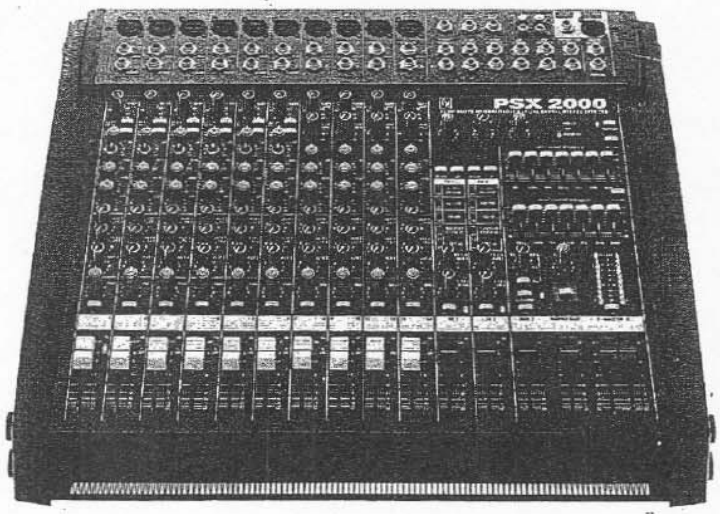
Electro-Voice®

PSX 2000 STEREO POWERED MIXER

SERVICE MANUAL



IMPORTANT SAFETY INSTRUCTIONS

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
AVIS: RISQUÉ DE CHOC ELECTRIQUE. NE PAS OUVRIR.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintance (servicing) instructions in the literature accompanying the appliance.

1. Read these instructions before installing unit.
2. Keep these instruction for future reference.
3. Heed all warnings contained in these instructions.
4. Do not use this apperatus near water.
5. Do not block any ventilation openings.
Install in accordance with the manufactures instructions.
6. Refer all servicing to qualified service personnel.

SPECIFICATIONS: PSX 2000

measuring standards : IEC 268, IHF-A
level : 0 dBu = 775 mV (RMS) frequency : 1kHz

MEASURING CONDITIONS

1. Rated setting:
gain controls at UNITY GAIN 0 dB (20 dB MIC), all faders at 0 dB-position, master fader at +6 dB, all other controls at their center position

2. Equivalent input noise

input	source impedance	gain control
LINE	50 ohms	unity gain (20dB)
MIC	150 ohms	maximum gain

3. Generally, distortion is distinguished as THD+noise. The bandwidth (MBW) is 80 kHz. The mixer is set to rated output power.

DUT	U(I) at the corresponding input	U(O) at the measured output	frequencies
LINE	+10 dBu	+ 16 dBu	1 kHz, 10 kHz
MIC	- 10 dBu	+ 16 dBu	1 kHz, 10 kHz
Power Amplifier	+ 6 dBu	250 watts / 8 ohms	20 Hz .... 20 kHz

4. Measurement of the frequency response at 20 dB below maximum level.
5. Crosstalk and attenuation at rated setting U (A) - 16 dBu with band pass filter, variable.
6. Common mode rejection CMRR (selective with band pass filter, variable).

Input	U(E)	output	gain control
LINE	+ 16 dBu	Main Out	Unity Gain (20dB)
MIC	- 50 dBu	Main Out	Gain max.

POWER SUPPLY

1. mains voltage: AC
2. rated mains supply: 120 volts
3. rated mains frequency: 50 - 60 Hz
4. maximal permissible deviation: –30 % ... +10 %
5. power consumption (both channels outputting a 1 kHz sine signal, respectively pink-noise)

power consumption at RL - 4 ohms	**PSX 2000**
power consumption, no load	80 ... 120 watts
rated power consumption	1600 watts
standard power consumption	520 watts
maximum power consumption (THD - 1 %)	1600 watts
power consumption at 1/8 of the maximum output	600 watts
power consumption at 1/3 of the maximum output	850 watts

INPUT CHARACTERISTICS

Mixer at rated setting, rated output levels, input sensitivity, gain, channel faders and master faders at maximum.

INPUT	rated input level (dBu)	input sensitivity	max. input level (dBu)	input impedance	input stage
MIC	–60 ... –10	–74 dBu (155 µV)	+11	1.8 k ohms	balanced
MONO LINE	–40 ... +10	–44 dBu (4.9 mV)	+30	18 k ohms	balanced
STEREO LINE	–20 ... +10	–34 dBu (15.5 mV)	+30	18 k ohms	balanced
INSERT RET. CHANNEL	0	–	+20	>3.3 k ohms	unbalanced
INSERT RET. MASTER	–6	–	+20	>2.2 k ohms	unbalanced
EQ IN	+6	–	+20	>8 k ohms	balanced
POWER AMP	+6	+6 dBu (1.55 V)	+20	18 k ohms	balanced
2TRACK RET.	+4	–	+14	>8 k ohms	unbalanced
STEREO RET.	0	–	+14	>15 k ohms	balanced

OUTPUT CHARACTERISTICS mixer

OUTPUT	rated output level (dBu)	max. output level (dBu)	output impedance	output stage
INSERT SEND CHANNEL	0	+ 20	75 ohms	unbalanced
INSERT SEND MASTER	- 6	+ 20	75 ohms	unbalanced
MAIN OUT	+ 6	+ 20	75 ohms	GND-sense
EQ OUT	+ 6	+ 20	75 ohms	GND-sense
MONO OUT	+ 6	+ 20	75 ohms	GND-sense
AUX ½ SEND	0	+ 20	75 ohms	GND-sense
AUX 3 SEND	0	+ 20	75 ohms	GND-sense
REC. SEND	- 7,8 (-10 dBV)	+ 16	1 k ohm	unbalanced
PHONES	–2 / 200 ohms	+ 18 / 200 ohms	47 ohms	unbalanced
LAMP	12 V DC/2.4 watts	---	---	---

OUTPUT CHARACTERISTICS power amplifier

rated input voltage at Power Amp In	**rated load impedance**	**rated output power, single channel THD < 0.1 %**	**max. output power, single channel THD = 1 %**	**max. single channel output power)[1]**	**rated output voltage**	**max. output voltage, no load**	**max. output voltage THD = 1 %**
+ 6 dBu	8 ohms	250 watts	340 watts	360 watts	44.7 V	58 V	53.6 V
+ 6 dBu	4 ohms	500 watts	570 watts	680 watts	44.7 V	58 V	47.7 V

)[1] measured with Dynamic Headroom test signal, according IHF-A: 1 kHz Burst, 20 ms On, 480 ms Off

STABILIZING of the power amplifier

Single channel, nominal output voltage

	8 ohms	**4 ohms**
stabilizing	0.57 %	1 %
stabilizing level	0.05 dB	0.09 dB

FREQUENCY RESPONSE

amplification frequency response (–3 dB dropped below the level of the nominal frequency 1kHz):

input	**output**	**f (u) at –3 dB**	**f (o) at –3 dB**
POWER AMP IN	SPEAKER L&R	45 Hz	54 kHz
MIC	MAIN OUT L&R	15 Hz	90 kHz
LINE	SPEAKER L&R	15 Hz	60 kHz
others	all other outputs	15 Hz	80 kHz

distortion-limited transmission range (effective bandwidth) of the power amplifier:

Input	**f (u)**	**f (o)**	**notes**
Power Amp Input	25 Hz	60 kHz	THD =0.4 %, 1/2 rated output capacity at 4 ohms, MBW=500 kHz

NON-LINEAR AMPLITUDES (single channel)

power amplifier input = Power Amp In	**power amplifier R(L) = 8 ohms**	**power amplifier R(L) = 4 ohms**	**notes**
rated overall distortion	< 0.03 % / 0.1 %	< 0.05 % / 0.2 %	MBW=80 kHz, f=1kHz / 10 kHz
standard overall distortion	< 0.03 % / < 0.03 %	< 0.05% / < 0.05 %	MBW=80 kHz, f=1kHz / 10 kHz
IMD-SMPTE	< 0.01 %	< 0.015 %	60 Hz, 7 kHz
DIM 30	< 0.01 %	< 0.015 %	3.15 kHz, 15 kHz
DIM 100	< 0.01 %	< 0.015 %	3.15 kHz, 15 kHz

mixer section	THD+N f = 1 kHz	THD+N f = 10 kHz	notes
LINE Input -> MAIN OUT	< 0.006 %	< 0.02 %	
LINE Input -> MONO OUT	< 0.006 %	< 0.02 %	
LINE Input -> AUX SEND	< 0.01 %	< 0.02 %	
LINE Input -> EQ OUT	< 0.006 %	< 0.02 %	
MIC Input - INSERT SEND	< 0.002 %	< 0.002 %	
MIC Input - MAIN OUT	< 0.006 %	< 0.02 %	
2TRACK -> MAIN OUT	< 0.006 %	< 0.015 %	
STEREO RET. -> MAIN OUT	< 0.006 %	< 0.015 %	

CROSSTALK AND ATTENUATION

	f = 1kHz	f = 10 kHz	notes
fader attenuation			
MONO CHANNEL	> 80 dB	> 80 dB	
STEREO CHANNEL	> 80 dB	> 80 dB	
MASTER	> 80 dB	> 80 dB	
MONO	> 80 dB	> 80 dB	
AUX/FX	> 80 dB	> 80 dB	
rotary control attenuation			
AUX	> 80 dB	> 65 dB	
PAN (BAL)	> 60 dB	> 60 dB	
2 TRACK RETURN	> 90 dB	> 90 dB	
STEREO RETURN	> 90 dB	> 80 dB	
switch attenuation			
STANDBY	> 90 dB	> 80 dB	
PFL	> 80 dB	> 70 dB	
crosstalk			
Endstufe L/R	> 60 dB	> 60 dB	Power Amp In
Kanal - Kanal	> 70 dB	> 70 dB	
common mode rejection			
CMRR MIC	> 80 dB	> 60 dB	
CMRR LINE	> 40 dB	> 40 dB	
CMRR STEREO LINE	> 40 dB	> 40 dB	
CMRR MASTER Inputs	> 40 dB	> 40 dB	

NOISE

- U (F) = hum & noise, unweighted with B = 22 Hz ... 22 kHz, RMS (IEC 268-1)
- U (G) = noise voltage, frequency weighting filter according to CCIR-468-3, quasi-peak-rated (IEC 268-1)
- U (A) = interfering voltage A-weighted, dB (A), RMS (IEC 268-1)
- S/N ratio maximum output voltage at 4 ohms 47.7 volts (+35.8 dBu) in relation interfering voltage A-weighted

measurement	U(F)	U(A)	U(G)	EIN (A)	S/N-Ratio (A)	output	notes
power amplifier	-67 dBu	-69 dBu	-56 dBu	------	104 dB	SPEAKER OUT	Power Amp In, R(Q) = 50 Ω
residual noise	-90 dBu	-92 dBu	-79 dBu	------	100 dB	MAIN OUT	MASTER at minimum
total noise MASTER	-87 dBu	-88 dBu	-75 dBu	------	------		MASTER at 0 dB, channel down.
typical mixer noise	-81 dBu	-83 dBu	-68 dBu	------	------		all faders at 0 dB, Unity Gain
MIC (150 ohms)	-67.5 dBu	-69.5 dBu	-56.5 dBu	130 dBu		INSERT	Gain max.
LINE (50 ohms)	-57 dBu	- 59 dBu	- 46 dBu	100 dBu			Gain max.

power amp **DAMPING FACTOR** : >200

power amp **SLEW RATE** : >20 V/µs

INDICATORS

PEAK (channel)	: 6 dB below maximum level
SIGNAL (channel)	: 25 dB below PEAK-indication
MAIN 10-segment	: 27 dB ... +6 dB (measured in dB at the MAIN OUT)
PEAK (FX 1/2)	: 6 dB below maximum level

PHANTOM POWER : 24 volts dc, commonly switched

SOUND CONTROLS

	LO (shelving)	MID (peaking)	HI (shelving)
MONO (MIC) INPUT	±15 dB / 60 Hz	±15 dB 100 Hz ... 8 kHz Q = 1	±15 dB / 12 kHz
STEREO INPUT	±15 dB / 60 Hz	±12 dB / 2.4 kHz Q = 0.7	±15 dB / 12 kHz

GRAPHIC EQUALIZER (master section)

2 x 7 band: 80 Hz, 250 Hz, 630 Hz, 2.5 kHz, 4 kHz, 8 kHz, 16 kHz; ±10 dB, Q = 1.4

FILTER LO-CUT; f = 80 Hz; 18 dB/oct. (monaural inputs)
VOICING FILTER (monaural inputs)
FEEDBACK FILTER (AUX3) controllable 80 Hz ... 7.7 kHz / notch / –9 dB

FX-SECTION 2 separately controllable stereo FX-units, 18 bit, UP/DOWN-keys, each with 99 program presets (delay, reverb, modulation, and mixed programs)

DIMENSIONS AND WEIGHT

	PSX 2000 desktop model	**PSX 2000 rack mount model**
Width	508.5 mm	483 mm
Height	210.3 mm	443.7 mm (10 H.E.)
Depth	478.7 mm	195.2 mm
Weight	20 kg	21.5 kg

EXTENSION KITS

NRS 90 220	19" rack-mount-ears for the PSX 2000 No. 112 698
DCN 112700	gooseneck lit-light, 12 volts/2.4 watts, 12", XLR-connector
DCN 110693	foot switch FS11

NOTE when mounting the PSX 2000 in a rack shelf system:
To protect the appliance against thermal overload, a space of at least 2 HU has to be left directly below and above the PSX 2000 which can be covered using dummy plates. In case the rack shelf is equipped with front and rear covers, these have to be detached.

MEASUREMENT DATA PSX 2000, complete

measuring conditions :

measurement tolerance:	$\Delta X = \pm 1.5$ dB
test frequency:	f = 1 kHz
reference level:	U = 775 mV (0dB)
source impedance LINE:	R(Q) = 50 Ω
source impedance MIC:	R(Q) = 150 Ω
load impedance mixer outputs:	R(L) = 100 kΩ
load impedance headphones:	R(L) = 2 x 200Ω
load impedance power amplifier:	R(L) = 4Ω, 8Ω,
EQ, PAN, BAL controls:	center position
FADER:	0 dB-position
gain controls:	Unity Gain = 0 dB (MIC 20 dB)
AUX, LEVEL controls:	center position
measurement standards:	IEC 268, IHF-A
safety class:	I
test voltage IEC65:	3000 Vrms
U (F) = hum & noise	unweighted with B = 22 Hz ... 22 kHz, rms (IEC 268)
U (G) = noise voltage	frequency weighting filter according to CCIR-468-3, quasi-peak-rated (IEC 268)
U (A) = interfering voltage	A-weighted, dB (A), rms (IEC 268)

• The printed board assembly is provided with service terminals. The assignment of these terminals complies to the following table:

CNSERV 1	Belegung	CNSERV 2	Belegung
1	-Vcc	1	LIM L
2	BIAS + R	2	-15V
3	BIAS - R	3	LIM R
4	FAN-Voltage	4	+5V
5	+Vcc	5	+24V
6	BIAS + L	6	+15V
7	BIAS - L	7	TEMP -Heatsink
8	Temp +Heatsink	8	GND

1. operating voltage: U(B) = 120V / 50Hz ... 60 Hz

2. critical tolerance (operating voltage): - 30% .... +10%

3. power consumption (both channels driven):

	power consumption	current
no load	80....120W	-----
rated operation (RL = 4 ohms) @ 2 x 470 watts	1600 W	17.7 A

4. adjustments:

4.1 IDLE-CIRCUIT CURRENT ADJUSTMENT:

A DC-voltmeter has to be connected to the BIAS test points to adjust the idle-circuit current via the trimmer on the printed board assembly 84170. Adjustment of both power amplifier channels L&R.

Adjustment	test point 1	test point 2	U (DC)	BIAS-trimmer
BIAS L	CNSERV1.6	CNSERV1.7	4 mV	VR301
BIAS R	CNSERV1.2	CNSERV1.3	4 mV	VR501

Adjustment of the idle-circuit current has to be performed under normal room temperature conditions. If the power amplifier had been operated before, the appliance has to rest for several hours to cool off.

