

ROTEL *hiFi*

RA-970BX

Stereo Integrated Amplifier

Technical Manual

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THE ROTEL CO., LTD.

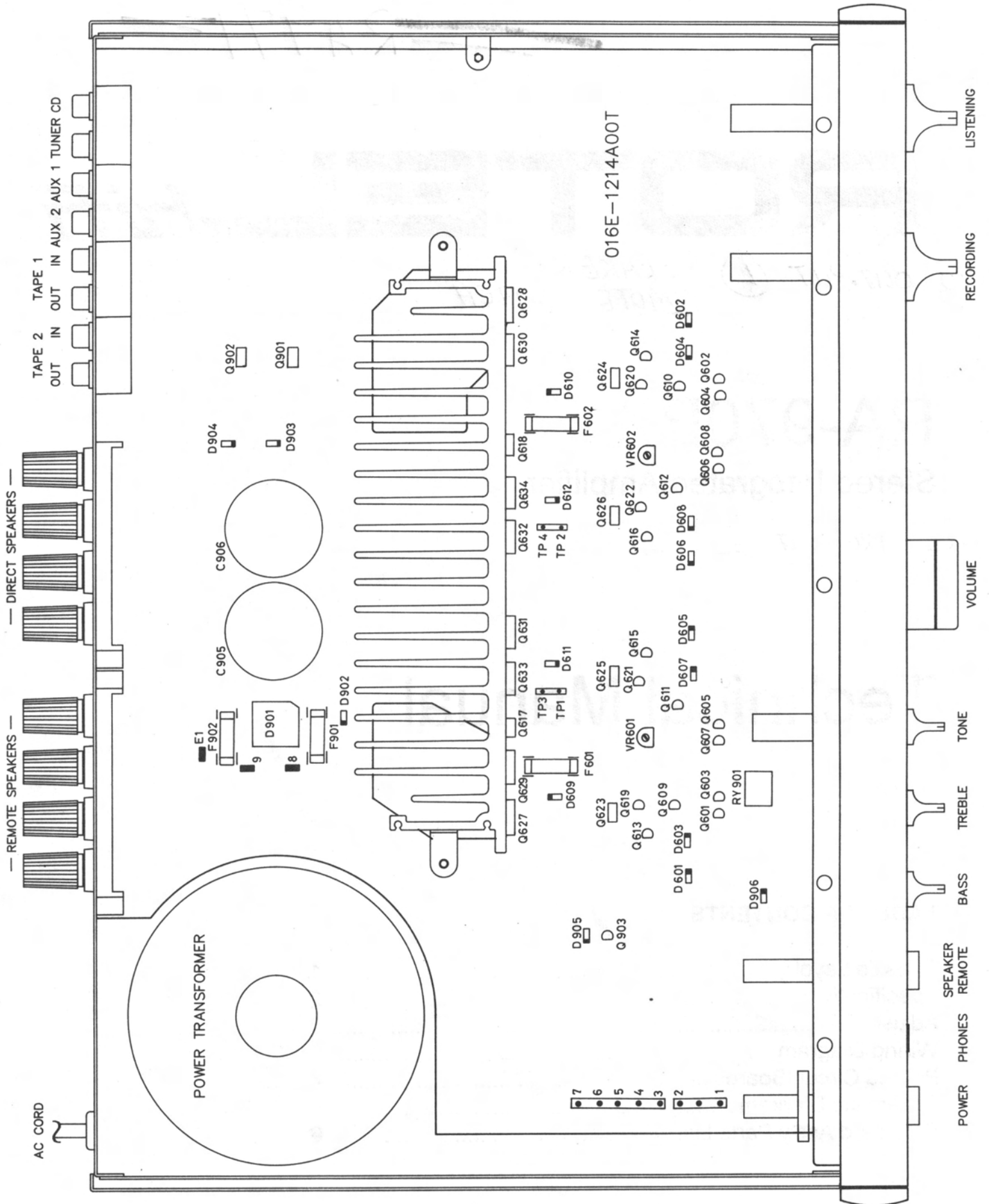
1-36-8, OHOKAYAMA, MEGURO-KU, TOKYO 152, JAPAN

ROTEL ELECTRONICS CO., LTD.

