

# ROTEL *hiFi*

## RA-945

Stereo Integrated Amplifier with Remote Control

# Technical Manual

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**ROTEL ELECTRONICS CO., LTD.**

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MN20002280



## SPECIFICATIONS:

Rated Power	40 Watts* per channel (RMS both channels driven into 8 ohms from 20-20,000 Hz with no more than 0.05% total harmonic distortion.)
DIN output rating (1 kHz, 1% THD, 8 ohm)	60 Watts
Total Harmonic Distortion (@ rated power)	< 0.05%
Intermodulation Distortion (@ rated power)	< 0.05%
Signal to Noise ratio (IHF A network)	100 dB
Frequency response (All inputs)	10-100,000 Hz +1.0 dB, -3.0 dB
Tone control response:	
Bass	± 6 dB @ 100 Hz
Treble	± 6 dB @ 10 kHz
Power requirements	115 volts, AC 50/60 Hz 230 volts, AC 50/60 Hz
Power consumption	260 watts
Weight	7.0 kg's / 15.4 Lbs.
IHF A Dimensions	440 (W) x 92 (H) x 347 (D) mm 17-3/8" (W) x 3-5/8" (H) x 13-11/16" (D)

\* Measured pursuant to FTC Trade Regulation Rule or Power Claims for Amplifiers, applicable in the USA only.

All specifications are accurate at the time of printing. Rotel reserves the right to make improvements without notice.

## Power Amplifier Bias Adjustment

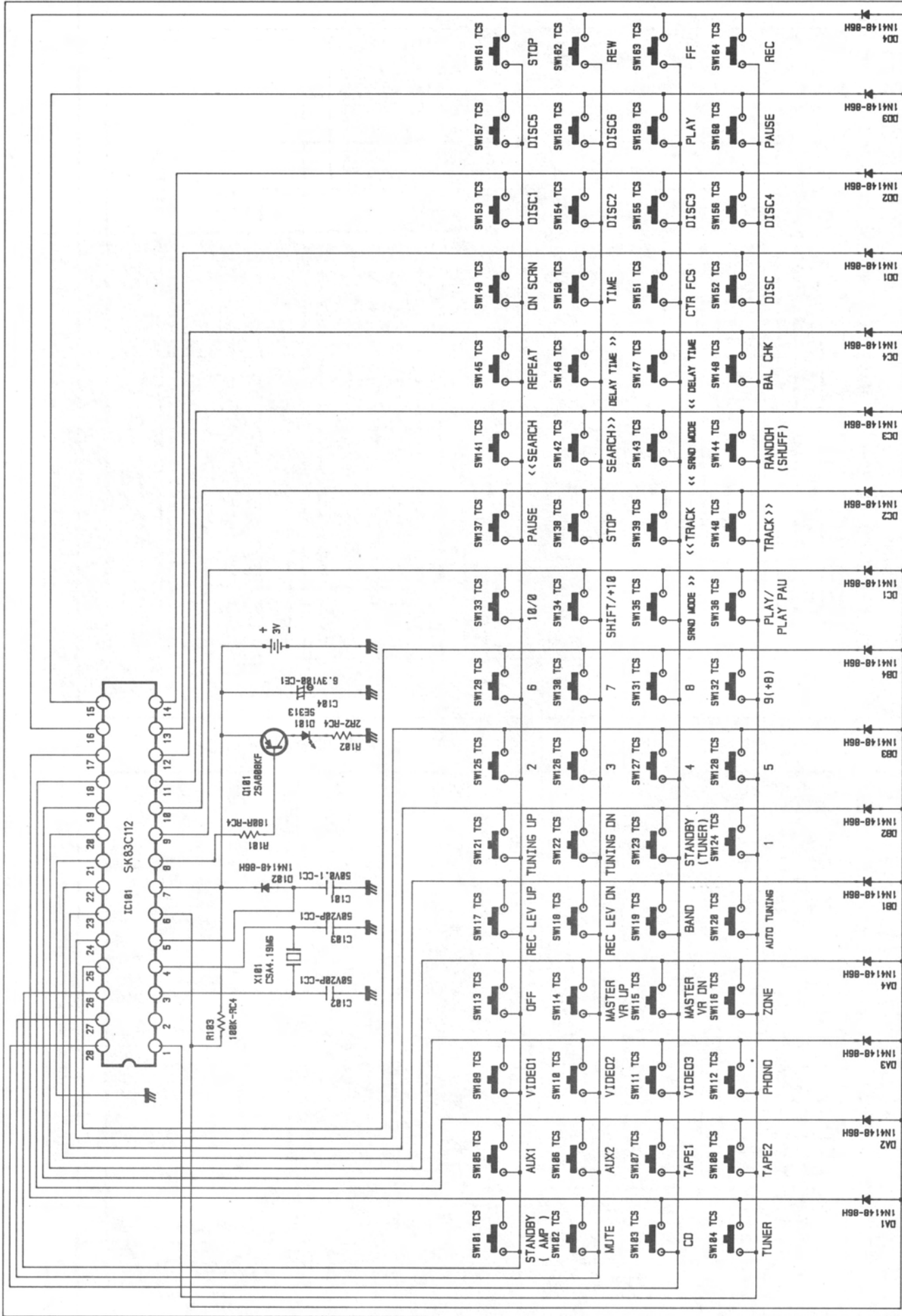
Instruments: DC milli-voltmeter

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	TP3	TP4	VR601	DC milli-voltmeter reads 6 mV
2	TP1	TP2	VR602	