4.2 VCA - OFFSET:
You have to rhythmically open and short-circuit the CNSERV2.1 and CNSERV2.2 for the left channel respectively the CNSERV2.3 and CNSERV2.2 for the right channel, that are located on the printed board assembly 84170, and adjust the power amplifier output signals for minimal offset, using VR300 respectively VR500 (using an oscillograph it has to be set for minimal peak or for audibly minimal loudness of the interference pulse).

5. function test:
5.1 OUTPUT - offset voltage
DC-voltage measurement at the speaker outputs CHANNEL L/R with U (DC) < ±10 mV.

5.2 LIMITER:
5.2.1. attenuation test
Drive each channel with a 1 kHz signal until output voltage = 50 volts (no load). Increase the input voltage by 10 dB. The LIMITER LED will light and the output voltage is increased by about 1 dB to 57 volts. The signal is slightly driven into clipping with a distortion rate of the limited signal: THD = 1.0 % ... 1.5 %. Further increasing the input signal up to +20 dBu should not result in excessive higher clipping.
5.2.2. Attack and release
• test the amplifier channels separately: testing should be performed without load resistors.
1.) Drive the power amplifier inputs with a burst signal (f = 1 kHz, 10 cycles, rate: 0.5 sec.) and U (in) = +16 dBu.
2.) Observe the outputt signal via an oscilloscope. After 3 - 4 signal periods, the limiter attenuated the "heavy" distortion in the beginning to a minor rest distortion (THD of 1.0 % ... 1.5 %).
attack time: 3 - 4 ms
release time: 30 - 40 ms

5.3 CUT-IN DELAY:
After turning on the appliance using the power-on switch, it takes about 2 seconds until the input signal is present on the power amplifier's outputs. The relay E2 on the printed board assembly 85267 bridges the NTC-resistor for limiting the inrush current.

5.4 FAN CONTROL:
When switching the power amplifier on, the internal fan coolers will run for approximately 2 seconds. Afterwards, they stop, provided that the power amplifier is "cold". During the power amplifier is operated with no load (power on, no input signal), the ventilators switch back and forth between SLOW-mode and OFF-mode, depending on the heat sinks' temperature. When unplugging the CN14 connector, the fans will run on FAST speed. Ventilator-voltage –27 volts DC, measured between CNSERV1.4 and CNSERV2.8.

5.5 SOAR PROTECTION CIRCUIT TEST:
Drive each channel up to 45 volts with a load of 4 ohms. Connect a 1 ohm resistor parallel. The protection circuit responds and tries to re-activate continuously! The protect-LED lights. Repeat the test with a load of 2ohms. The power amplifier has to stay in operation.

5.6 SHORT-CIRCUIT CURRENT-LIMITING TEST:
Test the power amplifier channels separately, without load:
- drive the power amplifier inputs with a burst signal (f = 1 kHz, 10 cycles, rate: ≈ 0.5 sec.) and U (E) = +6 dBu.
- include an 1 ohms load resistor.
- the short-circuit current-limiting circuitry attenuates the output voltage at the load resistor symmetrically (observe on the oscilloscope) to a peak voltage of 25 V - 27 V (approx. 25 A - 27 A maximum peak current).

5.7 DC-VOLTAGE PROTECTION CIRCUIT TEST:
This test can only be performed when measuring single printed board assemblies.
Test the power amplifier channels separately:
- drive each channel of the power amplifier with a test signal (f = 4 Hz) applied to the FET Q316 respectively Q516 Drain, without load.
- when reaching an input voltage of approximately 10 dBu, the protection circuit responds and tries to re-activate continuously! The protect-LED lights.
- Repeat the test using a test signal of f = 14 Hz. The power amplifier has to stay in operation.

5.8 HIGH FREQUENCY PROTECTION CIRCUIT TEST:

Caution: Operate the power amplifier under all circumstances without load resistors connected. Apply to one power amplifier channel at the time a sine burst of **f = 80 kHz** (40 ms ON, 960 ms OFF) with +20 dBu. The protection circuit has to respond and the power amplifier tries to re-activate continuously. The PROTECT-LED blinks rhythmically. Repeat the test with **f = 50 kHz**. The power amplifier has to stay in operation.

6. Level

All level controls within the signal path fully open.

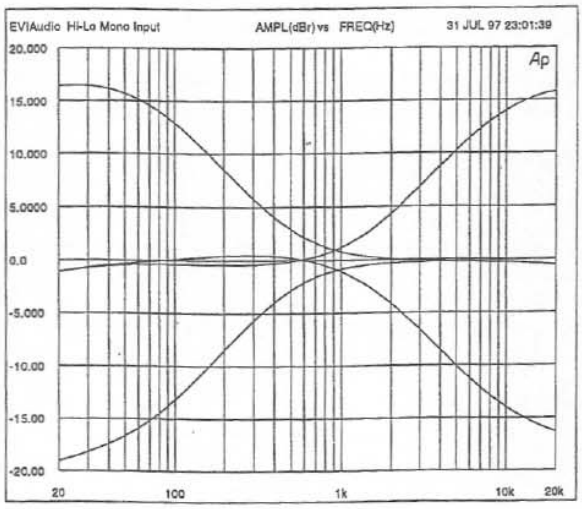
Input	U(in)	Output	U(out)	remarks
MIC Mono	-60 dBu	INSERT Mono	0 dBu	Gain max.
LINE Mono	-54 dBu	SPEAKER L&R	44.7 V	EQ Bypass
INSERT RETURN Mono	-14 dBu	SPEAKER L&R	44.7 V	
MIC Stereo	-60 dBu	MAIN INSERTS	+4 dBu	
LINE Stereo L/Mono	-34 dBu	MAIN OUTPUT L&R	+6 dBu	
LINE Stereo R	-34 dBu	MAIN OUTPUT R	+6 dBu	
STEREO RET. L/Mono	-24 dBu	EQ OUTPUT L&R	+2 dBu	EQ ON
STEREO RET. R	-24 dBu	EQ OUTPUT R	+2 dBu	EQ ON
2 TRACK RET.	-24 dBu	MONO OUTPUT	0 dBu	
LINE Mono	-44 dBu	REC. SEND	0 dBu	
2 TRACK RET.	-20 dBu	AUX3 SEND	-12 dBu	
LINE Mono	-60 dBu	AUX1 SEND	+20 dBu	
LINE Mono	-60 dBu	AUX2 SEND	+20 dBu	
LINE Mono	-60 dBu	AUX3 SEND	+5 dBu	AUX3 PRE
LINE Mono	-60 dBu	AUX3 SEND	+15 dBu	AUX3 POST
LINE Stereo L/Mono	-44 dBu	AUX3 SEND	+0 dBu	AUX3 PRE
LINE Stereo L/Mono	-44 dBu	AUX3 SEND	+8 dBu	AUX3 POST
LINE Stereo L/Mono	-44 dBu	AUX1 SEND	+13 dBu	FX1 off
LINE Stereo L/Mono	-44 dBu	AUX2 SEND	+13 dBu	FX2 off
LINE Mono	-44 dBu	PHONES L&R	+8 dBu	PFL CHANNEL engaged
LINE Stereo L/Mono	-24 dBu	PHONES L&R	+8 dBu	PFL CHANNEL engaged
LINE Stereo L/Mono	-24 dBu	PHONES L&R	+18 dBu	PFL MASTER engaged
LINE Stereo L/Mono	-34 dBu	PHONES L&R	+11 dBu	PFL AUX3 engaged /AUX3 PRE
POWER AMP INPUT L&R	+ 6 dBu	SPEAKER L&R	44.7 V	no distortion

7. Amplitudes and non-linearity

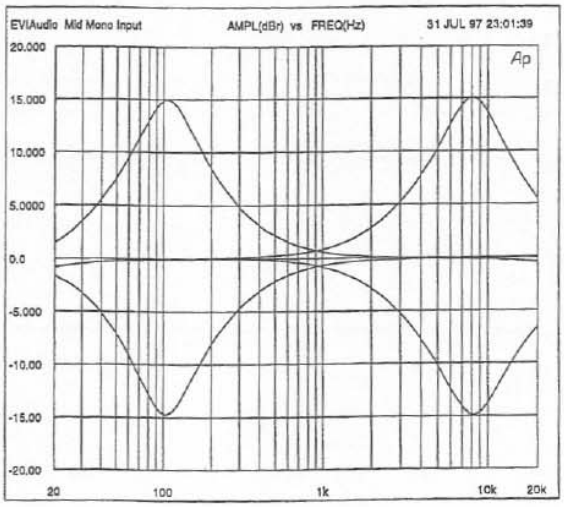
- measurement of the power amplifier with an 8 ohms load resistor, one channel driven.
- MBW = 80 kHz,
- DIM 30: 3.15 kHz, 15 kHz
- SMPTE: 60 Hz, 7 kHz, 4:1

input	output	THD+N @ 1 kHz	THD+N @ 10 kHz	DIM 30	SMPTE	remarks
MIC Mono/Stereo	EQ OUTPUT L&R	<0.005 %	<0.02 %	<0.01 %	<0.01 %	U(out) = 16dBu
LINE Mono	EQ OUTPUT L&R	<0.005 %	< 0.02 %	< 0.01 %	< 0.01 %	U(out) = 10 dBu
LINE STEREO	EQ OUTPUT L&R	<0.005 %	< 0.02 %	< 0.01 %	< 0.01 %	U(out) = 10 dBu
POWER AMP IN	SPEAKER OUT L&R	< 0.03 %	< 0.1 %	< 0.01 %	< 0.01 %	Pab = 250W

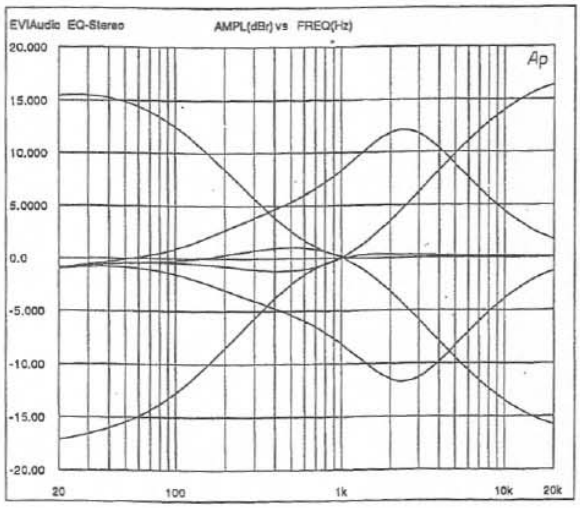
8. Frequency response



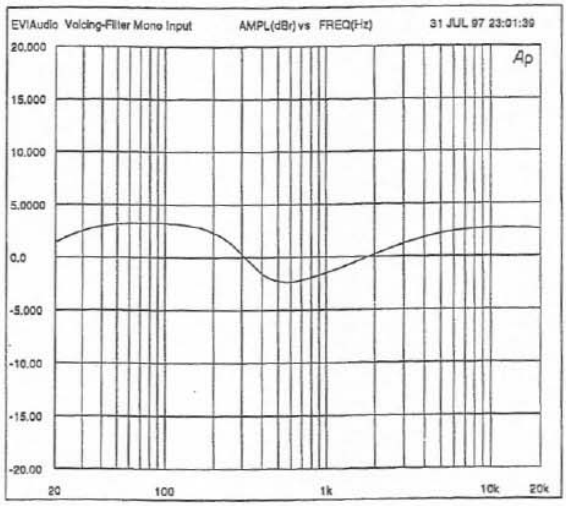
EQ Mono Input HI/LO



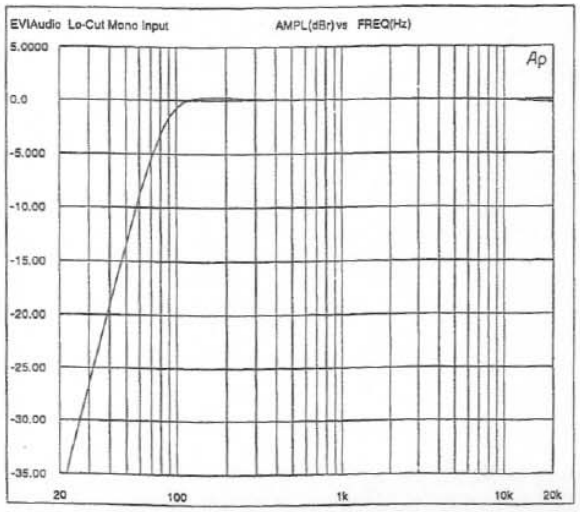
EQ Mono Input MID



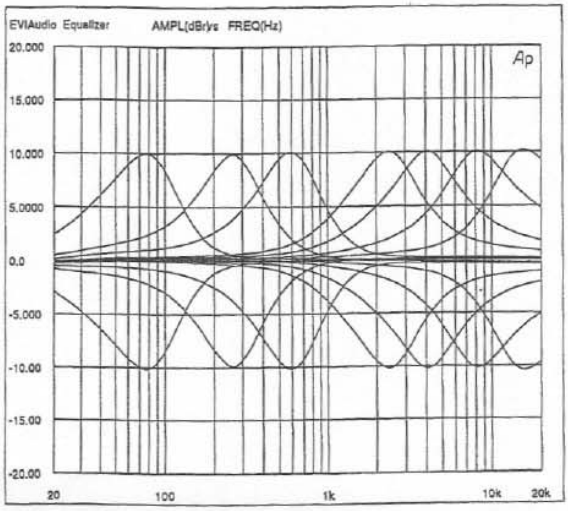
EQ Stereo Input



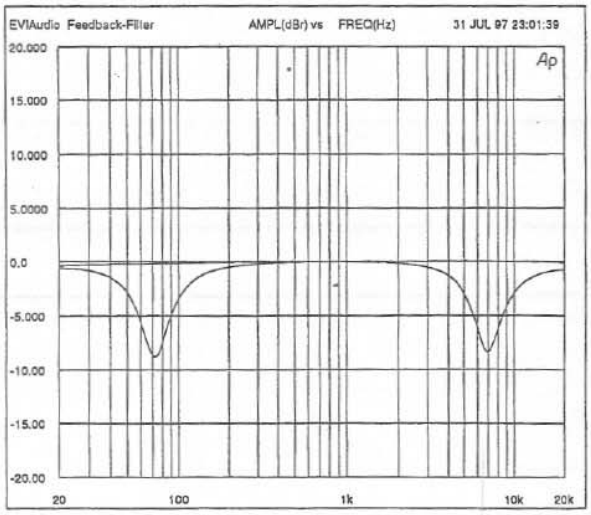
VOICING FILTER Mono Input



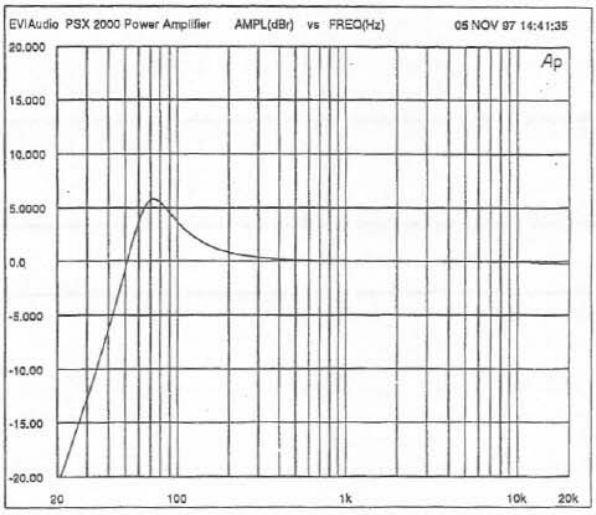
LO-CUT Mono Input



7-BAND EQUALIZER MASTER



FEEDBACK FILTER AUX3



Power Amplifier

8.2 cut-off frequencies –3 dB @ 1 kHz

All level controls within the signal path fully open.

