Service Manual

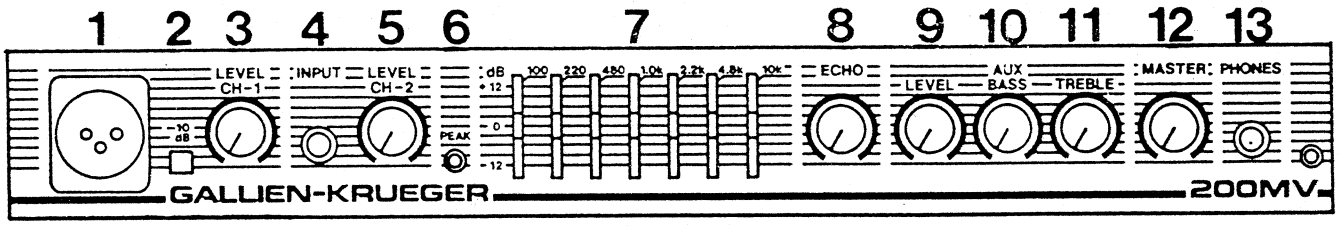
200MV

GK GALLIEN-KRUEGER

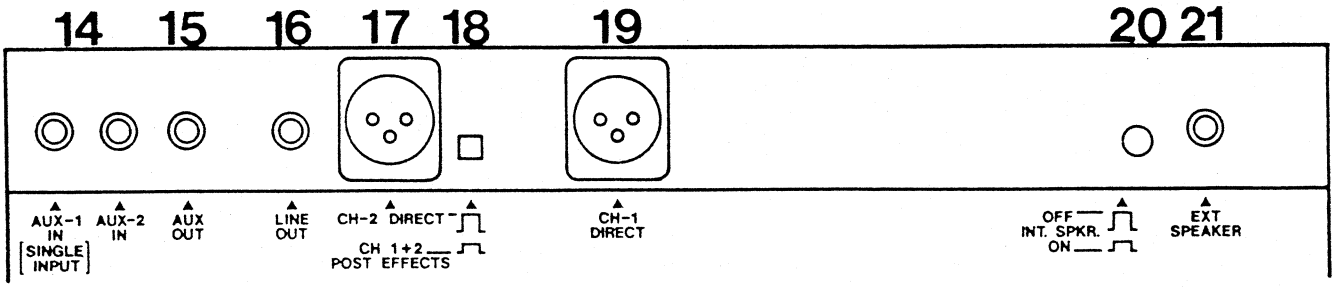
Table of Contents

Operating Instructions

200MV Front Panel



200MV Rear Panel



200MV Operating Instructions

Your new G-K vocal monitor represents the very latest advances technology has to offer. It was designed to give you full control of your voice over other voices and instruments in the monitor mix without affecting the mix or anyone elses monitors. With level, bass and treble controls for the auxilliary in (monitor send from PA), built-in echo and a 7-band graphic equalizer all on the 200MV, the user can not only do his own personal monitor mix but can also cut out any unwanted monitor feedback again without affecting anyone else.

The 200MV can also be used as a kind of "Mini PA" for the one man show situations. The auxilliary inputs on the rear panel can be used for drum machines or bass line machines while the two regular inputs on the front panel can be used for vocals and a guitar or keyboards.

The 200MV can be used in many different monitoring and recording situations (see sample setups) depending on your needs.

A careful examination of this manual will help you to get the most from your new unit.

(1) Channel 1. Balanced Input
This jack accepts a 3 conductor microphone cable and has a detent to hold the cable firmly in place. It is designed for use with microphones or other low impedence, balanced inputs. It can also provide +15V phantom power if needed for condensor mics. This can be turned on by a switch located under top cover near the jack.

(2) –10dB Pad
This switch provides 10dB attenuation of the input signal if the signal is too "hot" (ie, active electronics etc.). A signal that is too "hot" will cause distortion in the unit even at low volumes.

(3) Channel 1. Level Control
This provides control of the signal coming in the balanced input jack. It controls the level going to the internal amplifier as well as the level going out the 'line out' jack (#16) and also the level going out the balanced output jack (#17) (when switch #18 is in). It does not affect the level going out the CH. 1. direct jack (#19).

(4) Channel 2. Input
This jack accepts a 1/4" phone plug and can be driven by high or low impedence microphones or instruments such as guitars, electronic drums, electronic keyboards, etc.

(5) Channel 2. Level
This controls the level going into CH. 2 as knob #3 did for the CH. 1 input. It also does not affect the level going out the CH. 2 direct when switch #18 is left out.

(6) Peak LED
This is a dual function LED. When the individual channel levels are down all the way, this acts as a clipping indicator. If a signal is too "hot," the LED will light even with the levels down. This indicates that the input signal must be brought down to a useable level before it goes into the amplifier. This can be done by pushing in the –10dB pad (#2) or by turning down the instruments volume. This LED also acts as a peak detector – lighting when there is only 10dB of headroom remaining before clipping occurs.

(7) 7-Band Graphic Equalizer
This provides up to ± 12dB control of seven frequency bands over a nearly eight octave range. This is a very useful tool for eliminating feedback by reducing the gain in the problem frequency range. It is also useful for enhancing certain frequencies in vocals and other acoustic and electric instruments. It affects the signal going to the internal amplifier and to the 'line out.'

(8) Echo Mix Control
This provides control over the amount of echo present in the internal amplifier and in the 'line out' signal. The amount of echo can range from none at all, to a very subtle doubling, to a very heavy reverberation.

(9, 10, 11) Auxilliary Level, Bass and Treble Controls
These control the level and tone of the signals coming in the AUX. 1 and 2 jacks (#14) to go through the internal power amplifier. They do not affect what goes out the AUX. out. (#15).

(12) Master Volume Control
This is the main control for what goes to the internal amplifier (as well as to the headphones) from CH. 1, CH. 2, and AUX. 1 and 2. (#14).

(13) Headphone Jack
This jack accepts a 1/4" stereo phone plug (do not use a plug that is not stereo) for the use of stereo headphones. The signal sent out of this jack is the same as that being delivered to the speakers but at a lower level.

(14) Auxilliary In 1 & 2
These jacks accept 1/4" phone plugs and can be driven by sources such as a 'PA' mixing board (monitor send), a drum machine, an electric guitar (with effects or an active preamp), another GK 200MV, a stereo cassette deck, etc. The two inputs are summed internally and are controlled by the front panel controls (#9, 10, 11). Note: AUX. 1 should be used when only one AUX. input is required.

(15) Auxilliary Out Jack
This jack puts out the sum of AUX. in 1 & 2 (#14) at unity gain (same level). It is not affected by any of the front panel controls. If you have a monitor send from a 'PA' board going into the AUX. in (#14), you can use this jack to 'daisy chain' to other 200MVs or monitoring devices so everyone in the 'chain' gets the same signal.

(16) Line Out Jack
The line out jack sends out the signals from CH. 1 & 2 (#1, 4) post level controls, EQ and Echo. This signal is the same as what is heard in the internal amplifier minus the AUX. in (#14). This can be used for overdubbing in a home recording situation to record just the voice or instrument from CH. 1 & 2 (#1, 4) while listening to prerecorded music from the AUX. in. (#14).

(17, 18) Balanced Output/Switch Combination
This is a dual purpose output jack. With the switch in the 'out' position the output is just a balanced output of what is going in the CH. 2 (#4) input times a gain of 5. This is not affected by the CH. 2 level control (#5).

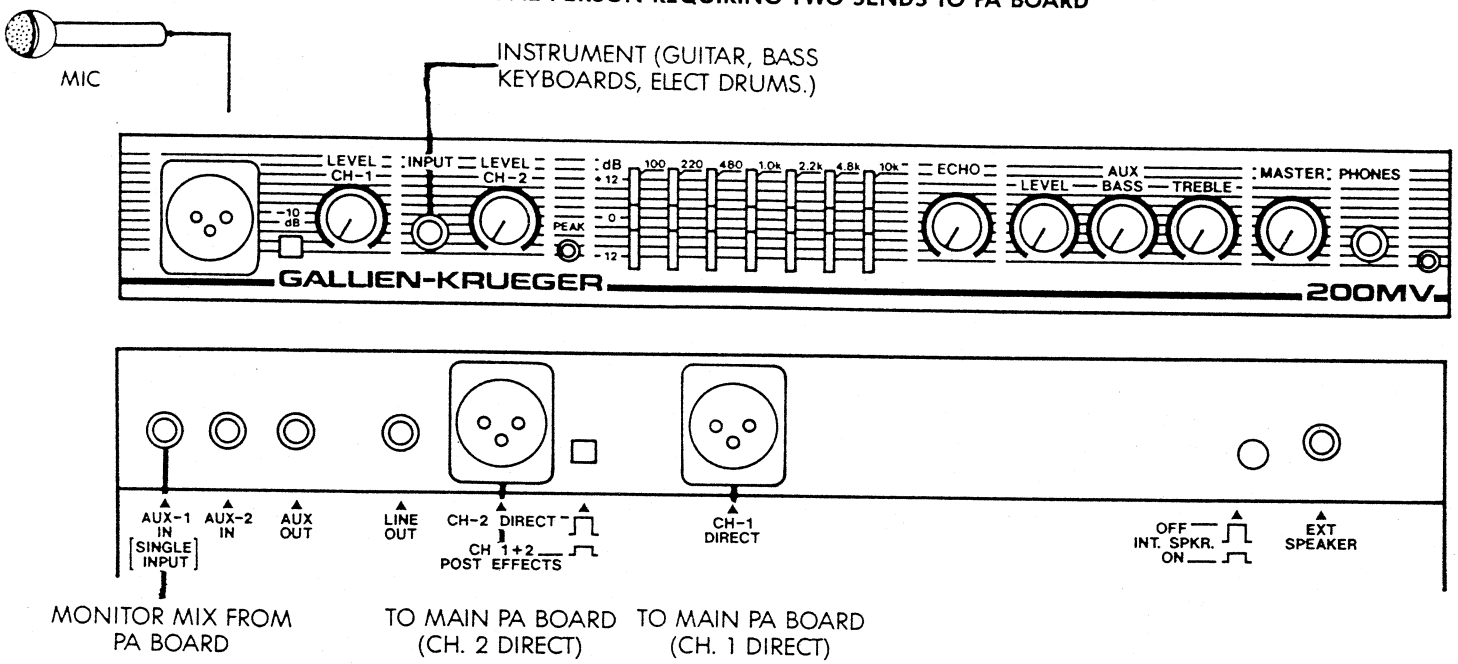
When the switch is pushed in, the output becomes a balanced version of exactly what is on line out. Thus it carries both CH. 1 and CH. 2, which are controlled by their respective level controls, with EQ and Echo. This control allows special equalization and Echo to be added to the vocals or instruments before they are sent to the main mixing board.

(19) Channel 1 Direct
This jack provides the same signal that is being fed into the CH. 1 input (#1). It is not affected by the level control (#3), however, it is affected by the –10dB pad (#2). This output should go into a true balanced input at the other end.

(20) Internal Speaker Switch
The internal speakers are on when this switch is in and can be turned off for private headphone listening or in order to send all the internal power to an external speaker load.

