

# **ROTEL** *hifi*

**STEREO INTEGRATED AMPLIFIER**

# **RA-980BX**

# **TECHNICAL MANUAL**

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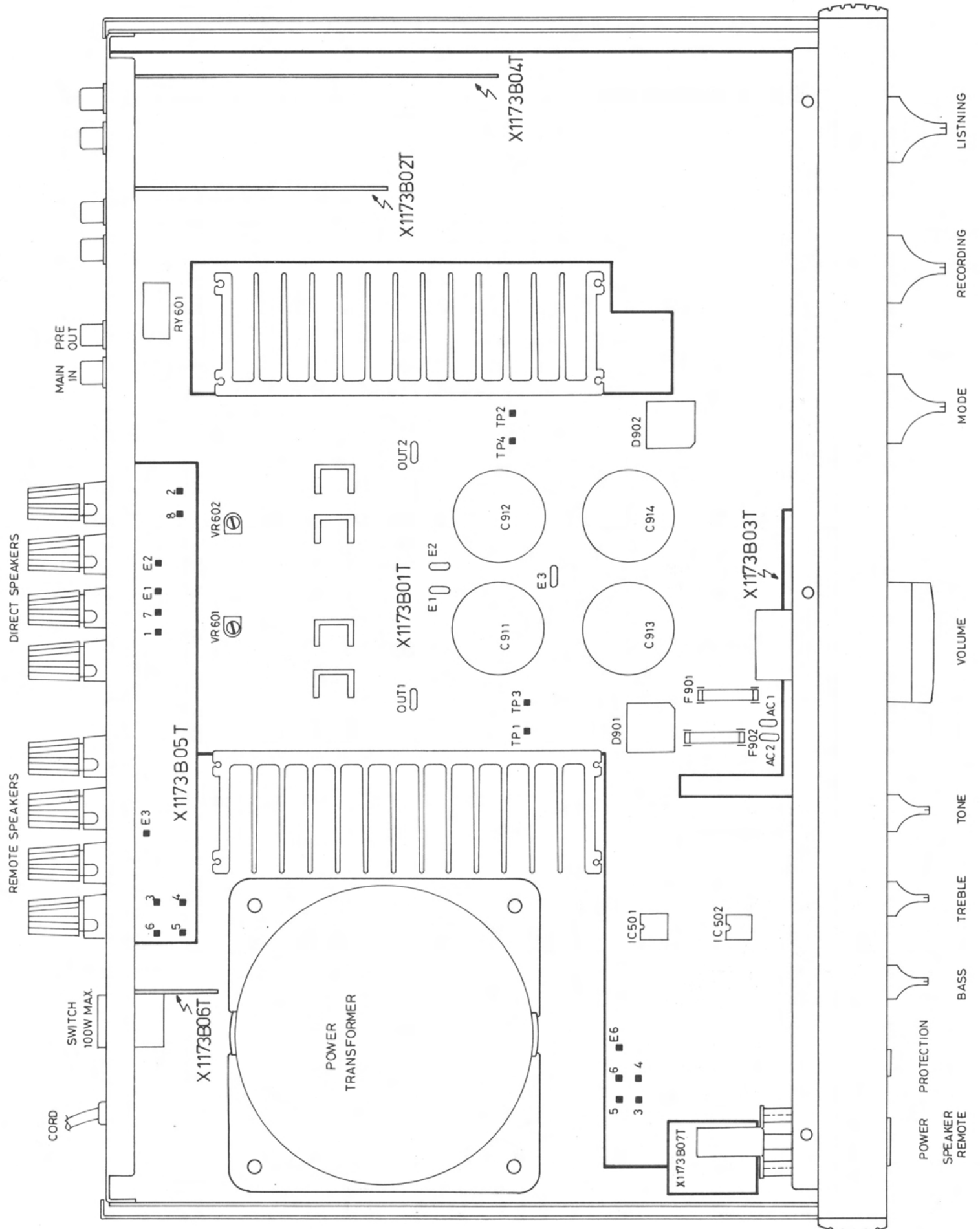
**THE ROTEL CO., LTD.**

1-36-8, OHOKAYAMA, MEGURO-KU, TOKYO 152, JAPAN

**ROTEL ELECTRONICS CO., LTD.**

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

# Chassis Layout



# Specifications

RA-980BX

Continuous Power Output...100 watts\* per channel, min. RMS both channels driven into 8 ohms from 20 to 20,000 kHz with no more than 0.03% total harmonic distortion.

DIN Output.....190 watts per channel (1 kHz, 4 ohms, 1% THD)

Peak Current.....80 A (0.1 ohms, 10 usec, 1 Pulse)

Total Harmonic Distortion...No more than 0.03% (continuous rated power output) 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) 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.....4 ohms minimum  
HEADPHONE.....8 - 2,000 ohms

Damping Factor:.....1000 (20 to 20,000 Hz, 8 ohms)

Input Sensitivity/ Impedance:  
PHONO: MC.....250 uV/ 100 ohms  
MM.....2.5 mV/ 47 kohms  
CD, TUNER.....150 mV/ 33 kohms  
AUX, TAPE 1, 2 .....150 mV/ 33 kohms

Overload Level (THD 0.5%, 1 kHz):  
PHONO: MC.....17 mV  
MM.....160 mV  
CD, TUNER.....5 V  
AUX, TAPE 1, 2 .....5 V

Frequency Response:  
PHONO.....20 to 20,000 Hz, +/- 0.2 dB (RIAA STD)  
CD, TUNER.....4 to 100 kHz, +1.0 dB, -3.0 dB  
AUX, TAPE 1,2 .....4 to 100 kHz, +1.0 dB, -3.0 dB

Tone Control:  
BASS..... +/- 6.0 dB (100 Hz)  
TREBLE..... +/- 6.0 dB (10 kHz)

Signal to Noise Ratio (IHF, A network):  
PHONO: MC.....70 dB  
MM.....75 dB  
CD, TUNER.....97 dB  
AUX, TAPE 1,2 .....97 dB

## MISCELLANEOUS

Power Requirement.....120 V/ 60 Hz, 220 V/ 50 Hz, 240 V/ 50 Hz (depending on destinations)

Power Consumption.....400 watts

Dimension (overall).....440 (W) x 121 (H) x 347 (D) mm  
17-3/8" x 4-13/16" x 13-11/16"

Weight (net).....10.1 kg / 22.2 lbs

- Specifications and design subject to possible modification without notice.
- \*Measured pursuant to the Federal Trade Commission's Trade Regulation Rule or, Power Claims for Amplifiers (applicable to the U.S.A. only).

