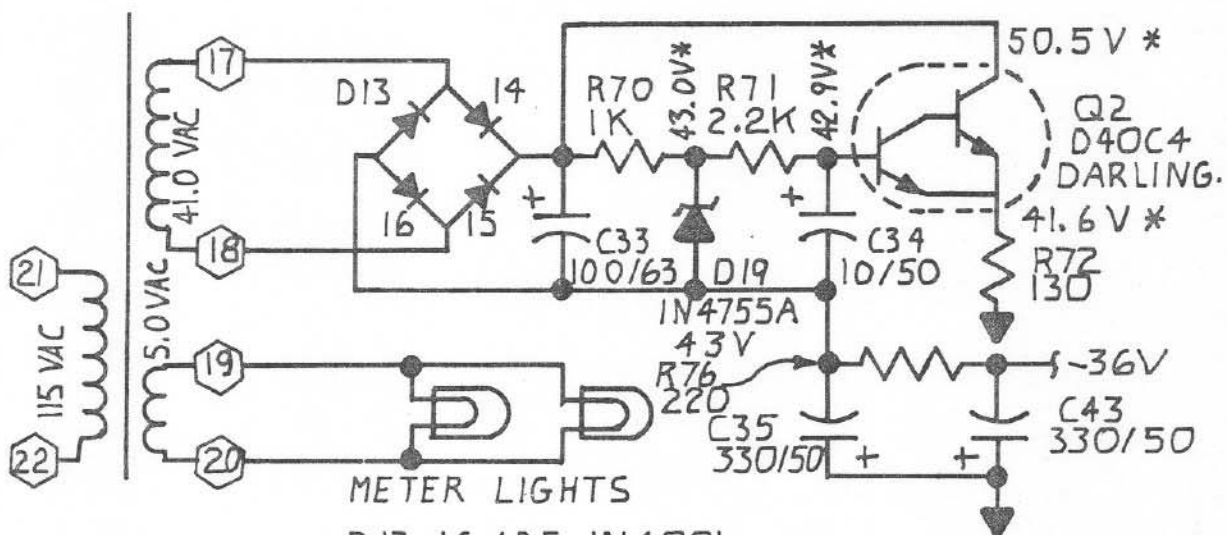
6200A: -126.5dBV EIN with
 20-20,000 Hz Bandwidth
 6200B: -128.5dBV EIN with
 20-20,000 Hz Bandwidth

POWER SUPPLY

NEW POWER SUPPLY: 6200A FROM S/N 125001 ON
6200B FROM S/N 125051 ON



EARLIER POWER SUPPLY: 6200A S/N 115001-115050
6200B S/N 125001-125050



D13-16 ARE IN4001

* MEASURE WITH RESPECT TO -38 V LINE.

SPECIFICATIONS

<u>General</u>	<u>6200A</u>	<u>6200B</u>
Frequency Response	15HZ - 40KHZ ± 1 dB	15HZ - 40KHZ ± 1 dB
Harmonic Distortion	under .1% @ 1000HZ	under .06% @ 1000HZ
Equivalent Input Noise	126.5 dB	128.5 dBV
Signal to Noise Ratio (-50 DBM reference)	76.5dB	78.5dB
Output Noise	20uV	20uV
Total Available Gain	96dB	96dB
Line Output Capability	10 volts RMS @ 2000 ohms +13 DBM @ 600 ohms	10 volts RMS @ 2000 ohms + 13 DBM @ 600 ohms
Line Output Impedance	10 ohms	10 ohms
Effects Send Capability	10 volts RMS + 13 DBM @ 600 ohms	10 volts RMS + 13 DBM @ 600 ohms
Effects Output Impedance	10 ohms	10 ohms
Effects Return Capability	up to 10 volts RMS	up to 10 volts RMS
Effects Return Impedance	68 k ohms	68 k ohms
Output Meters	adjustable	adjustable
Microphone EQ	+ 9dB @ 20KHZ	+ 9 dB @ 20KHZ
Rumble filter	-6 dB @ 100 HZ 6 dB / octave	-6 dB @ 100 HZ 6 dB / octave
Power Consumption	10 watts nominal	10 watts nominal
Weight	12 lbs	12½ lbs
Bass & Treble action	± 18 dB	± 18 dB
Microphone Input Matching	30 - 600 ohms	30 - 600 ohms
Common mode rejection	N/A	105 dB
<u>Channel Patching</u>		
Output Capability	10 volts RMS	10 volts RMS
Output Impedance	220 ohms	220 ohms
Return Impedance	12 K ohms	12 K ohms