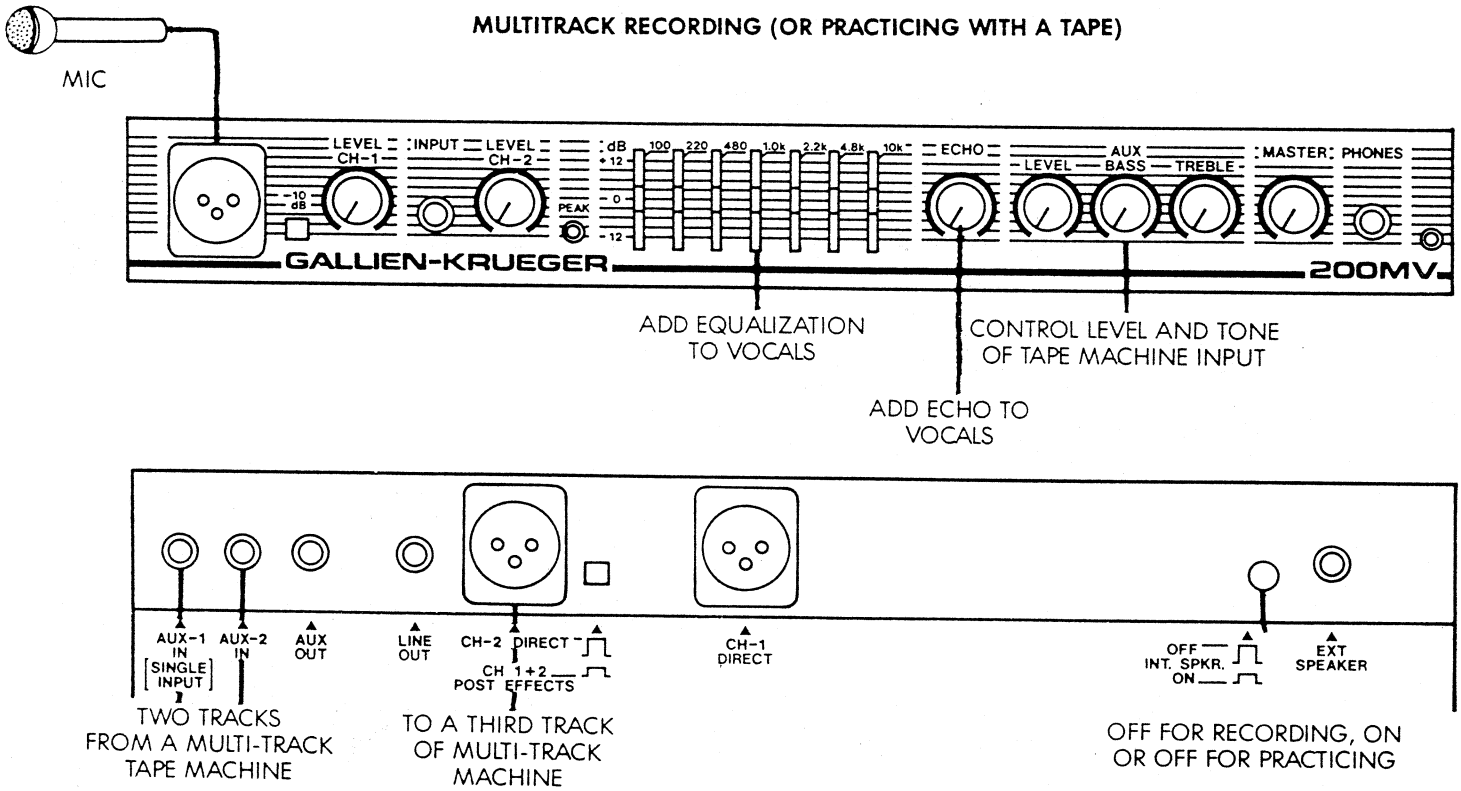
(21) External Speaker Jack
This jack accepts a 1/4" phone plug and can send 100W RMS to 4 OHM speaker load if the internal speakers are turned off or 50W RMS to an 8 OHM speaker load with the internal speakers on. Note: A 4 OHM load should not be connected unless the internal speakers are off or the amplifier may fail.

ONE PERSON REQUIRING TWO SENDS TO PA BOARD



THE DIRECT OUTS PROVIDE BALANCED VERSIONS OF THE INPUT SIGNALS, CH. 1 DIRECT IS CH. 1 X 1 AND CH. 2 DIRECT IS CH. 2 INPUT X 5. NEITHER OUTPUT IS AFFECTED BY THE LEVEL CONTROLS OR THE EQ OR THE ECHO HOWEVER, CH. 1 DIRECT IS AFFECTED BY THE −10dB PAD.

MULTITRACK RECORDING (OR PRACTICING WITH A TAPE)



THIS ALLOWS A SINGER TO LISTEN TO TWO TRACKS (VIA AUX. 1 & 2) AND RECORD ONLY VOCALS (WITH EQ AND ECHO IF DESIRED) ON THIRD TRACK. IT IS ALSO POSSIBLE TO ADD TWO INSTRUMENTS TO A THIRD AND FOURTH TRACK USING THE CH. 1 AND CH. 2 DIRECT OUTS. THESE, HOWEVER, WITHOUT EQ OR ECHO.

Power Switch
The power switch on the 200MV is located on the rear panel above the fuse holder.

Power Cord
The power cord is detachable and plugs into a socket located on the rear panel. If a replacement cord is used or needed it should be UL rated at 10amp, 125V; or if using 240V, the cord should be UL rated at 5amp, 240V.

Fuse
The fuse holder is located on the rear panel. Never operate this amplifier with any other than the recomended fuse type.

115V operation – type TSC3A
240V operation – type TSC2A

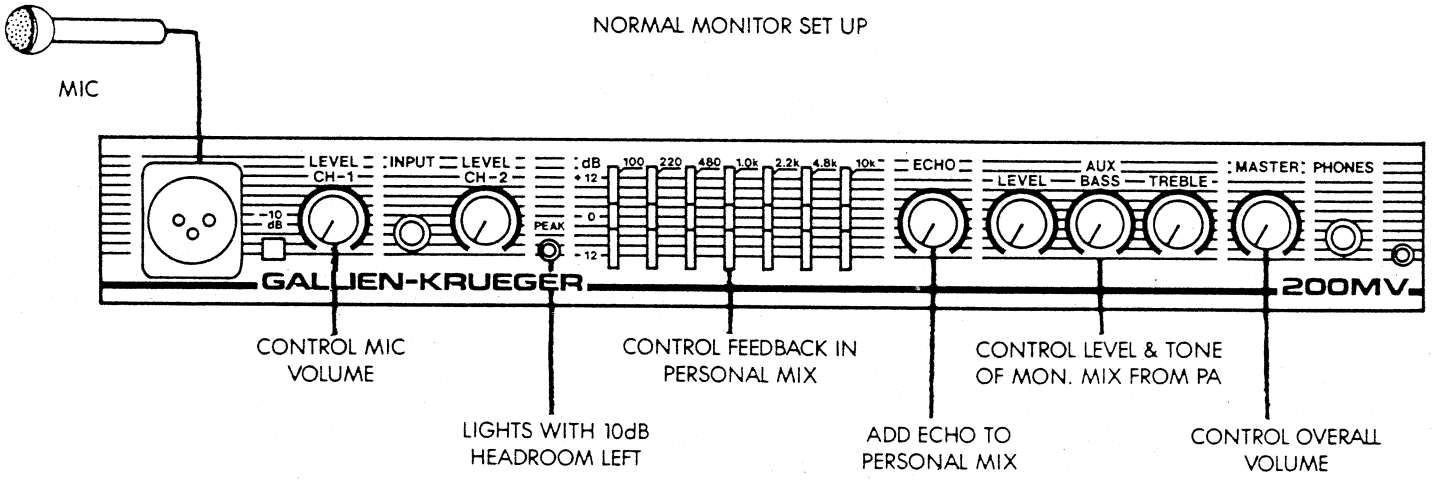
Maintenance
Your new amplifier is rugged. It was built to give you a lifetime of trouble free operation. If it is operated with care, your only maintenance problems should be cleaning. We recommend a soft, damp cloth and mild soap for cleaning the outside surfaces. A road case is advised for further protection from travel and handling. If you should need service, please call us or your local GK dealer to find out where the nearest certified GK repair station is.

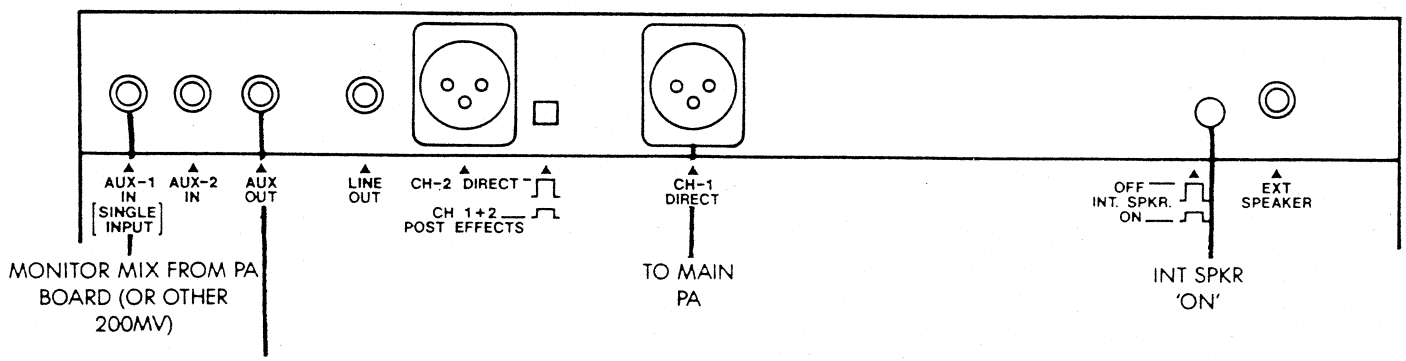
Specifications
Power @ 400 Hz
100 Watts into 4 OHMs @ .1% THD
72 Watts into 8 OHMs @ .1% THD
Signal-To-Noise Ratio
>80dB
Max Distortion
.35%
Frequency Response
Less than ± 1dB 20-20K Hz
Line Out
+1.6dBV (Nom)
Direct Outs-into 1K OHM Balanced Input
CH. 1 = CH. 1 Input Level
CH. 2 (Switch Out) = CH. 2 Input Level - 6dB
CH. 1 & 2 Post Effects (Switch In) - 20dBV (Nom)

Auxilliary Output
Equal to AUX. in 1 & 2 Levels
Channel 1 Input
Input Impedence - 5.6K OHM
Max Input Level - 95mV RMS
W/−10dB Switch in - 300mV
Input Sensitivity - 2.4mV
Channel 2 Input
Input Impedence - 1M OHM
Max Input Level - 2.4V RMS
Input Sensitivity - 30mV
Auxilliary Input
Input Impedence - 1M OHM
Max Input Level - .9V RMS
Input Sensitivity - 8mV

