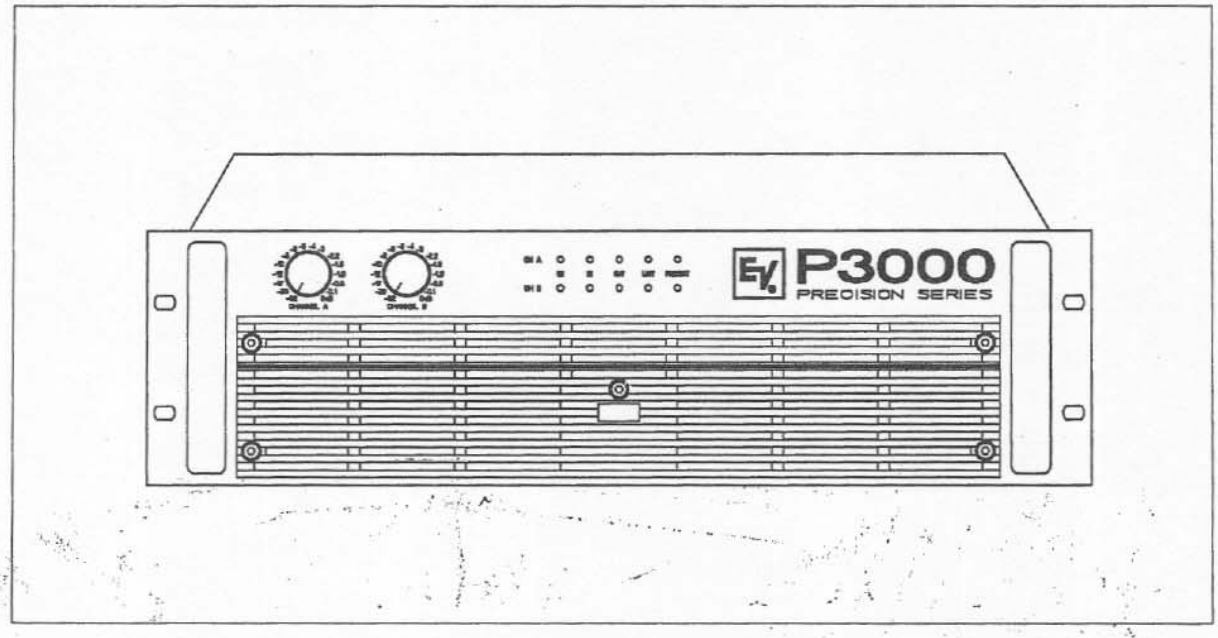
Electro-Voice®

OWNER'S MANUAL



P 3000

PRECISION SERIES

DESCRIPTION

Thank you very much for choosing an EV PRECISION SERIES amplifier. We are sure it will give you many years of satisfying performance.

EV power amplifiers of the PRECISION SERIES meet the stringent requirements of tough touring applications. They are protected against over-temperature, overload, shorted outputs, radio frequency interference and DC faults. The power transistors are protected from damage from reverse feeding of electrical energy by means of an additional special protective circuit. For the so-called soft-start, the power outputs are switched on delayed via relays. An inrush current limiter circuit prevents the mains fuses from being blown.

Maximum precision is also guaranteed as regards mechanical construction and finish. The robust steel chassis features remarkable torsion resistance and is specially designed to cope with the tough wear and tear associated with going on tour. Thermal stability is guaranteed by several low noise 3-stage fans which also means that they can be used inside the studio.

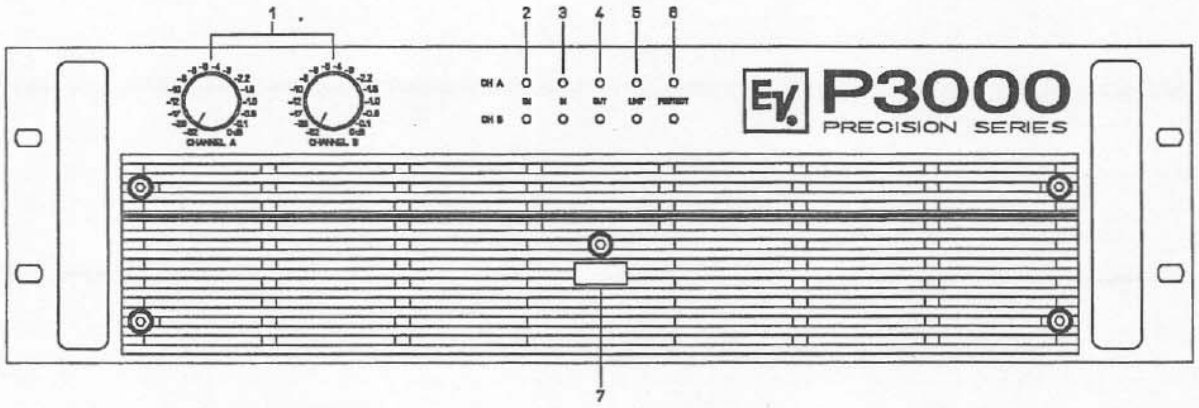
Comparator circuits constantly compare the power amplifiers' input and output signal and control the limiters under non-linear operating conditions. They protect the loudspeakers from overload due to power stage clipping. The PRECISION SERIES power amplifiers feature excellent transmission properties. The power amplifier topology also makes for extremely low distortion rates. Distortion factor (THD), intermodulation distortion (SMPTE-IM) and transient intermodulation distortion (DIM 30 and DIM 100) are so low that they are only detectable with the most sophisticated measuring equipment. Generously dimensioned power supplies with low-leakage toroidal-core transformers provide considerable headroom well above the nominal ratings. V/I foldback limiter circuits were deliberately not included in the PRECISION SERIES power amplifiers to facilitate operation at complex loads up to a phase angle of +/- 90°.

The inputs are electronically balanced on XLR connectors. (Isolation transformers can be retrofitted). Direct Outs in the form of XLR connectors (male), to loop the signal through, are also standard features. The modes DUAL/Stereo or PARALLEL/Mono can be selected via the Input Routing Switch. Furthermore, the PRECISION SERIES power amplifiers can also be operated in "Mono Bridged" mode.

The front panel accommodates the dB-calibrated input Gain controls which are designed as especially precise and safe-to-operate detented potentiometers. The LED display provides information about the power amplifers' operating status. For the two channels, they demonstrate readiness to operate, whether there is a signal at the input or output, when the Limiters have been activated and whether one of the protective features has been triggered. The power outputs Channel A, Channel B and Bridged Out are available on Speakon connectors. The rear side of the unit accommodates the ON/OFF switches for the integrated Hi and Lo cut filters, a groundlift switch which separates the housing from the circuit ground thus helping to prevent hum loops and the operating modes selector to mono bridged operation. They also feature extremely quiet fans with front-to-rear airflow, facilitating operation in large and narrow amplifier racks.

This Owner's Manual is meant to help you familiarize yourself with all the PRECISION SERIES' other features. Please read it through carefully and we guarantee that your new power amplifier of the PRECISION SERIES from EV will give you great pleasure.

FRONT PANEL



1. Level Control

Calibrated detented potentiometers to alter the total gain of the power amplifier. In order to avoid distortion in mixing consoles upstream, these controls should normally be positioned between 0 dB and -6 dB. The calibrated markings show the additional attenuation directly.

2. Power ON indication

This LED lights up when the mains switch is pressed. If it does not light up, the unit is not connected to the mains or the mains fuse has blown.

3. Input indication

This LED lights up if a signal is present at the power amplifier input. The indicator does not light up when the input controls are turned down completely.

4. Output indication

This LED lights up if a signal is present at the power amplifier output. The indicator goes off when the speaker line has shorted or a protective circuit has been activated thus indicating that there is no signal at the speaker output terminals.

5. LIMIT

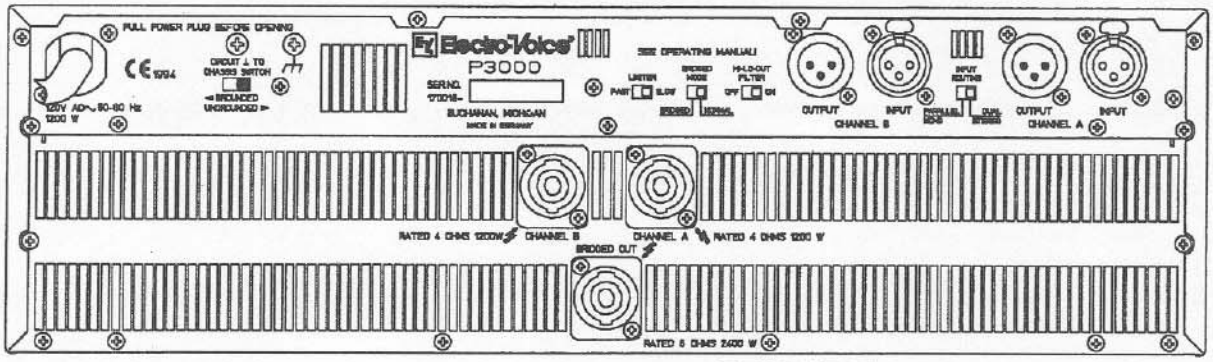
This LED lights up if the limiter has been activated and the power amplifier is being operated at the clip level. If the LED flashes briefly, this is not a cause for concern. If this LED is lit permanently, the volume should be reduced to avoid overload damages to the connected loudspeaker systems.

6. PROTECT

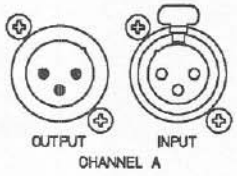
When this LED lights up during operation, one of the protection circuits against over-temperature, overload, shorted outputs, radio frequency interference or DC faults has been triggered. The cause of the error e.g. a shorted loudspeaker line must be remedied. In case of overheating, wait a little until the amplifier switches back to operating mode itself.

7. POWER Switch

The unit is switched on via the power switch. The loudspeaker outputs are switched on via delayed relays so that no startup transients are audible. A current limiter prevents startup peaks on the mains line and prevents the mains fuse from blowing.



REAR SIDE



Power amplifier input connectors

XLR connectors (male) are provided for "Looping" the signal to other power amplifiers. These are wired parallel to the XLR input connectors in each channel.

The inputs of the power amplifier are electronically balanced and wired according to IEC 268. Isolation transformers can be retrofitted in order to avoid hum interference in larger sound reinforcement systems. Please contact your dealer if you have any problems.

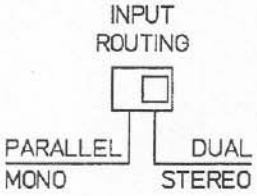
Input wiring XLR

PIN 1: SHIELD
PIN 2: a, +, hot
PIN 3: b, -, cold

The inputs are electronically balanced.

The input sensitivity is set to 0dBu (775 mV) by the factory. Please contact your local dealer if you want to change to 6dBu or 26 dB gain.

