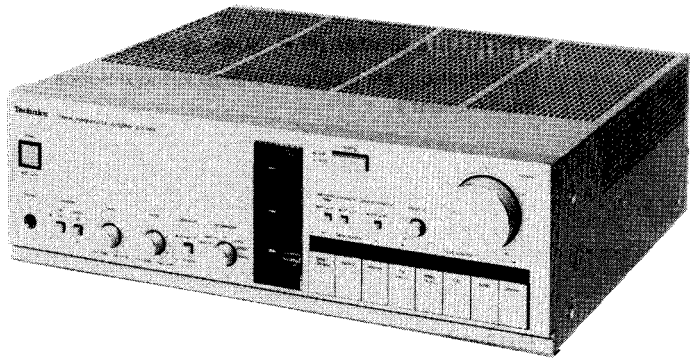
ORDER NO. HAD84062825A9

Service Manual

Computer Drive New Class A
Stereo Integrated Amplifier

Amplifier

SU-V6X



Color

(K)·····Black Type
(S)·····Silver Type

Color	Area
(K)(S)	[D]·····Scandinavia
(K)(S)	[EH] ·····Holland
(S)	[EB]·····Belgium
(K)(S)	[EW]·····Switzerland
(K)(S)	[Ei]·····Italy
(K)(S)	[EK]·····United Kingdom
(K)(S)	[EF]·····France
(K)(S)	[XL]·····Australia
(K)(S)	[PA]·····Far East PX
(K)(S)	[PE]·····European Military
(K)(S)	[XA]·····Asia, Latin America, Africa, Middle Near East and Oceania

Please use this manual together with the service manual for Model No. SU–V6X(K), Order No. HAD84042756C1.

SPECIFICATIONS

(DIN 45 500)

■ AMPLIFIER SECTION

20 Hz~20 kHz continuous power output
both channels driven — 2 × 100W (4Ω)
2 × 100W (8Ω)

40 Hz~16 kHz continuous power output
both channels driven — 2 × 100W (4Ω)
2 × 100W (8Ω)

1 kHz continuous power output
both channels driven — 2 × 100W (4Ω)
2 × 100W (8Ω)

Total harmonic distortion
rated power at 20 Hz~20 kHz — 0.007% (4Ω)
0.003% (8Ω)
rated power at 40 Hz~16 kHz — 0.007% (4Ω)
0.003% (8Ω)
rated power at 1 kHz — 0.0015% (4Ω)
0.001% (8Ω)
half power at 20 Hz~20 kHz — 0.002% (8Ω)
half power at 1 kHz — 0.001% (8Ω)
–26 dB power at 1 kHz — 0.01% (4Ω)
50 mW power at 1 kHz — 0.01% (4Ω)

Intermodulation distortion
rated power at 250 Hz: 8 kHz=4:1, 4Ω — 0.01%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω — 0.007%

Power bandwidth
both channels driven, –3 dB — 5 Hz~70 kHz (4Ω, 0.03%)
5 Hz~70 kHz (8Ω, 0.02%)

Residual hum and noise — 0.5 mV

Damping factor — 40 (4Ω), 80 (8Ω)

Input sensitivity and impedance
PHONO MM — 2.5 mV/47kΩ
MC — 170 μV/220Ω
TUNER, CD, TV/AUX 1, VIDEO/AUX 2 — 150 mV/18kΩ
TAPE 1/DA TAPE, TAPE 2 — 150 mV/18kΩ

PHONO maximum input voltage (1 kHz, RMS)
MM — 210 mV
MC — 15 mV

S/N
rated power (4Ω)
PHONO MM — 78 dB (IHF, A: 88 dB, input 2.5 mV)
MC — 72 dB (IHF, A: 72 dB, input 250 μV)
TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2 — 93 dB (IHF, A: 104 dB)
–26 dB power (4Ω)
PHONO MM — 72 dB
MC — 68 dB
TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2 — 74 dB
50 mW power (4Ω)
PHONO MM — 68 dB
MC — 67 dB
TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2 — 69 dB

Frequency response
PHONO — RIAA standard curve ±0.5 dB (30 Hz~15 kHz)
TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2 — 0.7 Hz~140 kHz (–3 dB) +0, –0.2 dB (20 Hz~20 kHz)

Technics

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shibakoen, Minato-ku,
Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
Subsonic filter	30 Hz, −6 dB/oct.
Loudness control (volume at −30 dB)	50 Hz, +9 dB
Output voltage and impedance	
REC OUT	150 mV
Channel balance, CD, AUX 1, 2 250 Hz~6,300 Hz	±1 dB
Channel separation, CD, AUX 1, 2 1 kHz	55 dB
Headphones output level and impedance	670 mV/330Ω
Load impedance	
MAIN or REMOTE	4Ω~16Ω
MAIN and REMOTE	8Ω~16Ω

■ GENERAL

Power consumption	580W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 142 × 380 mm (16-15/16" × 5-9/16" × 14-15/16")
Weight	11 kg (24.2 lb.)

Note:
Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

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

TECHNISCHE DATEN
(DIN 45 500)

■ VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz	
beide Kanäle ausgesteuert	2 × 100W (4 Ω)
	2 × 100W (8 Ω)
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz	
beide Kanäle ausgesteuert	2 × 100W (4 Ω)
	2 × 100W (8 Ω)
Dauerton-Ausgangsleistung bei 1 kHz	
beide Kanäle ausgesteuert	2 × 100W (4 Ω)
	2 × 100W (8 Ω)
Gesamtklirrfaktor	
Nennleistung bei 20 Hz ~ 20 kHz	0,007% (4 Ω)
	0,003% (8 Ω)
Nennleistung bei 40 Hz ~ 16 kHz	0,007% (4 Ω)
	0,003% (8 Ω)
Nennleistung bei 1 kHz	0,0015% (4 Ω)
	0,001% (8 Ω)
halbe Nennleistung bei 20 Hz ~ 20 kHz	0,002% (8 Ω)
halbe Nennleistung bei 1 kHz	0,001% (8 Ω)
−26 dB Leistung bei 1 kHz	0,01% (4 Ω)
50 mW Leistung bei 1 kHz	0,01% (4 Ω)
Intermodulationsfaktor	
Nennleistung bei 250 Hz: 8 kHz = 4:1, 4 Ω	0,01%
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8 Ω	0,007%
Leistungsbandbreite	
beide Kanäle ausgesteuert bei −3 dB	
	5 Hz ~ 70 kHz (4 Ω, 0,03%)
	5 Hz ~ 70 kHz (8 Ω, 0,02%)
Restbrumm und Geräusch	0,5 mV
Dämpfungsfaktor	40 (4 Ω), 80 (8 Ω)
Eingangsempfindlichkeit und -impedanz	
Phono MM	2,5 mV/47 kΩ
MC	170 μV/220 Ω
Tuner, CD, TV/AUX 1, Video/AUX 2	150 mV/18 kΩ
Tape 1/Digitaltonband, Tape 2	150 mV/18 kΩ
Maximale TA-Eingangsspannung (1 kHz, eff.)	
MM	210 mV
MC	15 mV
Tuner, CD, TV/AUX 1, Video/AUX 2, Tape 1/Digitaltonband, Tape 2	74 dB
50 mW Leistung (4 Ω)	
Phono MM	68 dB
MC	67 dB
Tuner, CD, TV/AUX 1, Video/AUX 2, Tape 1/Digitaltonband, Tape 2	69 dB
Frequenzgang	
Phono	RIAA-Standardkurve ±0,5 dB (30 Hz ~ 15 kHz)
Tuner, CD, TV/AUX 1, Video/AUX 2, Tape 1/Digitaltonband, Tape 2	0,7 Hz ~ 140 kHz (−3 dB), +0, −0,2 dB (20 Hz ~ 20 kHz)
Geräuschspannungsabstand	
Nennleistung (4 Ω)	
Phono MM	78 dB (nach IHF, A: 88 dB, Eingang 2,5 mV)
MC	72 dB (nach IHF, A: 72 dB, Eingang 250 μV)
Tuner, CD, TV/AUX 1, Video/AUX 2, Tape 1/Digitaltonband, Tape 2	93 dB (nach IHF, A: 104 dB)
−26 dB Leistung (4 Ω)	
Phono MM	72 dB
MC	68 dB
Klangregler	
Baßregler (BASS)	50 Hz, +10 dB ~ −10 dB
Höhenregler (TREBLE)	20 kHz, +10 dB ~ −10 dB
Tiefenfilter	30 Hz, −6 dB/Okt.
Lautstärkekorrektur (Loudness)	
(bei −30 dB Ausgangsleistung)	50 Hz, +9 dB
Ausgangsspannung und -impedanz	
Aufnahmeausgang (REC OUT)	150 mV
Kanalabweichung (CD, AUX 1, 2, 250 Hz ~ 6300 Hz)	±1 dB
Übersprechdämpfung (CD, AUX 1, 2, 1 kHz)	55 dB
Kopfhörerpegel und -impedanz	670 mV/330 Ω
Lautsprecherimpedanz	
MAIN oder REMOTE	4 Ω ~ 16 Ω
MAIN und REMOTE	8 Ω ~ 16 Ω

