ORDER NO. SD7812-1492

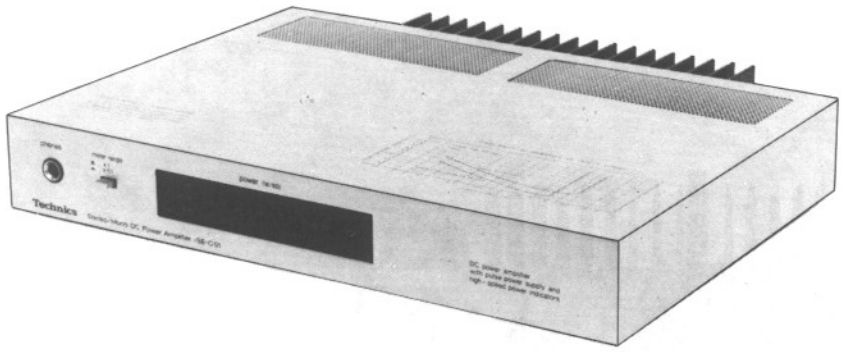
Service Manual

SE-C01

Stereo/Mono DC Power Amplifier

SE-C01

(M), (MC)



- The model SE-C01 (M) is available in America only.
- The model SE-C01 (MC) is available in Canada only.

TECHNICAL SPECIFICATIONS (Specifications are subject to change without notice for further improvement.)

POWER AMPLIFIER

Rated minimum sine wave RMS power output
20 Hz ~ 20 kHz both channels driven
0.03% total harmonic distortion
40 W per channel (8 ohms)
20 Hz ~ 20 kHz mono [BTL] driven
0.05% total harmonic distortion
55 W per channel (8 ohms)

1 kHz continuous power output	
both channels driven	45 W per channel (8 ohms)
mono [BTL] driven	60 W per channel (8 ohms)
Total harmonic distortion	
rated power	0.03% (20 Hz ~ 20 kHz, 8 ohms)
half power	0.008% (20 Hz ~ 20 kHz, 8 ohms)
	0.005% (1 kHz, 8 ohms)
Intermodulation distortion	0.03%
Frequency response	20 Hz ~ 20 kHz, $^{+0}_{-0.1}$ dB
	DC ~ 100 kHz, −1 dB
S/N (IHF, A)	110 dB
Residual hum and noise	0.1 mV
Input sensitivity and impedance	1V/47 kilohms
Damping factor	40 (8 ohms)
Load impedance	
stereo operation	4 ~ 16 Ω (each speaker)
mono [BTL] operation	8 ~ 16Ω

GENERAL

Power consumption	202 W , 293VA
Power supply	AC120V, 60 Hz
Dimensions (W x H x D)	297 x 49 x 250 mm
	(11⅝ x 1⅞ x 9¾) inch
Weight	3.5 kg (7.7 lb.)

Weights and dimensions shown are approximate.

■ CONTENTS

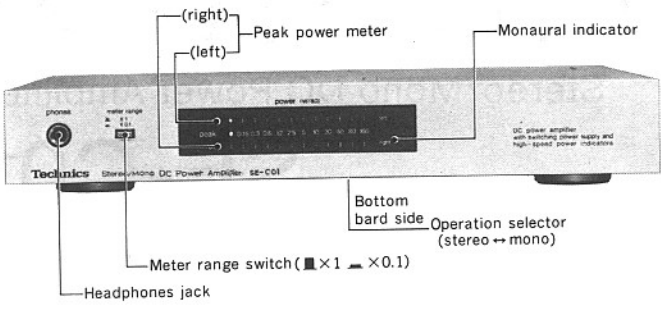
Technics

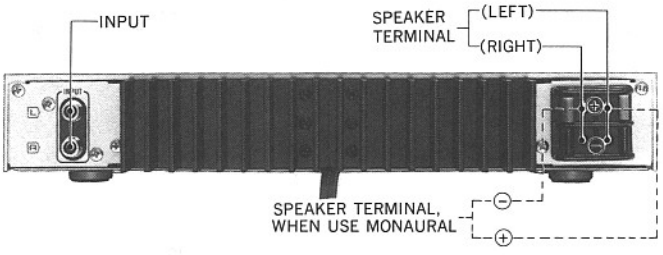
Panasonic Company
Division of Matsushita Electric Corporation of America
One Panasonic Way, Secaucus, New Jersey 07094

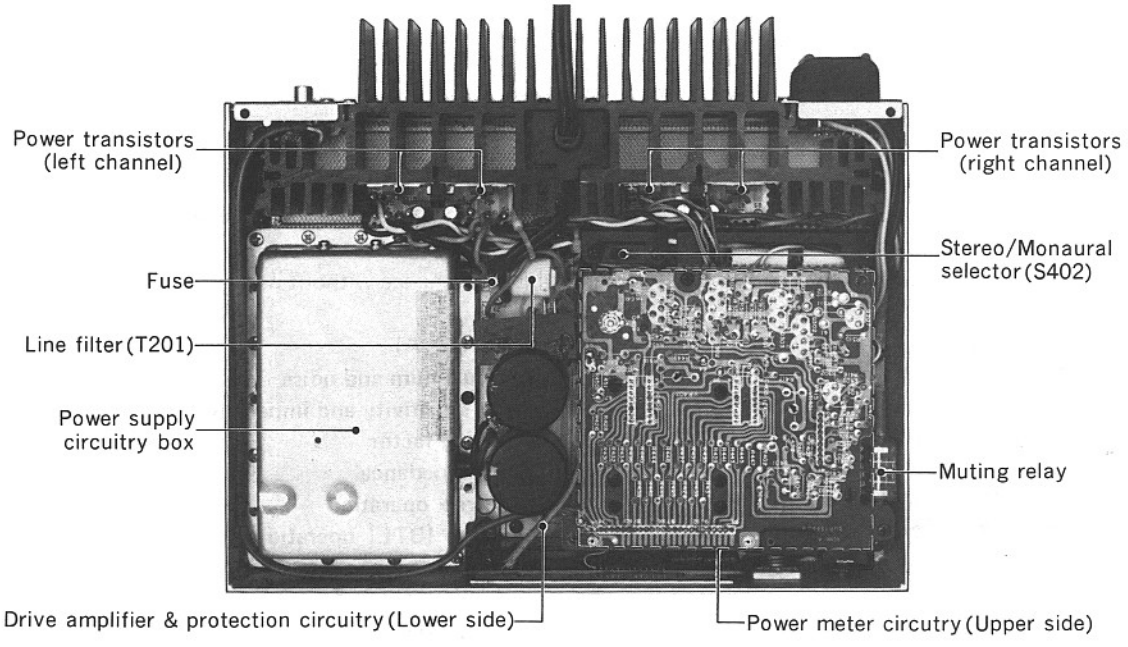
Panasonic Hawaii, Inc.
320 Waiakamilo Road, Honolulu, Hawaii 96817

Matsushita Electric of Canada Ltd.
5770 Ambler Drive, Mississauga, Ontario L4W 2K9

■ LOCATION OF CONTROLS

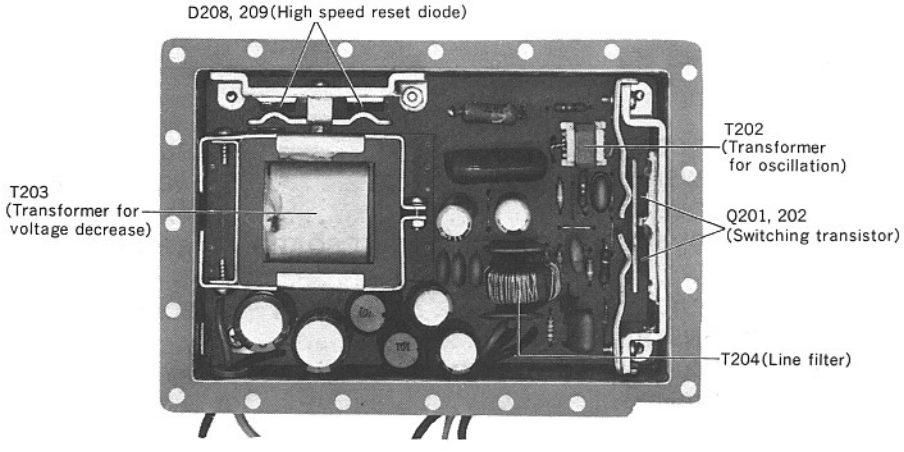






■ INSIDE OF POWER SUPPLY BOX

- The inside voltage is very high. Never touch the inside parts without disconnecting the power supply cord from the outlet.
- Do not short-circuit the cables coming out of the box, or otherwise the circuit may be ruined.