Input	Output	f(u)	f(o)
MIC Mono	SPEAKER L&R	52 Hz	83 kHz
MIC Stereo	SPEAKER L&R	52 Hz	83 kHz
LINE Mono	SPEAKER L&R	52 Hz	47 kHz
LINE Stereo	SPEAKER L&R	45 Hz	33 kHz
Power Amp In	SPEAKER L&R	45 Hz	95 kHz
LINE Stereo	AUX3	10 Hz	33 kHz
LINE Stereo	AUX2	12 Hz	33 kHz
LINE Stereo	AUX1	12 Hz	33 kHz
LINE Stereo	MONO OUT	8 Hz	33 kHz
LINE Stereo	REC.SEND	8 Hz	30 kHz
MIC Mono	INSERT SEND	50 Hz	100 kHz

9. Noise & Hum

- U (F) = extraneous voltage, unweighted with B = 22 Hz ... 22 kHz, rms (IEC 268-1)
- U (G) = noise voltage, frequency weighting filter according to CCIR-468-3, quasi-peak-rated (IEC 268-1)
- U (A) = interfering voltage A-weighted, dB (A), rms (IEC 268-1)
- S/N ratio maximum output at 4 ohms = 47.7 volts (+35.8 dBu) in relation to interfering voltage A-weighted

Input	Output	U(F) dBu	U(G) dBu	U(A) dBu	GAIN dB	EIN(A) dBu	S/N-R. dB	Remarks
Power Amp In	SPEAKER L&R	-67	-56	-69	29.2	---	104	Power Amp In R(Q) = 50 Ω
----	EQ OUT	-78	-67	-80	---	---	---	master up, EQ by-pass, channel down
----	EQ OUT	-90	-79	-92	---	---	---	master down, EQ by-pass, channel down
----	EQ OUT	-88	-77	-90	---	---	---	master down, EQ on, channel down
MIC Mono	MAIN	-47	-36	-49	81	130	---	MASTER, CHANNEL and GAIN up, R (Q) = 150 Ω
MIC Mono	MAIN	-74	-63	-75	30	105	---	MASTER, CHANNEL and GAIN down, R (Q) = 150 Ω
MIC Stereo	MAIN	-46	-35	-48	82	130	---	MASTER, CHANNEL and GAIN up

MIC Stereo	MAIN	-71	-60	-73	31	104	---	MASTER and CHANNEL up, GAIN down
LINE Stereo	MAIN	-45	-34	-47	41	88	---	MASTER, CHANNEL and GAIN up
LINE Stereo	MAIN	-71	-60	-73	11	84	---	MASTER and CHANNEL up, GAIN down
LINE Mono	MONO	-62	-51	-64	24	88	---	MONO, MASTER and CHANNEL up, GAIN down
PSX 2000	AUX1	-64	- 53	-66	---	---	---	AUX 1, CHANNEL down
PSX 2000	AUX2	-64	- 53	-66	---	---	---	AUX 2, CHANNEL down
PSX 2000	AUX3	-71	-60	-73	---	---	---	AUX 3, CHANNEL down,
---	2 TRACK	-94	-84	-96	---	---	---	CHANNEL down

10. operation voltages and service test points

voltage measured at the corresponding pin referred to GND CNSERV2.8

84170	**Power Amp**	**measured in idle condition**	**interfering voltage and ripple-voltage U (F) rms**
CNSERV 1	**assignment**		
1	-Vcc	-82Vdc	70 mVrms
2-3	BIAS R	4 mV	-----
4	FAN-Voltage	stage 0: 0 volts stage I: 13.5 volts stage II: 27 volts	-----
5	+Vcc	+82Vdc	70 mVrms
6-7	BIAS L	4 mV	-----
8	Temp +heatsink	variable *1	-----
CNSERV 2			
1	LIM L	-----	-----
2	-15V	-15.5Vdc	250 µVrms
3	LIM R	-----	-----
4	+5V	+5Vdc	40 µVrms
5	+24V	+25Vdc	120 µVrms
6	+15V	+15.5Vdc	250 µVrms
7	TEMP -heatsink	variable *1	-----
8	GND	GND	-----
CN2			
20	LAMP	12.5Vdc	1.5 mVrms

* see also paragraph 11

11. Heat sink temperature

DC-voltage measured at the corresponding pin referred to GND (CNSERV2.8)

heat sink temperature	25 °C	40°C	60°C	80°C	100°C	120°C	140°C
Udc CNSERV1.8 (+) respectively CNSERV2.7 (-)	2.5 V	4.5 V	7 V	9.5V	11 V	13 V	14V

The critical shut-off point is reached at approx. 130°C; the power amplifier enters the protection mode.

12. Phantom power

When the +24 volts-button is engaged, the measured DC-voltage on pin 2 referred to pin 1, respectively on pin 3 referred to pin 1 of the corresponding XLR-type input connector has to be between +24 ... +26 volts.

13. FX unit

13.1 Level

- AUX1/FX1 respectively AUX2/FX2, AUX3, channel fader, AUX1/FX1 Send respectively AUX2/FX2 Send, FX1 to AUX3 respectively FX2 to AUX3, AUX3 fader, master L&R-fader fully up.
- FX1 ON-switch respectively FX2 ON-switch set to ON. Selected FX-preset 0/0.

Input	U(E)	Output	U(A)	Remarks
MIC MONO	-40 dBu	MAIN OUTPUT L&R	+18 dBu	Gain min.
MIC MONO	-40 dBu	AUX 3 SEND	+15.5 dBu	Gain min. AUX3 PRE.
MIC STEREO	-40 dBu	MAIN OUTPUT L&R	+15 dBu	Gain Mic min.
MIC STEREO	-40 dBu	AUX 3 SEND	+12.5 dBu	Gain Mic min. AUX3 PRE.
Line STEREO L / MONO	-20 dBu	MAIN OUTPUT L&R	+15 dBu	Line Trim min.
Line STEREO L / MONO	-20 dBu	AUX 3 SEND	+12.5 dBu	Line Trim min. AUX3 PRE.
Line STEREO R	-20 dBu	AUX 3 SEND	+6.5 dBu	Line Trim min. AUX3 PRE.
Line STEREO R	-20 dBu	AUX 3 SEND	+6.5 dBu	Line Trim min. AUX3 POST

13.2 Noise & Hum

- U (F) =hum, unweighted with B = 22 Hz ... 22 kHz, rms (IEC 268-1)
- U (G) = noise voltage, frequency weighting filter according to CCIR-468-3, quasi-peak-rated (IEC 268-1)
- U (A) = interfering voltage A-weighted, dB (A), rms (IEC 268-1)

Output	U(F)	U(G)	U(A)	Remarks
MAIN OUTPUT L&R	-58 dBu	-49 dBu	-60 dBu	MASTER + FX1 respectively FX2 faders max. Prog. 0
AUX 3 SEND	-60 dBu	-52 dBu	-64 dBu	AUX3-fader, FX1 respectively FX2 to AUX3 max. Prog. 0
MAIN OUTPUT L&R	-59 dBu	-49 dBu	-60 dBu	MASTER + FX1 faders max. Prog. 5
MAIN OUTPUT L&R	-58 dBu	-49 dBu	-60 dBu	MASTER + FX2 faders max. Prog.55

13.3 Functioning test

Drive the FX 1 and the FX 2 units. Listen to the signal while switching the presets.
7-segment LED-Display: All bars have to light at the same intensity.
The FX-unit should not introduce extreme digital interference or extensive noise to the audio signal.
During the (ON/OFF) switching of the FX1/2 units, no switching noise should occur.
Switch the FX unit via foot switch.

14. Gooseneck-Lamp connector

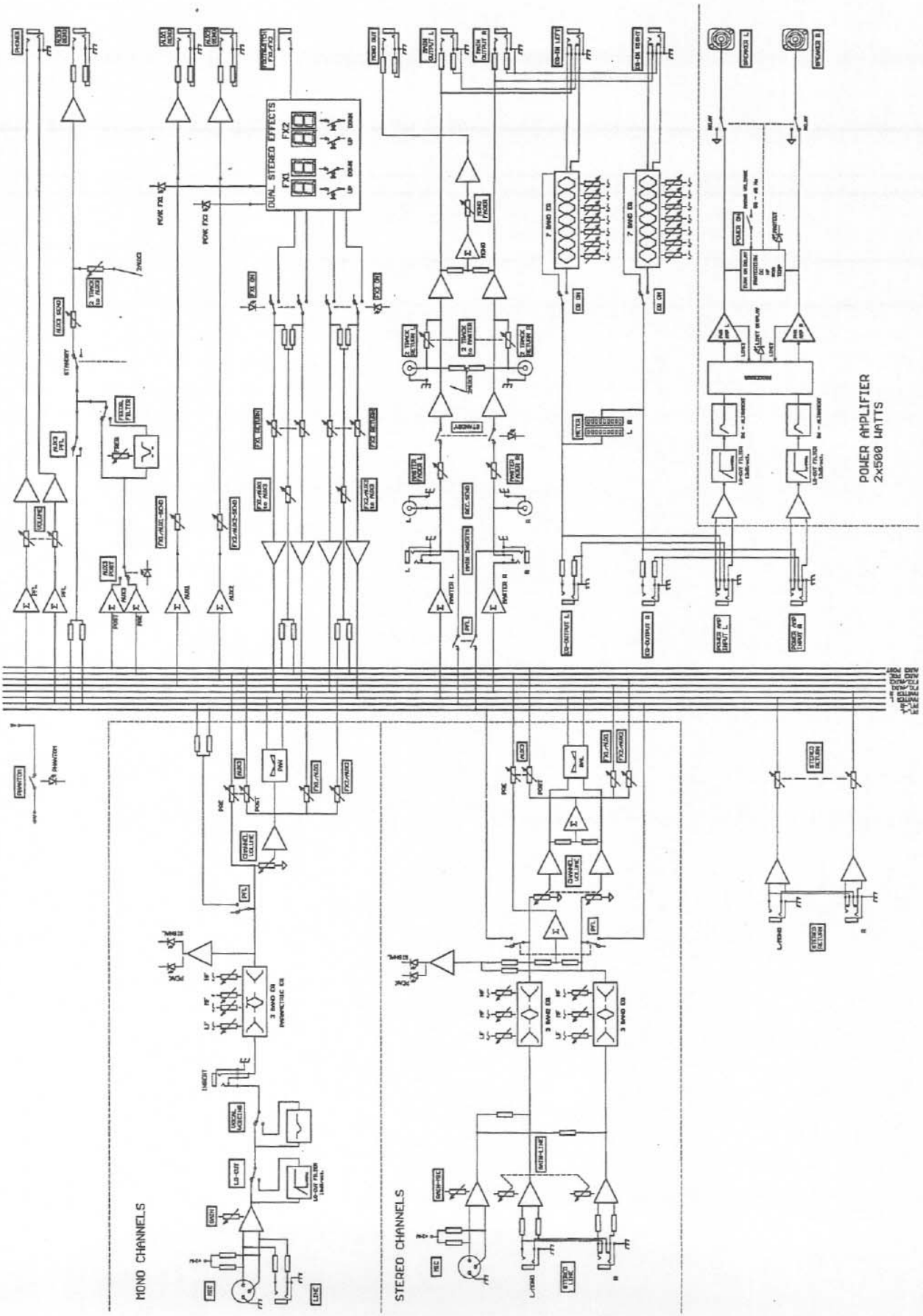
Connect a 40 ohms / 10 watts resistor to the pins 2 and 3 of the LAMP-connector. The measured voltage should indicate 12 volts DC.

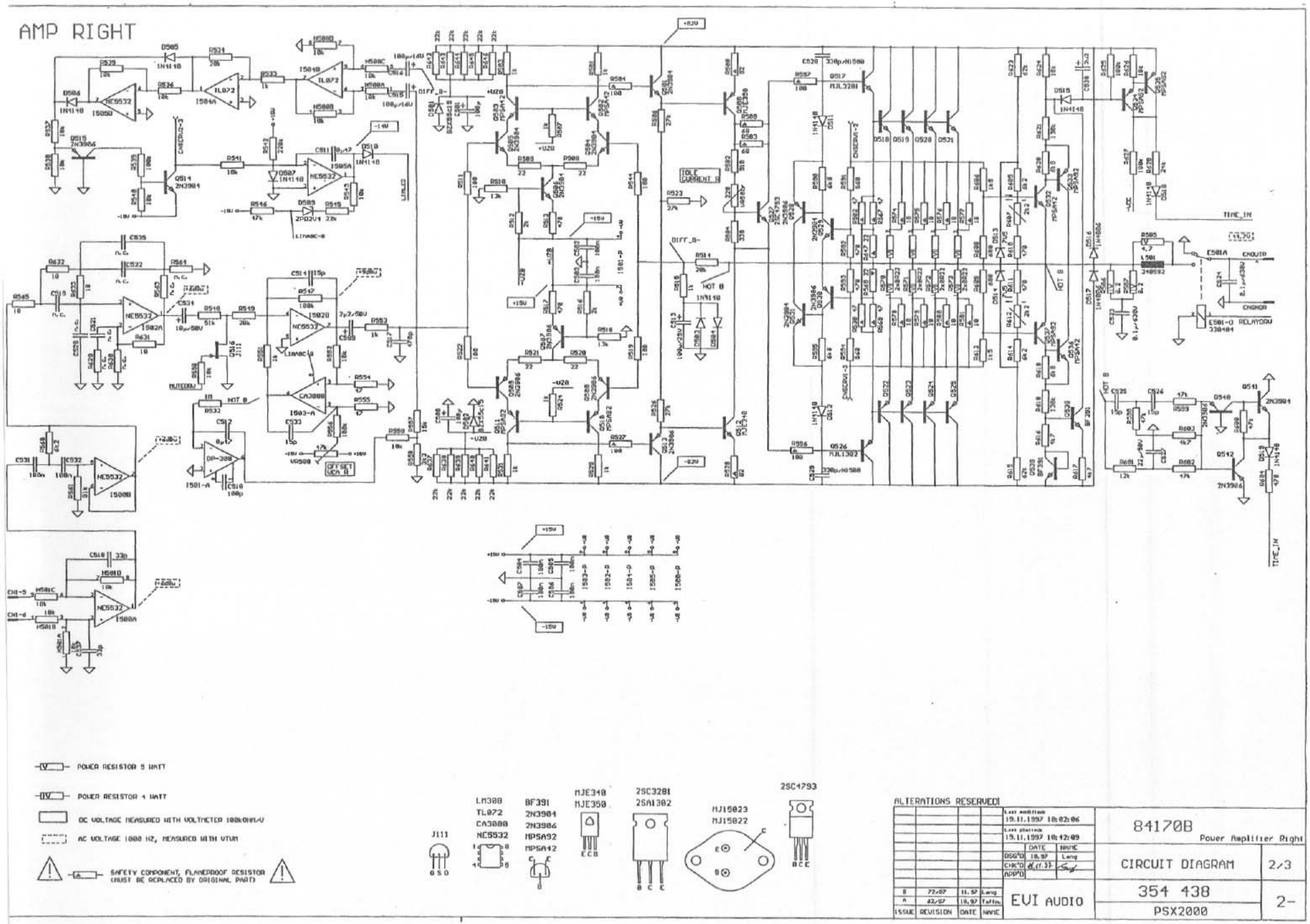
15. Displays

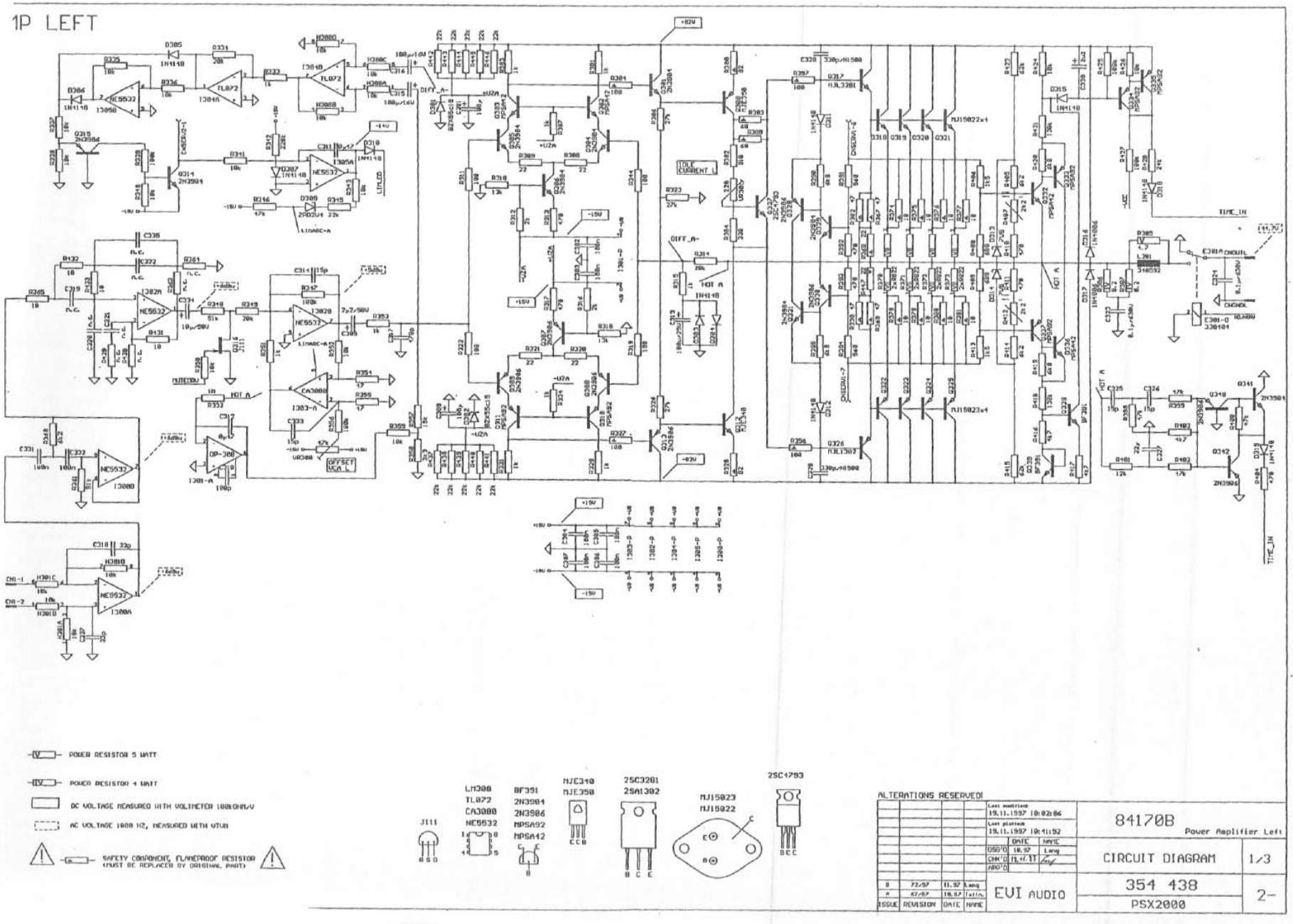
At the mentioned input-voltage the LED starts lighting. Gain and AUX1/2 controls set to their maximum with a tolerance of ±2 dB.