INPUT ROUTING



PARALLEL MONO

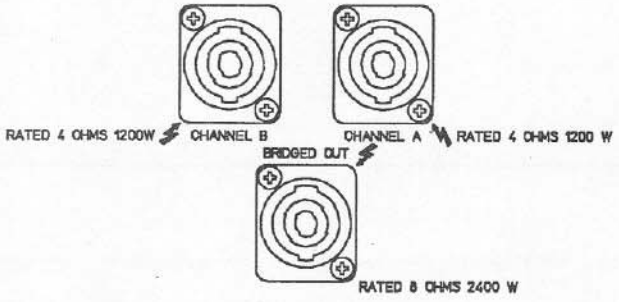
If the mode selector is in position PARALLEL MONO, the input connectors channel A und B are directly wired in parallel, but the volume for channel A or B can be adjusted independently using the input controls A or B.

DUAL STEREO

If the mode selector is in position DUAL STEREO, channel A and B are amplified separately.

Many mixing consoles have XLR connectors in the outputs, but are wired in such a way that they are unbalanced. If a mixer is used with unbalanced outputs, PIN 1 and PIN 3 of the power amplifier's input connectors must be connected by a jumper or PIN 3 must not be connected to the connection cable.

If signals are taken from unbalanced units via PIN 3 (b, -, cold) and PIN 2 (a, +, hot), strange hum interference or high frequency oscillations can occur. These effects can cause power amplifiers or loudspeakers to malfunction.

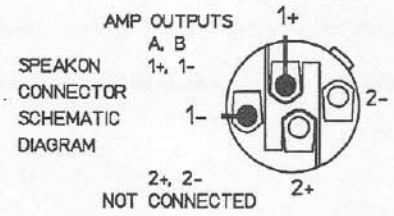


POWER AMPLIFIER OUTPUT CONNECTORS

SPEAKON output connectors are provided for the power amplifier channels A (left) and B (right).

The Bridged Out connector for bridged operation is sealed with a plastic cover to prevent connection errors.

WARNING:
Please make sure not to hook Speakers up to the BRIDGED OUTput in NORMAL mode or damage will result.

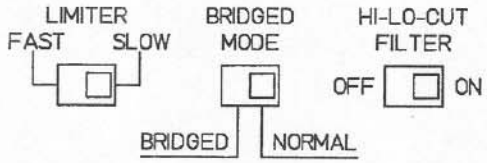


LIMITER

The time constant of the built-in limiter to avoid overdriving is adjustable. Position "SLOW" is the factory preset and this should also be the normal position.

If the power amplifier is used as a MID/HI-frequency amplifier in active multi-way systems, the limiter switch should be set to **"FAST".**

If the power amplifier is used as LOW-frequency amplifier in active multi-way systems, the limiter switch should be set to **"SLOW"**.

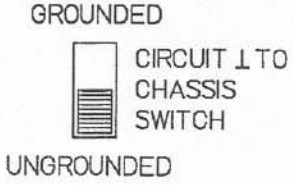


BRIDGED MODE

Slide switch to change from Normal Stereo mode to Bridged mode. In Bridged mode the built-in power amplifiers operate in "push- pull" and the double output voltage from channel A and B appears at the Bridged output connector. The phases of Channel A and B are in opposite and therefore the individual channels must not be used as loudspeaker outputs.

HI-LO-CUT FILTER

This filter attenuates subsonic and high frequency signals so that the power amplifiers are not modulated with these signals. This switch should normally always be in position ON. The OFF position is only for applications where an upstream unit, e.g. a crossover or a equalizer, has integrated HI-Cut and LO-Cut filters.



GROUNDLIFT SWITCH

Hum loops can be avoided with the groundlift switch. If the power amplifier is operated together with other units in one 19" rack, the switch should be in GROUNDED position. If the power amplifier is used with units which have different earthing potentials, the switch should be adjusted to the UNGROUNDED position.

TECHNICAL SPECIFICATIONS at rated output power 8ohms, one channel driven, unless otherwise specified

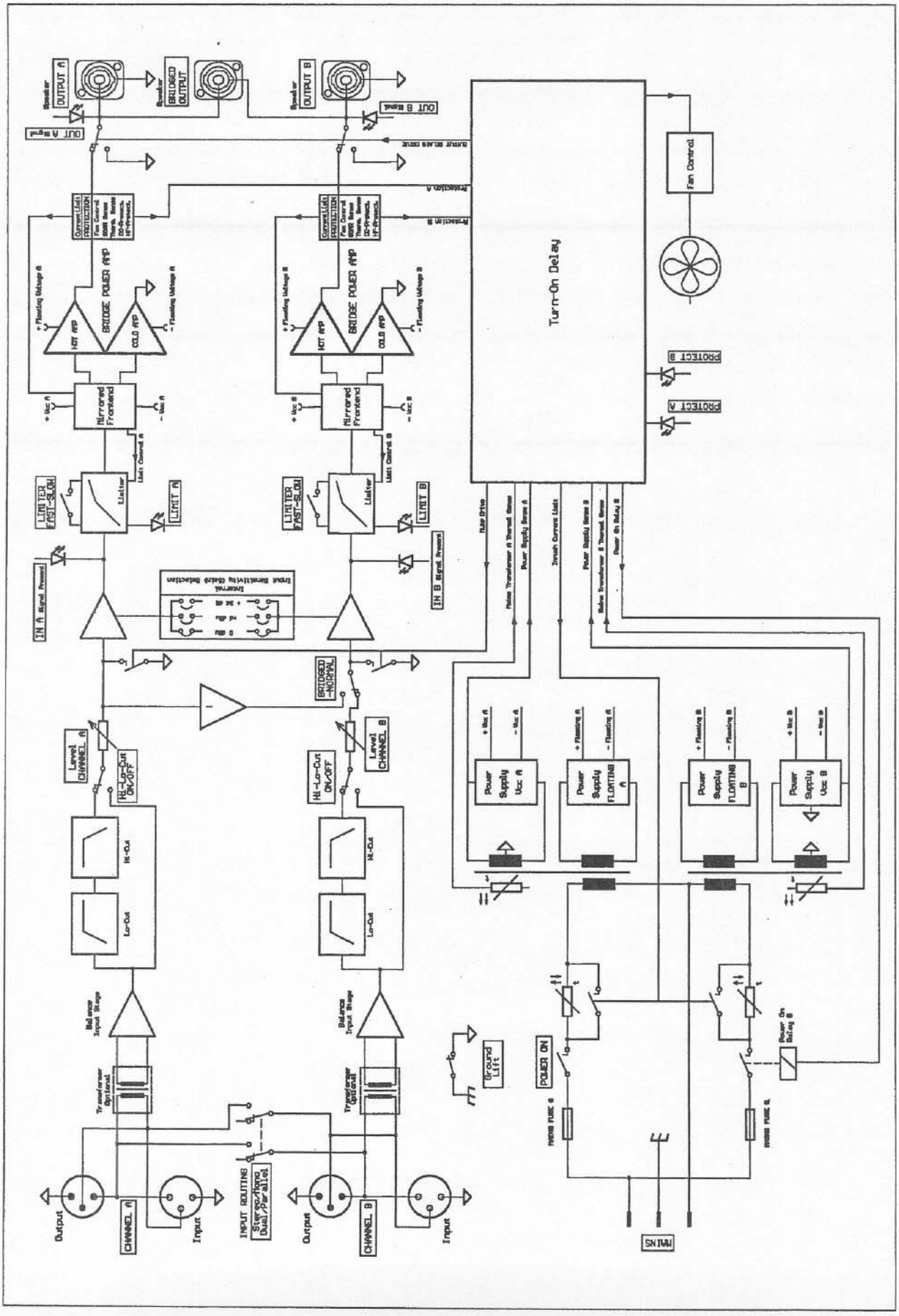
Output Power (20Hz - 20kHz / THD ≤ 0,1%)	**P 3000**
into 8 Ohms	2 x 750 W
into 4 Ohms	2 x 1200 W
into 8 Ohms bridged	1 x 2400 W

Output Power (1kHz / THD = 1,0%)	
into 8 Ohms	2 x 850 W
into 4 Ohms	2 x 1300 W
into 8 Ohms bridged	1 x 2600 W

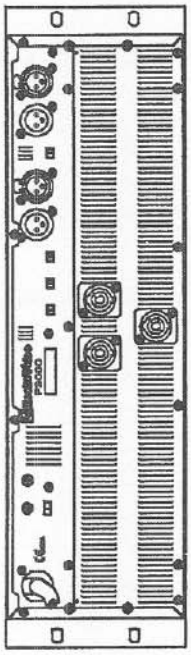
Technical Specification

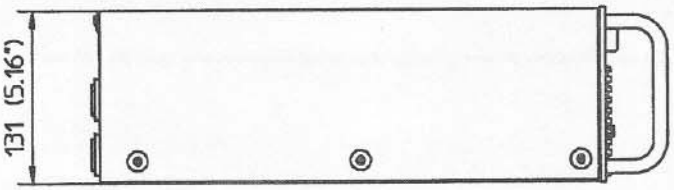
Frequency Response	0dB .....-1dB / 20Hz.....20kHz
Max. Output Level before clipping, no load reference 1 KHz / THD = 1%	91V / RMS
Voltage Gain reference 1kHz	26 dB (constant gain option)
Input Sensitivity at rated output power reference 1 kHz	0 dBu/0.775 V 6 dBu/1.55 V
Maximum Input Level	21 dBu / 8.7 V
Input Impedance active balanced	20 kOhm
THD at rated output power MBW = 80 kHz, f = 1kHz	< 0.05%
IMD - SMPTE 60 Hz, 7 kHz, typical	< 0.01%
IMD - SMPTE 60 Hz, 7 kHz, at rated output power	< 0.01%
Signal / Noise Ratio A-weighted, RMS to rated output level, Input sensitivity + 6dBu	> 105 dB
Crosstalk at rated output power reference 1 kHz	< -70 dB
Damping Factor Internal, 1kHz	> 300
DIM 30	< 0.01%
DIM 100	< 0.01%
Slew Rate Internal	> 40 V / µs
Power Consumption 1/8 rated output power 4 Ohm	1650 W
Dimensions (WxHxD)	483 x 132.5 x 426 mm 19 x 5.2 x 16.77 (in)
Weight	29 kg (63.9 lbs)
Optional Input Transformer	90176