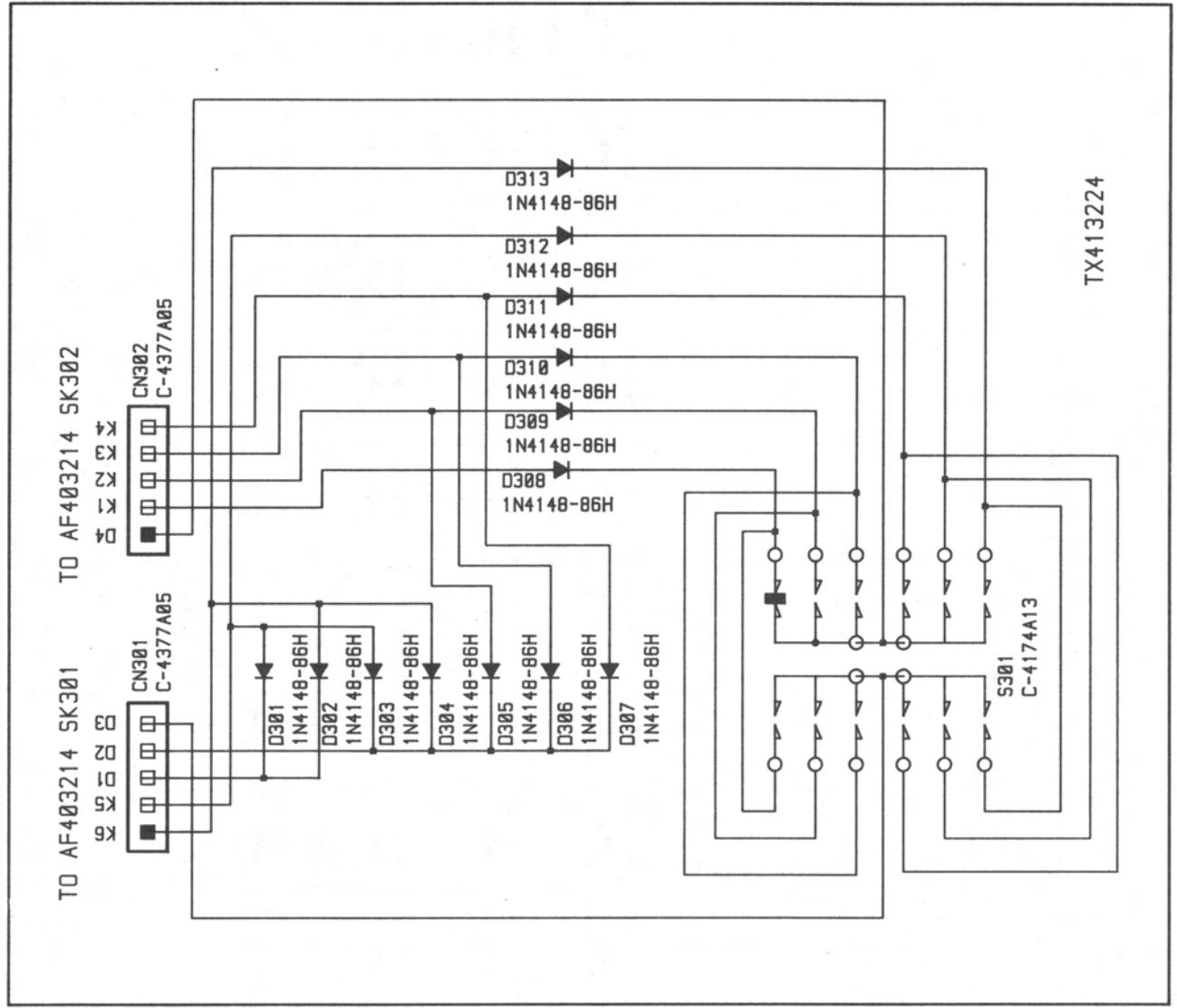
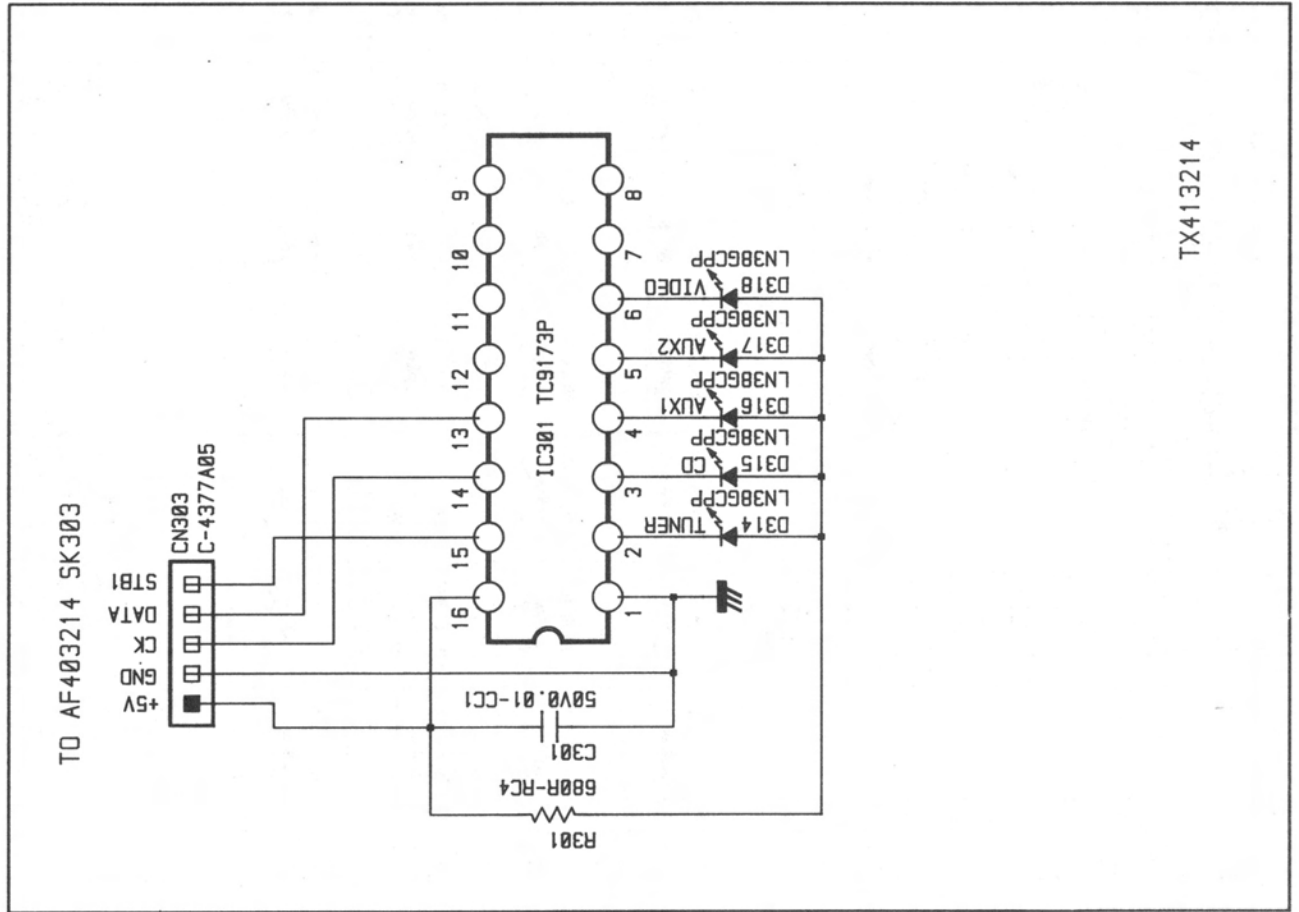
# REMOTE CONTROL HANDSET

