

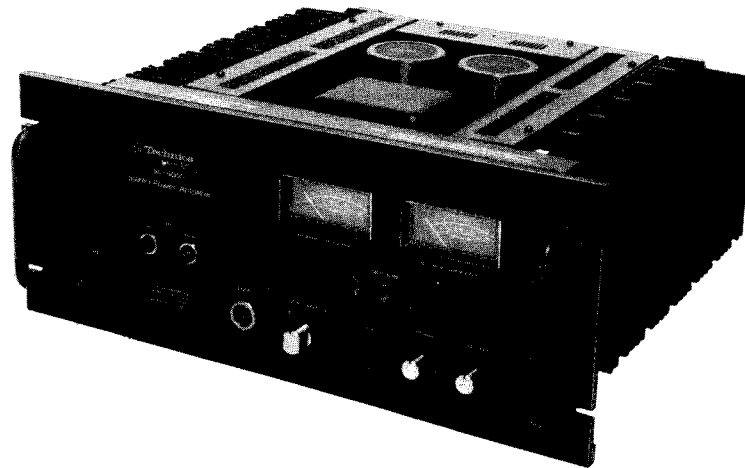


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# Service Manual



(for European Military)

**Stereo Power Amplifier**
**MODEL SE-9600**
**TECHNICAL SPECIFICATIONS** (For accommodating future improvements, specifications are subject to change without notice.)

**AMPLIFIER SECTION (IHF)**

1kHz continuous power each channel driven	165W/165W (4 $\Omega$ )
	110W/110W (8 $\Omega$ )
both channels driven	165W + 165W (4 $\Omega$ )
	110W + 110W (8 $\Omega$ )
20Hz~20kHz continuous power both channels driven	165W + 165W (4 $\Omega$ )
	110W + 110W (8 $\Omega$ )
Total harmonic distortion	0.08%
Intermodulation distortion	0.08%
Power bandwidth	
(both channels driven at 8 $\Omega$ )	5Hz~60kHz, -3dB
Frequency response	5Hz~150kHz, +0dB, -3dB
Signal-to-noise ratio	110dB

Residual hum & noise	0.3mV
Damping factor	
Load impedance 8 ohms	100, 10, 3, 1
Load impedance 4 ohms	50, 5, 1.5, 0.5
Input sensitivity impedance	1V/40k $\Omega$
Load impedance	
MAIN or REMOTE	4~ 16 $\Omega$
MAIN + REMOTE	8~ 16 $\Omega$

**GENERAL**

Power supply	110/120/220/240V	50/60Hz
Power consumption		960W
Dimensions (W x H x D)	17 $\frac{33}{32}$ " x 7 $\frac{19}{32}$ " x 16 $\frac{25}{32}$ " (450 x 193 x 426mm)	
Weight	52 lb. (23.6 kg)	

**Matsushita Electric Corp. of America**  
**Matsushita Electric Corp. of Hawaii, Inc.**  
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# REPLACEMENT PARTS LIST