■ HOW TO REMOVE CHASSIS

1. Turn the set upside down and remove 4 setscrews on the bottom board. (Fig. 1)
2. Remove the bottom board.
3. Remove 4 setscrews (① ~ ④ in Fig. 2) which secure radiator on the rear panel.
4. Remove 7 setscrews (⑤ ~ ⑪ , in Fig. 3) which secure printed circuit board and radiator.
5. Hold the radiator and pull it backward. Then, the cabinet can be removed from the printed circuit board along with the radiator.
6. When installing, refer to Fig. 3 and pay attention to installing positions and screw sizes.
   Also, note that washers are required for some setscrews.

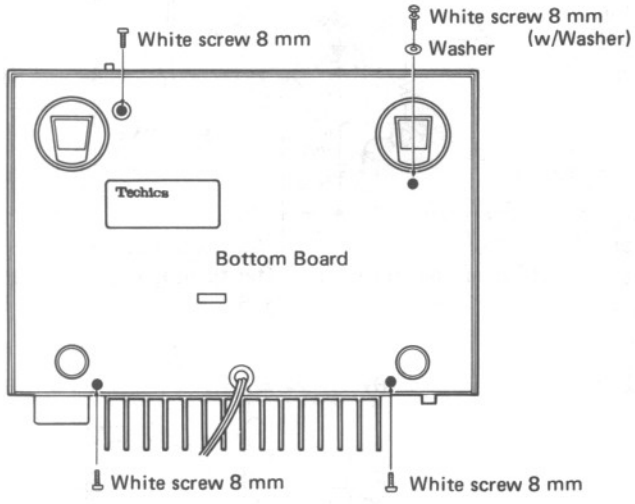


Fig. 1

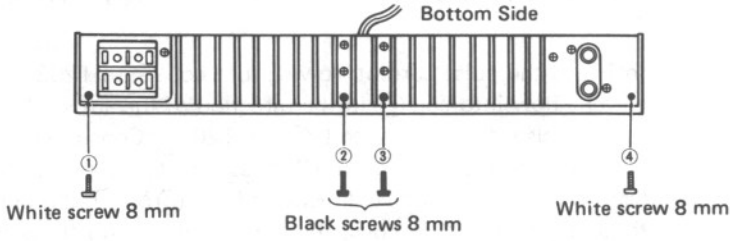


Fig. 2

■ HOW TO REMOVE POWER SUPPLY CIRCUIT BOARD

1. Remove 6 setscrews ⑫ ~ ⑰ shown in Fig. 3.
2. Remove power supply box from chassis.
3. Remove 13 setscrews used to secure the cover of power supply box, and then remove cover.
4. Remove 7 setscrews ① ~ ⑦ in Fig. 4) which secure the printed circuit board.
5. Take out printed circuit board.
6. When installing, tighten setscrew No. ⑩ together with lug terminal.

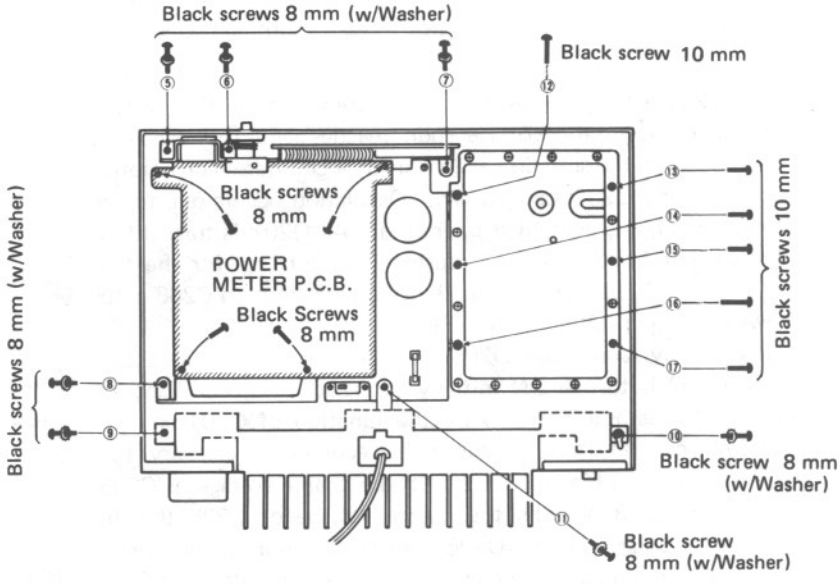


Fig. 3

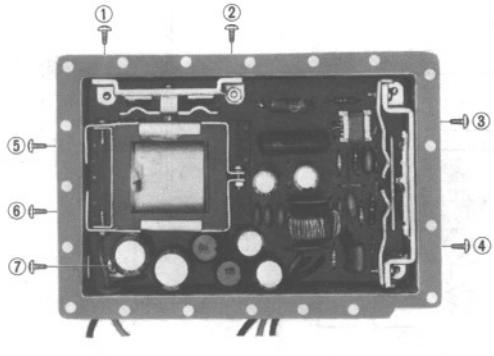


Fig. 4

- **Precautions for removal of power supply box**

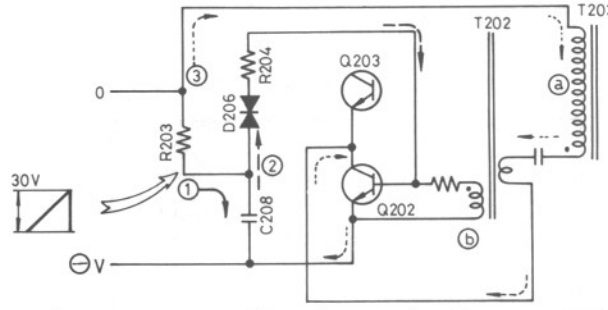
1. Make sure the power supply cord is disconnected from AC outlet.
2. Replace defective gasket with new one.
3. When installing the box, make sure all setscrews are completely tightened. Otherwise, noise may be created.

■ TECHNICAL GUIDE

1. Pulse switching power supply (DC to DC converter)

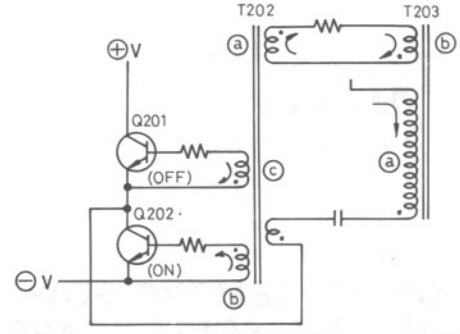
The AC 120V line voltage is first rectified by a full wave rectifier (voltage doubler) after passing through the current limiting choke T201. After passing through filter choke T204 it is converted to a 300 volt square wave pulse of about 20 kHz by the switching circuit, which is then stepped down to ±40 volts by transformer T203.
The full wave bridge (D207, D208) rectifies the 20 kHz square wave pulse into direct current which is then supplied to the power amplifier. The principles of operation are briefly described in the following:

When the power switch is turned on, current flows in the direction of arrow⟶(① in Fig. 5),starting to charge C208. When the voltage reaches about 30V, trigger diode D206 turns ON, and current flows in the direction of arrow ⇢ (② in Fig. 5), causing Q202 to turn ON, discharging C208. The current then starts to flow in the direction of arrow ⇢ (③ in Fig. 5).



(Current generated just after turning the power ON)
Fig. 5

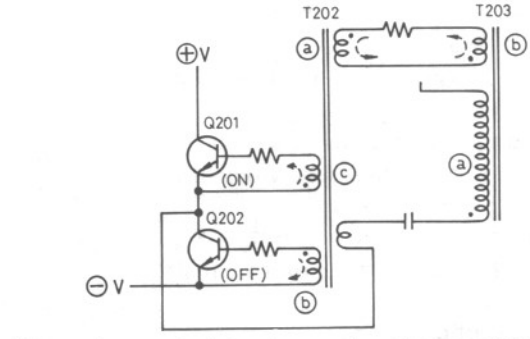
In Fig. 6 the pulse current flowing into coil ⓐ of T203, induces current flow into coil ⓑ in the direction of the arrow, therefore current also flows into coil ⓐ of T202. Consequently, the current flows into coil ⓑ of T202, causing Q202 to stay turned ON. Because the winding direction of coil ⓒ of T202 is opposite to that of the other coils, the current in coil ⓒ flows in the opposite direction, causing Q201 to be OFF.



