



Technical Manual

STEREO INTEGRATED AMPLIFIER RA-1070

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Specification

Continuous Power Output (20 - 20 kHz, < 0.03%, 8 ohms)	100 watts/channel
Total Harmonic Distortion (20 Hz - 20 kHz)	< 0.03% at rated power, 1/2 power, or 1 watt
Intermodulation Distortion(60 Hz : 7 kHz, 4:1)	< 0.05% at rated power, 1/2 power or 1 watt
Frequency Response Line Level inputs Phono input	4 Hz - 100 kHz, ± 3 dB 20 Hz - 20 kHz, ± 0.5 dB
Damping Factor (20 - 20,000 Hz. 8 ohms)	400
Input Sensitivity / impedance Line Level inputs Phono input (MM)	150 mV / 33 kohms 1.2 mV / 68 kohms
Input Overload Line Level inputs Phono input (MM)	5V 70 mV
Preamplifier Output Maximum Voltage	1 V
Signal to Noise Ratio (IHF " A" weighted) Line Level inputs Phono input	102 dB 70 dB
Power Requirements USA Version European Version	115 Volts, 60 Hz 230 Volts, 50 Hz
Power Consumption	400 Watts
Dimensions (W x H x D)	430 x 121 x 360 mm 16 ¹⁵ / ₁₆ x 4 ³ / ₄ x 14 ³ / ₁₆ inches
Weight (net)	10.3 kg, 22.7 lbs.

THE ROTEL CO., LTD

SHINSEN-BLD. 4F 10-10 SHINSEN-CHO, SHIBUYA-KU,
TOKYO 150-0045, JAPAN

Serial. NO. Beginning

Parts List-1

SYMBOL	PARTS NO.	DESCRIPTION
	X-1297-01 PCB ASSEMBLY	
C453.454	041 25BGF100M	CAPACITOR ELEC.25V100UF
C501.502	041 50BGF10M	CAPACITOR ELEC.50V10UF
C503.504	044 FSC160V470H	CAPACITOR STYROL 160V47PF
C505.506	041 50BGF10M	CAPACITOR ELEC.50V10UF
C507-510	041 ECEA1EFS221	CAPACITOR ELEC.25V220UF
C511.512	044 50MSAN824J	CAPACITOR FILM 50V0.82UF
C513.514	044 50MSAN154J	CAPACITOR FILM 50V0.15UF
C515.516	044 S50V560PJ	CAPACITOR STYROL 50V560PJ
C517.518	044 50MSAN824J	CAPACITOR FILM 50V0.82UF
C519.520	044 S50V1000PG	CAPACITOR STYROL 50V1000PF
C521.522	044 50MSAN104J	CAPACITOR FILM 50V0.1UF
C523.524	041 ECEA1EFS221	CAPACITOR ELEC.25V220UF
C525-529	044 50MSAN104J	CAPACITOR FILM 50V0.1UF
C530-533	044 S50V22PJ	CAPACITOR STYROL 50V22PF
C534.535	044 S50V47PJ	CAPACITOR STYROL 50V47PF
C536.537	041 UTES1H100-FB	CAPACITOR ELEC.50V10UF
C613-616	044 FSC160V561H	CAPACITOR STYROL 160V560PF
C617.618	044 KT18-2A104K	CAPACITOR FILM 100V0.1UF
C621	041 UTES1E101-FB	CAPACITOR ELEC.25V100UF
C622	041 UTES1H330-FB	CAPACITOR ELEC.50V33UF
C623	041 UTES1E470-FB	CAPACITOR ELEC.25V47UF
C624	041 UTES1E100-FB	CAPACITOR ELEC.25V10UF
C703-705	043 TC50V103	CAPACITOR CERA.50V0.01UF
C720	041 UTES1E470-FB	CAPACITOR ELEC.25V47UF
C901-904	041 ALN20S1076DD ※	CAPACITOR ELEC.63V10000UF
C908.909	041 UTES1J471	CAPACITOR ELEC.63V470UF
C910	041 UTES1H010-FB	CAPACITOR ELEC.50V1UF
C911	041 UTES1V101-FB	CAPACITOR ELEC.35V100UF
C912	041 UTES1A101-FB	CAPACITOR ELEC.10V100UF
C913	041 UTES1H470-FB	CAPACITOR ELEC.50V47UF
C915	041 UTES1V101-FB	CAPACITOR ELEC.35V100UF
C916.917	041 UTES1E101-FB	CAPACITOR ELEC.25V100UF
C918.919	041 25BGF470M	CAPACITOR ELEC.25V470UF
C920	043 TC500V103	CAPACITOR CERA.500V0.01UF
C922	041 UTES1H4R7-FB	CAPACITOR ELEC.50V4.7UF
D609-612	034 T1N4003-TB	DIODE
D613-617	034 T1N4148-86	DIODE
D651	034 TRD12JST1	ZENER DIODE
D707	034 T1N4148-86	DIODE
D713	034 TRD5.6JST1	ZENER DIODE
D905	034 T1N4148-86	DIODE
D906	034 TRD4.7JST1	ZENER DIODE
D907	034 T1N4148-86	DIODE
D908	034 TRD16JST1	ZENER DIODE
D909	034 TRD30JST1	ZENER DIODE
D910	034 TRD9.1JST1	ZENER DIODE
D911	034 TRD12JST1	ZENER DIODE
D912	034 TRD16JST1	ZENER DIODE
D916	034 T1N4003-TB	DIODE
IC501	031 OPA2604AP	IC(OPE DUAL)
IC502.503	031 NJM2114D	IC(OPE AMP)
IC601	031 MPC1237HA	IC(PROTECTION)
IC703	031 TC74HC595AP	IC(8BIT SHIFT REGISTER/LATCH)
IC704	031 LB1641	IC(MOTOR DRIVE)
IC901	031 NJM7805FA	IC(REGULATOR +5VDC)

