

# **ROTEL** *hifi*

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**STEREO POWER AMPLIFIER**

# **RB-970BX**

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# **TECHNICAL MANUAL**

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**ROTEL ELECTRONICS CO., LTD.**

3F-2, NO.35, FU HSING NORTH ROAD, TAIPEI, TAIWAN, REPUBLIC OF CHINA

# Specifications

Continuous Power Output .....	60 watts* per channel, min. RMS both channels driven into 8 ohms from 20 to 20,000 Hz with no more than 0.03% total harmonic distortion.
DIN Output .....	110 watts per channel (1kHz, 4 ohms, 1% THD)
Peak Current .....	30A (0.1 ohms, 10- $\mu$ sec, 1 pulse)
Power Output (BTL).....	180 watts (mono) min. RMS driven into 8 ohms from 20 to 20,000 Hz with no more than 0.03% total harmonic distortion.
Total Harmonic Distortion .....	No more than 0.03% (continuous rated power output)
(20 to 20,000 Hz)	No more than 0.03% (continuous 1/2 rated power output).
	No more than 0.05% (1 watt per channel power output, 8 ohms).
Intermodulation Distortion.....	No more than 0.05% (continuous rated power output)
(60 Hz : 7 kHz= 4:1)	No more than 0.05% (continuous 1/2 rated power output).
	No more than 0.05% (1 watt per channel power output, 8 ohms).
Output (Speakers) .....	8 ohms min (bridged mono mode); 4-16 ohms (stereo mode)
Damping Factor	280 (20 to 20,000 Hz, 8 ohms)
Input Sensitivity/Impedance.....	1.0 V / 27 kohms
Overload Level (THD 0.5 %, 1 kHz).....	5 V
Frequency Response .....	15 to 100,000 Hz, +0 dB, -1.0 dB
Signal to Noise Ratio (IHF, A network).....	116 dB

## GENERAL

Power Requirement .....	120 V/60 Hz, 220-240 V/50 Hz (depending on destination)
Power Consumption	300 watts
Dimension (overall) .....	440 (W) x 92 (H) x 334 (D) mm
	17-3/8" x 3-5/8" x 13-3/16"
Weight (net).....	6.8 kg / 15.0 lbs

\* Measured pursuant to the Federal Trade Commission's Trade Regulation Rule or, Power Claims for Amplifiers (applicable to the USA only).

NOTE: Specifications and design are subject to possible modification without notice.