(Current generated with Q202 turned ON)
Fig. 6

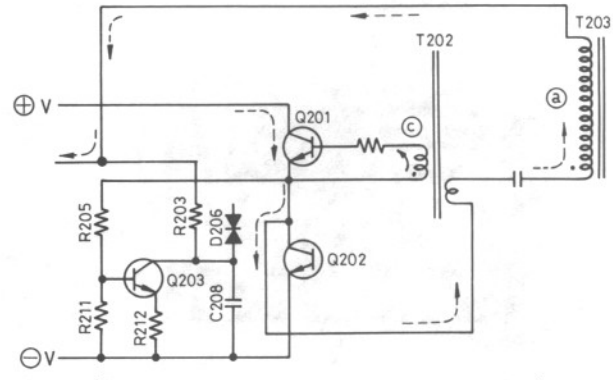
Since the current flowing into coil ⓐ of T203 is in the same direction, the induced electromotive force will soon reach saturation, and the induced voltage at T202 will rapidly drop, turning Q202 OFF. This sudden drop in voltage causes a reverse electromotive force to be generated at coil ⓐ of T202. The current then flows as shown in fig. 7 in opposite direction to that shown in Fig. 6. As a result, Q202 is reversed biased and turned OFF, while foreward bias is applied to Q201 turning it ON.

When Q201 is ON, the current flows as shown in Fig. 9. Then, as explained above, the voltage soon reaches saturation and the reduced current results in generation of a counter electromotive force, causing Q202 to turn ON. Oscillation occurs due to the repetition of this switching operation. As Q201 is turned ON, bias current flows to Q203, causing it to turn on for the first time. With Q203 turned ON, the charge current to C208 stops flowing keeping D206 turned OFF.
Consequently, bias from D206 is no longer applied to Q202. After Q202 is turned ON initially by D206, its ON-OFF operation continues automatically by the function of Q201 and the coil (self generation). Therefore, it becomes unnecessary to supply any more bias to Q202 with the charge voltage of C208. Transistor Q203 absorbs the charge voltage of C208 thereby protecting trigger diode D206 whose function is no longer required from damage. The collector voltage waveform of Q203 is shown in Fig. 8.



(Current generated due to counter electromotive force)
Fig. 7

(Collector voltage of Q203)
Fig. 8



(Current generated with Q201 turned ON)
Fig. 9

Thus, high frequency pulse oscillation is achieved by regulating the winding direction of the coils in T202 and the frequency of about 20 kHz is determined by the number of turns of the coil. This permits the transformer to be used efficiently and the number of turns of the coil to be reduced. Therefore, the power supply circuit is capable to produce a considerable amount of current for its compact and light weight size.

2. Power ON-OFF muting and DC detector protection circuit

This circuit serves to eliminate impact noise generated when the power is turned ON or OFF. When the power switch is turned ON, the power supply voltage will immediately reach operating level. Current flows to D301, causing Q301 to be biased and turned ON. Q302 is OFF at that time.

At the same time the power supply voltage also starts to charge C302. When the voltage at C302 reaches the point (about-1.2 V) at which Q305 starts to operate, Q305 turns ON and subsequently Q306 turns ON causing the relay to be energized. Only then is the output of the power amplifier connected to the speaker terminals.

The time delay for Q305 to turn ON is determined by the time constant of C302 and R308.

When the power switch is turned OFF, the power supply voltage collapses and D301 looses its zener effect (about 16V). Current stops flowing and Q301 turns OFF. With the zener effect lost, Q302 is biased to turn ON. Capacitor C302 discharges, turning OFF both Q305 and Q306, causing the relay to be de-energized.

The DC detector protection circuit. Should direct current appear at the power amplifier output, Q303 or Q304 are turned ON depending on the polarity of the voltage generated at C301. C302 is discharged thus de-energizing the relay. This circuit is intended to protect the speakers from being damaged by direct current at the voice coils. Positive voltage will bias Q304 to turn ON while negative voltage will bias Q303 to be turned ON.

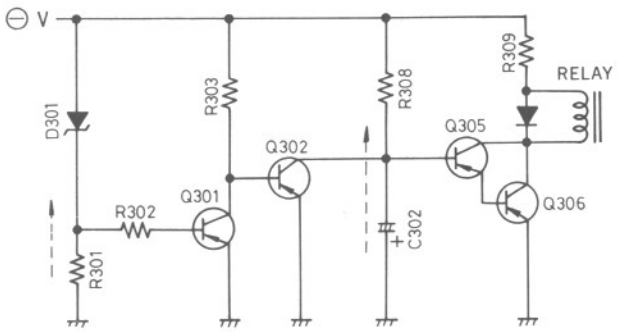


Fig. 10 (Muting circuit)

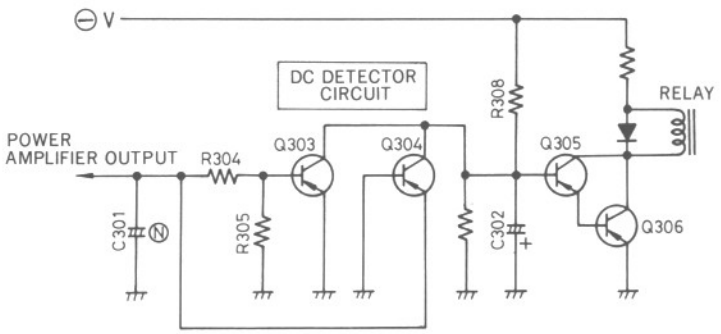


Fig. 11 (DC detector protection circuit)

3 Circuit configuration when using model SE-C01 as a monaural amplifier and LED power meter circuit block diagram

With the switch on the back of the unit set to "mono", the SE-C01 can be used as a high output monaural amplifier. The circuit configuration is shown in Fig. 12. The input of the R-channel is grounded, while the output of the L-channel is also fed back to the minus side of the R-channel differential amplifier Q102 via R171 and S-402. Accordingly, an output being opposite in phase to that of the L-channel output signal is obtained at the R-channel output.

When the plus (+) and minus (−) sides of the speaker are connected to the plus (+) terminal of the plus (+) L-channel and terminal of the R-channels respectively the driving voltage at the speaker is doubled. Expressed in electric power, the output is theoretically 4 times as large based on the formula E^2/R. Actually, it is about 2 times the power output of one stereo channel because of the power supply circuit and amplifier circuit efficiencies.

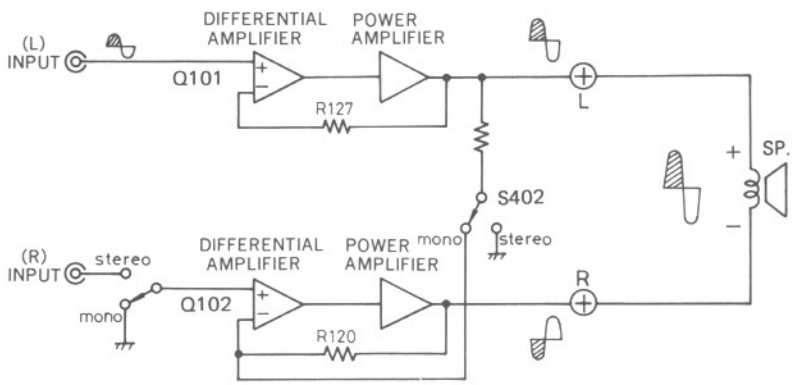


Fig. 12

In mono operation only the LED power meter for the R-channel indicates. Because the voltage applied to the L-channel indicator is cut as shown in Fig. 13. However the monaural indicator will light instead.

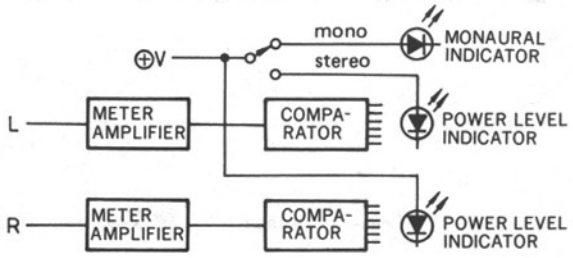


Fig. 13

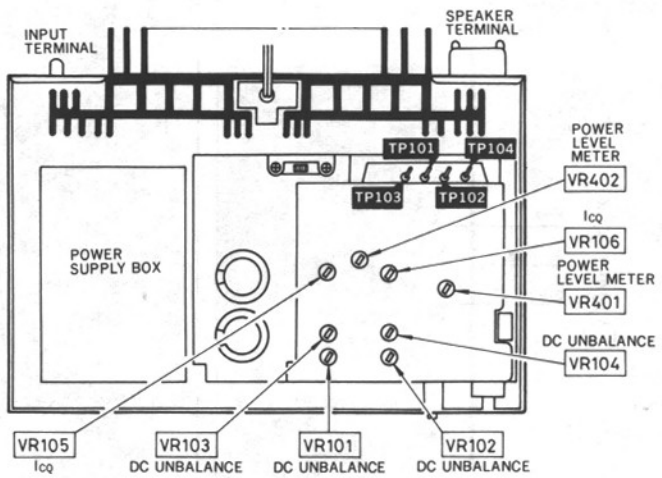
■ ALIGNMENT INSTRUCTIONS

[Cautions]

• Precautions for adjustment and repair

1. This unit is not furnished with power supply switch.
2. Do not remove power supply box from chassis except when necessary.
3. When carrying out repair after disconnecting the AC cord, short-circuit the ends of condensers (C203, 204, 212, 213) by using resistance of about 5 kilohms (5W) to eliminate charge voltage.

