9 Adjustments

After repair, all adjustable signals should be checked and re-adjusted if necessary.

1 AD converter reference voltage

input voltage:	0
output load:	open
adjustment location:	P1 on the front board
instrument:	DC volt meter
measure location + :	IC34 pin 15
measure location - :	IC34 pin 3
value:	-5.12 V ± 0.05 V

2 +86 V supply

input voltage:	0
output load:	open
adjustment location:	P1 on the regulated supply board
instrument:	DC volt meter
measure location + :	CN3 1 on a preamp board
measure location - :	CN3 7 on a preamp board
value:	86 V DC ± 1 V

3 -86 V supply

input voltage:	0
output load:	open
adjustment location:	P2 on the regulated supply board
instrument:	DC volt meter
measure location + :	R91 at the side of CN3 on a preamp board
measure location - :	CN3 7 on a preamp board
value:	-86 V DC ± 1 V

4 Bias current channel 1

input voltage:	0
output load:	open
adjustment location:	P1 on the power amp board
instrument:	DC volt meter
measure location + :	T9 pin 3
measure location - :	T15 pin 3
value:	0.03 V ± 0.005 V at 40 °C

5 Bias current channel 2

same as channel 1

6 Common mode rejection channel 1

input voltage:	1 Veff, 400 Hz on pin 2 and pin 3 in phase
output load:	8Ω
adjustment location:	P1 on the preamp board
instrument:	AC volt meter or scope
measure location + :	amplifier output +
measure location - :	amplifier output -
value:	≤ 0.015 Veff

7 Common mode rejection channel 2

same as channel 1

8 Output power calibration channel 1

output voltage:	40 Veff, 400 Hz, output device temperature 40 °C ± 1 °C
output load:	open
adjustment location:	P2 on the poweramp board
instrument:	scope
measure location + :	IC7-a (preamp board) pin 1
measure location - :	CN3 pin 8
value:	tune for minimum AC voltage until only a noise signal of ± 20 mV pk-pk is left.

output voltage:	40 Veff, 400 Hz, output device temperature 40 °C ± 1 °C
output load:	open
adjustment location:	P2 on the preamp board
instrument:	PPA 1200 display on peak power
measure location + :	PPA 1200 front
measure location - :	
value:	turn P2 fully clockwise and turn back slowly counter clockwise until the readout just changes from 3 or 4 W to 0. Do not turn further!

Connect a 8Ω dummy load and check the reading at peak power. It should read 200 ± 10%. Remove the dummy and the display should return to 0.

8 Output power calibration channel 2

same as channel 1

10 Final test after servicing

For a final test is needed a signal generator, 8 Ω / 500 W dummy loads, and a level meter/distortion analyser.

First check all buttons as described in chapter 7.

Next check the output power. Apply a 1 kHz sinewave and measure output power. The minimum output powers at 220 V mains voltage should be:

8 Ω :	350 W
4 Ω :	600 W
2 Ω :	900 W

at 1 kHz. Test if the clip leds work properly (disable limiter !).

Next check frequency response. This should be done at an output level of 10 V at 8 Ω. A typical frequency response is shown in figure 19. Final test norms are:

10 Hz -> 20 kHz ± 0.3 dB
10 Hz -> 80 kHz + 0.3 dB, - 1.5 dB

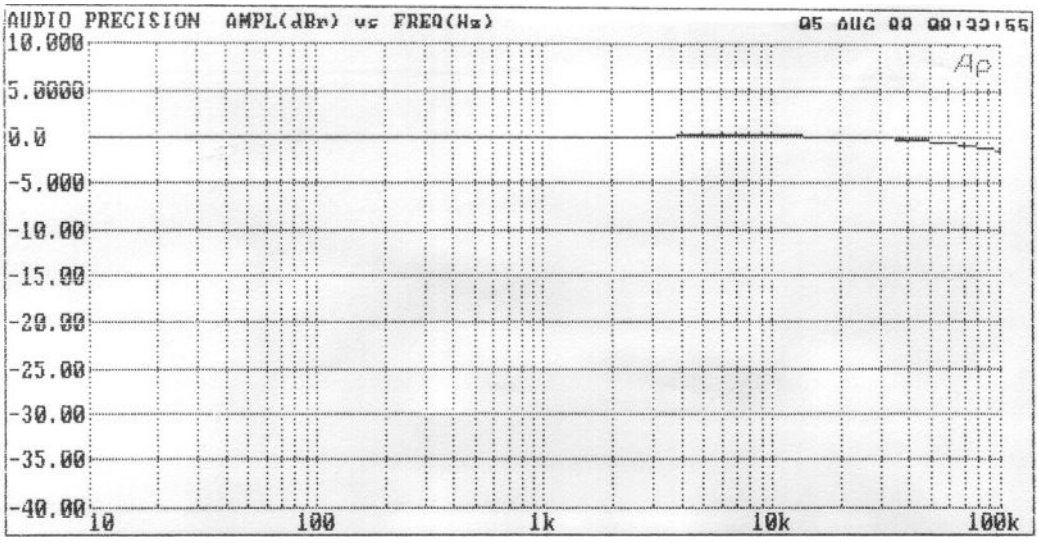


Fig 19 Typical frequency response

Next check harmonic distortion. Final test norms are:

P_{out} = 200 W into 8 Ω

THD + N	10 Hz -> 10 kHz	≤ 0.02 %
THD + N	10 Hz -> 30 kHz	≤ 0.05 %

P_{out} = 400 W into 4 Ω

THD + N	10 Hz -> 10 kHz	≤ 0.03 %
THD + N	10 Hz -> 30 kHz	≤ 0.08 %

Typical distortion graphs are shown in fig. 20 and fig. 21. An 80 kHz low pass filter is used to eliminate HF processor noise out of this test.