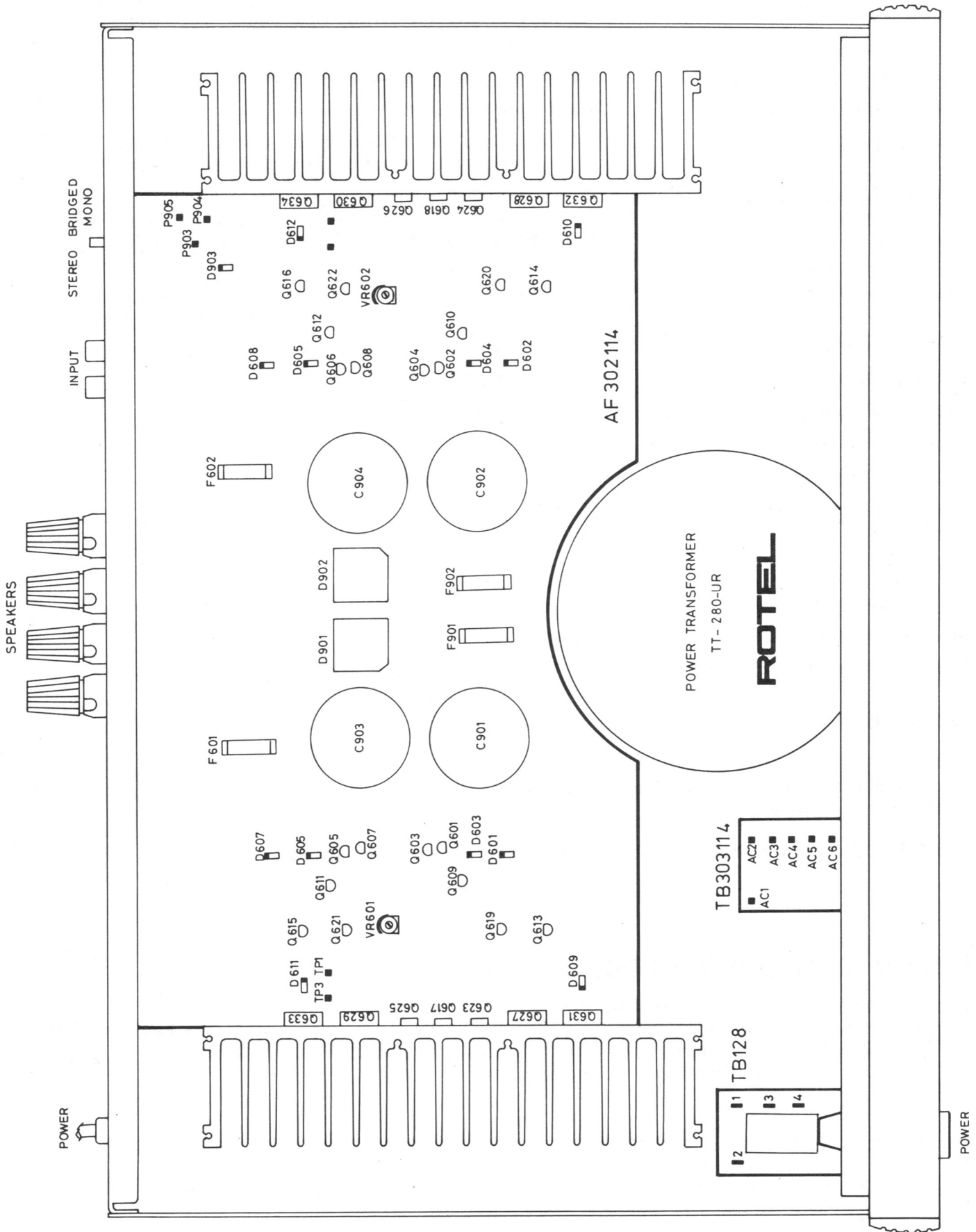
## Power Amplifier Bias Adjustment

Instruments: DC milli-voltmeter

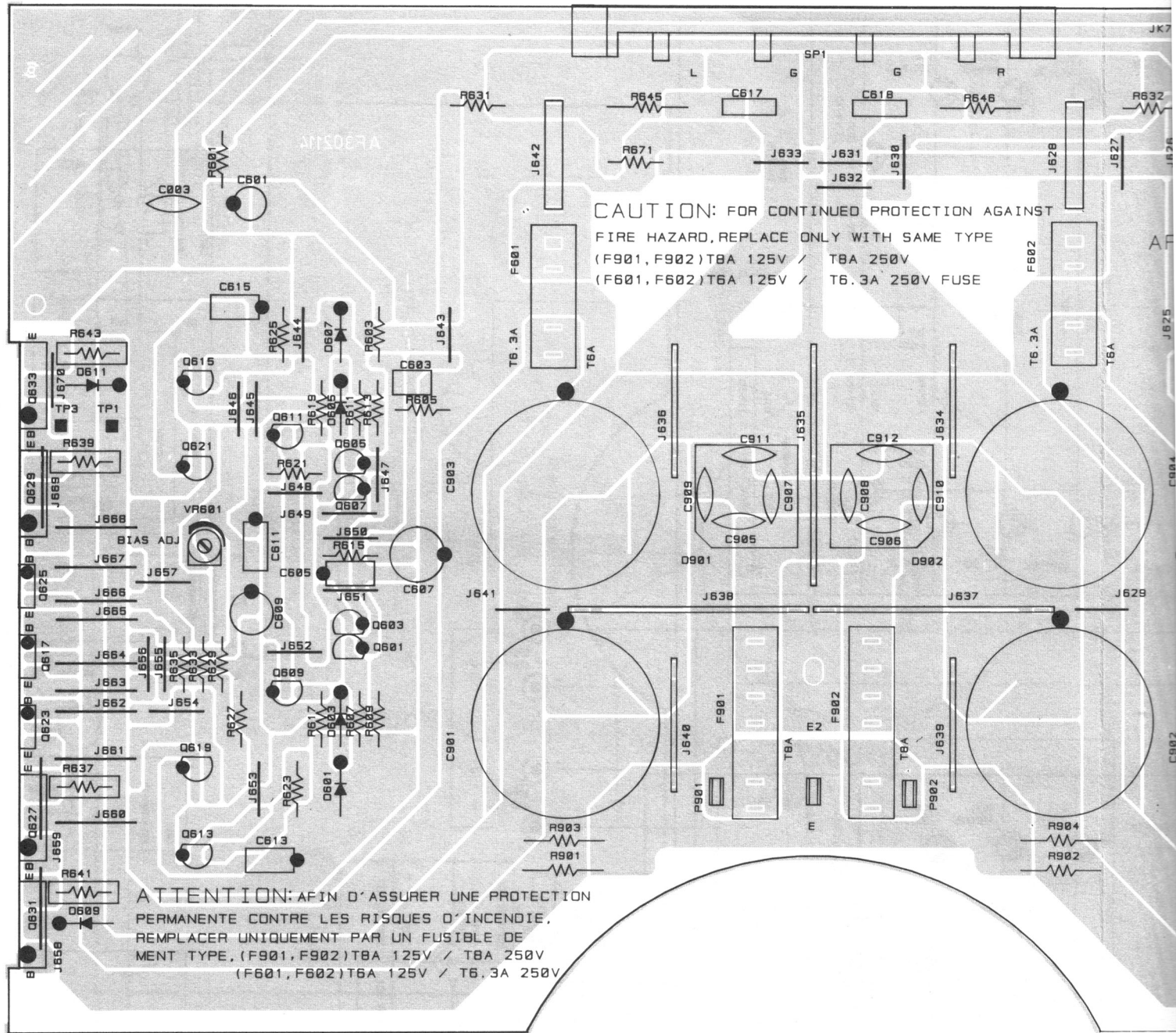
Notes: Prior to Bias Adjustment, run about 5 minutes with rated output (8 ohm) and warm up Power Transistor and Heat Sink.  
Set Volume Control to minimum.

