

Quality Uncompromised

**ROTEL**®

# Technical Manual

## STEREO INTEGRATED AMPLIFIER **RA-931**

### Table of Contents

Specification.....	1
Wiring Diagram .....	2
Parts List .....	3,4
Adjustment.....	4
PCB Assembly .....	5,6
Schematic Diagram.....	7,8

### Specification

Rated Power(20-20 kHz < 0.03%, 8 ohms)	30 Watts
DIN Output (1 kHz, 1% THD, 4 ohms)	50 Watts
Total Harmonic Distortion (20-20 kHz, 8 ohms)	< 0.03%
Intermodulation Distortion (60 Hz: 7 kHz, 4:1)	< 0.03%
Signal to Noise ratio, all inputs, IHF A	> 95 dB
Frequency Response	10-100,000 Hz +1 dB, -3 dB
Tone Control	
Bass	± 6 dB @ 100 Hz
Treble	± 6 dB @ 10 kHz
Power requirement	115 volts 60 Hz or 230 volts 50 Hz
Power consumption	260 watts, Max.
Dimensions, W x H x D mm	440 x 92 x 347 17.38 x 3.63 x 13.69"
Weight (net)	6.4 kg, 14.08 Lb.

**THE ROTEL CO., LTD**

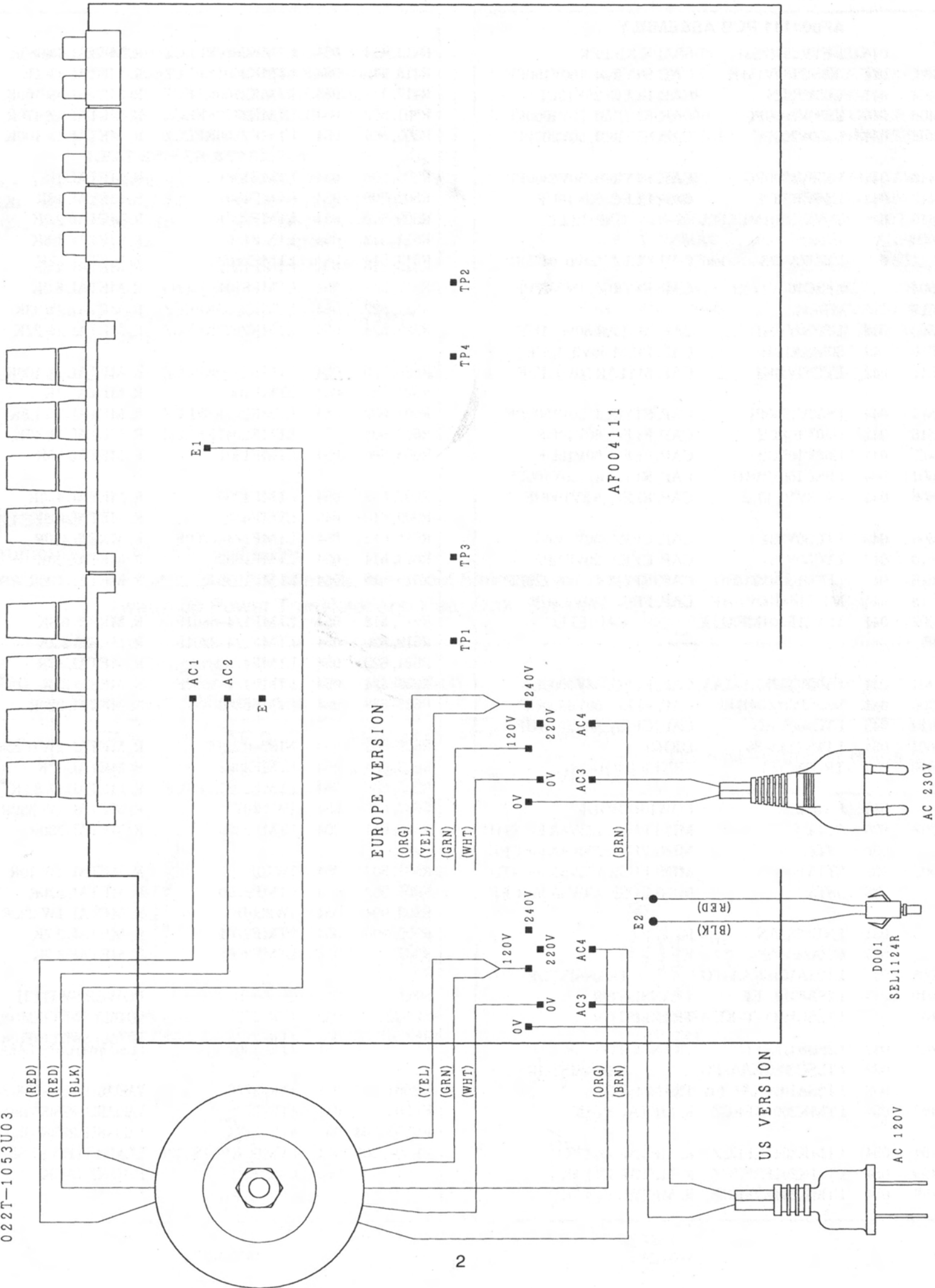
BUNZAN-SHINSEN-BLD. 4F 10-10 SHINSEN-CHO, SHIBUYA-KU,  
TOKYO 150-0045, JAPAN

Serial. NO.  
Beginning

Y-307A-98011M/S-S

# Wiring Diagram

POWER TRANSFORMER  
022T-1053U03



# Parts List

SYMBOL	PARTS NO.	DESCRIPTION
<b>AF004111 PCB ASSEMBLY</b>		
C001	044	DE7150F472M SPARK KILLER
C401,402	044	LFSC160V151H CAP, STYROL 160V150PF
C403, 404	041	U25V10LN CAP, ELEC. 25V10UF
C405, 406	044	LS50V1000PG CAP, STYROL 50V1000PF
C407, 408	044	LS50V200PG CAP, STYROL 50V200PF
C409, 410	044	LS50V4300PG CAP, STYROL 50V4300PF
C411, 412	044	U50V10RC2 CAP, ELEC. 50V10UF
C415, 416	041	TUVX1E101MEA1TA CAP, ELEC. 25V100UF
C417	043	LTC50V473 CAP, CERA. 50V0. 047UF
C501, 502	041	U50V10RC2 CAP, ELEC. 50V10UF