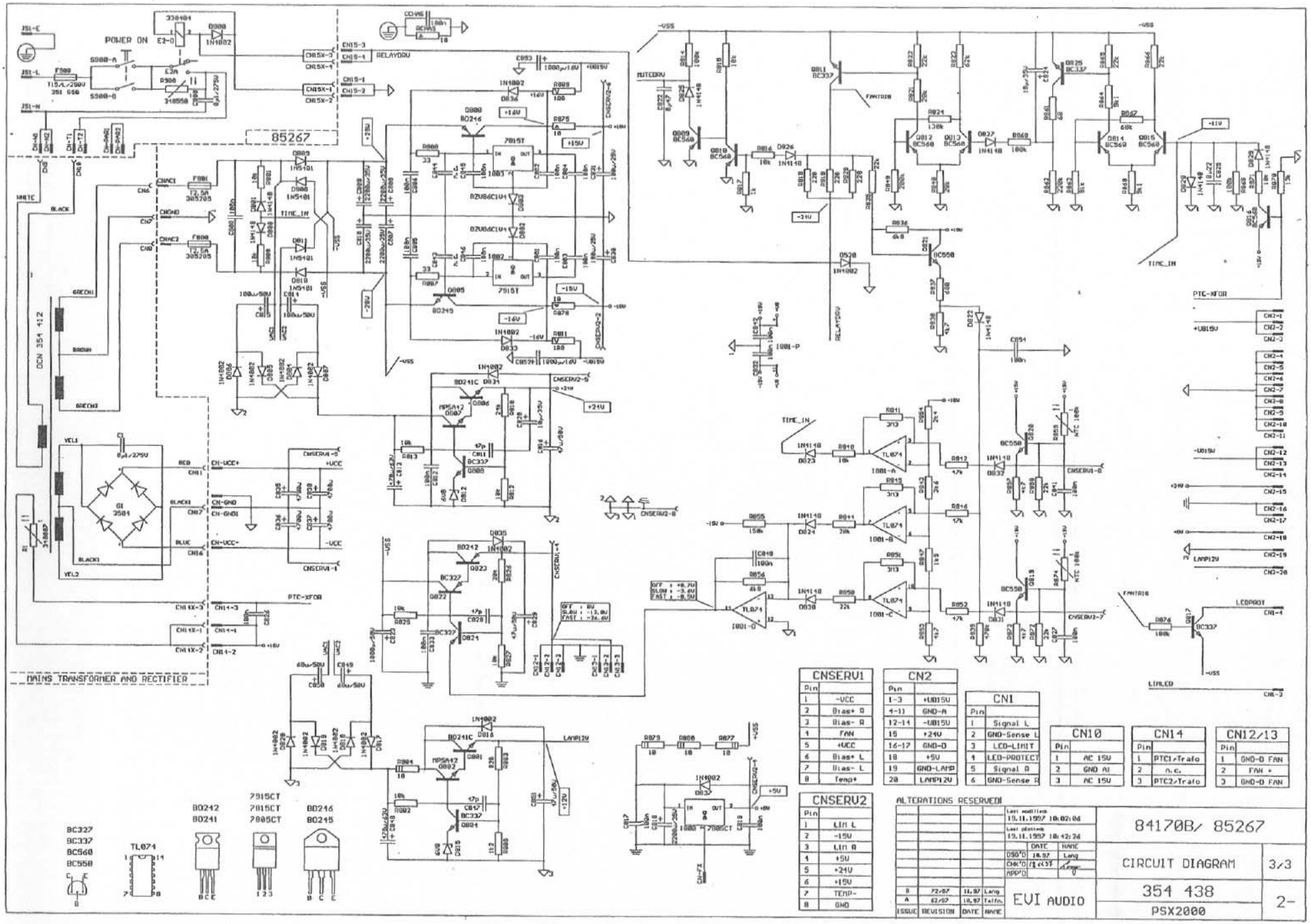
Display	Input	U(E) / dBu
SIGNAL of a monaural channel	LINE Mono	- 52
PEAK of a monaural channel	LINE Mono	- 26
SIGNAL of a stereo channel	LINE Stereo L/Mono	- 32
PEAK of a stereo channel	LINE Stereo L/Mono	- 6
PEAK FX1 / FX2	LINE Mono	- 65

The display within the master section indicates the corresponding output level at the MAIN OUT; in dBu. Check the indicated display-value of the MAIN OUT for every LED.

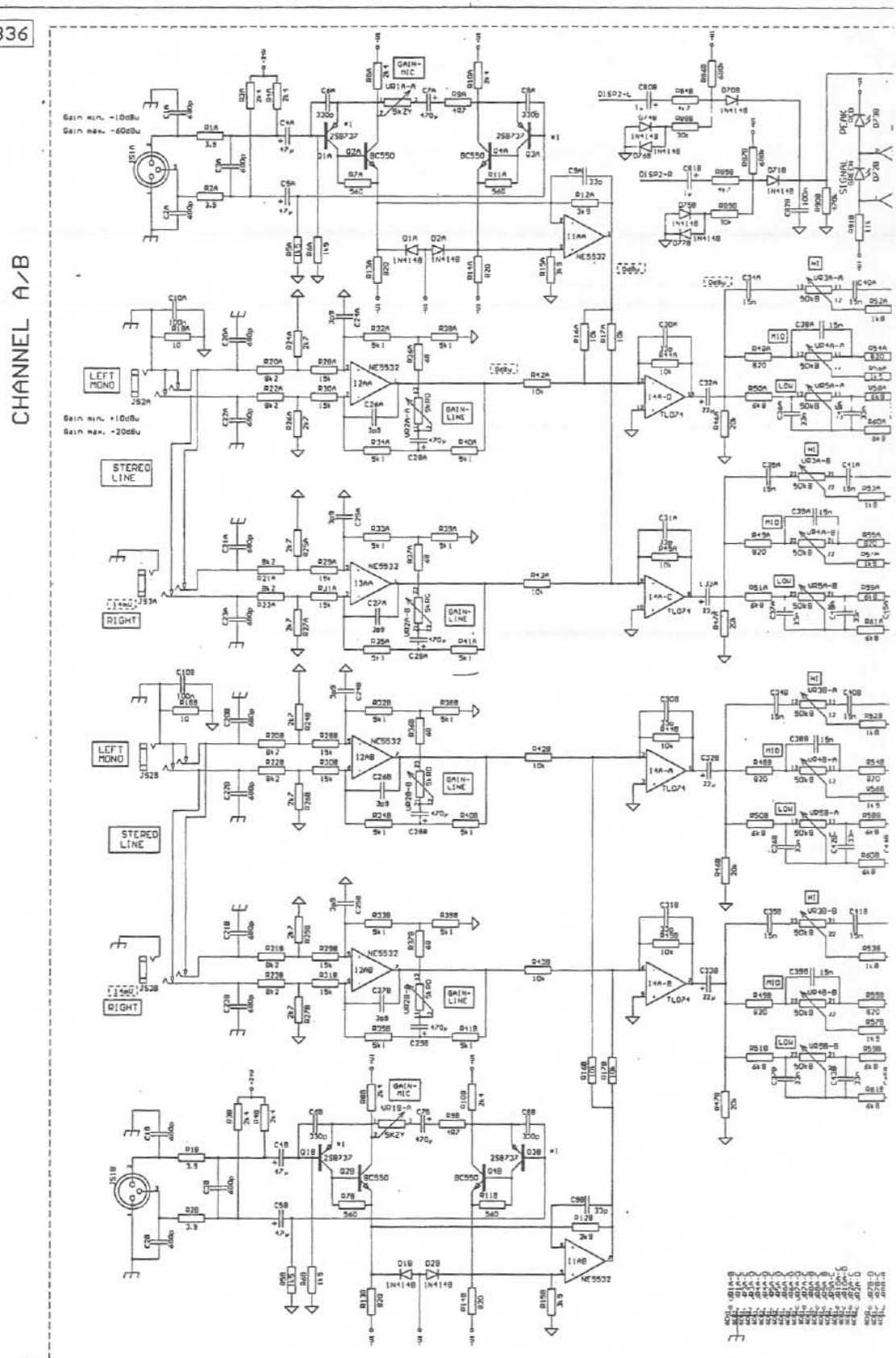

DUAL STEREO EFFECTS
FX1
FX2
POWER AMPLIFIER
2x500 WATTS
MONO CHANNELS
STEREO CHANNELS


AMP RIGHT
+82V
-82V
+15V
-15V
-14V
IDLE CURRENT 1A
DIFF_B-
HOT B
TIME_IN
POWER RESISTOR 5 WATT
POWER RESISTOR 4 WATT
DC VOLTAGE MEASURED WITH VOLTMETER 100kOHM/V
AC VOLTAGE 1000 HZ, MEASURED WITH VTVM
SAFETY COMPONENT, FLAMEPROOF RESISTOR (MUST BE REPLACED BY ORIGINAL PART)
J111
LM308
TL072
CA3080
NE5532
BF391
2N3904
2N3906
MPSA92
MPSA42
MJE340
MJE350
2SC3281
2SA1302
MJ15023
MJ15022
2SC4793
ALTERATIONS RESERVED!
84170B
Power Amplifier Right
CIRCUIT DIAGRAM
2/3
354 438
2-
PSX2000
EVI AUDIO


1P LEFT
POWER RESISTOR 5 WATT
POWER RESISTOR 4 WATT
DC VOLTAGE MEASURED WITH VOLTMETER 100KOHM/V
AC VOLTAGE 1000 HZ, MEASURED WITH VTVM
SAFETY COMPONENT, FLAMEPROOF RESISTOR (MUST BE REPLACED BY ORIGINAL PART)
J111
LM308
TL072
CA3080
NE5532
BF391
2N3904
2N3906
MPSA92
MPSA42
MJE340
MJE350
2SC3281
2SA1302
MJ15023
MJ15022
2SC4793
IDLE CURRENT
OFFSET
TIME_IN
ALTERATIONS RESERVED!
Last modified 19.11.1997 10:02:06
Last plotted 19.11.1997 10:41:52
DRAWN 18.97 Lang
CHK'D 11.11.11
APP'D
84170B
Power Amplifier Left
CIRCUIT DIAGRAM
1/3
354 438
PSX2000
2-
EUI AUDIO
ISSUE REVISION DATE NAME
II 72/97 11.97 Lang
I 62/97 10.97 Tatin

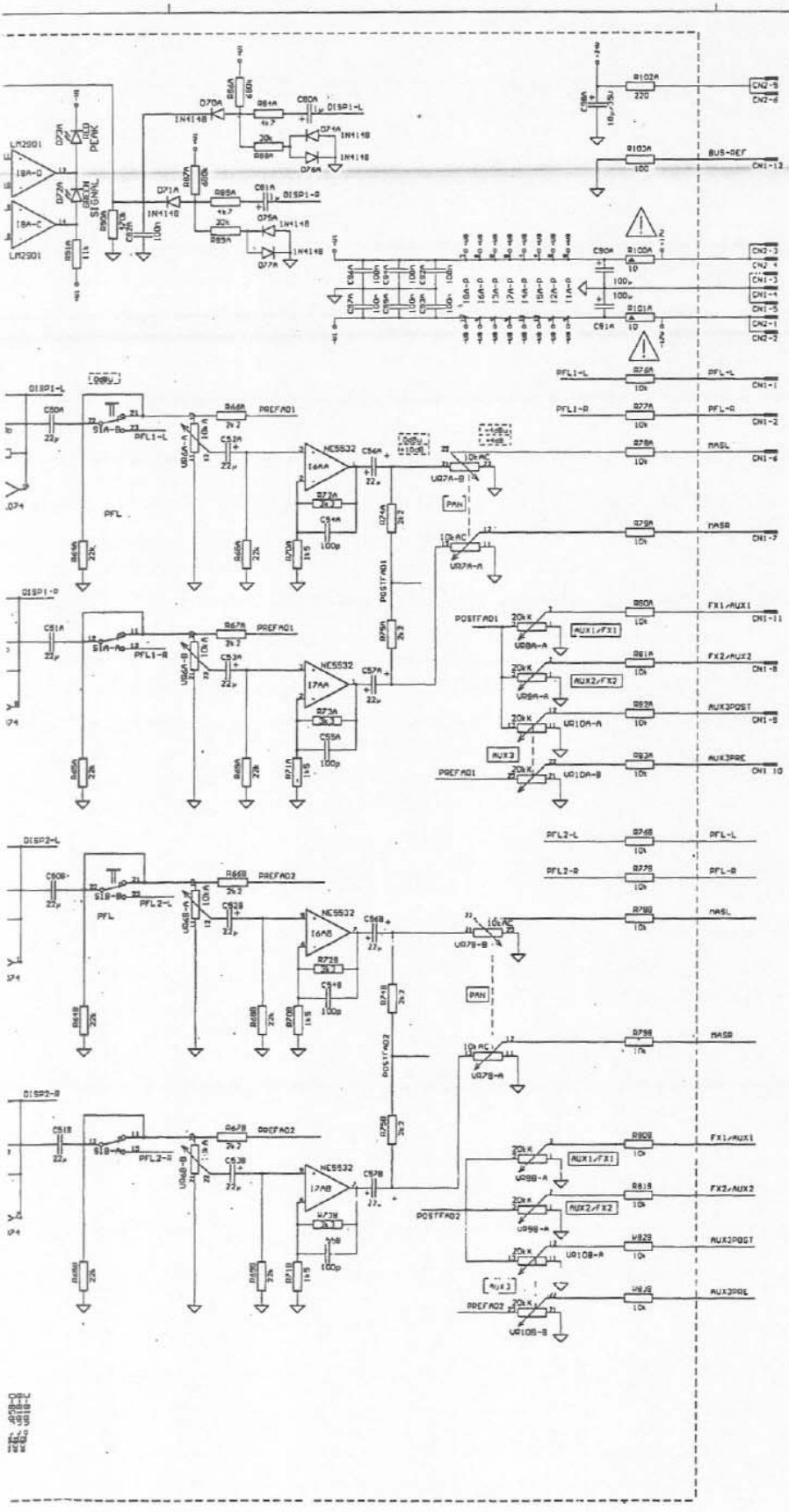

POWER ON
85267
MAINS TRANSFORMER AND RECTIFIER
RELAYDRV
MUTEDRV
FANTRIG
TIME_IN
PTC-XFOR
LCDPROT
LIMLED
-USS
+USS
-UB15V
+UB15V
-24V
+24V
-15V
+15V
-5V
+5V
-12V
+12V
-16V
+16V
CNSERV1
Pin | |
1 | -VCC
2 | Bias+ B
3 | Bias- B
4 | FAN
5 | +VCC
6 | Bias+ L
7 | Bias- L
8 | Temp+
CN2
Pin | |
1-3 | +UB15V
4-11 | GND-A
12-14 | -UB15V
15 | +24V
16-17 | GND-D
18 | +5V
19 | GND-LAMP
20 | LAMP12V
CN1
Pin | |
1 | Signal L
2 | GND-Sense L
3 | LCD-LIMIT
4 | LCD-PROTECT
5 | Signal R
6 | GND-Sense R
CN10
Pin | |
1 | AC 15V
2 | GND AC
3 | AC 15V
CN14
Pin | |
1 | PTC1/Trafo
2 | n.c.
3 | PTC2/Trafo
CN12/13
Pin | |
1 | GND-D FAN
2 | FAN +
3 | GND-D FAN
CNSERV2
Pin | |
1 | LIM L
2 | -15V
3 | LIM R
4 | +5V
5 | +24V
6 | +15V
7 | TEMP-
8 | GND
ALTERATIONS RESERVED!
Last modified 19.11.1997 10:02:04
Last plotted 19.11.1997 10:42:24
DATE NAME
DSG'D 18.97 Lang
CHK'D 18.11.97 Lang
APP'D
B 72/97 11.97 Lang
A 62/97 10.97 Talfn.
ISSUE REVISION DATE NAME
EVI AUDIO
84170B/ 85267
CIRCUIT DIAGRAM
3/3
354 438
PSX2000
2-
BC327
BC337
BC560
BC550
TL074
BD242
BD241
7915CT
7815CT
7805CT
BD246
BD245
BC548

81 336



CHANNEL C/D

SAME AS CHANNEL A



ALTERATIONS RESERVED!