■ ALLGEMEINE DATEN

Leistungsaufnahme	580 W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	430 × 142 × 380 mm
Gewicht	11 kg

Bemerkung:
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage H.P. 3045) gemessen.

(Spezifikationen Können infolge von Verbesserungen ohne Ankündigung geändert werden.)

CARACTERISTIQUES
(DIN 45 500)

■ SECTION AMPLIFICATEUR

Puissance de sortie continue de 20 Hz~20 kHz,
les deux canaux en circuit 2 × 100W (4Ω)
2 × 100W (8Ω)
Puissance de sortie continue de 40 Hz~16 kHz,
les deux canaux en circuit 2 × 100W (4Ω)
2 × 100W (8Ω)
Puissance de sortie continue à 1 kHz
les deux canaux en circuit 2 × 100W (4Ω)
2 × 100W (8Ω)
Distorsion harmonique totale
à puissance nominale (20 Hz~20 kHz) 0,007% (4Ω)
0,003% (8Ω)
à puissance nominale (40 Hz~16 kHz) 0,007% (4Ω)
0,003% (8Ω)
à puissance nominale (1 kHz) 0,0015% (4Ω)
0,001% (8Ω)
à demi-puissance (20 Hz~20 kHz) 0,002% (8Ω)
à demi-puissance (1 kHz) 0,001% (8Ω)
puissance de −26 dB à 1 kHz 0,01% (4Ω)
puissance de 50 mW à 1 kHz 0,01% (4Ω)
Distorsion d'intermodulation
à puissance nominale à 250 Hz: 8 kHz=4:1, 4Ω 0,01%
à puissance nominale à 60 Hz: 7 kHz=4:1, SMPTE, 8Ω 0,007%
Réponse de fréquences
les deux canaux en circuit, −3 dB
5 Hz~70 kHz (4Ω, 0,03%)
5 Hz~70 kHz (8Ω, 0,02%)
Bruit et ronflement résiduels 0,5 mV
Coefficient d'amortissement 40 (4Ω), 80 (8Ω)
Sensibilité et impédance d'entrée
PHONO MM 2,5 mV/47kΩ
MC 170 μV/220Ω
SYNTONISATEUR, DISQUE COMPACT, TV/AUX 1, VIDEO/AUX 2 (TUNER, CD, TV/AUX 1, VIDEO/AUX 2) 150 mV/18kΩ
BANDE 1, (TAPE 1/DA TAPE, TAPE 2) 150 mV/18kΩ
PHONO (tension d'entrée maximum, 1 kHz RMS)
MM 210 mV
MC 15 mV
Réponse de fréquence
PHONO Courbe nominale RIAA
±0,5 dB (30 Hz~15 kHz)
SYNTONISATEUR, DISQUE COMPACTO, TV/AUX 1, VIDEO/AUX 2, BANDE 1/DIGITALE, BANDE 2 (TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2)
0,7 Hz~140 kHz (−3 dB)
+0, −0,2 dB (20 Hz~20 kHz)
Réglage de la tonalité
BASSES (BASS) 50 Hz, +10 dB~ −10 dB
AIGUS (TREBLE) 20 kHz, +10 dB~ −10 dB
Filtre subsonique 30 Hz, −6 dB/oct.

Signal/Bruit
à puissance nominale (4Ω)
PHONO MM 78 dB (IHF, A: 88 dB, entrée 2,5 mV)
MC 72 dB (IHF, A: 72 dB, entrée 250 μV)
SYNTONISATEUR, DISQUE COMPACTO, TV/AUX 1, VIDEO/AUX 2, BANDE 1/DIGITALE, BANDE 2 (TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2) 93 dB (IHF, A: 104 dB)
puissance de −26 dB (4Ω)
PHONO MM 72 dB
MC 68 dB
SYNTONISATEUR, DISQUE COMPACTO, TV/AUX 1, VIDEO/AUX 2, BANDE 1/DIGITALE, BANDE 2 (TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2) 74 dB
puissance de 50 mW (4Ω)
PHONO MM 68 dB
MC 67 dB
SYNTONISATEUR, DISQUE COMPACTO, TV/AUX 1, VIDEO/AUX 2, BANDE 1/DIGITALE, BANDE 2 (TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2) 69 dB
Compensateur physiologique (volume à −30 dB) 50 Hz, +9 dB
Tension de sortie et impédance
SORTIE ENREGISTREMENT (REC OUT) 150 mV
Equilibrage des canaux, CD, AUX 1, 2
250 Hz~6 300 Hz ±1 dB
Séparation des canaux, CD, AUX 1, 2 1 kHz 55 dB
Niveau de sortie des casques et impédance 670 mV/330Ω
Impédance de charge
PRINCIPALE ou AUXILIAIRE (MAIN or REMOTE) 4Ω~16Ω
PRINCIPALE et AUXILIAIRE (MAIN and REMOTE) 8Ω~16Ω

■ DIVERS

Consommation 580W
Alimentation CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L×H×Pr) 430 × 142 × 380 mm
Poids 11 kg

Remarques:
1. On mesure la distorsion harmonique totale au moyen d'un analyseur de spectre digital (Système H.P. 3045).
2. La Société NATIONAL-PANASONIC-FRANCE, importateur du matériel MATSUSHITA-ELECTRIC déclare que cet appareil est conforme aux prescriptions de la directive 76/889/C.E.E. (arrêté 14 Janvier 1980).