C503, 504	044	LFSC160V470H CAP, STYROL 160V47PF
C505, 506	041	TUVX1E101MEA1TA CAP, ELEC. 25V100UF
C507, 508	042	LTP50V104J CAP, MYLAR 50V0. 1UF
C509, 510	044	50MSA124J CAP, FILM 50V0. 12UF
C511, 512	042	LTP50V104J CAP, MYLAR 50V0. 1UF
C513, 514	044	LS50V1500PJ CAP, STYROL 50V1500PF
C515, 516	041	U50V10RC2 CAP, ELEC. 50V10UF
C601,602	041	U50V10RC2 CAP, ELEC. 50V10UF
C603, 604	044	LFSC160V101H CAP, STYROL 160V100PF
C605, 606	041	U6. 3V100RC2 CAP, ELEC. 6.3V100UF
C607, 608	043	LTC50V331 CAP, CERA. 50V330PF
C609, 610	043	LTC50V151 CAP, CERA. 50V150PF
C615, 616	044	LFSC160V221H CAP, STYROL 160V220PF
C817, 818	044	MKT18-100V104K CAP, FILM 100V0.1UF
C901, 902	041	TUVX1E101MEA1TA CAP, ELEC. 25V100UF
C903, 904	041	UVXIV102MHA1AA CAP, ELEC. 35V1000UF
C905, 906	041	50USP6800MB40 CAP, ELEC. 50V6800UF
C907-910	043	LTC500V103 CAP, CERA. 500V0.01UF
D601-604	034	LT1N4148-86 DIODE
D901, 902	034	TRD18JST1 ZENER DIODE
D903	034	RS403L POWER DIODE
F601, 602	036	5TT4 MINI FUSE 125V4A for STD
	036	5ST4 MINI FUSE 250V4A for CEE
F901, 902	036	5TT5 MINI FUSE 125V5A for STD
	036	5ST5 MINI FUSE 250V5A for CEE
IC401	031	LNE5532AN IC
IC501	031	OPA2604AP IC
Q601-608	032	LT2SA1016KAA-FG TRANSISTOR
Q609, 610	033	L2SB631K-EF TRANSISTOR
Q611, 612	032	LT2SC1941-T-KL TRANSISTOR
Q615, 616	033	L2SD600K-EF TRANSISTOR
Q617, 618	033	L2SB631K-EF TRANSISTOR
Q901	032	LT2SC2362KAA-FG TRANSISTOR
Q902	032	LT2SA1016KA4-FG TRANSISTOR
R401, 402	054	LTMK2001KFECZ R, METAL 1% 1K
R403, 404	054	LTMK2047KFECZ R, METAL 1% 47K
R405, 406	054	LTMK201K2FECZ R, METAL 1% 1.2K
R407, 408	054	LTMK204K7FECZ R, METAL 1% 4.7K