FACTORY SERVICE

TAPCO has a staff of highly qualified service personnel who can assist with any field problems which may arise, and are able to answer questions concerning any aspect of the use and performance of our products. Our telephone number is area code ~~206-775-4411~~ 206 883 3510
If you wish written information, replacement parts, or factory service, our address is:



3810-148TH AVE. N.E.
REDMOND, WA 98052

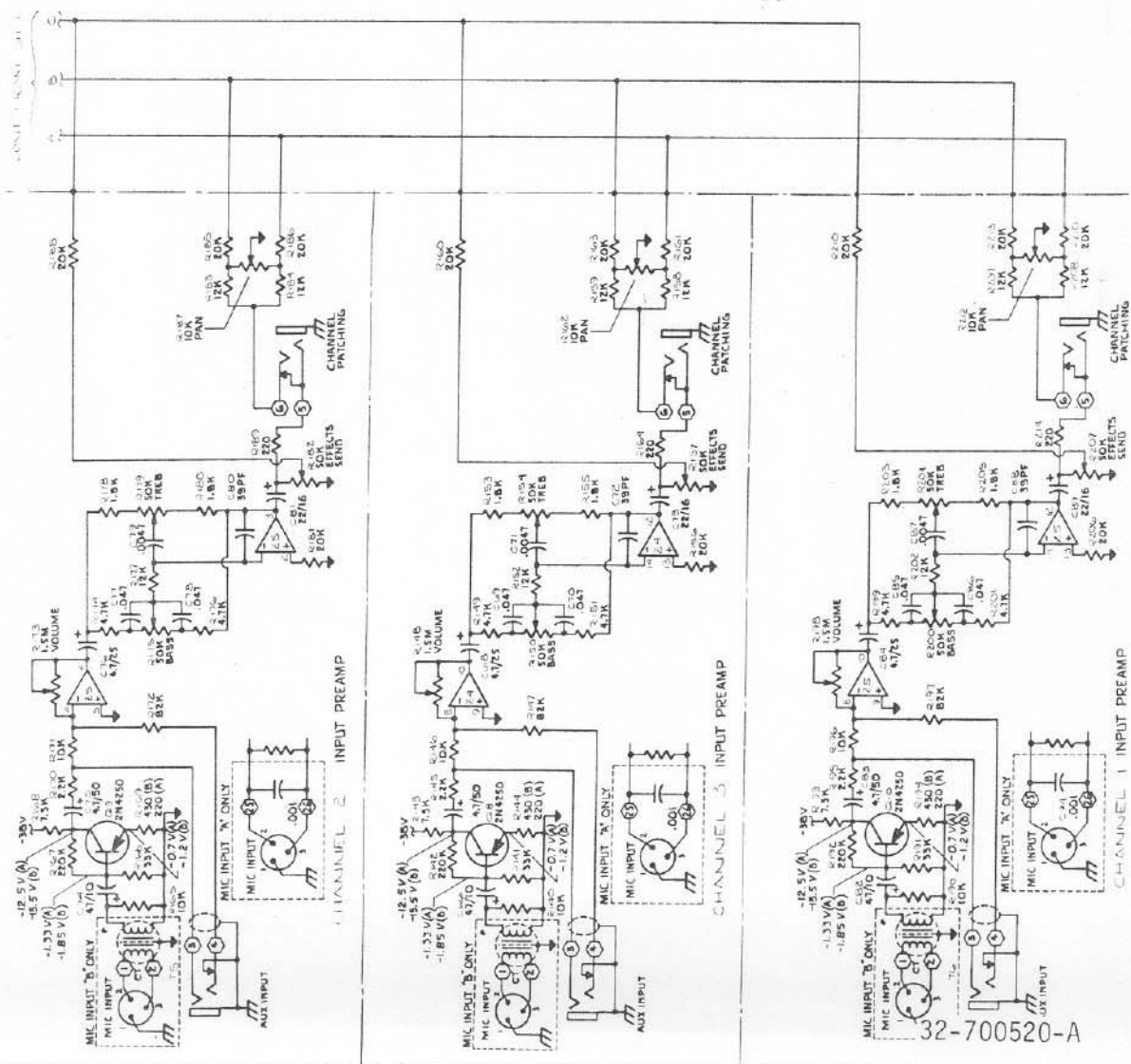
PARTS LIST

item no.	tapco no.								
5	001211	CAPACITOR	ELECT	AL	AXIAL				47/10
6	001403	CAPACITOR	ELECT	AL	AXIAL				2.2/25
18	001412	CAPACITOR	ELECT	AL	AXIAL				100/25
8	001425	CAPACITOR	ELECT	AL	AXIAL				330/25
7	001605	CAPACITOR	ELECT	AL	AXIAL				4.7/50
9	001606	CAPACITOR	ELECT	AL	AXIAL				10/50
10	001612	CAPACITOR	ELECT	AL	AXIAL				100/50
3	001641	CAPACITOR	ELECT	AL	AXIAL	LO	LEAKAGE		4.7/50
19	001712	CAPACITOR	ELECT	AL	AXIAL				100/63
12	002016	CAPACITOR	TANTALUM						.68/35
**	4	003001	CAPACITOR	MYLAR	10%				.001/50
13	003019	CAPACITOR	MYLAR	10%					.0033/50
14	003025	CAPACITOR	MYLAR	10%					.0047/50
15	003061	CAPACITOR	MYLAR	10%					.047/50
16	004013	CAPACITOR	CERAMIC	10%					20PF/100
17	004022	CAPACITOR	CERAMIC	10%					39PF/100
20	004210	CAPACITOR	ELECT	AL	AXIAL	NONPOLAR			22/10
21	004215	CAPACITOR	ELECT	AL	AXIAL	NONPOLAR			47/10
11	005080	RESISTOR	CF	.5W	5%				3.3K
45	005400	POT PCB	V	AUDIO	20%	(CV96101)			1.5M
46	005401	POT PCB	V	D TAPER	20%	(TC9611)			50K
47	005407	POT PCB	V	AUDIO	20%	(MV9617)			500K
48	005408	POT PCB	V	LINEAR	20%	(PP96169P)			10K
49	005410	POT PCB	VERT	TRIM					5K