(Sujet á changement sans prearis.)

ESPECIFICACIONES (DIN 45 500)

■ SECCION AMPLIFICADOR

Potencia continua de 20 Hz~20 kHz 2 × 100W (4Ω)
en ambos canales 2 × 100W (8Ω)
Potencia continua de 40 Hz~16 kHz 2 × 100W (4Ω)
en ambos canales 2 × 100W (8Ω)
Potencia continua de 1 kHz 2 × 100W (4Ω)
en ambos canales 2 × 100W (8Ω)
Distorsión armónica total
potencia de régimen a 20 Hz~20 kHz 0,007% (4Ω) 0,003% (8Ω)
potencia de régimen a 40 Hz~16 kHz 0,007% (4Ω) 0,003% (8Ω)
potencia de régimen a 1 kHz 0,0015% (4Ω) 0,001% (8Ω)
mitad de potencia a 20 Hz~20 kHz 0,002% (8Ω)
mitad de potencia a 1 kHz 0,001% (8Ω)
−26 dB de potencia a 1 kHz 0,01% (4Ω)
50 mW de potencia a 1 kHz 0,01% (4Ω)
Distorsión por intermodulación
potencia de régimen a 250 Hz: 8 kHz=4:1, 4Ω 0,01%
potencia de régimen a 60 Hz: 7 kHz=4:1, SMPTE, 8Ω 0,007%
Ancho de banda de potencia 5 Hz~70 kHz (4Ω, 0,03%)
en ambos canales, −3 dB 5 Hz~70 kHz (8Ω, 0,02%)
Zumbido residual y ruido 0,5 mV
Factor de amortiguamiento 40 (4Ω), 80 (8Ω)
Sensibilidad e impedancia de entrada
TOCADISC. (PHONO) MM 2,5 mV/47kΩ
MC 170 μV/220Ω
SINTON., DISCO COMPACTO, TV/AUX. 1, VIDEO/AUX. 2
(TUNER, CD, TV/AUX 1, VIDEO/AUX 2) 150 mV/18kΩ
GRAB. 1/DIGITAL, GRAB. 2. (TAPE 1/DA TAPE, TAPE 2)
150 mV/18kΩ
Voltaje máximo de entrada de PHONO (1 kHz, RMS)
MM 210 mV
MC 15 mV
Respuesta de frecuencia
TOCADISC. (PHONO) curva RIAA estándar
±0,5 dB (30 Hz~15 kHz)
SINTON., DISCO COMPACTO, TV/AUX. 1, VIDEO/AUX. 2,
GRAB. 1/DIGITAL, GRAB. 2
(TUNER, CD, TV/AUX 1, VIDEO/AUX 2,
TAPE 1/DA TAPE, TAPE 2)
0,7 Hz~140 kHz (−3 dB), +0, −0,2 dB (20 Hz~20 kHz)
Controles de tono
BAJOS (BASS) 50 Hz, +10 dB~ −10 dB
AGUDOS (TREBLE) 20 kHz, +10 dB~ −10 dB
Relación de señal a ruido
potencia de régimen (4Ω)
TOCADISC. (PHONO)
MM 78 dB (IHF, A: 88 dB, entrada 2,5 mV)
MC 72 dB (IHF, A: 72 dB, entrada 250 μV)
SINTON., DISCO COMPACTO, TV/AUX. 1, VIDEO/AUX. 2,
GRAB. 1/DIGITAL, GRAB. 2
(TUNER, CD, TV/AUX 1, VIDEO/AUX 2,
TAPE 1/DA TAPE, TAPE 2) 93 dB (IHF, A: 104 dB)
−26 dB de potencia (4Ω)
TOCADISC. (PHONO) MM 72 dB
MC 68 dB
SINTON., DISCO COMPACTO, TV/AUX. 1, VIDEO/AUX. 2,
GRAB. 1/DIGITAL, GRAB. 2
(TUNER, CD, TV/AUX 1, VIDEO/AUX 2,
TAPE 1/DA TAPE, TAPE 2) 74 dB
50 mW de potencia (4Ω)
TOCADISC. (PHONO) MM 68 dB
MC 67 dB
SINTON., DISCO COMPACTO, TV/AUX. 1, VIDEO/AUX. 2
GRAB. 1/DIGITAL, GRAB. 2
(TUNER, CD, TV/AUX 1, VIDEO/AUX 2,
TAPE 1/DA TAPE, TAPE 2) 69 dB
Filtro subsónico 30 Hz, −6 dB/oct.
Control de sonoridad (volumen a −30 dB) 50 Hz, +9 dB
Voltaje e impedancia de salida
SAL. GRAB. (REC OUT) 150 mV
Equilibrio de canales, CD, AUX 1, 2 250 Hz~6 300 Hz ±1 dB
Separación de canales, CD, AUX 1, 2 1 kHz 55 dB
Impedancia y nivel de salida de los auriculares 670 mV/330Ω
Impedancia de carga
MAIN o REMOTE 4Ω~16Ω
MAIN y REMOTE 8Ω~16Ω

■ GENERAL

Consumo de energía 580W
Alimentación de energía CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensiones (An.×Al.×Prof.) 430 × 141,6 × 380 mm
Peso 11 kg
Nota:
La distorsión armónica total se mide con el analizador de espectro digital (sistema H.P. 3045).
(Estas especificaciones están sujetas a cualaquier cambio sin previo eviso.)

■ PROTECTION CIRCUITRY

The protection circuitry may have operated if eigher of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted" , or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.

If this occurs, follow the procedure outlined below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