SAMPLE SETUPS

NORMAL MONITOR SET UP

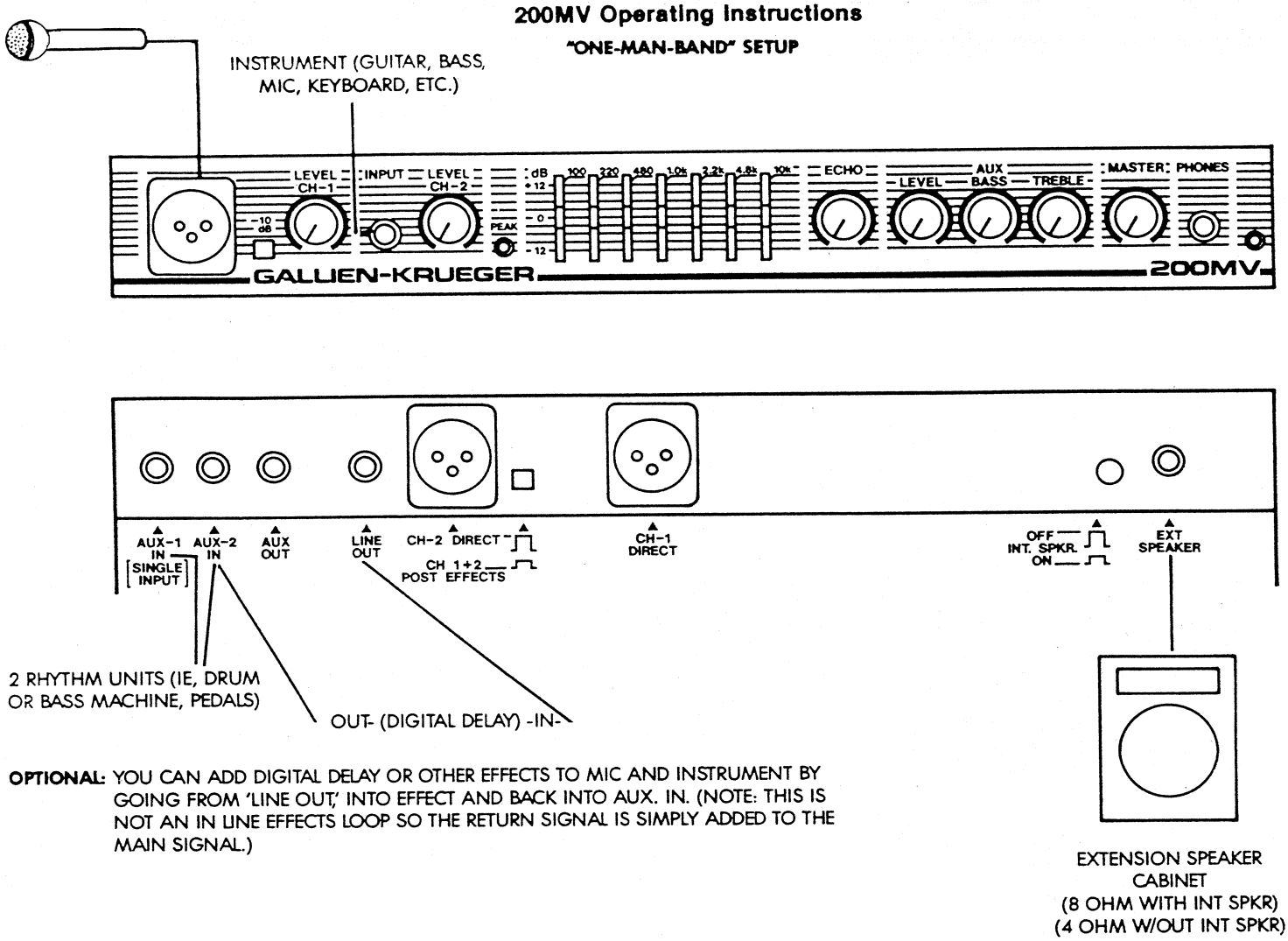




OPTIONAL: YOU CAN ADD THE 7-BAND GRAPHIC AND ECHO TO THE MON. SIGNAL FROM THE PA BOARD BY SENDING THE MONITOR SIGNAL INTO THE CH. 2 INPUT OF THE AUX. IN.

200MV Operating Instructions

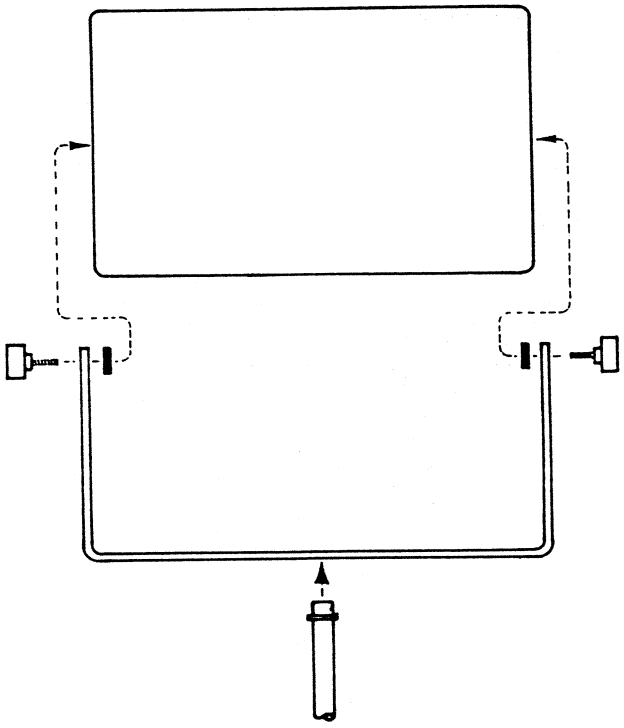
"ONE-MAN-BAND" SETUP

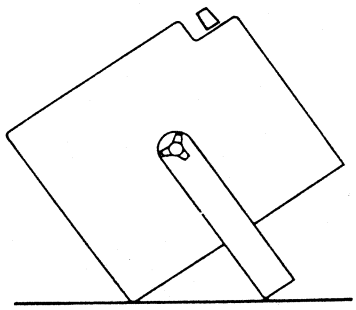


OPTIONAL: YOU CAN ADD DIGITAL DELAY OR OTHER EFFECTS TO MIC AND INSTRUMENT BY GOING FROM 'LINE OUT,' INTO EFFECT AND BACK INTO AUX. IN. (NOTE: THIS IS NOT AN IN LINE EFFECTS LOOP SO THE RETURN SIGNAL IS SIMPLY ADDED TO THE MAIN SIGNAL.)

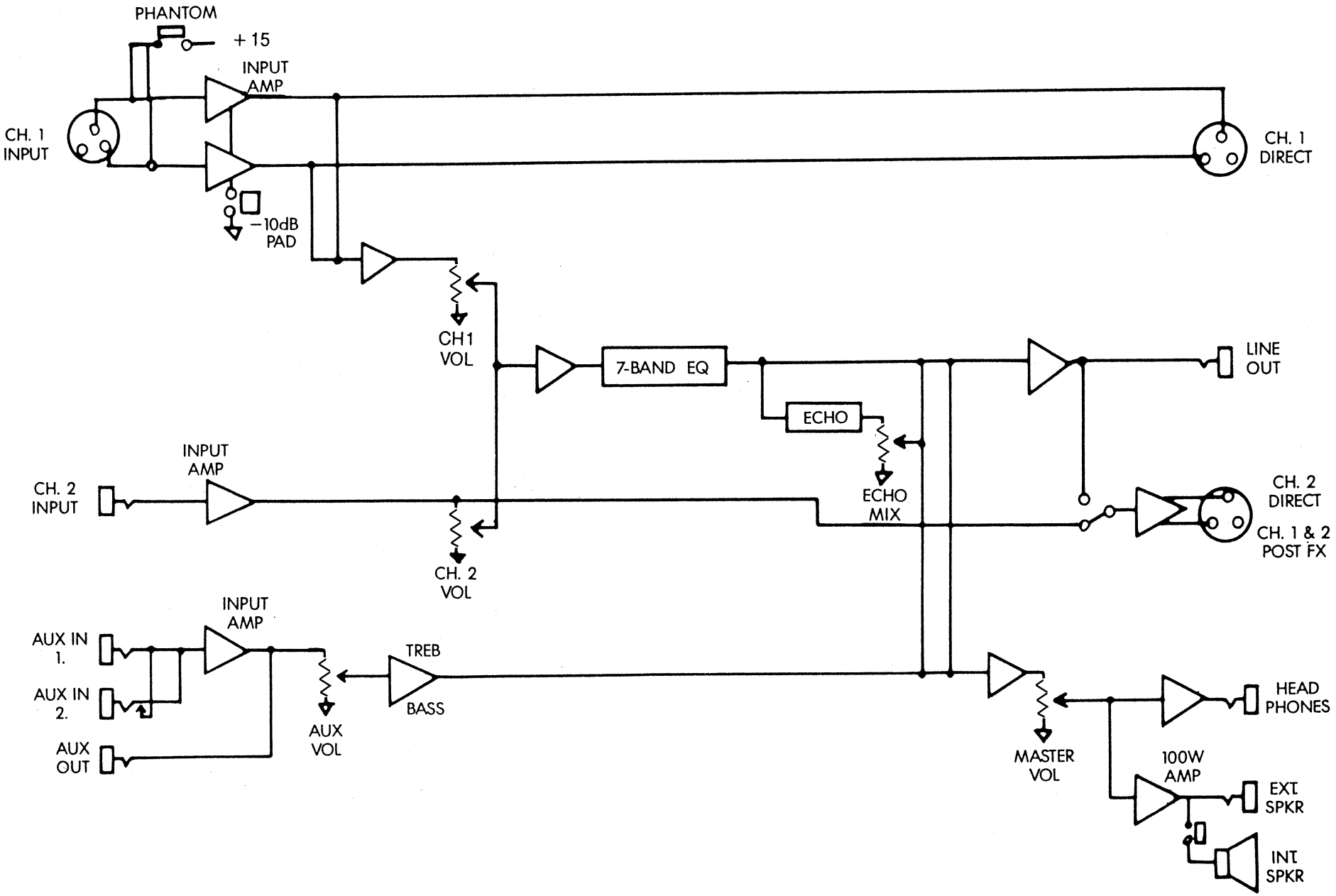
200MV Mic Stand Bracket

The 200MV is mic stand mountable for maximum potential. The same mic stand bracket can also be used to tilt the unit back for use on the floor.