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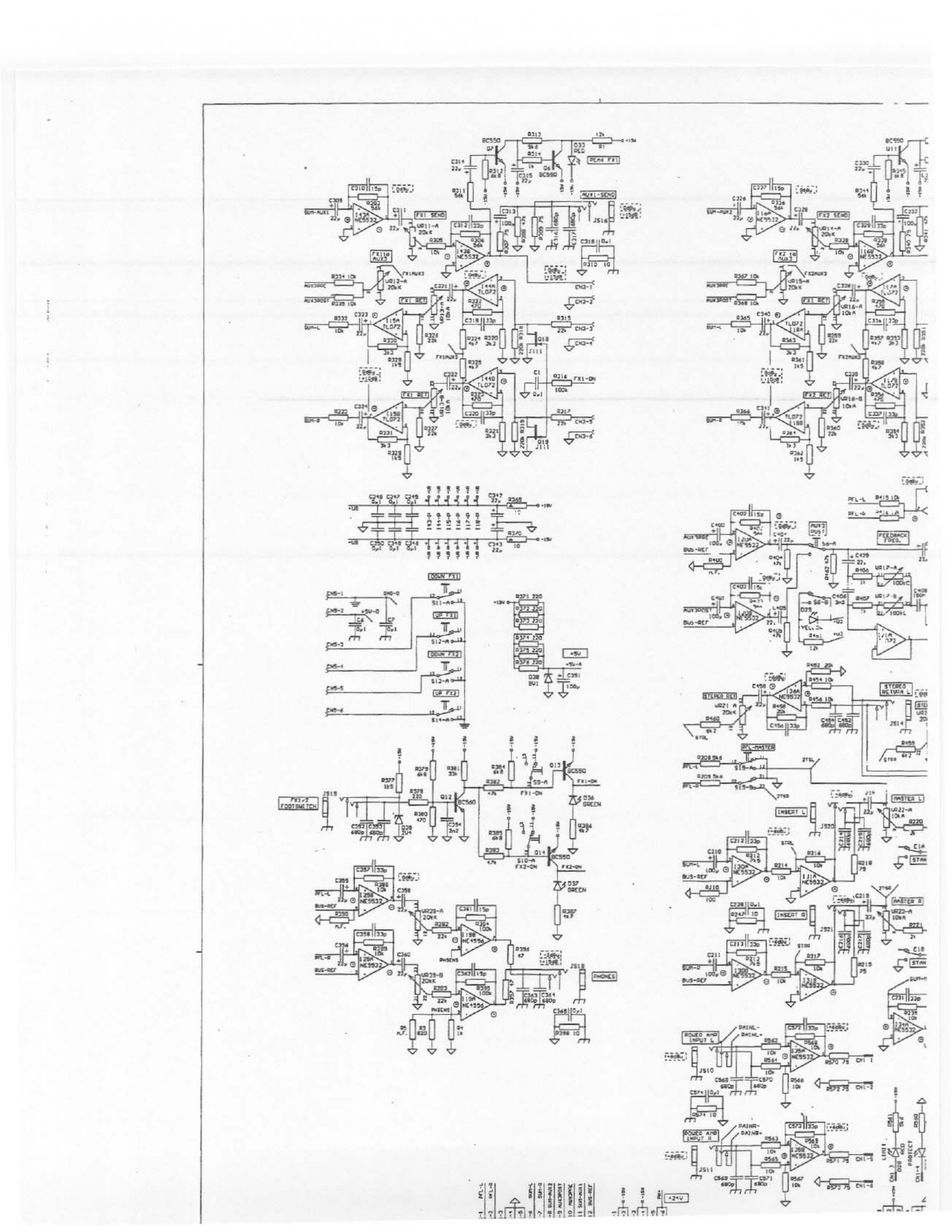
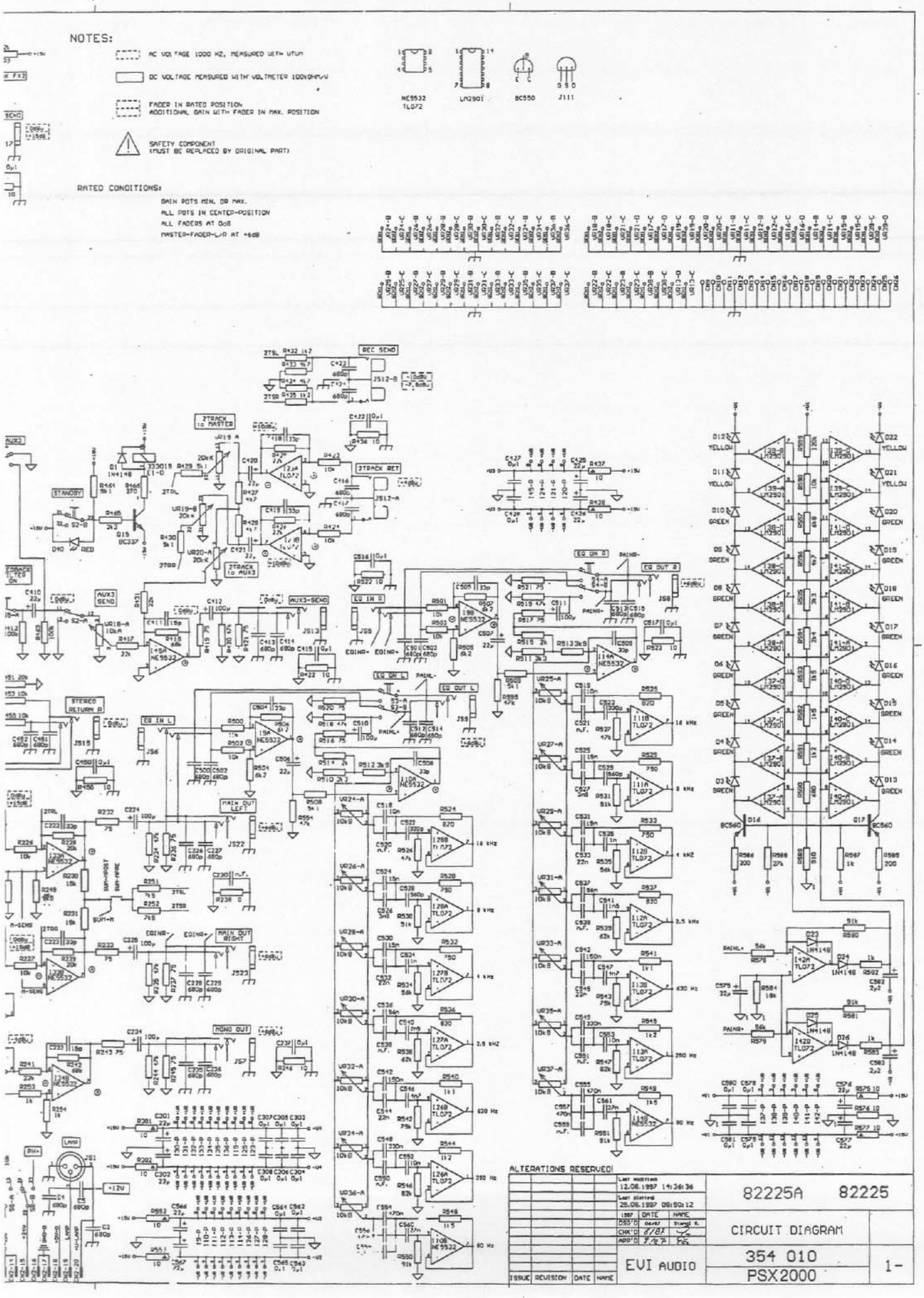
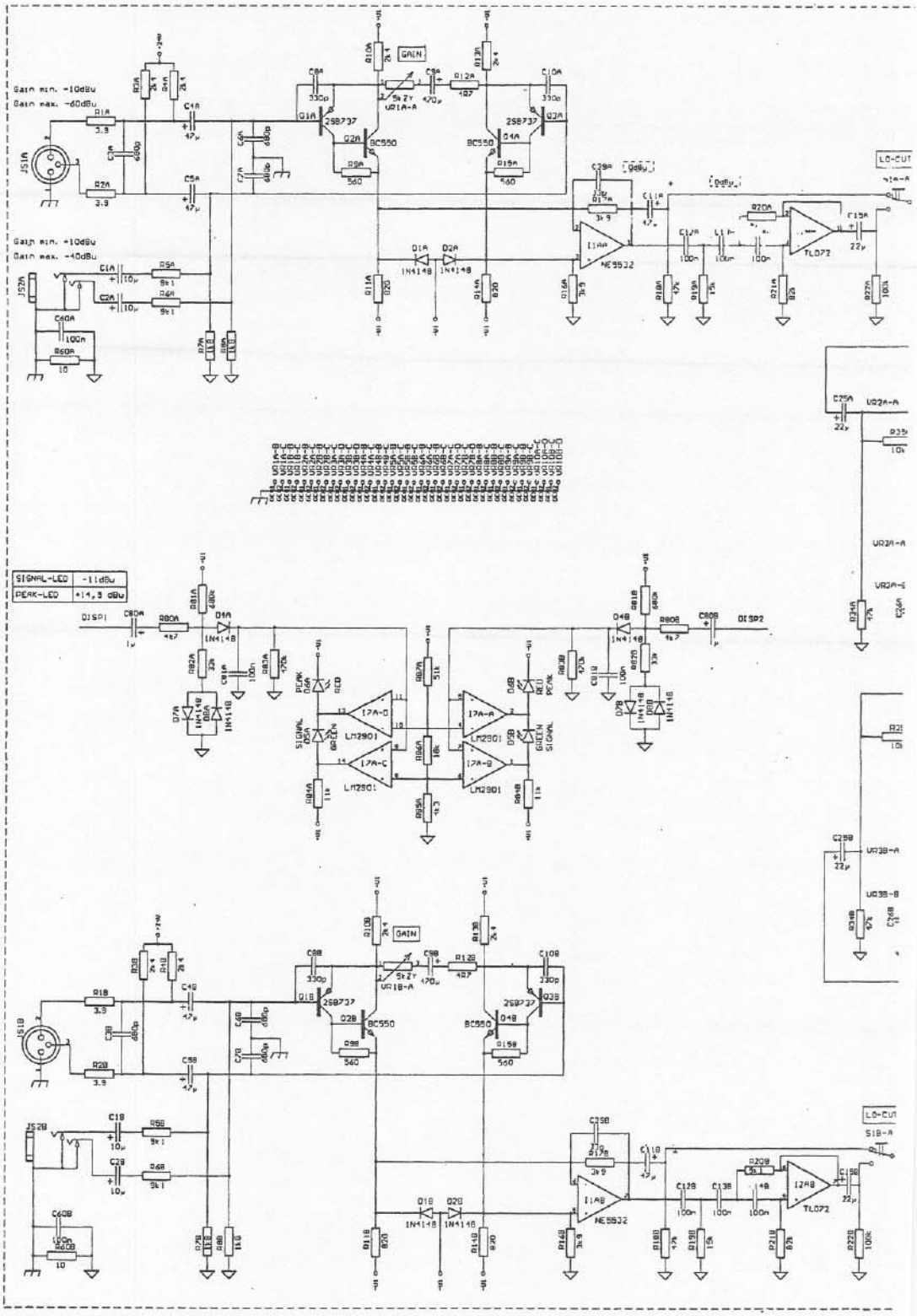
				Last plotted: 25.08.1997 08:48:53	
				DATE / NAME	
				DES'D 06.06.97 Lang r.	CIRCUIT DIAGRAM
				CHK'D 26.8.97	
				APP'D 26.8.97	
				EVI AUDIO	354 348
					PSX2000
LTR/WK	REVISION	DATE	NAME		1-




NOTES:
AC VOLTAGE 1000 HZ, MEASURED WITH VTVM
DC VOLTAGE MEASURED WITH VOLTMETER 100KOHM/V
FADER IN RATED POSITION
ADDITIONAL GAIN WITH FADER IN MAX. POSITION
SAFETY COMPONENT
(MUST BE REPLACED BY ORIGINAL PART)
RATED CONDITIONS:
GAIN POTS MIN. OR MAX.
ALL POTS IN CENTER-POSITION
ALL FADERS AT 0dB
MASTER-FADER-L/R AT +6dB
NE5532
TL072
LM2901
BC550
J111
REC SEND
2TRACK TO MASTER
2TRACK RET
2TRACK TO AUX3
AUX3 SEND
AUX3-SEND
STEREO RETURN B
EQ IN L
EQ IN R
EQ ON L
EQ ON R
EQ OUT L
EQ OUT R
MAIN OUT LEFT
MAIN OUT RIGHT
MONO OUT
STANDBY
LAMP
+12V
ALTERATIONS RESERVED!
82225A 82225
CIRCUIT DIAGRAM
354 010
PSX2000
EVI AUDIO