• Alignment points



Setting

1. Stereo/mono operation switch to "STEREO" position.
2. Meter range selection switch to "X1" position.

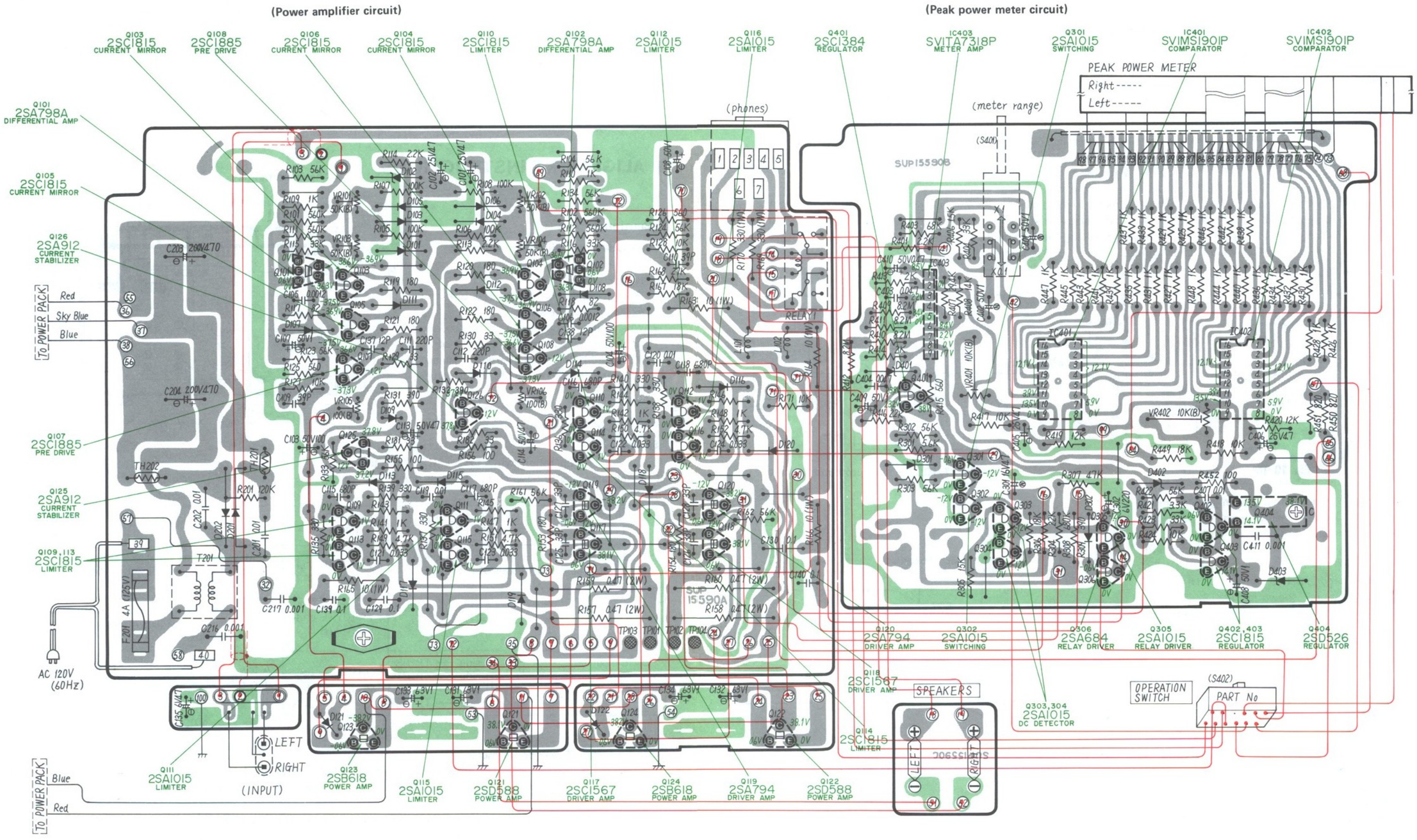
ADJUSTING ITEMS	DC VOLTMETER CONNECTION	ADJUSTING PARTS	ADJUSTING PROCEDURE
DC unbalanced voltage adjustment	Connect it to speaker terminals of L and R channels.	VR103 (L ch.) VR104 (R ch.)	1. Make input terminal short-circuited 2. Adjust it to zero (0) with as small measuring range as possible.
		VR101 (L ch.) VR102 (R ch.)	1. Make input terminal open-circuited. 2. Adjust it to zero (0) with as small measuring range as possible.
ICQ (Idle current of power transistor) adjustment	L ch. { ⊕ side → TP103 ⊖ side → TP101 R ch. { ⊕ side → TP104 ⊖ side → TP102	VR105 (L ch.) VR106 (R ch.)	A few minutes after turning on the power source make the adjustment so that the meter indicates 10mV.

• Adjustment of peak power meter

1. Connect low frequency oscillator to input terminals for both channels, while AC electrovoltmeter to speaker terminal.
2. Add 1 kHz signal from the low frequency oscillator, and then change the input level so that the AC electrovoltmeter indicates 18V.
3. Adjust **VR401** (Lch) while observing the power level indicator so that the 40W LED (red) is about to light up.
4. Next, adjust **VR402** (Rch) in the same way.
   At that time, if the indication for Lch somewhat changes, correct VR401.