SYMBOL	PARTS NO.	DESCRIPTION
L601.602	021 TRL-331	SPEAKER COIL
PJ5	066 4TR-2408#3	4P PINJACK
Q619.620	033 TC3478A-LKU	TRANSISTOR(2SC3478A-LKU)
Q621.622	033 TA1376A-LKU	TRANSISTOR(2SA1376A-LKU)
Q639.640	033 TC2362-FG	TRANSISTOR(2SC2362K-FG)
Q641-643	033 TA1016-FG	TRANSISTOR(2SA1016K-FG)
Q644	033 TC2362-FG	TRANSISTOR(2SC2362K-FG)
Q651	033 TC2362-FG	TRANSISTOR(2SC2362K-FG)
Q901	032 TC3708-ST	TRANSISTOR(2SC3708-ST)
Q902	033 TA1016-FG	TRANSISTOR(2SA1016K-FG)
Q903	032 TC536-FG	TRANSISTOR(2SC536K-FG)
Q904	032 TD863-EF	TRANSISTOR(2SD863-EF)
Q905	033 B631-EF	TRANSISTOR(2SB631K-EF)
Q906	033 D600-EF	TRANSISTOR(2SD600K-EF)
Q908	033 D600-EF	TRANSISTOR(2SD600K-EF)
R453.454	054 TMF2700	RESISTOR METAL 270R
R501.502	054 EE10-151	RESISTOR METAL 150R
R503.504	054 EE10-104	RESISTOR METAL 100K
R505.506	054 TMFR4680R	RESISTOR METAL 1% 680R
R507.508	054 TMFR403K9	RESISTOR METAL 1% 3.9K
R509.510	053 CR14-104J-A	RESISTOR CARBON 100K
R511.512	054 TMFR409K1	RESISTOR METAL 1% 9.1K
R513.514	054 TMFR405K6	RESISTOR METAL 1% 5.6K
R515.516	054 TMFR4027K	RESISTOR METAL 1% 27K
R517-520	053 CR16-223J-A	RESISTOR CARBON 22K
R521	054 TMF1001	RESISTOR METAL 1K
R522	054 MF16-1001-A	RESISTOR METAL 1K
R523.524	053 CR16-223J-A	RESISTOR CARBON 22K
R525.526	054 MF16-1002-A	RESISTOR METAL 10K
R527.528	053 CR16-223J-A	RESISTOR CARBON 22K
R529-538	054 MF16-1002-A	RESISTOR METAL 10K
R539.540	054 MF16-4702-A	RESISTOR METAL 47K
R541.542	054 MF16-5602-A	RESISTOR METAL 56K
R543.544	054 TMFR405K6	RESISTOR METAL 1% 5.6K
R545.546	054 TMFR4100R	RESISTOR METAL 1% 100R
R547	054 TMFR4010R	RESISTOR METAL 1% 10R
R548.549	054 MF16-1003-A	RESISTOR METAL 100K
R631.632	054 TMFR4001K	RESISTOR METAL 1% 1K
R633.634	054 TMFR4047R	RESISTOR METAL 1% 47R
R637-648	054 NIR2-0.22JF	RESISTOR METAL 2W 0.22R
R649.650	054 3WS10JF	RESISTOR METAL 3W 10R
R653-656	054 TMFR4220R	RESISTOR METAL 1% 220R
R657.658	054 TMF1800	RESISTOR METAL 180R
R659.660	054 TMF2202	RESISTOR METAL 22K
R661.662	054 TMF1201	RESISTOR METAL 1.2K
R663.664	054 TMF1502	RESISTOR METAL 15K
R665.666	054 TMF4702	RESISTOR METAL 47K
R667.668	054 TMF3300	RESISTOR METAL 330R
R669.670	054 TMF1202	RESISTOR METAL 12K
R671.672	054 MF16-1203-A	RESISTOR METAL 120K
R673	054 MF16-1003-A	RESISTOR METAL 100K
R674	054 TMF5602	RESISTOR METAL 56K
R675	054 TMF1802	RESISTOR METAL 18K
R676	054 TMF4702	RESISTOR METAL 47K
R681	054 TMF1003	RESISTOR METAL 100K