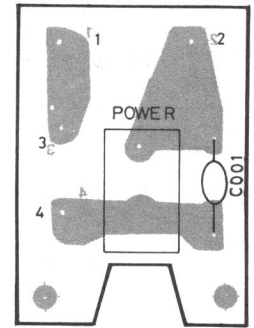
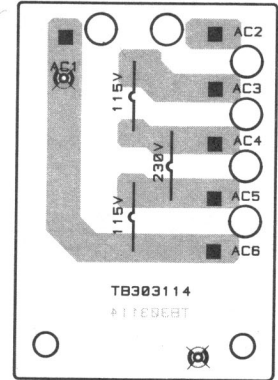
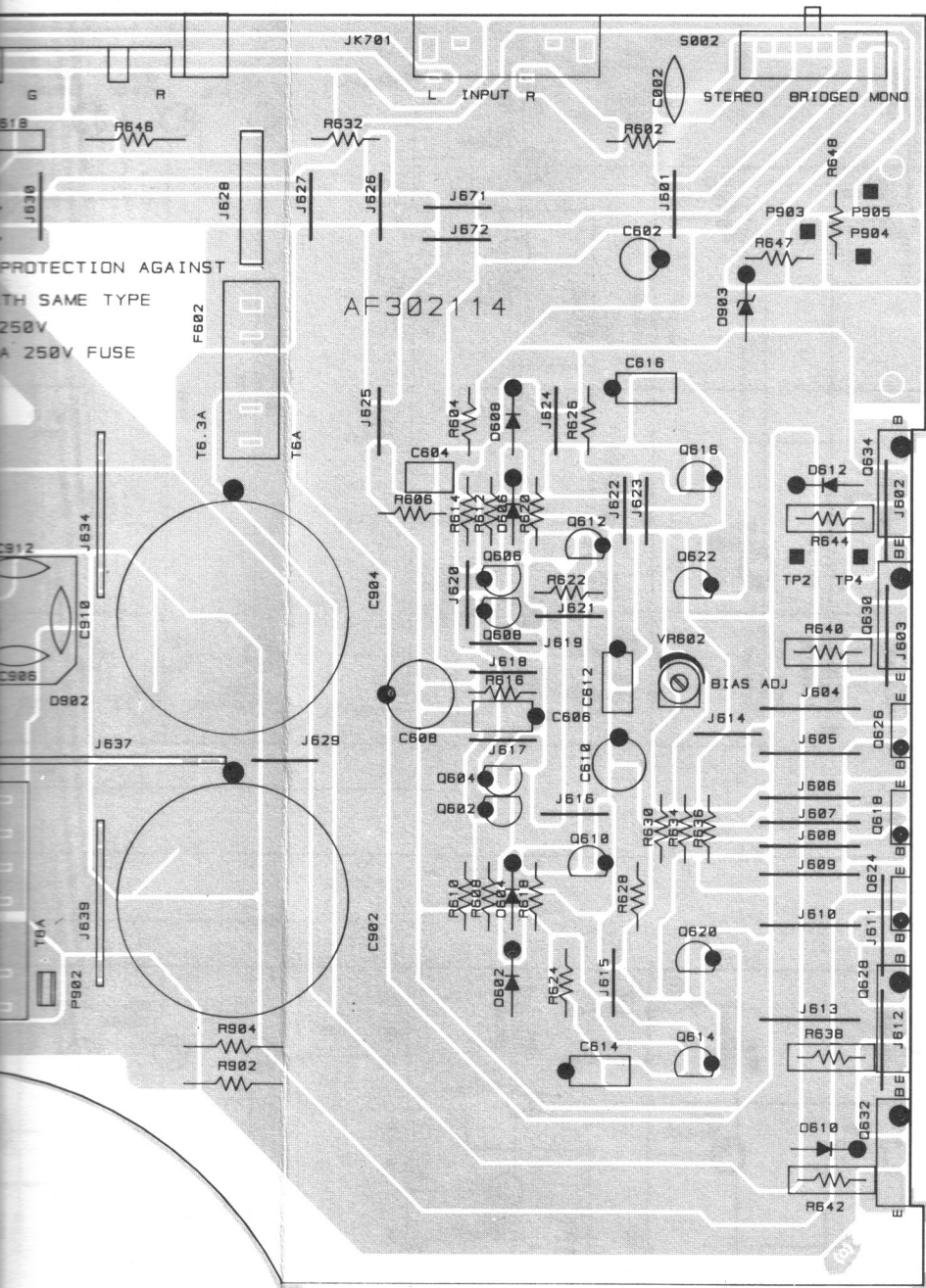
Step	Coupling		Adjust	Adjust for
	Plus Lead	Minus Lead		
1	TP1	TP3	VR601	DC milli-voltmeter reads 8 mV
2	TP2	TP4	VR602	