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

MN20002176

Chassis Layout



SPECIFICATIONS

RA 970BX STEREO INTEGRATED AMPLIFIER

Rated power, RMS, FTC* specs (Both channels driven, 20-20,000 Hz, 0.03% THD)	60 watts (8 ohms) 90 watts (4 ohms)
DIN Output (1 kHz, 1% THD)	80 watts (8 ohms) 100 watts (4 ohms)
Total Harmonic Distortion (rated power)	0.03%
Intermodulation Distortion (rated power)	0.03%
Damping factor	150 (20-20,000 Hz, 8 ohms)
Input sensitivity / Impedance (all inputs)	160 mV / 8 kohms
Signal to Noise ratio (all inputs)	> 95 dB (IHF, A network)
Frequency response	10-100,000 Hz +1 dB, -3 dB
Tone control response:	
Bass	± 6 dB (100 Hz)
Treble	± 6 dB (10 kHz)
Input overload level (all inputs)	5 volts
Power requirement	115 volts AC 50/60 Hz 230 volts AC 50/60 Hz
Power consumption	300 watts
Weight	6.2 kgs/ 13.6 lbs
Dimensions	440 (w) x 92 (h) x 347 (d) mm 17-3/8" (w) x 3-5/8" (h) x 13-11/16" (d)

All specifications are accurate at the time of printing. Rotel reserves the right to improvement 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).