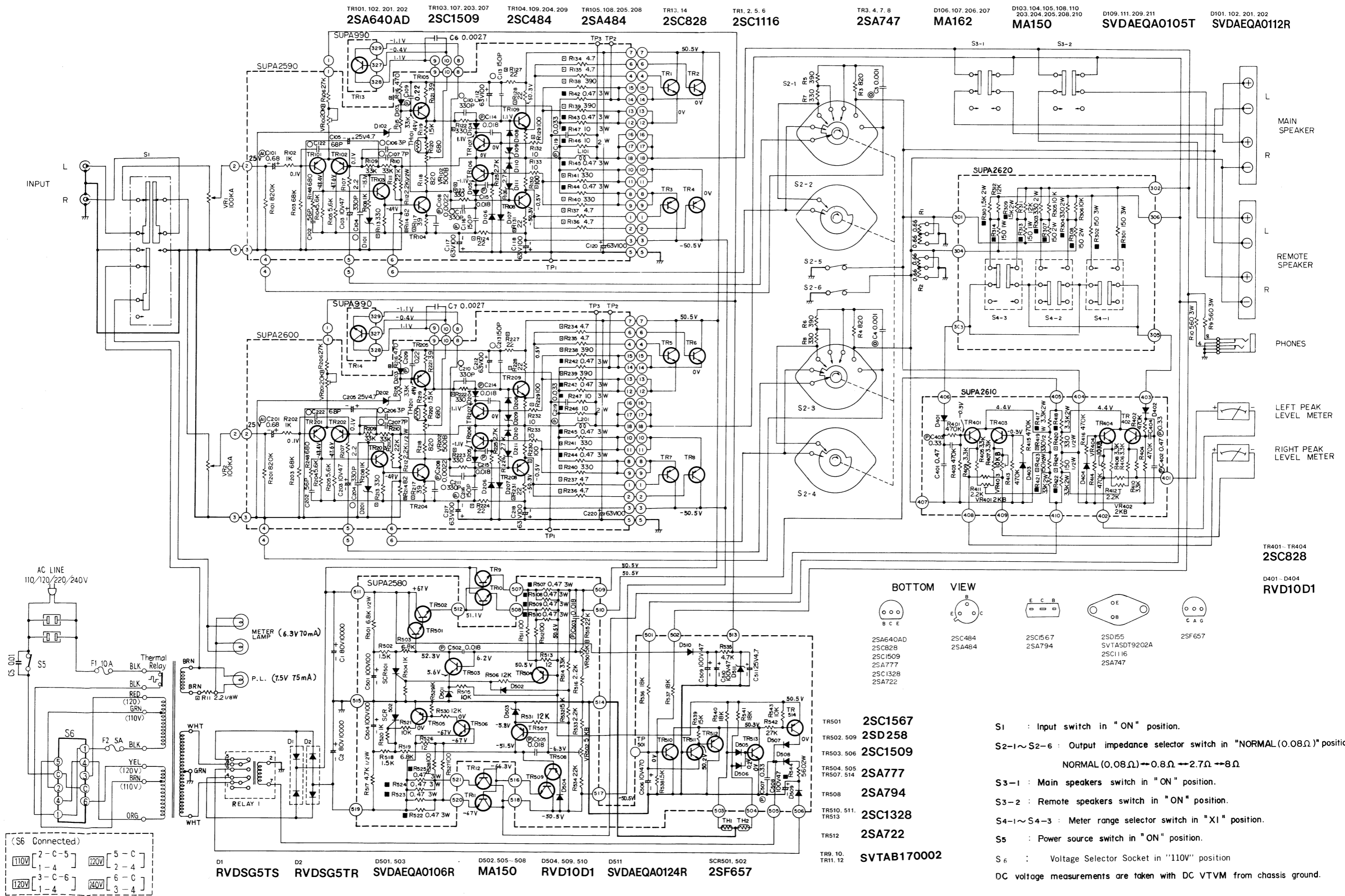
**NOTES:**

1. Part numbers are indicated on most mechanical parts.  
Please use this part number, for parts orders.

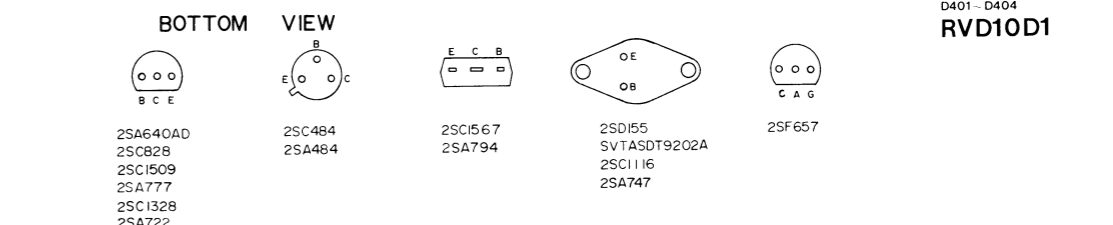
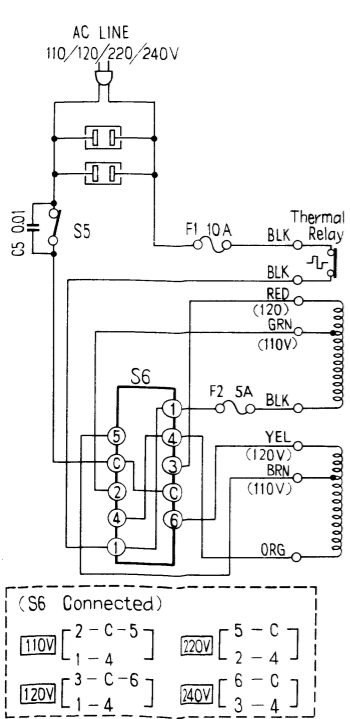
Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks	Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
<b>TRANSISTORS</b>					R120, 148, 220, 248	ERD14TJ681	680Ω, ¼W, ±5%, Carbon	4	
TR1, 2, 5, 6	2SC1116	Power Amplifier	4		R3, 4, 118, 218	ERD14TJ821	820Ω, ¼W, ±5%, Carbon	4	
TR3, 4, 7, 8	2SA747	Power Amplifier	4		R102, 108, 202, 208, 504, 520, 529	ERD14TJ102	1kΩ, ¼W, ±5%, Carbon	7	
TR9, 10, 11, 12	SVTA8170002	DC Voltage Control	4		R119, 219, 502, 518, 538	ERD14TJ152	1.5kΩ, ¼W, ±5%, Carbon	5	
TR13, 14	2SC828R	Thermal Compensation	2		R107, 207, 411, 412, 516, 533	ERD14TJ222	2.2kΩ, ¼W, ±5%, Carbon	6	
TR101, 102, 201, 202	2SA640AD-R	Differential Amplifier	4		R125, 126, 225, 226	ERD14TJ272	2.7kΩ, ¼W, ±5%, Carbon	4	
TR103, 107, 203, 207, 503, 506	2SC1509Q	Power Amp Protection & An Error Voltage Detector	6		R405, 406, 407, 408, 409, 410	ERD14TJ332	3.3kΩ, ¼W, ±5%, Carbon	6	
TR104, 109, 204, 209	2SC484Y	Driver Amplifier	4		R535	ERD14TJ472	4.7kΩ, ¼W, ±5%, Carbon	1	
TR105, 108, 205, 208	2SA484Y	Driver Amplifier	4		R104, 105, 204, 205	ERD14TJ562	5.6kΩ, ¼W, ±5%, Carbon	4	
TR106, 206, 504, 505, 507, 514	2SA777Q	Protection Circuit	6		R503, 519	ERD14TJ682	6.8kΩ, ¼W, ±5%, Carbon	2	