# Chassis Layout



# Printed Circuit Boards

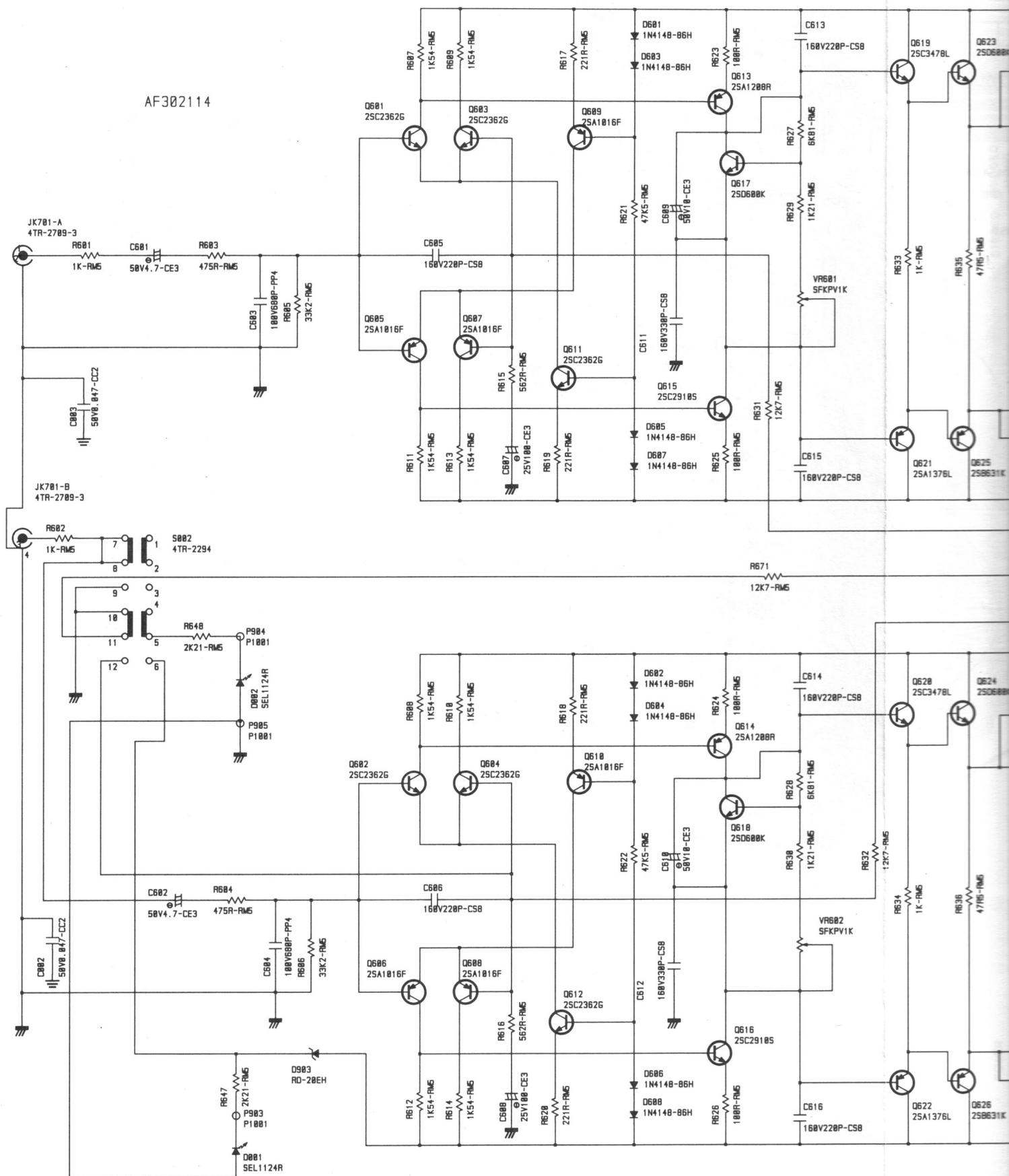




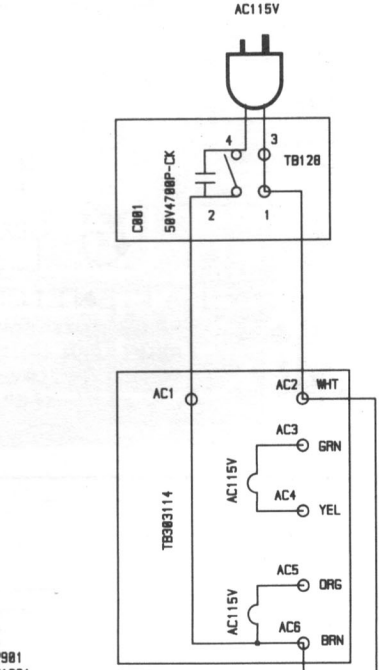
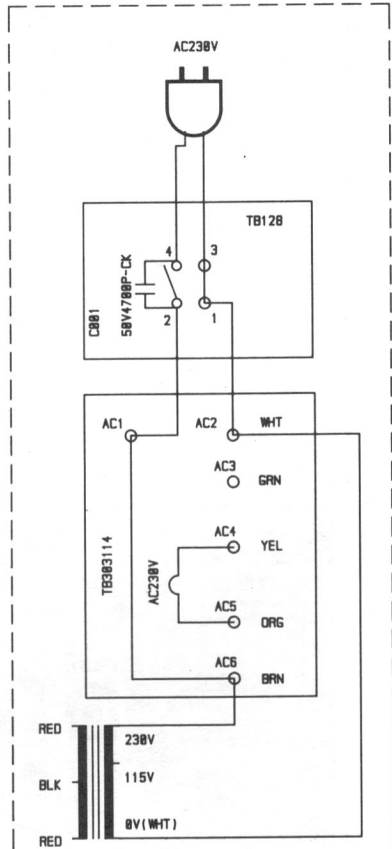
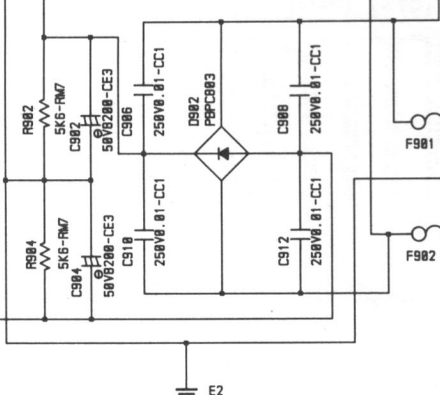