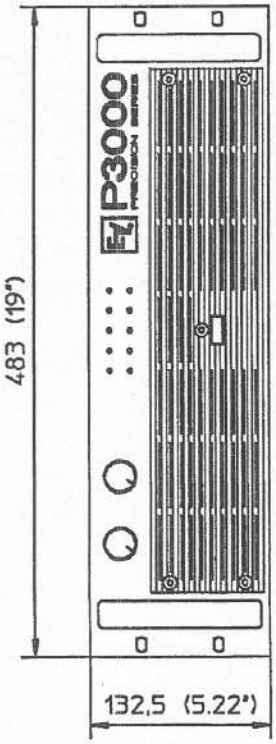
BLOCK DIAGRAM

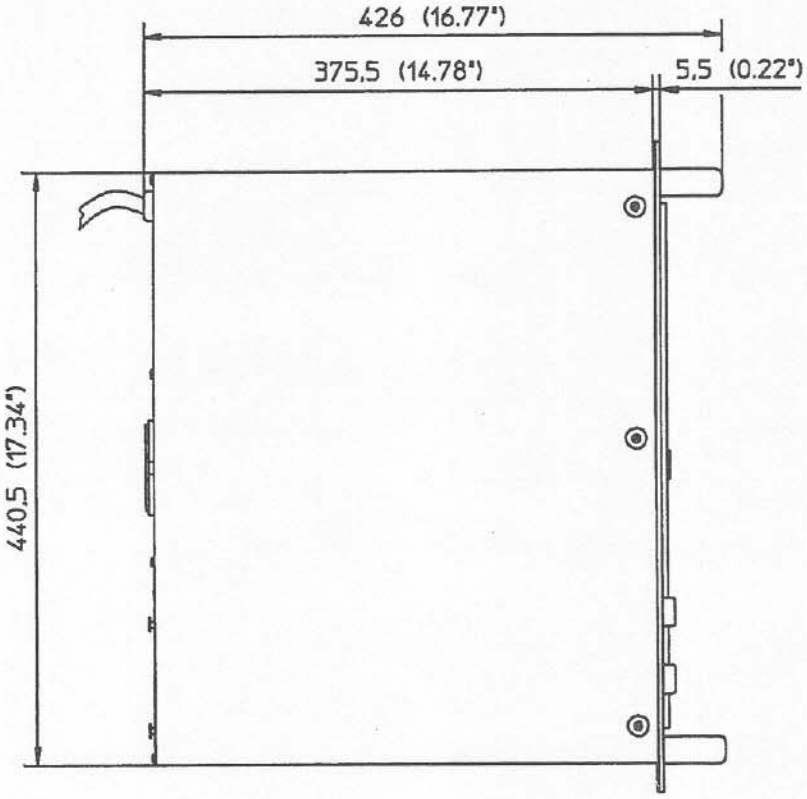


Dimensions in mm (inch)









SPECIFICATIONS: P 3000 complete unit

Standard specifications: IEC 268 part 3, IHF-A

0 dBu = 775 mV (RMS)

A. POWER SUPPLY

1. Type of power supply:	AC
2. Rated power supply voltage:	120 V
3. Rated power supply frequency:	60 Hz
4. Power drawn under rated conditions (1200W/4 ohms)	4100 watts
5. Power drawn under standard test conditions (120W/4 ohms)	1500 watts
6. Power consumption at 1/8 rated output power (150W/4 ohms)	1650 watts
7. Tolerance of power supply voltage variations:	-10%...+10%

B. INPUT CHARACTERISTICS

* Level controls fully clockwise

Input	Rated Input Level (rated source e.m.f)			Rated Output Power	Rated Load Impedance
	select Jumper internal				
	0dBu	+6dBu	26 dB		
CHANNEL A/B	+1dBu (870mV)	+7dBu (1.74V)	14dBu (3.87V)	750 W	8 ohms
CHANNEL A/B	0dBu (775mV)	+6dBu (1.55V)	13dBu (3.46V)	1200W	4 ohms
CHANNEL (Bridged)	0dBu (755mV)	+6dBu (1.55V)	13dBu (3.46V)	2400W	8 ohms

Maximum Input Level +21dBu (9V)

C. OUTPUT CHARACTERISTICS

* Rated output power at THD = < 0.1%, 20 Hz...20 kHz, MBW = 80 kHz
* Maximum Output Power at 1kHz / THD = 1%

OUTPUT POWER

Output socket	Rated Load Impedance	Rated Output Power Dual Mode	Maximum Output Power, Dual Mode	Single Channel Output Power)1	Rated Output Voltage
SPEAKER (A/B)	8 ohms	750 W	850 W	950 W	77.5 V
SPEAKER (A/B)	4 ohms	1200 W	1300 W	1700 W	69.3 V
SPEAKER BRIDGED	8 ohms	2400 W	2600 W	3400 W	138.6 V

)1 measured with "Dynamic Headroom" test signal according IHF-A: 1 kHz tone burst, 20ms ON, 480 ms OFF

D. MAXIMUM OUTPUT VOLTAGE (NO-LOAD)

Output socket	SPEAKER A/B	SPEAKER BRIDGED
Max. output voltage (no-load)	91 V (RMS)	182 V (RMS)

E. STABILIZATION

with rated load impedance, Dual Mode, standard test conditions

	8 ohms	4 ohms
Stabilization	0.325%	0.686%
Stabilization level	0.028 dB	0.059 dB

F. FREQUENCY RESPONSES

Gain frequency response:

* -3 dB drop against level at norm frequency 1 kHz

Input	Output	f(l)	f(u)	Comment
INPUT A/B	SPEAKER A/B	<10Hz	75 kHz	HI-LO-CUT Off
INPUT A/B	SPEAKER A/B	20Hz	35 kHz	HI-LO-CUT On

Distortion-limited effective frequency range (power bandwidth):

* THD = 0.1%, 1/2 rated power into 4 ohms, MBW = 500 kHz

Input	Output	f(l)	f(u)	Comment
INPUT A/B	SPEAKER A/B	<10Hz	48 kHz	HI-LO-CUT Off

G. PHASE-FREQUENCY RESPONSE

+/- 30 degrees (20 Hz-20 kHz, HI/LO-CUT Off)

H. INPUT IMPEDANCE

20 kohms (20 Hz ... 20 kHz)

I. AMPLITUDE NON-LINEARITIES

	Amplitude Non-Linearities	Comment
Rated total harmonic distortion	< 0.05%	MBW = 80 kHz, f = 1 kHz
Total harmonic distortion under standard test conditions	< 0.02%	MBW = 80 kHz, f = 1 kHz
IMD - SMPTE	< 0.01%	60 Hz, 7 kHz
DIM 30	< 0.01%	3.15 kHz, 15 kHz
DIM 100	< 0.01%	3.15 kHz, 15 kHz

J. CROSSTALK

< -70 dB

- at f = 1 kHz

K. DAMPING FACTOR > 300

- internal at f = 1 kHz

L. SLEW RATE > 40 V/µs

- internal

M. NOISE

- R(S) = 50 ohms
- Power amplifier input sensitivity 0dBu
- E(F) = Noise voltage, unweighted with B = 22 Hz ... 22 kHz, RMS (IEC 268-1)
- E(G) = Noise voltage, frequency weighting filter according CCIR-4683, quasi peak-weighted (IEC 268-1)
- E(A) = Noise voltage, dB(A) frequency-weighted, RMS (IEC 268-1)
- S/N ratios ref. to rated output voltage 69.3 V (1200W/4ohms)
- HI/LOW-CUT ON, GND LIFT = GROUNDED
- i.s. = Input Sensitivity

	Noise Output Voltage	S/N-Ratio	Equiv. input noise voltage	Equiv. input noise level	Residual noise output voltage
E(F)	< 615µV	> 101 dB	< 6.9µV	<- 101dBu	< 435µV
E(G)	< 3.65mV	> 85.5 dB	< 41µV	<- 85.5dBu	< 1.55mV
E(A) i.s.=0dBu	< 490µV	> 103 dB	< 5.5µV	<- 103dBu	< 345µV
E(A) i.s.=6dBu	< 245µV	> 109 dB	< 5.5µV	<- 103dBu	< 170µV
E(A) Gain=26dB	< 110µV	> 116 dB	< 5.5µV	<- 103dBu	< 90µV

N. Dimensions

Height : 132.5mm (3 HU)

Width : 483 mm

Depth : 426 mm

O. Weight

29 kg

TEST DATA: P 3000 complete unit

General measuring conditions unless specified otherwise elsewhere:

* Measuring Tolerance: ΔX = 1.5 dB
* Test Frequency: f = 1 kHz
* All Levels referred to: E = 775 mV (0dBu)
* Level controls fully clockwise
* Pin assignment of the XLR-socket: PIN 1 = SHIELD, GROUND
  PIN 2 = + INPUT
  PIN 3 = - INPUT
* Source impedance for feed-in via XLR socket: R(S) = 50 ohms

The pcbs 86211 (MAIN PCB) and 84157 (POWER AMP) are equipped with service connectors.

Pin assignment of service connectors:

84157 CNSERV	Assignment	86211 CNASERV	Assignment	86211 CNBSERV	Assignment
1	Coding	1	limiter A/B OFF	1	n.c.
2	BIAS Hot-Side+	2	Service Limiter A	2	Service Limiter B
3	BIAS Hot-Side-	3	- 15V	3	-15V
4	Hot - Out	4	GND	4	Fan voltage
5	BIAS Cold-Side +	5	+15V	5	Service Fan Switch 1
6	BIAS Cold-Side -	6	Heat sink temp. A/B	6	Service Fan Switch 2
7	GND	7	+U1 Frontend A	7	+U1 Frontend B
8	Floating +	8	-U1 Frontend A	8	-U1 Frontend B
9	Floating -	9	Coding	9	Coding

1. Power supply voltage: E(O) = 120V / 60 Hz

2. Tolerance of power supply voltage variations -10% .... +10%

3. Power consumption:

3.1. without load P(O) = 180 - 260 watts
3.2. Power drawn under rated conditions (1200W/4 ohms) P(O) = 4100 watts
3.3. Power drawn under standard test conditions (120W/4 ohms) P(O) = 1500 watts
3.4. Power consumption at 1/8 rated output power (150W/4 ohms) P(O) = 1650 watts

4. Adjustments:

4.1. ADJUSTMENT OF IDLE CURRENT:

Connect a DC voltmeter to the two test points (see table) and adjust the idle current with the trimmer (on PCB 84157). Perform adjustment for both power amplifier sides A&B.

Adjustment	Test point 1	Test point 2	E(DC)	BIAS Trimmer
BIAS HOT A	CNSERV2	CNSERV3	15mV	VR1
BIAS HOT A	CNSERV5	CNSERV6	15mV	VR2
BIAS HOT B	CNSERV2	CNSERV3	15mV	VR1
BIAS HOT B	CNSERV5	CNSERV6	15mV	VR2

The adjustment of the idle current must be done at room temperature, i.e the unit must be ieft to cool down for several hours, after it has been in operation.

4.2. FLOATING SYMMETRY

The symmetry of the floating voltage must be checked immediately after the idle current adjustment. The power amplifier is operated without load. Connect DC voltmeters between test point 1, test point 2 or test point 2 and test point 3. The floating voltage must be adjusted symmetrically against ground via the FLOATING trimmers on PCB 86211. The symmetry of the + floating voltage and the - floating voltage against ground is decisive, the absolute value of the voltage is not so important.