Parts List-2

SYMBOL	PARTS NO.	DESCRIPTION
R684	054 TMF4701	RESISTOR METAL 4.7K
R685	054 TMF1003	RESISTOR METAL 100K
R686	053 CR16-474J-A	RESISTOR CARBON 470K
R687	053 CR14-123J-A	RESISTOR CARBON 12K
R716	053 CR16-100J-A	RESISTOR CARBON 10R
R717	053 CR16-104J-A	RESISTOR CARBON 100K
R718	053 CR16-153J-A	RESISTOR CARBON 15K
R901	053 CR14-102J-A	RESISTOR CARBON 1K
R903	054 1WS1.2KJF	RESISTOR METAL 1W 1.2K
R904	053 CR14-331J-A	RESISTOR CARBON 330R
R905	053 CR14-562J-A	RESISTOR CARBON 5.6K
R906.907	053 CR14-153J-A	RESISTOR CARBON 15K
R908	053 CR14-472J-A	RESISTOR CARBON 4.7K
R910	053 CR16-473J-A	RESISTOR CARBON 47K
R911-913	053 CR16-223J-A	RESISTOR CARBON 22K
R916	053 CR16-104J-A	RESISTOR CARBON 100K
R917	054 1WS68JF	RESISTOR METAL 1W 68R
R918	053 CR14-333J-A	RESISTOR CARBON 33K
R919	054 1WS270JF	RESISTOR METAL 1W 270R
R920.921	054 TMFR406K8	RESISTOR METAL 1% 6.8K
R927	053 CR14-223J-A	RESISTOR CARBON 22K
R928.929	053 CR16-2R2J-A	RESISTOR CARBON 2.2R
R930	053 CR16-103J-A	RESISTOR CARBON 10K
R931.932	054 2WS470JF	RESISTOR METAL 2W 470R
RY601.602	063 DH2TU-24	RELAY(SPEAKER)
RY603	063 A24W-K	RELAY(MUTE)
RY902	063 DG1U-24 ※	RELAY(AC OUTLET)
S501	062 C-4174A20	ROTARY SWITCH(CONTOUR)
SKT1	068 PS-1101-32	CONNECTOR BASE 16P
SP1.SP2	067 C-4493A00	SPEAKER TERMINAL
TH601.602	034 TTC-503	THERMISTOR
VR501	051 C-4170A33	VARIABLE RESISTOR(VOLUME)
	068 DM-2GM-O	MINI JUMPER
	069 C-4372A01 ※	AC OUTLET for STD
	X-1297-02 PCB ASSEMBLY	
C402.403	041 UTES1E101-FB	CAPACITOR ELEC.25V100UF
D406-408	034 T1N4148-86	DIODE
D409.410	034 TRD15JST1	ZENER DIODE
IC401	031 TC9163AN	IC(SWITCH ALLEY)
PJ3	066 4TR-2408#3	4P PINJACK
PJ6	066 4TR-3184	6P PINJACK
Q406-408	032 TA1345	TRANSISTOR(2SA1345)
Q414-416	032 TC3399	TRANSISTOR(2SC3399)
Q417	032 TC536-FG	TRANSISTOR(2SC536K-FG)
Q418.419	032 2K366-GR	FET(2SK366-GR)
Q420	032 TA1345	TRANSISTOR(2SA1345)
R401-414	054 MF16-1001-FA	RESISTOR METAL 1K
R415.416	054 TMFR4001K	RESISTOR METAL 1% 1K
R417.418	054 MF16-1001-A	RESISTOR METAL 1K
R419	053 CR14-472J-A	RESISTOR CARBON 4.7K
R420.421	053 CR14-225J-A	RESISTOR CARBON 2.2M
R422	053 CR16-474J-A	RESISTOR CARBON 470K
R423	053 CR16-224J-A	RESISTOR CARBON 220K
R424	053 CR16-103J-A	RESISTOR CARBON 10K
R426	053 CR16-564J-A	RESISTOR CARBON 560K