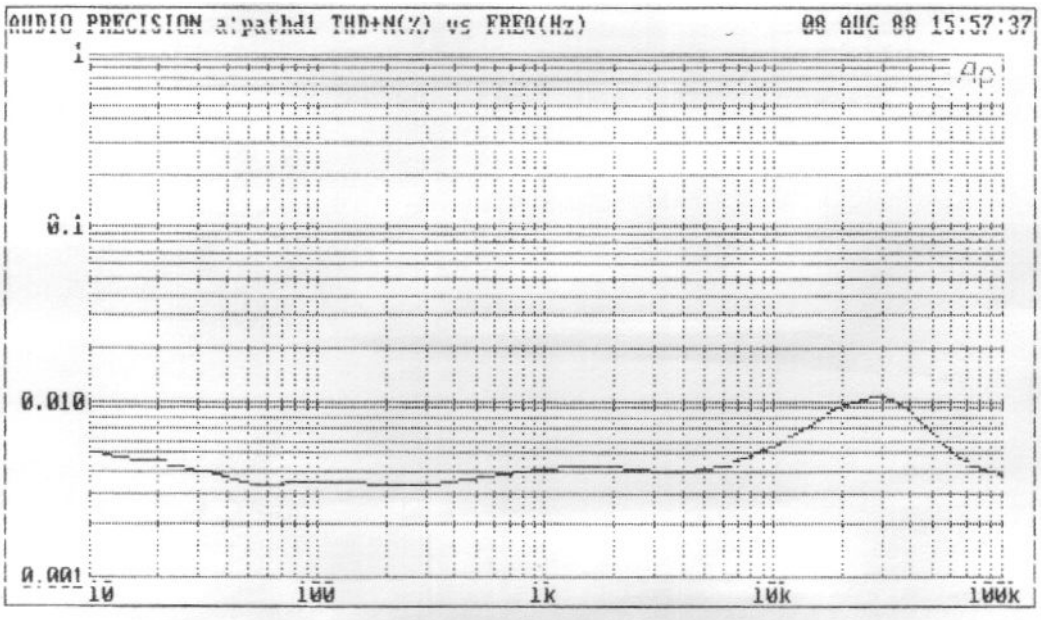


Fig 20 Typical harmonic distortion at 200 W / 8 Ω

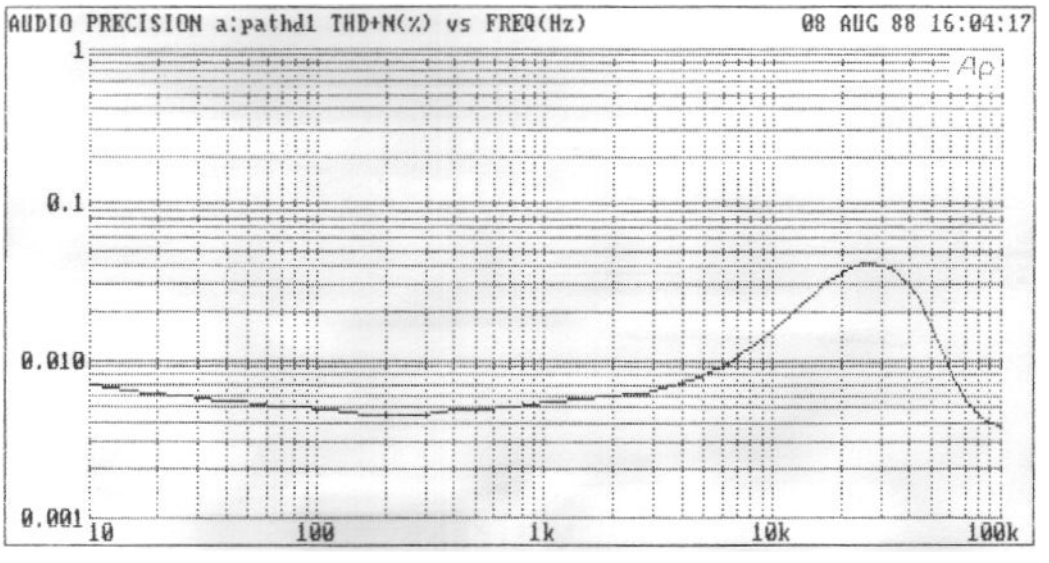


Fig 21 Typical harmonic distortion at 400W / 4 Ω

The total noise level of the PPA 1200 should be less than 110 dB under 50V output level. For this test, a 600 Ω resistor should be placed between pin 2 and pin 3 of the XLR input connector. The best way to test output noise is to measure frequency response without an input signal. A typical graph is shown in fig. 22.

