

# **ROTEL***hifi*

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SIX CHANNEL POWER AMPLIFIER

# **RB-956AX**

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# **TECHNICAL MANUAL**

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**THE ROTEL CO., LTD.**

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

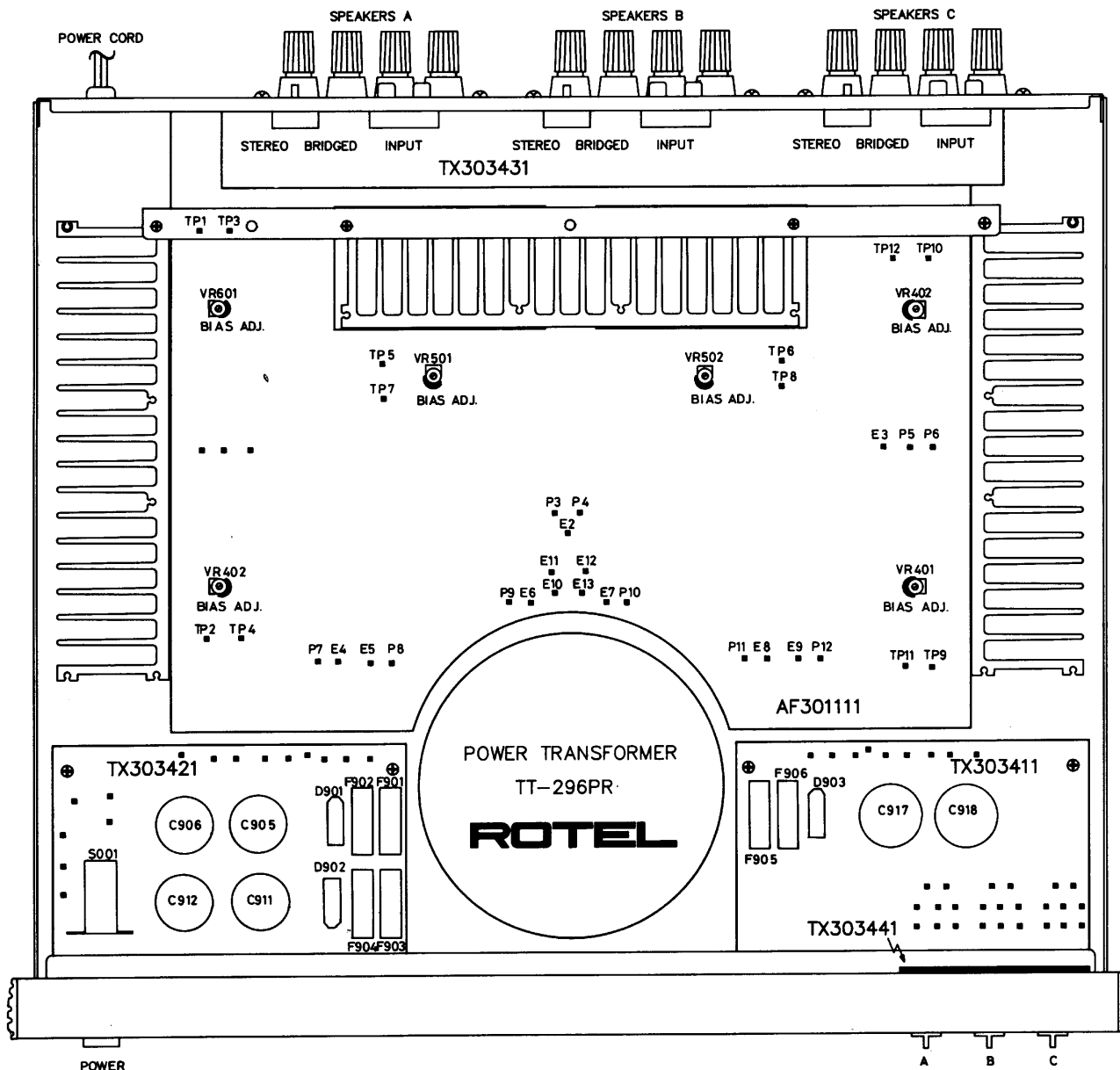
**ROTEL ELECTRONICS CO., LTD.**

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

MN20002097

DEC 20 1993

# Chassis Layout



# Specifications

Continuous Power Output .....	30 watts* per channel, min. RMS both channels driven into 8 ohms from 20 to 20,000 Hz with no more than 0.03% THD.
DIN Output .....	50 watts per channel (1kHz, 4 ohms, 1% THD)
Peak Current .....	20A (0.1 ohms, 10 $\mu$ sec, 1 pulse)
Power Output (BTL).....	90 watts (bridged) min. RMS driven into 8 ohms from 20 to 20,000Hz with no more than 0.03% THD.
Total Harmonic Distortion (THD).....	No more than 0.03% (continuous rated power output).
(20 to 20,000Hz)	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 mode); 4-16 ohms (stereo mode)
Damping Factor.....	180 (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 .....	10 to 80,000 Hz, +1 dB, -1.0 dB
Signal to Noise Ratio (IHF, A network).....	105 dB

## GENERAL

Power Requirement .....	120 V/60 Hz, 230-240 V/50 Hz (depending on destination)
Power Consumption.....	400 watts
Dimension (overall) .....	440 (W) x 92 (H) x 396 (D) mm
	7-3/8" x 3-5/8" x 15-5/8"
Weight (net).....	10.5 kg / 23.1 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.

