



# Technical Manual

STEREO INTEGRATED AMPLIFIER

# RA-931MKII

## Table of Contents

Specification .....	1
Wiring Diagram .....	2
Parts List .....	3
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 260 watts, Max, 440 x 92 x 347
Power consumption	17.38 x 3.63 x 13.69"
Dimensions, (W x H x D mm)	6.5 kg, 14.08 lb.
Weight (net)	

## THE ROTEL CO., LTD

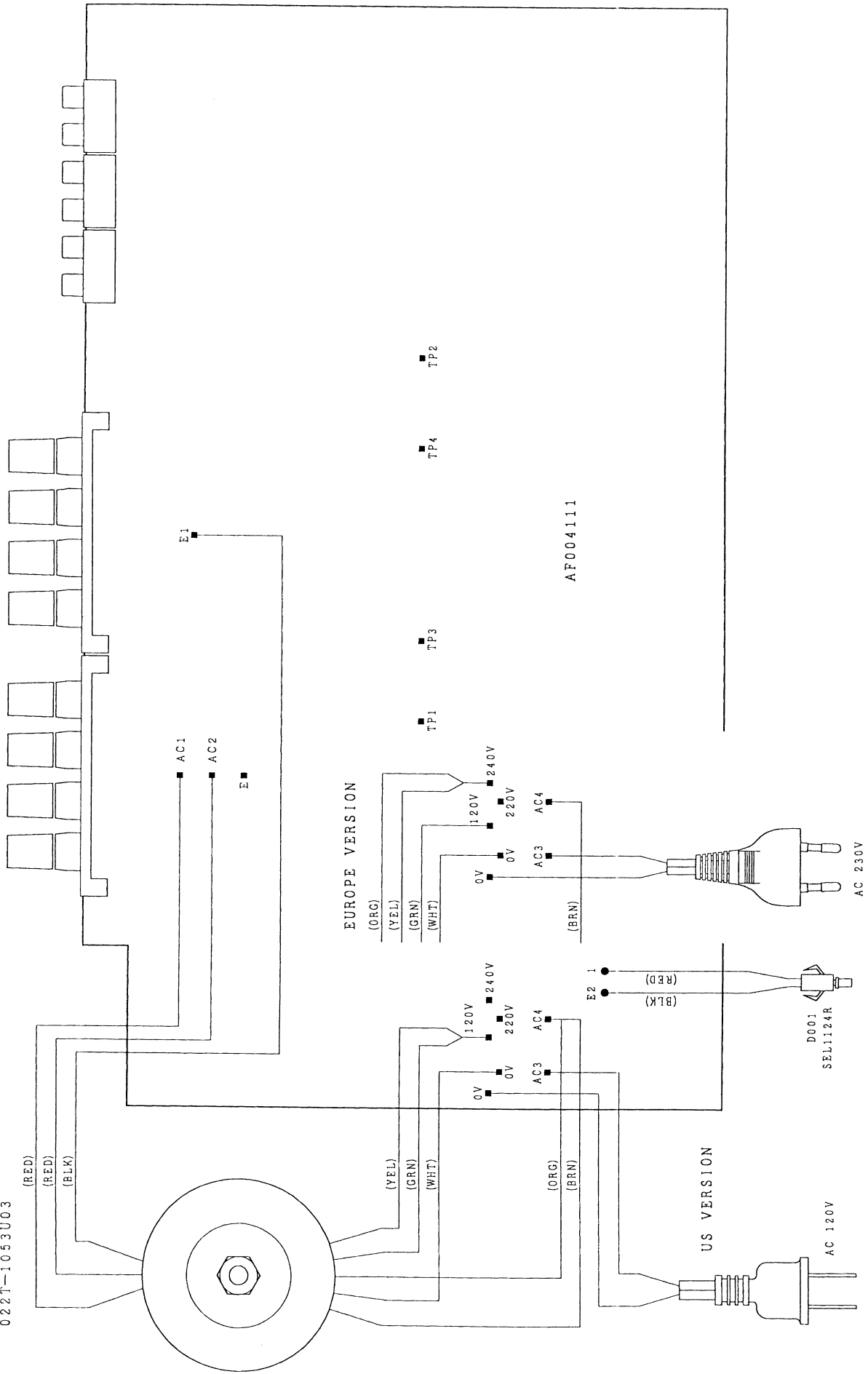
BUNZAN-SHINSEN-BLD.4F 10-10 SHINSEN-CHO, SHIBUYA-KU,  
TOKYO 150-0045, JAPAN

Serial. No.  
Beginning

Y-307A-98011M/S-S

# Wiring Diagram

POWER TRANSFORMER  
022T-1053U03



AF004111

# Parts List RA-931MKII

SYMBOL	PARTS NO. (CHINA)	DESCRIPTION
<b>AF004111 PCB ASSEMBLY</b>		
C001	044 DE7150F472M	SPARK KILLER
C401, 402	044 LFSC160V151H	CAP, STYROL 160V150PF
C403, 404	041 U25V10LN	CAP, ELEC. 25V10 $\mu$ F
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. 25V10 $\mu$ F
C415, 416	041 TUVX1E101MEA1TA	CAP, ELEC. 25V100 $\mu$ F
C417	043 LTC50V473	CAP, CERA. 50V0.047 $\mu$ F
C501, 502	041 U50V10RC2	CAP, ELEC. 50V10 $\mu$ F
C503, 504	044 LFSC160V470H	CAP, STYROL 160V47PF
C505, 506	041 TUVX1E101MEA1TA	CAP, ELEC. 25V100 $\mu$ F
C507, 508	042 LTP50V104J	CAP, MYLAR 50V0.1 $\mu$ F
C509, 510	044 50MSA124J	CAP, FILM 50V0.12 $\mu$ F
C511, 512	042 LTP50V104J	CAP, MYLAR 50V0.1 $\mu$ F
C513, 514	044 LS50V1500PJ	CAP, STYROL 50V1500PF
C515, 516	041 U50V10RC2	CAP, ELEC. 50V10 $\mu$ F
C601, 602	041 U50V10RC2	CAP, ELEC. 50V10 $\mu$ F
C603, 604	044 LFSC160V101H	CAP, STYROL 160V100PF
C605, 606	041 U6.3V100RC2	CAP, ELEC. 6.3V100 $\mu$ F
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 100V0.1 $\mu$ F
C901, 902	041 TUVX1E101MEA1TA	CAP, ELEC. 25V100 $\mu$ F
C9013, 904	041 UVX1V102MHA1AA	CAP, ELEC. 35V1000 $\mu$ F
C905, 906	041 50USP6800MB40	CAP, ELEC. 50V6800 $\mu$ F
C907-910	043 LTC500V103	CAP, CERA. 500V0.01 $\mu$ F