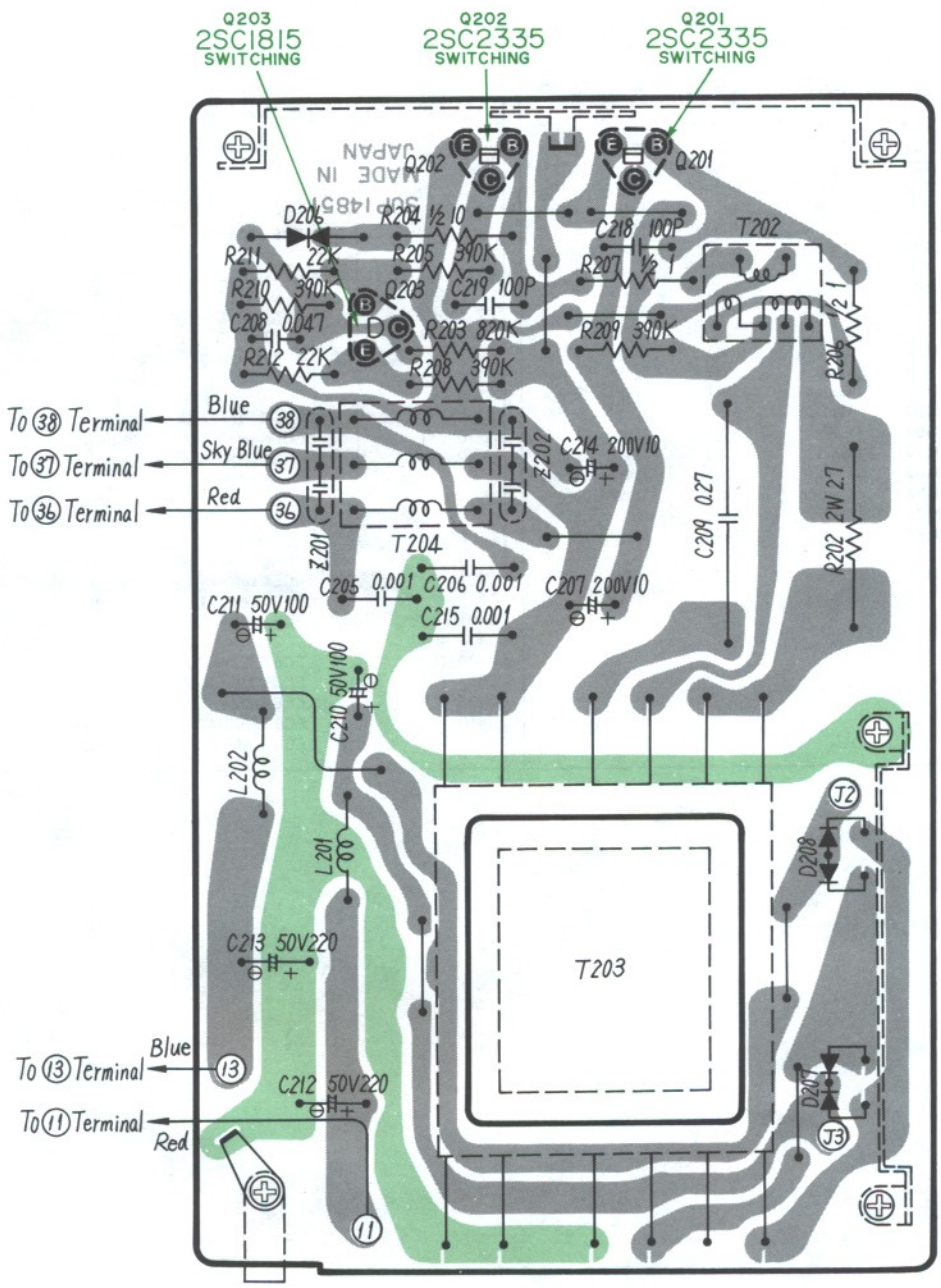
■ PRINTED CIRCUIT BOARD WIRING VIEW

Earth (Ground) Lines

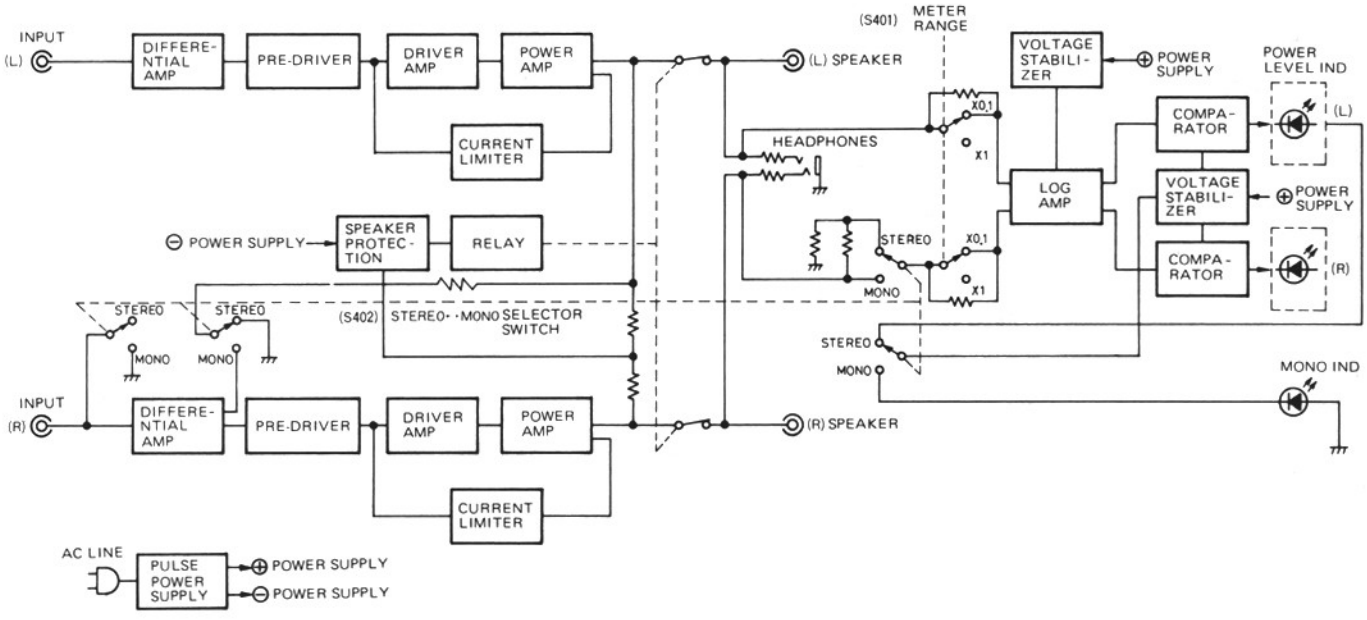


■ PRINTED CIRCUIT BOARD WIRING VIEW

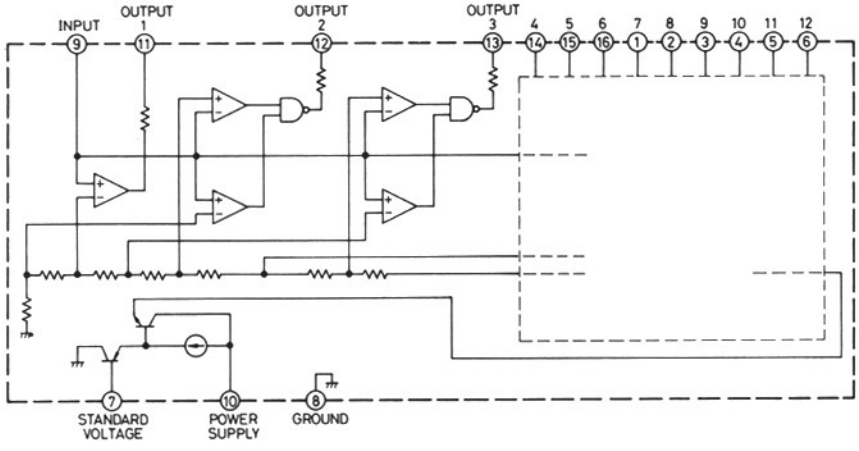
(Power supply circuit)



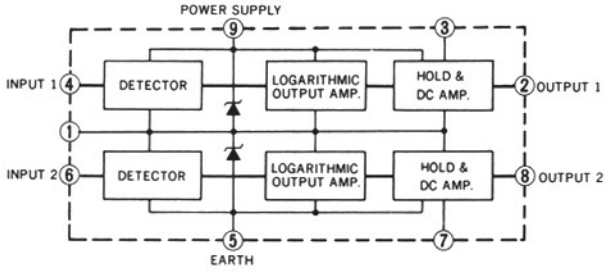
■ BLOCK DIAGRAM



■ BLOCK DIAGRAM OF IC'S



IC401, 402 (SVIMS1901P) Comparator



IC403 (SVITA7318P) Meter Amplifier

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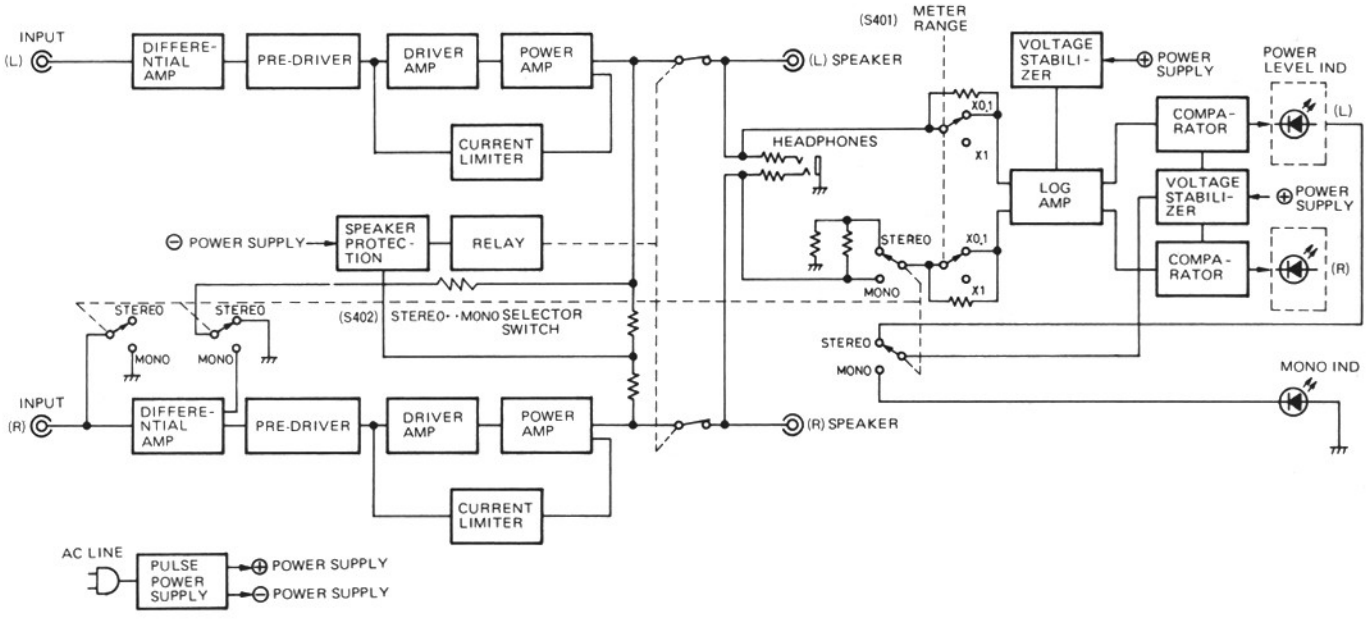