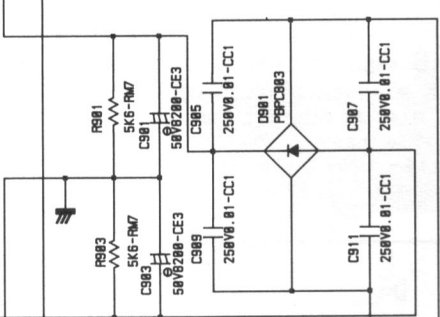
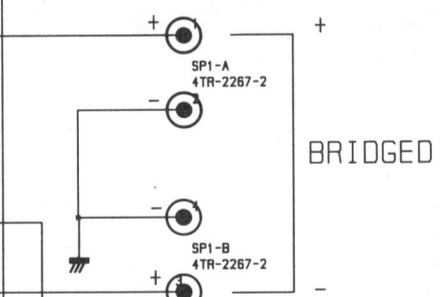
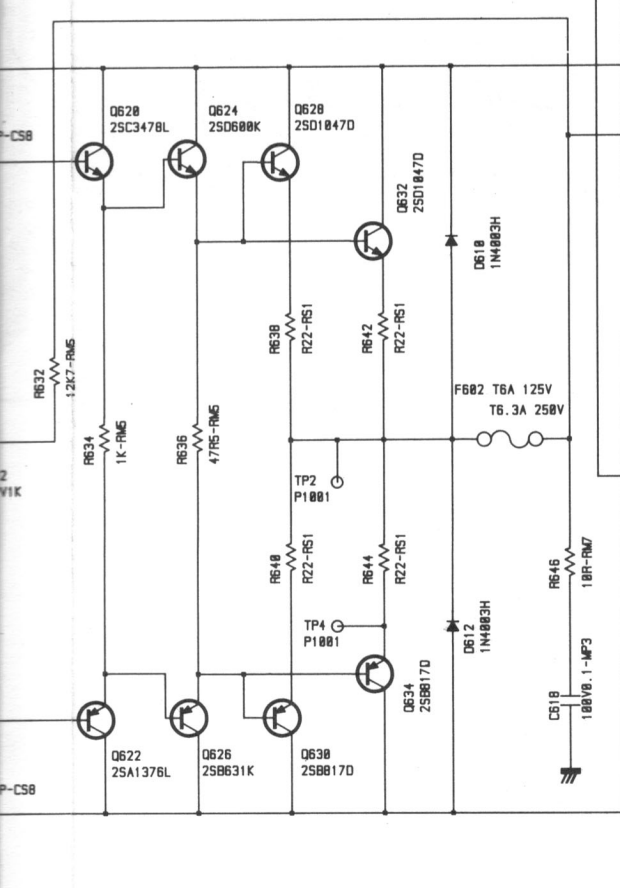
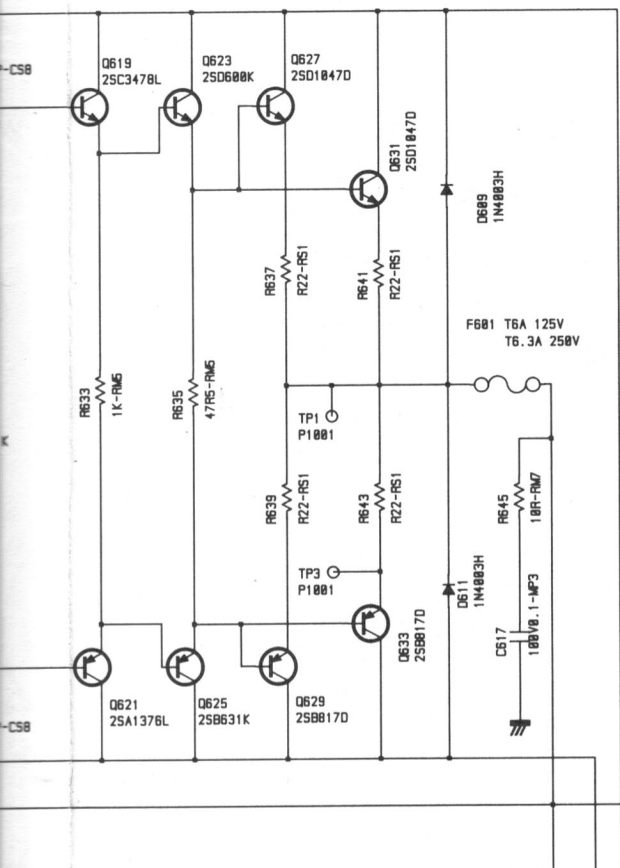
# Schematic Diagram