52	006002	TRANSISTOR	SIG	PNP		40V			2N4250
51	006004	TRANSISTOR	SW	PNP					2N3645
54	007004	IC	QUAD OP	AMP	(TESTED)				4136
57	008008	DIODE	SIG		GERM				1N100
58	008021	DIODE	PWR		1A/50V				1N4001
59	008044	DIODE	ZENER		39V				1N4754
60	008046	DIODE	ZENER		18V				1N4746A
	300001	CONNECTOR	JACK	PHONE		.25 OD			(11)
	300004	CONNECTOR	JACK	PHONO					(3501 FR)
	300008	CONNECTOR	JACK	MIC					(SWCFT D3F)
	300009	CONNECTOR	JACK	PHONE	STEREO		W/SW		(1138)
62	301002	SWITCH	PADDLE	DPDT	(WHITE)				(SGD0410-PW-B)
61	301004	SWITCH	PADDLE	DPDT	(RED)				
63	301043	LAMP	INCAND	6V T-1	3/4				(OL 2181)
	302003	TRANSFORMER	PWR		120/30	CT/38/6			
*	65	302043	TRANSFORMER	MATCHING	150	OHM/600	OHM		PCB MT
*	64	302045	SHIELD	TRANSFORMER		MU-METAL			
	303001	CORD	PWR	18/3		SVT	6 FT		BLK
	303003	STRAIN RELIEF							(SMITH 939)
	303007	RUBBER FEET							
66	303009	SOLDER LUG		PIN	3/8	ID			(SMITH 1497)
	303008	SOLDER LUG		1 PIN	NO. 8				(SMITH 1415-8)
	303010	SPACER	.8 LG	.25 OD	NO. 6	ID			DWG 24034
	400001	KNOB	W/POINTER		PUSH-ON				.75 OD
	400002	KNOB	NUMBERED		PUSH-ON				1.5 OD
	450011	CHASSIS			6200A				SCREENED
	450012	CHASSIS			6200B				SCREENED
	450013	BOTTOM			6200 A/B				DWG 24027
67	455001	METER	DUAL	180	MICROAMP				
	500100	SCREW	THD	FRMG	PHH				6-32X1/2
	500102	SCREW	MACH		PH PNH	BLK			6-32X3/8
	500103	SCREW	MACH		PH PNH	BLK			6-32X1 1/4
	500190	NUT	KEP						6-32
	500200	SCREW	THD	FRMG	PH PNH	BLK			8-32X1/2
	500590	NUT	HEX		APPEARANCE				3/8-32UNEF-2A
	500591	NUT	HEX						3/8-32UNEF-2A
	500680	WSHR	LKG		IN STAR				3/8
	500681	WSHR	THIN		APPEARANCE				3/8
	500800	RIVET	POP						(CHERRY SSP-4-3)