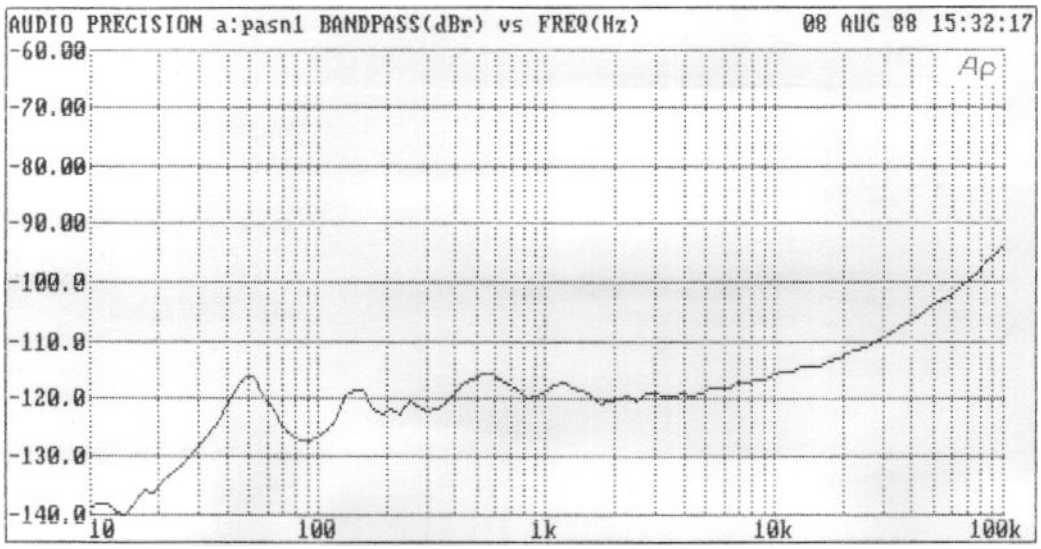


Fig 22 Output noise versus frequency, @ 50 V

Next test common mode rejection. A typical performance graph is shown in fig. 23. The norms are:

CMRR	≥ 60 dB at 1 kHz
	≥ 35 dB at 20 kHz

The PPA 1200's crossover should be tested on frequency accuracy. Put the PPA in the preset mode on the SA 4529 preset. Be sure both input levels are 0 dB.
The best way to check the crossover frequencies is to make a frequency graph of both the channels. If this is not possible, check a few frequencies.
Take 100 Hz, 10 V output into 8 Ω as reference level. The following levels should be checked:

channel 2 level:	0 dB ± 0.5 dB at 10 kHz
channel 1 high pass filter:	f_{-3dB} = 15 Hz ± 10 %
channel 1 low pass filter:	f_{-6dB} = 1 kHz ± 5 %
channel 2 high pass filter:	f_{-6dB} = 1 kHz ± 5 %

A typical graph is shown in fig. 24.