SCHEMATIC DIAGRAM MODEL NO. RB-970BX

AF302114

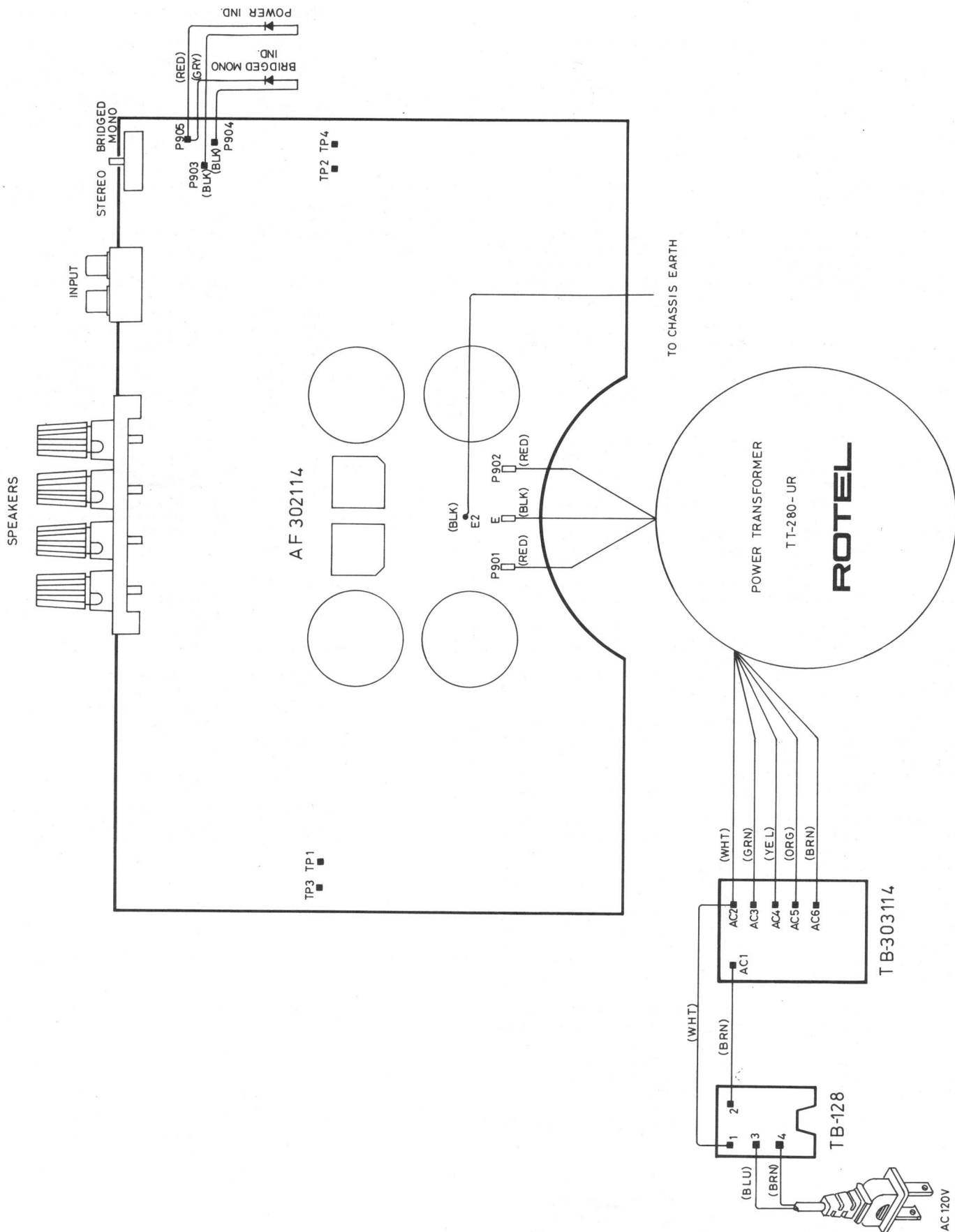






E2

# Wiring Diagram





# Parts List

NOTE: THE COMPONENTS INDENTIFIED BY  $\Delta$  MARK ARE FOR SAFETY. REPLACE ONLY WITH ORIGINAL PARTS. DO NOT SUBSTITUTE.

SYMBOL	PARTS NO.	DESCRIPTION
PCB ASSEMBLY		
C001	CK00000035	SPARK KILLER DE7150F472M $\Delta$
C002-3	CC45009456	CAP. 50V 0.047UF CERAMIC
C601-602	CE54707478	CAP. 50BGF4R7M ELEC.
C603-604	CP76811359	CAPACITOR FKP2-100V681H P.P
C605-606	CS32211306	CAP. 160V 220PF STYROL
C607-608	CE51005679	CAP. 25BGF100M ELEC.
C609-610	CE51006477	CAP. 50BGF10M ELEC.
C611-612	CS33311310	CAP. 160V 330PF STYROL
C613-616	CS32211306	CAP. 160V 220PF STYROL
C617-618	CP61008321	CAP. MKT18-100V104K M.P
C901-904	CE58204475	CAP. 50LPSS8200M ELEC.
C905-912	CC01009256	CAP. 250V 0.01UF CERAMIC $\Delta$
D001-2	DD40000095	DIODE SEL1124R 1X5 RED
D601-608	DD80000021	DIODE 1N4148 1A 75V TAPED
D609-612	DD10000068	DIODE 1N4003 1A 140V RTFR
D901-902	DD10000147	DIODE PBPC803 BRIDGE $\Delta$
D903	DD20000028	DIODE RD-20E (B3) ZENER
F601-602	FU25000041	FUSE 125V 6A UL $\Delta$
	FU230000219	FUSE 250V T6.3A S $\Delta$
F901-902	FU23000189	FUSE BEL 5ST 250V 8A $\Delta$
	FU25000053	FUSE T8A $\Delta$
JK701	JPO2000260	2P PIN JACK 4TR-2709#3
Q601-604	TR30000212	TRANSISTOR 2SC2362(G)
Q605-610	TR10000023	TRANSISTOR 2SA1016(F.G)
Q611-612	TR30000212	TRANSISTOR 2SC2362(G)
Q613-614	TR10000242	TRANSISTOR 2SA1208(R.S.T)
Q615-616	TR30000479	TRANSISTOR 2SC2910(S.T)
Q617-618	TR40000069	TRANSISTOR 2SD600KE/KF
Q619-620	TR30000558	TRANSISTOR 2SC3478(L.K.U)