TR401, 402, 403, 404	2SC828S	VU Meter Amplifier	4		R305, 306, 505, 521, 543	ERD14TJ103	10kΩ, ¼W, ±5%, Carbon	5	
TR501	2SC1567R	DC Amplifier	1		R311, 312, 506, 530, 531	ERD14TJ123	12kΩ, ¼W, ±5%, Carbon	5	
TR508	2SA794R	DC Amplifier	1		R532, 539	ERD14TJ153	15kΩ, ¼W, ±5%, Carbon	2	
TR510, 511, 513	2SC1328T	Speaker Protection Switching	3		R536, 537, 540, 541	ERD14TJ183	18kΩ, ¼W, ±5%, Carbon	4	
TR502, 509	2SD258R	DC Amplifier	2		R111, 211, 515, 534	ERD14TJ223	22kΩ, ¼W, ±5%, Carbon	4	
TR512	2SA722T	Speaker Protection Switching Switching	1		R106, 206, 542	ERD14TJ273	27kΩ, ¼W, ±5%, Carbon	3	
<b>SCR and DIODES</b>					R109, 110, 115, 209, 210, 215, 514	ERD14TJ333	33kΩ, ¼W, ±5%, Carbon	7	
SCR501, 502	2SF657	Silicon Controlled Rectifier	2		R103, 203	ERD14TJ683	68kΩ, ¼W, ±5%, Carbon	2	
D1	RVDSG5TS	Rectifier	1		R401, 402, 403, 404, 413, 414, 415, 416	ERD14TJ474	470kΩ, ¼W, ±5%, Carbon	8	
D2	RVDSG5TR	Rectifier	1		R101, 201	ERD14TJ824	820kΩ, ¼W, ±5%, Carbon	2	
D101, 102, 201, 202	SVDAEQA0112R	12V Zener	4		R134, 135, 136, 137, 234, 235, 236, 237	ERD14FJ4R7	4.7Ω, ¼W, ±5%, Carbon	8	
D103, 104, 105, 108, 110, 203, 204, 205, 208, 210, 502, 505, 506, 507, 508	MA150	AOC	15		R124, 127, 128, 131, 224, 227, 228, 231	ERD14FJ220	22Ω, ¼W, ±5%, Carbon	8	
D106, 107, 206, 207	MA162	Protection	4		R117, 121, 217, 221	ERD14FJ390	39Ω, ¼W, ±5%, Carbon	4	
D109, 111, 209, 211	SVDAEQA0105T	5V Zener, Protection	4		R114, 214	ERD14FJ820	82Ω, ¼W, ±5%, Carbon	2	
D401, 402, 403, 404, 504, 509, 510	RVD10D1	Meter Detector	7		R129, 130, 229, 230	ERD14FJ101	100Ω, ¼W, ±5%, Carbon	4	