D601-604	034 LT1N148-86	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 LT2SA1016KAA-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
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

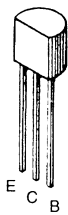
SYMBOL	PARTS NO. (CHINA)	DESCRIPTION
R525, 526	054 LTMK2100KFECZ	R, METAL 1% 100K
R527, 528	054 LTMF100	R, METAL 1K
R601, 602	054 LTMK201E8FECZ	R, METAL 1% 1.8K
R603, 604	054 LTMK2047KFECZ	R, METAL 1% 47K
R605, 606	054 LTMF150	R, METAL 1.5K
R607, 608	054 LTMF4700	R, METAL 470R
R609, 610	045 LTMF6801	R, METAL 6.8K
R611, 612	054 LTMF1/4-4700F	R, MRS25 470R
R613, 614	054 LTMF1001	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 NIR2-0.12JF	R, METAL 2W 0.22R
R633, 634	054 LTMF3301	R, METAL 33K
R635, 636	054 LTMK208FECZ	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 1W20JF	R, METAL 1W 220R
R905, 906	054 LTMF2701	R, METAL 2.7K
R907	054 LTMF3901	R, METAL 3.9K
S001	061 C-4176A08	POWER SWITCH
S1	062 4TR-2777	ROTARY SWITCH (MONITOR)
S2	062 4TR-2778	ROTARY SWITCH (FUNCTION)
S3	062 4TR-2780	ROTARY 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
	066 4TR-2408#1	4P PIN JACK (AUX. TUNER. TAPE)
	066 4TR-2408#3	4P PIN JACK (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 T0-220	INSULATION SHEET (S)
	019 T0-3P	INSULATION SHEET (L)
<b>OTHERS</b>		
	011 TFP-517	FRONT PANEL ASSY
	012 L4TQF-15	POWER BUTTON 14x14
	012 L4TQF-18	KNOB 13F
	012 L4TQF-19	KNOB 24F
	012 4TQF-16	PUSH BUTTON 5x10
	012 4TQG-6	KNOB 33F
	014 C-4550A05	UPPER COVER
	014 L4TR-2797#2	ORNAMENT SIDE BOARD
	014 2TQG-2	BOTTOM BOARD
	015 RP-371	REAR CHASSIS
	019 4TR-2807	PLASTIC FOOT CAP
	022 T-1053U03	POWER TRANSFORMER
	072 L4TR-670#4	AC CORD for STD
	072 LC-3763	AC CORD for AUSTRALIA
	072 C-4572A01	AC CORD for UK
	072 L4TR-1037	AC CORD for CEE
	081 RN4-17B01	INSIDE CARTON
	081 TZ-166-1	STYROL SIDE MOULDING