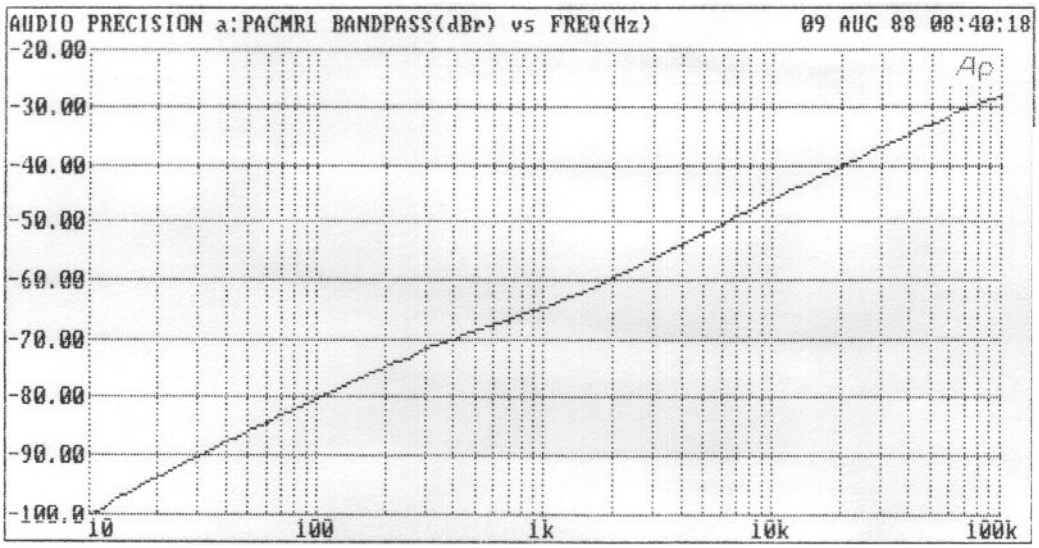


Fig 23 Typical CMR versus frequency

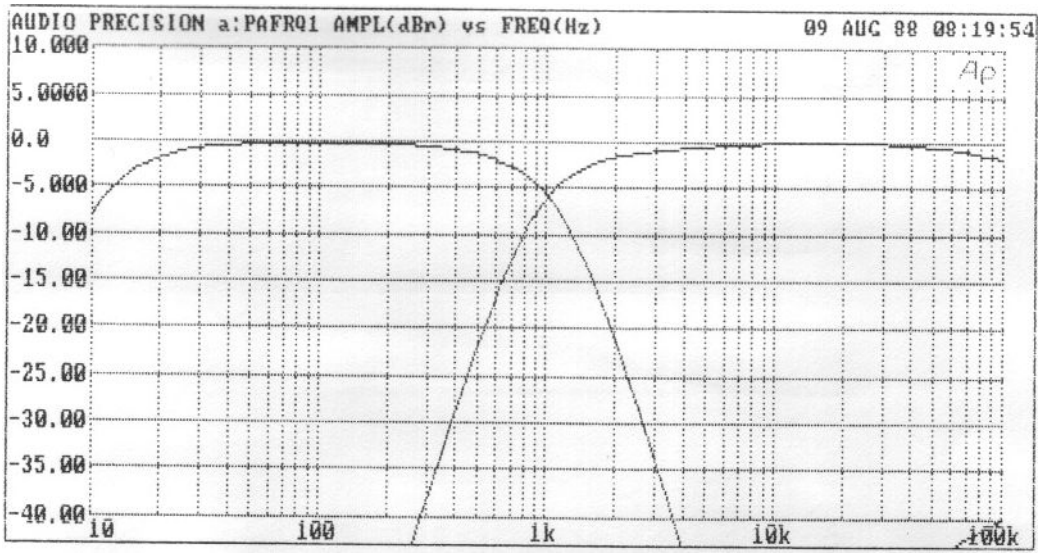


Fig 24 Typical frequency response in the preset mode

11 Specifications

Frequency response: 10 V into 8Ω.	20 Hz to 20 kHz 5 Hz to 80 kHz	± 0.3 dB - 3 dB
Power output:	180 W into 16Ω 350 W into 8Ω 600 W into 4Ω 900 W into 2Ω	Both channels driven, 20 Hz to 20 kHz, full 220 V mains.
Bridge mode power:	700 W into 16Ω 1200 W into 8Ω 1800 W into 4Ω	20 Hz to 20 kHz, full 220 V mains.
Harmonic distortion:	≤ 0.08% THD	20 Hz to 20 kHz, impedance >2 Ω at all powers 10% below clip value.
typical	≤ 0.008% THD ≤ 0.015% THD ≤ 0.008% THD	1 kHz, 200 W into 8Ω. 20 kHz, 200 W into 8Ω. 1 kHz, 1 W into 8 Ω.
Intermodulation distortion:	≤ 0.01%	200 Hz to 20 kHz with f1 = 70 Hz 4:1, 200 W into 8 Ω.
Channel separation:	≥ 80 dB ≥ 60 dB	1 kHz, 300 W into 8 Ω. 20 kHz, 300 W into 8 Ω.
S/N ratio:	≥ 110 dB	20 Hz to 20 kHz below full output power.
Slew rate	≥ 40 V/uS	
Damping factor:	≥ 10000	1 kHz, 10V into 8Ω
CMRR:	≥ 70 dB ≥ 60 dB	1 kHz 20 kHz
Display readout: Temperature accuracy	± 1 °C	between 0 °C and 100 °C
Power accuracy	± 10 W ± 10%	below 100W above 100W

12.1 Output board

The connections of the components on the output board are shown in fig. 25.
The four resistors provide for feedback in case one of the DDC terminals is not connected to a loudspeaker terminal.
The two capacitors provide for high frequency stability.