D501, 503	SVDAEQA0106R	6V Zener, Voltage Stabilizer	2		R113, 122, 123, 140, 141, 213, 222, 223, 240, 241	ERD14FJ331	330Ω, ¼W, ±5%, Carbon	10	
D511	SVDAEQA0124R	24V Zener, Shock Noise Silencer	1		R138, 139, 238, 239	ERD14FJ391	390Ω, ¼W, ±5%, Carbon	4	
<b>TRANSFORMER and COIL</b>					R116, 216	ERD14FJ471	470Ω, ¼W, ±5%, Carbon	2	
T1	SLTA5T5S	Power Transformer	1		R112, 212	ERD12TJ222	2.2kΩ, ½W, ±5%, Carbon	2	
L101, 201	ELQ22A1	High Character Stabilizer Coil	2		R517	ERD12TJ472	4.7kΩ, ¼W, ±5%, Carbon	1	
<b>RESISTORS</b>					R501	ERD12TJ682	6.8kΩ, ½W, ±5%, Carbon	1	
R132, 133, 232, 233	ERD14TJ100	10Ω, ¼W, ±5%, Carbon	4		R423, 424	ERD12FJ151	150Ω, ¼W, ±5%, Carbon	2	
R513, 526	ERD14TJ120	12Ω, ¼W, ±5%, Carbon	2		R419, 420	ERD12FJ331	330Ω, ¼W, ±5%, Carbon	2	
R511, 512, 527, 528	ERD14TJ101	100Ω, ¼W, ±5%, Carbon	4		R11	ERD18FJ2R2	2.2Ω, ½W, ±5%, Carbon	1	
R7, 8	ERD14TJ331	330Ω, ¼W, ±5%, Carbon	2		R313, 314	ERG1ANJ151	150Ω, 1W, ±5%, Metallic	2	
R5, 6	ERD14TJ391	390Ω, ¼W, ±5%, Carbon	2		R307, 308	ERG2ANJ151	150Ω, 2W, ±5%, Metallic	2	
					R303, 304	ERG2ANJ331	330Ω, 2W, ±5%, Metallic	2	
					R544	ERG2ANJ561	560Ω, 2W, ±5%, Metallic	1	
					R309, 310	ERG2ANJ152	1.5kΩ, 2W, ±5%, Metallic	2	
					R417, 418, 421, 422	ERG2ANJ332	3.3kΩ, 2W, ±5%, Metallic	4	
					R301, 302	ERG3ANJ151	150Ω, 3W, ±5%, Metallic	2	
					R9, 10	ERG3ANJ561	560Ω, 3W, ±5%, Metallic	2	
					R146, 246	ERX2ANJ100	10Ω, 2W, ±5%, Metallic	2	