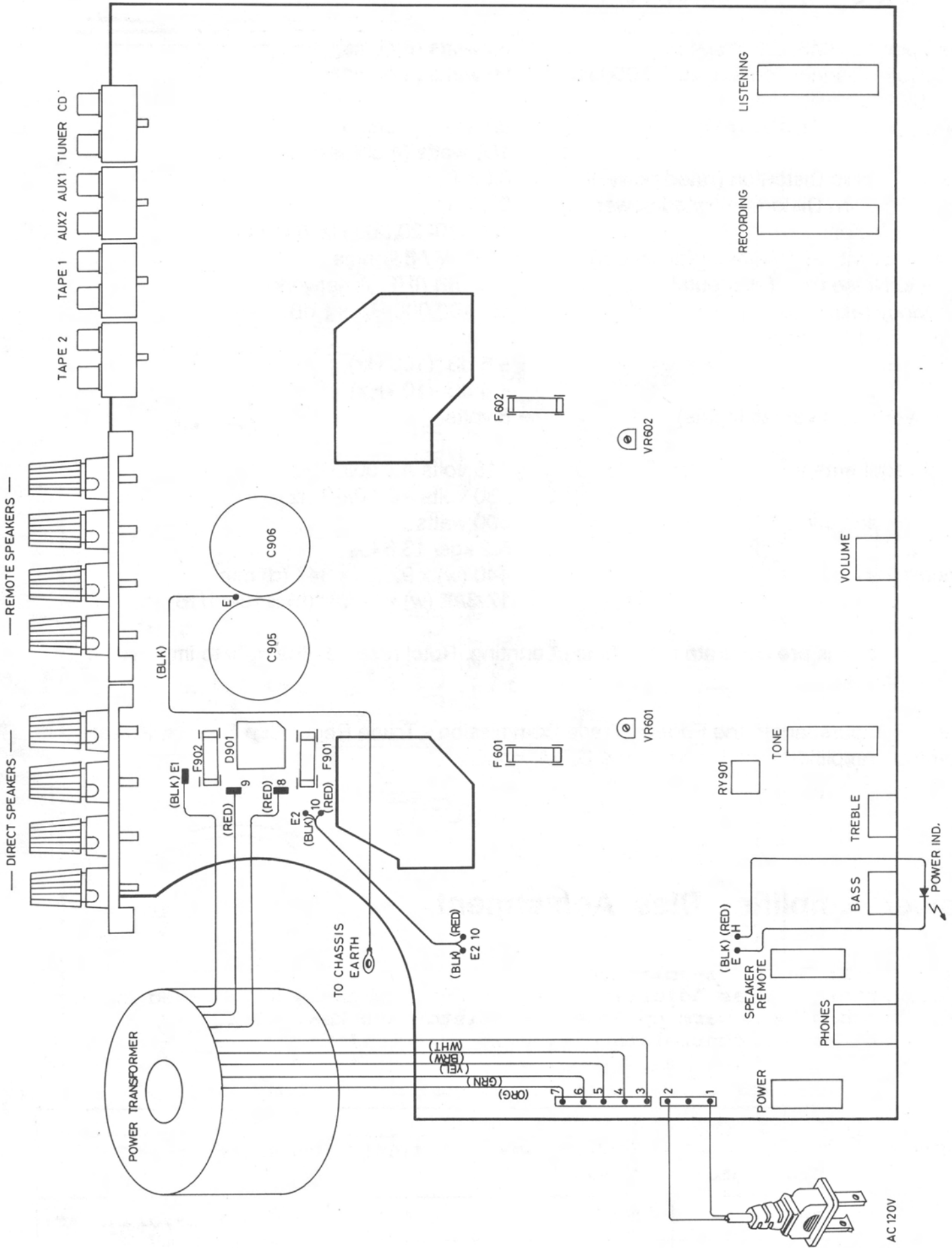
Power Amplifier Bias Adjustment

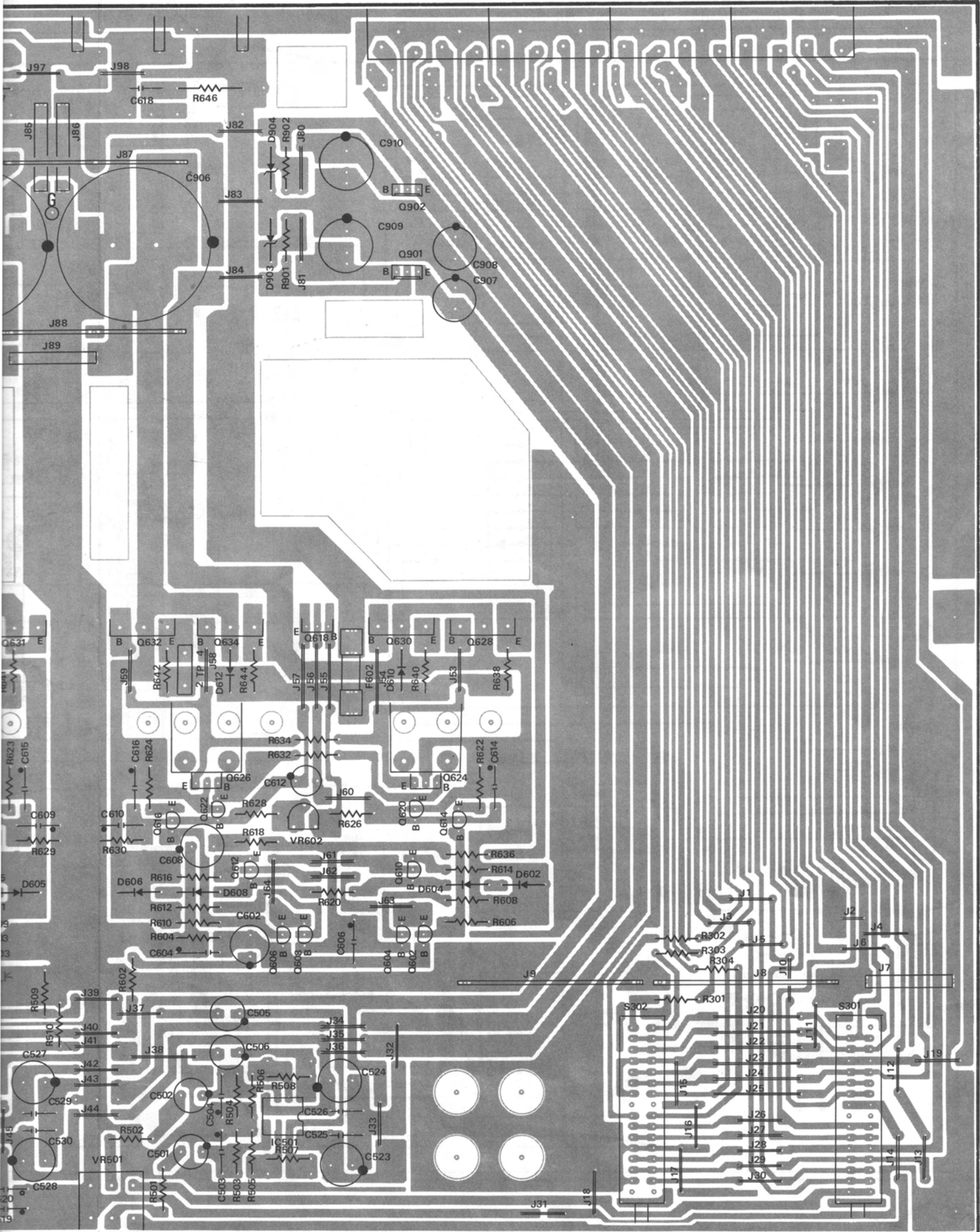
Instruments: DC milli-voltmeter

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.