## 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	TP1	VR601	DC milli-voltmeter reads 10 mV
2	TP4	TP2	VR602	

# Parts List

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

SYMBOL	PARTS NO.	DESCRIPTION
	X-1173A01T	P.C.B. ASSEMBLY
R501, 502	RM81500616	R, METAL MK2150RFECZ.
R503, 504	RM81003610	R, METAL MK2100KFECZ.
R505, 506	RM81002616	R, METAL MK2010KFECZ.
R507, 508	RM81821615	R, METAL MK21K82FECZ.
R509, 510	RM81000619	R, METAL MK2100RFECZ.
R511, 512	RM81003610	R, METAL MK2100KFECZ.
R513, 514	RM82211614	R, METAL MK22K21FECZ.
R515, 516	RM81821615	R, METAL MK21K82FECZ.
R517, 518	RM82212618	R, METAL MK222K1FECZ.
R519-522	RM81501610	R, METAL MK201K5FECZ.
R523, 524	RM81500616	R, METAL MK2150RFECZ.
R525-528	RM81003610	R, METAL MK2100KFECZ.
R529, 530	RM81211618	R, METAL MK21K21FECZ.
R531, 532	RM82211614	R, METAL MK22K21FECZ.
R533, 534	RM81000619	R, METAL MK2100RFECZ.
R535, 536	RM88251610	R, METAL MK28K25FECZ.
R537, 538	RM82211614	R, METAL MK22K21FECZ.
C501, 502	CE51006477	CAP, ELEC. 50BGF10M
C503, 504	CS31011310	CAP, POLYSTYRENE 160V 100P
C505, 506	CP61008321	CAP, M.P 100V104K
C507, 508	CE72205645	CAP, ELEC. 220uF 25V HFS
C509, 510	CP61008321	CAP, M.P 100V 104K
C511, 512	CE72205645	CAP, ELEC. 220uF 25V HFS
C513, 514	CE51006477	CAP, ELEC. 50BGF10M
C515, 516	CM01008423	CAP, MYLAR 104 J 50V
C517, 518	CM01208424	CAP, MYLAR 124 J 50V
C519, 520	CS41510414	CAP, STYROL 1500P 50V
C521, 522	CE51006477	CAP, ELEC. 50BGF10M
C523, 524	CS34712311	CAP, POLYSTYRENE 160V47P
C525, 526	CE51006477	CAP, ELEC. 50BGF10M
C527, 528	CM01008423	CAP, MYLAR 104 J 50V
C529	CC64709439	CAP, LAYER CERAMIC 473K 50V
IC501, 502	IC00002454	IC AD712JN
S501	SH30000500	FUNCTION SW 4TR-2780
VR502, 503	RV10001541	R, VARIABLE 4TR-2774 20KBx2
HJ1	JH00000135	HEAD PHONE JACK C-3399#1
S301, 302	SH30000511	FUNCTION SW 4TR-2781
S30	SH30000535	FUNCTION SW C-4174A11
R601, 602	RM83322614	R, METAL MK233K2FECZ.
R603, 604	RM81001612	R, METAL MK2001KFECZ.
R607, 608	RM81501610	R, METAL MK201K5FECZ.
R609, 610	RM81501610	R, METAL MK201K5FECZ.
R611-614	RM81501610	R, METAL MK201K5FECZ.
R615-618	RM82210610	R, METAL MK2221RFECZ.
R619, 620	RM85620616	R, METAL MK2562RFECZ.
R623, 624	RM84752616	R, METAL MK247K5FECZ.
R625, 626	RM81000619	R, METAL MK2100RFECZ.
R627, 628	RM81000619	R, METAL MK2100RFECZ.
R633, 634	RM86811612	R, METAL MK26K81FECZ.
R635, 636	RM81211618	R, METAL MK21K21FECZ.
R639, 640	RM81001612	R, METAL MK2001KFECZ.
R641, 642	RM84759611	R, METAL MK247R5FECZ.
R643, 644	RM84752616	R, METAL MK247K5FECZ.
R657-660	RS20228230	R, SQUARE TYPE MPC70-0.22F
R661-668	RS20228230	R, SQUARE TYPE MPC70-0.22F
R669, 670	RM91009322	R, METAL OXIDE 3W 10 J
T671, 672	RD51000820	R, CARBON 100 1/4W J
R673, 674	RD51200820	R, CARBON 120 1/4W J
R679	RD56800825	R, CARBON 680 1/4W J
R680	RM92701924	R, METAL OXIDE FILM 1/2W 2.7K
R681, 682	RD58201829	R, CARBON 8.2K 1/4W J
R683	RD53900821	R, CARBON 390 1/4W J
R686, 687	RM94700121	R, METAL 1W 470 J
R697	RM88251610	R, METAL MK28K25FECZ.
R698	RM81500616	R, METAL MK2150RFECZ.
C601, 602	CE54707478	CAP, ELEC. 50BGF4R7M
C603, 604	CP76811359	CAP, P.P 100V 680P
C605, 606	CS32211306	CAP, POLYSTYRENE 160V 220P

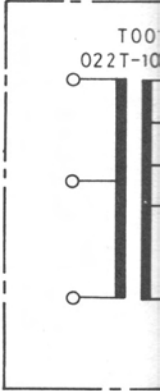
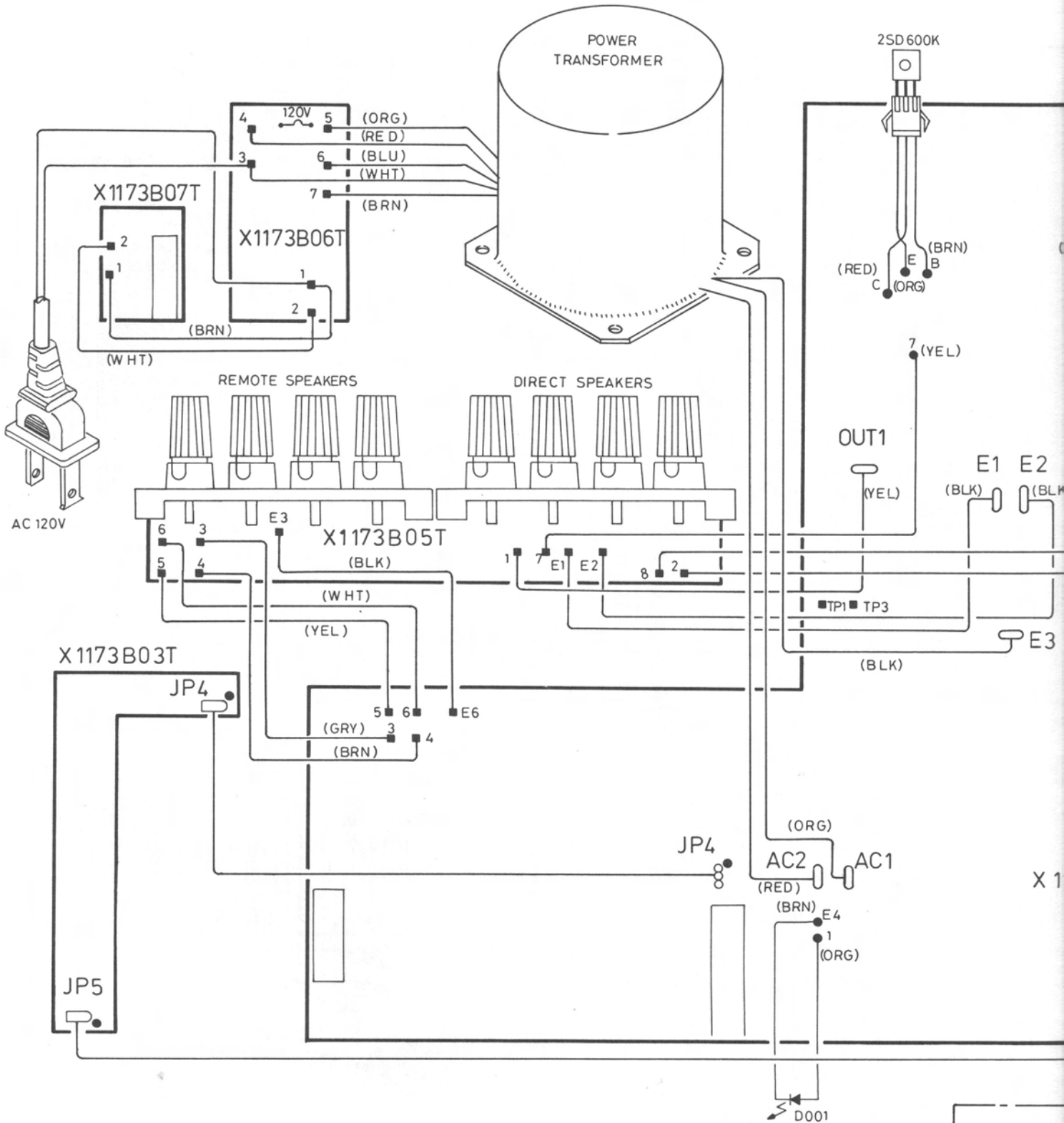
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C607, 608	CE51005679	CAP, ELEC. 25BGF100M
C609, 610	CE51006477	CAP, ELEC. 50BGF10M
C611, 612	CS33311310	CAP, POLYSTYRENE 160V 330P
C613-616	CS32211306	CAP, PLOYSTYRENE 160V 220P
C617, 618	CP61008321	CAP, M.P 100V 104K
C624	CE02206259	CAP, ELEC. 22uF 25V
Q601-604	TR30000212	TRANSISTOR 2SC2362 (F, G)
Q605-610	TR10000023	TRANSISTOR 2SA1016 (F, G)
Q611, 612	TR30000212	TRANSISTOR 2SC2362 (F, G)
Q613, 614	TR10000217	TRANSISTOR 2SA1209-ST
Q615, 616	TR30000571	TRANSISTOR 2SC2911-ST
Q617, 618	TR40000124	TRANSISTOR 2SD600K(E)
Q619, 620	TR30000558	TRANSISTOR 2SC3478 (L, K, U)
Q621, 622	TR10000308	TRANSISTOR 2SA1376 (L, K, U)
Q623, 624	TR30000560	TRANSISTOR 2SC4381 (O, Y)
Q625, 626	TR10000291	TRANSISTOR 2SA1667 (O, Y)
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) $\Delta$
Q635, 636	TR40000045	TRANSISTOR 2SD1047 (D, E) $\Delta$
Q637, 638	TR20000040	TRANSISTOR 2SB817 (D, E) $\Delta$
Q639, 640	TR10000023	TRANSISTOR 2SA1016 (F, G)
Q643, 644	TR30000327	TRANSISTOR 2SC536G
D601-608	DD80000021	DIODE 1N4148
D609-612	DD80000010	DIODE 1N4003
D613-615	DD80000021	DIODE 1N4148
D617	DD80000021	DIODE 1N4148
D619	DD20000089	DIODE RD24E
D695	DD80000021	DIODE 1N4148
RY601	LY00000277	RELAY RY-24W-KJ $\Delta$
TH601, 602	DD60000260	THERMISTOR TD5C-350CD
S601	SH11000434	1 KEY PUSH SW 4TR-2899
D001, 002	DD40000095	LED LN224R
R901, 902	RM83921613	R, METAL MK23K92FECZ.
R903-906	RF13300838	R, FUSIBLE TYPE ERQ14AJ331P
R911	RD52203828	R, CARBON 220K 1/4W J
R912	RD52201820	R, CARBON 2.2K 1/4W J
R913	RD56600828	R, CARBON 560 1/4W J
C901-908	CC01009256	CAP, CERAMIC 0.01uF 250V $\Delta$
C909-912	CE61003631	CAP, ELEC. 10000uF 63V $\Delta$
C913, 914	CE71004255	CAP, ELEC. 1000uF 25V $\Delta$
C915-918	CE51005679	CAP, ELEC. 25BGF100M
C919	CE02205255	CAP, ELEC. 220uF 25V
Q901, 902	TR40000124	TRANSISTOR 2SD600K (E)
Q903, 904	TR10000047	TRANSISTOR 2SB631K (E, F)
D901, 902	DD10000147	DIODE KBPC802 $\Delta$
D903, 904	DD20000041	DIODE RD18E
D905	DD80000010	DIODE 1N4003
D906-910	DD80000021	DIODE 1N4148
F901, 902	FU25000053	FUSE 125V 8A UL (U, C, J, A) $\Delta$
	FU23000219	FUSE 250V T6.3A S (E8) $\Delta$
	FU21000174	FUSE 250V T8A $\Delta$
	X-1173A02T	P.C.B. ASSEMBLY
R301-304	RM81001612	R, METAL MK2001KFECZ.
	X-1173A03T	P.C.B. ASSEMBLY
VR501	RV10001619	R, VARIABLE C-4170A19 50Kax2
	X-1173A04T	P.C.B. ASSEMBLY
R401, 402	RM84752616	R, METAL MK247R5FECZ.
R403, 404	RM81000619	R, METAL MK2100RFECZ.
R405, 406	RM84752616	R, METAL MK247K5FECZ.
R407, 408	RM82212618	R, METAL MK222K1FECZ.
R409-412	RM85621610	R, METAL MK25K62FECZ.