Adjustment	Test point 1	Test point 2	Test point 3	E(DC)	Trimmer
FLOATING SYMMETRY A	CNSERV8	CNSERV7	CNSERV9	approx. +/-67 V	VR102
FLOATING SYMMETRY B	CNSERV8	CNSERV7	CNSERV9	approx. +/-67 V	VR202

4.3. VCA - OFFSET:

Open and close service switches S101 or S201 on PCB 86211 rhythmically and adjust with VR101 or VR201 to a minimum offset (with oscilloscope to minimum peak or by ear to minimum noise volume) at the amplifier output.

The function of the service switches can also be executed via the service connectors with a short between CNASERV 2 and CNASERV 3 for the power amplifier A or a short between CNBSERV 2 and CNBSERV 3 for the power amplifier B.

4.4. ADJUSTMENT OF INDICATIONS

* Level control fully clockwise, f = 1 kHz, input sensitivity = 0 dBu

Feed in a signal (E(I) approx. -34 dBu) via Input A or B, until the IN LED lights up. Adjust the corresponding OUT LED to the same brightness via trimmer VR600 or VR601 on PCB 86211.

4.5. FAN ADJUSTMENT

Close service switch S001 on PCB 86211 or insert jumper between CNBSERV 5 and CNBSERV 6. Adjust the voltage at CNBSERV 4 with VR700 to 27.5 V (DC). Open switch or jumper again.

4.6. GAIN SELECTION

The input sensitivity of the power stage can be adjusted via the jumpers J11 ... J13 or J21 ... J23. The ratings for the Input Sensitivity or Gain refer always to fully opened level controls.

CHANNEL A	CHANNEL B	SELECTION
J11	J21	Input Sensitivity 0 dBu
J12	J22	Input Sensitivity +6 dBu
J13	J23	Gain +26 dB

The Input Sensitivity is set to 0 dBu from the factory.

5. Function Test:

5.1. OUTPUT Offset Voltage

DC measurement at the loudspeaker outputs CHANNEL A/B U (DC) $\leq \pm 10$ mV

5.2 LIMITER

5.2.1. Attenuation Test

Drive both channels with 1 kHz until E(O) = 89 V (without load); increase input voltage by 10 dB. The LIMITER LED will light up, the output voltage will only rise by approx. 0.5 dB to 91 V and is slightly clipped. The THD of the limited signal is approx. 1% ... 2%. If the input voltage is increased further up to +21 dBu, the output signal must not clip more.

5.2.2. LIMITER FAST/SLOW Test

* Test both power amplifier channels separately, perform test without load resistors

1) Drive the power amplifier with a burst signal (f = 1 kHz, 1 - 10 cycles, rate = 0.5 sec.) and E(I) = 10 dB higher than nominal input voltage.

2) Monitor the output signal with an oscilloscope and operate the FAST/SLOW switch

* SLOW: after 2 - 3 signal periods the limiter responds to the

strong distortion and regulates it to a small residual distortion (THD = 1% ... 2%)

* FAST: after 1-2 signal periods the limiter has already regulated the strong distortion to a small residual distortion (THD = 1% ... 2%)

The factory preset position is SLOW!

5.3. POWER-ON DELAY

After approx 2 sec. from operating the Power On switch the relays E1 and E3 on pcb 86211 and the relays E1 on the pcbs 84157 (channel A/B) will pick up together.

5.4. FAN CONTROL:

The fans run for approx. 2 seconds after switching the power amplifier on and then stop if the power amplifier is cold. The fans toggle between stage 1 and stage 0 in stand-by mode of the power amplifier (Power On, no signal), depending on the temperature of the heat sinks. If the switch S001 at PCB 86211 is closed, the fans run in stage 3.

The function of the fan control can be tested by connecting a variable resistor (approx. 100 kohms) to CNBSERV 5 and CNBSERV 6. Via CNASERV 6 the heatsink temperature can be monitored during operation.

Fan stage	E(DC) CNASERV 6	E(DC) CNBSERV 4	Comment
Stage 0	<6.5 V	0 V	Fans do not run
Stage 1	6.5 V .... 7.5 V	12.5 V	
Stage 2	7.5 V .... 9 V	19.5 V	
Stage 3	9 V .... 12.5 V	27.5 V	
Protect	> 12.5 V	27.5 V	Power amp switches off

Note: S001 is opened from the factory!

5.5. SOAR PROTECTION CIRCUIT TEST

Drive both channels separately to 69.3 V into 4 ohms . Connect a 0.1ohms resistor parallel; protection circuit responds and always tries to switch on again! The Protect LED flashes at the same rhythm.

5.6. SHORT CIRCUIT - CURRENT LIMITER TEST

Test the two amplifier channels individually

- drive the power amplifier to (E(O) = 89 V) with a burst signal (f = 1 kHz, 1 - 10 cycles, rate: = 1 sec.), without load

- terminate with load resistor 1 ohm

- the short circuit current limiter limits the output voltage over the load resistor symmetrically (monitor with oscilloscope!) to a peak value of approx. 45 V (approx. 45 amps).

5.7. DC VOLTAGE PROTECTION CIRCUIT TEST

* HI/LO CUT OFF

* Limiter in position SLOW

Test the two channels individually:

- drive the power amplifier with a test signal (f = 7 Hz, without load resistor)

- the protection circuit responds at a input voltage of approx. 3 V peak and always tries to switch on again! The Protect LED flashes at the same rhythm.

Repeat test with f = 14 Hz, the power amplifier may not switch off.

5.8. RF PROTECTION CIRCUIT TEST

* Switch HI/LO CUT OFF

* Fan service switch on

* Note: Operate power amplifiers absolute without load resistors.

Switch off limiter via S102 or jumper between CNASERV 1 and CNASERV 3. Feed in burst signal (f = 60 kHz, 100 msec On, 900 msec. Off) with E(I) 7 V rms into always one channel. The protection circuit must respond. The power amplifier always tries to switch on again! The Protect LED flashes at the same rhythm.

Repeat test with f = 30 kHz and Limiter On, the power amplifier may not switch off.

6. Levels CHANNEL A and B

* Level control fully clockwise

* INPUT ROUTING switch into position DUAL/STEREO

* HI-LOW-CUT switch: ON (factory preset)

* BRIDGED MODE: NORMAL

* LIMITER: SLOW (factory preset)

* THD 0.1%

6.1. Rated Levels

Input	E(I)	Test point	E(O)	R(L)	Comment
CH. A/B	0 dBu	SPEAKER A/B	69.3 V	4 ohms	select J11,J21
CH. A/B	+6 dBu	SPEAKER A/B	69.3 V	4 ohms	select J12,J22
CH. A/B	+13 dBu	SPEAKER A/B	69.3 V	4 ohms	select J13,J23
CH. A/B	+1 dBu	SPEAKER A/B	77.5 V	8 ohms	select J11,J21
CH. A/B	-2 dBu	SPEAKER A/B	54.8 V	2 ohms	select J11,J21

6.2. Max. Input Level: E(I) = +21 dBu (8.7 V rms)

7. INPUT ROUTING Switch

DUAL/STEREO (factory preset!)

- Channels A and B must be driven separately

PARALLEL/MONO

- Channels A and B are switched in parallel at the input; both channels can be driven by one signal source.

8. Level BRIDGED MODE

* Level control fully clockwise
* HI-LOW-CUT switch: ON (factory preset)
* BRIDGED MODE: BRIDGED
* LIMITER: SLOW (factory preset)
* THD 0.1%

Factory preset: NORMAL

BRIDGED: The double output voltage is available at the BRIDGED OUT socket.
The CHANNEL A input socket must be used; the CHANNEL B input socket has no function.

Input	E(I)	Test point	E(O)	R(L)	Comment
CH. A	-2 dBu	BRIDGED OUT	109.5 V	4 ohms	select J11,J21
CH. A	0 dBu	BRIDGED OUT	138.5 V	8 ohms	select J11,J21

9. GROUND LIFT Switch

Factory preset: GROUNDED

Check the correct function of the switch with an ohm-meter:

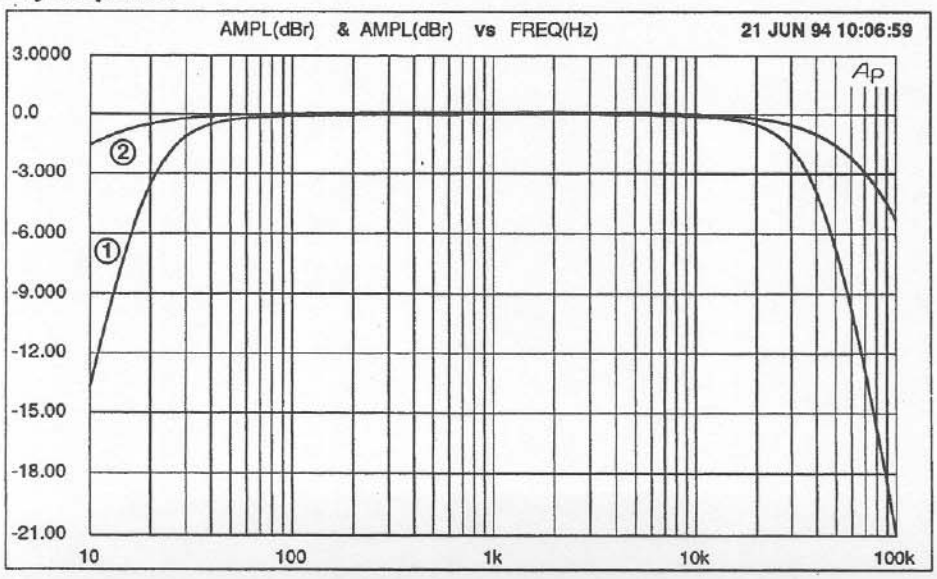
- Circuit ground (at the input or output socket) is connected or disconnected with chassis ground (contact at the earth-terminal screw at the rear or protective-conductor of the mains cable)

10. Amplitude non-linearities

* Input Sensitivity 0 dBu
* Measurements with load resistor 8 ohms
* MBW = 80 kHz
* Power amplifier in factory preset condition (HI/LO Cut On, Limiter Slow)

Measurement	at rated output level E(O) = 77.5 V	at output level under standard test conditions E(O) = 24.5V	Comment
THD+N (f=1kHz)	< 0.005%	< 0.005%	MBW=80kHz
THD+N (f=10kHz)	< 0.02%	< 0.01%	MBW=80kHz
DIM 30	< 0.007%	< 0.005%	3.15kHz, 15kHz
DIM 100	< 0.009%	< 0.005%	3.15kHz, 15kHz
SMPTE	< 0.01%	< 0.01%	60Hz, 7kHz

11. Frequency response



* plot 1: HI/LO CUT On
* plot 2: HI/LO-CUT Off

12. Noise levels

- Input Sensitivity = 0 dBu
- E(F) = Noise voltage, unweighted with B = 22 Hz ... 22 kHz, RMS (IEC 268-1)
- E(G) = Noise voltage, frequency weighting filter according CCIR-4683, quasi peak-weighted (IEC 268-1)
- E(A) = Noise voltage, dB(A) frequency-weighted, RMS (IEC 268-1)
- S/N ratios ref. to rated output voltage 69.3 V (1200W/4ohms)
- HI/LOW-CUT ON, GND LIFT = GROUNDED