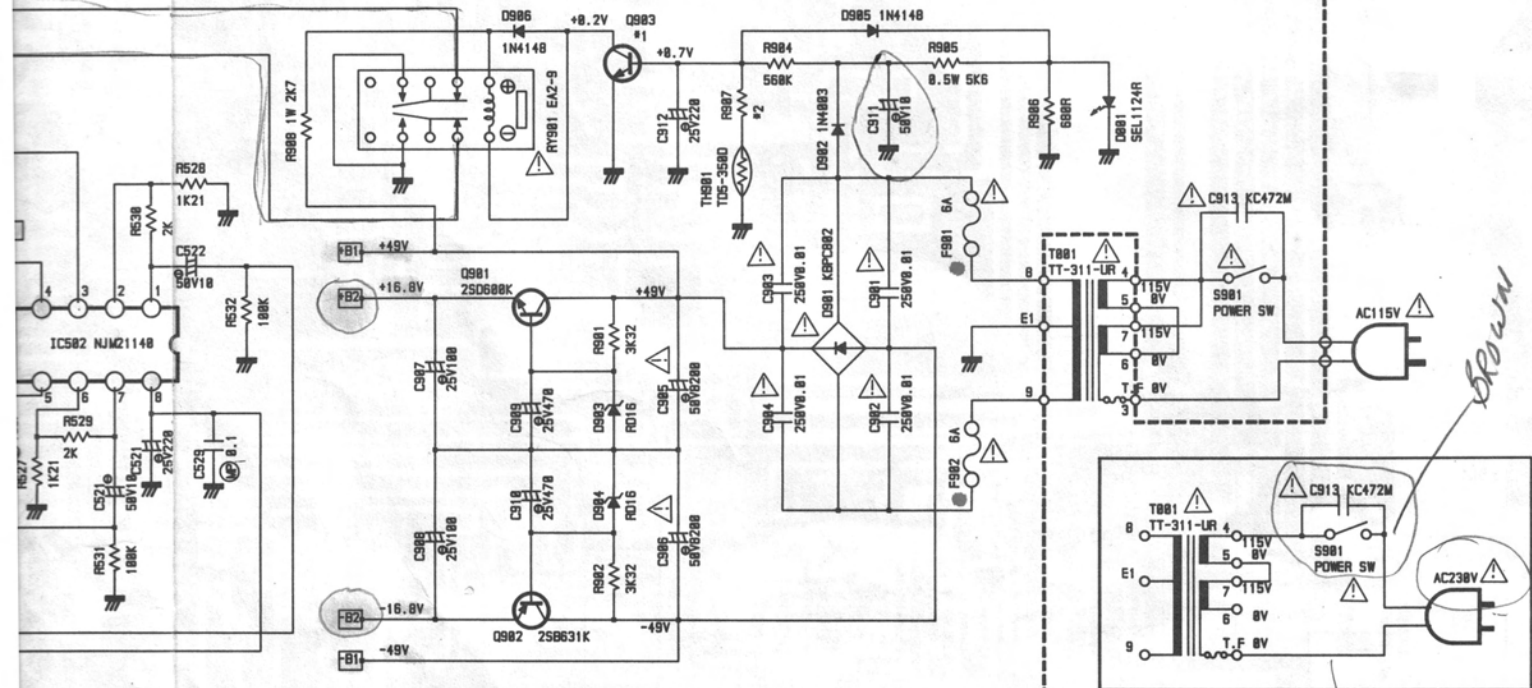
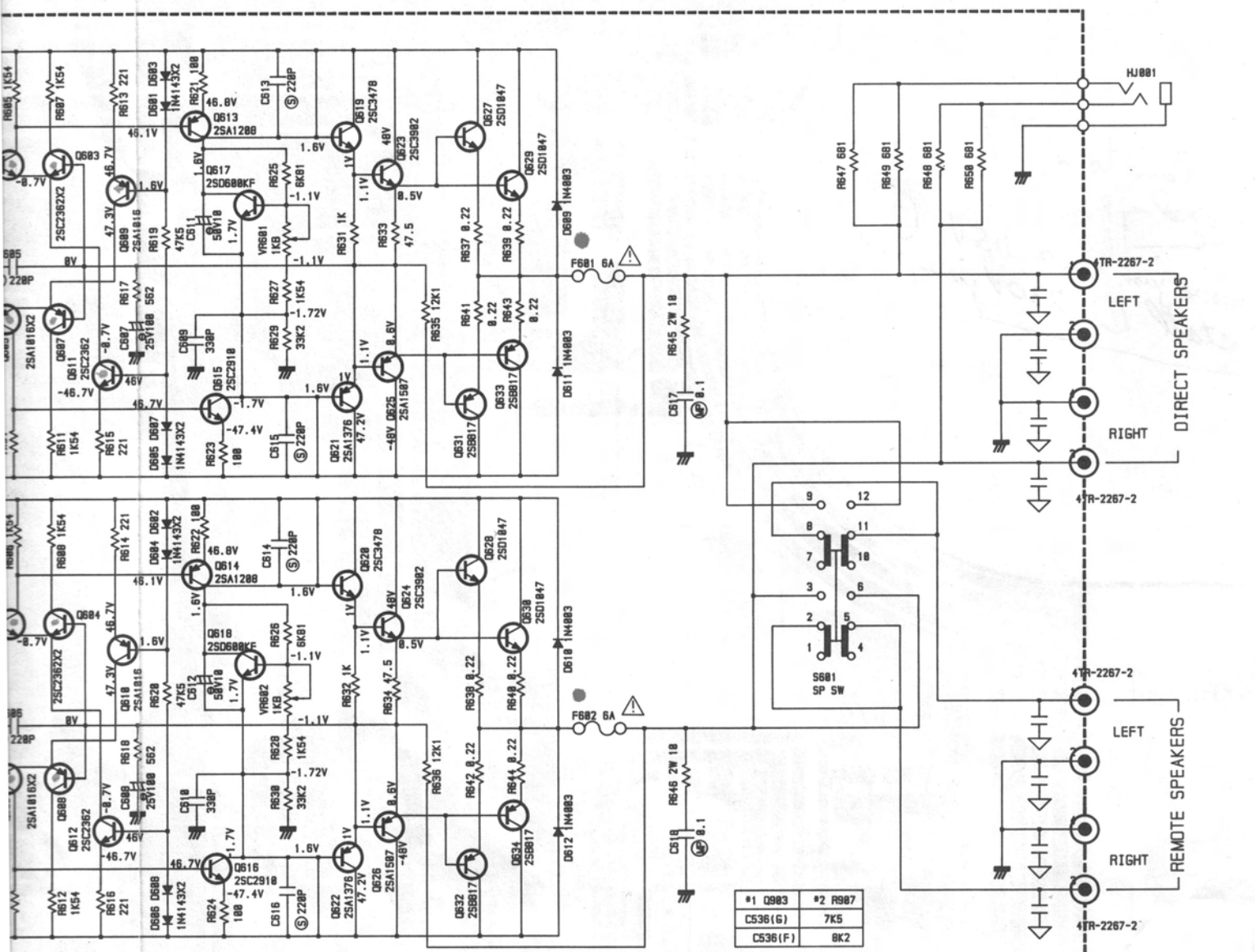
Step	Coupling		Adjust	Adjust for
	Plus Lead	Minus Lead		
1	TP1	TP3	VR601	DC milli-voltmeter reads 8 mV
2	TP2	TP4	VR602	