Q621-622	TR10000308	TRANSISTOR 2SA1376(L.K.U)
Q623-624	TR40000069	TRANSISTOR 2SD600KE/KF
Q625-626	TR10000047	TRANSISTOR 2SB631KE/KF
Q627-628	TR40000045	TRANSISTOR 2SD1047(D.E) $\Delta$
Q629-630	TR20000040	TRANSISTOR 2SB817(D.E) $\Delta$
Q631-632	TR40000045	TRANSISTOR 2SD1047(D.E) $\Delta$
Q633-634	TR20000040	TRANSISTOR 2SB817(D.E) $\Delta$
R601-602	RM81001612	RESISTOR MK2001KFECZ. METAL
R603-604	RM84750619	RESISTOR MK2475RFECZ. METAL
R605-606	RM83322614	RESISTOR MK233K2FECZ. METAL
R607-614	RM81541618	RESISTOR MK21K54FECZ. METAL
R615-616	RM85620616	RESISTOR MK2562RFECZ. METAL
R617-620	RM82210610	RESISTOR MK2221RFECZ. METAL
R621-622	RM84752616	RESISTOR MK247K5FECZ. METAL
R623-626	RM81000619	RESISTOR MK2100RFECZ. METAL
R627-628	RM86811612	RESISTOR MK26K81FECZ. METAL
R629-630	RM81211618	RESISTOR MK21K21FECZ. METAL
R631-632	RM81272619	RESISTOR MK212K7FECZ. METAL
R633-634	RM81001612	RESISTOR MK2001KFECZ. METAL
R635-636	RM84759611	RESISTOR MK247R5FECZ. METAL
R637-644	RS20228230	RES. 0.22 J 2W SQUARE TYPE
R645-646	RM91009127	RES. 10 J 1W METAL FORMING
R647-648	RM82211614	RESISTOR MK22K21FECZ. METAL
R671	RM81272619	RESISTOR MK212K7FECZ. METAL
R901-904	RM95601126	RES. 5.6K J 1W METAL FORMING
S002	SH20000319	SLIDE SW 4TR-2294
SP1	TP20000286	4P SPEAKER TERMINAL 4TR-2267#2
VR601-602	RV40000060	RES. SEMI-FIXED VM6CKPV-1K
OTHERS		
	AB00000729	BOTTOM BOARD 3TQZ-5#2
	AF20000179	FRONT CHASSIS 2TTF-2C
	AM00002074	CHASSIS BODY 2TR-2966A#1
	AR20000681	PRINTED REAR BCHASSIS TRP-627
	PT28016209	POWER TRANSFORMER TT-280-UR $\Delta$