SYMBOL	PARTS NO.	DESCRIPTION
R413, 414	054	LTMK2680RFECZ R, METAL 1%680R
R415, 416	054	LTMK2001KFECZ R, METAL 1% 1K
R417, 418	054	LTMK2100KFECZ R, METAL 1% 100K
R501, 502	054	LTMK2470RFECZ R, METAL 1% 470R
R503, 504	054	LTMK2100KFECZ R, METAL 1% 100K
R505, 506	054	LTMF1001 R, METAL 1K
R507, 508	054	LTMF1802 R, METAL 18K
R509, 510	054	LTMF2201 R, METAL 2.2K
R511, 512	054	LTMF1801 R, METAL 1.8K
R513, 514	054	LTMF2202 R, METAL 22K
R515, 516	054	LTMF1501 R, METAL 1.5K
R517, 518	054	LTMF8201 R, METAL 8.2K
R519, 520	054	LTMF1501 R, METAL 1.5K
R521, 522	054	LTMK2033KFECZ R, METAL 1% 33K
R523, 524	054	LTMK2022KFECZ R, METAL 1% 22K
R525, 526	054	LTMK2100KFECZ R, METAL 1% 100K
R527, 528	054	LTMF1001 R, METAL 1K
R601, 602	054	LTMK201K8FECZ R, METAL 1% 1.8K
R603, 604	054	LTMK2047KFECZ R, METAL 1% 47K
R605, 606	054	LTMF1501 R, METAL 1.5K
R607, 608	054	LTMF4700 R, METAL 470R
R609, 610	045	LTMF6801 R, METAL 6.8K
R611, 612	054	LTMF1/4-4700F R, MRS25 470R
R613, 614	054	LTMF1002 R, METAL 10K
R615, 616	054	LTMF1000 R, METAL 100R
R617, 618	054	LTMF1/4-6801F R, MRS25 6.8K
R619, 620	054	LTMF1/4-2201F R, MRS25 2.2K
R621, 622	054	LTMF47R0 R, METAL 47R
R623, 624	054	LTMF1/4-3302F R, MRS25 33K
R625-628	054	LTMF2200 R, METAL 220R
R629-632	054	NIR2-0.22JF R, METAL 2W 0.22R
R633, 634	054	LTMF3302 R, METAL 33K
R635, 636	054	LTMK208K2FECZ R, METAL 1% 8.2K
R637, 638	054	1W330JF R, METAL 1W 330R
R640, 641	054	LTMF3300 R, METAL 330R
R801, 802	054	1W10J R, METAL 1W 10R
R901, 902	054	LTMF2700 R, METAL 270R
R903, 904	054	1W220JF R, METAL 1W 220R
R905, 906	054	LTMF2701 R, METAL 2.7K
R907	054	LTMF3901 R, METAL 3.9K
S001	061	C-3600B-T POWER SWITCH
S1	062	4TR-2777 ROTALY SWITCH(MONITOR)
S2	062	4TR-2778 ROTALY SWITCH(FUNCTION)
S3	062	4TR-2780 ROTALY SWITCH(TONE)
S4	061	4TR-3302 PUSH SWITCH(SPEAKER)
VR501	051	4TR-2776 VARIABLE RESISTOR(BALANCE)
VR502	051	4TR-2775 VARIABLE RESISTOR(VOLUME)
VR503, 504	051	4TR-2774 VARIABLE RESISTOR(TONE)
VR601, 602	051	LVM6CKPV1S 2.2K SEM-FIXED RESISTOR
	065	C-3399#1 PHONE JACK