SYMBOL	PARTS NO.	DESCRIPTION
R427.428	054 TMFR4100R	RESISTOR METAL 1% 100R
R429-432	054 MF16-1003-A	RESISTOR METAL 100K
RY406-408	063 A24W-K	RELAY(FUNCTION)
	X-1297-03.04 PCB ASSY	
C601.602	041 50BGF4R7M	CAPACITOR ELEC.50V4.7UF
C603.604	044 FSC160V331H	CAPACITOR STYROL 160V330PF
C605.606	044 FSC160V471H	CAPACITOR STYROL 160V470PF
C607.608	041 25BGF100M	CAPACITOR ELEC.25V100UF
C609.610	044 FSC160V331H	CAPACITOR STYROL 160V330PF
C611.612	041 50BGF10M	CAPACITOR ELEC.50V10UF
C619.620	044 FSC160V221H	CAPACITOR STYROL 160V220PF
D601-608	034 T1N4148-86	DIODE
Q601-604	033 TC2362-FG	TRANSISTOR(2SC2362K-FG)
Q605-610	033 TA1016-FG	TRANSISTOR(2SA1016K-FG)
Q611.612	033 TC2362-FG	TRANSISTOR(2SC2362K-FG)
Q613.614	033 A1209-ST	TRANSISTOR(2SA1209-ST)
Q615.616	033 C2911-ST	TRANSISTOR(2SC2911-ST)
R601.602	054 TMFR4560R	RESISTOR METAL 1% 560R
R603.604	054 TMFR4047K	RESISTOR METAL 1% 47K
R605-612	054 TMFR401K5	RESISTOR METAL 1% 1.5K
R613-616	054 TMFR4220R	RESISTOR METAL 1% 220R
R617.618	054 TMF1/4-5600F	RESISTOR MRS25 560R
R619.620	054 TMFR4047K	RESISTOR METAL 1% 47K
R621-624	054 TMFR4100R	RESISTOR METAL 1% 100R
R625.626	054 TMF1/4-6801F	RESISTOR MRS25 6.8K
R627.628	054 TMF1/4-3901F	RESISTOR MRS25 3.9K
R635.636	054 TMFR4015K	RESISTOR METAL 1% 15K
R651.652	054 TMF3300	RESISTOR METAL 330R
VR601.602	051 SFR001-222	SEMI-FIXED RESISTOR 2.2K
	017 C-4401A01	SUB HEAT SINKER
	019 TO-126	INSULATION SHEET
	X-1297-05 PCB ASSEMBLY	
HJ1	065 C-3399#1	PHONE JACK
R677-680	054 TMFR4680R	RESISTOR METAL1% 680R
R682.683	054 1WS1.8KJF	RESISTOR METAL 1W 1.8K
S601	062 4TR-3089	ROTARY SWITCH(SPEAKERS)
	X-1297-06 PCB ASSEMBLY	
C921	044 DE1307E472M	SPARK KILLER ¼
S902	061 C-4176A08	POWER SWITCH ¼
	X-1297-07-10 PCB ASSY	
Q623.624	033 C4381-OY	TRANSISTOR(2SC4381-OY)
Q625.626	033 A1667-OY	TRANSISTOR(2SA1667-OY)
	X-1298-01 PCB ASSEMBLY	
C401	041 UTES1J220-FB	CAPACITOR ELEC.63V22UF
C451.452	041 BPUE1E4R7-FB	CAPACITOR BI-POLAR 25V4.7UF
D401-405	034 T1N4148-86	DIODE
PJ1	066 4TR-2408#3	4P PINJACK
PJ2	066 4TR-3184	6P PINJACK
Q401-405	032 TA1345	TRANSISTOR(2SA1345)
Q409-413	032 TC3399	TRANSISTOR(2SC3399)
R451.452	054 TMFR4027K	RESISTOR METAL 1% 27K
RY401-405	063 A24W-K	RELAY(FUNCTION)

Parts List-3

SYMBOL	PARTS NO.	DESCRIPTION
X-1298-02 PCB ASSEMBLY		
C905-907	043 TC500V103	CAPACITOR CERA.500V0.01UF
C914	043 TC500V103	CAPACITOR CERA.500V0.01UF
C923-930	043 TC500V103	CAPACITOR CERA.500V0.01UF
D901.902	034 BR84	BRIDGED DIODE
D903	034 T1N4003-TB ※	DIODE
D904	034 T1N4148-86	DIODE
D913	034 T1N4003-TB ※	DIODE
D915	034 T1N4003-TB ※	DIODE
F901.902	036 5ST8 ※	MINI FUSE 250VT8A
R902	054 1WS1.8KJF	RESISTOR METAL 1W 1.8K
R909	053 CR14-682J-A	RESISTOR CARBON 6.8K
RY901	063 DH2U-24 ※ 069 C-3417A	RELAY(POWER) FUSE CLIP
X-1300-01 PCB ASSEMBLY		
C701.702	043 TC50V473	CAPACITOR CERA.50V0.047UF
C706	044 50MSAN104J	CAPACITOR FILM 50V0.1UF
C708	041 FYD0H224Z	CAPACITOR 5.5V0.22F
C709-712	043 TC50V101	CAPACITOR CERA.50V100PF
C718	041 UTES1H100-FB	CAPACITOR ELEC.50V10UF
C719	041 UTES1H2R2-FB	CAPACITOR ELEC.50V2.2UF
C722	041 UTES1A101-FB	CAPACITOR ELEC.10V100UF
D701-706	034 T1N4148-86	DIODE
D708	034 T1N4148-86	DIODE
FL701	035 SVR12MM18	FL TUBE
IC701	031 CXP82832-311Q	IC(FL DRIVE)
Q701	032 TC536-FG	TRANSISTOR(2SC536K-FG)
R702	053 CR16-101J-A	RESISTOR CARBON 100R
R703-707	053 CR16-102J-A	RESISTOR CARBON 1K
R709-713	053 CR16-473J-A	RESISTOR CARBON 47K
R714	053 CR16-472J-A	RESISTOR CARBON 4.7K
R715	053 CR16-104J-A	RESISTOR CARBON 100K
R719	054 SE4473J	THICK FILM RS NETWORK 47K
R720	053 CR16-473J-A	RESISTOR CARBON 47K
R791	054 SE8104J	THICK FILM RS NETWORK 100K
R792	054 SE7104J	THICK FILM RS NETWORK 100K
R793	054 SE8104J	THICK FILM RS NETWORK 100K
S701-708	061 C-4679A03	TACT SWITCH
S711-718	061 C-4679A03	TACT SWITCH
X701	023 CST10.0MTW	CERAMIC RESONATOR
X-1300-02 PCB ASSEMBLY		
C713-717	041 UTES1H010-FB	CAPACITOR ELEC.50V1UF
D709-712	034 TRD12JST1	ZENER DIODE
D914	034 T1N4148-86	DIODE
HJ901-905	065 YKB21-5103A	MINI JACK