200MV BLOCK DIAGRAM



8/16/99 SW

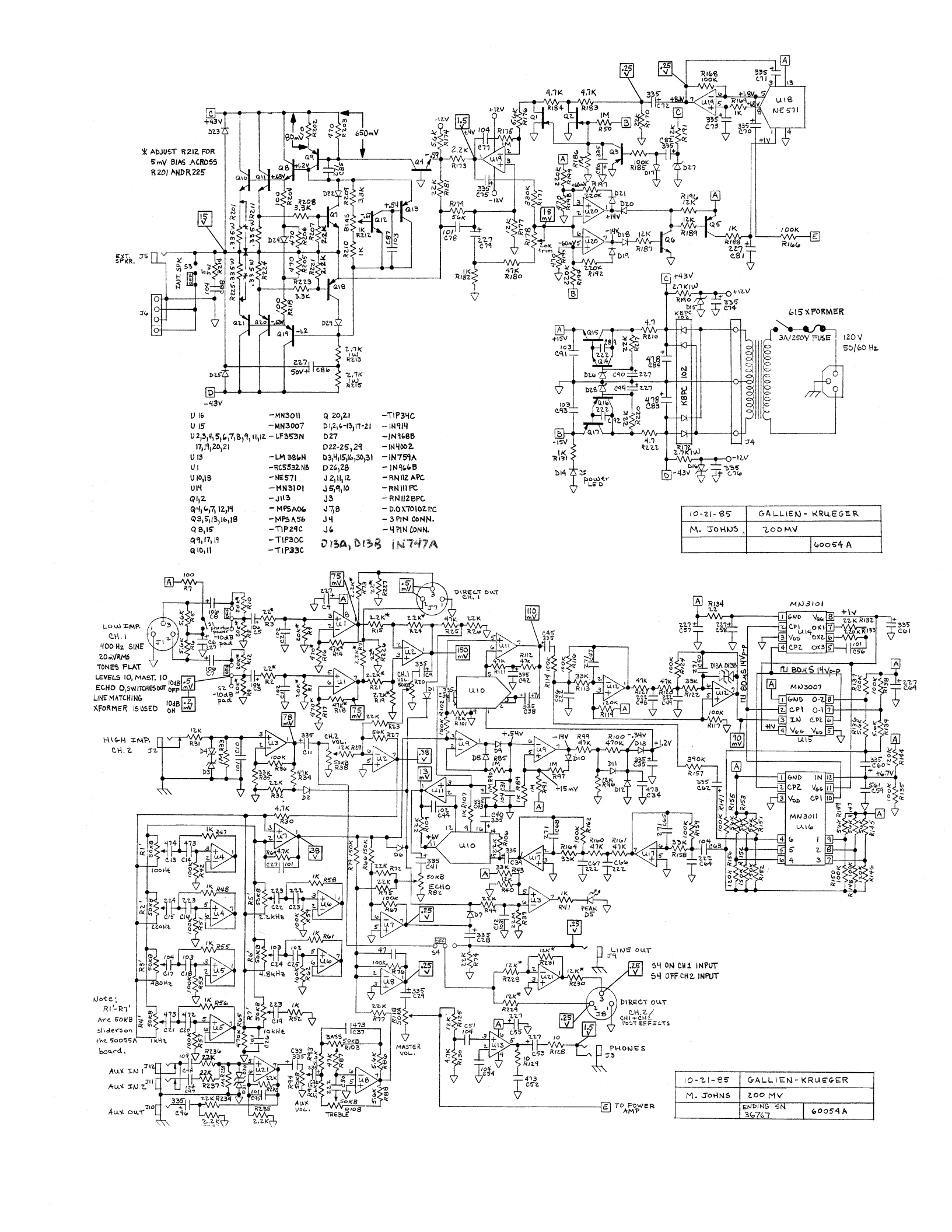
200MV Turn-On Procedure

Board # 206-0054-0 -All Revisions

Revised 8/12/1999

1) Inspect board.
2) Observe the following: levels 10; master 0; Graphic EQ flat; Aux. tones 0; echo 0; switches out; phantom switch off; speaker load on.
3) Gradually adjust variac to 20Vrms. Reg. Supplies 4.3V +or- .5V U19-P8 2V +or- .5V
   -2.8V +or- .5V P4 -1V +or- .5V.
4) Continue to adjust to 70Vrms. Watch variac, listen to speaker. Amp should not draw current and output will go –7V then +10V then snap to 0 between 30-40Vrms. Between 60-70Vrms out may go +7V then snap to 0.
5) Continue to adjust variac to 120Vrms.
6) Turn speaker load off and set bias. Adjust R212 to get 5mV across R201, R211 (the most positive of the two) and R225, R225 (the most negative of the two).
7) Phantom switch test. Turn on phantom switch. Pins 2 and 3 at input should =15V.
8) Channel 1 input (+10dB 100Hz sine)
   A) Peak indicator should be lit. Signal at U2-P1 should clip evenly. Attenuate input signal so that clipping goes away. Peak indicator should turn off as soon as clipping disappears.
   B) Return input to +10dB.
   C) Push in –10dB switch. Signal should attenuate by 10dB.
   D) Attenuate input to 0dB.
   E) Check direct out 1 should = 30mVrms at pins 2 and 3.
9) Plug into Channel 2 input (0dB 100Hz).
   A) U3-P1 should = 4Vrms.
   B) Increase input signal back up to +10dB.
   C) Peak indicator should be lit. Signal at U3-P1 should clip evenly. Attenuate input signal until clipping goes away. Peak indicator should turn as soon as clipping disappears.
10) Set input signal to 0dB. Increase level 2 slightly. Signal at U2-P7 should = U7-P1.
11) Set the following: Master on 10. Attenuate input signal to-20dB. Level 2 at 10.
12) Adjust limiter. Adjust R178 for a flat response at U20-P2 (compare limiter figure). Output should = 30Vrms.
13) Set the following: 4 ohm load.
14) Check for full power. Output should = 20Vrms w/o clipping or bouncing.
15) Current limiter test. With a 2 ohm load, output should be clean sine wave and =12Vrms.
16) No load. Check the following: line out = 3.5Vp-p. Direct Out 2 = 1.1Vp-p (switch off), 3.5Vp-p (on).
17) Set the following: square wave input (-20dB 100Hz), level 2 at 5.
18) Test graphic EQ and compare EQ figures.
19) Echo test. Audio test echo, echo at U7-P7 should = echo at U8-P1.
20) Switch back to sine input (-20dB 100Hz).
21) Test aux. 1 and 2 inputs.
    Aux. 1 input, aux. level at 10: Output = 33Vrms.
    Aux. output = 100mVrms.
    Aux. 2 input, aux. level at 10: Output = 22Vrms.
    Aux. output = 50mVrms.
22) Set the following: square input (-20dB 100Hz); Aux. level at 9 o'clock; tones, master on 10.
23) Test aux. tones and compare figures.
24) Check headphone jack.
25) Noise and tap test.
    Noise < or = 200mVrms Levels 10, master 10, aux. level 10, EQ 10, aux. tone 10, echo 10.
    100mVms Levels 0, everything else on 10.
    12mVms Levels 0, aux. level 0, EQ 0, master 0.
    3mVms Master 0

Noise should be clean, without popping or crackling. Sharply tap brain on bench a few times to make sure nothing fails.



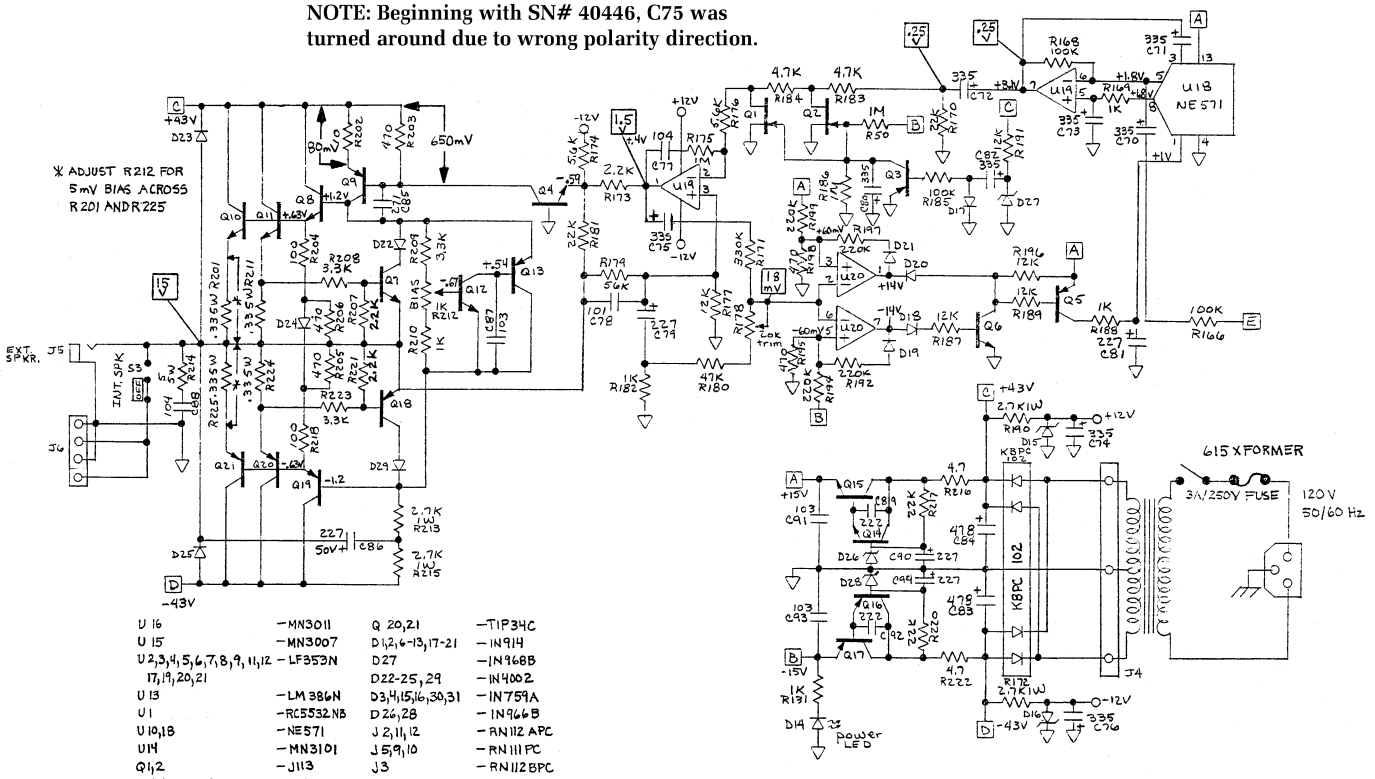
U 16	-MN3011
U 15	-MN3007
U2,3,4,5,6,7,8,9,11,12 17,19,20,21	-LF353N
U 13	-LM 386N
U1	-RC5532 NB
U10,18	-NE571
U14	-MN3101
Q1,2	-J113
Q4,6,7,12,14	-MPSA06
Q3,5,13,16,18	-MPSA56
Q 8,15	-TIP29C
Q9,17,19	-TIP30C
Q10,11	-TIP33C
Q 20,21	-TIP34C
D1,2,6-13,17-21	-IN914
D27	-IN968B
D22-25,29	-IN4002
D3,4,15,16,30,31	-IN759A
D26,28	-IN966B
J 2,11,12	-RN112 APC
J5,9,10	-RN111 PC
J3	-RN112 BPC
J7,8	-D.O X70102 PC
J4	-3 PIN CONN.
J6	-4 PIN CONN.