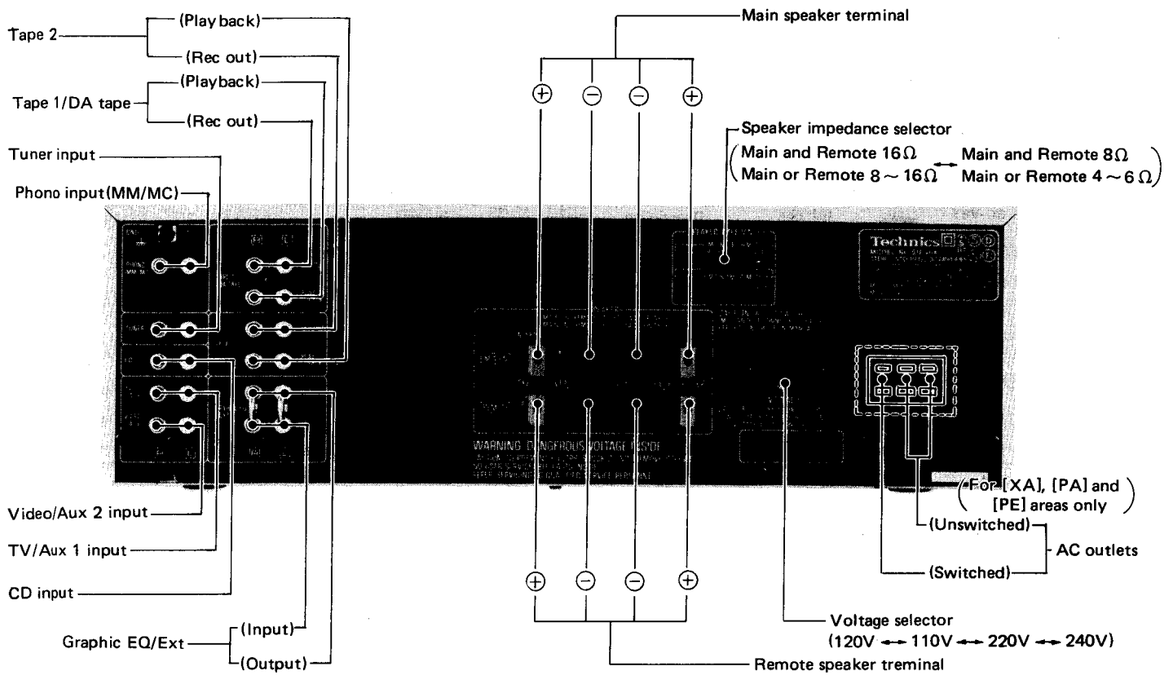
■ BEFORE REPAIR AND ADJUSTMENT

1. Turn off the power supply and short-circuit of power supply capacitors (C701 and C702, 15000μF) at resistance (about 10Ω, 5W) in order to discharge the charged voltage. Do not short between C701 and C702 by screwdriver. It may damage the component.
2. Before turning on the power supply after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current is free of abnormality. The consumed current at 60Hz/50Hz in no signal mode is shown below with respect to supply voltage 110V/120V/220V/240V.

Power supply voltage		AC110V	AC120V	AC220V	AC240V
Cousumed current	50 Hz	390 ~ 675 mA	360 ~ 620 mA	200 ~ 340 mA	180 ~ 315 mA
	60 Hz	360 ~ 645 mA	330 ~ 600 mA	180 ~ 325 mA	165 ~ 300 mA

■ LOCATION OF CONTROLS

● Change of Rear panel



● The power supply for this unit varies depending upon the areas. Also, the parts used for power supply are different. So, refer to the circuit diagram and the replacement parts list.

* Phono input capacitance is about 150pF.

■ MESSUNGEN UND JUSTIERUNGEN

● Einstellungen und zu ver Wendende Instrumente

1. AF–Oszillator.
2. Wechselstrom und Gleichstrom Röhrenvoltmeter.
3. Frequenzzähler.
4. Oszilloskop.

1. Leerlauf-Einstellung (Icq) (nach Reparatur des integrierten Verstärkers)

1. Nach der Reparatur ist der Lautstärkeregler auf Maximum einzustellen, bevor der Netzschalter eingeschaltet wird, und an die Lautsprecher–Anschlußbuchsen ist nichts anzuschließen.
2. Die Icq–Regler (VR301, VR302) entgegen dem Uhrzeigersinn drehen.
3. Die an den Verstärker angelegte Spannung allmählich mit dem Spannungsregler erhöhen und vor Beginn der Justierung ist der Wert in der nachstehenden Tabelle zu überprüfen.
4. Das elektronische Gleichstrom–Voltmeter an **TP302** (+) und **TP301** (–) (L Kanal), oder **TP304** (+) und **TP303** (–) (R Kanal) anschließen.
5. VR301 (L. Kanal) und VR 302 (R. Kanal) so justieren, daß die Spannung ca. 15 ~20 Minuten nach Einschalten des Netzschalters 20mV beträgt.
   * In diesem Gerät wird Icq durch einen Mikrocomputer geregelt, und Icq von etwas mehr als dem normalen Pegel wird durch "PREHEAT" während ca. 14 ~16 Sekunden nach Einschalten der Stromzufuhr zugeführt. Danach werden der Ausgangspegel und die Transistortemperatur durch "AUTO" erfaßt, wodurch Icq automatisch geregelt wird.

2. Prüfung der Stummschaltung bei ausgeschalteter Stromzufuhr

1. Wechselstrom–Voltmeter und 8Ω–Last (Widerstand oder Lautsprecher) an die Hauptlautsprecherausgänge anschließen.
2. Den Lautstärkeregler auf einen zweckmäßigen Lautstärkepegel einstellen.
3. Ein 1kHz–Signal, 100mV, in den AUX–Eingangsanschluß eingeben.
4. Überprüfen, daß die Ausgangsleistung 3 ~ 5 Sekunden nach Einschalten des Netzschalters auf "on" vorhanden ist, und daß die Ausgangsleistung sofort nach Ausschalten des Netzschalters auf "off" verfällt.

3. Prüfung der Überlasterfassungs– und –Schutzschaltung

1. Den Lautstärkeregler auf Maximum einstellen.
2. Den AF–Oszillator an den AUX–Anshß anschließen und ein 1kHz–Signal eingeben. Dann den Ausgangspegel des AF–Oszillators so einstellen, daß der Ausgangspegel an den Lautsprecheranschlüssen 1,5V beträgt.

3. Bei kurzgeschlossenen (L. Kanal) Hauptlautsprecheranschlüssen (mit Leitungsdraht, der so kurz und dick wie möglich sein sollte):
   Überprüfen daß:
   — das Relais ausgeschaltet ist.
   — die "auto"–Anzeige "on" erlöscht.
   — die "safety operation"–Anzeige blinkt.
4. Wenn das Relais ausgeschaltet ist, Netzschalter auf "off" stellen und eine Weile warten, bevor er wieder auf "on" gestellt wird.
   Andernfalls werden die ursprünglichen Zustände auch dann nicht wiederhergestellt, wenn Schaltung und Last wieder normal sind.

4. Prüfung der Detektions-Schaltung

1. Den Eingangs–Wahlschalter in die "tuner"–Position stellen.
2. +1V Gleichspannung (an L. Kanal) an den Wiedergabe–Anschluß von "tape 1", und –1V (an R. Kanal) an den Wiedergabe–Anschluß von "tape 2" anlegen.
3. Den Eingangs–Wahlschalter in die "tape 1"–Position stellen.
   Überprüfen daß:
   — das Relais ausgeschaltet ist.
   — die "auto"– Anzeige "on" erlöscht.
   — die "safety operation"– Anzeige blinkt.

■ MESURAGES ET RÉGLAGES

● Réglages et appareils utilisés

1. Oscillateur de fréquences audios.
2. Voltmètre électronique à CA et à CC.
3. Compteur de fréquences.
4. Osilloscope.

1. Réglage de la marche à vide (Icq) (après réparation de l'amplif. principal).

1. La réparation une fois achevée, régler le volume sonore au maximum avant de mettre en circuit le commutateur d'alimentation, et ne rien raccorder aux bornes des haut parleurs.
2. Tourner complètement la commande Icq (VR301, VR302) dans le sens inverse des aiguilles d'une montre.
3. Augmenter graduellement la tension appliquée à l'amplificateur à partir de OV au moyen du régulateur de tension, et vérifier la valeur d'après le tableau ci–dessous avant de commencer l'ajustement.
4. Raccorder le voltmètre électronique à C. C. à **TP302** (+) et à **TP301** (–) (canal de gauche) ou a **TP304** (+) et à **TP303** (–) (canal de droite).
5. Régler VR301 (Canal de gauche) ou VR302 (Canal de droite) de telle sorte que la tension soit de 20mV à peu près 15 ~ 20 minutes après que l'interrupteur d'alimentation est mis "en circuit" ("on").
   * Dans cet appareil, Icq est contrôlé par un microordinateur, et Icq un peu plus que le niveau normal est appliqué par "PRECHAUFFAGE" pendant à peu près 14 ~ 16 secondes après la mise sous tension. Après cela, le niveau de sortie et la température du transistor sont détectés là par AUTO contrôlant automatiquement Icq.