SYMBOL	PARTS NO.	DESCRIPTION
IC702		
IC904	031 HIN232CP	IC(TRANSMITTER RECEIVER)
Q907	031 PC817B	IC(PHOTO COUPLER)
R914	032 TC536-FG	TRANSISTOR(2SC536K-FG)
R915	053 CR16-822J-A	RESISTOR CARBON 8.2K
	053 CR16-103J-A	RESISTOR CARBON 10K
R922.923		
R924.925	053 CR16-102J-A	RESISTOR CARBON 1K
R926	053 CR16-100J-A	RESISTOR CARBON 10R
SKT1	053 CR16-101J-A	RESISTOR CARBON 100R
	066 SY010-8P/K	COMPUTER I/O TERMINAL
C707	X-1300-03 PCB ASSEMBLY	
IC705	041 UTES1E470-FB	CAPACITOR ELEC.25V47UF
R701	031 SBX3010-52B	IC(REMOTE EYE)
	053 CR16-101J-A	RESISTOR CARBON 100R
Q617.618	HEAT SINKER ASSEMBLY	
Q627-632	032 D1953	TRANSISTOR(2SD1953)
Q633-638	033 D1047-DE	POWER TRANSISTOR(2SD1047-DE)
	033 B817-DE	POWER TRANSISTOR(2SB817-DE)
	017 TM3-10A00	HEAT SINKER BOARD
	019 TO-3P	INSULATION SHEET
OTHERS		
	011 FP-536B	SUB PANEL ASSY
	011 TH3-01A00	H/S PANEL
	012 C-4711A01	KNOB ASSY 43F
	012 C-4712A01	KNOB 13F
	012 RV4-09A00	PUSH BUTTON 14F
	014 C-4723A01	UPPER COVER
	014 TM3-07A00	BOTTOM BOARD
	015 RP-386B	REAR CHASSIS
	019 4TSH-19#2	PLASTIC FOOT 50F
	022 T-1078UR1 ※	POWER TRANSFORMER
	034 SEL1124R	LED 1X5
	069 C-4629A01 ※	AC INLET
	072 C-4621A01 ※	AC CORD SET for STD
	072 C-4622A01 ※	AC CORD SET for AUSTRALIA
	072 C-4623A01 ※	AC CORD SET for U.K
	072 C-4624A01 ※	AC CORD SET for CEE
	081 TM3-08A00	INSIDE CARTON
	081 Z-204	STYROL MOULDING
	092 RR-969	REMOTE UNIT

NOTE ON SAFETY : Symbol ※ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ※ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

Adjustment

Instruments : DC milli-voltmeter

Notes : Prior to Bias Adjustment, run about 5minutes with rated output(8ohms) and warm up Power Transistor and Heat Sink. Set input off.