D13A, D13B IN747A

10-21-85	GALLIEN-KRUEGER	
M. JOHNS	200MV	
		60054 A

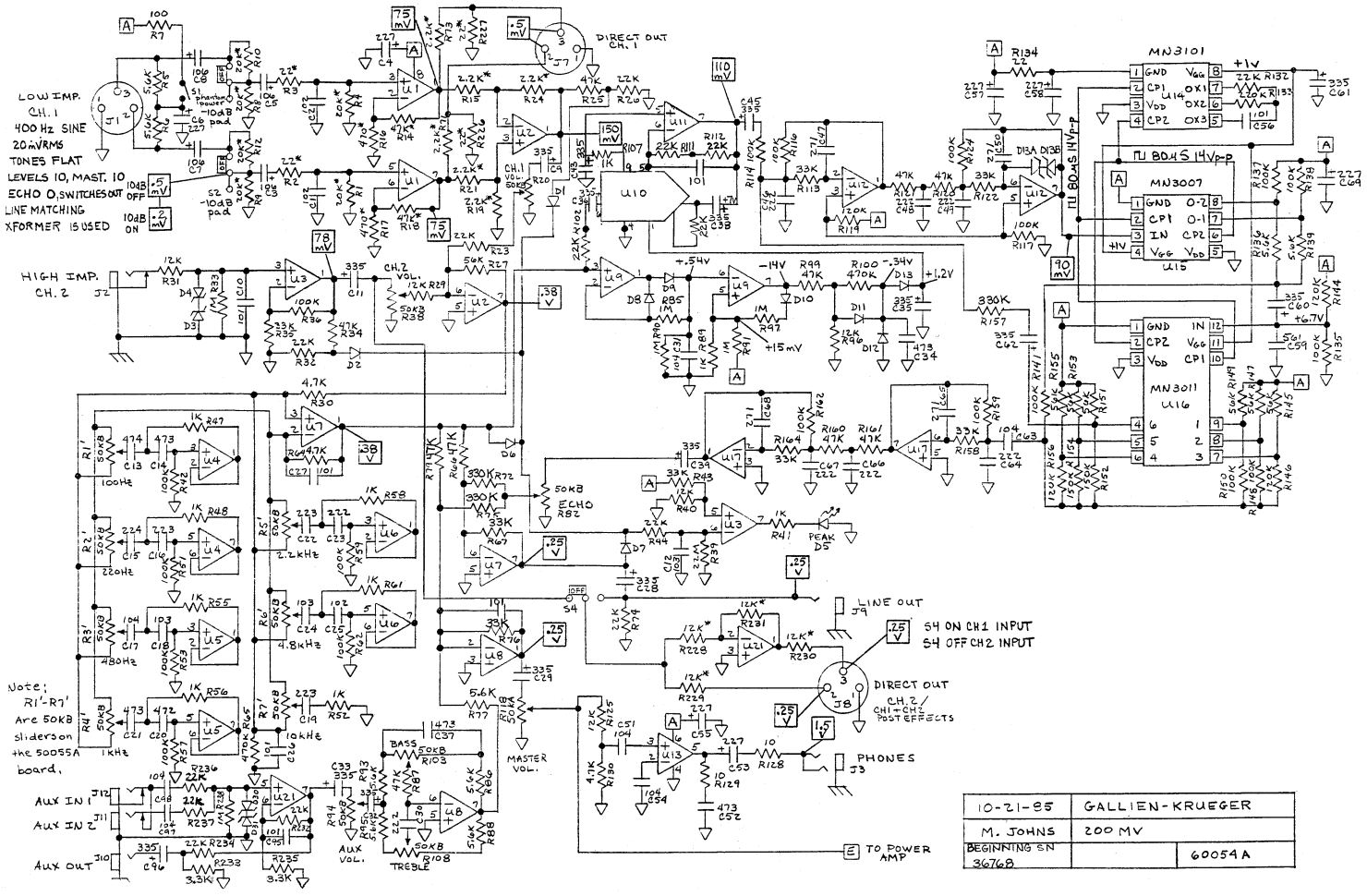
10-21-85	GALLIEN-KRUEGER	
M. JOHNS	200 MV	
	ENDING SN 36767	60054 A

NOTE: Beginning with SN# 40446, C75 was turned around due to wrong polarity direction.

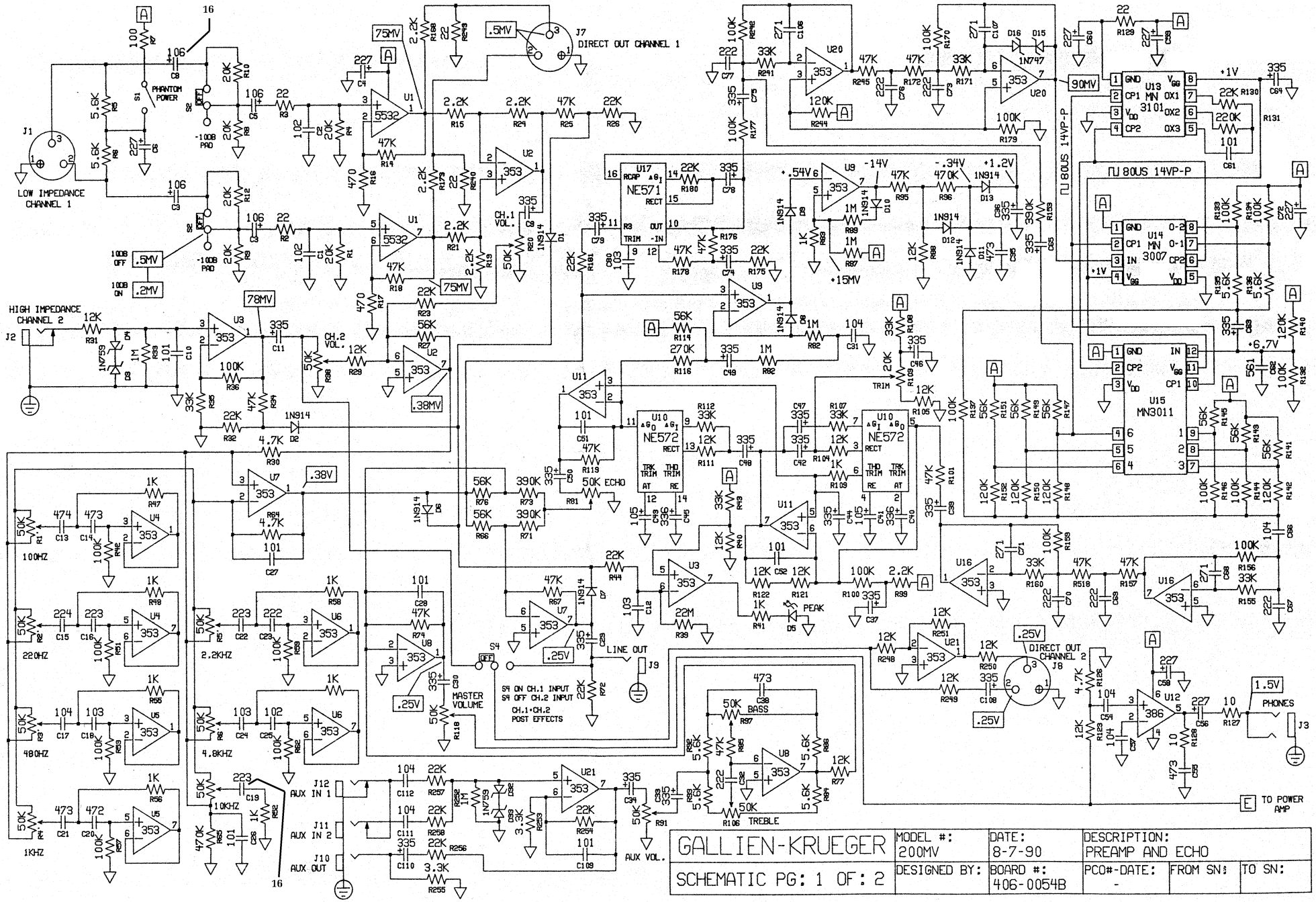


U 16	-MN3011	Q 20,21	-TIP34C
U 15	-MN3007	D1,2,6-13,17-21	-IN914
U 2,3,4,5,6,7,8,9,11,12 17,19,20,21	-LF353N	D27	-IN968B
		D22-25,29	-IN4002
U 13	-LM 386N	D3,4,15,16,30,31	-IN759A
U1	-RC5532.NB	D 26,28	-IN966B
U 10,18	-NE571	J 2,11,12	-RN112 APC
U14	-MN3101	J 5,9,10	-RN111 PC
Q1,2	-J113	J3	-RN112 BPC
Q4,6,7,12,14	-MPSA06	J 7,8	-D.O.X70102 PC
Q3,5,13,16,18	-MPSA56	J4	-3 PIN CONN.
Q 8,15	-TIP29C	J6	-4 PIN CONN.
Q9,17,19	-TIP30C	D18A, D18B IN747A	
Q10,11	-TIP33C		