SCHEMATIC DIAGRAM MODEL NO. RR-927

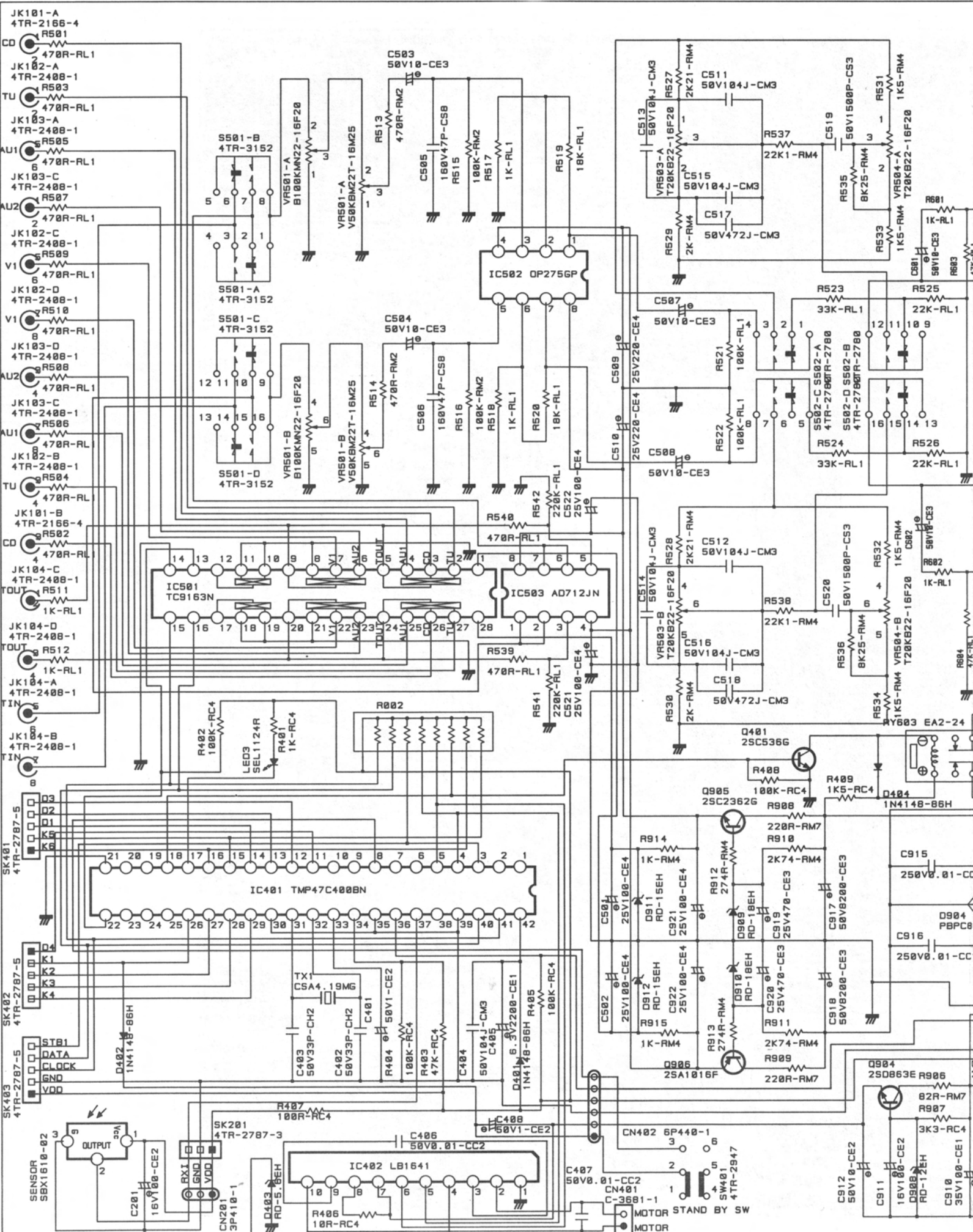


PLEASE USE THESE DIODES : DA2 DB1 DC1 DD1 OTHERS ARE OPTIONAL .