# Schematic Diagram ..... Model SE-9600

(This schematic diagram may be modified at any time with the development of new technology.)



- TR101, 102, 201, 202  
**2SA640AD**
- TR103, 107, 203, 207  
**2SC1509**
- TR104, 109, 204, 209  
**2SC484**
- TR105, 108, 205, 208  
**2SA484**
- TR13, 14  
**2SC828**
- TR1, 2, 5, 6  
**2SC1116**
- TR3, 4, 7, 8  
**2SA747**
- D106, 107, 206, 207  
**MA162**
- D103, 104, 105, 108, 110, 203, 204, 205, 208, 210  
**MA150**
- D109, 111, 209, 211  
**SVDAEQAO105T**
- D101, 102, 201, 202  
**SVDAEQAO112R**



- S1 : Input switch in "ON" position.
  - S2-1~S2-6 : Output impedance selector switch in "NORMAL (0.08Ω)" position.  
NORMAL (0.08Ω) → 0.8Ω → 2.7Ω → 8Ω
  - S3-1 : Main speakers switch in "ON" position.
  - S3-2 : Remote speakers switch in "ON" position.
  - S4-1~S4-3 : Meter range selector switch in "X1" position.
  - S5 : Power source switch in "ON" position.
  - S6 : Voltage Selector Socket in "110V" position
- DC voltage measurements are taken with DC VTVM from chassis ground.

- D1  
**RVD5G5TS**
- D2  
**RVD5G5TR**
- D501, 503  
**SVDAEQAO106R**
- D502, 505-508  
**MA150**
- D504, 509, 510  
**RVD10D1**
- D511  
**SVDAEQAO124R**
- SCR501, 502  
**2SF657**