2. Vérification de l'accord silencieux avec la mise sous tension/hors circuit.

1. Raccorder un voltmètre à C.A. et une charge de 8Ω (résistance ou haut–parleur) aux bornes du haut–parleur principal.
2. Régler l'intensité sonore sur un niveau approprié.
3. Appliquer un signal de 1kHz 100mV à la borne d'entrée AUXILIAIRE.
4. S'assurer que la puissance de sortie soit amplifiée 3 ~ 5 secondes après la "mise sous tension" de l'interrupteur d'alimentation et que la puissance de sortie s'éteigne immédiatement après la "mise hors circuit" de l'interrupteur d'alimenattion.

3. Vérification de la détection d'une surcharge et du circuit de protection.

1. Régler la commande du volume au maximum.
2. Raccorder l'oscillateur d'audio–fréquences à la borne AUXILIAIRE et appliquer un signal d'entrée de 1kHz à la borne. Puis, régler le niveau de sortie de l'oscillateur d'audio–fréquences de telle sorte que le niveau de sortie des bornes du haut–parleur soit de 1,5V.
3. Avec les bornes du haut–parleur principal (Canal de gauche) court–circuitées par un fil d'amenée (aussi épais et court que possible):
   S'assurer que:
   — le relais est hors circuit.
   — l'indicateur "auto" qui est "en circuit" s'éteint.
   — l'indicateur de "sécurité de fonctionnement" clignote.
4. Lorsque le relais est hors circuit, mettre "hours circuit l'alimentation et l'appareil pendant un certain temps avant de le mettre "en marche".
   Autrement, les conditions initiales ne seront pas rétablies, même lorsque le circuit et la charge sont normaux.

4. Vérification du circuit de détection par C. C.

1. Régler le sélecteru d'entrée sur la position "tuner".
2. Appliquer une tension C. C. de +1V (au canal de gauche) à la borne de lecture de la bande I et de–1V (au canal de droite) à la borne de lecture de la bande 2.
3. Régler le sélecteur d'entrée sur la position "tape 1".
   S'assurer que:
   — le relais est hors circuit.
   — l'indicateur "auto" qui est "en circuit" s'éteint.
   — l'indicateur de "securité de fonctionnement" clignote.

■ MEDICIONES Y AJUSTE

- Puesta e instrumentos usados

1. Oscilador AF
2. Voltimetro electrónico de CA y CC.
3. Contador de frecuencia.
4. Osciloscopia.

1. Ajuste de Marcha Lenta (I_{CQ}) (después de reparar el amp. principal)

1. Después de la reparación, ajustar el volumen de sonido a máximo antes de prender el interruptor de alimentación, y no conectar nada a los terminales de altavoz.
2. Girar completamente a la derecha el contador de control I_{CQ} (VR301, VR302).
3. Aumente el voltaje aplicado al amplificador gradualmente desde 0V mediante un regulador de voltaje, y asegúrese del valor en la tabla de abajo antes de comenzar el ajuste.
4. Conectar el voltímetro electrónico CC a **TP302** (+) y **TP301** (–) (Canal I) o **TP304** (+) y **TP303** (–) (Canal D).
5. Ajuste VR301 (canal I) o VR302 (canal D) de manera que el voltaje sea 20mV unos 15 ~ 20 min. después de conectar la corriente.
   * En este aparato, ICQ es regulado mediante un microcomputador, y ICQ, un poco más del nivel normal, es aplicado mediante "PRECALENTAMIENTO" por unos 14~16 seg. después de conectar la corriente. Después de eso, el nivel de salida y la temperatura de transistor son detectados mediante AUTO allí automáticamente regulando ICQ.

2. Comprobación de silenciamiento con corriente conectada/desconectada.

1. Conecte voltímetro de CA y carga de 8Ω (resistor o altavoz) a terminales de altavoz principales.
2. Ajuste el volumen de sonido a un nivel apropiado.
3. Aplique señal de 1kHz 100mV a terminal de entrada AUX.
4. Asegúrese de que salida sea ganada 3 ~ 5seg. después de conectar la corriente y que la salida desaparezca inmediatamente después de desconectar la corriente.

3. Comprobación de detección de sobrecarga y circuito de protección

1. Ponga el control de volumen en máximo.
2. Conecte el oscilador AF al terminal AUX y aplique la señal de entrada de 1kHz al terminal. Luego ajuste el nivel de salida del oscilador AF de manera que el nivel de salida de los terminales de altavoz se convierta en 1,5V.
3. Con los terminales de altavoz (canal I) cortocircuitados mediante hilo conductor (lo más grueso y corto posible):
   Asegurar de que:
   - relé está desconectado.
   - indicador "auto" "on" (encendido) se apaga.
   - indicador de operación de seguridad parpadea.
4. Cuando el relé esté desconectado, desconecte la corriente y unidad por un rato antes de conectarla.
   De lo contario, las condiciones originales no se restaurarán aun cuando el circuito y la carga sean normales.

4. Comprobación de Circuito de Detección CC

1. Poner el selector de entrada en la posición de "sintonizador".
2. Aplicar Voltaje CC +1V (Chanal I) al termanl de reproducción de cinta 1, –1V (Chanal D) al terminal de reproducción de cinta 2.
3. Poner el selector de entrada en la posición de "cinta 1".
   Asegurar de que
   - rélé está desconectado.
   - indicador "auto" "on" (encendido) se apaga.
   - incicador de operación de seguridad parpadea.

CHANGES

■ REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by △ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Ⓚ –marked parts are used for black only, while ○ –marked parts are for silver type only.
4. Part other than Ⓚ – and ○–marked are used for both black and silver type.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. The "Ⓢ" mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity per set.