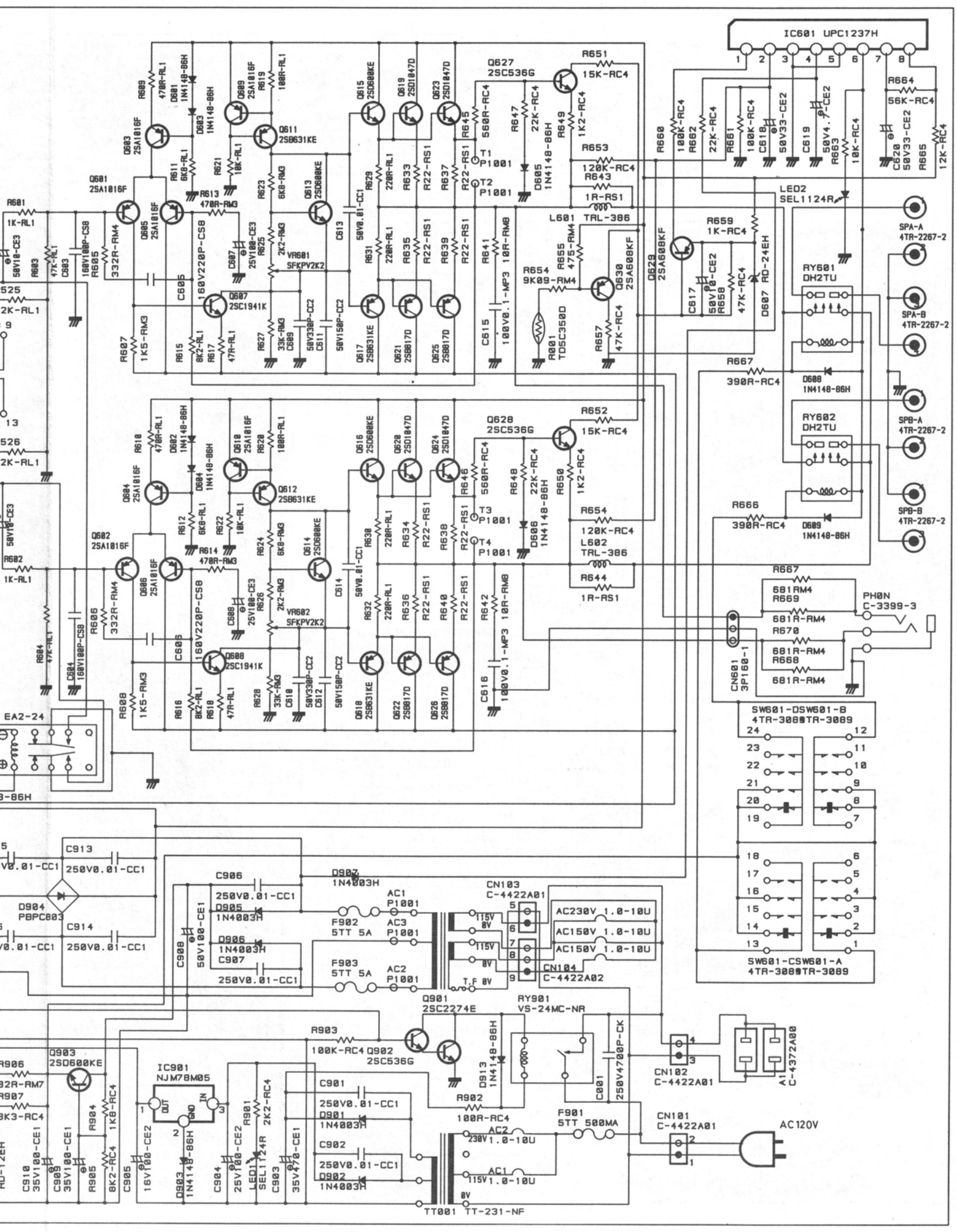
SCHEMATIC DIAGRAM MODEL NO. RA-945 (1/2)



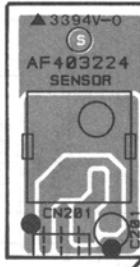
SCHEMATIC DIAGRAM MODEL NO. RA-945 (2/2)