* 6200 B ONLY
 ** 6200 A ONLY

REV	DATE	DESCRIPTION
1	10-1-73	INITIAL DESIGN
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REV	DESCRIPTION	DATE	BY	CHKD
1	REVISED TO ADD 3RD CHANNEL	11-10-77	W. J. HARRIS	W. J. HARRIS
2	REVISED TO ADD 4TH CHANNEL	11-10-77	W. J. HARRIS	W. J. HARRIS



REV	DESCRIPTION	DATE	BY	CHKD
1	REVISED TO ADD 3RD CHANNEL	11-10-77	W. J. HARRIS	W. J. HARRIS
2	REVISED TO ADD 4TH CHANNEL	11-10-77	W. J. HARRIS	W. J. HARRIS

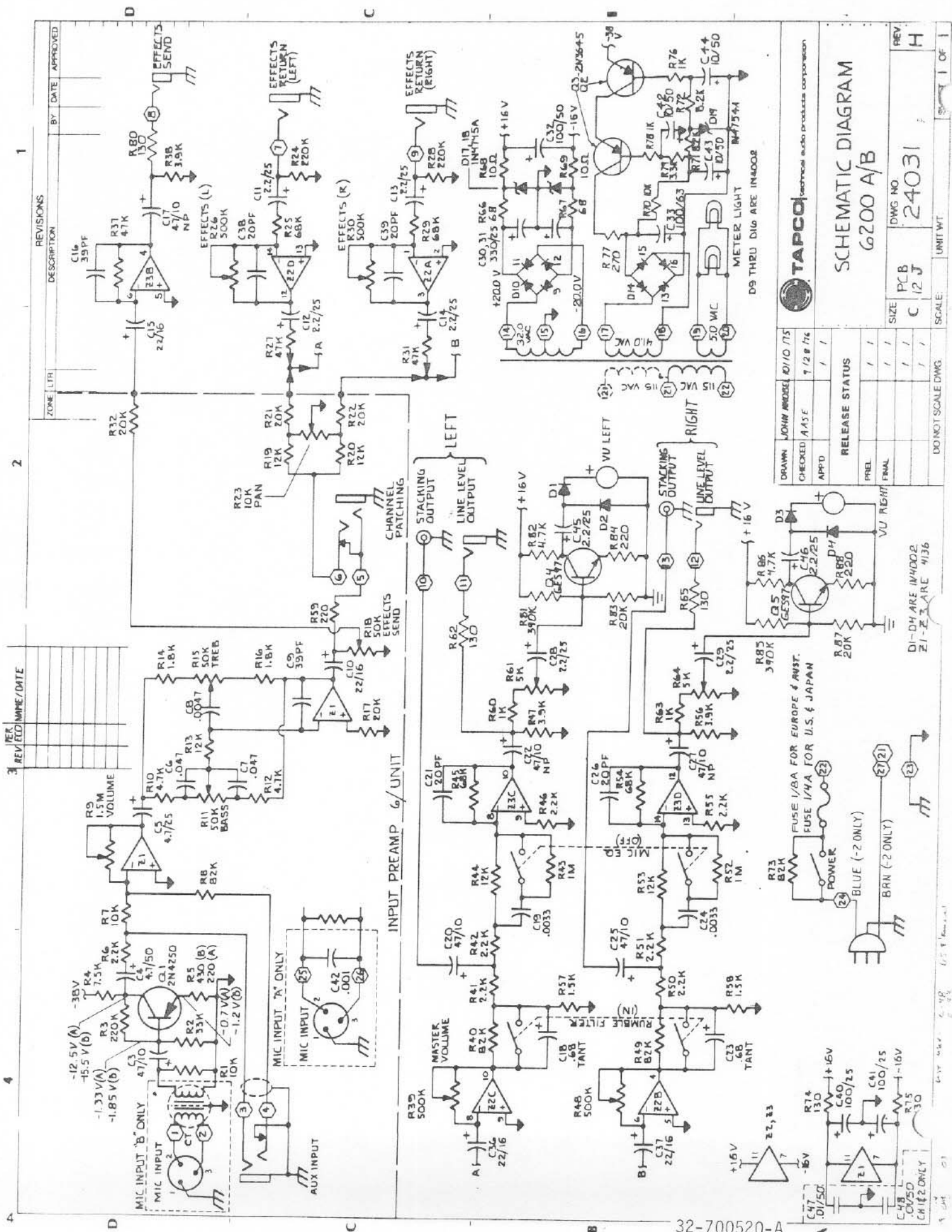
REV	DESCRIPTION	DATE	BY	CHKD
1	REVISED TO ADD 3RD CHANNEL	11-10-77	W. J. HARRIS	W. J. HARRIS
2	REVISED TO ADD 4TH CHANNEL	11-10-77	W. J. HARRIS	W. J. HARRIS

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2	REVISED TO ADD 4TH CHANNEL	11-10-77	W. J. HARRIS	W. J. HARRIS



		SCHEMATIC DIAGRAM G200 A/B		REV. H
DRAWN JOHN MODEL	CHECKED A. J. E.	DATE 1/28/74	SIZE C 12 J	DWG NO. 24031
RELEASE STATUS		UNIT WT.		
DO NOT SCALE DWG.		SCALE		
DO NOT SCALE DWG.		SCALE		

DI-DH ARE IN4002
Z1-Z3 ARE 4136

FUSE 1/8A FOR EUROPE & JAPAN.
FUSE 1/4A FOR U.S. & JAPAN.