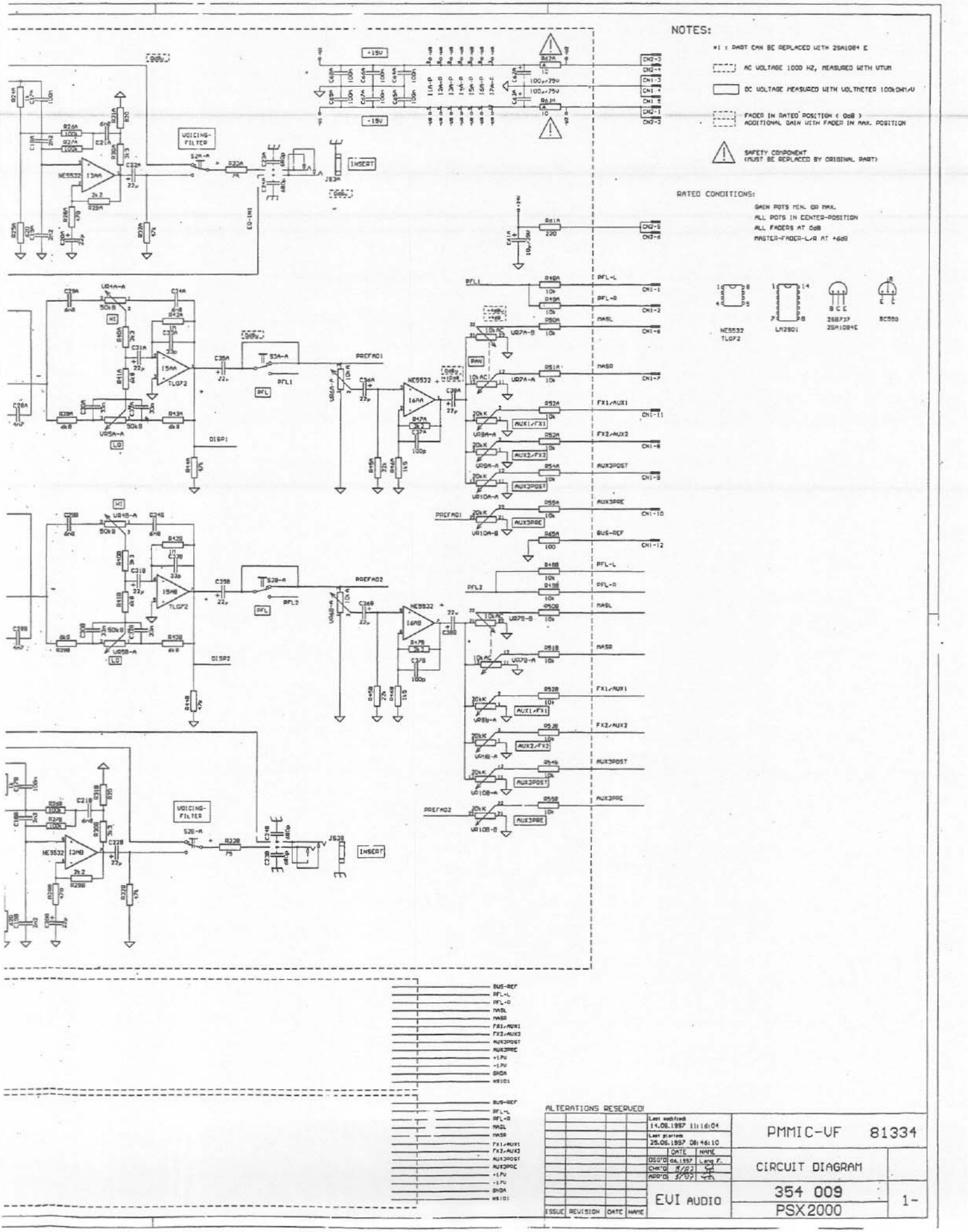
81 334

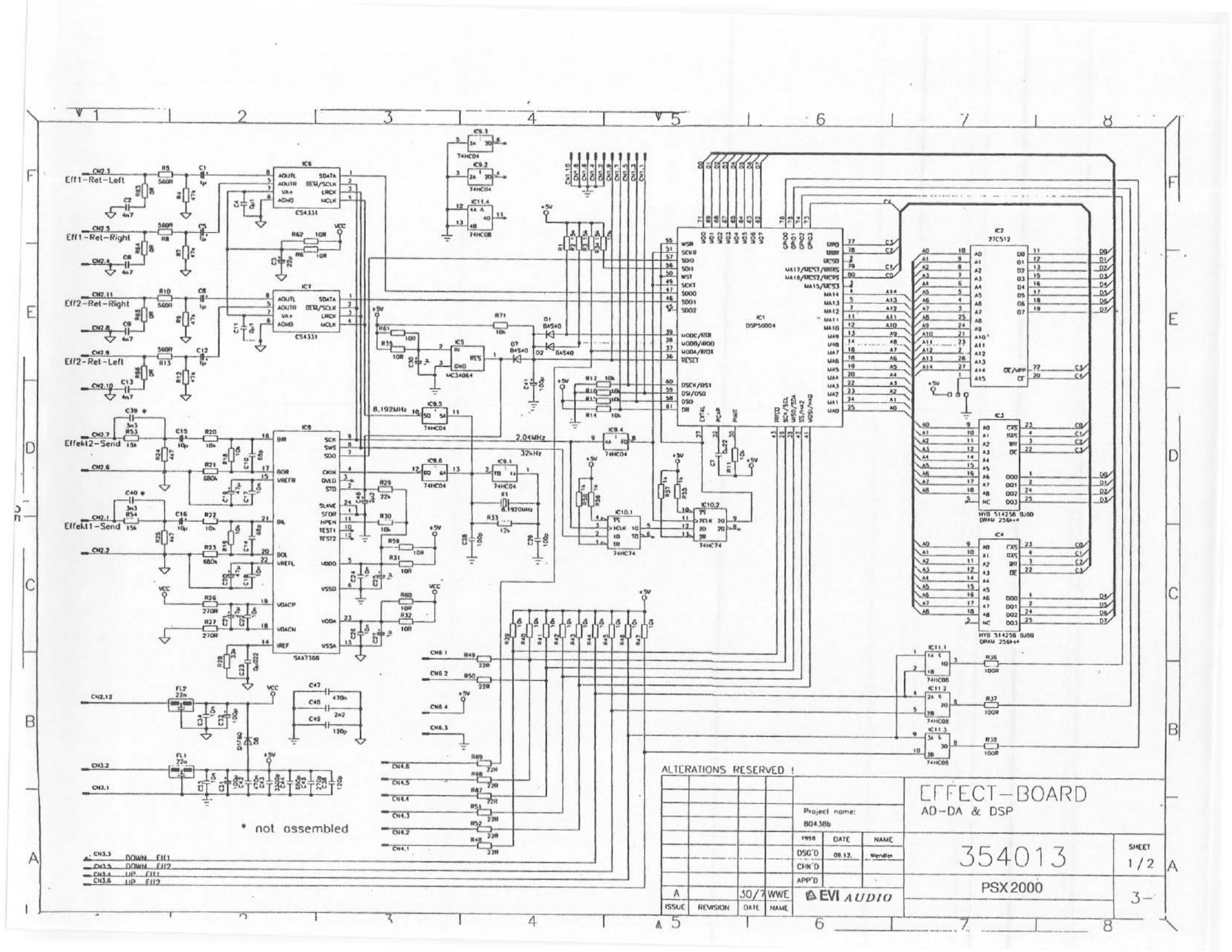


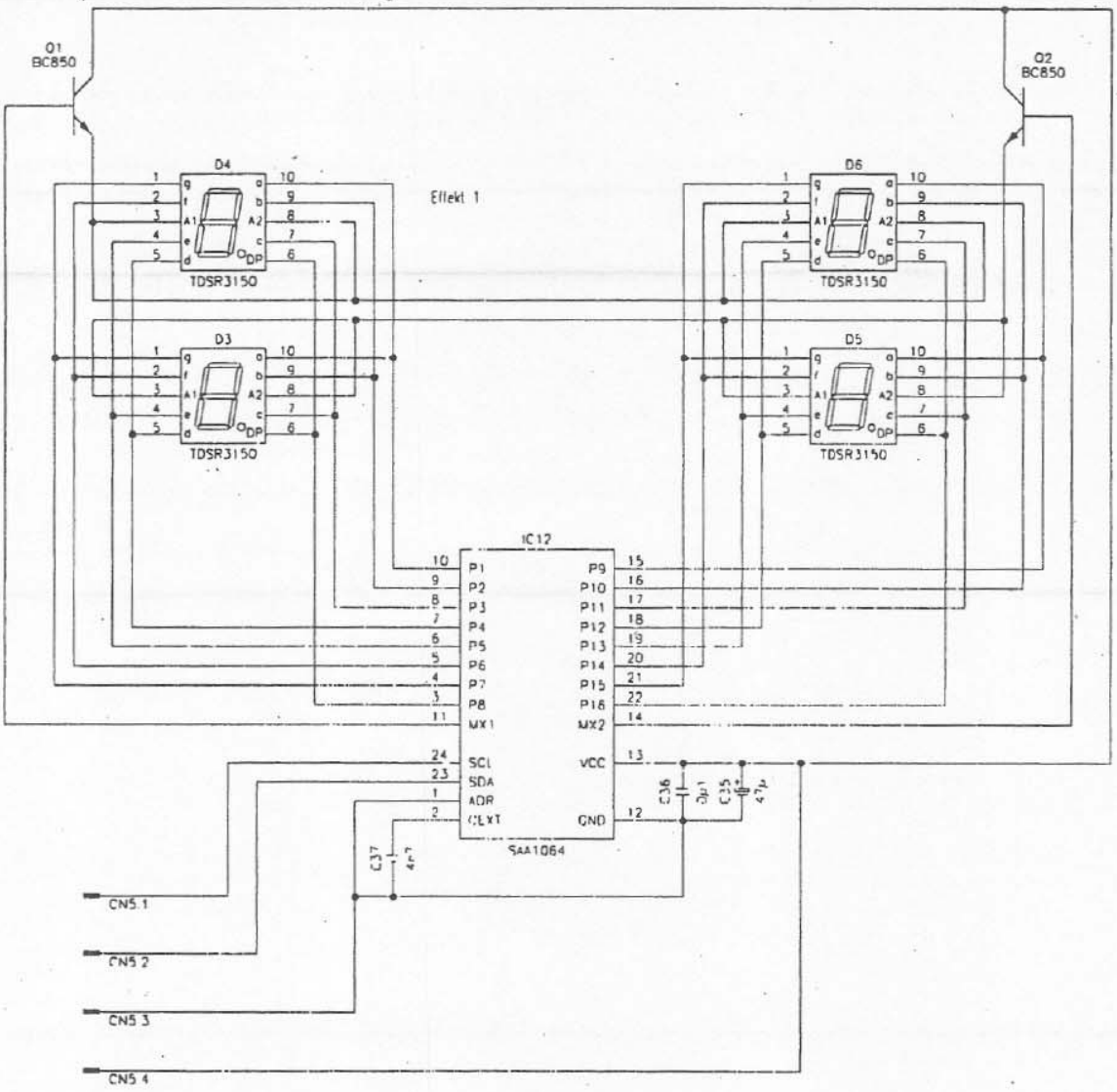
CHANNEL E/F CHANNEL C/D

SAME AS CHANNEL A/B

SAME AS CHANNEL A/B


NOTES:
*1 : PART CAN BE REPLACED WITH 2SA1084 E
AC VOLTAGE 1000 HZ, MEASURED WITH UTUM
DC VOLTAGE MEASURED WITH VOLTMETER 100kOHM/V
FADER IN RATED POSITION (0dB) ADDITIONAL GAIN WITH FADER IN MAX. POSITION
SAFETY COMPONENT (MUST BE REPLACED BY ORIGINAL PART)
RATED CONDITIONS:
GAIN POTS MIN. OR MAX.
ALL POTS IN CENTER-POSITION
ALL FADERS AT 0dB
MASTER-FADER-L/R AT +6dB
NE5532 TL072
LM2901
2SB737 2SA1084E
BC550
+15V
-15V
EQ-IN1
VOICING-FILTER
INSERT
DISP1
DISP2
PFL1
PFL2
PREFAD1
PREFAD2
PFL-L
PFL-R
MASL
MASR
FX1/AUX1
FX2/AUX2
AUX3POST
AUX3PRE
BUS-REF
BAN
HI
LO
BUS-REF
PFL-L
PFL-R
MASL
MASR
FX1/AUX1
FX2/AUX2
AUX3POST
AUX3PRE
+15V
-15V
SHDA
MS101
ALTERATIONS RESERVED!
Last modified 14.08.1997 11:16:04
Last plotted 25.08.1997 08:46:10
DATE NAME
DSG'D 06.1997 Lang F.
CHK'D
APP'D
ISSUE REVISION DATE NAME
EVI AUDIO
PMMIC-VF 81334
CIRCUIT DIAGRAM
354 009
PSX2000
1-


Eff1-Ret-Left
Eff1-Ret-Right
Eff2-Ret-Right
Eff2-Ret-Left
Effekt2-Send
Effekt1-Send
IC1 DSP56004
IC2 27C512
IC3 HYB 514256 BJ60
IC4 HYB 514256 BJ60
IC5 MC34064
IC6 CS4331
IC7 CS4331
IC8 SAA7388
8,192MHz
2,04MHz
32kHz
* not assembled
ALTERATIONS RESERVED !
EFFECT-BOARD
AD-DA & DSP
Project name:
80438b
354013
PSX2000
SHEET 1/2
3-
EVI AUDIO
30/7 WWE



ALTERATIONS RESERVED !

ISSUE	REVISION	DATE	NAME

Project name:
BD438b

	DATE	NAME
1997		
DSG'D	02.04.	Wendler
CHK'D	5/97	
APP'D	5/97	

EVI AUDIO

EFFECT-BOARD

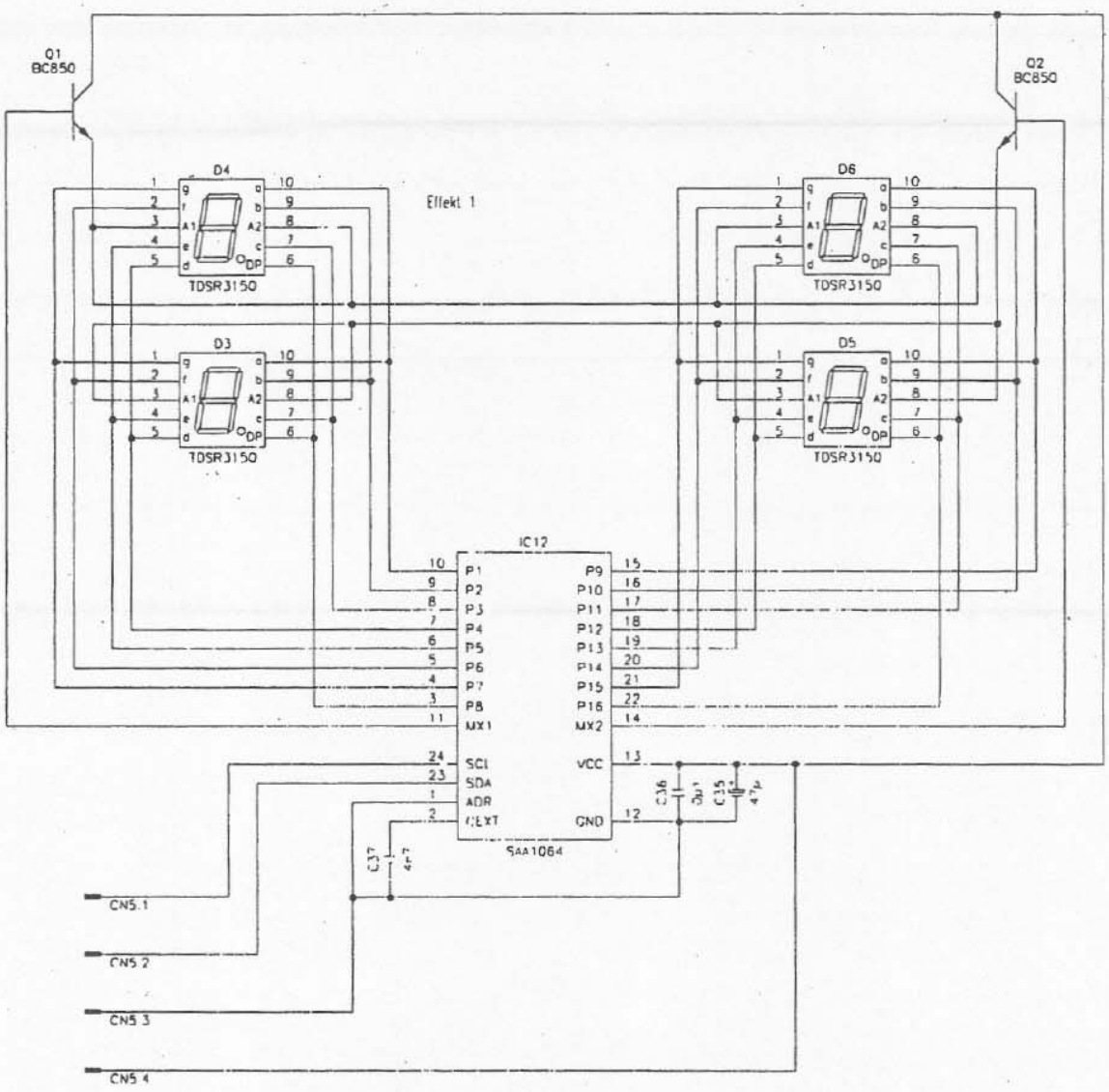
Display

354015

SHEET 2/2

PSX 2000

4-



ALTERATIONS RESERVED !