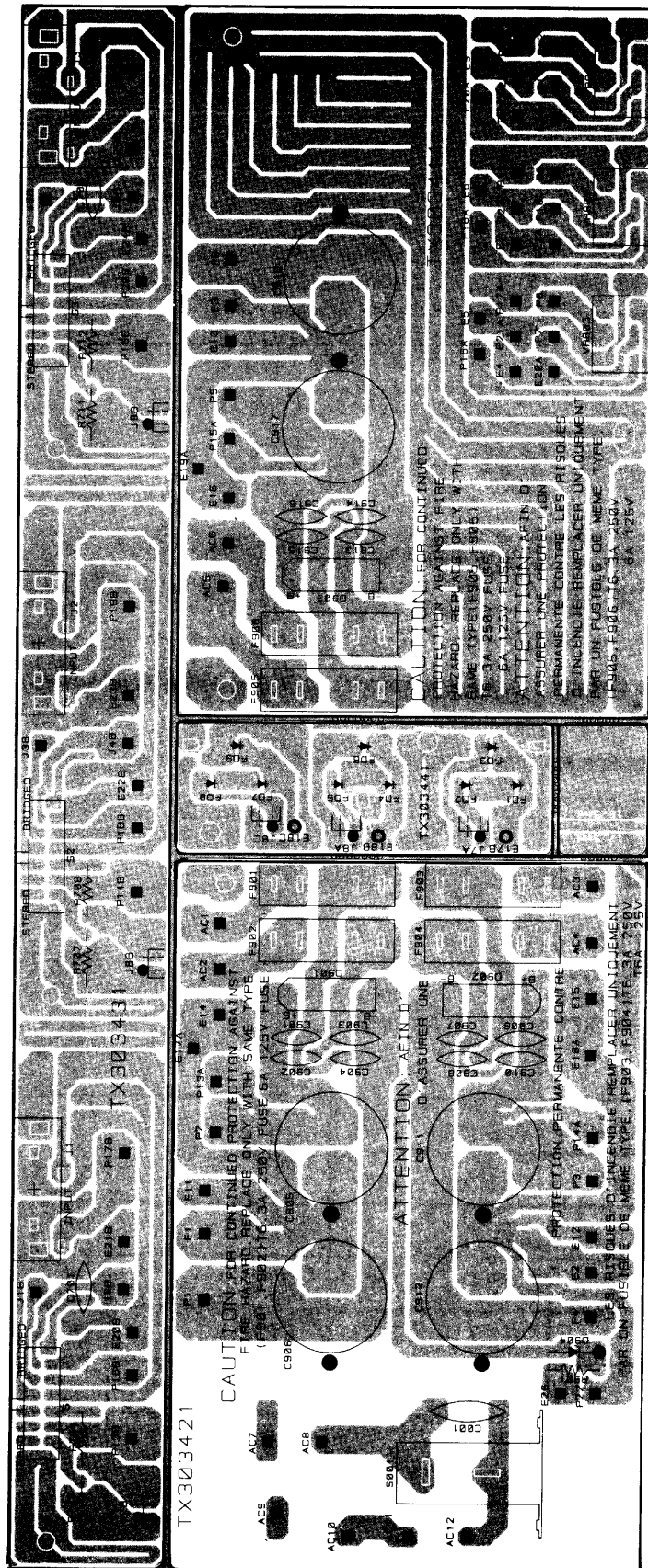
## Power Amplifier Bias Adjustment

Instruments:DC milli-voltmeter

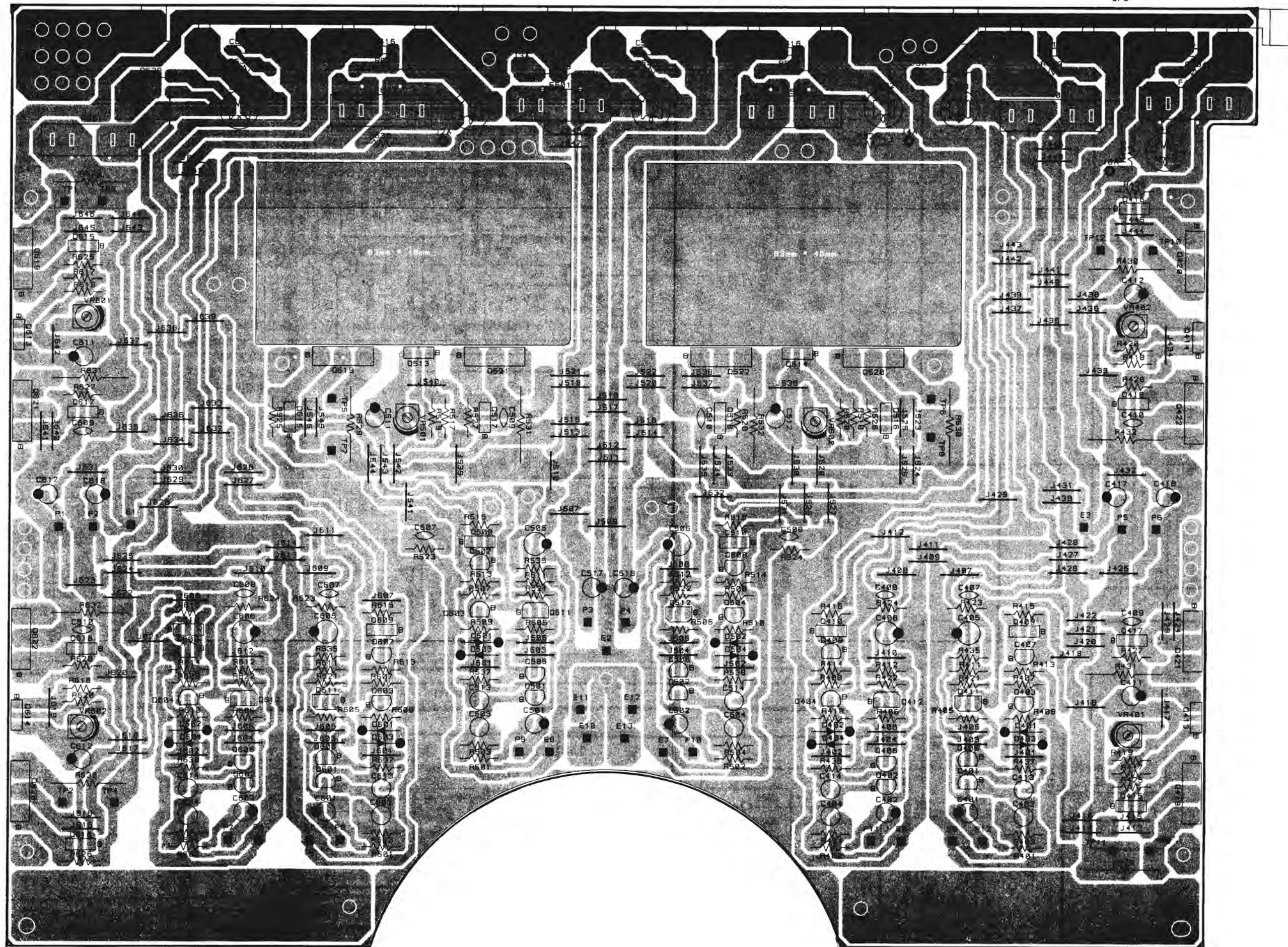
Notes:Prior to Bias Adjustment,run about 5 minutes with rated output (8 ohm) and warm up power Transistor and Heat Sink.  
Set Volume Control to minimum.