	Noise Output Voltage	S/N-Ratio	Equiv. input noise voltage	Equiv. input noise level	Residual noise output voltage
$E_{(F)}$	<-615µV	>101dB	< 6.9µV	<-101 dBu	< 435µV
$E_{(G)}$	< 3.65mV	>85.5dB	< 41µV	<-85.5 dBu	< 1.55mV
$E_{(A)}$	< 490µV	>103dB	< 5.5µV	<-103 dBu	< 345µV

13. Crosstalk < -70 dB

- at f = 1 kHz

14. Damping factor > 300

- internal at f = 1kHz

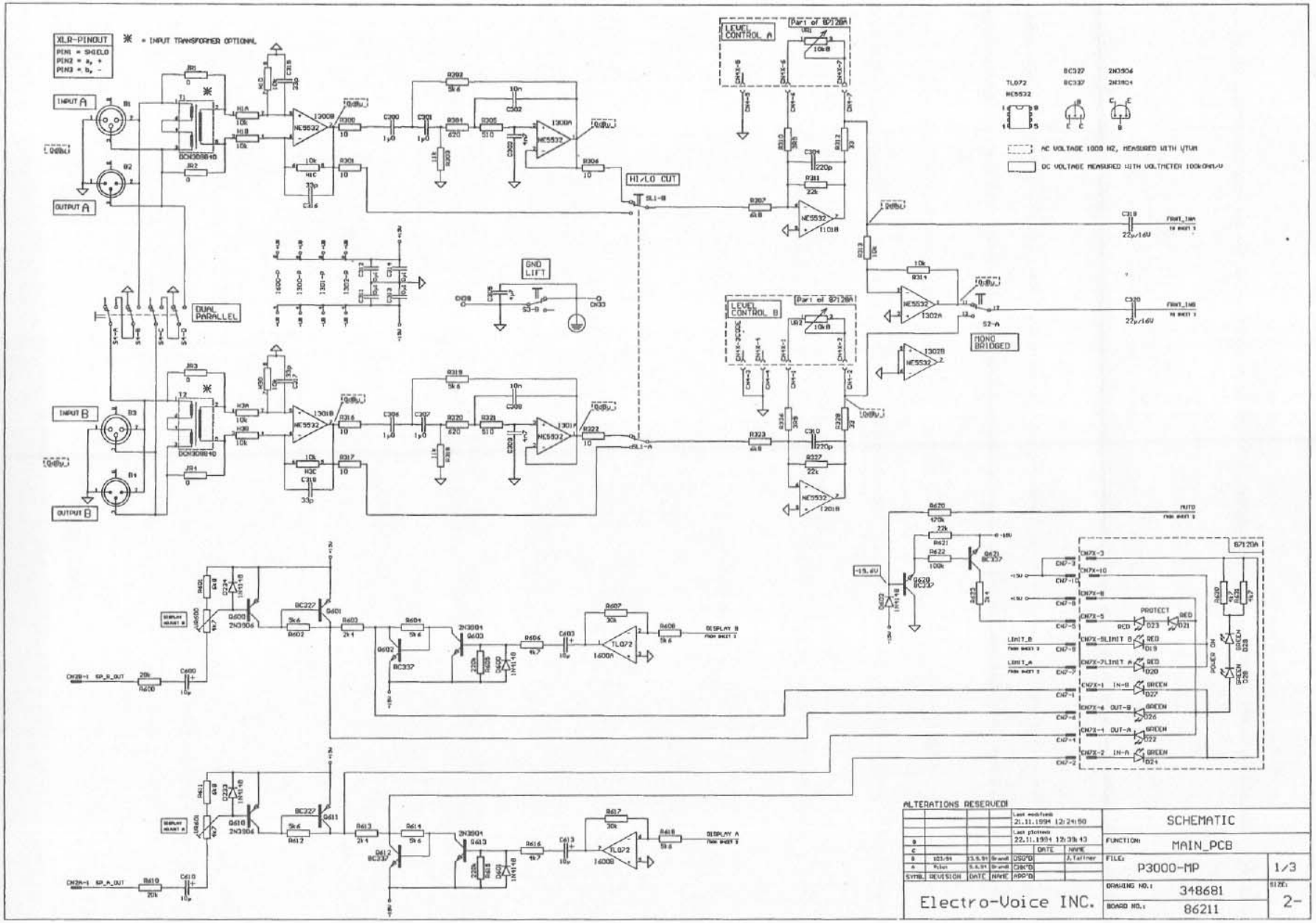
15. Slew rate > 40 V/µs

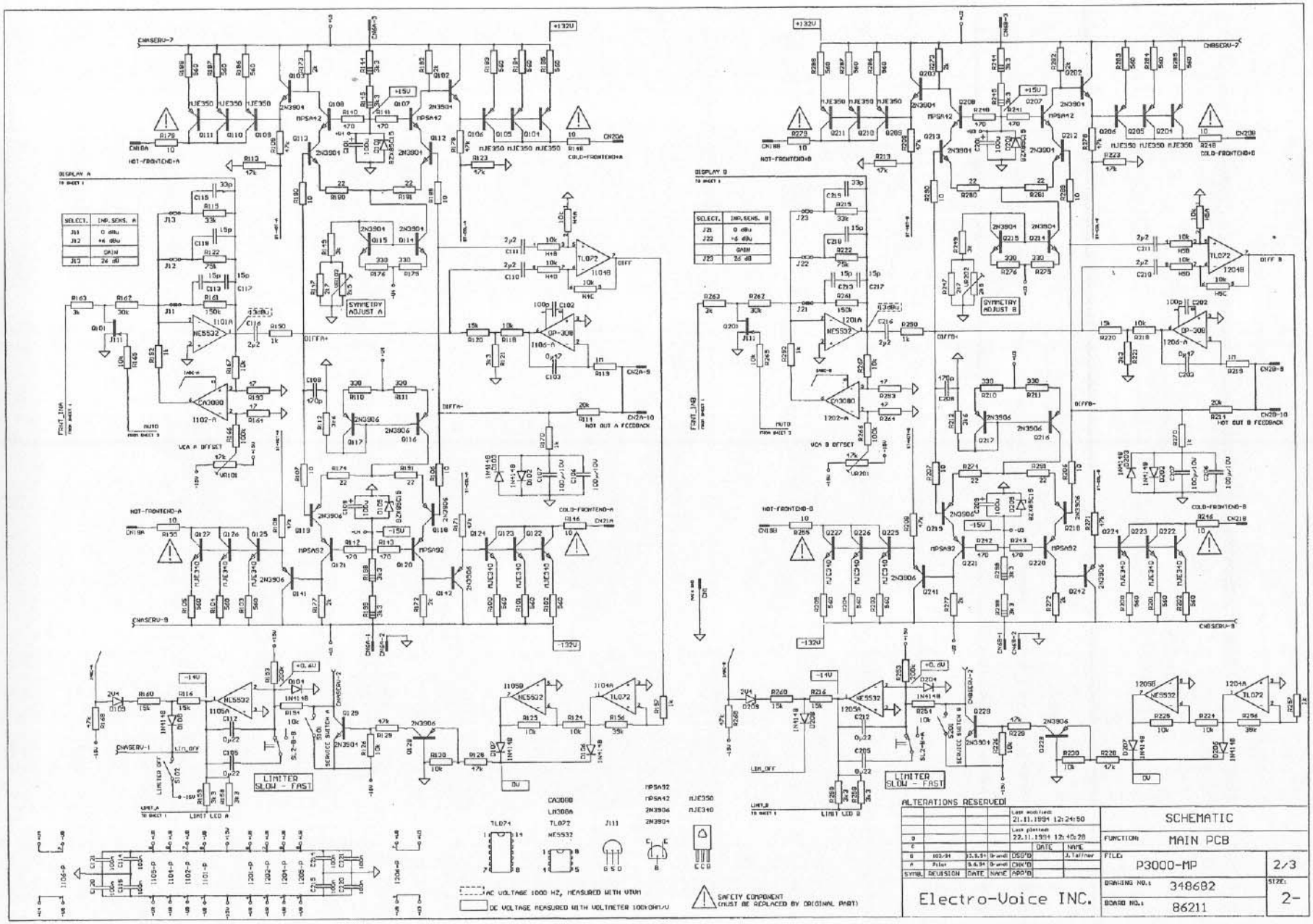
- internal

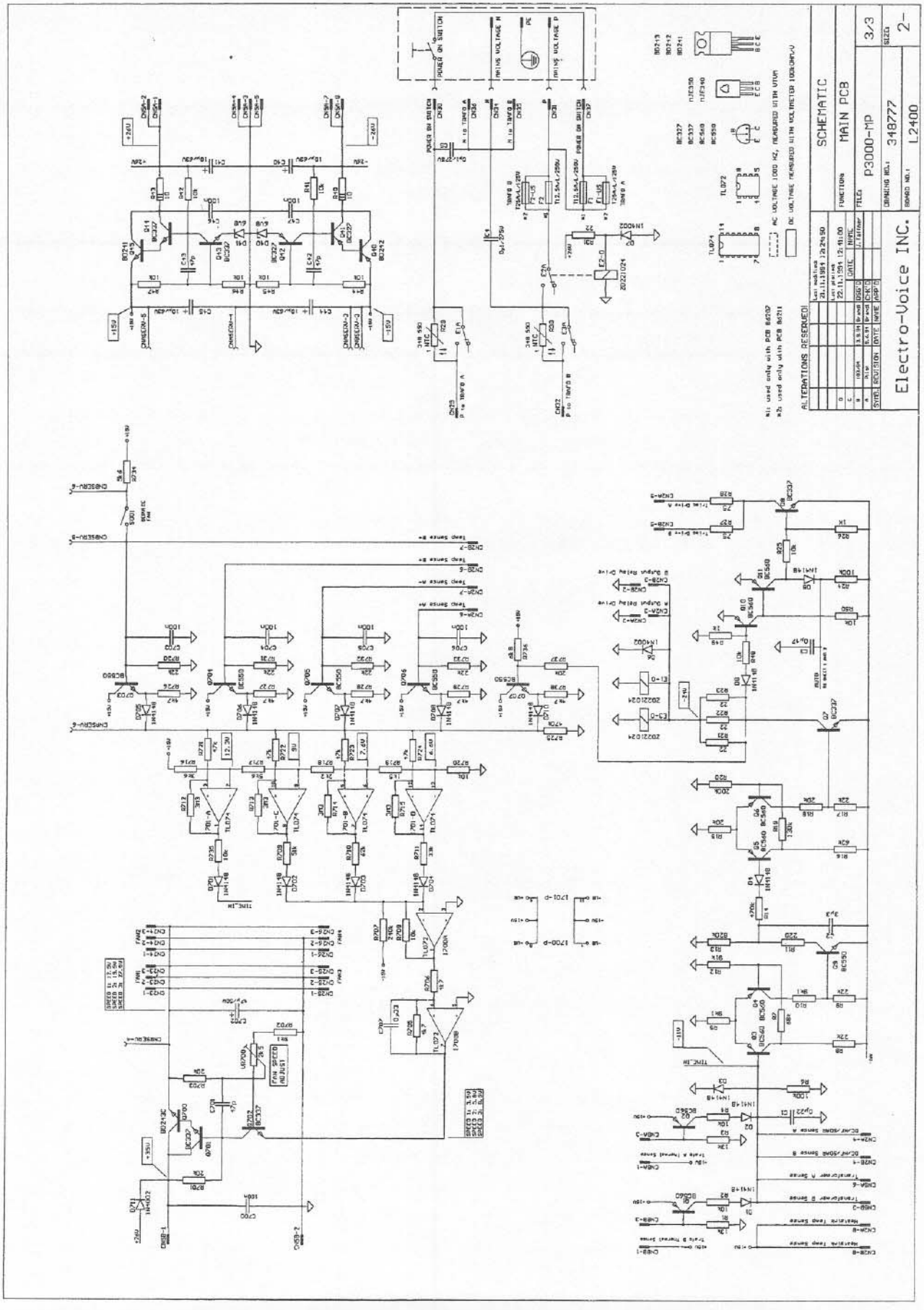
16. Factory Preset Condition

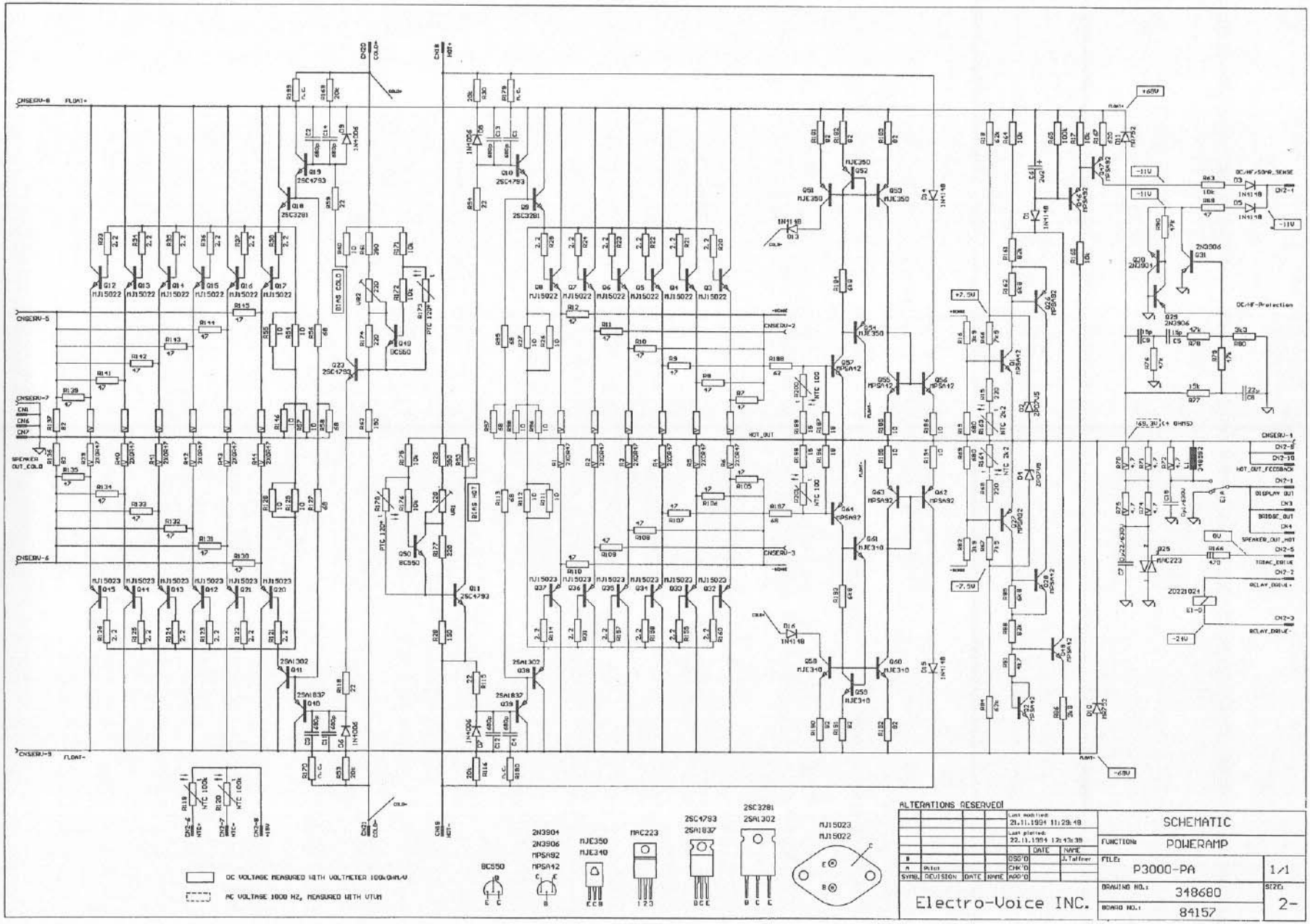
* Check settings

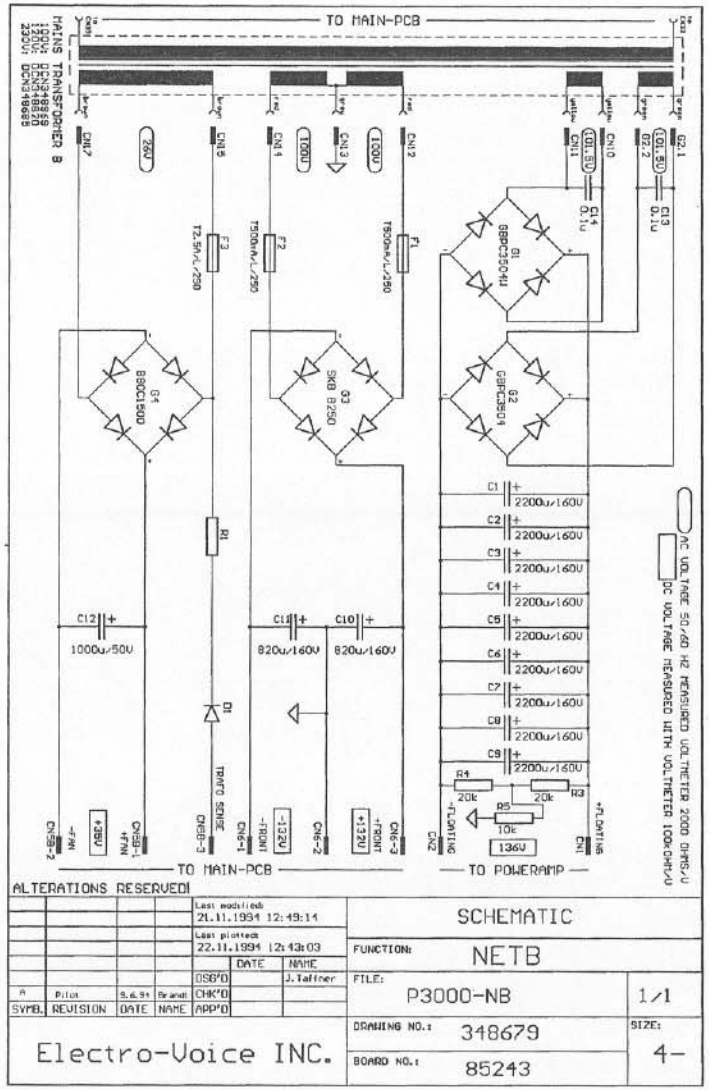
Function	Position	Control element	Condition	Setting
Input sensitivity	PCB 86211	Jumper J11/12	plugged	0 dBu
Limiter Off switch	PCB 86211	bow-type switch S102	open	Limiter On
Limiter Service switch	PCB 86211	bow-type switch S101/S2012	open	
Service fan switch	PCB 86211	bow-type switch S001	open	
Input Routing	Rear side	slide switch	Dual/Stereo	Dual Mode
HI/LO CUT filter	Rear side	slide switch	On	Filter On
Bridged Mode	Rear side	slide switch	Normal	Not bridged
Limiter	Rear side	slide switch	Slow	Limiter slow
CIR.GND to CHASSIS	Rear side	slide switch	Grounded	


XLR-PINOUT
PIN1 = SHIELD
PIN2 = a, +
PIN3 = b, -
* = INPUT TRANSFORMER OPTIONAL
INPUT A
OUTPUT A
INPUT B
OUTPUT B