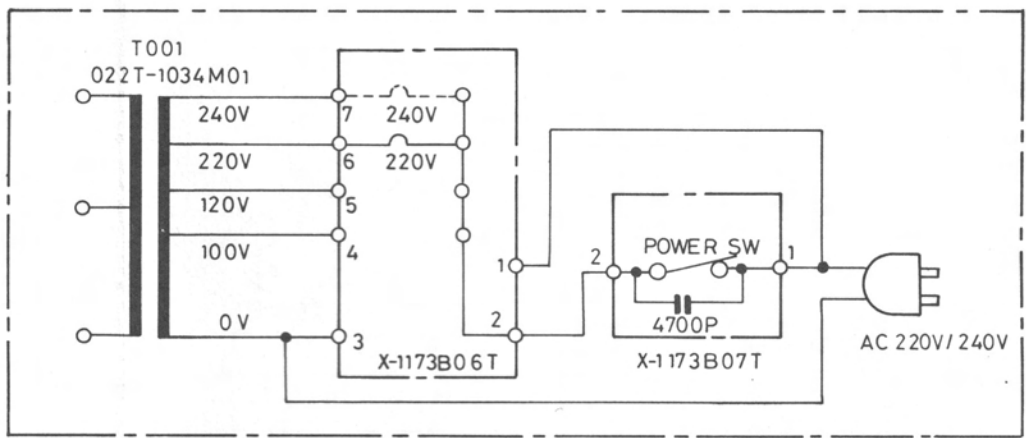
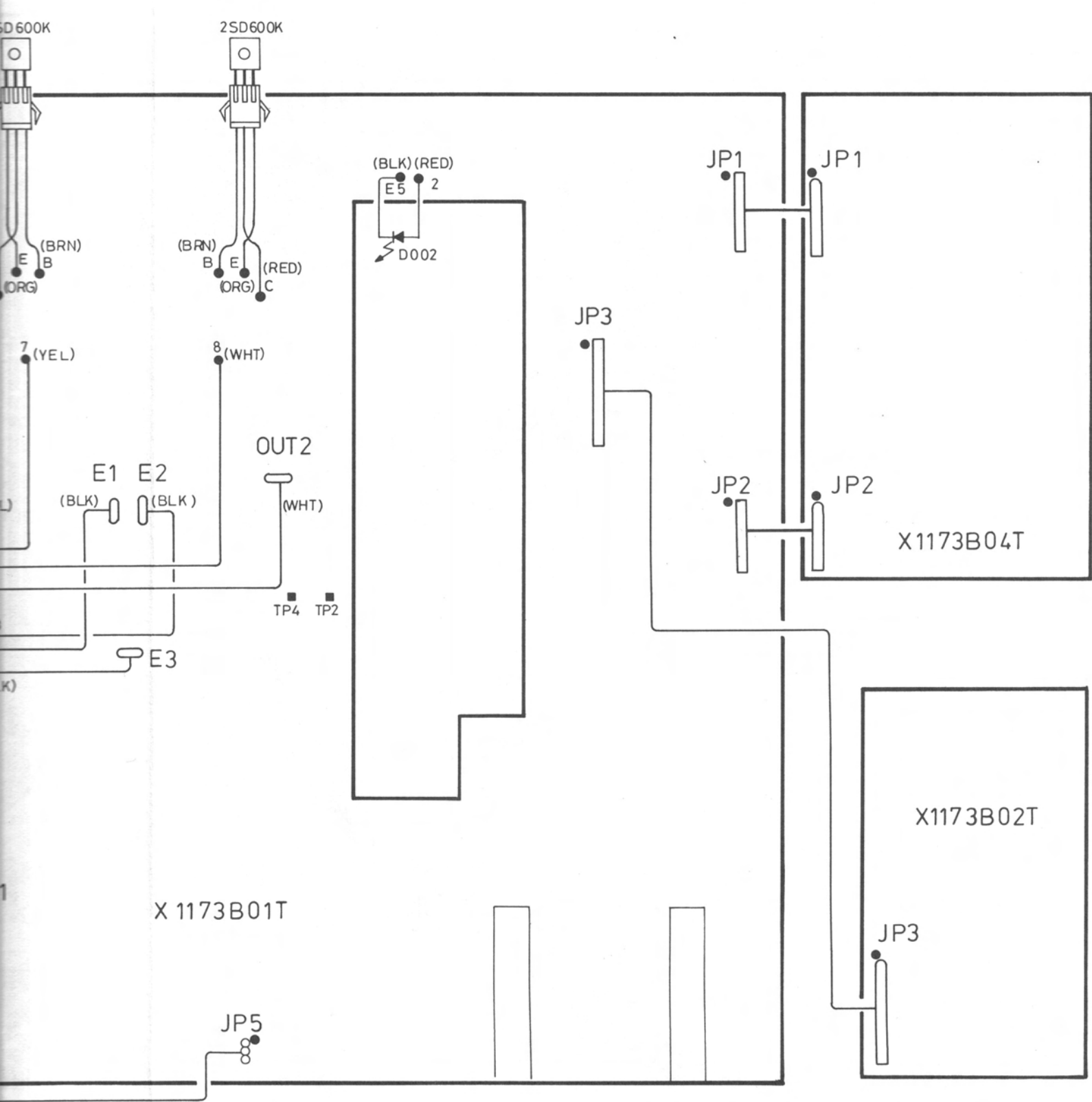
# Parts List