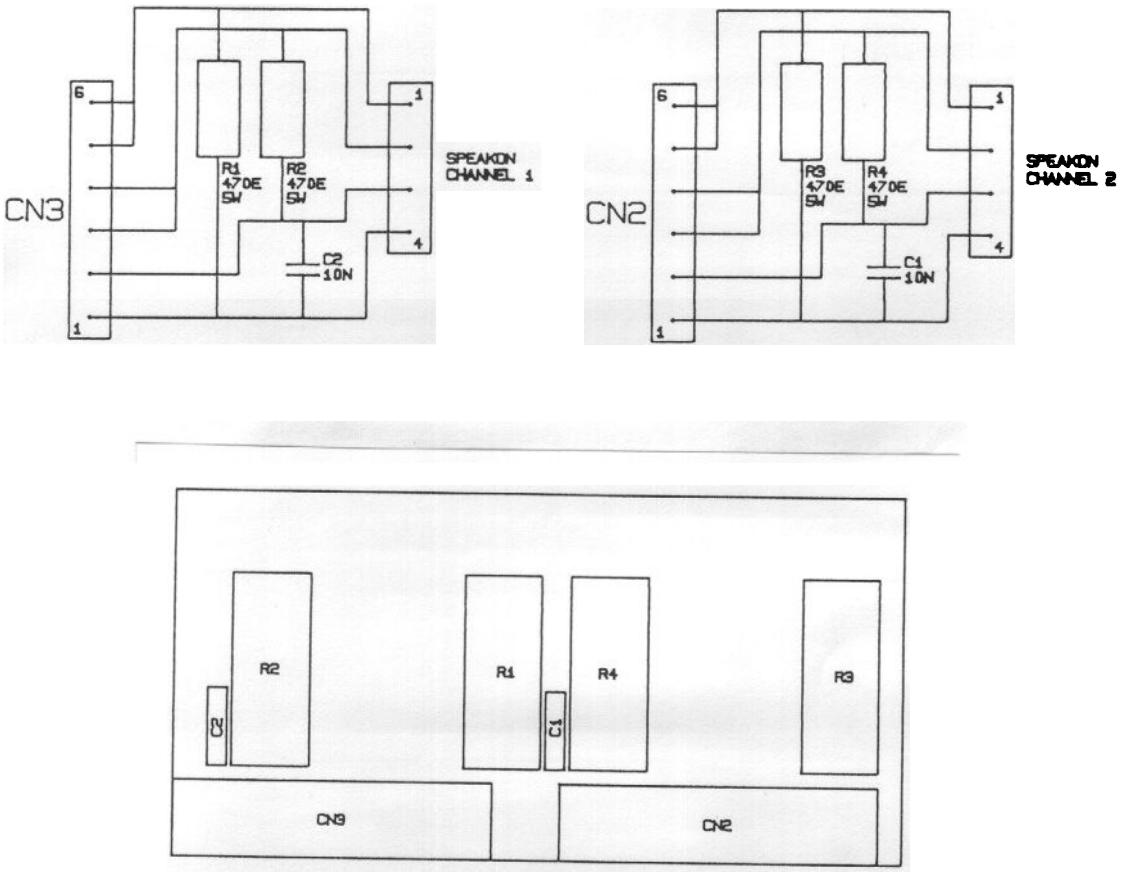


Fig. 25 output board

12.2 Triggering problems

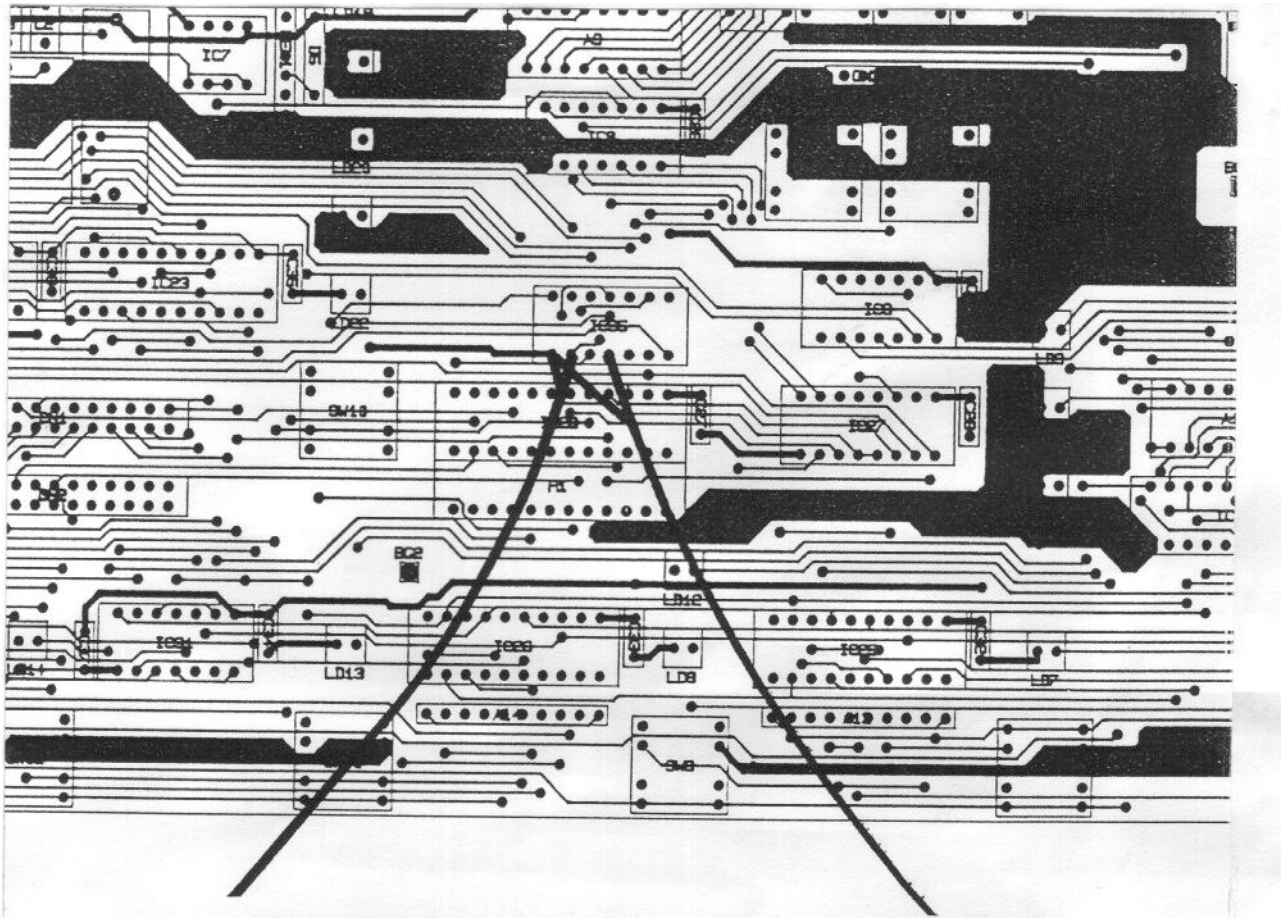
With some PPA 1200's, the following problem may occur:
While switching a power amplifier from standby to the power amp on mode, some other controls of that channel or the opposite channel change as well, temporary or steady state. The intensity of the problem is dependent of the way the power cord is plugged into mains receptacle.
The problem is caused by large potential changes that occur when the power transformers are being switched on and off. These changes have influence on the triggering of the latches IC12 on the preamp boards.

Solution:

The problem can be solved by connecting the clock signal with screened cable and changing the 74HC273 for a 74HC373. Upgrading sets can be supplied by Stage Accompany (part no. 2220.9990).