# Parts List

SYMBOL	PARTS NO.	DESCRIPTION
	066 4TR-2408#1	4P PINJACK(AUX, TUNER, TAPE)
	066 4TR-2408#3	4P PINJACK(PHONO, CD)
	067 4TR-3090	SPEAKER TERMINAL
	069 C-3417A	FUSE CLIP
<b>HEAT SINKER ASSEMBLY</b>		
Q613, 614	032 L2SD600K-EF	TRANSISTOR
Q619, 620	033 L2SD1047-DE	POWER TRANSISTOR
Q621, 622	033 L2SB817-DE	POWER TRANSISTOR
	017 4TQG-5#1	HEAT SINKER BOARD
	019 TO-220	INSULATION SHEET(S)
	019 TO-3P	INSULATION SHEET(L)
<b>OTHERS</b>		
	011 TFP-803	FRONT PANEL ASSY
	012 LATQF-15	POWER BUTTON 14x14
	012 LATQF-18	KNOB 13F

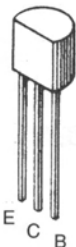
SYMBOL	PARTS NO.	DESCRIPTION
	012 LATQF-19	KNOB 24F
	012 4TQF-16	PUSH BUTTON 5X10
	012 4TQG-6	KNOB 33F
	014 C-4550A05	UPPER COVER
	014 LATR-2797#2	ORNAMENT SIDE BOARD
	014 2TQG-2	BOTTOM BOARD
	015 RP-336	REAR CHASSIS
	019 4TR-2807	PLASTIC FOOT CAP
	022 T-1053U03	POWER TRANSFORMER
	072 LATR-670#4	AC CORD for STD
	072 LC-3763	AC CORD for AUSTRALIA
	072 C-4572A01	AC CORD for UK
	072 LATR-1037	AC CORD for CEE
	081 RN4-17B00	INSIDE CARTON
	081 TZ-166-1	STYROL SIDE MOULDING

## Adjustment

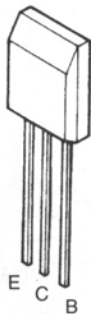
Instruments : DC milli-voltmeter

Notes : Prior to Bias Adjustment, run about 5minutes with rated output(8ohms) and warm up Power Transistor and Heat Sink. Set input off.

Step	Coupling		Location	Adjust	Adjust for
	Plus Lead	Minus Lead			
1	TP 1	TP 3	AF004111 PCB	VR601	DC milli-voltmeter reads 4mV
2	TP 2	TP 4	AF004111 PCB	VR602	