SYMBOL	PARTS NO.	DESCRIPTION
	BC00000817	CYLINDER BUSH 4TVL-7#8 6F $\times$ 13H
	FT00000229	PLASTIC FOOT 4TSH-19#2 50F $\times$ 14H
	FT00000242	FOOT 4TR-2823#2 24F $\times$ 14H
	SC00000027	AC CORD STOPPER SR-4N-4 $\Delta$
	SR00001266	SILICON RUBBER SPACER 4TR-3000A#2
	CD00000218	AC CORD SPT-2 4TR-670#4(U,C,A,J) $\Delta$
	CD00000322	AC POWER CORD 4TR-2757(D) $\Delta$
	CD00000048	AC POWER CORD 4TR-1037 (H,E,Y1,Y2,S1) $\Delta$
	CD00000085	AC POWER CORD C-2504A (K1) $\Delta$
	CD00000115	AC POWER CORD C-3763-T $\Delta$
	NP00001949	NAME STICKER AC120V 4TR-2828A#1 TNP-382
	NP00001974	NAME STICKER AC120V-C 4TR-2828A#4 TNP-385
	NP00001962	NAME STICKER AC240V 4TR-2828A#3 TNP-384
	NP00001998	NAME STICKER AC230V 4TR-2828A#5 TNP-389
	NP00002012	NAME STICKER AC100V 4TR-2828A#6 TNP-391
	NP00001950	NAME STICKER AC220V 4TR-2828A#2 TNP-383
	AH20001015	HEAT SINKER BOARD 4TR-3002
	AA20000725	FRONT PANEL 2TQH-1#2 TFP-695
	BU00001145	POWER RING W/LED 4TQF-13 14 $\times$ 14
	KB20002681	POWER BUTTON 4TQF-15 14 $\times$ 14
	OM10001272	ORNAMENTAL SIDE BOARD 4TR-2797#2 H=80MM
	OM70000065	PUSH BUTTON CONNECTOR 4TTL-15
	SN00000179	BUTTON SPRING 4TR-1988A#2 10F
	AU00001201	TOP COVER POLY 3TTF-5#7 H=80MM
	SR00000882	UPPER COVER SPACER 4TR-2418
	MN10003027	OWNER'S MANUAL RB-970BX
	PLO0001142	STYROL SIDE MOULDING 2TTF-9A#3 TZ-165-1