## Adjustment

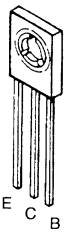
Instruments : DC milli-voltmeter

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

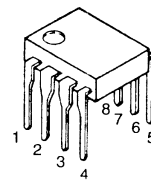
Step	Coupling		Location	Adjust	Adjust for
	Plus Lead	Minus Lead			
<b>1</b>	TP 1	TP 3	AF004111 PCB	VR601	DC milli-voltmeter reads 4mV
<b>2</b>	TP 2	TP 4	AF004111 PCB	VR602	



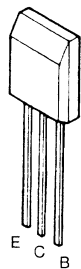
2SAS1016K  
2SC2362K



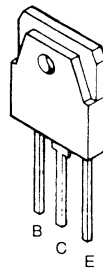
2SB631K  
2SD600K



NE5532AN  
OPA2604AP

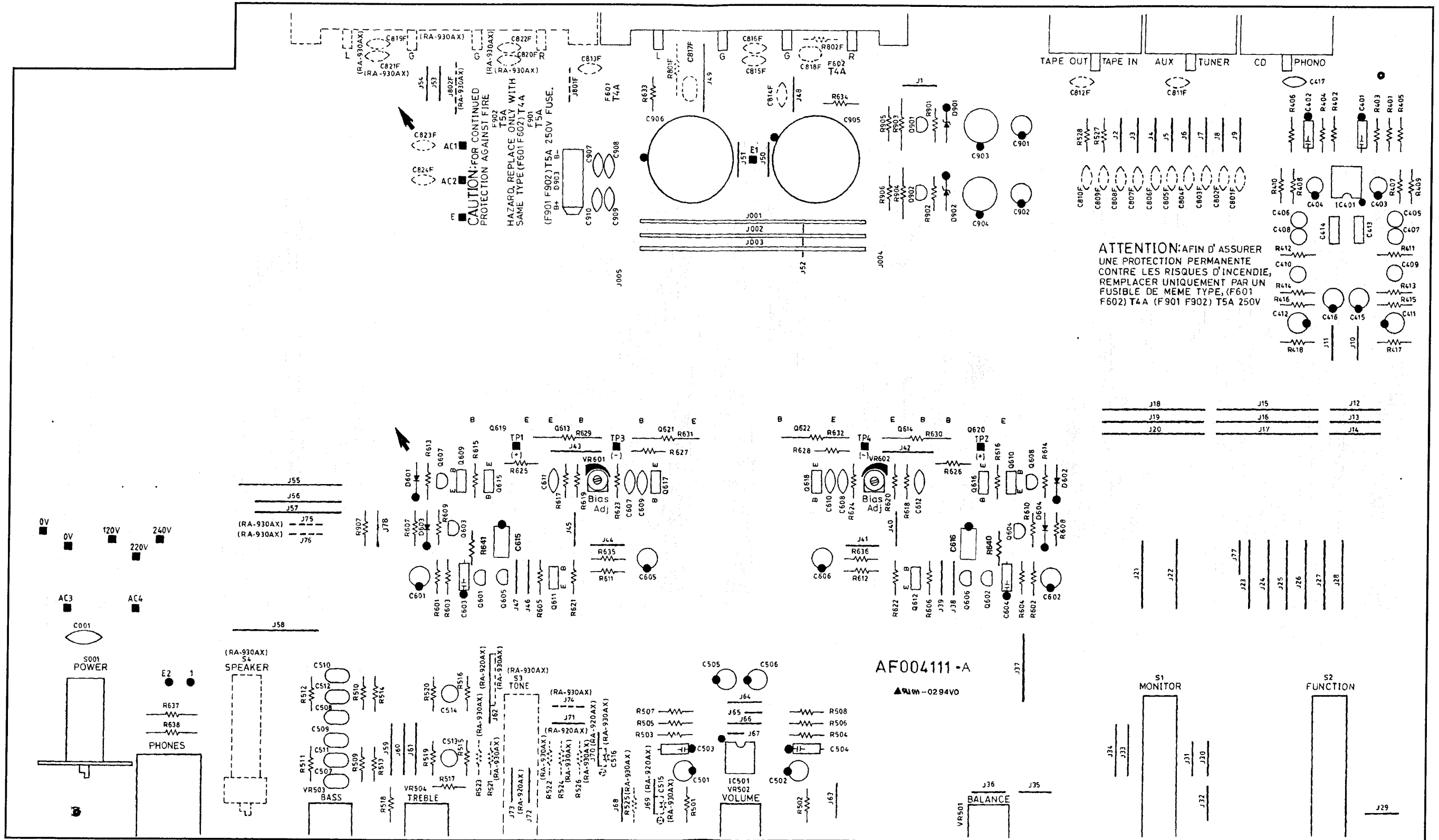


2SC1941



2SB817  
2SD1047

PCB Assembly



# Schematic Diagram

## SCHEMATIC DIAGRAM MODEL RA-931