ISSUE	REVISION	DATE	NAME

Project name:
80438h

1997	DATE	NAME
DSG'D	02.04.	Wendler
CHK'D	5/07	
APP'D	5/07	

EVI AUDIO

EFFECT–BOARD

Display

354015

SHEET 2/2

PSX2000

4–

Electro Voice — Spare Parts List PSX 2000

Pos. No.	Part No.	Description
B0010	341343	speaker socket 4-pol
C0001	333014	safety cap 100nF/275V
G0010	343270	bridge rectifier GBPC 3504
	355405	owner's manual PSX 2000
	355509	quick start PSX 2000
	346832	power cable
	353911	mylar window
	355153	knob fader
	355155	knob fader
	355154	knob fader
	355156	knob fader
	353648	knob fader
	353879	push button
	353905	knob rotary
	353909	knob rotary
	353907	knob rotary
	353906	knob rotary
	353910	knob rotary
	341382	push button black
	348415	fan
	355465	side panel left
	355466	side panel right
	355437	handle
	355439	label
	355152	plastic nipple
	355151	latch
	355472	foam left
	355473	foam right
	337053	plastic bag
	355400	front panel PSX 2000
	355401	chassis PSX 2000
	355402	cover PSX 2000
	813348	**input p.c.b. "mic-channel"**
CN01	348802	connector male 12-pin
CN02	345489	connector male 6-pin
C1A-F	340522	cap electrolytic 10uF/35V
C10A-F	301543	cap ceramic 330pF
C11A-F	346841	cap electrolytic 47uF/16V
C12/13/14A-F	336095	cap mylar 100nF
C15A-F	340523	cap electrolytic 22uF/16V
C16A-F	346841	cap electrolytic 47uF/16V
C17A-F	336095	cap mylar 100nF
C18/19A-F	326924	cap mylar 2200pF
C2A-F	340522	cap electrolytic 10uF/35V
C20A-F	340523	cap electrolytic 22uF/16V
C21A-F	336094	cap mylar 6800pF
C22A-F	340523	cap electrolytic 22uF/16V
C23/24A-F	345461	cap ceramic 680pF
C25A-F	340523	cap electrolytic 22uF/16V
C26A-F	300303	cap mylar 1800pF
C27A-F	335787	cap ceramic 15pF
C29A-F	336094	cap mylar 6800pF
C3A-F	345461	cap ceramic 680pF
C30/32A-F	342934	cap mylar 33nF
C31A-F	340523	cap electrolytic 22uF/16V

PM10ER~1

Pos. No.	Part No.	Description
C37A-F	301530	cap ceramic 100pF
C39A-F	301558	cap ceramic 33pF
C4/5A-F	343530	cap electrolytic 47uF/50V
C6A-F	345461	cap ceramic 680pF
C60A-F	329021	cap ceramic 100nF
C61A-C	340522	cap electrolytic 10uF/35V
C62/63A-F	343532	cap electrolytic 100uF/25V
C64/65/66A-C	329021	cap ceramic 100nF
C67/68/69A-C	329021	cap ceramic 100nF
C7A-F	345461	cap ceramic 680pF
C8A-F	301543	cap ceramic 330pF
C80A-F	340520	cap electrolytic 1uF/50V
C81A-F	329021	cap ceramic 100nF
C9A-F	354031	cap electrolytic 470uF/10V
D1/2/4A-F	301254	diode 1N 4148
D5A-F	354004	led green
D6A-F	354003	led red
D7/8A-F	301254	diode 1N 4148
I1A-C	327197	IC NE 5532 N
I2A-C	331340	IC TL 072 CP
I3A-C	327197	IC NE 5532 N
I4/5A-C	331340	IC TL 072 CP
I6A-C	327197	IC NE 5532 N
I7A-C	343502	IC LM 2901
JS1A-F	354000	xlr connector female
JS2/3A-F	354001	phone jack
Q1/3A-F	343536	transistor 2SB 737 S
Q2/4A-F	301184	transistor BC 550 B
R62/63A-C	329215	safety resistor 10 ohm
S1/2/3A-F	354006	switch pc vert 2pdt
VR06A-F	354262	fader 10k A
VR1A-F	352323	pot 5k XX
VR10A-F	352329	pot 2x20k K
VR2A-F	352325	pot 10k B
VR3A-F	352326	pot 2x500k C
VR4/5A-F	352324	pot 50k B
VR7A-F	352327	pot 2x10k AC
VR8/9A-F	352328	pot 20k K
	813368	**input p.c.b. "line-channel"**
CN001	348802	connector male 12-pin
CN002	345489	connector male 6-pin
C001/2/3A-D	345461	cap ceramic 680pF
C004/5A-D	343530	cap electrolytic 47uF/50V
C006A-D	301543	cap ceramic 330pF
C007A-D	354031	cap electrolytic 470uF/10V
C008A-D	301543	cap ceramic 330pF
C009A-D	301558	cap ceramic 33pF
C010A-D	329021	cap ceramic 100nF
C020/21A-D	345461	cap ceramic 680pF
C022/23A-D	345461	cap ceramic 680pF
C024/25A-D	308059	cap ceramic 3.9pF
C026/27A-D	306059	cap ceramic 3.9pF
C028/29A-D	354031	cap electrolytic 470uF/10V
C030/31A-D	301558	cap ceramic 33pF
C034/35A-D	342932	cap mylar 15nF
C036/37A-D	342934	cap mylar 33nF
C038/39A-D	342932	cap mylar 15nF
C040/41A-D	342932	cap mylar 15nF
C042/43A-D	342934	cap mylar 33nF
C044/45A-D	342932	cap mylar 15nF
C046/47A-D	340523	cap electrolytic 22uF/16V

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Pos. No.	Part No.	Description
C050/51A-D	340523	cap electrolytic 22uF/16V
C052/53A-D	340523	cap electrolytic 22uF/16V
C054/55A-D	301530	cap ceramic 100pF
C056/57A-D	340523	cap electrolytic 22uF/16V
C080/81A-D	340520	cap electrolytic 1uF/50V
C082A-D	329021	cap ceramic 100nF
C090A-D	343532	cap electrolytic 100uF/25V
C092/93A-B	329021	cap ceramic 100nF
C094/95A-B	329021	cap ceramic 100nF
C096/97A-B	329021	cap ceramic 100nF
C098A-B	340522	cap electrolytic 10uF/35V
D001/2A-D	301254	diode 1N 4148
D070/71A-D	346335	diode 1N 4148
D072A-D	354004	led green
D073A-D	354003	led red
D074/75A-D	346335	diode 1N 4148
D076/77A-D	346335	diode 1N 4148
I001/2/3A-B	327197	IC NE 5532 N
I004/5A-B	332985	IC TL 074 CN
I006/7A-B	327197	IC NE 5532 N
I008A-B	343502	IC LM 2901
JS01A-D	354000	xlr connector female
JS02/3A-D	354001	phone jack
Q001/3A-D	343536	transistor 2SB 737 S
Q002/4A-D	301184	transistor BC 550 B
R100/101A-B	329215	safety resistor 10 ohm
S001A-D	354006	switch pc vert 2pdt
VR01A-D	352323	pot 5k XX
VR02A-D	352330	pot 2x5k XX
VR03/4/5A-D	352331	pot 2x50k B
VR06A-D	354263	pot 2x10k A
VR07A-D	352327	pot 2x10k AC
VR08/9A-D	352328	pot 20k K
VR10A-D	352329	pot 2x20k K
	822258	**master p.c.b.**
CN001	345489	connector male 6-pin
CN002	349105	connector male 20-pin
CN003/4/5	348488	connector female 6-pin
CN006	348802	connector male 12-pin
CN007	345489	connector male 6-pin
C0001/2/6/7	329021	cap ceramic 100nF
C0003/4/5	345461	cap ceramic 680pF
C0210/211	340524	cap electrolytic 100uF/16V
C0212-213	301558	cap ceramic 33pF
C0214-217	345461	cap ceramic 680pF
C0218-219	340523	cap electrolytic 22uF/16V
C0220-221	335787	cap ceramic 15pF
C0222-223	301558	cap ceramic 33pF
C0224-225	340524	cap electrolytic 100uF/16V
C0226-229	345461	cap ceramic 680pF
C0231	301558	cap ceramic 33pF
C0232	340523	cap electrolytic 22uF/16V
C0233	335787	cap ceramic 15pF
C0235-236	345461	cap ceramic 680pF
C0237-238	329021	cap ceramic 100nF
C0301-302	340523	cap electrolytic 22uF/16V
C0303-308	329021	cap ceramic 100nF
C0309/311	340523	cap electrolytic 22uF/16V
C0310/312	335787	cap ceramic 15pF
C0313	340524	cap electrolytic 100uF/16V
C0314-315	340523	cap electrolytic 22uF/16V

Pos. No.	Part No.	Description
C0318	329021	cap ceramic 100nF
C0319-320	301558	cap ceramic 33pF
C0321-326	340523	cap electrolytic 22uF/16V
C0327	335787	cap ceramic 15pF
C0328	340523	cap electrolytic 22uF/16V
C0329	335787	cap ceramic 15pF
C0330-331	340523	cap electrolytic 22uF/16V
C0332	340524	cap electrolytic 100uF/16V
C0333-334	345461	cap ceramic 680pF
C0335	329021	cap ceramic 100nF
C0336-337	301558	cap ceramic 33pF
C0338-343	340523	cap electrolytic 22uF/16V
C0345-350	329021	cap ceramic 100nF
C0351	340524	cap electrolytic 100uF/16V
C0352-353	345461	cap ceramic 680pF
C0354	301566	cap ceramic 2200pF
C0355-356	340523	cap electrolytic 22uF/16V
C0357-358	301558	cap ceramic 33pF
C0359-360	340523	cap electrolytic 22uF/16V
C0361-362	301558	cap ceramic 33pF
C0363-364	345461	cap ceramic 680pF
C0365	329021	cap ceramic 100nF
C0400-401	340524	cap electrolytic 100uF/16V
C0402-403	335787	cap ceramic 15pF
C0404-405	340523	cap electrolytic 22uF/16V
C0406	326923	cap mylar 3300pF
C0407	340523	cap electrolytic 22uF/16V
C0408	342936	cap mylar 150nF
C0409-410	340523	cap electrolytic 22uF/16V
C0411	335787	cap ceramic 15pF
C0412	340524	cap electrolytic 100uF/16V
C0413-414	345461	cap ceramic 680pF
C0415	329021	cap ceramic 100nF
C0416-417	345461	cap ceramic 680pF
C0418-419	301558	cap ceramic 33pF
C0420-421	340523	cap electrolytic 22uF/16V
C0422	329021	cap ceramic 100nF
C0423-424	345461	cap ceramic 680pF
C0425-426	340523	cap electrolytic 22uF/16V
C0427-428	329021	cap ceramic 100nF
C0429	340523	cap electrolytic 22uF/16V
C0450	329021	cap ceramic 100nF
C0451-454	345461	cap ceramic 680pF
C0455-456	301558	cap ceramic 33pF
C0457-458	340523	cap electrolytic 22uF/16V
C0502-503	345461	cap ceramic 680pF
C0505	301558	cap ceramic 33pF
C0506-507	340523	cap electrolytic 22uF/16V
C0509	301558	cap ceramic 33pF
C0510-511	340524	cap electrolytic 100uF/16V
C0512-515	345461	cap ceramic 680pF
C0515	345461	cap ceramic 680pF
C0516-517	329021	cap ceramic 100nF
C0522-523	300050	cap mylar 330pF
C0524-525	342932	cap mylar 15nF
C0526-527	327392	cap mylar 3900pF
C0528-529	328365	cap mylar 560pF
C0530-531	342932	cap mylar 15nF
C0532-533	342933	cap mylar 22nF
C0534-535	326922	cap mylar 1nF
C0536-537	344109	cap mylar 56nF
C0540-541	327391	cap mylar 1500pF

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Pos. No.	Part No.	Description
C0544-545	342933	cap mylar 22nF
C0546-547	327393	cap mylar 4700pF
C0548-549	340244	cap mylar 330nF
C0552-553	337181	cap mylar 10nF
C0554-557	340988	cap mylar 470nF
C0560-561	344105	cap mylar 27nF
C0562-565	329021	cap ceramic 100nF
C0566-567	340523	cap electrolytic 22uF/16V
C0568-571	345461	cap ceramic 680pF
C0572-573	301558	cap ceramic 33pF
C0574	329021	cap ceramic 100nF
C0575	340523	cap electrolytic 22uF/16V
C0576-577	340524	cap electrolytic 100uF/16V
C0578-581	329021	cap ceramic 100nF
C0582-583	340521	cap electrolytic 2.2uF/50V
D0001	301254	diode 1N 4148
D0003-10	354004	led green
D0011-12	354005	led yellow
D0013-20/31	354004	led green
D0021-22	354005	led yellow
D0023-26	301254	diode 1N 4148
D0027-28	354003	led red
D002932	354005	led yellow
D0033-34	354003	led red
D0035	329511	diode zener BZX 55C 2V4
D0036-37	354004	led green
D0038	328788	diode zener ZPD 5V1
D0040	354003	led red
E0001	333019	relay 24V
I0009-10	327197	IC NE 5532 N
I0011-13	331340	IC TL 072 CP
I0014/16	327197	IC NE 5532 N
I0015/17/18	331340	IC TL 072 CP
I0019	344864	IC NJM 4556 D
I0020/25	327197	IC NE 5532 N
I0021-24	331340	IC TL 072 CP
I0026-28	331340	IC TL 072 CP
I0030-36	327197	IC NE 5532 N
I0037-41	343502	IC LM 2901
I0042/44	331340	IC TL 072 CP
I0043/45	327197	IC NE 5532 N
JS001	354000	xlr connector female
JS005-11	354001	phone jack
JS012	354002	connector cinch
JS013-23	354001	phone jack
Q0006-7	301184	transistor BC 550 B
Q0008-9	330264	transistor J 111 A
Q0010-14	301184	transistor BC 550 B
Q0015	307150	transistor BC 337-25
Q0016-17	306928	transistor BC 560 C
Q0018-19	330264	transistor J 111 A
R0301-302	329215	safety resistor 10 ohm
R0437-438	329215	safety resistor 10 ohm
R0552-553	329215	safety resistor 10 ohm
R0575/577	329215	safety resistor 10 ohm
S10/15	354006	switch pc vert 2pdt
S11-14	354008	switch pc 2pdt momentary
S2-9	354006	switch pc vert 2pdt
VR11-12	352328	pot 20k K
VR13/16	354263	pot 2x10k A
VR14-15	352328	pot 20k K
VR17	354288	pot 2x100k C