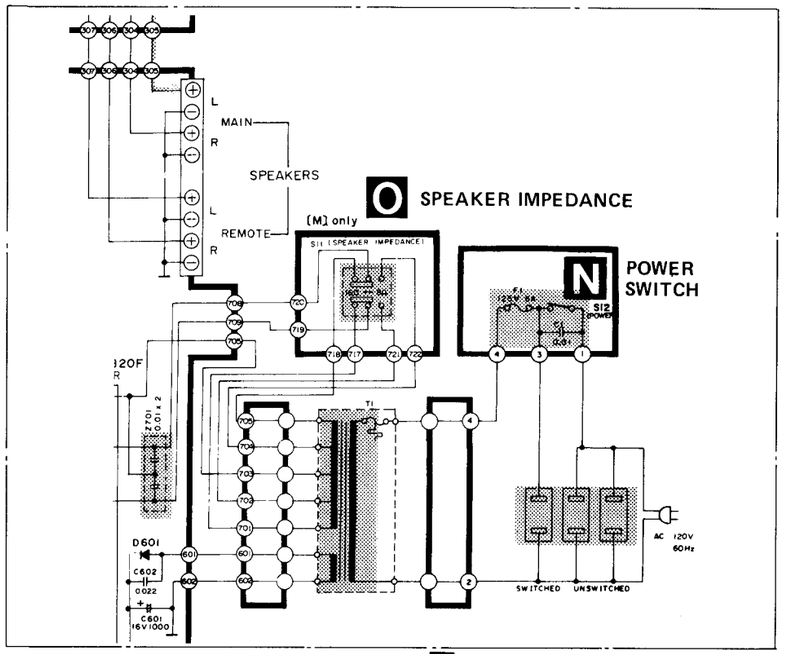
Ref. No.	Change of Part No. SU-V6X [M]	→ SU-V6X [D,EF,EI,EH,EW,EK,XA,XL,PA,PE]	Part Name & Description	Per Set (Pcs.)
TRANSISTORS				
Q309,310	2SA1123-R	2SA1124-R	Inverter	2
DIODES				
D403~406	MA182	Deletion	(Correction)	0
D618	LN0603YP4	LN0603GP3G [PA,PE]	LED	1
		LN0603YP4 [Other]		
TRANSFORMER				
T1	SLT5Q139	SLT5Q135	Power Source △	1
FUSES				
F1	XBA1F60NU14	XBA2C63TR0	250V, T6.3A △	1
F2	Addition	XBA2C31TR0	250V, T3.15A △	1
SWITCHES				
S11	ESB70221T	SSH1158	Impedance Selector △	1
S12	SSH1109	ESB90259S	Power Source △	1
S13	Addition	ESE37219	Voltage Selector △	
RESISTORS				
R331,332	ERD25FJ102	ERD2FCG102	Carbon, 1kΩ	2
R333,334	ERD25FJ102	ERD2FCG102	Carbon, 1kΩ	2
R339,340	ERD25FJ102	ERD2FCG102	Carbon, 1kΩ	2
R341,342	ERD25FJ102	ERD2FCG102	Carbon, 1kΩ	2
R375,376	ERD25FJ331	ERD2FCG331	Carbon, 330	2
R387,388	ERD25FJ-100	ERD2FCG100	Carbon, 10Ω	2
R701,702	ERG1ANJ391	ERQ12AJ391	Fuse Type Metal, 390Ω	2
CAPACITORS				
C331,332	ECKD1H223ZF	ECKD1H473ZF	Ceramic, 0.047μF	2
C335,336	Addition	ECKD1H473ZF	Ceramic, 0.047μF	2
C701,702	ECET71V153Z	ECET71V153X	Electrolytic, 15,000μF	2
CABINET & CHASSIS PARTS				
1	SGWUV6X-KM	○ SGWUV6X-SP [PA,PE]	Front Panel Ass'y	1
		○ SGWUV6X-SD [Other]		
		Ⓚ SGWUV6X-KD		
5	SBC641-4A	○ SBC641-2A	Button, Phono	1
		Ⓚ SBC641-4A		
6	SBC641-4B	○ SBC641-2B	Button, Tuner	1
		Ⓚ SBC641-4B		
7	SBC641-4C	○ SBC641-2C	Button, CD	1
		Ⓚ SBC641-4C		
8	SBC641-4D	○ SBC641-2D	Button, Video/AUX2	1
		Ⓚ SBC641-4D		
9	SBC641-4E	○ SBC641-2E	Button, TV/AUX1	1
		Ⓚ SBC641-4E		
10	SBC641-4F	○ SBC641-2F	Button, Source	1
		Ⓚ SBC641-4F		

Ref. No.	Change of Part No. SU-V6X [M]	→ SU-V6X [D,EF,EI,EH,EW,EK,XA,XL,PA,PE]	Part Name & Description	Per Set (Pcs.)
CABINET & CHASSIS PARTS				
11	SBC641-4G	○ SBC641-2G	Button, Tape 2	1
		Ⓚ SBC641-4G		
12	SBC641-4H	○ SBC641-2H	Button, Tape 1	1
		Ⓚ SBC641-4G		
14	SBC643-2	○ SBC643	Button, Muting	1
		Ⓚ SBC643-2	Button, Muting	1
19	SJT345	SJT347	Crip, Fuse	2
28	SGPUV6X-KM	SGPUV6X-SK [EK]	Rear Panel Ass'y	1
		SGPUV6X-SL [XL]		
		SGPUV6X-SX [XA]		
		SGPUV6X-SD [Other]		
29	RJA9Y	SJA111 [EW,XA]	AC Cord △	1
		QFC1205M [EK]		
		QFC1207MA [XL]		
		RJA52YA [PA,PE]		
		SJA97 [Other]		
30	SJS601-3	SJS601-3 [XA,PA,PE]	Socket △	1
		Deletion [Other]		
31	SKC1590BB2	○ SKC1590S2	Cabinet	1
		Ⓚ SKC1590BB2		
35	RHR111	SHR129 [EK]	Bushing	1
		SHR131 [XL]		
		SHR127 [Other]		
PACKING PARTS				
P1	SPG4820	SPG4819 [EF]	Carton Box	1
		SPG4820 [EW,XA,PA,PE]		
		SPG4818 [Other]		
		○ SPG4837 [EK]		
		Ⓚ SPG4837-1 [EK]		
P2	SPS4289-4	SPS4289-4 [EW,EK,XA,PA,PE]	Pad, Left Side	1
		SPS-4289-5 [Other]		
P3	SPS4291-4	SPS4291-4 [EW,EK,XA,PA,PE]	Pad, Right Side	1
		SPS4291-5 [Other]		
ACCESSORIES				
A1	SQF12050	SQF12054 [XA]	Instruction Book	1
		SQF12055 [PA,PE]		
		SQF12052 [Other]		
A2	Addition	SJP9215 [PA,PE]	Plug △	1
		SJP5213-1 [XA]		
		SJP5215 [XA]		