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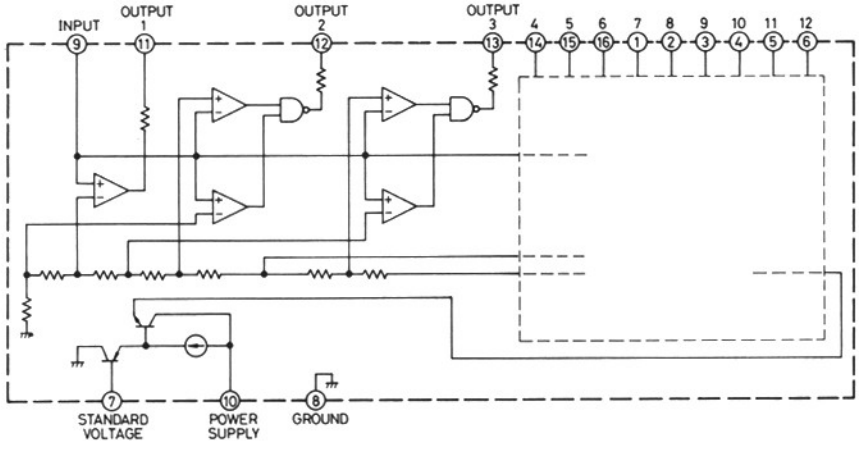
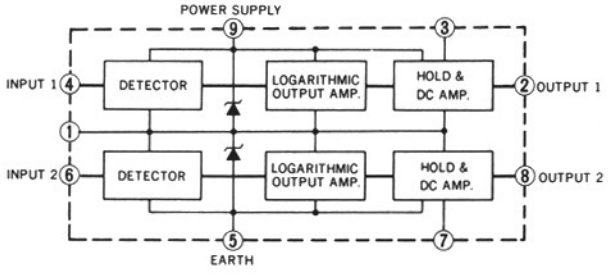


IC401, 402 (SVIMS1901P) Comparator



IC403 (SVITA7318P) Meter Amplifier

■ REPLACEMENT PARTS LIST (Electric Parts)

Important Safety Notice

Components identified by shaded area have special characteristics important for safety.
When replacing any of these components use only manufacturer's specified parts.

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

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS		
IC401, 402	SVIMS1901P	IC, Voltage Comparator
IC403	SVITA7318P	IC, Logrithm Amplifier
TRANSISTORS		
Q101, 102	**2SA798A-G2**	Transistor, Differential Amplifier (Use in ranks H2 or G2)
Q103, 104, 105, 106, 109, 110, 113, 114, 402, 403	2SC1815-O	Transistor, Current Mirror, Protection & Voltage Regulator Circuitry (Use in ranks Y or O)
Q107, 108	2SC1885-R	Transistor, Drive Amplifier (Use in ranks Q or R)
Q111, 112, 115, 116, 301, 302, 303, 304, 305	2SA1015-O	Transistor, Current Limiter, DC Detector & Switching (Use in ranks Y or O)
Q117, 118	**2SC1567-Q**	Transistor, Drive Amplifier (Use in ranks Q or R) — Use in pair ranks as same as Q117~119 and 120.
Q119, 120	**2SA794-Q**	Transistor, Drive Amplifier (Use in ranks Q or R)
Q121, 122	2SD588-R2	Transistor, Power Amplifier (Use in ranks R2 or S2) — Use in pair ranks as same as Q121~123 and 124.
Q123, 124	2SB618-R2	Transistor, Power Amplifier (Use in ranks R2 or S2)
Q125, 126	2SA912-R	Transistor, Current Stabilizer (Use in ranks Q or R)
Q201, 202	2SC2335-K	Transistor, Pulse Power Supply (Use in ranks L or K)
Q203	2SC1815-O	Transistor, Pulse Power Supply (Use in ranks Y or O)
Q306	2SA684NC-R	Transistor, Relay Drive (Use in ranks Q or R)
Q401	**2SC1384A-R**	Transistor, Regulator (Use in ranks Q or R)
Q404	2SD526-O2	Transistor, Regulator (Use in ranks O2, R2 or Y2)

Ref. No.	Part No.	Part Name & Description
DIODES		
D101, 102, 401	MA1220	Diode, Zener 22V
D103 ~ 108, 111 ~ 116	MA150	Diode, Bias Supply
D109, 110	SVDMA26-1	Diode, Bias Supply
D117 ~ 120	MA162	Diode, Protection
D121, 122	SVDSTV4HG	Diode, Thermal Compensation
D201, 202	SVDS3V40	Rectifier
D206	SVDN413	Diode, Trigger
D207	SVDCTU22S	Rectifier High Speed Resetting
D208	SVDCTU22R	Rectifier High Speed Resetting
D301	SVDMZ316B	Diode, Zener 16V
D302	**SM112**	Diode, Relay Drive
D402	SVDMZ318B	Diode, Zener 18V
D403	SVDMZ314B	Diode, Zener 14V
COILS and TRANSFORMERS		
L101, 102	SLQY15G-1U	Coil, Choke (15μH)
L201, 202	SLQW101-5	Coil, Choke (10μH)
T201	ELF18D302V	Coil, Line Filter
T202	SLT9C1	Transformer, Oscillator
T203	SLT9J3	Transformer, Output
T204	SLL18D1	Transformer, Line Filter
COMPONENT COMBINATIONS		
Z201, 202	RXAF103P22HD	Component Combination, 0.01μF (X2)
THERMISTERS		
TH201, 202	ERTD5FFL8R0E	Thermistor
VARIABLE RESISTORS		
VR101 ~ 104	EVTR4AA00B54	DC Balance Adjustment, 50kΩ (B)
VR105, 106	EVT12AA00B12	ICQ Adjustment, 100Ω (B)
VR401, 402	**EVLS3AA00B14**	Power Level Indicator Adjustment 10kΩ(B)
FUSE		
F201	XBA1C40NU100	Fuse, 4A (125V)
RELAY		
RELAY 1	SSY65	Relay, Speakers Protection
SWITCHES		
S401	SSH83	Switch, Meter Range Selector
S402	SSSA7S	Switch, Stereo/Mono(Operation) Selector