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Pos. No.	Part No.	Description
VR19	352329	pot 2x20k K
VR20	352328	pot 20k K
VR21	352329	pot 2x20k K
VR22	354414	fader 10k A / selected
VR001	354262	fader 10k A
VR23	354414	fader 10k A / selected
VR24-37	354264	fader 10k B
VR38	354262	fader 10k A
VR39	352329	pot 2x20k K
	841708	**power amp p.c.b. S/A**
CCHAS	329021	cap ceramic 100nF
CNSER	354306	connector male 16-pin
CN001	345489	connector male 6-pin
CN002	349105	connector male 20-pin
CN012-14	348334	connector male 3-pin
CN015	341937	connector male 4-pin
C0301	343532	cap electrolytic 100uF/25V
C0302-307	329021	cap ceramic 100nF
C0308/313	343532	cap electrolytic 100uF/25V
C0309	340521	cap electrolytic 2.2uF/50V
C0310	301530	cap ceramic 100pF
C0311-312	340988	cap mylar 470nF
C0314	335787	cap ceramic 15pF
C0315-316	343532	cap electrolytic 100uF/25V
C0317	327390	cap mylar 470pF
C0318	301558	cap ceramic 33pF
C0319	337237	cap mylar 47nF
C0320	342936	cap mylar 150nF
C0321	341276	cap mylar 12nF
C0322	344109	cap mylar 56nF
C0323-324	341714	safety cap 100nF/275V
C0325-326	335787	cap ceramic 15pF
C0327	301474	cap bip electr. 22uF/16V
C0328-329	354304	cap ceramic 330pF
C0330	301458	cap electrolytic 2.2uF/63V
C0331-332	342923	cap mylar 220nF
C0333	335787	cap ceramic 15pF
C0334	340522	cap electrolytic 10uF/35V
C0335	344105	cap mylar 27nF
C0337	301558	cap ceramic 33pF
C0501	343532	cap electrolytic 100uF/25V
C0502-507	329021	cap ceramic 100nF
C0508	343532	cap electrolytic 100uF/25V
C0509	340521	cap electrolytic 2.2uF/50V
C0510	301530	cap ceramic 100pF
C0511-512	340988	cap mylar 470nF
C0513	343532	cap electrolytic 100uF/25V
C0514	335787	cap ceramic 15pF
C0515-516	343532	cap electrolytic 100uF/25V
C0517	327390	cap mylar 470pF
C0519	337237	cap mylar 47nF
C0520	342936	cap mylar 150nF
C0521	341276	cap mylar 12nF
C0522	344109	cap mylar 56nF
C0523-524	341714	safety cap 100nF/275V
C0525-526	335787	cap ceramic 15pF
C0527	301474	cap bip electr. 22uF/16V
C0528-529	354304	cap ceramic 330pF
C0530	301458	cap electrolytic 2.2uF/63V
C0531-532	342923	cap mylar 220nF
C0533	335787	cap ceramic 15pF

Pos. No.	Part No.	Description
C0535	344105	cap mylar 27nF
C0537	301558	cap ceramic 33pF
C0800-806	329021	cap ceramic 100nF
C0807-810	335935	cap electrolytic 2200uF/35V
C0811	301524	cap ceramic 47pF
C0812	329021	cap ceramic 100nF
C0813	341920	cap electrolytic 470uF/63V
C0814-815	301491	cap electrolytic 100uF/50V
C0816	343530	cap electrolytic 47uF/50V
C0817	329021	cap ceramic 100nF
C0818	335935	cap electrolytic 2200uF/35V
C0819	329021	cap ceramic 100nF
C0820	340522	cap electrolytic 10uF/35V
C0822	340988	cap mylar 470nF
C0823	337597	cap electrolytic 1000uF/50V
C0824	307445	cap electrolytic 10uF/35V
C0825	342923	cap mylar 220nF
C0826-827	329021	cap ceramic 100nF
C0828	301524	cap ceramic 47pF
C0829	343530	cap electrolytic 47uF/50V
C0830-831	301491	cap electrolytic 100uF/50V
C0832-833	329021	cap ceramic 100nF
C0835-838	351835	cap electrolytic 4700uF/100
C0840-846	329021	cap ceramic 100nF
C0847	301524	cap ceramic 47pF
C0848	341920	cap electrolytic 470uF/63V
C0849-850	354305	cap electrolytic 68uF/50V
C0851	343530	cap electrolytic 47uF/50V
C0852-853	343534	cap electrolytic 1000uF/16V
C0854	329021	cap ceramic 100nF
D0301-302	309450	diode zener BZX 55C 15V
D0303-307	301254	diode 1N 4148
D0309	329511	diode zener BZX 55C 2V4
D0310-312	301254	diode 1N 4148
D0313-314	307916	diode zener ZPD 7V5
D0315	301254	diode 1N 4148
D0316-317	305739	diode 1N 4006
D0318-319	301254	diode 1N 4148
D0501-502	309450	diode zener BZX 55C 15V
D0503-507	301254	diode 1N 4148
D0509	329511	diode zener BZX 55C 2V4
D0510-512	301254	diode 1N 4148
D0513-514	307916	diode zener ZPD 7V5
D0515	301254	diode 1N 4148
D0516-517	305739	diode 1N 4006
D0518-519	301254	diode 1N 4148
D0520	304360	diode 1N 4002
D0800-801	301254	diode 1N 4148
D0802-803	306953	diode zener BZV 86C 1V4
D0804-807	304360	diode 1N 4002
D0812/815	304992	diode zener ZPD 6V8
D0816	301254	diode 1N 4148
D0817-820	304360	diode 1N 4002
D0822-832	301254	diode 1N 4148
D0833-837	304360	diode 1N 4002
E0301/501	330404	relay RP 310 024
F080A	305205	fuse 2.5A slow blow
F0800-801	306838	fuse holder
H0300-301	343457	res.network RKL 8A 103J
H0500-501	343457	res.network RKL 8A 103J
I0300/302	327197	IC NE 5532 N
I0301	338359	IC LM 308 A

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Pos. No.	Part No.	Description
I0304	331340	IC TL 072 CP
I0305/500	327197	IC NE 5532 N
I0501	338359	IC LM 308 A
I0502	327197	IC NE 5532 N
I0503	307421	IC CA 3080 E
I0504	331340	IC TL 072 CP
I0505	327197	IC NE 5532 N
I0800	309719	IC MC 7805 C
I0801	332985	IC TL 074 CN
I0802	308293	IC LM 7915 CT
I0803	308292	IC LM 340 T-15
L0301/501	348592	coil
00010	338869	transistor MJE 350
Q0301	335763	transistor 2N 3904
Q0302-303	348422	transistor MPSA 42
Q0304-306	335763	transistor 2N 3904
Q0307-309	348421	transistor 2N 3906
Q0310-311	348423	transistor MPSA 92
00010	338868	trans. MJE 340
Q0313/315	348421	transistor 2N 3906
Q0314	335763	transistor 2N 3904
Q0316	330264	transistor J 111 A
Q0317	351981	transistor MJL 3281 A
Q0318-321	331657	transistor MJ 15022
Q0322-325	331658	transistor MJ 15023
Q0326	351982	transistor MJL 1302 A
Q0327	348409	transistor 2SC 4793
Q0328/330	348421	transistor 2N 3906
Q0329/331	335763	transistor 2N 3904
Q0332/336	348422	transistor MPSA 42
Q0333-335	348423	transistor MPSA 92
Q0337	348423	transistor MPSA 92
Q0338-339	307911	transistor BF 391
Q0340/342	348421	transistor 2N 3906
Q0341	335763	transistor 2N 3904
00010	338869	transistor MJE 350
Q0501	335763	transistor 2N 3904
Q0502-503	348422	transistor MPSA 42
Q0504-506	335763	transistor 2N 3904
Q0507-509	348421	transistor 2N 3906
Q0510-511	348423	transistor MPSA 92
00010	338868	trans. MJE 340
Q0513/515	348421	transistor 2N 3906
Q0514	335763	transistor 2N 3904
Q0516	330264	transistor J 111 A
Q0517	351981	transistor MJL 3281 A
Q0518-521	331657	transistor MJ 15022
Q0522-525	331658	transistor MJ 15023
Q0526	351982	transistor MJL 1302 A
Q0528/530	348421	transistor 2N 3906
Q0529/531	335763	transistor 2N 3904
Q0532/536	348422	transistor MPSA 42
Q0533-535	348423	transistor MPSA 92
Q0537	348423	transistor MPSA 92
Q0538-539	307911	transistor BF 391
Q0540/542	348421	transistor 2N 3906
Q0541	335763	transistor 2N 3904
00010	301233	transistor BD 246 B
Q0801	349177	transistor BD 241 B
Q0802/807	348422	transistor MPSA 42
Q0804/808	307150	transistor BC 337-25
Q0806	301236	transistor BD 241 B

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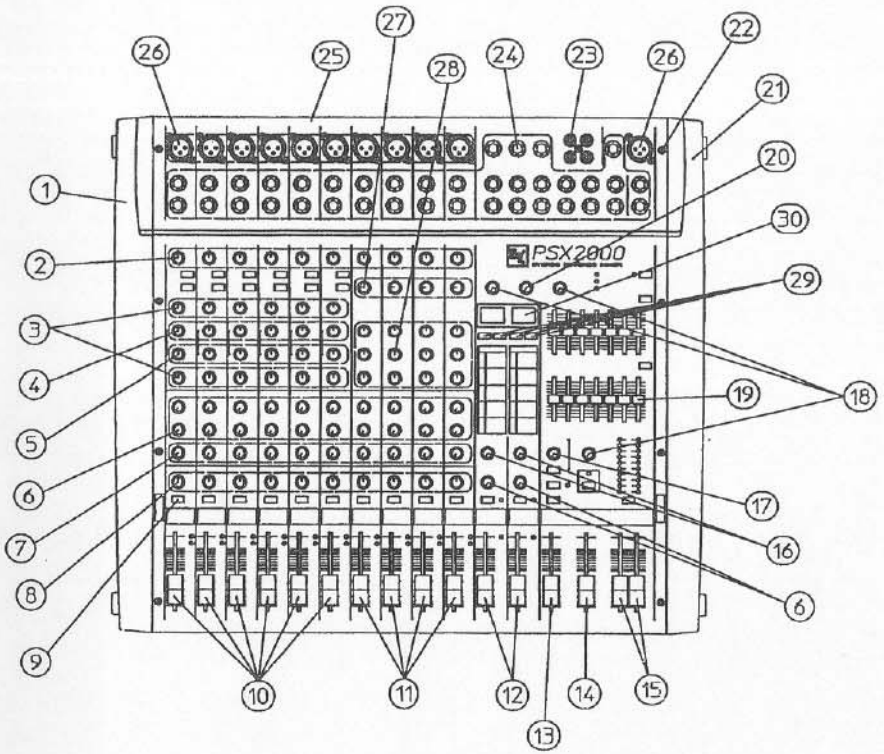
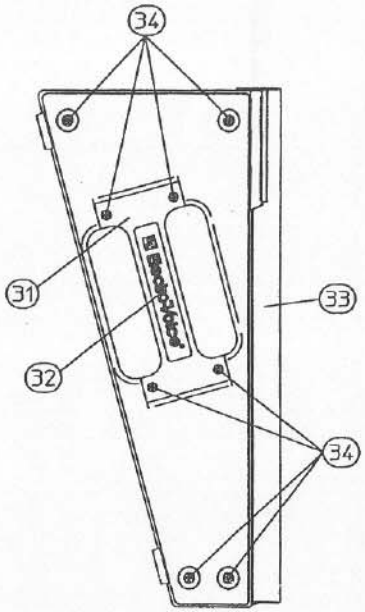
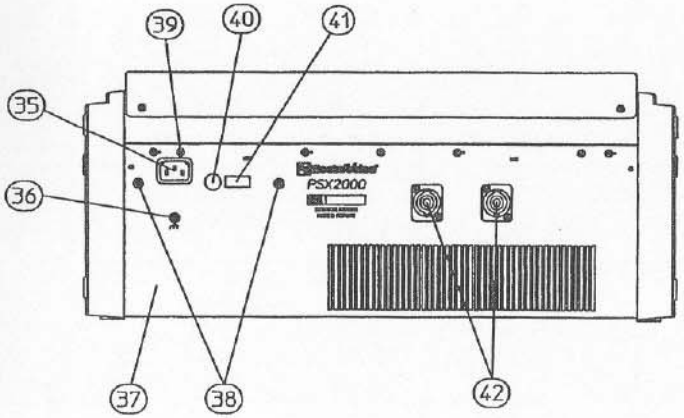
Pos. No.	Part No.	Description
Q0811	307150	transistor BC 337-25
Q0812-816	306928	transistor BC 560 C
Q0817	307150	transistor BC 337-25
Q0819-821	301184	transistor BC 550 B
Q0822	307430	transistor BC 327-25
Q0823	301235	transistor BD 242 B
Q0824-825	307430	transistor BC 327-25
R0370-373	348456	resistor 2x0.22 ohm 5 watt
R0385	341713	resistor 4.70 ohm 4 watt
R0386-387	348590	resistor 8.20 ohm 4 watt
R0407/412	348593	safety component NTC
R0570-573	348456	resistor 2x0.22 ohm 5 watt
R0585	341713	resistor 4.70 ohm 4 watt
R0586-587	348590	resistor 8.20 ohm 4 watt
R0607/612	348593	safety component NTC
R0804	302022	resistor 10 ohm 2 watt
R0809/811	351538	resistor 1.00 ohm 5 watt
R0859/874	348490	safety component NTC
R0875/878	329215	safety resistor 10 ohm
R0877	302022	resistor 10 ohm 2 watt
R0879-880	302022	resistor 10 ohm 2 watt
VR300/500	348486	pot trim 47 kohm lin
VR301/501	348674	pot trim 220 ohm lin
	852678	**mains p.c.b. S/A**
CN15X	341937	connector male 4-pin
C0900	341714	safety cap 100nF/275V
D0900	305739	diode 1N 4006
E0002	330404	relay RP 310 024
F0900	328390	fuse holder
JS001	338835	connector male mains
R0900	348550	safety resistor 10 ohm
S0900	349114	mains switch
	351947	fuse 8A slow blow
	328391	cap of fuse holder
	804388	**effect p.c.b. S/A**
C 001/5	340520	cap electrolytic 1uF/50V
C 003	340523	cap electrolytic 22uF/16V
C 007	342923	cap mylar 220nF
C 008/12	340520	cap electrolytic 1uF/50V
C 015-16	340522	cap electrolytic 10uF/35V
C 019-21	346841	cap electrolytic 47uF/16V
C 023	342933	cap mylar 22nF
C 025/27/30	340520	cap electrolytic 1uF/50V
C 031-32	340524	cap electrolytic 100uF/16V
C 035	346841	cap electrolytic 47uF/16V
C 041	340524	cap electrolytic 100uF/16V
CN001	342982	connector male 2x5-pin
CN002-4	354230	connector male 6-pin
CN005-6	341937	connector male 4-pin
D 003-6	348492	display TDSR 3150 G+H
IC005	351726	IC MC 34064
	354412	transformer power 120V
	348805	safety component PTC
	348341	connector female 3-pin







POS.	DESCRIPTION	PART.NO.
1	SIDE PANEL LEFT	355 465
2	KNOB	353 905
	POTENTIOMETER	352 323
3	KNOB	353 909
	POTENTIOMETER	352 324
4	KNOB	353 910
	POTENTIOMETER	352 326
5	KNOB	353 909
	POTENTIOMETER	352 325
6	KNOB	353 907
	POTENTIOMETER	352 328
7	KNOB	353 906
	POTENTIOMETER	352 329
8	KNOB	353 909
	POTENTIOMETER	352 327
9	KNOB	353 879
	SWITCH	354 006
10	KNOB	355 153
	FADER	354 262
11	KNOB	355 153
	FADER	354 263
12	KNOB	355 155
	FADER	354 263
13	KNOB	355 154
	FADER	354 262
14	KNOB	355 156
	FADER	354 262
15	KNOB	355 156
	FADER	354 414
16	KNOB	353 906
	POTENTIOMETER	352 328
17	KNOB	353 910
	POTENTIOMETER	354 288
18	KNOB	353 909
	POTENTIOMETER	352 329
19	KNOB	353 645
	FADER	354 264
20	KNOB	353 906
	POTENTIOMETER	352 328
21	SIDE PANEL RIGHT	355 466
22	SCREW M3x6	352 822
23	CINCH CONNECTOR	354 002
	SCREW 3x8	344 229
24	PHONE JACK	354 001
25	FRONT PANEL	355 400
26	XLR CONNECTOR	354 000
	SCREW 3x8	344 229

POS.	DESCRIPTION	PART.NO.
27	KNOB	353 905
	POTENTIOMETER	352 330
28	KNOB	353 909
	POTENTIOMETER	352 331
29	KNOB	353 879
	KEY	354 008
30	ACRYL WINDOW	353 911
31	HANDLE	355 437
32	LABEL	355 439
33	COVER	355 402
	LATCH	355 151
	PLASTIC NIPPLE	355 152
	SCREW M3x6	352 822
34	SCREW M4x40	355 027
35	MAINS CONNECTOR	338 835
36	SCREW 3.9x9.5	304 251
37	CHASSIS	355 401
38	SCREW M4x10	329 557
39	SCREW M3x6	334 989
40	DOME-PLUG	337 044
	FUSE T15A	351 850
41	KNOB	341 382
	MAINS SWITCH	349 114
42	SPEAKON CONNECTOR	341 343
	SCREW M3x8	353 396
	ACCESSORIES	
	GOOSENECK LAMP	112 700
	REPLACEMENT BULB	350 319