DUAL PARALLEL
GND LIFT
HI/LO CUT
LEVEL CONTROL A
LEVEL CONTROL B
Part of 8P128A
MONO BRIDGED
TL072
NE5532
BC327
BC337
2N3906
2N3904
AC VOLTAGE 1000 HZ, MEASURED WITH VTVM
DC VOLTAGE MEASURED WITH VOLTMETER 100KOHM/V
PROTECT
LIMIT_B
LIMIT_A
POWER ON
IN-B
OUT-B
OUT-A
IN-A
DISPLAY ADJUST B
DISPLAY ADJUST A
DISPLAY B
DISPLAY A
ALTERATIONS RESERVED!
SCHEMATIC
MAIN_PCB
P3000-MP
1/3
348681
86211
2-
Electro-Voice INC.


SELECT. INP.SENS. A
J13 0 dBu
J12 +6 dBu
GAIN
J12 26 dB
SELECT. INP.SENS. B
J23 0 dBu
J22 +6 dBu
GAIN
J22 26 dB
SYMMETRY ADJUST A
SYMMETRY ADJUST B
VCA A OFFSET
VCA B OFFSET
LIMITER SLOW - FAST
LIMITER SLOW - FAST
SERVICE SWITCH A
SERVICE SWITCH B
LIMIT LED A
LIMIT LED B
HOT-FRONTEND-A
HOT-FRONTEND-B
COLD-FRONTEND-A
COLD-FRONTEND-B
HOT OUT A FEEDBACK
HOT OUT B FEEDBACK
DIFFA+
DIFFA-
DIFFB+
DIFFB-
+132U
-132U
+15U
-15U
+0.6U
-14U
0U
CHASERV-7
CHASERV-8
CHASERV-9
CHASERV-1
LIN_OFF
NE5532
TL072
OP-300
CA3080
LM308A
TL074
J111
2N3904
2N3906
MPSA42
MPSA92
MJE350
MJE340
AC VOLTAGE 1000 HZ, MEASURED WITH VTVM
DC VOLTAGE MEASURED WITH VOLTMETER 100KOHM/V
SAFETY COMPONENT (MUST BE REPLACED BY ORIGINAL PART)
ALTERATIONS RESERVED!
Last modified: 21.11.1994 12:24:50
Last plotted: 22.11.1994 12:40:28
SCHEMATIC
FUNCTION: MAIN PCB
FILE: P3000-MP
2/3
DRAWING NO.: 348682
SIZE: 2-
BOARD NO.: 86211
Electro-Voice INC.