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks	Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
R142, 143, 144, 145, 242, 243, 244, 245, 507, 508, 509, 510, 522, 523, 524, 525	ERX3ANJR47	0.47Ω, 3W, ±5%, Metallic	16		<b>RELAY</b>				
R147, 247	ERX3ANJ100	10Ω, 3W, ±5% Metallic	2		RELAY1	SSYA9	Speakers Protection Relay	1	
R1, 2	ERW20GA1R3	1.3Ω, 20W, ±10% Wire	2		<b>CABINET PARTS</b>				
<b>VARIABLE RESISTORS</b>					SBLA4-1		Knob, Power & Input Switch	2	
VR1, 2	EVC6BAF25A15	100kΩ (A), Input Level Control	2		SBSA9S		Knob, Output Impedance Switch	1	
VR102, 202	EVL50AA00B52	500 Ω (B), ICQ Adjustment	2		SBNA121S		Knob, Output Level Control	2	
VR401, 402	EVL50AA00B23	2kΩ (B), Meter Zero Point Adj.	2		SBCA52		Button, Meter Range Push Switch	3	
VR403, 404	EVL50AA00B14	10kΩ (B), Meter Adjustment	2		SBCA53		Button, Speaker Push Switch	2	
VR101, 201	EVL50AA00B24	20kΩ (B), DC Unbalance Adj.	2		SGWA1192		Front Panel, Complete	1	
VR501, 502	EVL53AA00B53	5kΩ (B), Voltage Stabilizer Adj.	2		SGXA65		Bracket, Speaker Push Switch	2	
<b>THERMISTORS and POSISTORS</b>					SGXA67		Bracket, Headphone	1	
TH101, 201	RRT251	Thermistor, Driver Circuit	2		SGUA23		Plastic Plate, VU Meter	2	
TH1, 2	SRPX101E271K	Posistor, Thermal Protection	2		SGLA9		Panel Light, Plastic, Orange	1	
<b>CAPACITORS</b>					SKYA6		Handle, Front Panel	2	
C106, 206	ECCD1H030CC	3pF, 50 WV, ±0.25pF, Ceramic	2		SGXA64		Handle Bracket	4	
C107, 207	ECCD1H070DC	7pF, 50 WV, ±0.5 pF, Ceramic	2		XNA6FFZ		Nut, Handle M'tg	4	
C102, 202	ECCD1H560K	56pF, 50 WV, ±10%, Ceramic	2		XVE6B10K		Six Corner Box bolt, Front Panel M'tg	6	
C122, 222	ECCD1H680K	68pF, 50 WV, ±10%, Ceramic	2		SKUA390		Bottom Board	1	
C104, 110, 111, 204, 210, 211	ECCD1H331K	330pF, 50 WV, ±10%, Ceramic	6		SHGA304		Leg	4	
C113, 116, 213, 216	ECCD2H151K	150pF, 50 WV, ±10%, Ceramic	4		XSN4+25S		Screw, Leg M'tg.	4	
C314, 4	ECKD1H102PF	0.001μF, 50 WV, ±100%, Ceramic	2		SGPA481B		Rear Panel	1	
C5	ECQU2A103MD	0.01μF, 250VAC, ±20%, Polyester	1		SJFA4807		Terminal, Speakers	1	
C108, 208	ECQM05222KZ	0.0022μF, 50 WV, ±10%, Polyester	2		SJFA3207		Terminal, Input	1	
C6, 7	ECQM05272KZ	0.0027μF, 50 WV, ±10%, Polyester	2		SJSA66		AC Outlet	2	
C114, 115, 214, 215, 502, 503, 505	ECQM05183KZ	0.018μF, 50 WV, ±10%, Polyester	7		SJA66		AC Cord	1	
C119, 219	ECQM05333KZ	0.033μF, 50 WV, ±10%, Polyester	2		SJRA107		Bushing, AC Cord	1	
C109, 209	ECQM05224KZ	0.22μF, 50 WV, ±10%, Polyester	2		SHGA302		Rubber Cushion, Set Rear	2	
C403, 404, 507	ECQM05334KZ	0.33μF, 50 WV, ±10%, Polyester	3		XTB4+8BR		Red Screw, Bottom Board M'tg	9	
C401, 402	ECQM05474KZ	0.47μF, 50 WV, ±10%, Polyester	2		SGTA2020		Name Plate	1	
C103, 203	ECEA10V47	47 μF, 10 WV, Electrolytic	2		<b>CHASSIS PARTS</b>				
C506	ECEA10V470	470 μF, 10 WV, Electrolytic	1		SSMA28		VU (Output Level) Meter	2	
C105, 205, 511	ECEA25V47	4.7 μF, 25 WV, Electrolytic	3		SJFA1		Fuse Holder	1	
C112, 117, 118, 120, 212, 217, 218, 220	ECEA63V100LU	100 μF, 63 WV, Electrolytic	8		SJJA10-1		Jack, Headphones	1	
C508, 509, 510	ECEA100V47	47 μF, 100 WV, Electrolytic	3		SJSA69		18pin Socket, Driver Amp p.c.b.	2	
C501, 504	ECEB100V100	100 μF, 100 WV, Electrolytic	2		SJSA70		10pin Socket, Driver Amp p.c.b.	2	
C1, 2	ECEM80R103X	10000 μF, 80 WV, Electrolytic	2		SJSA72		Socket, Speaker Protection Relay	1	
C8, 9	RXAF103P22HD	0.01 μF (X2), Component Combination	2		SJVA1202S		Socket, Power Transistor	12	
<b>LIGHT and FUSES</b>					SUVA65		Plastic Cover, Power Transistor	12	
PL	XAM37K150	Pilot Lamp (7.5V 75mA)	1		SMYA47		Radiator, Power Transistor	12	
F1	XBA2E100NS5	Fuse, Power Source, 10A	1		XVE6B25K		Six Corner Box bolt, Heat Sink M'tg.	24	
F2	XBA2K50NS5	Fuse, Power Source, 5A	1		SMZA6091		Bracket, Pilot Lamp	1	
<b>SWITCHES</b>					SHRA520		Thermo Label	2	
S1	SSLA35S	Input Switch	1		SJEA4		Socket, Voltage Selector	1	
S2-1~2-6	ESRC244F25AP	Output Impedance Selector Switch	1		<b>ACCESSORIES</b>				
S3-1, 3-2	ESB707	Speakers Switch	2		SJP2129		Connector Cord	1	
S4-1~4-3	SHA49S	Meter Range Switch	1		SHEA5		Six Corner Screw Driver	1	
S5	SSLA34S	Power Source Switch	1		RJP5		Pin Plug	4	
S6	-----	Socket, Voltage Selector	1		RJP74		Ae Plug	1	
					RJP75		Ac Plug	1	
<b>PACKINGS</b>					SPPA37		Soft Cover	1	
					SPHA6008		Polyethylene Sheet	1	
					SPSA99		Pad	1	
					SPSA100		Pad	1	
					SPSA101		Pad, Plate	2	
					SPGA581A		Carton Box	1	
					SQFA237		Printed Matter, Complete	1	

■ CHANGE OF SCHEMATIC DIAGRAM