Step	Coupling		Adjust	Adjust for
	Plus Lead	Minus Lead		
1	TP1	TP3	VR601	DC milli-voltmeter reads 4 mV
2	TP2	TP4	VR602	
3	TP5	TP7	VR501	DC milli-voltmeter reads 4 mV
4	TP6	TP8	VR502	
5	TP9	TP11	VR401	DC milli-voltmeter reads 4 mV
6	TP10	TP12	VR402	

# Printed Circuit Boards

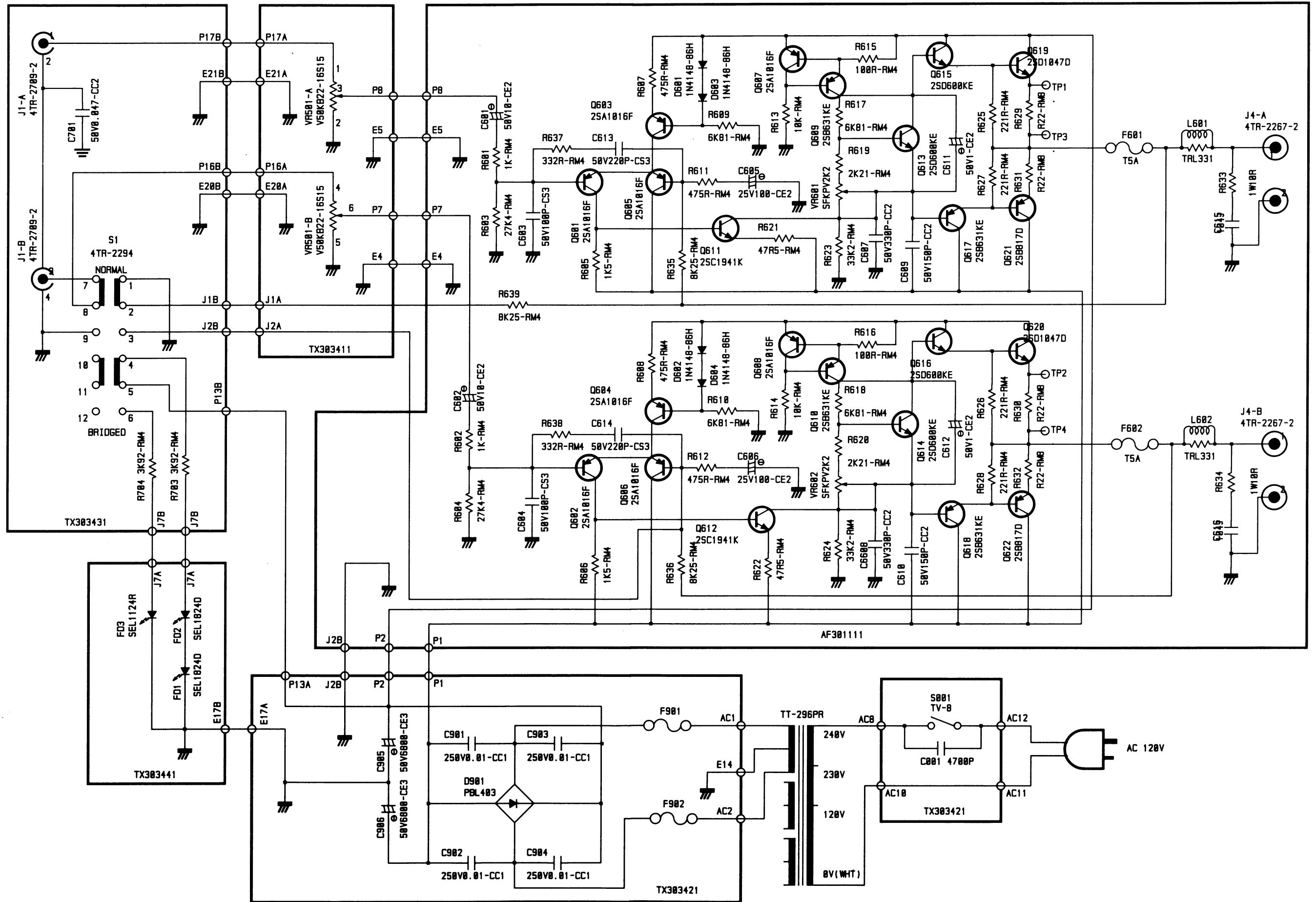




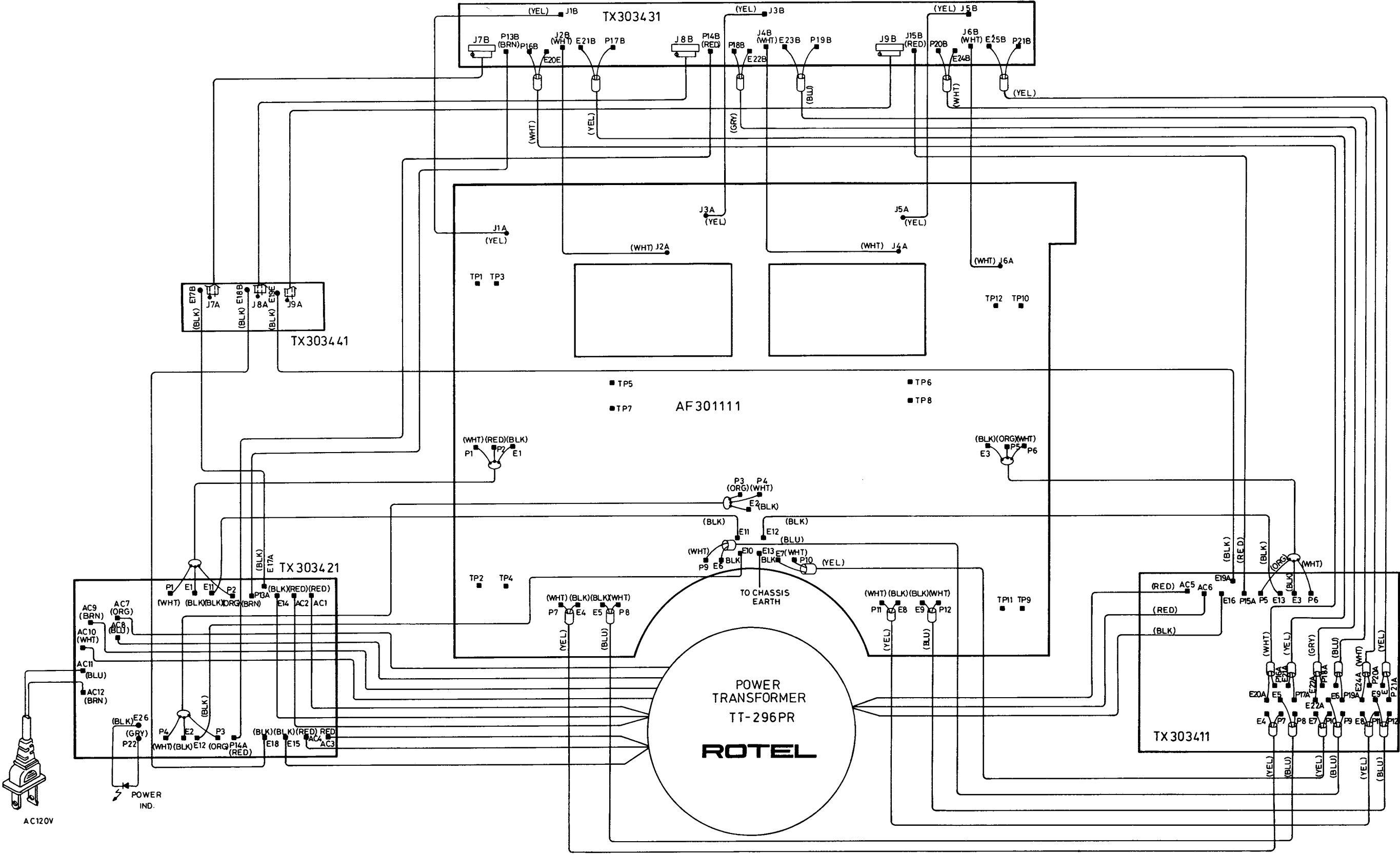


# Schematic Diagram

SCHEMATIC DIAGRAM RB-956AX ( 1/3 )