Wiring Diagram





117 - Dns MIT



blown

Parts List

NOTE: THE COMPONENTS IDENTIFIED BY Δ MARK ARE FOR SAFFTY. REPLACE ONLY WITH ORIGINAL PARTS. DO NOT SUBSTITUTE.

SYMBOL	PARTS NO.	DESCRIPTION
	016E-1214A00T	PCB ASSEMBLY
R301-304	RM81001612	R, METAL MK2001KFECZ.
S301, 302	SH30000511	FUNCTION SW 4TR-2781
R501, 502	RM81540614	R, METAL MK2154RFECZ.
R503, 504	RM81000619	R, METAL MK2100KFECZ.
R505, 506	RM86810619	R, METAL MK2681RFECZ.
R507, 508	RM83921613	R, METAL MK23K92FECZ.
R509, 510	RM81000619	R, METAL MK2100KFECZ.
R511, 512	RM82211614	R, METAL MK22K21FECZ.
R513, 514	RM82001619	R, METAL MK2002KFECZ.
R515, 516	RM82212618	R, METAL MK222K1FECZ.
R517-520	RM81541618	R, METAL MK21K54FECZ.
R521, 522	RM81502613	R, METAL MK2015KFECZ.
R523, 524	RM81003610	R, METAL MK2100KFECZ.
R525, 526	RM81540614	R, METAL MK2154RFECZ.
R527, 528	RM81211618	R, METAL MK21K21FECZ.
R529, 530	RM82001619	R, METAL MK2002KFECZ.
R531, 532	RM81000619	R, METAL MK2100KFECZ.
R533, 534	RM84750619	R, METAL MK2475RFECZ.
C501, 502	CE51006477	CAP, ELEC. 50BGF10M
C503, 504	CS34712311	CAP, POLYSTYRENE 160V 47P
C505, 506	CE51006477	CAP, ELEC. 50BGF10M
C507-512	CP61008321	CAP, M.P. 100V 0.1uF
C513, 514	CM04710428	CAP, MYLAR 472J 50V
C515, 516	CM01510426	CAP, MYLAR 152J 50V
C517, 518	CE51006477	CAP, ELEC. 50BGF10M
C519, 520	CS31011310	CAP, POLYSTYRENE 160V 100P
C521, 522	CE51006477	CAP, ELEC. 50BGF10M
C523, 524	CE72205645	CAP, ELEC. 25V 220uF HFS
C525, 526	CP61008321	CAP, M.P. 100V 0.1uF
C527, 528	CE72205645	CAP, ELEC. 25V 220uF HFS
C529, 530	CP61008321	CAP, M.P. 100V 0.1uF
IC501	IC00003628	IC AD827JN
IC502	IC00003203	IC NJM2114D
S501	SH30000500	FUNCTION SW 4TR-2780
VR501	RV10001577	R, VARIABLE C-4170A17 50Kax2
VR502, 503	RV10001541	R, VARIABLE 4TR-2774 20KBx2
R601, 602	RM85620616	R, METAL MK2562RFECZ.
R603, 604	RM84752616	R, METAL MK247K5FECZ.
R605-612	RM81541618	R, METAL MK21K54FECZ.
R613, 614	RM82210610	R, METAL MK2221RFECZ.
R615, 616	RM82210610	R, METAL MK2221RFECZ.
R617, 618	RM85620616	R, METAL MK2562RFECZ.
R619, 620	RM84752616	R, METAL MK247K5FECZ.
R621-624	RM81000619	R, METAL MK2100RFECZ.
R625, 626	RM86811612	R, METAL MK26K81FECZ.
R627, 628	RM81541618	R, METAL MK21K54FECZ.
R629, 630	RM83322614	R, METAL MK233K2FECZ.
R631, 632	RM81001612	R, METAL MK2001KFECZ.
R633, 634	RM84759611	R, METAL MK247R5FECZ.
R635, 636	RM81212611	R, METAL MK212K1FECZ.
R637-644	RS20228230	R, SQUARE TYPE MPC70-0.22F
R645, 646	RM91009220	R, METAL OXIDE FILM 2W 10
R647-650	RM86810619	R, METAL MK2681RFECZ.
C601, 602	CE54707478	CAP, ELEC. 50BGF4R7M
C603, 604	CS33311310	CAP, POLYSTYRENE 160V 330P
C605, 606	CS32211306	CAP, POLYSTYRENE 160V 220P
C607, 608	CE71005259	CAP, ELEC. 25V 100uF
C609, 610	CS33311310	CAP, POLYSTYRENE 160V 330P
C611, 612	CE51006477	CAP, ELEC. 50BGF10M
C613-616	CS32211306	CAP, POLYSTYRENE 160V 220P
C617, 618	CP61008321	CAP, M.P. 100V 0.1uF
Q601-604	TR30000212	TRANSISTOR 2SC2362(F)
Q605-610	TR10000023	TRANSISTOR 2SA1016(F)
Q611, 612	TR30000212	TRANSISTOR 2SC2362(F)
Q613, 614	TR10000242	TRANSISTOR 2SA1208-RST
Q615, 616	TR30000479	TRANSISTOR 2SC2910S/T
Q619, 620	TR30000558	TRANSISTOR 2SC3478(L, K, U)