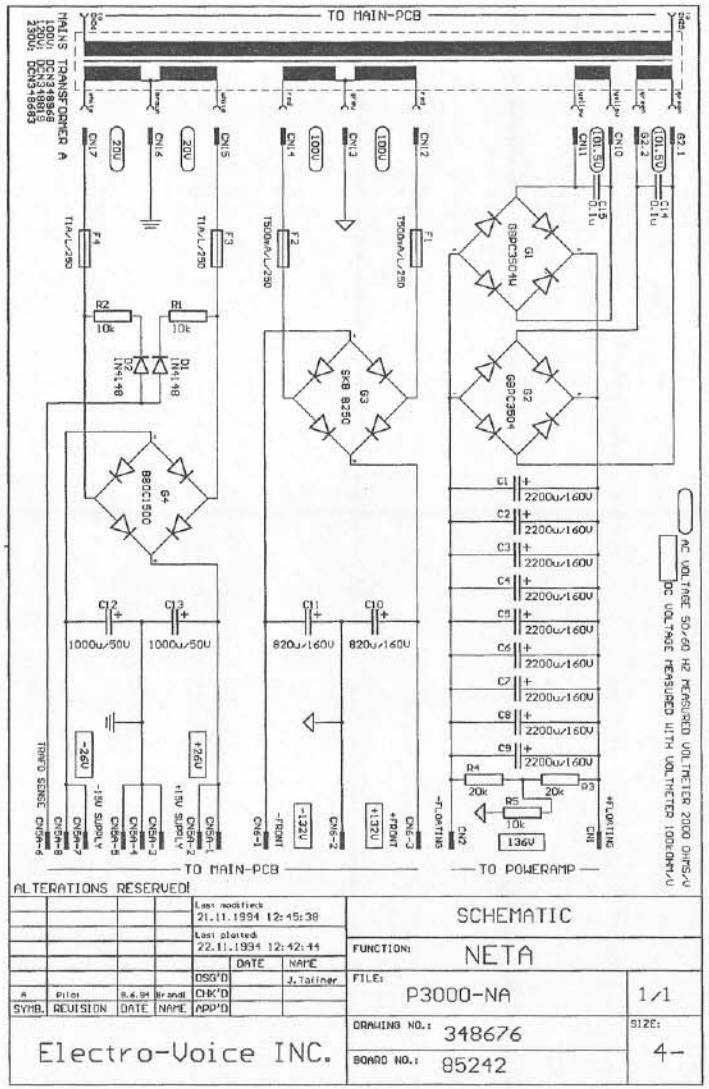

SCHEMATIC
MAIN PCB
P3000-MP
3/3
348777
L2400
Electro-Voice INC.
ALTERATIONS RESERVED!
POWER ON SWITCH
MAINS VOLTAGE N
MAINS VOLTAGE P
PE
TLO72
TLO74
BC327
BC337
BC560
BC550
BC547
BC557
BC548
BC558
1N4148
1N4002
TL072
TL074


CNSERV-8 FLOAT+
CNSERV-5
CNSERV-7
CN6
CN7
SPEAKER OUT_COLD
CNSERV-6
CNSERV-9 FLOAT-
HOT_OUT
CNSERV-2
CNSERV-3
CNSERV-1
+68V
-11V
+7.5V
-7.5V
-68V
-24V
DC-HF/SOAR_SENSE
DC-HF-Protection
69.3V (4 OHMS)
CN2-8
CN2-10
HOT_OUT_FEEDBACK
CN2-1
DISPLAY_OUT
CN3
BRIDGE_OUT
CN4
SPEAKER_OUT_HOT
CN2-5
TRIAC_DRIVE
CN2-2
RELAY_DRIVE+
CN2-3
RELAY_DRIVE-
2D221024
BC550
2N3904
2N3906
MPSA92
MPSA42
NJE350
NJE340
MAC223
2SC4793
2SA1837
2SC3281
2SA1302
NJ15023
NJ15022
DC VOLTAGE MEASURED WITH VOLTMETER 100k OHM/V
AC VOLTAGE 1000 Hz, MEASURED WITH VTVM
ALTERATIONS RESERVED!
Last modified: 21.11.1994 11:29:48
Last plotted: 22.11.1994 12:43:38
DATE NAME
DSG'D J.Taffner
CHK'D
APP'D
SYMB. DECISION DATE NAME
SCHEMATIC
FUNCTION: POWERAMP
FILE: P3000-PA
1/1
DRAWING NO.: 348680
SIZE: 2-
BOARD NO.: 84157
Electro-Voice INC.



ALTERATIONS RESERVED!

				Last modified: 21.11.1994 12:49:14	SCHEMATIC		
				Last plotted: 22.11.1994 12:43:03	FUNCTION: NETB		
					DATE	NAME	
				DSG'D		J.Taffner	
A	Pilot	8.6.94	Brandt	CHK'D	FILE: P3000-NB		1/1
SYMB.	REVISION	DATE	NAME	APP'D			
Electro-Voice INC.					DRAWING NO.: 348679		SIZE: 4-
					BOARD NO.: 85243		



ALTERATIONS RESERVED!

				Last modified: 21.11.1994 12:45:38	SCHEMATIC		
				Last plotted: 22.11.1994 12:42:44	FUNCTION: NETA		
					DATE	NAME	
				DSG'D		J.Taffner	
A	Pilot	8.6.94	Brandt	CHK'D	FILE: P3000-NA		1/1
SYMB.	REVISION	DATE	NAME	APP'D			
Electro-Voice INC.					DRAWING NO.: 348676		SIZE: 4-
					BOARD NO.: 85242		

Pos. in diagram	description	Part-No.
B0010	speaker socket 4pol.	341343
C0013	capacitor SO 0.10 MF/250V	333014
C0014	capacitor SO 0.10 MF/250V	333014
S0010	power switch	346720
Z0080	rubber foot	335589
00030	power button black	341382
00210	handle 109mm	349520
00510	fan	348415
00005	PCB	841578
CNSER	connector 9pol	306446
C0007	safety component 0,22MF	344934
C0015	safety component	341714
D0001	diode 1N 4148	301254
D0002	break down diode ZPD 7V5	307916
D0003	diode 1N 4148	301254
D0004	break down diode ZPD 7V5	307916
D0005	diode 1N 4148	301254
D0006	diode 1N 4006	305739
D0007	diode 1N 4006	305739
D0008	diode 1N 4006	305739
D0009	diode 1N 4006	305739
D0010	diode MR 752	328769
D0011	diode MR 752	328769
D0012	diode 1N 4002	304360
D0013	diode 1N 4148	301254
D0014	diode 1N 4148	301254
D0015	diode 1N 4148	301254
D0016	diode 1N 4148	301254
E0001	relay ZD 22	348634
L0001	coil	348592
Q0001	trans. MPSA 42	348422
Q0002	trans. MPSA 42	348422
Q0003	trans. MJ 15022	331657
Q0004	trans. MJ 15022	331657
Q0005	trans. MJ 15022	331657
Q0006	trans. MJ 15022	331657
Q0007	trans. MJ 15022	331657
Q0008	trans. MJ 15022	331657
Q0009	trans. 2SC 3281	348305
Q0010	trans. 2SC 4793	348409
Q0011	trans. 2SC 4793	348409
Q0012	trans. MJ 15022	331657
Q0013	trans. MJ 15022	331657
Q0014	trans. MJ 15022	331657
Q0015	trans. MJ 15022	331657
Q0016	trans. MJ 15022	331657
Q0017	trans. MJ 15022	331657
Q0018	trans. 2SC 3281	348305
Q0019	trans. 2SC 4793	348409
Q0020	trans. MJ 15023	331658
Q0021	trans. MJ 15023	331658
Q0023	trans. 2SC 4793	348409
Q0025	triac MAC 223-6	338876
Q0026	trans. MPSA 92	348423
Q0027	trans. MPSA 92	348423
Q0028	trans. MPSA 42	348422
Q0029	trans. 2N 3906	348421
Q0030	trans 2N 3904	335763
Q0031	trans. 2N 3906	348421
Q0032	trans. MJ 15023	331658
Q0033	trans. MJ 15023	331658
Q0034	trans. MJ 15023	331658
Q0035	trans. MJ 15023	331658
Q0036	trans. MJ 15023	331658
Q0037	trans. MJ 15023	331658
Q0038	trans. 2SA 1302	348424
Q0039	trans. 2SA 1837	348408
Q0040	trans. 2SA 1837	348408
Q0041	trans. 2SA 1302	348424
Q0042	trans. MJ 15023	331658
Q0043	trans. MJ 15023	331658
Q0044	trans. MJ 15023	331658
Q0045	trans. MJ 15023	331658
Q0046	trans. MPSA 92	348423
Q0047	trans. MPSA 92	348423
Q0048	trans. MPSA 42	348422
Q0049	trans. BC 550 B	301184
Q0050	trans. BC 550 B	301184
Q0051	trans. MJE 350	338869
Q0052	trans. MJE 350	338869
Q0053	trans. MJE 350	338869
Q0054	trans. MJE 350	338869
Q0055	trans. MPSA 42	348422
Q0056	trans. MPSA 42	348422
Q0057	trans. MPSA 42	348422
Q0058	trans. MJE 340	338868
Q0059	trans. MJE 340	338868
Q0060	trans. MJE 340	338868
Q0061	trans. MJE 340	338868
Q0062	trans. MPSA 92	348423
Q0063	trans. MPSA 92	348423
Q0064	trans. MPSA 92	348423
R0070	wire-wound resistor 4,7ohm	341713
R0071	wire-wound resistor 4,7ohm	341713
R0072	wire-wound resistor 4,7ohm	341713
R0074	wire-wound resistor 4,7ohm	341713
R0075	wire-wound resistor 4,7ohm	341713
00035	shorting plug	306397
00010	PCB	871288
D0019	LED red 3mm	336399
D0020	LED red 3mm	336399
D0021	LED red 3mm	336399
D0022	LED green 3mm	336398
D0023	LED red 3mm	336399