SYMBOL	PARTS NO.	DESCRIPTION
R413, 414	RM82740611	R, METAL MK2274RFECZ.
R415, 416	RM85620616	R, METAL MK2562RFECZ.
R417, 418	RM82741615	R, METAL MK22K74FECZ.
R419, 420	RM87502611	R, METAL MK2075KFECZ.
R425, 426	RM84751612	R, METAL MK24K75FECZ.
R427, 428	RM84752616	R, METAL MK247K5FECZ.
R429, 430	RM84753610	R, METAL MK2475KFECZ.
R431, 432	RM81003610	R, METAL MK2100KFECZ.
R433, 434	RM81000619	R, METAL MK2100RFECZ.
R435, 436	RM81009611	R, METAL MK2010RFECZ.
R437, 438	RM84750619	R, METAL MK2475RFECZ.
C401, 402	CP71011353	CAP, P.P 100V 100P
C403, 404	CP61008321	CAP, M.P 100V 104K
C405, 406	CE51005679	CAP, ELEC. 25BGF100M
C407, 408	CS32212300	CAP, POLYSTYRENE 160V 22P
C409, 410	CP71010300	CAP, P.P 100V 1000P
C411, 412	CE51005679	CAP, ELEC. 25BGF100M
C413, 414	CP61008321	CAP, M.P 100V 104K
C415, 416	CP61008321	CAP, M.P 100V 104K
C417, 418	CE51005679	CAP, ELEC. 25BGF100M
C419, 420	CE51006477	CAP, ELEC. 50BGF10M
C421, 422	CP61008321	CAP, M.P 100V 104K
C423, 424	CE51005679	CAP, ELEC. 25BGF100M
C425, 426	CS36810300	CAP, POLYSTYRENE 160V 6800P
C429, 430	CE51006477	CAP, ELEC. 50BGF10M
C431, 432	CS33311310	CAP, POLYSTYRENE 160V 330P
C435	CC05009457	CAP, CERAMIC 0.047uF 50V
IC401, 402	IC00002430	IC TL071CP
IC403, 404	IC00001735	IC NE5534AN
Q401-404	TR40000100	TRANSISTOR 2SD786 (R, S)
Q405, 406	TR30000212	TRANSISTOR 2SC2362 (F, G)
S401	SH11000367	1 KEY PUSH SW 4TR-2783 4U
D401-404	DD80000021	DIODE 1N4148
	X-1173A05T	P.C.B ASSEMBLY
R695, 696	RM82212618	R, METAL MK222K1FECZ.
	X-1173A06T	P.C.B. ASSEMBLY
	SA00002193	AC OUTLET SOCKET C-4372A00 (U, C, A, J) ⚠
	X-1173A07T	P.C.B. ASSEMBLY
C001	CK00000035	SPARK KILLER DE7150F472M ⚠
S001	SH40000167	POWER SW C-4176A02 TV08 ⚠
		OTHERS
	AF20000271	FRONT CHASSIS PR2-03A00T
	AR20000607	RPINTED REAR CHASSIS TRP-589
	AS01000348	SIDE CHASSIS PR3-20A00T
	KB20002747	PUSH BUTTON PR4-07A00T
	PT00000291	POWER TRANSFORMER T-1034M01 ⚠
	FT00000229	PLASTIC FOOT 4TSH-19A#2 50Fx14H
	PN00000080	JUMPER PIN 4TR-2185#1 P-18
	SB00000686	P.V.C SHIELD PLATE 4TR-2869
	SC00000120	AC CORD STOPPER SP-5KN-4 ⚠
	SP10006478	RCA JACK SUPPORT PR4-08A00T
	SP10006521	P.T SUPPORT PR4-19A00T
	CD00000220	AC CORD SPT-2 AWG#16 4TR-670#5-C, U, A, J ⚠
	CD00000048	AC POWER CORD 4TR-1037-H ⚠
	CD00000115	AC POWER CORD C-3763-T-G ⚠
	CD00000085	AC POWER CORD C-2504A-K1 ⚠
	CD00000292	AC POWER CORD 4TR-2631#1-D ⚠