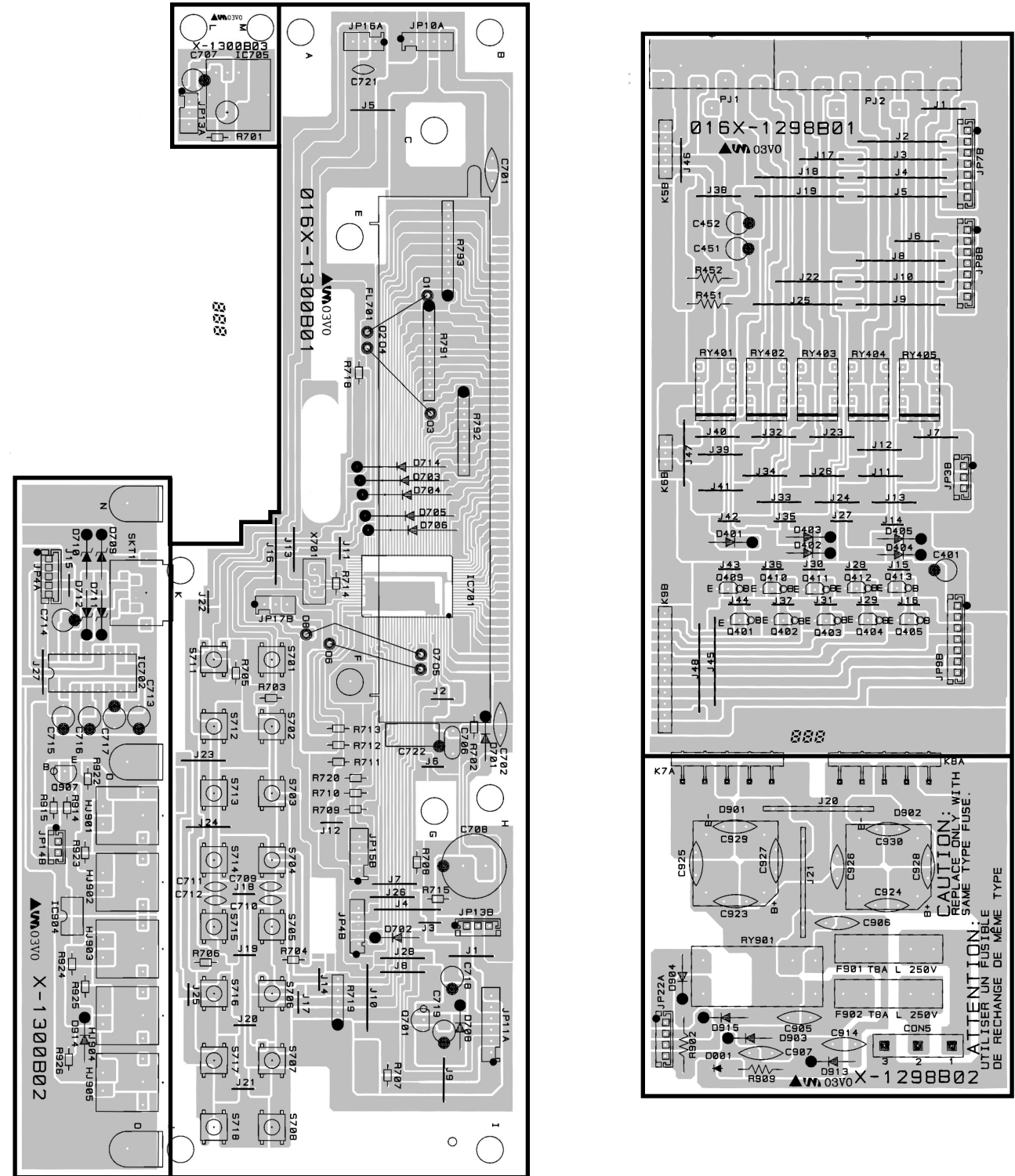
Step	Coupling	Adjust	Adjust for
1	X-1297-01 PCB R641	X-1297-03 PCB VR601	DC milli-voltmeter reads 5mV
2	X-1297-01 PCB R642	X-1297-04 PCB VR602	

Safety Caution

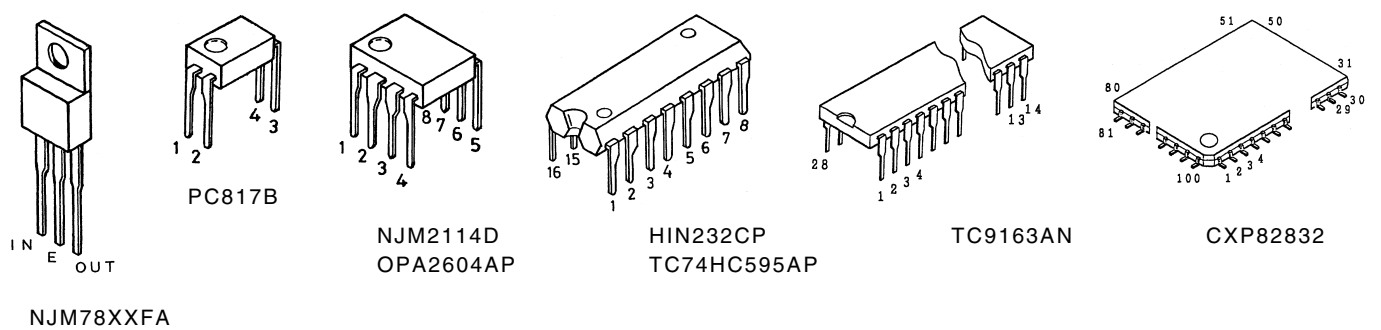
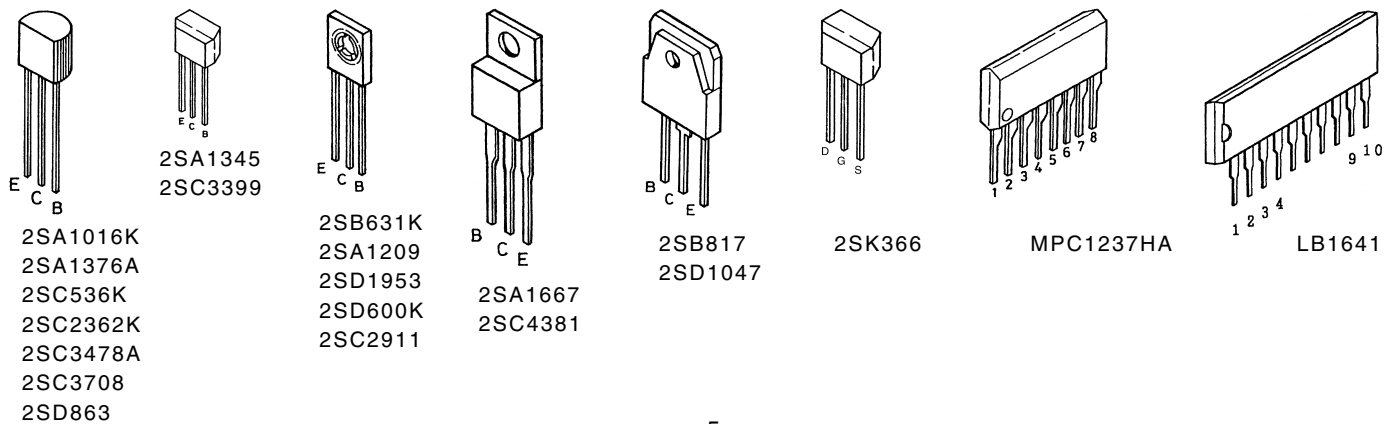
Cautions during Inspection and Repair