Pos. in diagram	description	Part-No.
D0024	LED green 3mm	336398
D0026	LED green 3mm	336398
D0027	LED green 3mm	336398
D0028	LED green 3mm	336398
D0029	LED green 3mm	336398
VR001	potentiometer 10kohm lin	348430
VR002	potentiometer 10kohm lin	348430
00005	shorting plug	306397
00015	PCB	862118
B0001	socket XLR 3pol.	346791
B0002	connector XLR 3pol.	346792
B0003	socket XLR 3pol.	346791
B0004	connector XLR 3pol.	346792
CNASE	connector 9pol	306446
CNBSE	connector 9pol	306446
C0004	safety component 0,22MF	344934
C0005	safety component	341714
C0702	KO-EL 47MF 50V	343530
C0707	KO-FOL 0.33MF 63V	340244
D0001	diode 1N 4148	301254
D0002	diode 1N 4148	301254
D0003	diode 1N 4148	301254
D0004	diode 1N 4148	301254
D0005	diode 1N 4148	301254
D0006	diode 1N 4002	304360
D0007	diode 1N 4002	304360
D0008	diode 1N 4148	301254
D0040	break down diode ZPD 6V8	304992
D0041	break down diode ZPD 6V8	304992
D0101	diode zener BZX 85C 15V	334321
D0102	diode 1N 4148	301254
D0103	diode 1N 4148	301254
D0104	diode 1N 4148	301254
D0105	diode zener BZX 85C 15V	334321
D0106	diode 1N 4148	301254
D0107	diode 1N 4148	301254
D0108	diode 1N 4148	301254
D0109	diode zener BZX 55C 2V4	329511
D0201	diode zener BZX 85C 15V	334321
D0202	diode 1N 4148	301254
D0203	diode 1N 4148	301254
D0204	diode 1N 4148	301254
D0205	diode zener BZX 85C 15V	334321
D0206	diode 1N 4148	301254
D0207	diode 1N 4148	301254
D0208	diode 1N 4148	301254
D0209	diode zener BZX 55C 2V4	329511
D0233	diode 1N 4148	301254
D0234	diode 1N 4148	301254
D0600	diode 1N 4148	301254
D0601	diode 1N 4148	301254
D0602	diode 1N 4148	301254

Pos. in diagram	description	Part-No.
D0701	diode 1N 4148	301254
D0702	diode 1N 4148	301254
D0703	diode 1N 4148	301254
D0704	diode 1N 4148	301254
D0705	diode 1N 4148	301254
D0706	diode 1N 4148	301254
D0707	diode 1N 4148	301254
D0708	diode 1N 4148	301254
D0710	diode 1N 4148	301254
D0711	diode 1N 4002	304360
E0001	relay ZD 22	348634
E0002	relay ZD 22	348634
E0003	relay ZD 22	348634
H0001	res.network RKL 8A 103J	343457
H0003	res.network RKL 8A 103J	343457
H0004	res.network RKL 8A 103J	343457
H0005	res.network RKL 8A 103J	343457
I0101	IC NE 5532 N	327197
I0102	IC CA 3080 E	307421
I0104	IC TL 072 CP	331340
I0105	IC NE 5532 N	327197
I0106	IC LM 308 A	338359
I0201	IC NE 5532 N	327197
I0202	IC CA 3080 E	307421
I0204	IC TL 072 CP	331340
I0205	IC NE 5532 N	327197
I0206	IC LM 308 A	338359
I0300	IC NE 5532 N	327197
I0301	IC NE 5532 N	327197
I0302	IC NE 5532 N	327197
I0600	IC TL 072 CP	331340
I0700	IC TL 072 CP	331340
I0701	IC TL 074 CN	332985
Q0001	trans. BC 560 B	306928
Q0002	trans. BC 560 B	306928
Q0003	trans. BC 560 B	306928
Q0004	trans. BC 560 B	306928
Q0005	trans. BC 560 B	306928
Q0006	trans. BC 560 B	306928
Q0007	trans. BC 337-25	307150
Q0008	trans. BC 337-25	307150
Q0009	trans. BC 550 B	301184
Q0010	trans. BC 560 B	306928
Q0011	trans. BC 560 B	306928
Q0040	trans BD 242B	301235
Q0041	trans. BC 327-25	307430
Q0042	trans. BC 327-25	307430
Q0043	trans. BC 337-25	307150
Q0044	trans. BC 337-25	307150
Q0045	trans. BD 241B	301236
Q0101	trans. J 111 A	330264
Q0102	trans 2N 3904	335763
Q0103	trans 2N 3904	335763

Pos. in diagram	description	Part-No.	Pos. in diagram	description	Part-No.
Q0104	trans. MJE 350	338869	Q0226	trans. MJE 340	338868
Q0105	trans. MJE 350	338869	Q0227	trans. MJE 340	338868
Q0106	trans. MJE 350	338869	Q0228	trans. 2N 3906	348421
Q0107	trans. MPSA 42	348422	Q0229	trans 2N 3904	335763
Q0108	trans. MPSA 42	348422	Q0241	trans. 2N 3906	348421
Q0109	trans. MJE 350	338869	Q0242	trans. 2N 3906	348421
Q0110	trans. MJE 350	338869	Q0600	trans. 2N 3906	348421
Q0111	trans. MJE 350	338869	Q0601	trans. BC 327-25	307430
Q0112	trans 2N 3904	335763	Q0602	trans. BC 337-25	307150
Q0113	trans 2N 3904	335763	Q0603	trans 2N 3904	335763
Q0114	trans 2N 3904	335763	Q0610	trans. 2N 3906	348421
Q0115	trans 2N 3904	335763	Q0611	trans. BC 327-25	307430
Q0116	trans. 2N 3906	348421	Q0612	trans. BC 337-25	307150
Q0117	trans. 2N 3906	348421	Q0613	trans 2N 3904	335763
Q0118	trans. 2N 3906	348421	Q0620	trans. BC 337-25	307150
Q0119	trans. 2N 3906	348421	Q0621	trans. BC 337-25	307150
Q0120	trans. MPSA 92	348423	Q0700	trans. BD 243C	339860
Q0121	trans. MPSA 92	348423	Q0701	trans. BC 337-25	307150
Q0122	trans. MJE 340	338868	Q0702	trans. BC 337-25	307150
Q0123	trans. MJE 340	338868	Q0703	trans. BC 550 B	301184
Q0124	trans. MJE 340	338868	Q0704	trans. BC 550 B	301184
Q0125	trans. MJE 340	338868	Q0705	trans. BC 550 B	301184
Q0126	trans. MJE 340	338868	Q0706	trans. BC 550 B	301184
Q0127	trans. MJE 340	338868	Q0707	trans. BC 550 B	301184
Q0128	trans. 2N 3906	348421	SL001	rotary switch	348583
Q0129	trans 2N 3904	335763	SL002	rotary switch	348583
Q0141	trans. 2N 3906	348421	S0001	control element on/off	327947
Q0142	trans. 2N 3906	348421	S0002	rotary switch	348583
Q0201	trans. J 111 A	330264	S0003	sliding switch	338886
Q0202	trans 2N 3904	335763	S0004	rotary switch	348572
Q0203	trans 2N 3904	335763	S0101	control element on/off	327947
Q0204	trans. MJE 350	338869	S0102	control element on/off	327947
Q0205	trans. MJE 350	338869	S0201	control element on/off	327947
Q0206	trans. MJE 350	338869	VR101	wire wound resistor 47 kohm	348486
Q0207	trans. MPSA 42	348422	VR102	wire wound resistor 2.5 k	348675
Q0208	trans. MPSA 42	348422	VR201	wire wound resistor 47 kohm	348486
Q0209	trans. MJE 350	338869	VR202	wire wound resistor 2.5 k	348675
Q0210	trans. MJE 350	338869	VR600	wire-wound resistor 4.70k	348487
Q0211	trans. MJE 350	338869	VR601	wire-wound resistor 4.70k	348487
Q0212	trans 2N 3904	335763	VR700	wire wound resistor 2.5 k	348675
Q0213	trans 2N 3904	335763	00025	shorting plug	306397
Q0214	trans 2N 3904	335763			
Q0215	trans 2N 3904	335763	00020	PCB	852428
Q0216	trans. 2N 3906	348421	C0012	KO-EL 1000MF 25V	337597
Q0217	trans. 2N 3906	348421	C0013	KO-EL 1000MF 25V	337597
Q0218	trans. 2N 3906	348421	C0015	safety component	341714
Q0219	trans. 2N 3906	348421	D0001	diode 1N 4148	301254
Q0220	trans. MPSA 92	348423	D0002	diode 1N 4148	301254
Q0221	trans. MPSA 92	348423	G0001	rectifier GBPC-W	348714
Q0222	trans. MJE 340	338868	G0002	rectifier GBPC 35-04	343270
Q0223	trans. MJE 340	338868	G0003	rectifier B250 C1000	333719
Q0224	trans. MJE 340	338868	G0004	rectifier B 80 C1500 M	340791
Q0225	trans. MJE 340	338868	00010	fuse holder	306838

Pos. in diagram	description	Part-No.
00015	fuse holder	306838
00020	fuse holder	306838
00025	fuse holder	306838
00025	PCB	852438
C0012	KO-EL 1000MF 25V	337597
C0014	safety component	341714
G0001	rectifier GBPC-W	348714
G0002	rectifier GBPC 35-04	343270
G0003	rectifier B250 C1000	333719
G0004	rectifier B 80 C1500 M	340791
00010	fuse holder	306838
00015	fuse holder	306838
00020	fuse holder	306838
00030	transformer power US	348819
00035	transformer power US	348820

Pos. in diagram	description	Part-No.

SERVICE INFORMATION

WARNING: No user serviceable parts inside. Extremely hazardous voltages and currents may be encountered within the chassis. The servicing information contained within this document is only for use by Electro-Voice Authorized warranty repair stations and qualified service personnel. To avoid electric shock DO NOT perform any servicing other than that contained in the Operating instructions unless you are qualified to do so. Otherwise, refer all servicing to qualified service personnel.

NOTICE: Modification to Electro-Voice products is not recommended. Such modifications shall be at the sole expense of the person(s) or company responsible, and any damage resulting therefrom shall not be covered under warranty or otherwise.

#.1 ORDERING REPLACEMENT PARTS

TO ORDER REPLACEMENT PARTS, LOOK UP THE ORDERING NUMBER FROM THE COMPONENT PARTS LISTING AND CALL E. S. T. (616) 695-6831, FAX (800) 685-6386, OR WRITE:

ELECTRO-VOICE SERVICE
600 CECIL STREET
BUCHANAN, MICHIGAN 49107
U. S. A.

#.2 ELECTRO-VOICE UNIFORM LIMITED WARRANTY STATEMENT

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. **Exclusions and Limitations:** The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice or any of its authorized service representatives. **Obtaining Warranty Service:** To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice at 600 Cecil Street, Buchanan, MI 49107 (616/695-6831or 800/685-2606). **Incidental and Consequential Damages Excluded:** product repair or replacement and return to the customer are only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Electro-Voice Electronics are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. Additional details are included in the Unifom Limited Warranty statement.

#. 3 Technical Assistance

For applications assistance or other technical information, contact the Applications Engineer. You can call (616) 695-6831, FAX (616) 695-1304, or write:

Electro-Voice Applications Engineer 600 Cecil Street Buchanan, MI 49107 U. S. A.

Electro-Voice a MARK IV company

600 Cecil Street, Buchanan, Michigan 49107, Phone (616) 695-6831, Fax: 616-695-1304
8234 Doe Avenue, Visalia, California 93291, Phone (209) 651-7777, Fax: (209) 651-0164
Mark IV Audio Canada. Inc. 345 Herbert St., Gananoque, Ontario, Canada K7G 2V1, Phone (613)382-2141, Fax (613)382-7466

Printed in Germany 10.12.95 / 351 212