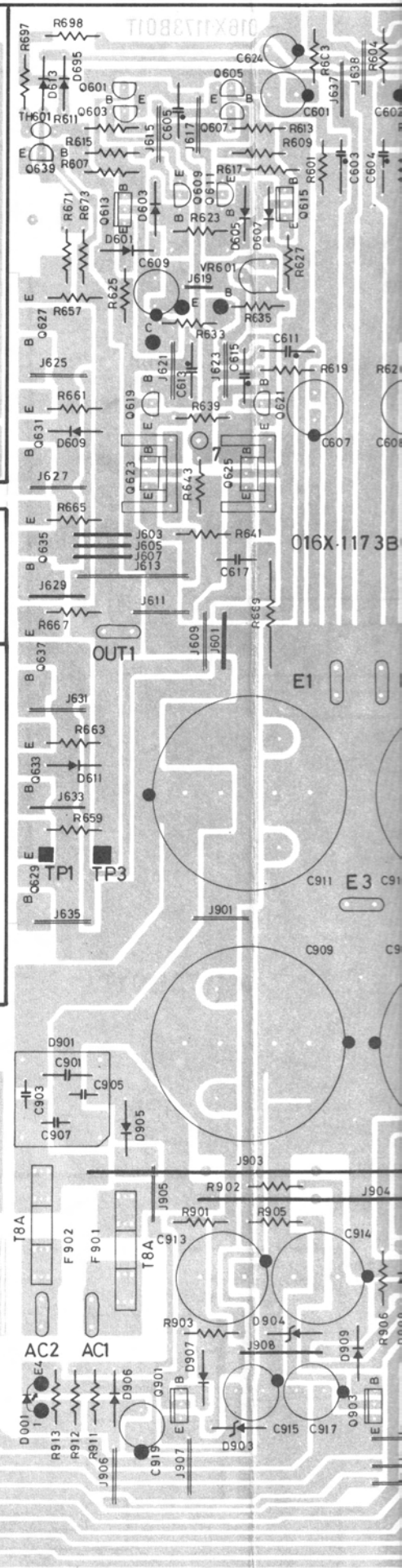
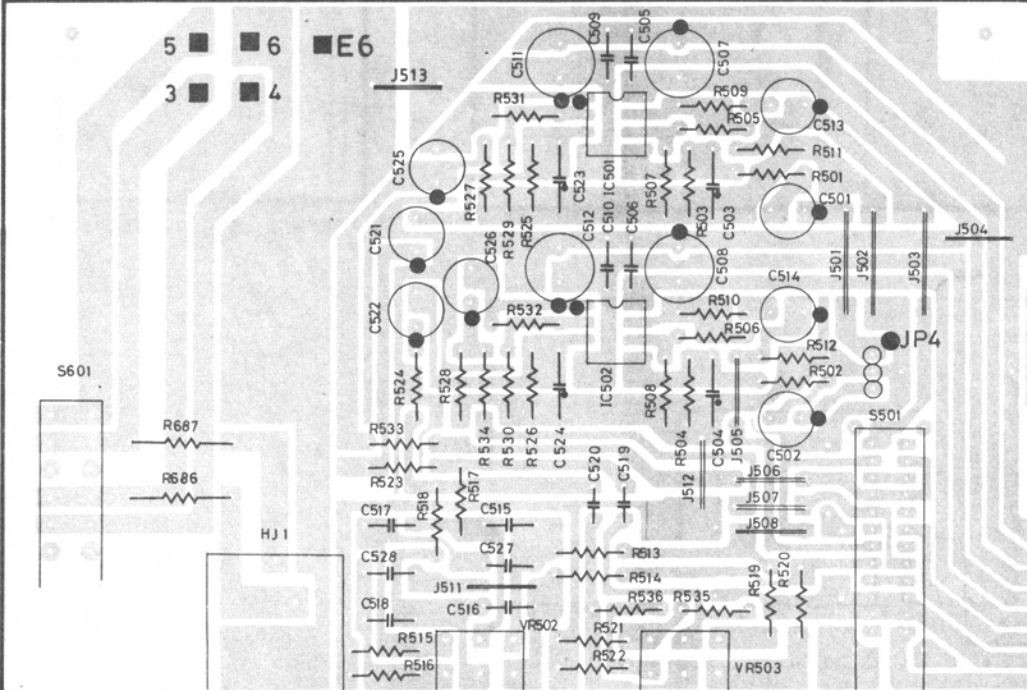
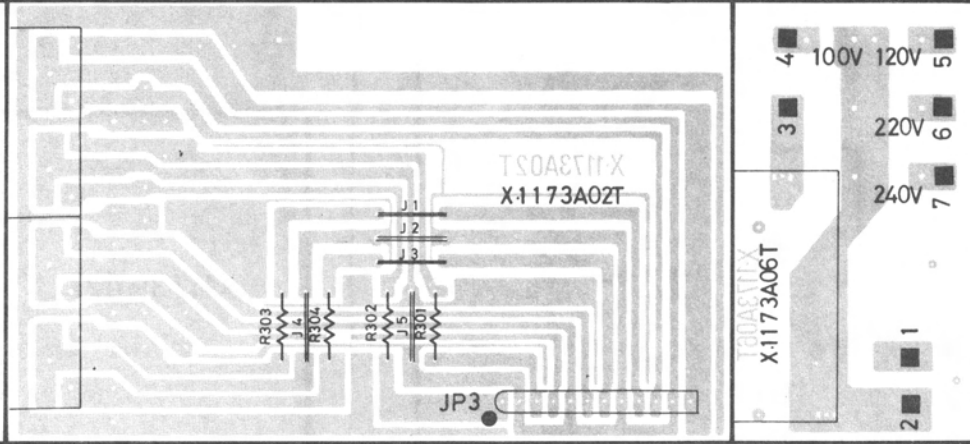
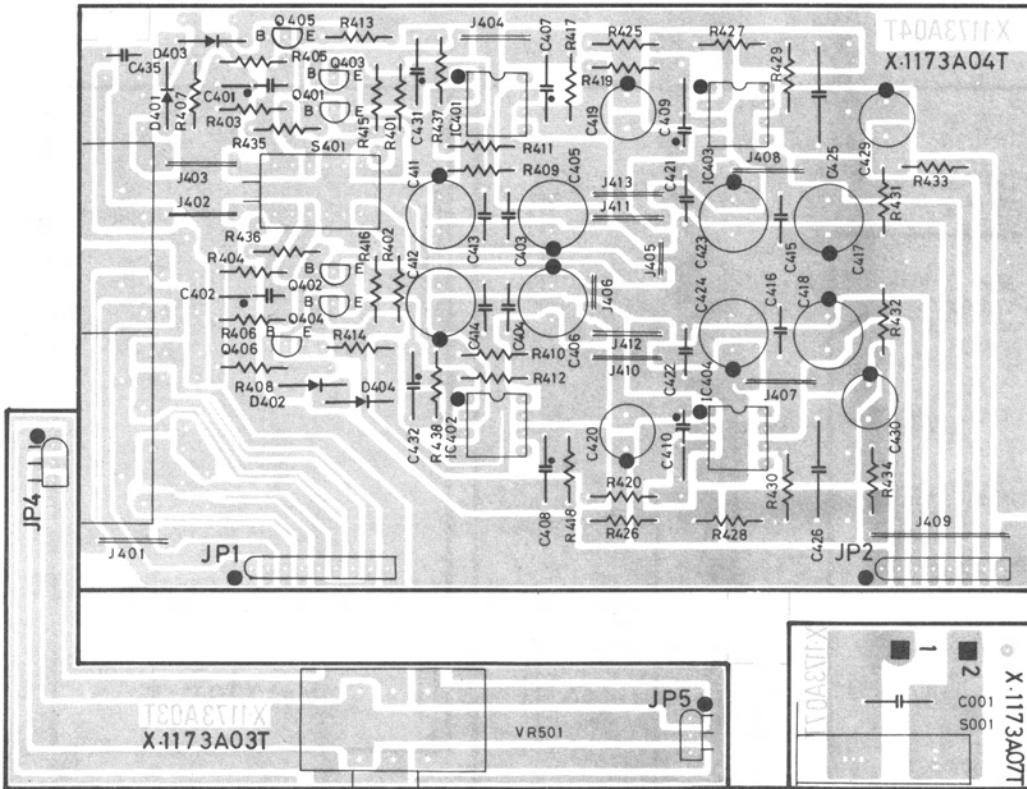
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	SP30000574	OUTLET COVER PR4-21A00T
	AH20000874	HEAT SINKER BOARD PR4-06A00T
	AH20000898	HEAT SINKER BOARD C-4401A02
	SB00000649	ALUMINUM SHIELD FIBER C-4430A00T
	SP10006508	P.C.B SUPPORT (R) PR2-18A01T
	SP10006510	P.C.B SUPPORT (L) PR2-18A02T
	AA20000646	FRONT PANEL PR2-01Q00T TFP-630
	BU00001145	POWER RING 4TQF-13 14x14
	BU00001212	PUSH BUTTON RING PR4-09100T
	BU00001224	KNOB RING PR4-12A00T 46F
	KB20002681	POWER BUTTON 4TQF-15 14x14
	KB20002759	PUSH BUTTON PR4-13A00T 50x20
	OM10001284	ORNAMENTAL SIDE BOARD 4TR-2797#3
	OM70000065	PUSH BUTTON CONNECTOR 4TTL-15
	SN00000179	BUTTON SPRING 4TR-1988#2 10F
	AB00000560	BOTTOM BOARD PR3-05A00T
	AU00001225	TOP COVER POLY 3TUV-6#6
	KB10001722	KNOB 4TQF-18 13F
	KB10001734	KNOB 4TQF-19 24F
	KB10001771	KNOB PR4-10A00T
	KB10001783	KNOB 43F PR4-10A00T (WF)
	FE00000067	FELT 4TR-1083B#1 22F
	FE00000092	FELT 4TR-1083B#2 30F
	FE00000432	FELT 4TR-1083B#5 58F
	SR00000882	UPPER COVER SPACER 4TR-2418
	MN10002847	OWNER'S MANUAL RA-980BX
	PL00001051	STYROL SIDE MOULDING 2TR-2800 TZ-183
	NP00001949	NAME STICKER ROTEL-120V 4TR-2828A#1 TNP-382
	NP00001962	NAME STICKER ROTEL-240V 4TR-2828A#3 TNP-384
	NP00001974	NAME STICKER ROTEL-120V-C 4TR-2828A#4 TNP-385
	NP00001998	NAME STICKER ROTEL-230V 4TR-2828A#5 TNP-389
	NP00002012	NAME STICKER ROTEL-100V 4TR-2828A#6 TNP-391
	NP00001950	NAME STICKER ROTEL-220V 4TR-2828A#2 TNP-383