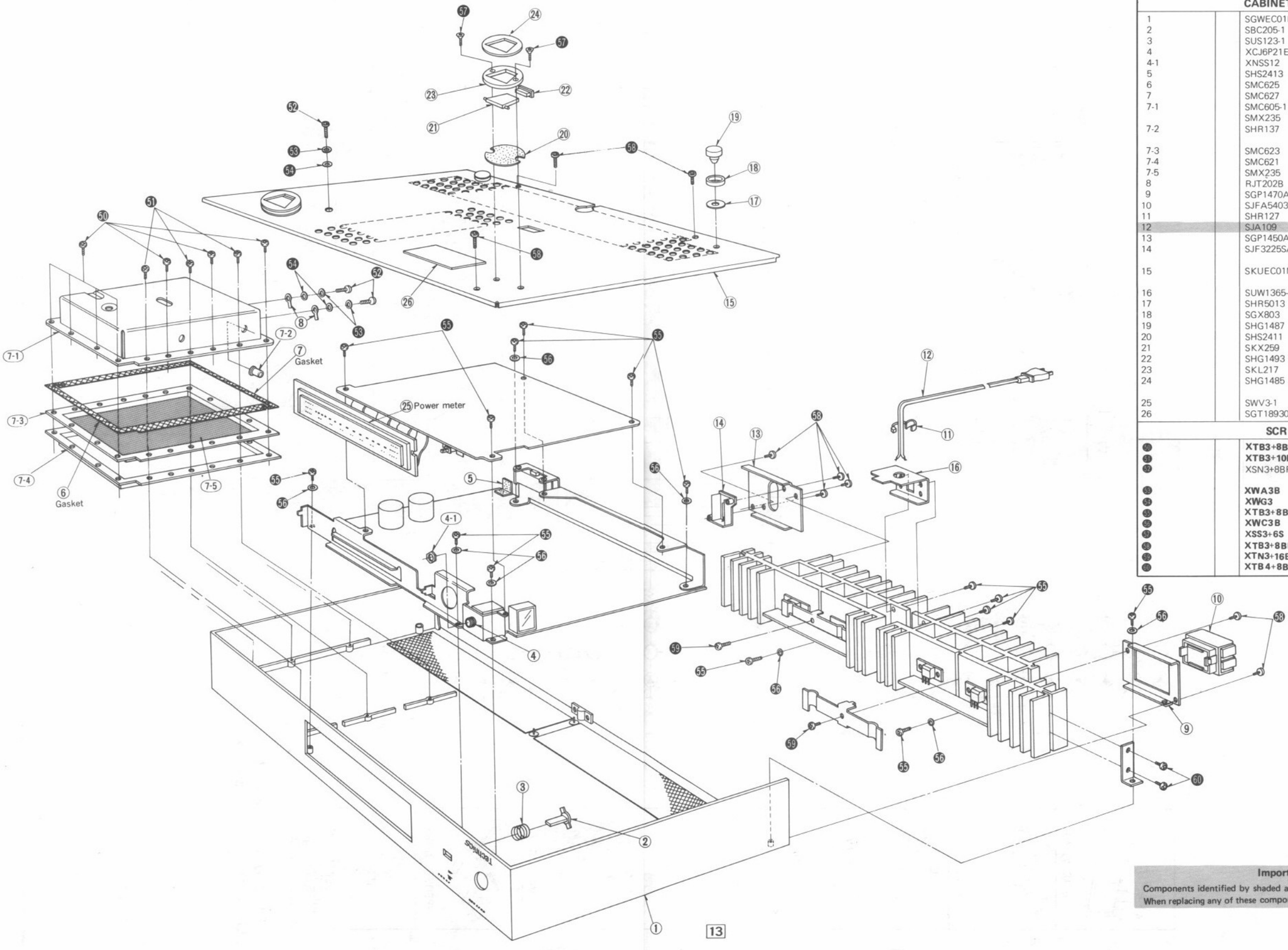
Ref. No.	Part No.	Part Name & Description
RESISTORS		
R101, 102	**ERD25TJ564**	Carbon, 560kΩ, 1/4W, ± 5%
R103, 104	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R105, 106	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R107, 108	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R109, 110	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R111, 112	**ERD25TJ564**	Carbon, 560kΩ, 1/4W, ± 5%
R113, 114	ERD25FJ222	Carbon, 2.2kΩ, 1/4W, ± 5%
R115, 116	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R117, 118	**ERD25TJ820**	Carbon, 82Ω, 1/4W, ± 5%
R119, 120	ERD25FJ181	Carbon, 180Ω, 1/4W, ± 5%
R121, 122	ERD25FJ181	Carbon, 180Ω, 1/4W, ± 5%
R123, 124	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R125, 126	ERO25CKF5600	Metal Film, 560Ω, 1/4W, ± 1%
R127, 128	ERO25CKF1002	Metal Film, 10kΩ, 1/4W, ± 1%
R129, 130	ERD25FJ330	Carbon, 33Ω, 1/4W, ± 5%
R131, 132	ERD25FJ391	Carbon, 390Ω, 1/4W, ± 5%
R133, 134	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R135, 136	ERO25CKF3300	Metal Film, 330Ω, 1/4W, ± 1%
R137, 138	ERO25CKF3300	Metal Film, 330Ω, 1/4W, ± 1%
R139, 140	**ERD25TJ331**	Carbon, 330Ω, 1/4W, ± 5%
R141, 142	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R143, 144	ERO25CKF8200	Metal Film, 820Ω, 1/4W, ± 1%
R145, 146	ERO25CKF8200	Metal Film, 820Ω, 1/4W, ± 1%
R147, 148	**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R149, 150	**ERD25TJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%

Ref. No.	Part No.	Part Name & Description
R151, 152	**ERD25TJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R153, 154	ERD25FJ181	Carbon, 180Ω, 1/4W, ± 5%
R155, 156	ERD25FJ101	Carbon, 100Ω, 1/4W, ± 5%
R157, 158	ERF2SKR47	Non-Flammable, 0.47Ω, 2W, ±10%
R159, 160	ERF2SKR47	Non-Flammable, 0.47Ω, 2W, ±10%
R161, 162	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R163, 164	**ERG1ANJ100**	Metal Oxide, 10Ω, 1W, ± 5%
R165, 166	**ERG1ANJ100**	Metal Oxide, 10Ω, 1W, ± 5%
R167	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R168	**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R169, 170	**ERG1ANJ331**	Metal Oxide, 330Ω, 1W, ± 5%
R171	ERO25CKF1002	Metal Film, 10kΩ, 1/4W, ± 1%
R181, 182	ERD25FJ330	Carbon, 33Ω, 1/4W, ± 5%
R201	**ERD25TJ124**	Carbon, 120kΩ, 1/4W, ± 5%
R202	**ERX2ANJ2R7**	Metal Film, 2.7Ω, 2W, ± 5%
R203	**ERD25TJ824**	Carbon, 820kΩ, 1/4W, ± 5%
R204	ERD50FJ100	Carbon, 10Ω, 1/2W, ± 5%
R205	**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%
R206, 207	**ERX12ANJ1R0**	Metal Film, 1Ω, 1/2W, ± 5%
R208, 209	**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%
R210	**ERD25TJ394**	Carbon, 390kΩ, 1/4W, ± 5%
R211, 212	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R301	**ERD25TJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R302, 303	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R304	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
R305		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R306		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R307		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R308		**ERD25TJ684**	Carbon, 680kΩ, 1/4W, ± 5%
R309		ERD50FJ391	Carbon, 390Ω, 1/2W, ± 5%
R401		**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R403		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R404		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R406		**ERD25TJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R407		ERO25CKF2942	Metal Film, 29.4kΩ, 1/4W, ± 1%
R408		ERO25CKF1402	Metal Film, 14kΩ, 1/4W, ± 1%
R409, 410		**ERC14GK825**	Solid, 8.2MΩ, 1/4W, ±10%
R411, 412		**ERC14GK825**	Solid, 8.2MΩ, 1/4W, ±10%
R413, 414		ERO25CKF2001	Metal Film, 2kΩ, 1/4W, ± 1%
R415		ERD25FJ561	Carbon, 560Ω, 1/4W, ± 5%
R416		**ERD25TJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R417, 418		**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R419, 420		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R421		**ERD25TJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R422		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R423		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R424		**ERD25TJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R425, 426		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R427, 428		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R429, 430		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R431, 432		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R433, 434		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R435, 436		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R437, 438		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R439, 440		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R441, 442		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R443, 444		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R445, 446		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R447, 448		**ERD25TJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R449		**ERD25TJ182**	Carbon, 1.8kΩ, 1/4W, ± 5%
R450, 451		**ERD25TJ821**	Carbon, 820Ω, 1/4W, ± 5%
R452		ERD25FJ101	Carbon, 100Ω, 1/4W, ± 5%

Ref. No.		Part No.	Part Name & Description
CAPACITORS			
C101, 102		**ECEA1ES470**	Electrolytic, 47μF, 25V
C103, 104		**ECEA1HS101**	Electrolytic, 100μF, 50V
C105, 106		ECQM1H122KZ	Polyester, 0.0012μF, 50V, ±10%
C107, 108		**ECEA50M1R**	Electrolytic, 1μF, 50V
C109, 110		ECCD1H390K	Ceramic, 39pF, 50V, ±10%
C111, 112		ECKD1H221KB	Ceramic, 220pF, 50V, ±10%
C113, 114		**ECEA1HS470**	Electrolytic, 47μF, 50V
C115, 116		ECKD1H681KB	Ceramic, 680pF, 50V, ±10%
C117, 118		ECKD1H681KB	Ceramic, 680pF, 50V, ±10%
C119, 120		ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%
C121, 122		ECQM1H333KZ	Polyester, 0.033μF, 50V, ±10%
C123, 124		ECQM1H333KZ	Polyester, 0.033μF, 50V, ±10%
C125, 126		ECCD2H330K	Ceramic, 33pF, 500V, ±10%
C127, 128		ECCD2H330K	Ceramic, 33pF, 500V, ±10%
C129, 130		ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C131, 132		ECEA63T1	Electrolytic, 1μF, 63V
C133, 134		ECEA63T1	Electrolytic, 1μF, 63V
C135		**ECEA1AS470**	Electrolytic, 47μF, 10V
C137, 138		ECCD2H120K	Ceramic, 12pF, 500V, ±10%
C139, 140		ECQM1H104KZ	Polyester, 0.1μF, 50V, ±10%
C201, 202		ECKD2H103PEM	Ceramic, 0.01μF, 500V, $^{+100}_{-0}$%
C203, 204		ECET2DR471SL	Electrolytic, 470μF, 160V
C205, 206		ECKDAL102Z-T	Ceramic, 0.001μF, 125VAC, $^{+80}_{-20}$%
C207		ECEA200G10	Electrolytic, 10μF, 200V
C208		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C209		ECQE10274T24	Polyester, 0.27μF, 1000V
C210, 211		ECEA1HF101V	Electrolytic, 100μF, 50V
C212, 213		ECEA1HF221V	Electrolytic, 220μF, 50V
C214		ECEA200G10	Electrolytic, 10μF, 200V
C215		ECKDAL102Z-T	Ceramic, 0.001μF, 125VAC, $^{+80}_{-20}$%
C216, 217		ECKDAL102Z-T	Ceramic, 0.001μF, 125VAC, $^{+80}_{-20}$%
C218, 219		ECKD3D101KB9	Ceramic, 100pF, 2000V, ±10%
C301		**ECEA16N47**	Non-Polar Electrolytic, 47μF, 16V
C302		**ECEA1AS221**	Electrolytic, 220μF, 10V
C401, 402		**ECEA50N1**	Non-Polar Electrolytic, 1μF, 50V
C403, 404		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C405, 406		**ECEA25Z4R7**	Electrolytic, 4.7μF, 25V
C407		ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%
C408, 409		**ECEA50Z1**	Electrolytic, 1μF, 50V
C410		**ECEA50ZR47**	Electrolytic, 0.47μF, 50V
C411		ECKD1H102ZF	Ceramic, 0.001μF, 50V, $^{+80}_{-20}$%