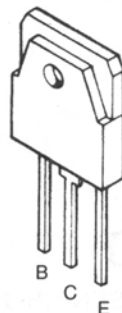
2SAS1016K  
2SC2362K



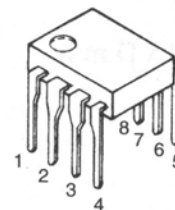
2SC1941



2SB631K  
2SD600K

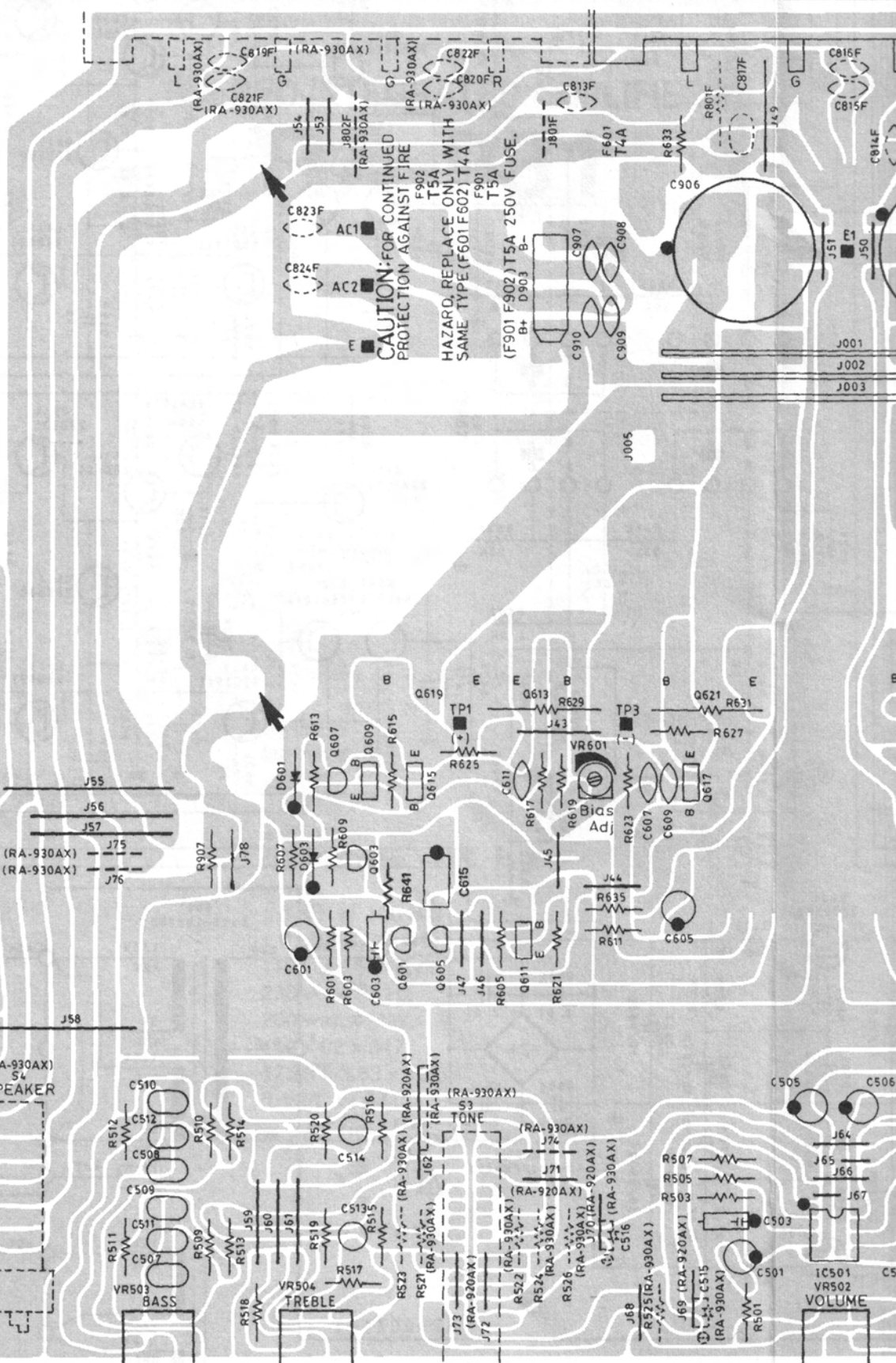