# Wiring Diagram

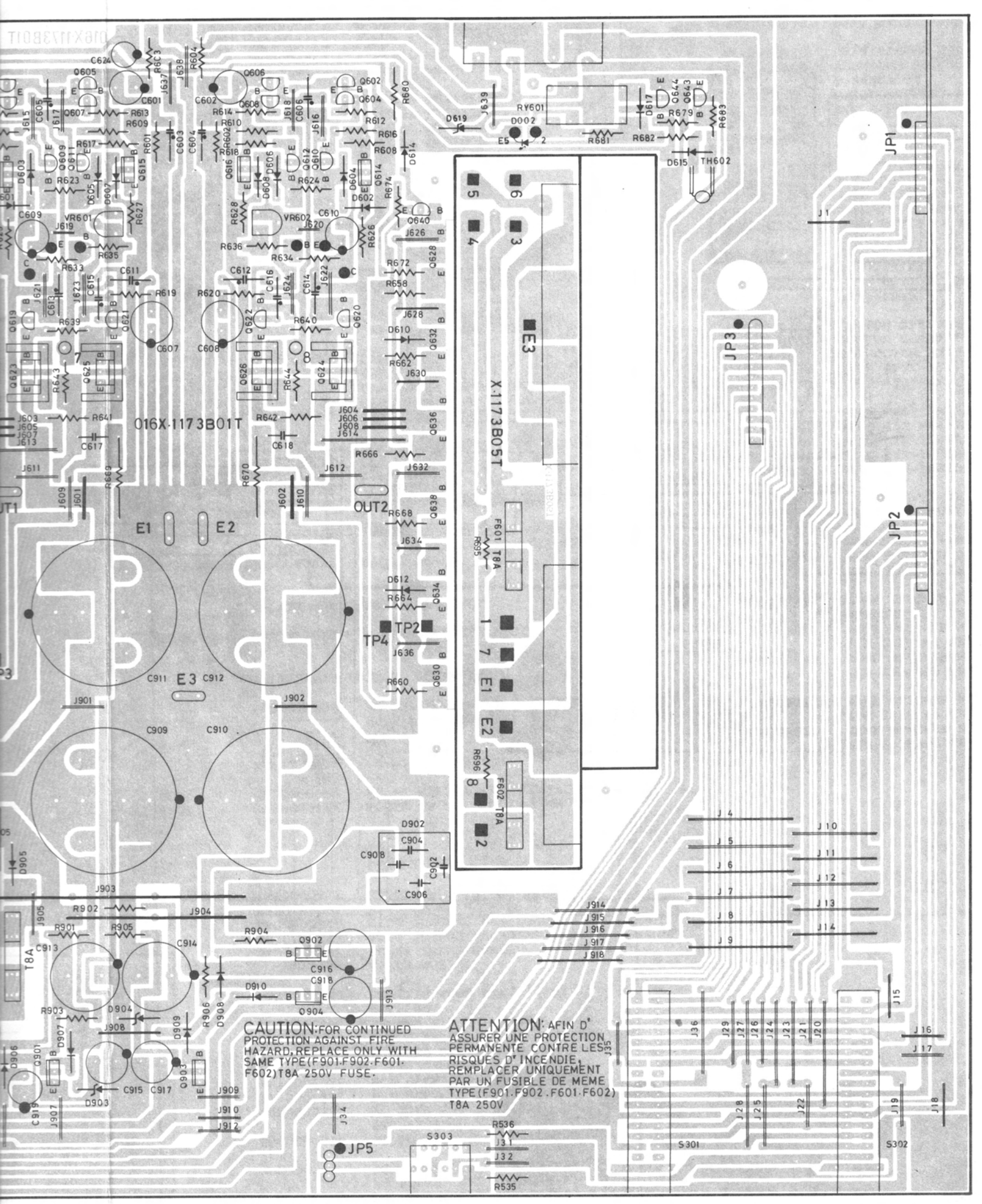




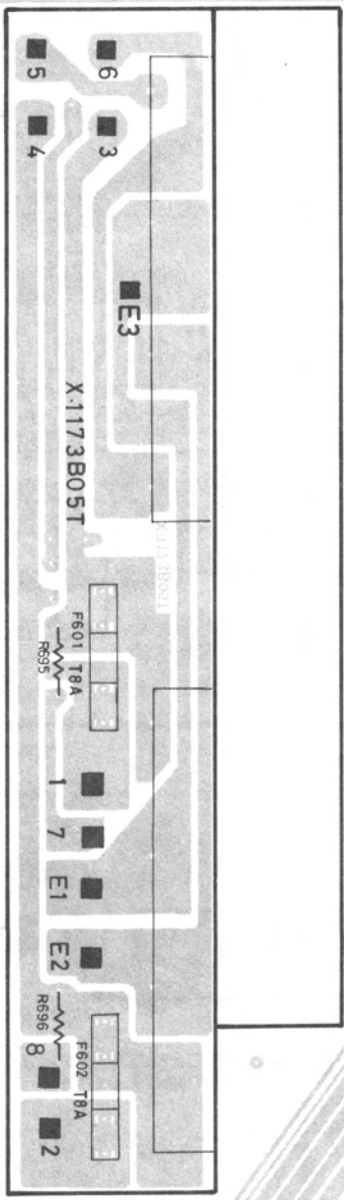
# Printed Circuit Boards





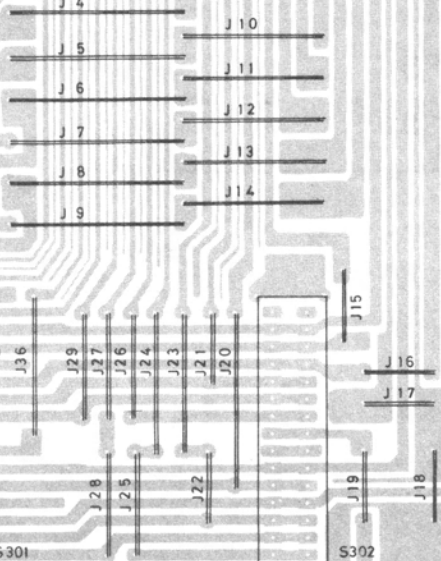


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