# Wiring Diagram





# Parts List

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

SYMBOL	PARTS NO.	DESCRIPTION
TX303411 PCB ASSEMBLY		
C913-916	CC01009256	CAP, CERAMIC 250V 0.01uF $\Delta$
C917, 918	CE56804451	CAP, ELEC. 50LPSS6800M $\Delta$
VR801-803	RV10001759	R, VARIABLE 4TR-2972 50KBx2
F905, 906	FU25000041	FUSE 125V 6A UL U, C, A, J $\Delta$
	FU23000219	FUSE 250V T6.3A S $\Delta$
TX303421 PCB ASSEMBLY		
C901-904	CC01009256	CAP, CERAMIC 250V 0.01uF $\Delta$
C905, 906	CE56804451	CAP, ELEC. 50LPSS6800M $\Delta$
C907, 910	CC01009256	CAP, CERAMIC 250V 0.01uF $\Delta$
C911, 912	CE56804451	CAP, ELEC. 50LPSS6800M $\Delta$
R901	RM53921817	R, METAL 3K92 1/4W F
D901, 902	DD10000020	DIODE PBL403 $\Delta$
D904	DD20000028	DIODE RD-20E
F901-904	FU25000041	FUSE 125V 6A UL(U, C, A, J) $\Delta$
	FU23000219	FUSE 250V T6.3A S $\Delta$
S001	SH40000167	POWER SW C-4176A01 TV-8 $\Delta$
C001	CK00000035	SPARK KILLER DE7150F472M $\Delta$
TX303431 PCB ASSEMBLY		
R701-706	RM53921817	R, METAL 3K92 1/4W F
C701, 702	CC05009457	CAP, CERAMIC 0.047uF 50V
S1-S3	SH20000319	SLIDE SW 4TR-2294
TX303441 PCB ASSEMBLY		
D1, D2	DD40001282	LED SEL824D
D3	DD40000095	LED LN224R
D4, D5	DD40001282	LED SEL824D
D6	DD40000095	LED LN224R
D7, D9	DD40001282	LED SEL824D
D9	DD40000095	LED LN224R
AF301111 PCB ASSEMBLY		
R401, 402	RM51001816	R, METAL 1/4W F
R403, 404	RM52741812	R, METAL 27K4 1/4W F
R405, 406	RM51501813	R, METAL 1K5 1/4W F
R407, 408	RM54750812	R, METAL 475 1/4W F
R409, 410	RM56811816	R, METAL 6K81 1/4W F
R411, 412	RM54750812	R, METAL 475 1/4W F
R413, 414	RM51002810	R, METAL 10K 1/4W F
R415, 416	RM51000812	R, METAL 100 1/4W F
R417, 418	RM56811816	R, METAL 6K81 1/4W F
R419, 420	RM52211818	R, METAL 2K21 1/4W F
R421, 422	RM54759815	R, METAL 47.5 1/4W F
R423, 424	RM53322818	R, METAL 33K2 1/4W F
R425-428	RM52210814	R, METAL 221 1/4W F
R429-432	RM90228220	R, METAL 2W 0.22 J
R433, 434	RM91009127	R, METAL 1W 10 J
R435, 436	RM58251814	R, METAL 8K25 1/4W F
R437, 438	RM53320810	R, METAL 332 1/4W F
R439	RM58251814	R, METAL 8K25 1/4W F
R440, 441	RM53322818	R, METAL 33K2 1/4W F
C401, 402	CE01006500	CAP, ELEC. 50V 10uF
C403, 404	CS41011422	CAP, STYROL 50V 100P
C405, 406	CE01005258	CAP, ELEC. 25V 100uF
C407, 408	CC33311434	CAP, CERAMIC 50V 330P
C409, 410	CC31511432	CAP, CERAMIC 50V 150P
C411, 412	CE01007504	CAP, ELEC. 50V 1uF
C413, 414	CS42211420	CAP, STYROL 50V 220P
C415, 416	CM01008423	CAP, MYLAR 50V104 J
C417, 418	CE01006500	CAP, ELEC. 50V 10uF
D401-404	DD80000021	DIODE IN4148
Q401-408	TR10000310	TRANSISTOR 2SA1016G
Q409, 410	TR10000047	TRANSISTOR 2SB631KE