■ EXPLODED VIEW



■ REPLACEMENT PARTS LIST (Cabinet and Chassis Parts)

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

Ref. No.		Part No.	Part Name & Description
		CABINET and CHASSIS PARTS	
1		SGWEC01M	Panel, Front Ass'y
2		SBC205-1	Button, Meter Range Switch
3		SUS123-1	Spring, Push Switch
4		XCJ6P21E-A	Jack, Headphones
4-1		XNSS12	Nut, Headphones Jack M'tg
5		SHS2413	Fiber
6		SMC625	Gasket
7		SMC627	Gasket
7-1		SMC605-1	Case, Power Supply Box
		SMX235	Sheet, Insulator
7-2		SHR137	Bushing, Lead Wire
7-3		SMC623	Cover, Power Supply Box
7-4		SMC621	Cover, Power Supply Box
7-5		SMX235	Sheet, Shield
8		RJT202B	Lug Terminal Ground
9		SGP1470A	Metal Fitting, Speaker Terminal
10		SJFA5403	Terminal, Speaker
11		SHR127	Bushing, AC Cord
12		SJA109	AC Cord
13		SGP1450A	Metal Fitting, Input Terminal
14		SJF3225SA	Terminal, Input
15		SKUEC01M	Bottom Board, SKU7590 with Insulator (SMX229)
16		SUW1365-1	Metal Fitting, AC Cord Bushing
17		SHR5013	Washer, Rear Side Feet
18		SGX803	Ring, Rear Side Feet
19		SHG1487	Foot, Rear Side
20		SHS2411	Fiber, Front Side Feet
21		SKX259	Stand Foot, Front Side
22		SHG1493	Rubber Cushion, Stand Feet
23		SKL217	Foot, Front Side
24		SHG1485	Rubber Cushion, Front Feet
25		SWV3-1	Meter, LED Peak Power
26		SGT18930	Name Plate
		SCREWS and WASHERS	
㊽		**XTB3+8BFN**	Screw, Power Supply Box M'tg
㊾		**XTB3+10BFZ**	Screw, Power Supply Box M'tg
㊿		XSN3+8BFN	Screw, Power Supply Box & Bottom Board M'tg
㊿		**XWA3B**	Washer, Spring
㊿		**XWG3**	Washer, Spring
㊿		**XTB3+8BFZ**	Screw, Chassis M'tg
㊿		**XWC3B**	Washer
㊿		**XSS3+6S**	Screw, Front Foot M'tg
㊿		**XTB3+8BFN**	Screw, Metal Fitting & Bottom Board M'tg
㊿		**XTN3+16BFZ**	Screw, Power Transistor Metal Fitting M'tg
㊿		**XTB4+8BFZ**	Screw, Heat Sink M'tg

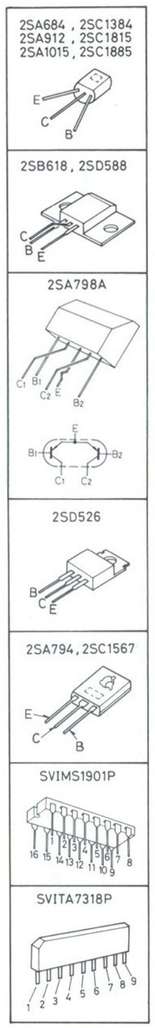
Important Safety Notice

Components identified by shaded area have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Schematic Diagram ..... Model SE-C01

Ref. No.	Production Parts	Standard Parts
D302	SVD10E1	SM112

■ TERMINAL GUIDE OF TRANSISTOR & IC



IMPORTANT SAFETY NOTICE

THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR SAFETY. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTUR'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.

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

Notes:

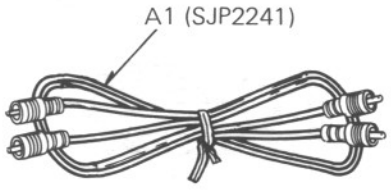
1. **S401** : Meter range selector switch in "**X0.1**" position. (X1 ⟷ X0.1)
2. **S402** : Operation selector switch in "**mono**" position. (stereo ⟷ mono)
3. **RELAY 1** : Muting and speaker protection relay in "**ON**" position.
4. Amplifier and meter circuit: The left and right channels use the same type of circuit. The resistors, capacitors, etc. used for the right channel (schematic diagram below) are the same as for the left channel.
5. ▭ Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
6. To represent transistor **Q** is used instead of **TR**. (Ex. TR1 ⟶ Q1)
7. ▬▶ Signal lines of the left channel.

Ref. No.		Part No.	Part Name & Description
ACCESSORY			
A1		SJP2241	Cord, Connection

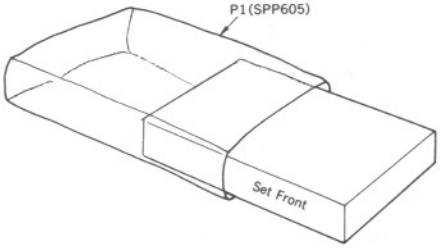
Ref. No.		Part No.	Part Name & Description
PACKINGS			
P1		SPP605	Polythylene Bag
P2		SPS1771	Pad, Upper Side
P3		SPS1769	Pad, Lower Side
P4 [M] only		SPG1909	Carton Box
P4 [MC] only		SPG1911	Carton Box
P5 [M] only		SQF10113	Instructions Book, Printed Matter
P5 [MC] only		SQF10115	Instructions Book, Printed Matter

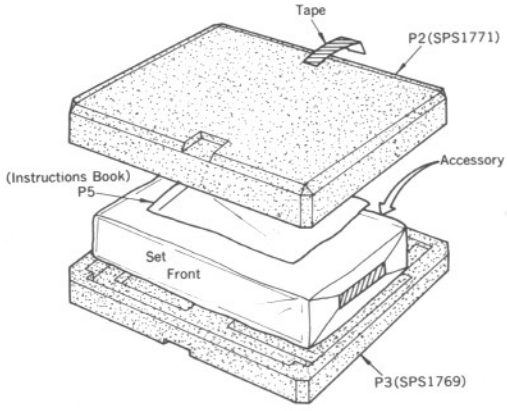
(M) is available in America only.
(MC) is available in Canada only.

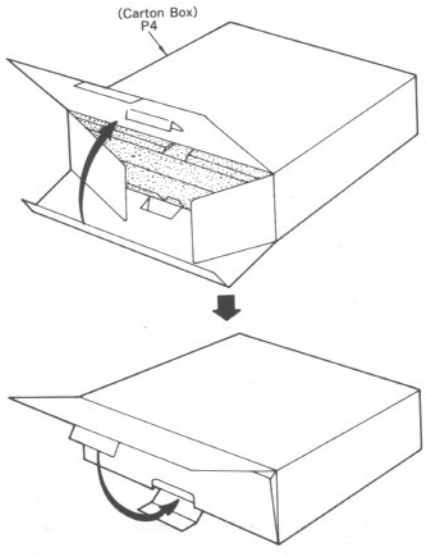
■ ACCESSORY



■ PACKINGS







• **How to assemble the carring handle**