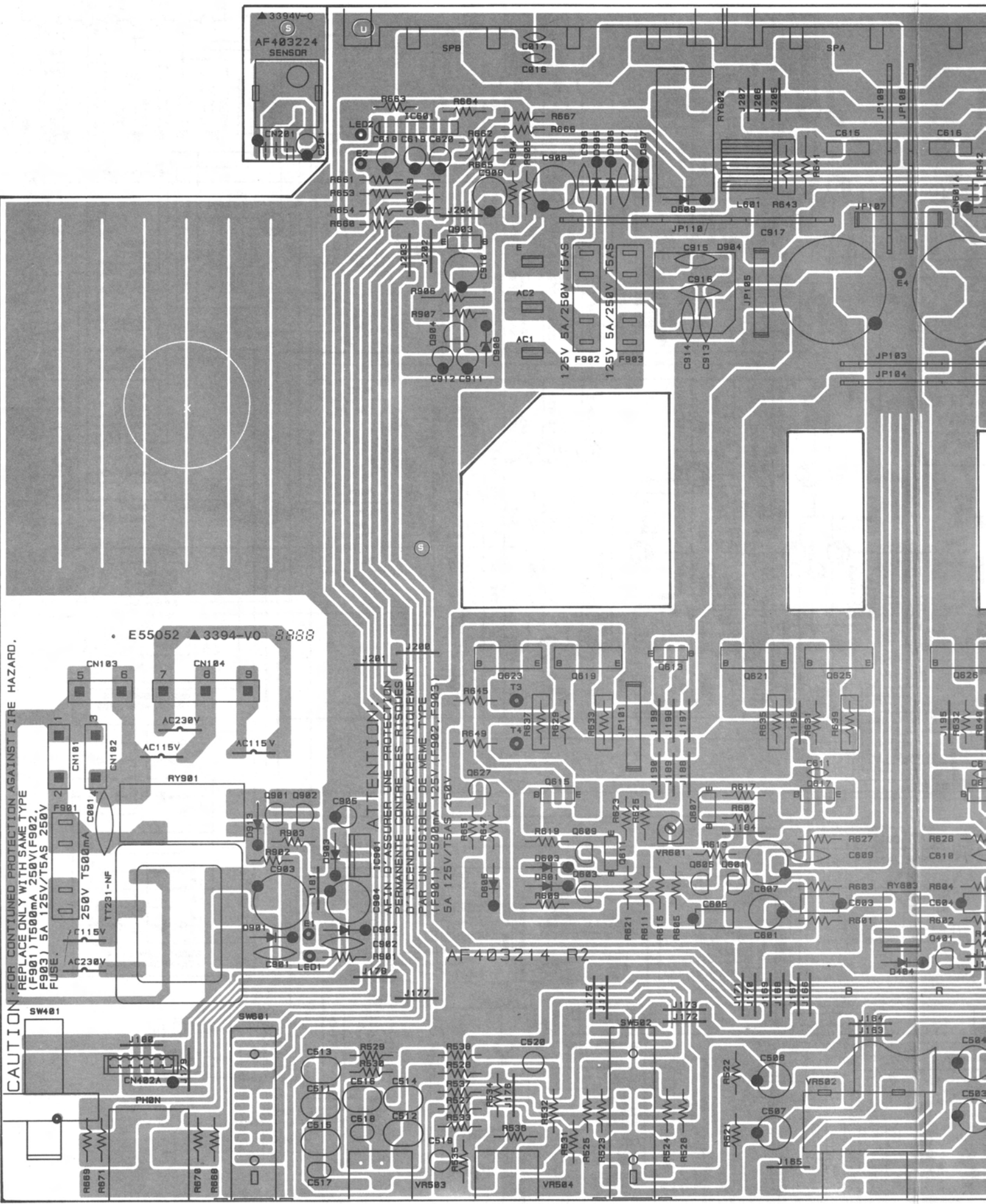




# Printed Circuit Boards



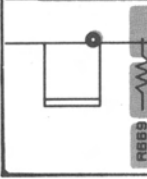
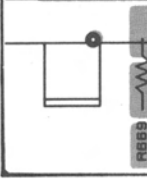
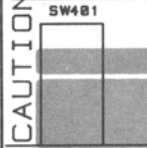
CAUTION FOR CONTINUED PROTECTION AGAINST FIRE HAZARD. REPLACE ONLY WITH SAME TYPE (F901) 1500mA 250V(F902, F903) 5A 125V/T5AS 250V FUSE.



ATTENTION: AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE. REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE (F901) 1500mA 250V (F902, F903) 5A 125V/T5AS 250V