■ SCHEMATIC DIAGRAM

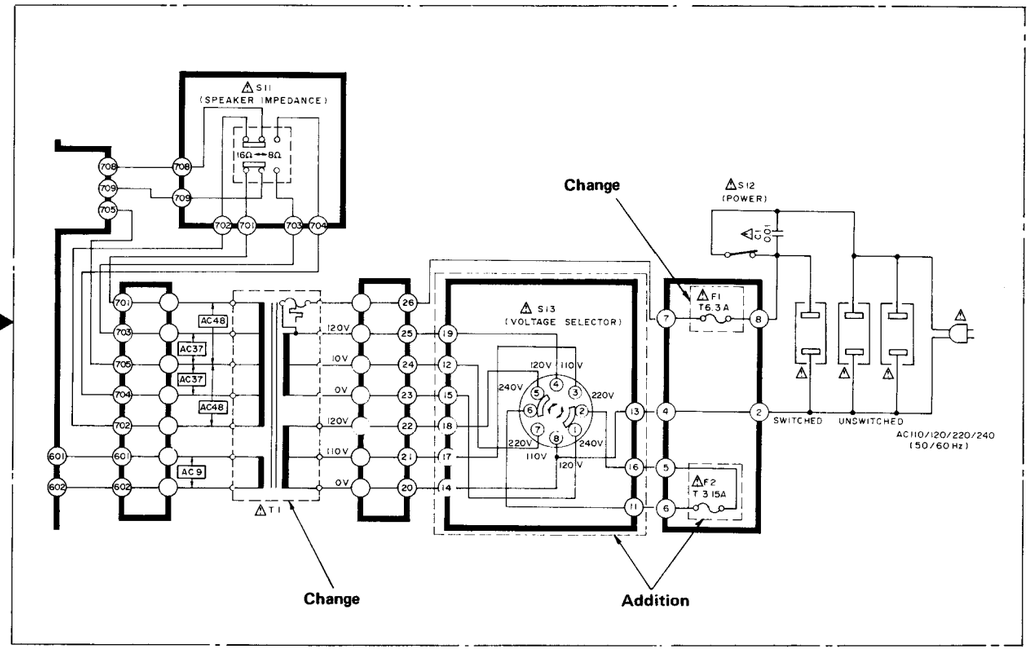
• Change of power supply

For [M] area



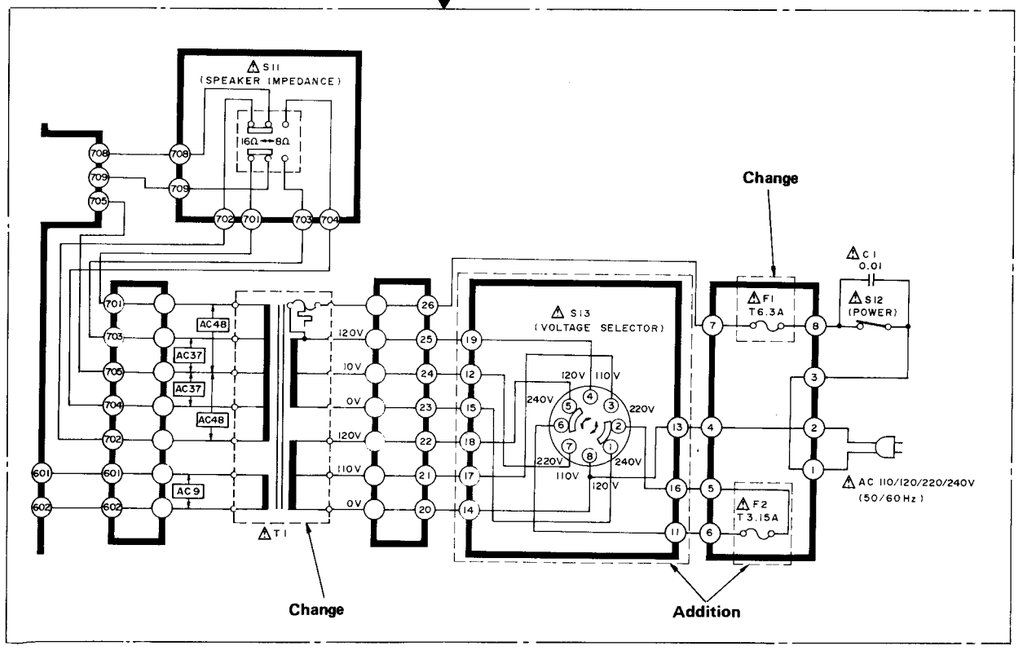
Change

For [XA], [PA] and [PE] areas

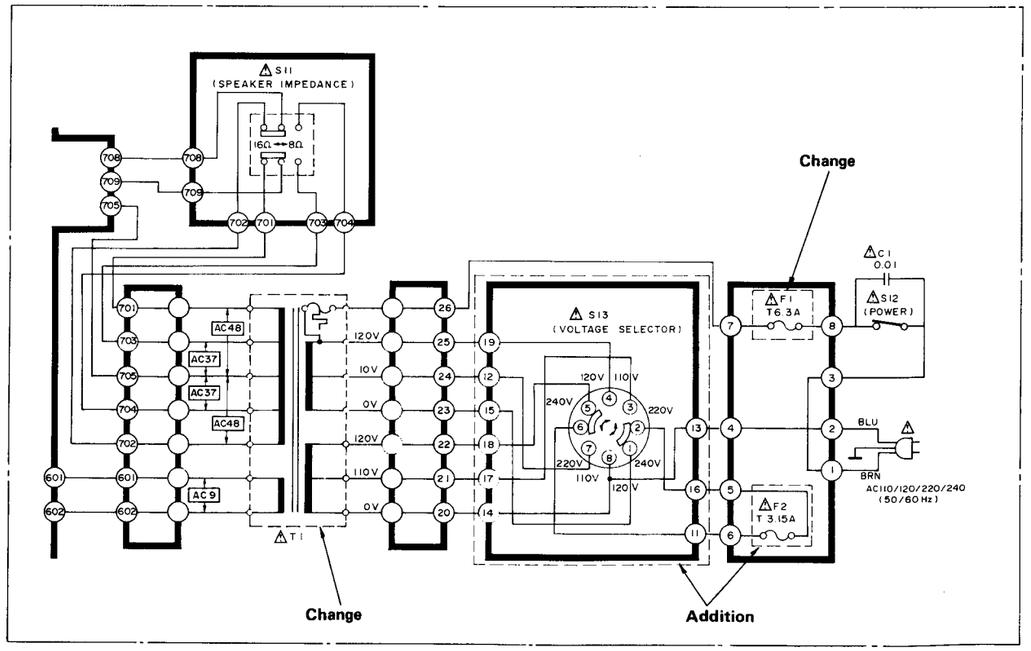


Change

For Continental Europe([D], [EH], [EB], [EW], [Ei], [EK], [EF] areas)



For [XL] area



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Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS		
IC21	MN1404STE	ICQ Control
IC101	SVINJM4560DX	Equalizer AMP
TRANSISTORS		
Q21~29	2SC1815—Y	Switching
Q101~104	2SK369—GR	FET Differential AMP
(Use pair ranks as same as Q101,Q102,Q103 and Q104)		
Q301,302	2SK389—GR	FET Differential AMP
Q305~308 Ⓢ	2SC1845—E	FET Differential
501~504		AMP Over Load Deft, Relay Drive.
Q309,310	2SA1124—R	Inverter
Q311,312	2SA1124—R	A Class AMP
Q313,314	2SC2632—R	A Class AMP
Q315,316	2SC2631—Q	Pre Drive
Q317,318	2SA1123—S	Pre Drive
(Use pair ranks as same as Q315,Q316,Q317 and Q318)		
Q319,320	2SC2592—R	Drive
Q321,322	2SA1112—R	Drive
(Une pair ranks as same as Q319,Q320,S321 and Q322)		
Q323,324	2SC3280—R	Power AMP
Q325,326	2SA1301—R	Power AMP
(Use pair ranks as same as Q323,Q324,Q325 and Q326)		
Q327,328	2SD661—S	Bias Control
Q329,330,705	2SC1815—Y	Bias Control, Regulator
Q701	2SC2592—R	Regulator
Q702	2SA1112—R	Regulator
Q703,704 Ⓢ	2SK34—D1	Regulator
DIODES		
D21,22 Ⓢ	MA162A	Switchng
D23	MA1062A	6. 2V Zener
D101,102 Ⓢ	MA162A	Switching
305~310,506		
D311~314	MA182	Switching
D315,316	MA27W—A	Switching
325~328		
D317~324 Ⓢ	0A90	Switching
D501~505 Ⓢ	MA162A	Signal Rectifier
D601 Ⓢ⚠	SVDSR1K2	Rectifier
D605,608	LN446YP	Power, Via Tone IND
D606	LN346GP	Auto IND
D607	LN846RP	Straight DC IND
D609~613,615	SVDPR5533K	Input Selector IND
D614,616,617	SVDAY5533K—M	Tape Selector IND
D618(PA,PE)	LN0603GP3G	LED
D618(other)	LN0603YP4	New Class A IND
D623~626	MA1030	3V Zener
D701 ⚠	SVDS10VB20F	Rectifier
D702	SVDMZ322A	22V Zener
COILS and TRANSFORMER		
L301,302	SLQY15G—30	Choke
T1 ⚠	SLT5Q135	Power Source
VARIABLE RESISTORS		
VR201	EWJKMA054B15	Volume Adj, 100kΩ (B)
VR202	EWHFKA002G15	Volume Balance Adj, 100kΩ(G)
VR203	EWCX8A011012	Tone Adj
VR204	EWCXEA011C15	Bass Adj
VR301,302	EVNK6AA00B13	ICQ Adj, 1kΩ(B)