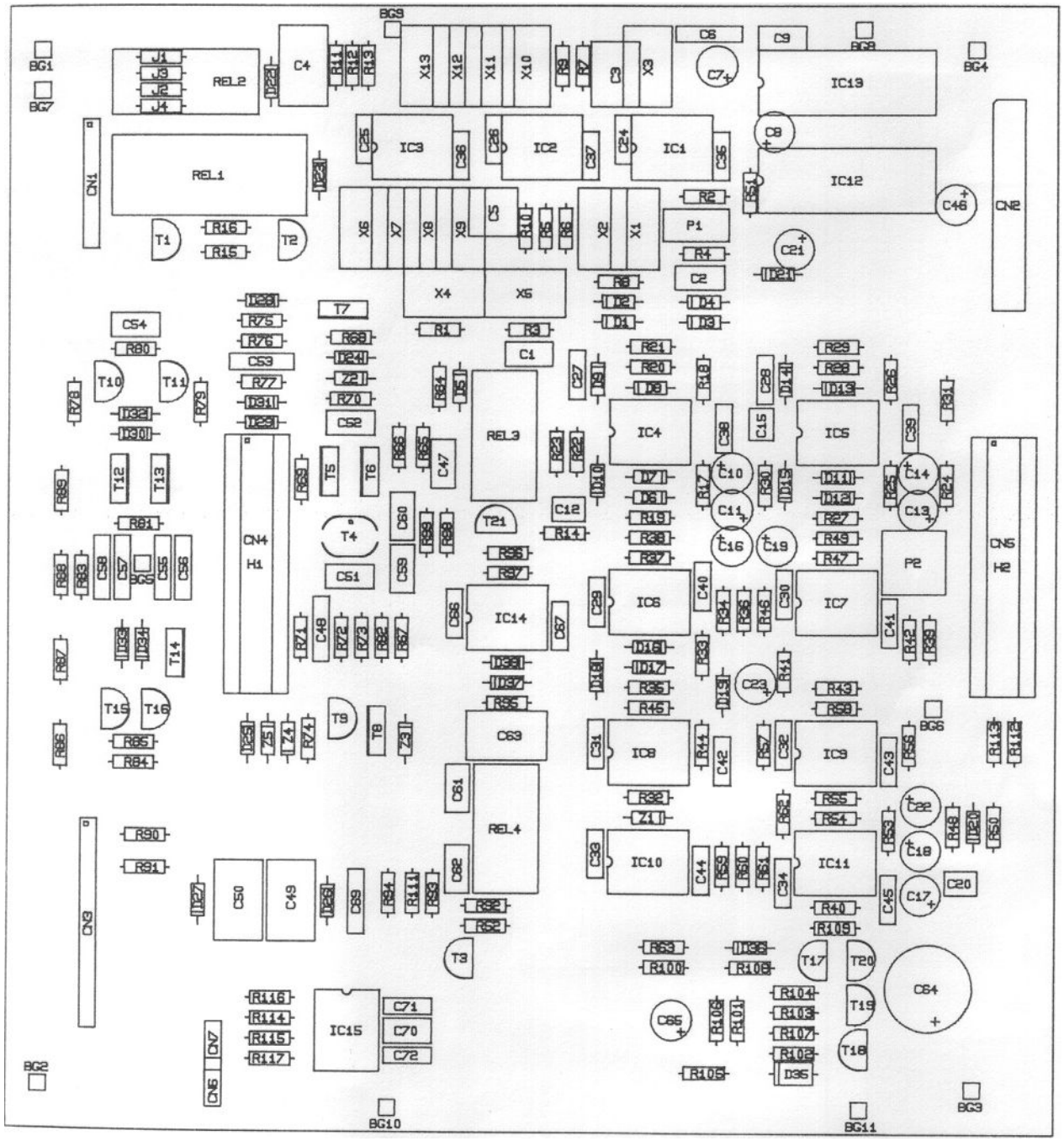
12.2.1 Modification of a PPA 1200 with identity number < 121

- Order for an upgrading set at Stage Accompany
  Remove the PPA 1200's amplifier modules and front as described in