POWER

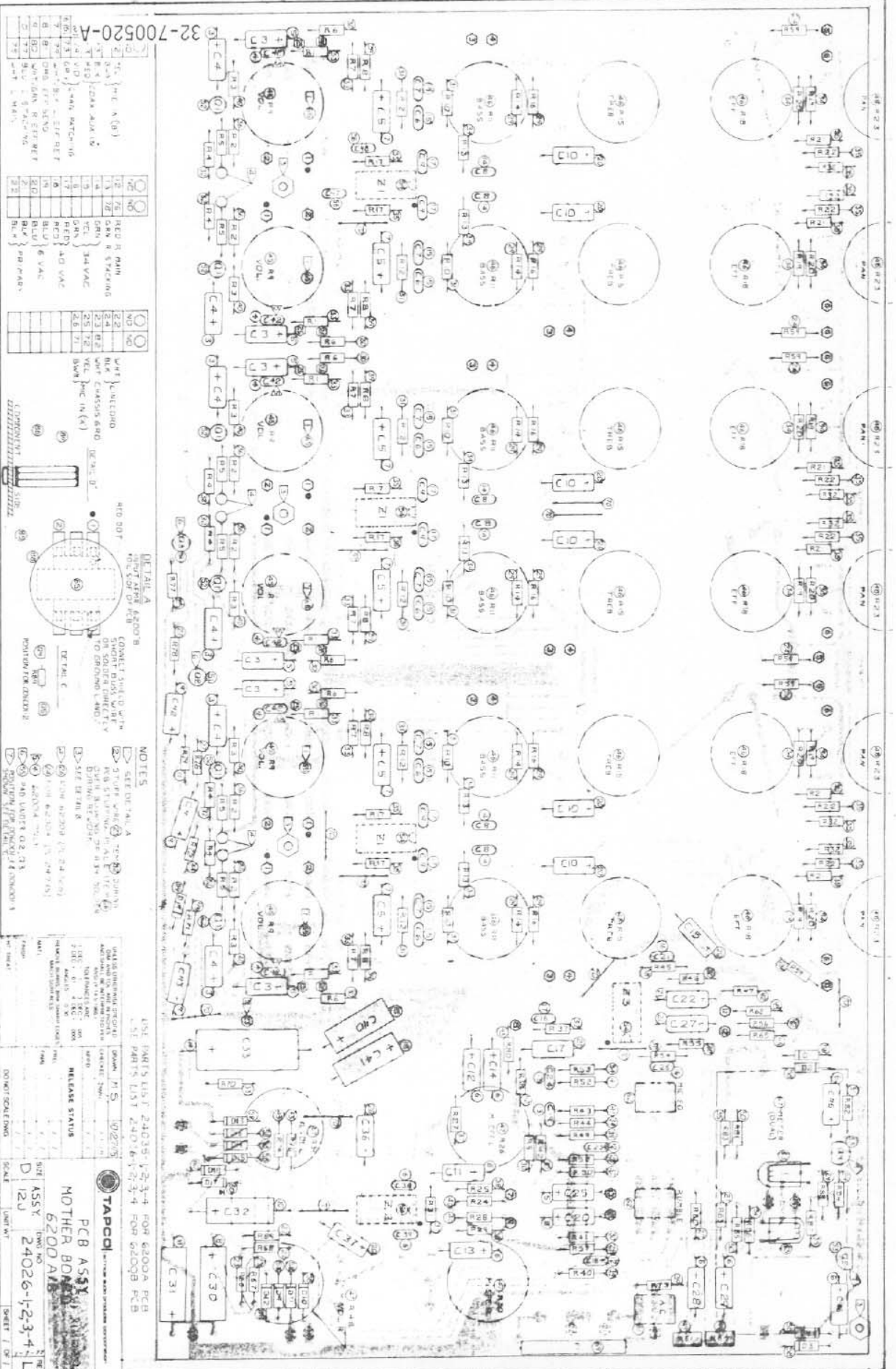
BLUE (-2 ONLY)

BRN (-2 ONLY)