10-21-85	GALLIEN-KRUEGER	
M. JOHNS	200 MV	
		60054 A

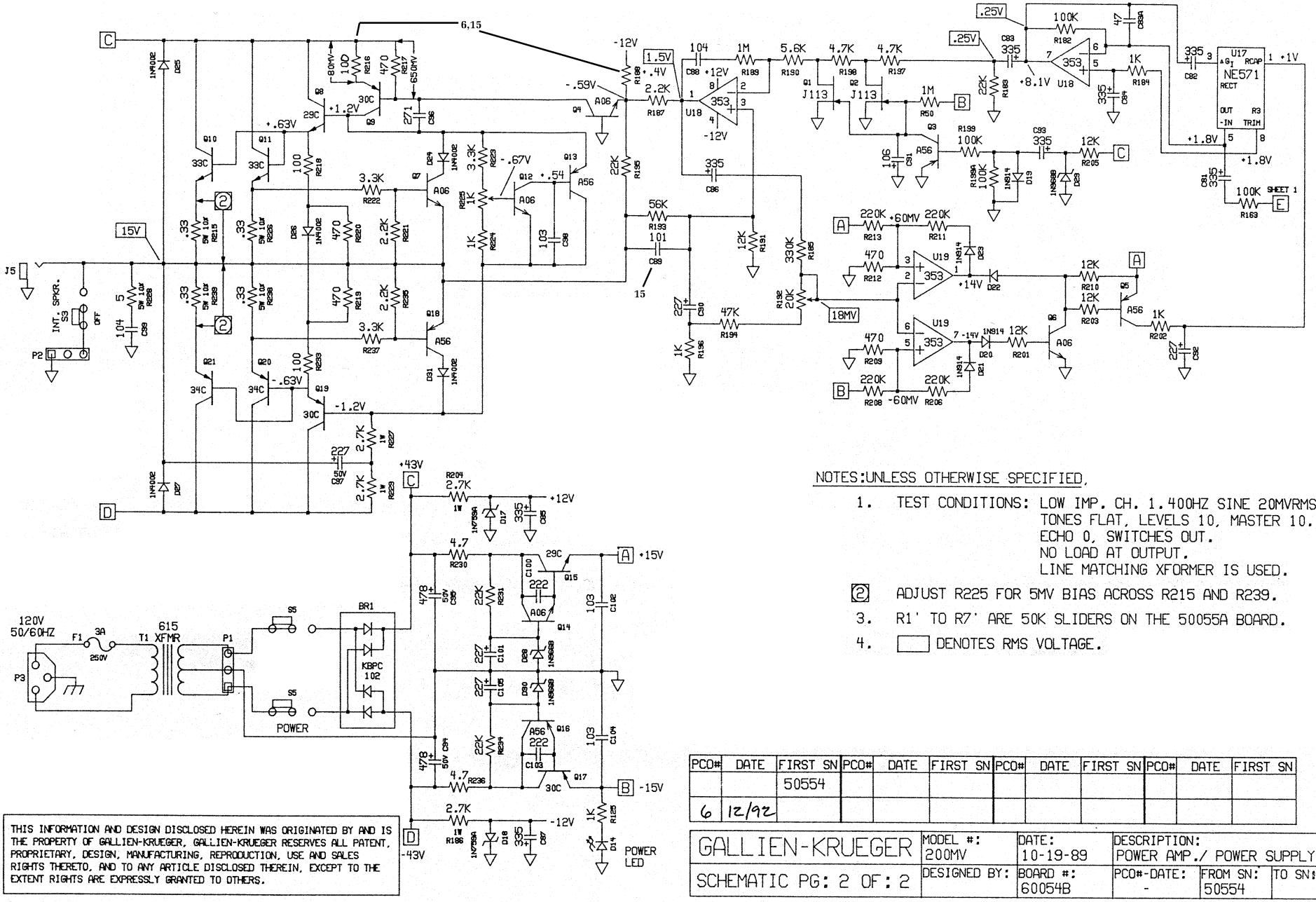


10-21-85	GALLIEN-KRUEGER	
M. JOHNS	200 MV	
BEGINNING SN 36768		60054 A



GALLIEN-KRUEGER	MODEL #: 200MV	DATE: 8-7-90	DESCRIPTION: PREAMP AND ECHO		
SCHEMATIC PG: 1 OF: 2	DESIGNED BY:	BOARD #: 406-0054B	PCO#-DATE: -	FROM SN:	TO SN:

Bold face numbers refer to ECO changes.



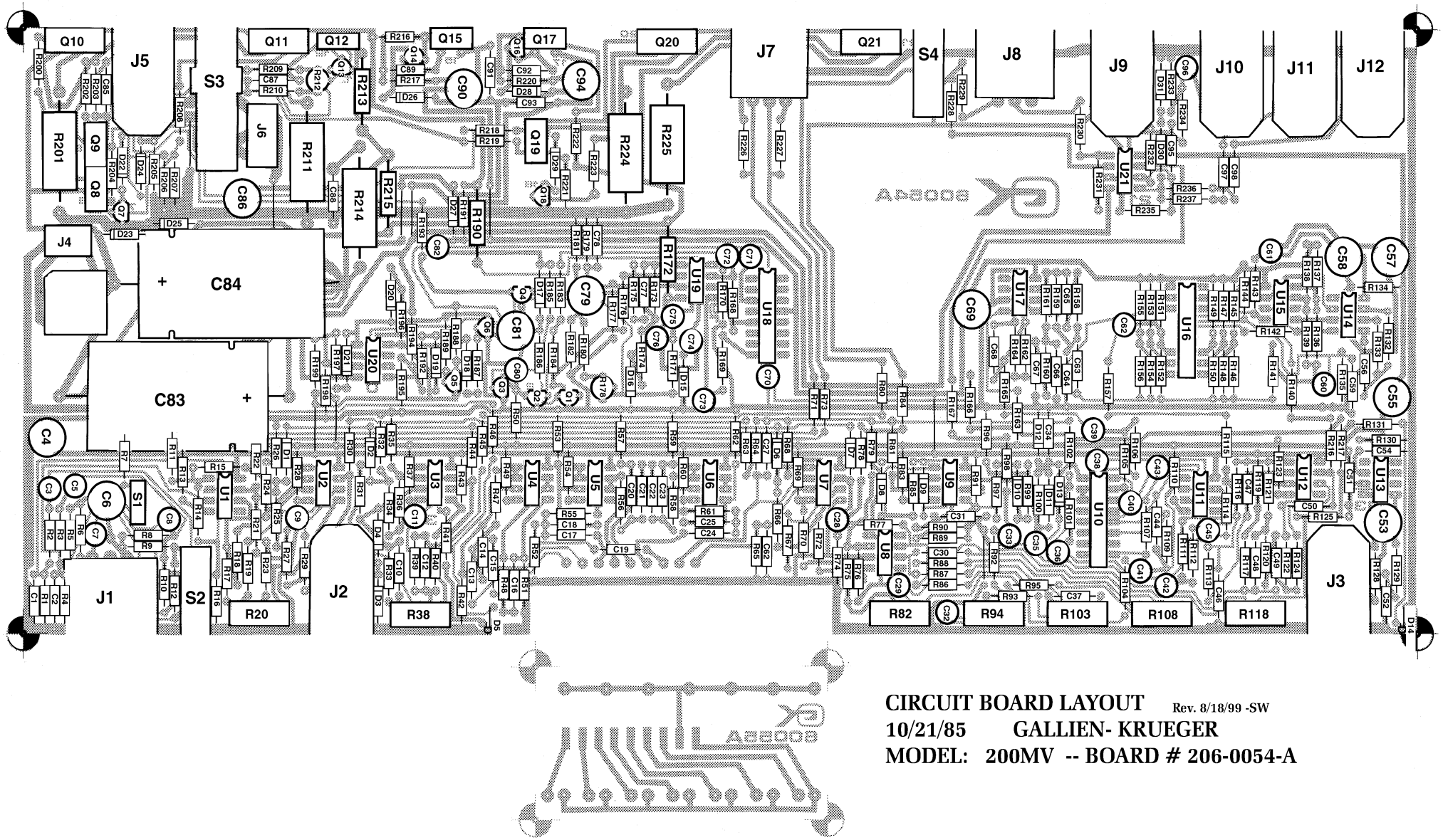
NOTES:UNLESS OTHERWISE SPECIFIED,

1. TEST CONDITIONS: LOW IMP. CH. 1. 400HZ SINE 20MVRMS.
   TONES FLAT, LEVELS 10, MASTER 10.
   ECHO 0, SWITCHES OUT.
   NO LOAD AT OUTPUT.
   LINE MATCHING XFORMER IS USED.
2. ADJUST R225 FOR 5MV BIAS ACROSS R215 AND R239.
3. R1' TO R7' ARE 50K SLIDERS ON THE 50055A BOARD.
4. ☐ DENOTES RMS VOLTAGE.

PCO#	DATE	FIRST SN	PCO#	DATE	FIRST SN	PCO#	DATE	FIRST SN	PCO#	DATE	FIRST SN
		50554									
6	12/92										

GALLIEN-KRUEGER	MODEL #: 200MV	DATE: 10-19-89	DESCRIPTION: POWER AMP./ POWER SUPPLY
SCHEMATIC PG: 2 OF: 2	DESIGNED BY:	BOARD #: 60054B	PCO#-DATE: - / FROM SN: 50554 / TO SN:

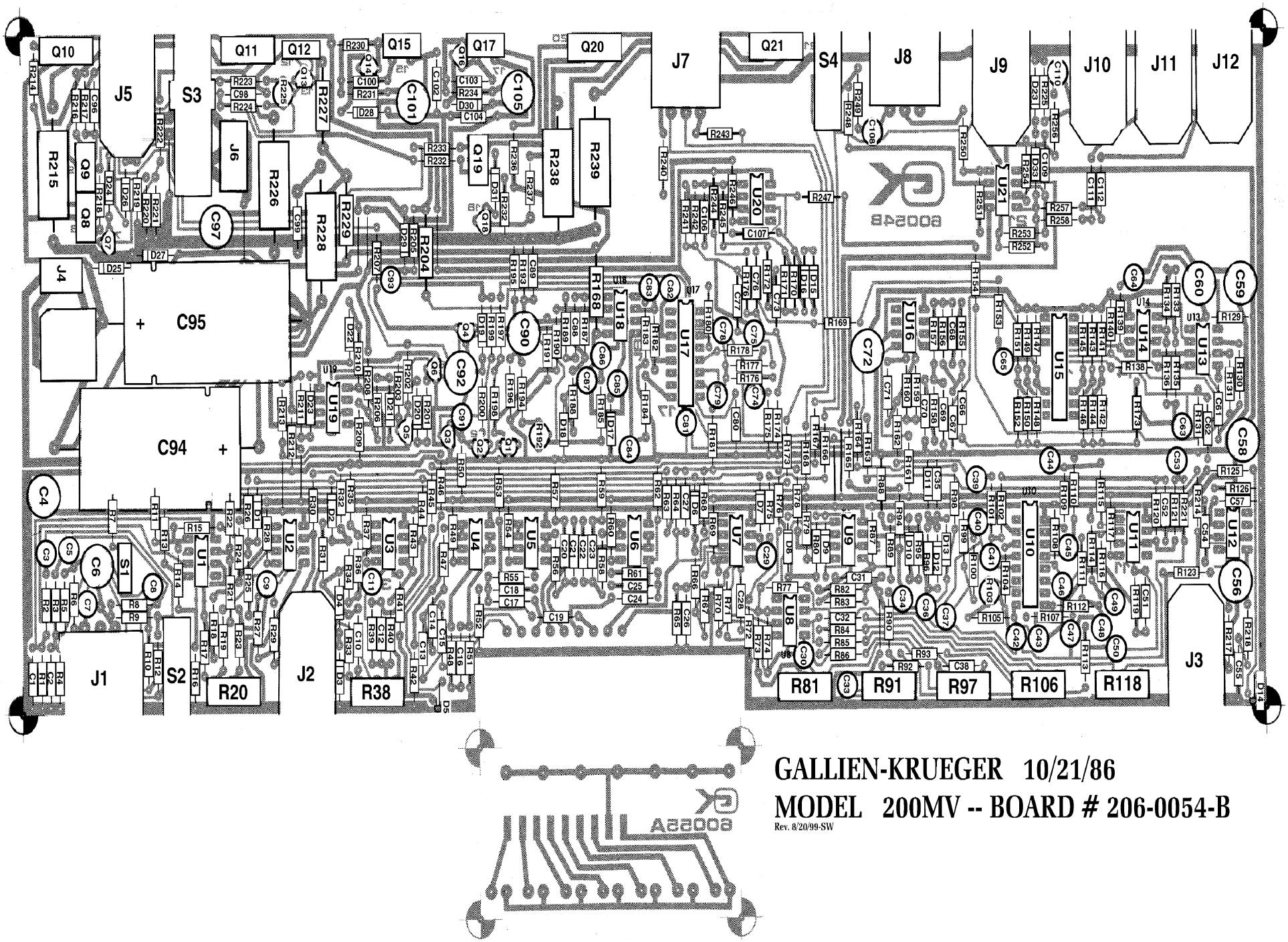
NOTE: Bold face numbers refer to ECO changes. Consult sheets for specifics.