AF403214 R2

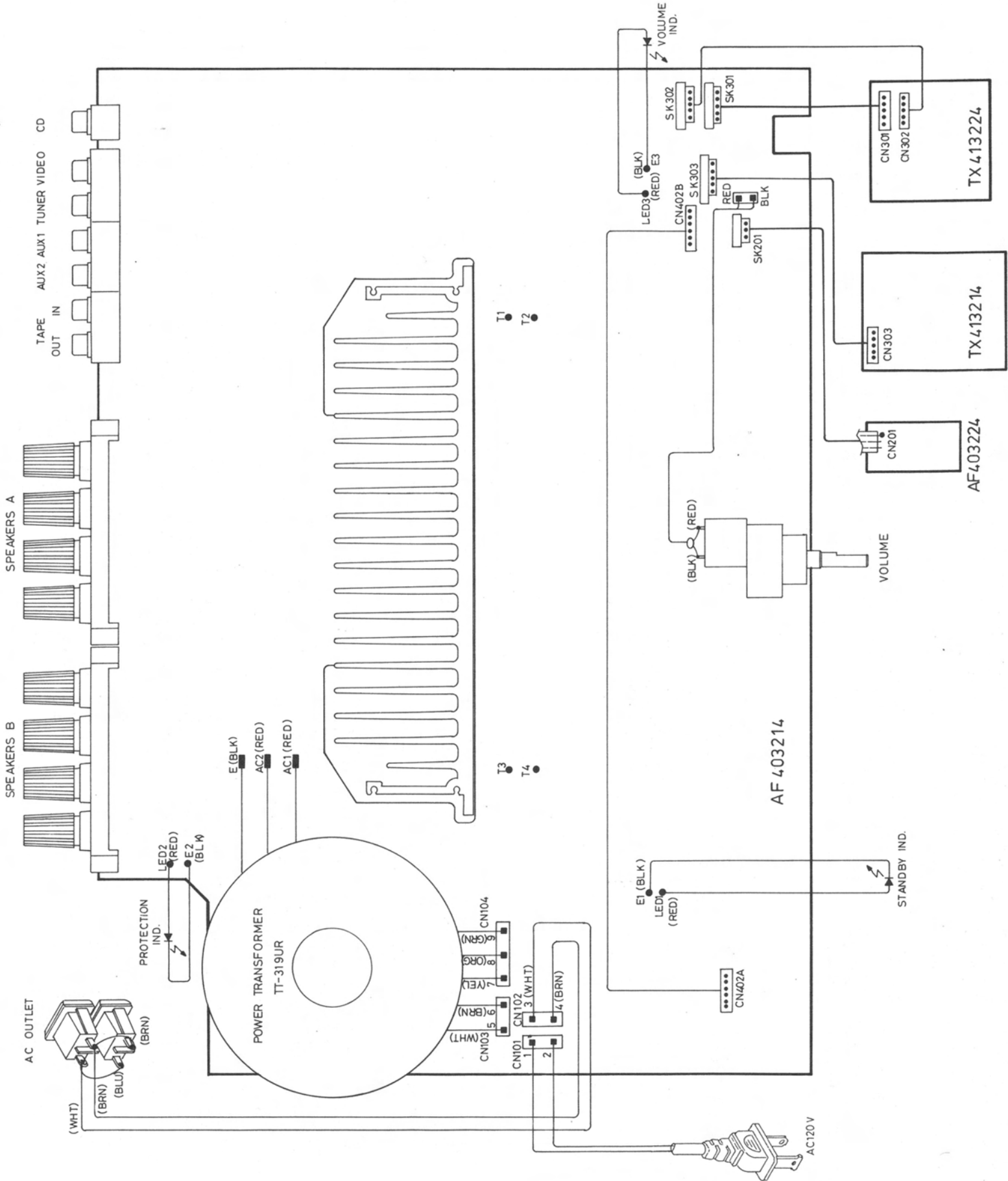
E55052 ▲3394-V0 8888







# Wiring Diagram



# Parts List

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

SYMBOL	PARTS NO.	DESCRIPTION
	AF403214 R1	PCB ASSEMBLY
R401	RD51001823	R, CARBON 1K 1/4W J
R402	RD51003820	R, CARBON 100K 1/4W J
R403	RD54702824	R, CARBON 47K 1/4W J
R404, 405	RD51003820	R, CARBON 100K 1/4W J
R406	RD51009822	R, CARBON 10 1/4W J
R407	RD51000820	R, CARBON 100 1/4W J
R408	RD51003820	R, CARBON 100K 1/4W J
R409	RD51501820	R, CARBON 1.5K 1/4W J
R501-510	RL84700614	R, METAL MK2470RFE
R511, 512	RL81001610	R, METAL MK2001KFE
R513, 514	RM64700015	R, METAL 470R F T-1
R515, 516	RM61003019	R, METAL 100K F T-1
R517, 518	RM11001716	R, METAL MRS251K 0.6W
R519, 520	RL81802618	R, METAL MK2018KFE
R521, 522	RL81003618	R, METAL MK2100KFE
R523, 524	RL83302613	R, METAL MK2033KFE
R525, 526	RL82202611	R, METAL MK2022KFE
R527, 528	RM52211818	R, METAL 2.2K 1/4W F
R529, 530	RM52001812	R, METAL 2K 1/4W F
R531-534	RM51501813	R, METAL 1.5K 1/4W F
R535	RM58251814	R, METAL 8.25K 1/4W F
R536	RM58251814	R, METAL 8.25K 1/4W F
R537, 538	RM52212811	R, METAL 22.1K 1/4W F
R539, 540	RL84700614	R, METAL MK2470RFE
R541, 542	RL82203615	R, METAL MK2220KFE
R601, 602	RL81001610	R, METAL MK2001KFE
R603, 604	RL84702611	R, METAL MK2470KFE
R605, 606	RM53320810	R, METAL 332 1/4W F
R607, 608	RM11501713	R, METAL MRS251K5
R609, 610	RL84700614	R, METAL MK2470RFE
R611, 612	RL86801616	R, METAL MK206K8FE
R613, 614	RM14700718	R, METAL MRS25470R
R615, 616	RL88201616	R, METAL MK208K2FE
R617, 618	RL84709617	R, METAL MK2047RFE
R619, 620	RL81000617	R, METAL MK2100RFE
R621, 622	RM81002614	R, METAL MK2010KFE
R622, 623	RM16801710	R, METAL MRS256K8
R625, 626	RM02201718	R, METAL MRS252K2
R627, 628	RM13302713	R, METAL MRS2533K
R629-632	RL82200614	R, METAL MK2220RFE
R633-640	RS20228230	R, SQUARE TYPE MPC70-0.22F
R641, 642	RM91009220	R, METAL 10 J 2W
R643, 644	RS21008248	R, SQUARE TYPE MPC70-1F
R645, 646	RD54700827	R, CARBON 470 1/4W J
R647, 648	RD52202824	R, CARBON 22K 1/4W J
R649, 650	RD51201824	R, CARBON 1.2K 1/4W J
R651, 652	RD51502824	R, CARBON 15K 1/4W J
R653, 654	RD51203821	R, CARBON 120K 1/4W J
R655	RM54750812	R, METAL 475 1/4W F
R656	RM59091818	R, METAL 9.09K 1/4W F
R657, 658	RD54702824	R, CARBON 47K 1/4W J
R659	RD51801827	R, CARBON 1.8K 1/4W J
R660, 661	RD51003820	R, CARBON 100K 1/4W J
R662	RD52202824	R, CARBON 22K 1/4W J
R663	RD51002827	R, CARBON 10K 1/4W J
R664	RD55602825	R, CARBON 56K 1/4W J
R665	RD51202828	R, CARBON 12K 1/4W J
R666, 667	RD53900821	R, CARBON 390 1/4W J
R668-671	RM56810812	R, METAL 681 1/4W F
R901	RD52201820	R, CARBON 2.2K 1/4W J
R902	RD51000820	R, CARBON 100 1/4W J
R903	RD51003820	R, CARBON 100K 1/4W J
R904	RD51801827	R, CARBON 1.8K 1/4W J
R905	RD58201829	R, CARBON 8.2K 1/4W J
R906	RM98209122	R, METAL 82 J 1W
R907	RD53301822	R, CARBON 3.3K 1/4W J
R908, 909	RM92200121	R, METAL 220 J 1W
R910, 911	RM52741819	R, METAL 2.74K 1/4W F