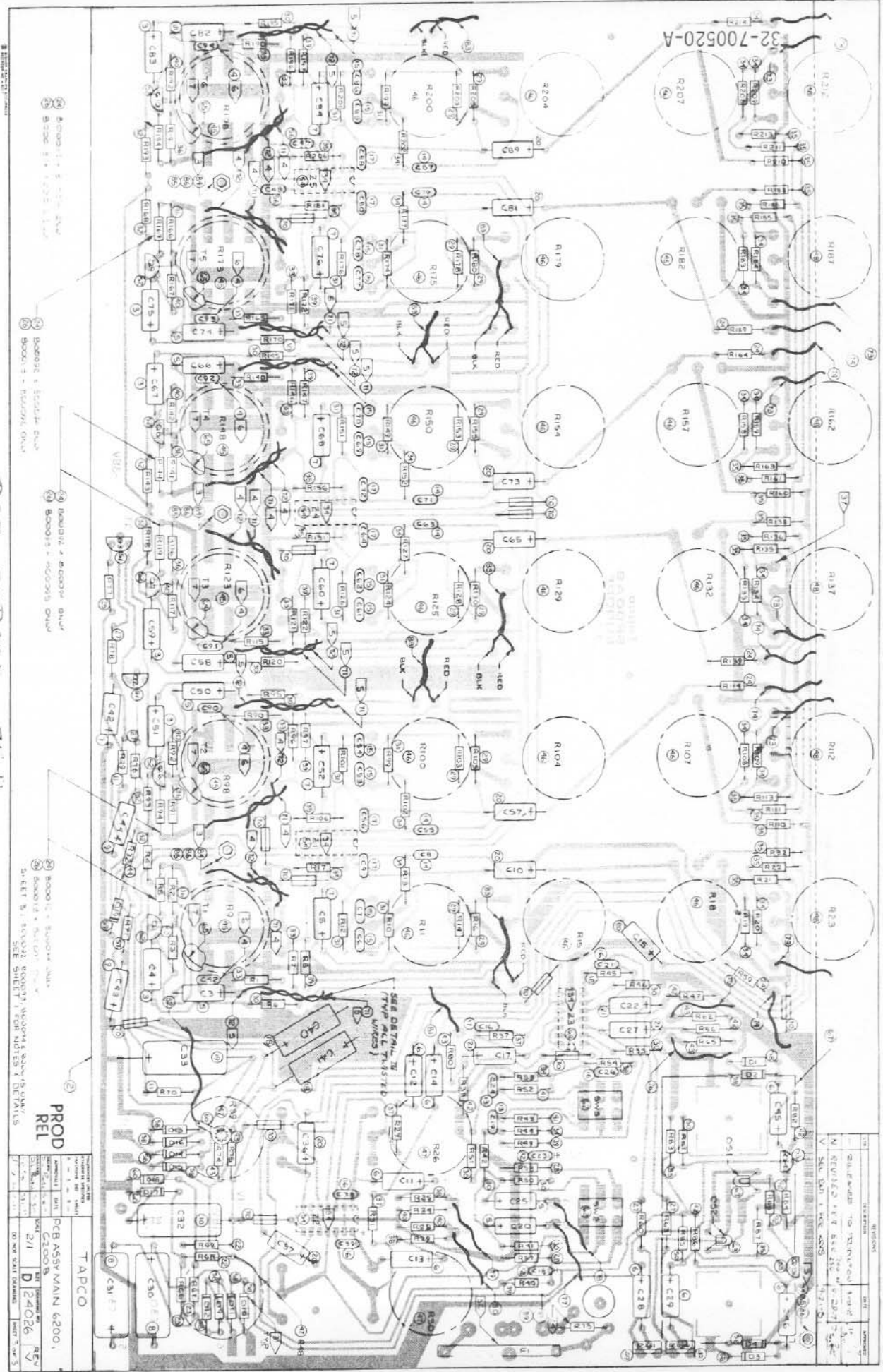
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32-700520-A



32-700520-A



REV	DATE	BY	CHKD	APP'D
1	10/1/78	J. J. J.	J. J. J.	J. J. J.
2	10/1/78	J. J. J.	J. J. J.	J. J. J.
3	10/1/78	J. J. J.	J. J. J.	J. J. J.
4	10/1/78	J. J. J.	J. J. J.	J. J. J.
5	10/1/78	J. J. J.	J. J. J.	J. J. J.
6	10/1/78	J. J. J.	J. J. J.	J. J. J.
7	10/1/78	J. J. J.	J. J. J.	J. J. J.
8	10/1/78	J. J. J.	J. J. J.	J. J. J.
9	10/1/78	J. J. J.	J. J. J.	J. J. J.
10	10/1/78	J. J. J.	J. J. J.	J. J. J.

PCB EXPORT 35R

PCB DOMESTIC 15K

PROD REL

TAPCO

PCB ASSY MAIN 62001

REV 2/1 D 24026 V