CIRCUIT BOARD LAYOUT Rev. 8/18/99 -SW

10/21/85 GALLIEN- KRUEGER

MODEL: 200MV -- BOARD # 206-0054-A



GALLIEN-KRUEGER 10/21/86

MODEL 200MV -- BOARD # 206-0054-B

Rev. 8/20/99-SW

GALLIEN-KRUEGER	PRODUCTION CHANGE ORDER	PCO#: 15
DATE: 5/26/93	ASSEMBLY #: 206-0054B	MODEL#: 200MV
ASSEMBLY DESCRIPTION: 200MV Board		PAGE 1 OF 1

AFFECTS OPTIONS: ☒ ALL ☐ 100V ☐ 120V ☐ 220V ☐ 240V ☐ 50HZ ☐ 60HZ

TYPE OF CHANGE:
- ☐ NECESSARY TO THE FUNCTION OF THE UNIT
- ☒ IMPROVEMENT OR ADDITION TO THE UNIT
- ☐ OTHER_____

CHANGE TO BE IMPLEMENTED TO:
- ☒ NEXT PRODUCTION RUN
- ☒ ALL UNITS IN PRODUCTION
- ☐ ALL UNITS IN STOCK
- ☒ ALL UNITS BEING SERVICED
- ☐ OTHER_____

REMARKS: Reverses PCO #6 with 1 additional change

BEGINNING SERIAL NUMBER AFFECTED:

DESCRIPTION OF CHANGE: ☐ SEE PCO SUPPLEMENTS ☐ CONTINUED ON PCO SUPPLEMENT PAGE ____

1- Change R216 from 100Ω back to 10Ω
2- Change R188 from 4.3KΩ back to 5.6KΩ
3- Remove C89 (101)

REASON FOR CHANGE:
PCO #6 was causing problems with some units with limiters not working and the power output being too low.

PARTS ADDED

PART#	DESCRIPTION	QTY.	REF. DES.
	10Ω	1	R216
	5.6KΩ	1	R188

☐ CONTINUED ON PAGE ____

PARTS DELETED

PART#	DESCRIPTION	QTY.	REF. DES.
	100Ω	1	R216
	4.3KΩ	1	R188
	101 cap	1	C89

☐ CONTINUED ON PAGE ____

AFFECTED AREAS	DONE BY	DATE
☒ CIRCUIT SCHEMATIC	MG	5/26/93
☒ BILL OF MATERIAL		
☒ AUTO INSERTER		
☒ SAMPLE CHANGE		
☐ TEST PROCEDURE		
☐ COMP. CONTROL FORM		
☐ FAB DRAWING		
☐ PUNCH PROGRAM		
☐ PUNCH SAMPLE		
☐ ASSEMBLY PROCEDURES		
☐ ARTWORK		
☐ SILKSCREEN TEMPLATE		
☐		

AFFECTED AREAS (CONT)	DONE BY	DATE
☐		
☐		
☐		
DOCUMENT DIST. LIST	# COPIES	
☐ GK USA		
☐ SERVICE CENTERS		
☐ GK EUROPE		
☐ GK CAMPBELL		
☐ ENGINEERING		
☐ FABRICATION		
☐ PRODUCTION		
☐ OUTSIDE SUPPLIERS		
☐		

DRAWING(S) SHOWING MODIFICATION ATTACHED: ☒ NO ☐ YES - SPECIFY:

WRITTEN BY: Michael Johns DEPT: Eng DATE: 5/26/93

REVIEWED/APPROVED BY: DEPT: DATE:

PCOFORM

GALLIEN TECHNOLOGY
2240 Paragon Dr., San Jose, CA 95131
Tel: (408) 441-8081
Fax: (408) 441-8085

ECO# 16

ENGINEERING CHANGE ORDER

MODEL: 200 MV

CUSTOMER Gallien Krueger
DESC. 200 MV Input
ASSY# 206-0052 REV# B

LEVEL: ☒ System ☐ Board ☐ Fab
DATE: 4/17/95
ORIGINATOR: W Gehrmo

☐ EFFECTIVE	☒ PENDING
☒ Next production Run ☒ All in Process ☐ All in Stock ☐ All being Serviced ☐ Others:	Pending/Reject Reason: Pending approval from Bob. Type of Change: ☒ Necessary ☐ Improvement ☐ Other:

APPROVAL	INITIAL	DATE
Engineering	BMA	4/19/95
Material		
Production		
Fabrication		
Marketing		
Cost accounting		

REASON FOR CHANGE:

Was oscillating into 8 ohm load (into rails).
Change previous ECO's 6, 15.
NOTE: This still has a 3.5 dB rolloff @20kHz but the old one rolled off by 2.5 dB before putting in C83A to stop the oscillation problem.

Continued on ECO supplement page _____

AFFECTED AREA:

- ☒ Schematic
- ☐ Artwork
- ☒ Bill of Material
- ☐ Comp. Control Form
- ☐ Assembly Drawing
- ☐ Test Procedure
- ☐ Fab Drawing
- ☐ Silkscreen
- ☐ Punch Program

DESCRIPTION OF CHANGE:

Change R216 from 10 ohm to 47 ohm.
Replace C89 (101).
Change from 47pF to 27pF.
Add 101 caps from base to collector of Q3 and Q19 (name them C3A, and C19A, respectively).

Continued on ECO supplement page Schematic Included

TOTAL PARTS ADDED:

PART#	DESCRIPTION	QTY	REF.DES.
	47Ω 1/2W	1	R216
	101 cap	3	C89, C3A, C19A
	27pF cap	1	C83A

TOTAL PARTS DELETED:

PART#	DESCRIPTION	QTY	REF.DES.
	10Ω 1/2W	1	R216
	47pF	1	C83A

DISTRIBUTION:
☒ Engineering ☒ Material ☒ Production ☐ Fabrication ☐ Others: _____

FORM#: REV A 12/7/93

SW- Rev. 8/30/99 **200MV INDENTED BILL OF MATERIALS**

NOTE: Level 1 refers to main assembly parts.
Level 2 refers to board level components.
Main assemly parts are in bold face, while commonly needed parts are italicized.

LVL	PART#	DESCRIPTION	QTY	REF. DESIG.
1	010-0012-0	MPSA06 NPN 80V 500MA TO-92	1	
1	011-0023-0	TIP29C NPN 100V 1A TO-220 FP	1	
1	011-1035-0	TIP30C PNP 100V 1A TO-220	1	
1	*012-0085-0*	*TIP-35CFP NPN 100V 25A TO218*	*2*	
1	*012-1086-0*	*TIP 36CFP,PNP,100V,25A,TO-218,PECOR*	*2*	
1	025-0116-0	RED LED,1.5MCD,120 DEG,T-1	2	
1	080-0488-0	X-FORMER BACKLINE,DOMESTIC	0	
1	080-0489-0	X-FORMER BACKLINE,EXPORT	0	
1	*082-0037-0*	*SPEAKER,6.5",32MM VC,Z=16 PAN-VOICE*	*2*	
1	*090-0005-0*	*SWITCH,ROCKER,DPDT,4A,QUICK-TERM*	*1*	
1	*091-0003-0*	*FUSE, 3A,125V,1/4X1 1/4,SLB*	*1*	
2	799-TEST-0	TRY OUT	0	
1	092-0009-0	XLR,MALE,PC TERM TRIANGLE	2	
1	092-0064-0	Q-CON, .25 TAB,18-22GA,INSULATED	12	
1	093-0014-0	RECEPTICAL AC,Q-TERM	1	
1	093-0032-0	HOUSING,3X.156,FEMALE 22GA,LOCK	1	
1	093-0035-0	HOUSING,4X.156,FEMALE 22GA,LOCK	1	
1	*094-0013-0*	*HOLDER,FUSE,1/4 X 1 1/4,Q-TERM*	*1*	
1	*095-0005-0*	*POWER CORD,117V PLUG,DETACH*	*1*	
1	100-0012-0	GROMIT,3/16 X.100	1	
1	100-0027-0	BUTTON,ROUND BLACK CAP - PUSH SWITCH	1	
1	100-0028-0	BUTTON,SQUARE BLACK CAP - MINI SWITCH	2	
1	100-0032-0	INSULATOR,MICA,56-77-11AP,TO-220	2	
1	100-0037-0	HEAT CLIP,TO-98	1	
1	100-0072-0	GROMMET,.187 I.D.	4	
1	100-0076-0	FOOT,RUBBER,ROUND,5/8DIA. X 5/8"	4	
1	*100-0080-0*	*HANDLE RUBBER,10"*	*1*	
1	*100-0098-0*	*KNOB,GRAY,6X15MM SPLINE SHAFT*	*7*	
1	100-0108-0	X-FORMER BRACKET,FOR BACKLINE	4	

LVL	PART#	DESCRIPTION	QTY	REF. DESIG.
1	111-0061-0	BOLT 4-40 3/8 PHP CAD	4	
1	111-0081-0	BOLT 4-40 1/2 PHP CAD	6	
1	111-3041-0	SCREW 4AB 1/4 PHP CAD	4	
1	111-4060-0	SCREW 4AB 3/8 FHP 82^ B.O.	2	
1	111-4080-0	SCREW 4AB 1/2 FHP 82^ B.O.	4	
1	111-6001-0	NUT 4-40 KEP SMALL	4	
1	111-6011-0	NUT 4-40 HEX SMALL CAD	6	
1	111-7011-0	WASHER #4 SPLIT	6	
1	112-0051-0	BOLT 6-32 5/16 PHP CAD	4	
1	112-1050-0	BOLT 6-32 5/16 FHP 82^ B.O.	11	
1	112-1100-0	BOLT 6-32 5/8 FHP 82^ B.O.	4	
1	112-4080-0	SCREW 6AB 1/2 FHP 82^ B.O.	28	
1	112-4081-0	SCREW 6AB 1/2 FHP 82^ CAD	1	
1	112-7001-0	WASHER #6 FLAT CAD	8	
1	112-8060-0	TR-BOLT 6-32 3/8 PHP B.O.	2	
1	113-0080-0	BOLT 8-32 1/2 PHP B.O.	8	
1	113-0221-0	BOLT 8-32 1 3/4 PHP CAD	4	
1	113-6011-0	NUT 8-32 KEP CAD	16	
1	114-0080-0	BOLT 10-32 1/2 PHP B.O.	2	
1	115-7005-0	WASHER 3/8 FIBRE FLAT	1	
1	115-7021-0	WASHER 3/8 INTERNAL CAD	9	
1	115-7031-0	WASHER SMALL 3/8 LOCK CAD	4	
1	116-2041-0	BOLT 2M X 4 PHP B.O.	4	
1	130-0004-0	OVERLAY,206 GRILL	1	
1	132-0349-A	200MK/MV TOP COVER	1	
2	120-0005-0	ALUM .100	98	
1	132-0375-C	200MV FRONT PANEL	1	
2	112-6016-0	NUT 6-32 CAPTIVE	5	
2	120-0007-0	ALUM .063	54	
1	132-0376-B	200MV REAR PANEL	1	
2	112-6016-0	NUT 6-32 CAPTIVE	10	
2	120-0005-0	ALUM .100	45	
1	132-0378-E	200MV BAFFLE	1	