SYMBOL	PARTS NO.	DESCRIPTION
Q411, 412	TR30000169	TRANSISTOR 2SC1941KL
Q413-416	TR40000069	TRANSISTOR 2SD600KE
Q417, 418	TR10000047	TRANSISTOR 2SB631KE
Q419, 420	TR40000045	POWER TRANSISTOR 2SD1047D/E
Q421, 422	TR40000040	POWER TRANSISTOR 2SB817D/E
VR401, 402	RV40000022	R, SEMI-FIXED VM6CKPV-1S-B 2K2
L401, 402	LC23310002	ANTI-PARASITIC COIL TRL-331
F401, 402	FU25000030	FUSE 5A UL/CSA $\Delta$
	FU23000141	FUSE 250V T5A S $\Delta$
R501, 502	RM51001816	R, METAL 1/4W F
R503, 504	RM52741812	R, METAL 27K4 1/4W F
R505, 506	RM51501813	R, METAL 1K5 1/4W F
R507, 508	RM54750812	R, METAL 475 1/4W F
R509, 510	RM56811816	R, METAL 6K81 1/4W F
R511, 512	RM54750812	R, METAL 475 1/4W F
R513, 514	RM51002810	R, METAL 10K 1/4W F
R515, 516	RM51000812	R, METAL 100 1/4W F
R517, 518	RM56811816	R, METAL 6K81 1/4W F
R519, 520	RM52211818	R, METAL 2K21 1/4W F
R521, 522	RM54759815	R, METAL 47.5 1/4W F
R523, 524	RM53322818	R, METAL 33K2 1/4W F
R525-528	RM52210814	R, METAL 221 1/4W F
R529-532	RM90228220	R, METAL 2W 0.22 J
R533, 534	RM91009127	R, METAL 1W 10 J
R535, 536	RM58251814	R, METAL 8K25 1/4W F
R537, 538	RM53320810	R, METAL 332 1/4W F
R539	RM58251814	R, METAL 8K25 1/4W F
R540, 541	RM53322818	R, METAL 33K2 1/4W F
C501, 502	CE01006500	CAP, ELEC. 50V 10uF
C503, 504	CS41011422	CAP, STYROL 50V 100P
C505, 506	CE01005258	CAP, ELEC. 25V 100uF
C507, 508	CC33311434	CAP, CERAMIC 50V 330P
C509, 510	CC31511432	CAP, CERAMIC 50V 150P
C511, 512	CE01007504	CAP, ELEC. 50V 1uF
C513, 514	CS42211420	CAP, STYROL 50V 220P
C515, 516	CM01008423	CAP, MYLAR 50V104 J
C517, 518	CE01006500	CAP, ELEC. 50V 10uF
D501-504	DD80000021	DIODE IN4148
Q501-508	TR10000310	TRANSISTOR 2SA1016G
Q509, 510	TR10000047	TRANSISTOR 2SB631KE
Q511, 512	TR30000169	TRANSISTOR 2SC1941KL
Q513-516	TR40000069	TRANSISTOR 2SD600KE
Q517, 518	TR10000047	TRANSISTOR 2SB631KE
Q519, 520	TR40000045	POWER TRANSISTOR 2SD1047D/E
Q521, 522	TR40000040	POWER TRANSISTOR 2SB817D/E
VR501, 502	RV40000022	R, SEMI-FIXED VM6CKPV-1S-B 2K2
L501, 502	LC23310002	ANTI-PARASITIC COIL TRL-331
F501, 502	FU25000030	FUSE 5A UL/CSA $\Delta$
	FU23000141	FUSE 250V T5A S $\Delta$
R601, 602	RM51001816	R, METAL 1/4W F
R603, 604	RM52741812	R, METAL 27K4 1/4W F
R605, 606	RM51501813	R, METAL 1K5 1/4W F
R607, 608	RM54750812	R, METAL 475 1/4W F
R609, 610	RM56811816	R, METAL 6K81 1/4W F
R611, 612	RM54750812	R, METAL 475 1/4W F
R613, 614	RM51002810	R, METAL 10K 1/4W F
R615, 616	RM51000812	R, METAL 100 1/4W F
R617, 618	RM56811816	R, METAL 6K81 1/4W F
R619, 620	RM52211818	R, METAL 2K21 1/4W F
R621, 622	RM54759815	R, METAL 47.5 1/4W F
R623, 624	RM53322818	R, METAL 33K2 1/4W F
R625-628	RM52210814	R, METAL 221 1/4W F
R629-632	RM90228220	R, METAL 2W 0.22 J
R633, 634	RM91009127	R, METAL 1W 10 J
R635, 636	RM58251814	R, METAL 8K25 1/4W F
R637, 638	RM53320810	R, METAL 332 1/4W F
R639	RM58251814	R, METAL 8K25 1/4W F
R640, 641	RM53322818	R, METAL 33K2 1/4W F