2SB817  
2SD1047

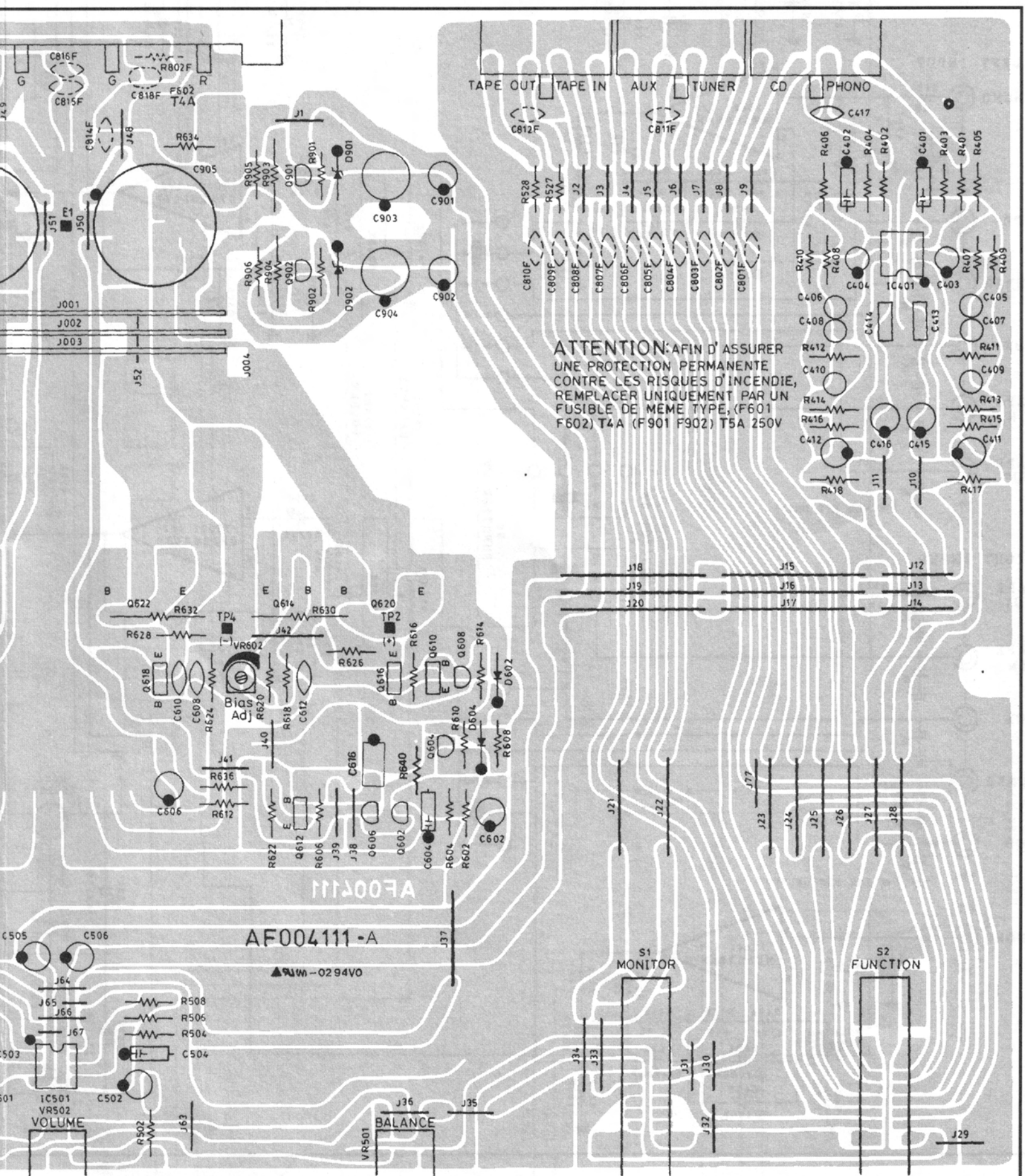


NE5532AN  
OPA2604AP

# PCB Assembly







# SCHEMATIC DIAGRAM MODEL RA-931