LVL	PART#	DESCRIPTION	QTY	REF. DESIG.
2	120-0005-0	ALUM .100	288	
1	132-0379-B	200MV RIGHT SIDE	1	
2	114-6046-0	NUT 10-32 CAPTIVE	1	
2	120-0005-0	ALUM .100	96	
1	132-0380-B	200MV LEFT SIDE	1	
2	114-6046-0	NUT 10-32 CAPTIVE	1	
2	120-0005-0	ALUM .100	96	
1	132-0381-C	200MV GRILL	1	
2	120-0011-0	STEEL,18 GAUGE JET COAT,.048	150	
1	132-0390-F	200MV BACK SERIES 2,1	1	
2	120-0005-0	ALUM .100	288	
1	**206-0054-B**	**200MV AMP**	**1**	
2	001-0001-0	MN3011 MULTI-TAP BBD	1	U15
2	001-0006-0	MN3007 1024 STAGE BBD	1	U14
2	001-1030-0	LF353N DUAL JFET OP AMP	14	U2,3,4,5,6,7,8,9,16,18,19,20,21
2	001-1038-0	LM386 LOW VOLTAGE POWER AMP	1	U12
2	001-1042-0	RC5532NB BI-POLAR OP-AMP	2	U1,11
2	001-2044-0	MN3101 CLOCK GENERATOR/DRIVER	1	U13
2	001-4043-0	NE571 DUAL COMPANDOR	1	U17
2	001-4045-0	NE572 DUAL COMPANDOR	1	U10
2	*010-0012-0*	*MPSA06 NPN 80V 500MA TO-92*	*5*	*Q4,6,7,14*
2	*010-1013-0*	*MPSA56 PNP 80V 500MA TO-92*	*5*	*Q3,5,13,16,18*
2	010-2010-0	J113 N-JFET 35V 2MA TO-92	2	Q1,2
2	011-0023-0	TIP29C NPN 100V 1A TO-220 FP	1	Q8
2	011-1035-0	TIP30C PNP 100V 1A TO-220	2	Q9,19
2	020-0036-0	1N747A,ZENER,3.6V,5%,400MW,DO-35	2	D15,16
2	020-0120-0	1N759A,ZENER,12V,5%,400MW,DO-35	6	D3,4,17,18,32,33
2	020-0160-0	1N966B,ZENER,16V,5%,400MW,DO-35	2	D28,30
2	020-0200-0	1N968B,ZENER,20V,5%,400MW,DO-35	1	D29
2	020-1103-0	1N914 ,RECT-FAST,200MA,100V,4NS,DO-35	15	D1,2,6,7,8,9,10,11,12,13,19,20,21,22,23
2	020-2105-0	1N4002,RECT,1A,150V,DO-41	5	D24,25,26,27,31
2	023-0109-0	KBPC-102 BRIDGE RECT 3A,200V,C219K	1	BRIDGE RECTIFIER
2	025-0101-0	LED-GREEN,6MCD,80 DEG,T-1	2	

LVL	PART#	DESCRIPTION	QTY	REF. DESIG.
2	030-0223-0	CAP,CERAMIC AXIAL,223,30%,16V	3	
2	030-1103-0	CAP,CERAMIC AXIAL,103,30%,25V	7	C12,18,24,80,98,102,104
2	030-2101-0	CAP,CERAMIC AXIAL,101,5%,50V	9	C10,26,27,28,51,52,61,89,109
2	030-2102-0	CAP,CERAMIC AXIAL,102,10%,50V	3	C1,2,25
2	030-2104-0	CAP,CERAMIC AXIAL,104,10%,50V,XR7,.3"	9	
2	030-2222-0	CAP,CERAMIC AXIAL,222,10%,50V	10	C23,32,67,69,70,73,76,77,100,103
2	030-2224-0	CAP,CERAMIC AXIAL,224,20%,50V,XR7	1	C15
2	030-2271-0	CAP,CERAMIC AXIAL,271,10%,50V	5	C68,71,96,106,107
2	030-2470-0	CAP,CERAMIC AXIAL,47,5%,50V	1	C83A
2	030-2472-0	CAP,CERAMIC AXIAL,472,10%,50V	1	C20
2	030-2473-0	CAP,CERAMIC AXIAL XR7,473,10%,50V	5	C14,21,35,38,55
2	030-2474-0	CAP,CERAMIC AXIAL Z5U,474,20%,50V	1	C13
2	030-2561-0	CAP,CERAMIC AXIAL,561,10%,50V	1	C62
2	031-1227-0	CAP,ELECTROLYTIC RADIAL,227,-10%+50%,25V	11	C4,6,56,58,59,60,72,90,92,101,105
2	031-1336-0	CAP,ELECTROLYTIC RADIAL,336,-10%+50%,25V	2	C40,45
2	031-2105-0	CAP,ELECTROLYTIC RADIAL,105,-10/+20%,50V	2	C41,43
2	031-2106-0	CAP,ELECTROLYTIC RADIAL,106,-10%+50%,50V	4	C3,5,7,8,
2	031-2227-0	CAP,ELECTROLYTIC RADIAL,227,-10%+50%,50V	1	C97
2	031-2335-0	CAP,ELECTROLYTIC RADIAL,335,20%,50V	33	C9,11,29,30,33,34,36,37,39,42,44,46,47,48, 49,50,53,63,64,65,74,75,78,79,81,82,83,84, 85,86,87,91,93,108,110
2	038-2478-0	CAP,ELECTROLYTIC AXIAL,478,20%,50V	2	C94,95
2	051-0101-0	RES,CARBON FILM,10 OHM,1/4W,5%	2	R127,128,216
2	051-0221-0	RES,CARBON FILM,22 OHM,1/4W,5%	5	R129
2	051-0470-0	RES,CARBON FILM, 4.7 OHM,1/4W,5%	2	R230,236
2	051-1001-0	RES,CARBON FILM,100 OHM,1/4W,5%	4	R7,218,233
2	051-1002-0	RES,CARBON FILM,1K OHM,1/4W,5%	15	R41,47,48,52,55,56,58,61,83,109,125,184, 196,202,224
2	051-1004-0	RES,CARBON FILM,100K OHM,1/4W,5%	24	R36,42,51,53,57,59,62,100,132,133,134,137 144,146,156,159,163,170,177,179,182,199, 199A,242
2	051-1005-0	RES,CARBON FILM,1M OHM,1/4W,5%	7	R33,50,80,82,87,89,189,252
2	051-1203-0	RES,CARBON FILM,12K OHM,1/4W,5%	20	R29,31,40,77,88,104,105,111,114,121,122, 123,191,201,203,205,210
2	051-1204-0	RES,CARBON FILM,120K OHM,1/4W,5%	6	R140,142,152,244
2	051-1504-0	RES,CARBON FILM,150K OHM,1/4W,5%	2	R148,150

LVL	PART#	DESCRIPTION	QTY	REF. DESIG.
2	051-2202-0	RES,CARBON FILM,2.2K OHM,1/4W,5%	4	R99,187,221,235
2	051-2203-0	RES,CARBON FILM,22K OHM,1/4W,5%	17	R23,26,32,44,72,130,175,180,181,183,195, 231,234,254,256,257,258
2	051-2204-0	RES,CARBON FILM,220K OHM,1/4W,5%	6	R116,131,206,208,211,213
2	051-2206-0	RES,CARBON FILM,22M OHM,1/4W,5%	1	
2	051-3302-0	RES,CARBON FILM,3.3K OHM,1/4W,5%	5	R222,223,237,253,255
2	051-3303-0	RES,CARBON FILM,33K OHM,1/4W,5%	9	R35,43,107,108,112,155,160,171,241
2	051-3304-0	RES,CARBON FILM,330K OHM,1/4W,5%	1	R185
2	051-3904-0	RES,CARBON FILM,390K OHM,1/4W,5%	3	R71,73,153
2	051-4701-0	RES,CARBON FILM,470 OHM,1/4W,5%	5	R209,212,217,219,220
2	051-4702-0	RES,CARBON FILM,4.7K OHM,1/4W,5%	5	R30,64,126,197,198
2	051-4703-0	RES,CARBON FILM,47K OHM,1/4W,5%	15	R25,34,67,74,85,95,101,119,157 158,172,176,178,194,245
2	051-4704-0	RES,CARBON FILM,470K OHM,1/4W,5%	2	R65,96
2	051-5602-0	RES,CARBON FILM,5.6K OHM,1/4W,5%	1	
2	051-5602-0	RES,CARBON FILM,5.6K OHM,1/4W,5%	10	R5,6,84,86,92,93,135,136,188,190
2	051-5603-0	RES,CARBON FILM,56K OHM,1/4W,5%	10	R27,66,76,141,143,145,147,149,151,193
2	052-0000-0	RES,METAL WIRE, 0 OHM,1/4W,1%	10	
2	052-1213-0	RES,METAL FILM,12.1K OHM,1/4W,1%	4	R248,249,250,251
2	052-2003-0	RES,METAL FILM,20K OHM,1/4W,1%	6	R1,4,8,9,10,12
2	052-2200-0	RES,METAL FILM,22 OHM,1/4W,1%	4	R2,3,240,243
2	052-2212-0	RES,METAL FILM,2.21K OHM,1/4W,1%	6	R15,19,21,24,168,173
2	052-4701-0	RES,METAL FILM,470 OHM,1/4W,1%	2	R16,17
2	052-4703-0	RES,METAL FILM,47K OHM,1/4W,1%	2	R14,18
2	054-2702-0	RES,CARBON FILM,2.7K OHM,1W,5%	4	R186,204,227,229
2	056-.330-0	RES,CERAMIC WW,.33 OHM,5W,10%	4	R215,226,238,239
2	056-0500-0	RES,CERAMIC WW,5 OHM,5W,10%	1	R228
2	*070-0506-0*	*POT,50KA,9MM,PLASTIC KNURL 14MM,.05W*	*1*	*R118*
2	*070-0508-0*	*POT,1K TRIM,6MM,SLOT,.3W*	*1*	*R225*
2	*070-0509-0*	*POT,20K TRIM,6MM,SLOT,.3W*	*2*	*R103,192*
2	*070-0514-0*	*POT,50KB,LINEAR,9MM,METAL KNURL 9MM,.1*	*6*	
2	090-0002-0	SWITCH,DIP,SPST,.1A,PC-TERM	1	S1
2	090-0012-0	SWITCH,MINI PP,DPDT,.1A BRK/MAKE,PC TERM	2	
2	090-0014-0	SWITCH,PP,DPDT,.2A,BREAK/MAKE,PC MOUNT	1	

LVL	PART#	DESCRIPTION	QTY	REF. DESIG.
2	*092-0201-0*	*JACK SW-RN112APC,1/4",S-TIP,SLDR TERM*	*3*	
2	*092-0203-0*	*JACK SW-RN111PC,1/4",O-TIP,P.C. TERM*	*3*	
2	*092-0204-0*	*JACK SW-RN112BPC,1/4",O-TIP,O-RING,P.C.*	*1*	
2	093-0028-0	HEADER,3X.156,MALE,LOCK	1	J4
2	093-0029-0	HEADER,4X.156,MALE,LOCK	1	J6
2	145-0054-0	200MV BOARD	1	
1	206-0055-A	200MV SLIDE POT ASY	1	
2	070-0503-0	POT,50K LINEAR SLIDE,20MM	7	
2	145-0055-0	200MV SLIDE POT BOARD	1	
1	602-0007-0	FORMS,WARRANTY CARDS	1	