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SYMBOL	PARTS NO.	DESCRIPTION
C601, 602	CE01006500	CAP, ELEC. 50V 10uF
C603, 604	CS41011422	CAP, STYROL 50V 100P
C605, 606	CE01005258	CAP, ELEC. 25V 100uF
C607, 608	CC33311434	CAP, CERAMIC 50V 330P
C609, 610	CC31511432	CAP, CERAMIC 50V 150P
C611, 612	CE01007504	CAP, ELEC. 50V 1uF
C613, 614	CS42211420	CAP, STYROL 50V 220P
C615, 616	CM01008423	CAP, MYLAR 50V104 J
C617, 618	CE01006500	CAP, ELEC. 50V 10uF
D601-604	DD80000021	DIODE IN4148
Q601-608	TR10000310	TRANSISTOR 2SA1016G
Q609, 610	TR10000047	TRANSISTOR 2SB631KE
Q611, 612	TR30000169	TRANSISTOR 2SC1941KL
Q613-616	TR40000069	TRANSISTOR 2SD600KE
Q617, 618	TR10000047	TRANSISTOR 2SB631KE
Q619, 620	TR40000045	POWER TRANSISTOR 2SD1047D/E
Q621, 622	TR40000040	POWER TRANSISTOR 2SB817D/E
VR601, 602	RV40000022	R, SEMI-FIXED VM6CKPV-1S-B 2K2
L601, 602	LC23310002	ANTI-PARASITIC COIL TRL-331
F601, 602	FU25000030	FUSE 5A UL/CSA $\Delta$
	FU23000141	FUSE 250V T5A S $\Delta$
OTHERS		
AB00000717		BOTTOM BOARD 3TQZ-5#1
AF20000325		FRONT CHASSIS 2TTZ-2
AM00002086		CHASSIS BODY 2TQZ-4A
AR20000693		PRINTED REAR CHASSIS TRP-628
PT29611200		POWER TRANSFORMER TT-296-PR $\Delta$
BC00000258		CYLINDER BUSH 4TVL-7#4 9.5MM
BC00000313		CYLINDER BUSH 4TVL-7#5 18MM
BC00000465		CYLINDER BUSH 4TR-2187#4 6Fx10.9H
FT00000229		PLASTIC FOOT 4TSH-19#2 50Fx14H
SB00000972		P.V.C SHIELD PLATE 4TQZ-13
SC00000120		AC CORD STOPPER SR-5KN-4 $\Delta$
CD00000220		AC CORD SPT-2 AWG#16 4TR-670#5 (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(G) $\Delta$
NP00001949		NAME STICKER 4TR-2828#1 TNP-382 AC120V
NP00001974		NAME STICKER 4TR-2828#4 TNP-385 AC120V-C
NP00001962		NAME STICKER 4TR-2828#3 TNP-384 AC240V
NP00001998		NAME STICKER 4TR-2828#5 TNP-389 AC230V
NP00002012		NAME STICKER 4TR-2828#6 TNP-391 AC100V
NP00001950		NAME STICKER 4TR-2828#2 TNP-383 AC220V
AH20000990		HEAT SINKER BOARD 4TQX-6#1
AA20000737		FRONT PANEL 2TQZ-1 TFP-694
BU00000145		POWER RING 4TQF-13 14X14
KB20002681		POWER BUTTON 4TQF-15 14x14
OM10001284		ORNAMENTAL SIDE BOARD 4TR-2797#3
DD40000095		LED SEL1124R
OM70000065		PUSH BUTTON CONNECTOR 4TTL-15

SYMBOL	PARTS NO.	DESCRIPTION
SN00000179		BUTTON SPRING 4TR-1988A#2 10F
AU00001353		TOP COVER POLY 3TQZ-8
KB10001813		KNOB 11F 4TSA-7#2
FE00000067		FELT 4TR-1083B#1 22F
SR00000882		UPPER COVER 4TR-2418
MN10003049		OWNER'S MANUAL RB-956AX
PL00001245		STYROL SIDE MOULDING 3TQZ-10 TZ-190