SYMBOL	PARTS NO.	DESCRIPTION
Q621, 622	TR10000308	TRANSISTOR 2SA1376(L, K, U)
Q623-626	TR10000345	POWER TRANSISTOR 2SA1507 Δ
Q627-630	TR40000045	TRANSISTOR 2SD1047D/E Δ
Q631-634	TR20000040	POWER TRANSISTOR 2SB817 Δ
VR601, 602	RV40000060	R, SEMI-FIXED VM6CKPV-1S-B 1KB
F601, 602	FU25000041	FUSE 125V 6A UL (U, C, A, J) Δ
	FU23000219	FUSE 250V T6.3A S Δ
S601	SH11000434	1 KEY PUSH SW 4TR-2899
D601-608	DD80000021	DIODE IN4148-86
D609-612	DD23000219	DIODE IN4003-TB
R901, 902	RM83321610	R, METAL MK23K32FECZ.
R904	RD55603829	R, CARBON 560K 1/4W J
R905	RM95601928	R, METAL OXIDE FILM 1/2W 5.6K
R906	RD56800825	R, CARBON 680 1/4W J
R907	RD57501829	R, CARBON 7K5 1/4W J
R908	RM92701122	R, METAL 1/2W 2K7
C901-904	CC01009256	CAP, CERAMIC 250V 0.01uF Δ
C905, 906	CE61003503	CAP, ELEC. 50V 1000uF Δ
C907, 908	CE71005259	CAP, ELEC. 25V 100uF HFS
C909, 910	CE74705645	CAP, ELEC. 25V 470uF HFS
C911	CE01006500	CAP, ELEC. 50V 10uF
C912	CE02205255	CAP, ELEC. 25V 220uF
C913	CK00000035	SPARK KILLER DE7150F472M Δ
D901	DD10000147	DIODE KBPC802 Δ
D902	DD80000010	DIODE IN4003-TB
D903, 904	DD20000077	DIODE RD16E
D905, 906	DD80000021	DIODE IN4148-86
Q901	TR40000069	TRANSISTOR 2SD600KE/KF
Q902	TR10000047	TRANSISTOR 2SB631KE/KF
Q903	TR30000327	TRANSISTOR 2SC536G-NP
TH901	DD60000260	THERMISTOR TD5C350D
F901, 902	FU25000041	FUSE 125V 6A (U, C, J, A) Δ
	FU23000219	FUSE 250V T6.3A S Δ
S901	SH40000155	POWER SW C-4176A01 Δ
D001	DD40000095	LED SEL1124R
RY901	LY00000370	RELAY EA2-9 Δ
	OTHERS	
	AB00000547	BOTTOM BOARD 1TQF-5
	AF20000258	FRONT CHASSIS 2TQF-2
	AR20000759	PRINTED REAR CHASSIS TRP-650
	AS01000270	SIDE CHASSIS 3TQF-4C
	PT28016209	POWER TRANSFORMER TT-280-UR Δ
	BU00001236	INSULATION BUSH 4TR-2841
	FT00000217	PLASTIC FOOT CAP 4TR-2807
	SB00000613	P.V.C SHIELD PLATE (B)4TR-2825
	SB00001137	P.V.C SHIELD PLATE 4TR-3079
	SP10006892	P.T SUPPORT 3TR-3023
	SP10006909	P.T SUPPORT 4TR-3001A#2
	SC00000027	AC CORD STOPPER SR-4N-4 Δ
	NP00001949	NAME STICKER 4TR-2828A#1 TNP-382 AC120V
	NP00001962	NAME STICKER 4TR-2828A#3 TNP-384 AC240V
	NP00001998	NAME STICKER 4TR-2828A#5 TNP-389 AC230V
	NP00002012	NAME STICKER 4TR-2828A#6 TNP-391 AC100V
	NP00001950	NAME STICKER 4TR-2828A#2 TNP-383 AC220V
	CD00000218	AC CORD SPT-2 AWG#18 4TR-670#4 (U, C, J, A) Δ
	CD00000322	AC POWER CORD 4TR-2757(D) Δ
	CD00000048	AC POWER CORD 4TR-1037

Parts List

SYMBOL	PARTS NO.	DESCRIPTION
		(H, E, Y1, Y2, S1) Δ
	CD00000085	AC POWER CORD C-2504A(K1) Δ
	CD00000115	AC POWER CORD C-3763-T (G1) Δ
	AA20000786	FRONT PANEL 2TQF-1#7 TFP-715
	BU00001145	POWER RING W/LED 4TQF-13 14x14
	BU00001157	PUSH BUTTON RING 4TQF-14 5x10
	BU00001169	KNOB RING 4TQF-17 39F
	KB20002681	POWER BUTTON 4TQF-15 14x14
	KB20002693	PUSH BUTTON 4TQF-16 5x10
	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
	KB10001722	KNOB 4TQF-18 13F
	KB10001734	KNOB 4TQF-19 24F
	KB10001746	KNOB 4TQF-20 33F (WR)
	KB10001758	KNOB 4TQF-21 33F (WF)
	SR00000882	UPPER COVER SPACER 4TR-2418
	MN10003529	OWNER'S MANUAL RA-970BX
	PLO0001051	STYROL SIDE MOULDING 2TR-2800B TZ-183
	TN10004682	INSIDE CARTON 4TR-3080#2