- Keep in mind the safety warnings
The safety instructions are shown as the labels or printings on the exterior, the inside chassis or the parts, etc. Refer to the instructions when proceeding with inspection or repair.
- Use only the specified parts for replacement
The selected parts are used at critical area to reduce fire hazard or electrical shock. So when replacing these parts where designaged with **⚠ marks or marks on the schematic diagram or the parts list**, ensure to use only the same parts.
- Ensure to dress back the AC (Mains) cord to the original position
If for some reason, the AC cord is moved or partially disassembled, ensure to re-route or assemble back to the original position. The AC cord area is protected and secured by tubing and insulation materials for the sake of safety, so that no loose wire will touch and cause fire hazard and electrical shock.
- Check for safety aspects after inspection or repair
Ensure all parts, such as screws or wires, removed during inspection or repair are secured back to the original positions, and check visually for any anomaly. Also check for any electrical leakage or resistance to maintain the safety.

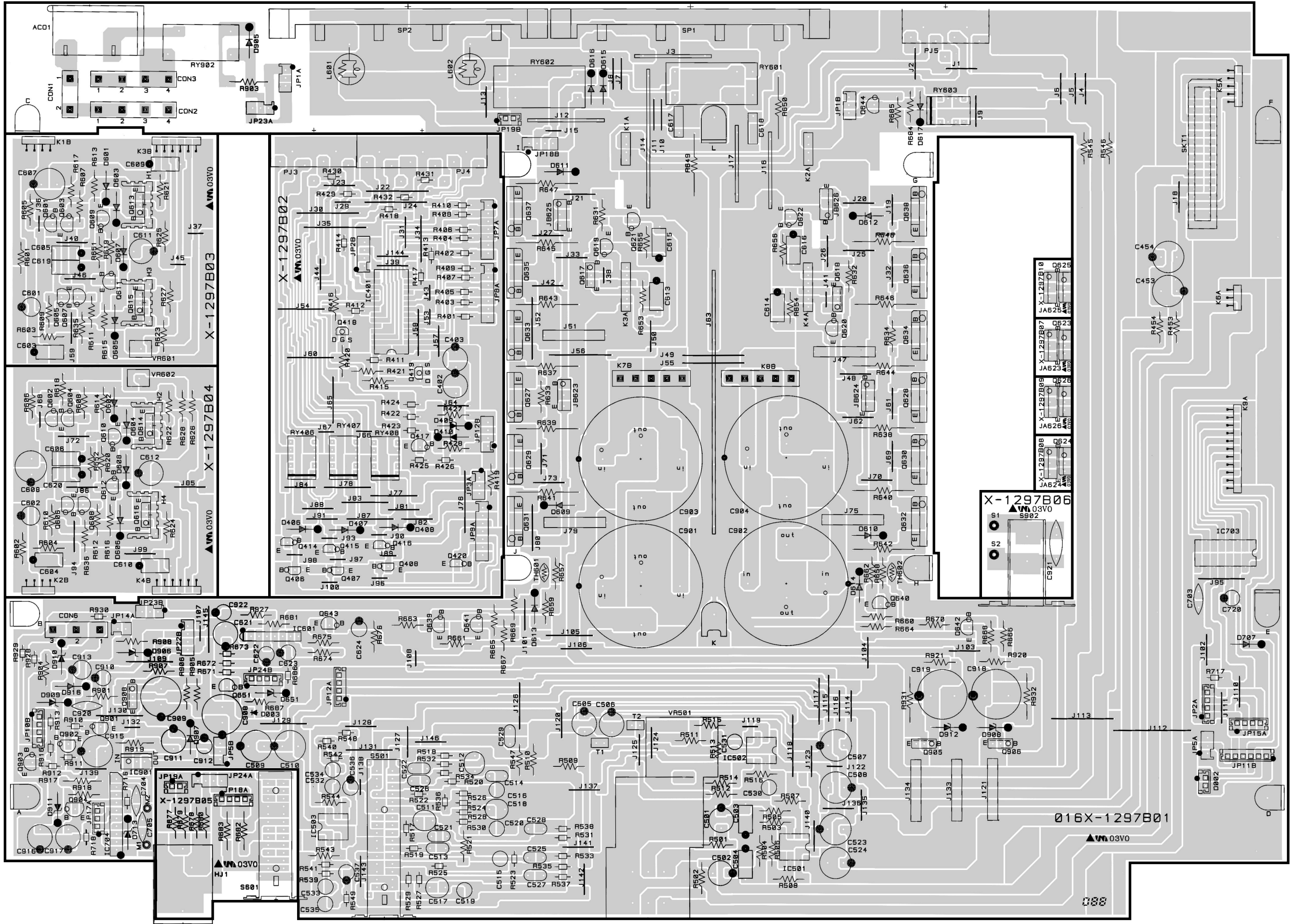
PCB Assembly



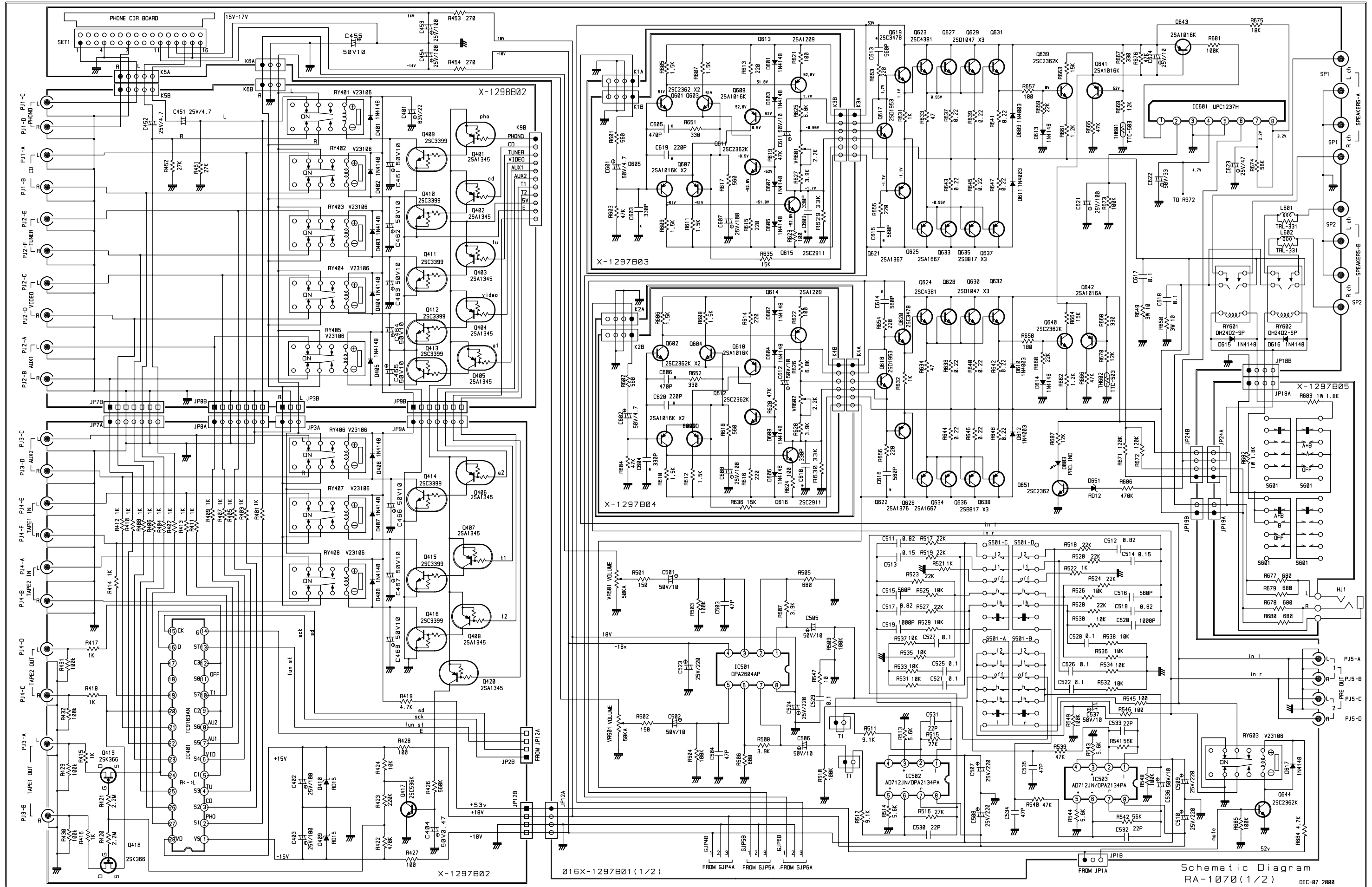
Case Outlines



PCB Assembly



Schematic Diagram



Schematic Diagram
RA-1070 (1/2)
DEC-87 2088

Schematic Diagram