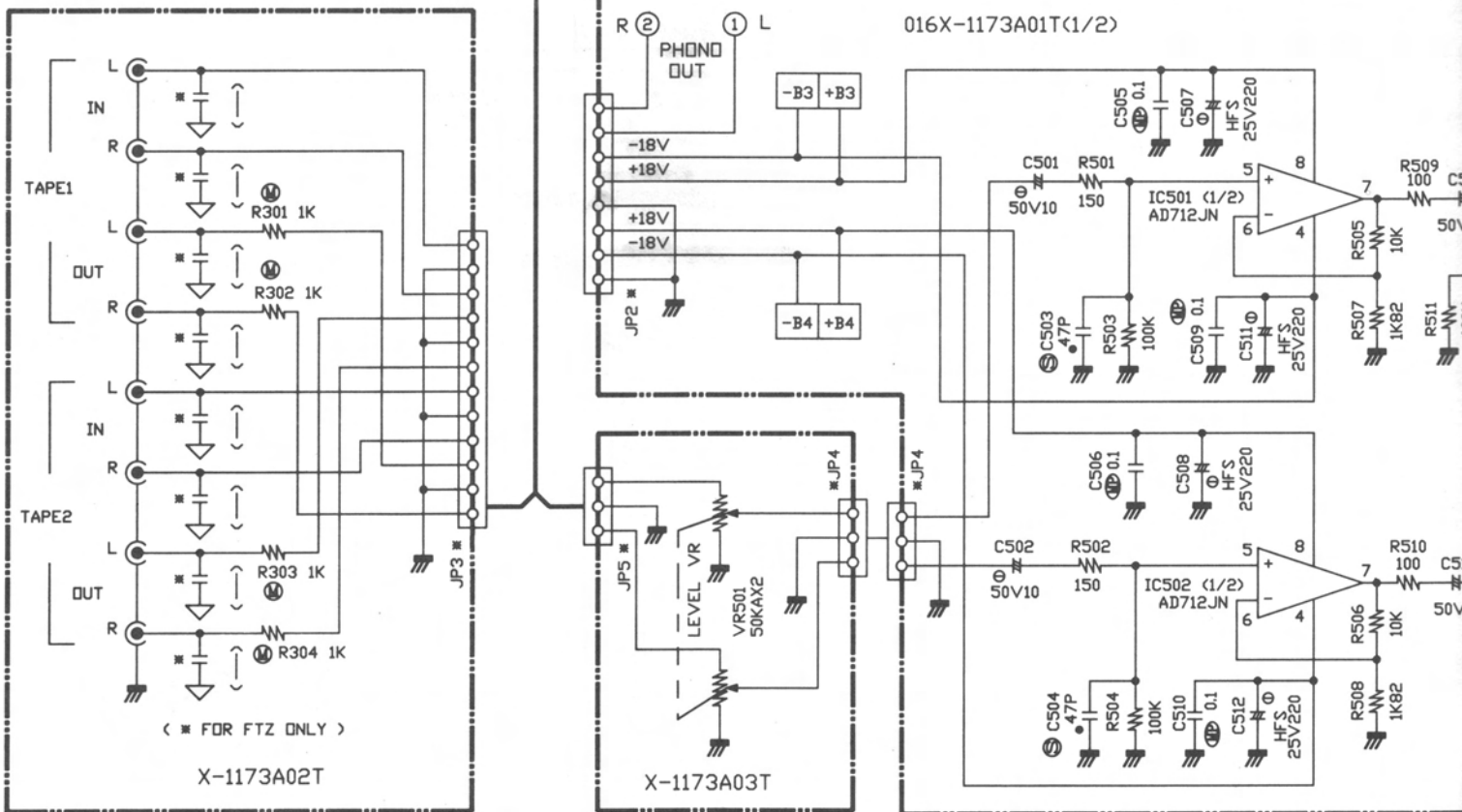
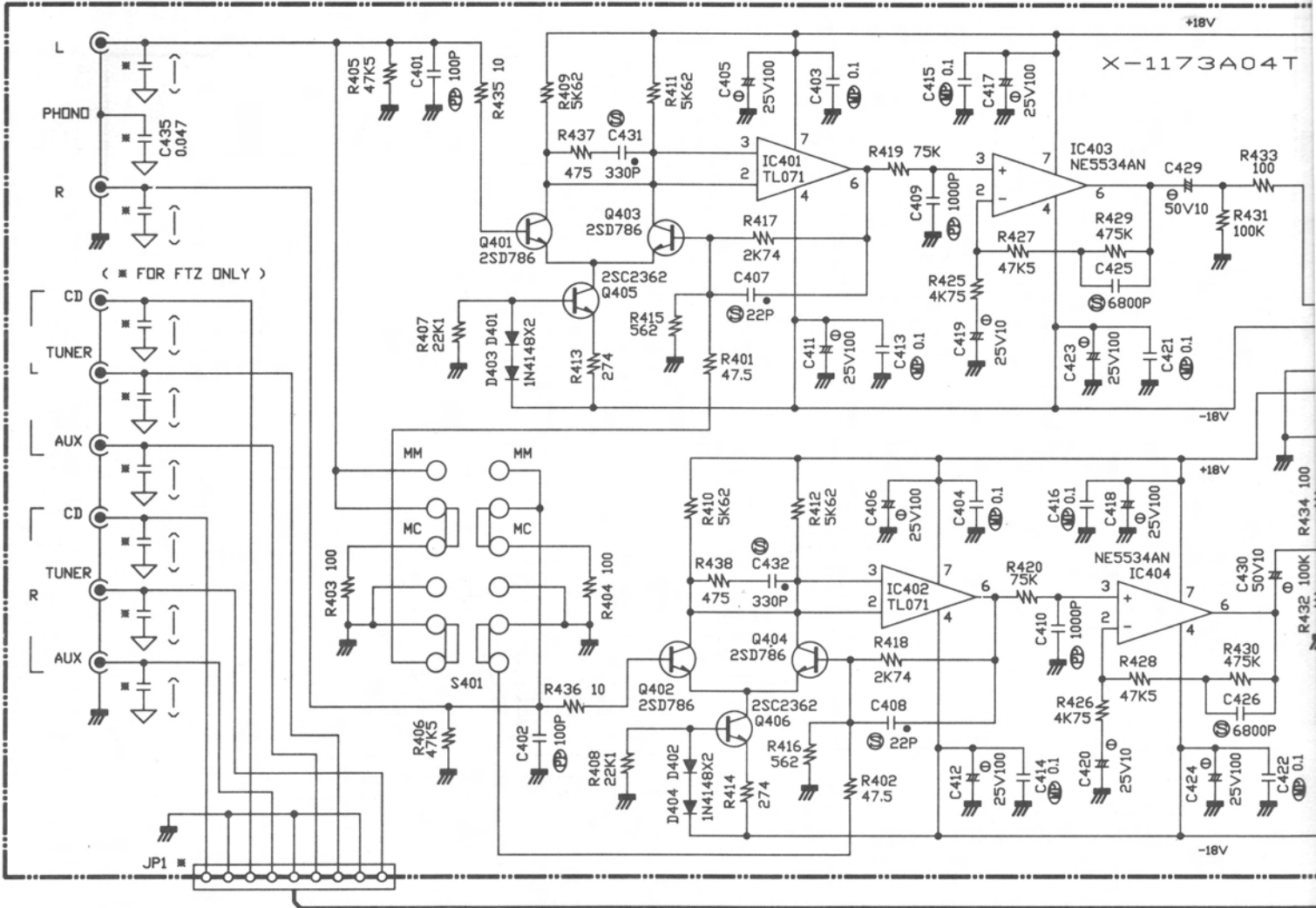
**CAUTION:** FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE (F901-F902-F601-F602) T8A 250V FUSE.