channel 2 hannel 1

Fig.26 connection of the screened wires



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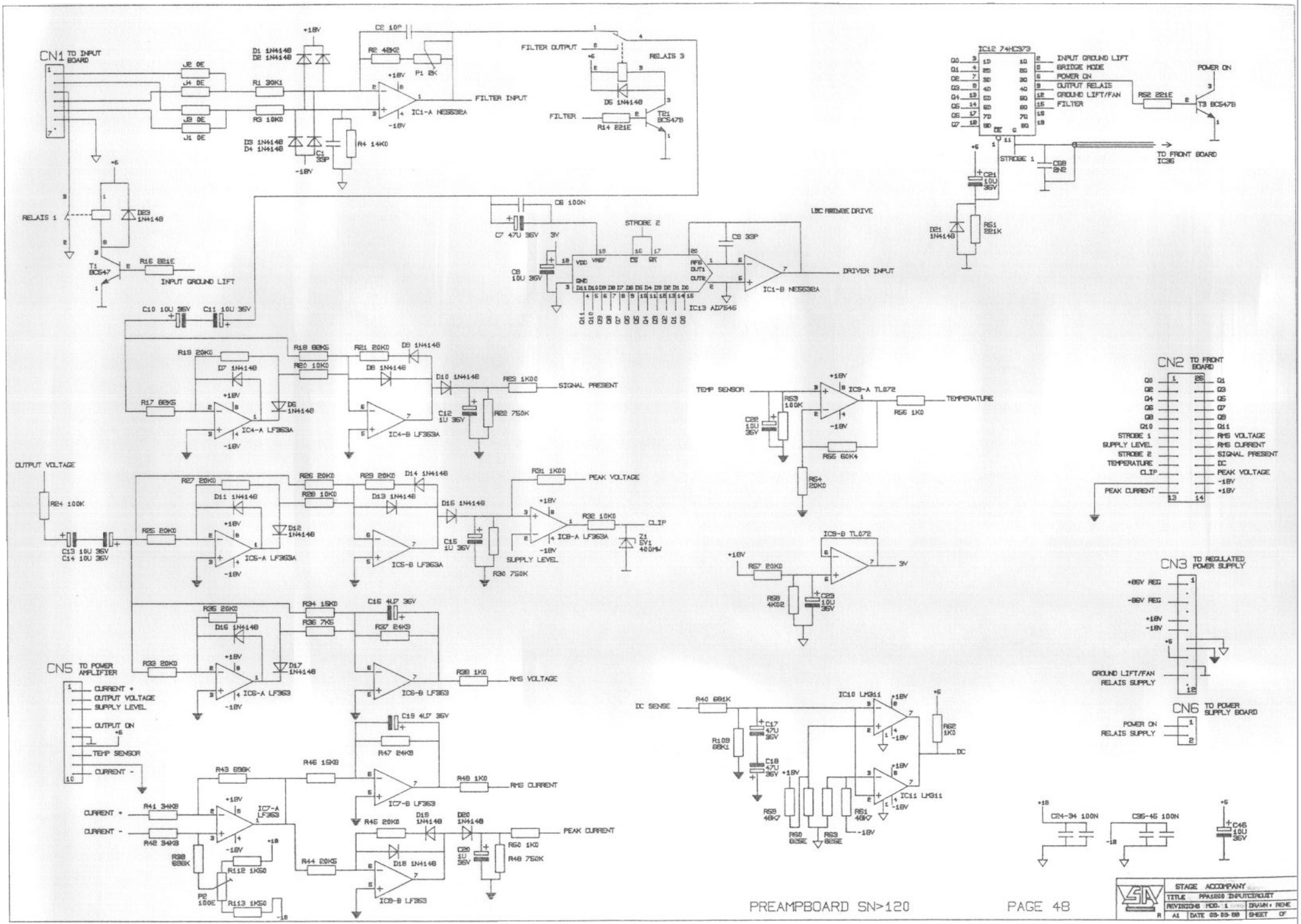


STAGE ACCOMPANY
TITLE PPA1000 INPUT/CIRCUIT
REVISIONS MOD. 1 DRAWN: RENE
A1 DATE 09-09-98 SHEET OF

13.1 Various new PCB layouts

From serial (identity) number 271 and higher, most of the PPA 1200 PCB's have been modified:

Preamp board	-	The crossover is on a separate PCB now to increase ease of installing special versions.
	-	Dual operational amplifiers have been replaced by quad types.
	-	The output voltage measurement has been simplified.
	-	A steel screen has been added to improve hum performance for studio applications.
	-	Zener diodes have been added for better performance of the current measurement circuit.
	-	HF common mode rejection is improved by adding a capacitive trimmer.
High power supply board	-	Build in soft start to reduce initial peak currents.
Regulated power supply board	-	The PCB has been placed on the bottom panel for better access to the fuses.
	-	The resistors for the low speed operation of the fan are on the PCB now.
	-	The regulated power supplies do not longer need to be trimmmed
Front board	-	New memory circuit for Flash Eprom
	-	The screened wire modification (see chapter 12.2) has been added on the PCB.
Input connector board	-	Two male XLR3 connectors have been added to make an input link possible.

13.2 Adjustments

Important: Notice in figure 19 that for adjustment purposes of the new PPA, the amplifier modules are lifted to the right, in stead of to the left.

The adjustments to these boards are the same as to the previous ones, except for (see page 37):