SYMBOL	PARTS NO.	DESCRIPTION
R912, 913	RM52740815	R, METAL 274 1/4W F
R914, 915	RM51001816	R, METAL 1K 1/4W F
R001	DD60000260	THERMISTOR TD5C350D $\Delta$
R002	RN31003080	THICK FILM RS NETWORK A8104J/RA8-104-8K
VR501	RV10001565	R, VARIABLE 4TR-2776 100KMN
VR502	RV10001899	R, VARIABLE 4TR-3132 50KAx2
VR503, 504	RV10001541	R, VARIABLE 4TR-2774 20KBx2
VR601, 602	RV40000022	R, SEMI-FIXED VM6CKPV-1S-B 2.2K
C001	CK00000035	SPARK KILLER DE7150F472Z $\Delta$
C401	CE41007503	CAP, ELEC. 50V 1uF
C402, 403	CC53312419	CAP, CERAMIC 50V 33PF (CH)
C404	CM11008422	CAP, MYLAR 50V 104 J
C405	CE02204068	CAP, ELEC. 6.3V 2200uF $\Delta$
C406, 407	CC41009462	CAP, CERAMIC 50V 0.01uF
C408	CE41007503	CAP, ELEC. 50V 1uF
C501, 502	CE71005259	CAP, ELEC. 25V 100uF
C503, 504	CE51006477	CAP, ELEC. 50BGF10M
C505, 506	CS34712311	CAP, POLYSTYRENE 160V 47PF
C507, 508	CE51006477	CAP, ELEC. 50BGF10M
C509, 510	CE72205645	CAP, ELEC. 25V 220uF
C511-516	CM11008422	CAP, MYLAR 50V 104 J
C517, 518	CM14710425	CAP, MYLAR 50V 472 J
C519, 520	CS41510426	CAP, POLYSTYRENE 50V 1500PF
C521, 522	CE71005259	CAP, ELEC. 25V 100uF
C601, 602	CE51006477	CAP, ELEC. 50BGF10M
C603, 604	CS31011310	CAP, POLYSTYRENE 160V 100PF
C605, 606	CS32211306	CAP, POLYSTYRENE 160V 220PF
C607, 608	CE51005679	CAP, ELEC. 25BGF100M
C609, 610	CC43311431	CAP, CERAMIC 50V 330PF
C611, 612	CC41511430	CAP, CERAMIC 50V 150PF
C615, 616	CP61008321	CAP, M.P 100V 0.1uF
C617	CE41006500	CAP, ELEC. 50V 10uF
C618	CE43306467	CAP, ELEC. 50V 33uF
C619	CE44707500	CAP, ELEC. 50V 4.7uF
C620	CE43306467	CAP, ELEC. 50V 33uF
C901, 902	CC41009164	CAP, CERAMIC 500V 0.01uF
C903	CE04705358	CAP, ELEC. 35V 470uF
C904	CE41005257	CAP, ELEC. 25V 100uF
C905	CE41005166	CAP, ELEC. 16V 100uF
C906, 907	CC41009164	CAP, ELEC. 500V 0.01uF
C908	CE01005507	CAP, ELEC. 50V 100uF
C909, 910	CE01005350	CAP, ELEC. 35V 100uF
C911	CE41005166	CAP, ELEC. 16V 100uF
C912	CE41006500	CAP, ELEC. 50V 10uF
C913-916	CC41009164	CAP, CERAMIC 500V 0.01uF
C917, 918	CE58204475	CAP, ELEC. 50LPSS8200M $\Delta$
C919, 920	CE54705640	CAP, ELEC. 25BGF470M
C921, 922	CE71005259	CAP, ELEC. 25V 100uF
TX1	LF00000490	CERAMIC RESONATOR CSA4.19MG
L601, 602	LC23860002	SPEAKER COIL TRL-386
F901	FU25000016	FUSE 250V 500mA UL/CSA $\Delta$
	FU230000360	FUSE 250V T 500mA(S) $\Delta$
F902, 903	FU25000030	FUSE 125V 5A UL/CSA $\Delta$
	FU230000141	FUSE 250V T 5A (S) $\Delta$
D401, 402	DD80000021	DIODE IN4148-86
D403	DD20000478	DIODE RD5.6JS-T1
D404	DD80000021	DIODE IN4148-86
D601-606	DD80000021	DIODE IN4148-86
D607	DD20000624	DIODE RD24JS-T1
D608, 609	DD80000021	DIODE IN4148-86
D901, 902	DD80000010	DIODE IN4003-TB
D903	DD80000021	DIODE IN4148-86
D904	DD10000147	DIODE KBPC-802
D905-907	DD80000010	DIODE IN4003-TB
D908	DD20000557	DIODE RD12JS-T1
D909, 910	DD20000594	DIODE RD18JS-T1
D911, 912	DD20000570	DIODE RD15JS-T1