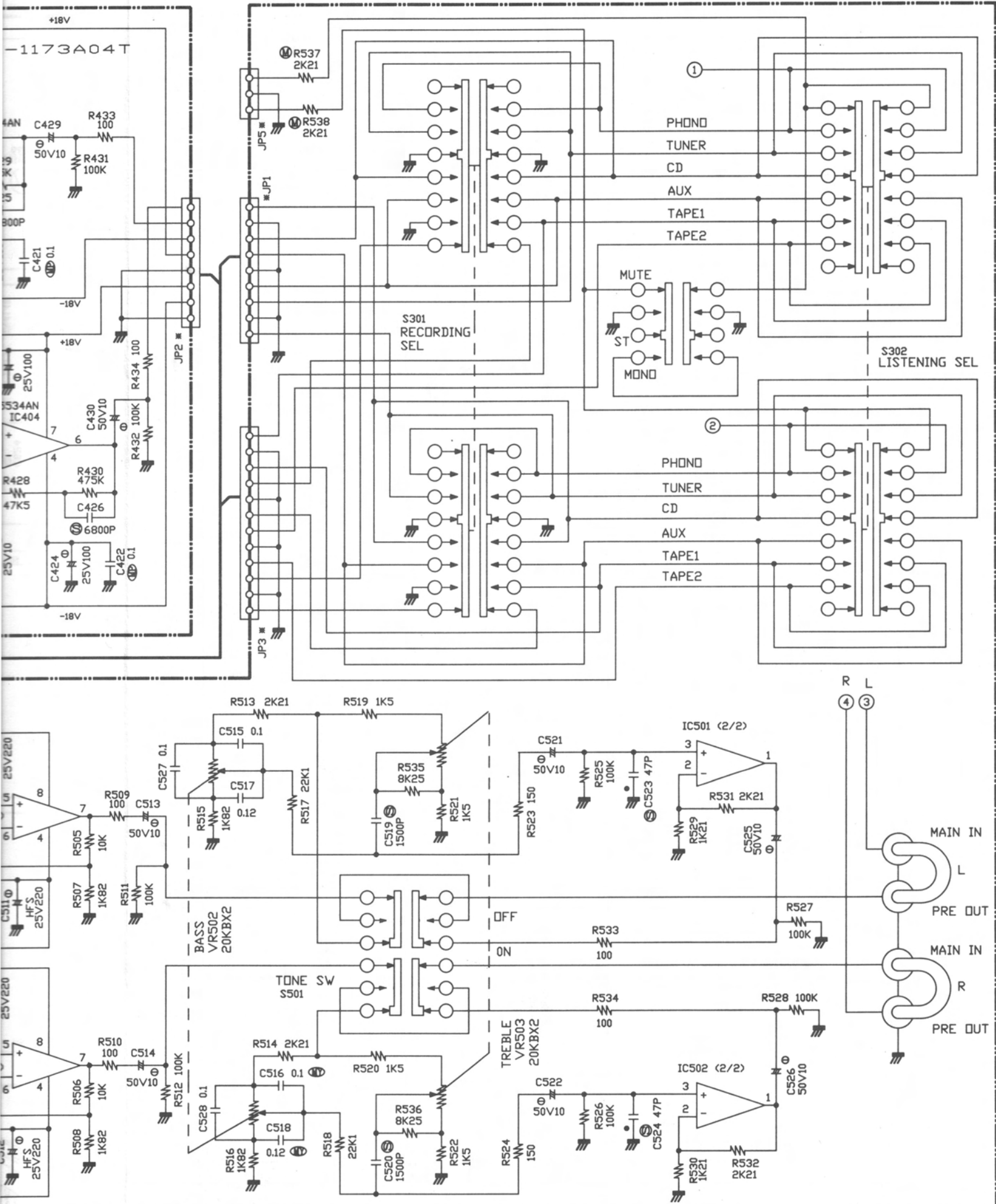
**ATTENTION:** AFIN D' ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D' INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE (F901-F902-F601-F602) T8A 250V



# Schematic Diagram

SCHEMATIC DIAGRAM MODEL RA-980BX (NOTE: PARTS ARE NOT SHOWN IN THIS DIAGRAM)

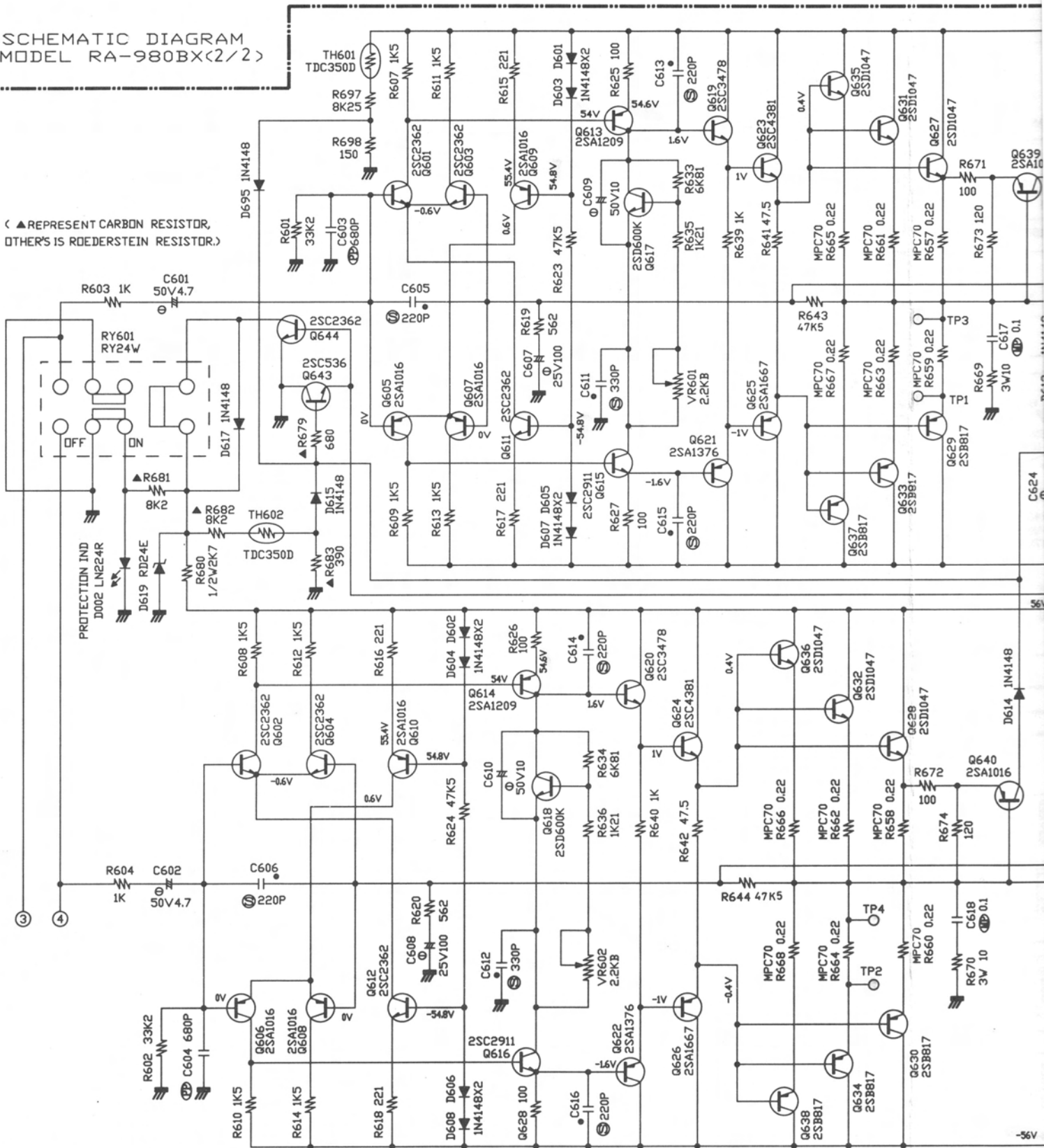




# Schematic Diagram

SCHEMATIC DIAGRAM  
MODEL RA-980BX(2/2)

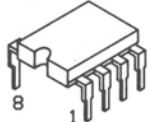
(▲ REPRESENT CARBON RESISTOR,  
OTHERS IS ROEDERSTEIN RESISTOR.)



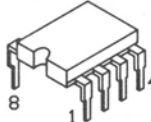
016X-1173B01T(2/2)

## INSTRUCTION FOR SERVICING PERSONNEL:

1. USE ONLY REPLACEMENT PARTS THAT HAVE THE CRITICAL CHARACTERISTICS RECOMMENDED BY MANUFACTURER.
2. MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE AC SUPPLY CIRCUIT BEFORE RETURNING THE UNIT TO THE CUSTOMER.



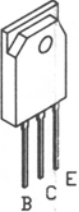
- NE5532AN
- TL071CP



- AD712JN



- 2SA1209
- 2SB631K
- 2SD600K
- 2SC2911



- 2SD1047
- 2SB817



- 2SD1047
- 2SB817