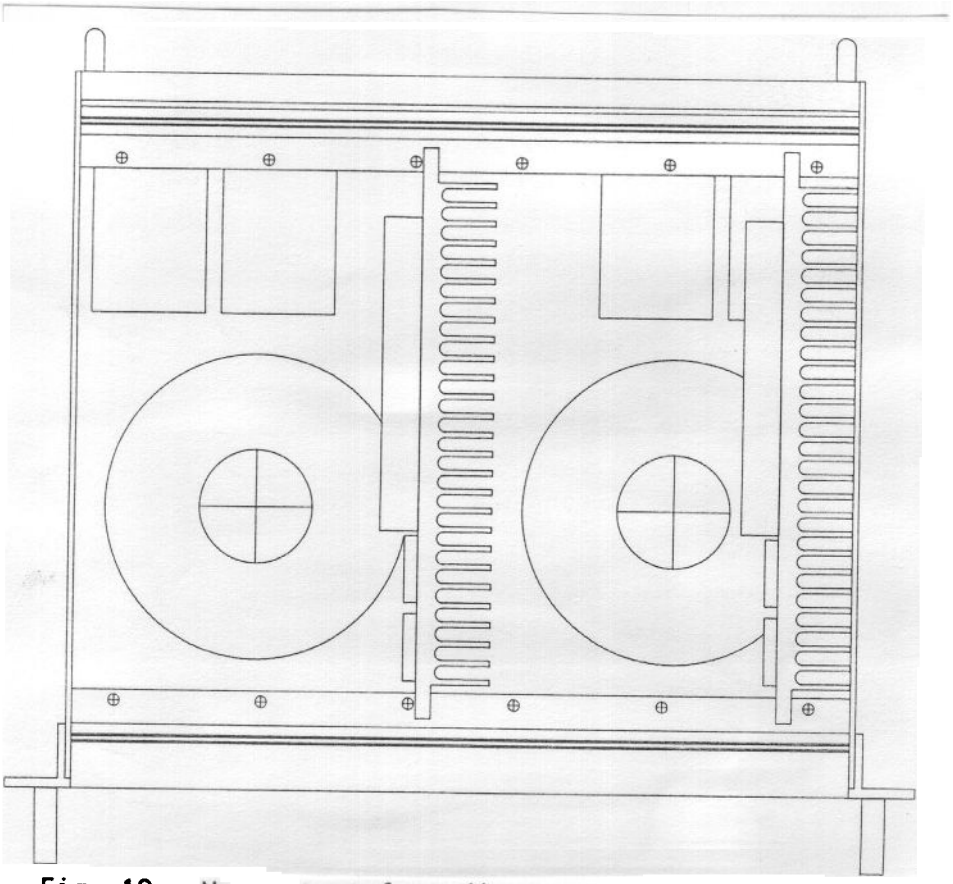


Fig. 19 New set up for adjustments

Procedure 2 and 3 are omitted, the 86 volt supplies do not need to be trimmed any more.

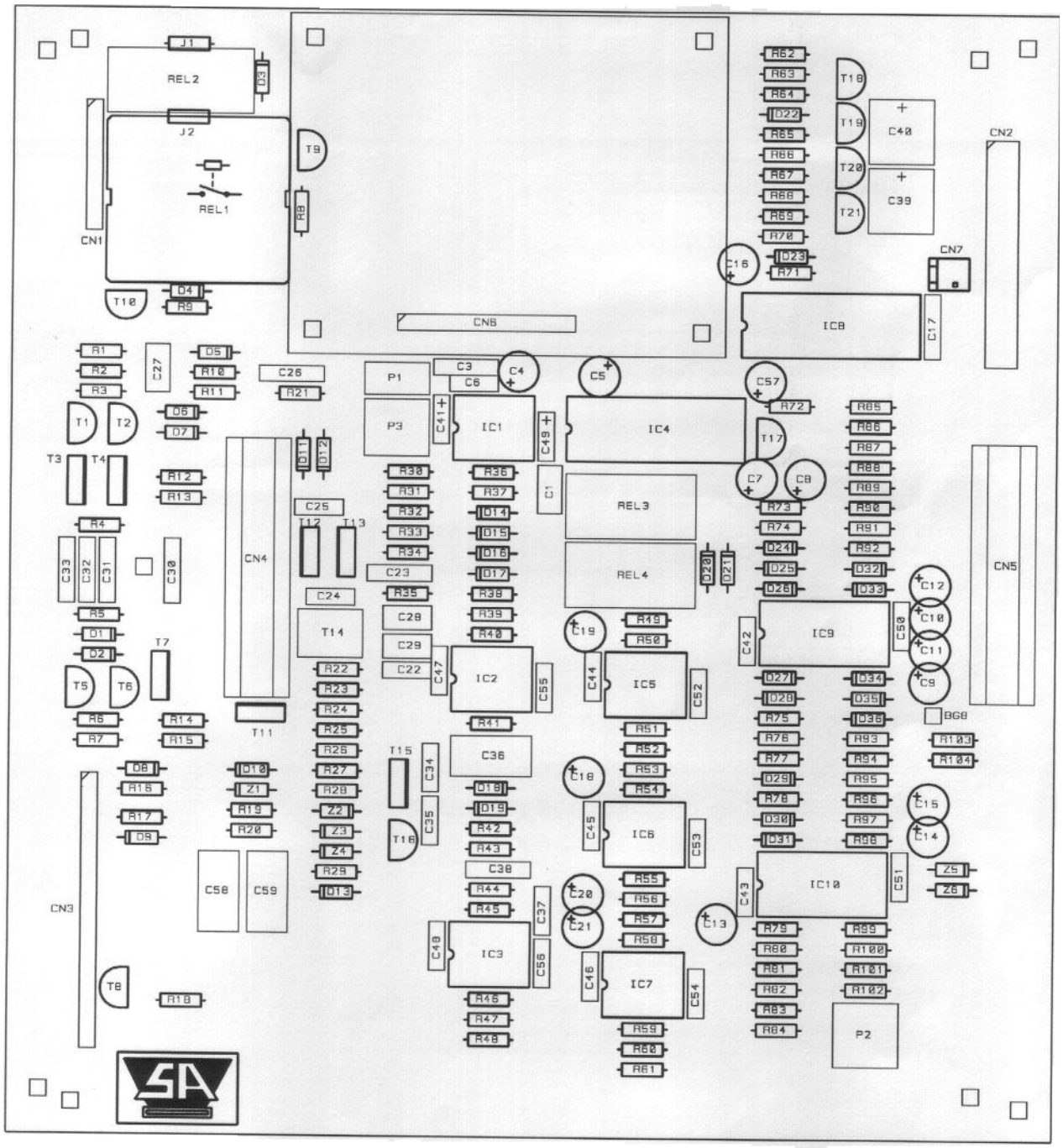
Procedure 6 and 7 remain the same but are extended with procedure 6a and 7a.

6a High frequency common mode rejection channel 1

input voltage:	1 Veff, 20 kHz on pin 2 and pin 3 in phase
output load:	8 Ω
adjustment location:	P3 on the preamp board
instrument:	AC voltmeter or scope
measure location +:	amplifier output +
measure location −:	amplifier output -
value:	≤ 0.02 Veff

7a High frequency common mode rejection channel 2

same as channel 1



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