# Parts List

SYMBOL	PARTS NO.	DESCRIPTION
D913	DD80000021	DIODE IN4148-86
IC401	IC00003781	IC TMP47C400BN-H691
IC402	IC00002260	IC LB1641
IC501	IC00002983	IC TC9163N
IC502	IC00003859	IC OP275GP
IC503	IC00002454	IC AD712JN
IC601	IC00000860	IC MPC1237HA
IC901	IC00000615	IC NJM78M05
Q401	TR31000034	TRANSISTOR 2SC536G-NP-AA
Q601-606	TR11000039	TRANSISTOR 2SA1016F
Q607, 608	TR31000125	TRANSISTOR 2SC1941K/L-T
Q609, 610	TR11000039	TRANSISTOR 2SA1016F
Q611, 612	TR10000047	TRANSISTOR 3SB631KE/KF
Q613, 614	TR40000069	TRANSISTOR 2SD600KE/KF
Q615, 616	TR40000069	TRANSISTOR 2SD600KE/KF
Q617, 618	TR10000047	TRANSISTOR 3SB631KE/KF
Q619, 620	TR40000045	POWER TRANSISTOR 2SD1047D/E $\Delta$
Q621, 622	TR20000040	POWER TRANSISTOR 2SB817D/E $\Delta$
Q623, 624	TR40000045	POWER TRANSISTOR 2SD1047D/E $\Delta$
Q625, 626	TR20000040	POWER TRANSISTOR 2SB817D/E $\Delta$
Q627, 628	TR31000034	TRANSISTOR 2SC536G-NP-AA
Q629, 630	TR11000015	TRANSISTOR 2SA608KF
Q901	TR31000071	TRANSISTOR 2SC2274E/F
Q902	TR31000034	TRANSISTOR 2SC536G-NP-AA
Q903	TR40000069	TRANSISTOR 2SD600KE/KF
Q904	TR41000011	TRANSISTOR 2SD863E/F-AE
Q905	TR31000083	TRANSISTOR 2SC2362F
Q906	TR11000039	TRANSISTOR 2SA1016F
TT001	PT231110108	SUB TRANSFORMER TT-231-NF $\Delta$
PHON	JH00000135	HEAD PHONE JACK C-3399#1
JK101	JP02000211	2P PIN JACK 4TR-2166#4
JK102-104	JP04000140	4P PIN JACK 4TR-2408#1
RY601, 602	LY00000435	RELAY DH2TU $\Delta$
RY603	LY00000460	RELAY EG2-24NU $\Delta$
RY901	LY00000265	RELAY VS-24MC-NR $\Delta$
SW401	SH11000460	1 KEY PUSH SW 4TR-2947
SW501	SH30000640	FUNCTION SW 4TR-3152
SW502	SH30000500	FUNCTION 4TR-2780
SW601	SH30000638	FUNCTION SW 4TR-3089
	AF403224	PCB ASSEMBLY
SENSOR C201	IC00002030 CE41005166	IC SBX1610-02/1483-12 CAP, CERAMIC 16V 100uF
	TX413214	PCB ASSEMBLY
IC301 D314-318 R301 C301	IC00003045 DD40001440 RD56800825 CC41009462	IC TC9173P L.E.D LN38GCPP R, CARBON 680 1/4W J CAP, CERAMIC 50V 0.01uF
	TX413224	PCB ASSEMBLY
D301-313 S301	DD80000021 SH30000626	DIODE IN4148-86 FUNCTION SW C-4174A13
	OTHERS	
	AB00000833 AF20000374 AR20000838 AS01000270 BU00000803 BU00001236	PAINTER BOTTOM BOARD 2PTL-4 FRONT CHASSIS 2TPL-2 PRINTED REAR CHASSI TRP-677 SIDE CHASSIS 3TQF-3D RUBBER BUSH 4TR-2544 15F INSULATION BUSH 4TR-2841

SYMBOL	PARTS NO.	DESCRIPTION
	FT00000229	PLASTIC FOOT 4TSH-19#2 50Fx14H
	SB00001204	P.V.C SHIELD COVER 3TPL-9
	SG00000845	EVA SPONGE 4TR-2871 80F
	SP10006909	P.T SUPPORT 4TR-3001A#2
	SP10007252	P.T SUPPORT 3TPL-5
	SR00001266	SILICON RUBBER SPACER 4TR-3000A#2
	CD000002218	AC CORD SPT-2 AWG#18 4TR-670#4 $\Delta$ (U,C,A,J)
	CD00000048	AC POWER CORD 4TR-1037 $\Delta$ (H,E,S1,Y)
	CD00000322	AC POWER CORD OKA 4TR-2757 $\Delta$ (D)
	CD00000516	AC CORD HO5VV-F 4TR-3061 $\Delta$ (K1)
	CD00000115	AC POWER CORD C-3763-T $\Delta$ (G)
	NP00001949	NAME STICKER AC 120V 4TR-2828A#1 TNP-382
	NP00002012	NAME STICKER AC 100V 4TR-2828A#6 TNP-391
	NP00002188	NAME STICKER AC 220-240V 4TR-2828A#15 TNP-402
	NP00002140	NAME STICKER AC 220-240V 4TR-2828A#11 TNP-398
	SA00001450	AC OUTLET SOCKET S-16519 $\Delta$
	SA00001796	AC OUTLET SOCKET S-16536#1 $\Delta$
	SA00001980	AC OUTLET SOCKET S2-741T-110/120 K1,G1 $\Delta$
	SC00000039	AC CORD STOPPER SR-6W-1 $\Delta$ K1
	SC00000027	AC CORD STOPPER SR-4N-4 $\Delta$
	PT31916200	POWER TRANSFORMER TT-319-UR $\Delta$
	AH20000813	HEAT SINKER BOARD 3TQF-6#2
	AA20000841	FRONT PANEL 2TPL-1
	AW00000654	RJ SENSOR WINDOW PT4-12A00T
	BU00001145	POWER RING W/LED 4TQF-13 14x14
	BU00001224	KNOB RING PR4-12A00T 46F
	KB20002681	POWER BUTTON 4TQF-15 14x14
	OM10001272	ORNAMENTAL SIDE BOARD 4TR-2797#2 H=80MM
	DD40000095	L.E.D SEL1124R
	BU00001420	L.E.D BUSH QT4-18A00T
	OM70000065	PUSH BUTTON CONNECTOR 4TTL-15
	SN00000179	BUTTON SPRING 4TR-1988A#2
	AG00000482	REMOTE CONTROL HANDSET RR-927G
	AU00001201	TOP COVER POLY 3TTF-5#7
	KB10001886	KNOB W/LED QT4-08A00T
	KB10001898	KNOB 25F QT4-09A00T
	KB10001916	KNOB 4TR-3134 25F
	KB10001928	KNOB RB4-04A00T 15F
	DD40000095	L.E.D SEL1124R
	FE00000067	FELT 4TR-1083B#1 22F
	FE00000092	FELT 4TR-1083B#2 30F
	FE00000432	FELT 4TR-1083B#5 58F
	SR00000882	UPPER COVER SPACER 4TR-2418
	MN10003700	OWNER'S MANUAL RA-945
	PL00001051	STYROL SIDE MOULDING 2TR-2800B TZ-183
	TN10004943	INSIDE CARTON RA-945 4TPL-6