Ref. No.	Part No.	Part Name & Description
FUSE		
F1 ⚠	XBA2C63TR0	250V, T6.3A
F2 ⚠	XBA2C31TR0	250V, T3.15A
COMPONENT COMBINATIONS		
Z301,302 ⚠	ERF3GBKR22N	3W, 0.22Ω(×2)
Z701 ⚠	SXRFS203ZSM	0.01μF(×2)
THERMISTERS		
TH301,302	ERTD2ZHL103S	10kΩ
PS601	SRPBG47101	Temperature Det (60°C, 140°F)
SWITCHES		
S1,6,7	SSH3065	Phono Selector, Loudness, Subsonic Filter
S2,3	SSH807	Input Selector, Tape Monitor
S4	SSR189	Rec Output Selector
S5	SSH1143	Audio Muting Tperation
S8	SSH1141	Speaker Selector
S9,10	SSH2017	Speaker Impedance Selector
S11	SSH1158	Power Source
S12 ⚠	ESB90259S	Voltage Selector
S13 ⚠	ESE37219	
RELAY		
RLY501 ⚠	SSY105	Speaker Protection
CABINET and CHASSIS PAPTS		
1(PA,PE) ○	SGWUV6X—SP	Front Panel Ass'y (1)
1(other) ○	SGWUV6X—SD	Front Panel Ass'y (1)
1 Ⓚ	SGWUV6X—KD	Front Panel Ass'y (1)
2	SBN993—1	Knob, Bass, Treble, Rec (3)
3	SBN1181	Knob, Balance (1)
4	SBN1177	Knob, Volume (1)
5 ○	SBC641—2A	Button, Phono (1)
5 Ⓚ	SBC641—4A	Button, Phono (1)
6 ○	SBC641—2B	Button, Tuner (1)
6 Ⓚ	SBC641—4B	Button, Tuner (1)
7 ○	SBC641—2C	Button, CD (1)
7 Ⓚ	SBC641—4C	Button, CD (1)
8 ○	SBC641—2D	Button, Video/AUX2 (1)
8 Ⓚ	SBC641—4D	Button, Video/AUX2 (1)
9 ○	SBC641—2E	Button, TV/AUX1 (1)
9 Ⓚ	SBC641—4E	Button, TV/AUX1 (1)
10 ○	SBC641—2F	Button, Source (1)
10 Ⓚ	SBC641—4F	Button, Source (1)
11 ○	SBC641—2G	Button, Tape 2 (1)
11 Ⓚ	SBC641—4G	Button, Tape 2 (1)
12 ○	SBC641—2H	Button, Tape 1 (1)
12 Ⓚ	SBC641—4H	Button, Tape 1 (1)

Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PAPTS		
13	SUS753—1	Spring, Input Selector (8)
14	SBC643	Button, Muting (1)
15	SUS123—3	Spring, Muting (1)
16	SBC399T	Button, Speaker, Operation (3)
17	SBC627	Button, Power (1)
18	SBC621	Button, Subsonic Filter, Loudness, Phono (3)
19	SJT347	Crip, Fuse (4)
20	SJJ71B	Jack, Headphone(1)
21	SML107—7	Plate, Power Transformer (1)
22	SKU8990—4	Bottom Board (1)
23	SKL249	Foot (4)
24	SMN1893	Fix Plate (1)
25	SJF4815—1	Permanal Board, Speaker (1)
26	SJF3059—8N	Terminal Board, Tape 1, Tape 2 (1)
27	SJF3059—2N	Terminal Board, Source input (1)
28(EK)	SGPUV6X—SK	Rear Panel Ass'y (1)
28(XL)	SGPUV6X—SL	Rear Panel Ass'y (1)
28(XA)	SGPUV6X—SX	Rear Panel Ass'y (1)
28(other)	SGPUV6X—SD	Rear Panel Ass'y (1)
29(EW) ⚠	SJA111	AC Cord (1)
29(EK) ⚠	QFC1205M	AC Cord (1)
29(XL) ⚠	QFC1207MA	AC Cord (1)
29(PA,PE) ⚠	RJA52YA	AC Cord (1)
29(other) ⚠	SJA97	AC Cord (1)
30(XA,PA,PE) only ⚠	SJS601—3	Socket (1)
31 ○	SKC1590S2	Cobinet (1)
31 Ⓚ	SKC1590BB2	Cabinet (1)
32	SHR9717	Holder, P. C. B. (1)
33	SHR9720	Holder, P. C. B. (1)
34	SJP9205—2	Pin (2)
35(XL)	SHR131	Bushing (1)
35(EK)	SHR129	Bushing (1)
35(other)	SHR127	Bushing (1)
36	SUW2827—1	Plape, Speaker Switch (1)
37	SBC527	Button, Inpedance Selector (1)
38	SJT3319	Post(3 pin) (1)
38	SJT3213	Post(2 pin) (1)
39	SJS5331	Socket(3 pin) (1)
39	SJS5629	Socket(6 pin) (1)
40	SJT783	Terminal (11)
SCREWS, WASHERS and NUT		
N1 Ⓢ	XTB3×8FZ	Tapping, ⊕3×8 (4)
N2 Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (4)
N3 Ⓢ	XSN3+6S	Tapping, ⊕3×6 (2)
N4 Ⓢ	XWA3B	Spring, φ3 (2)
N5 Ⓢ	XSN3+6S	⊕3×6 (2)
N6 Ⓢ	XWA3B	Spring, φ3 (2)

Ref. No.	Part No.	Part Name & Description
SCREWS, WASHERS and NUT		
N7 Ⓢ	XSN3+6S	⊕3×6 (3)
N8 Ⓢ	XWA3B	Sping, φ3 (3)
N9 Ⓢ	XSN3+6S	⊕3×6 (3)
N10 Ⓢ	XWA3B	Spring, φ3 (3)
N11	SNE4021	Nut (2)
N12	SNE4021	Nut (1)
N13	SNE4021	Nut (1)
N14 Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (4)
N15 Ⓢ	XTB3+10BFN	Tapping, ⊕3×10(4)
N16 Ⓢ	XWG3	Thin, φ3 (4)
N17	XTB4+10BFN	Tapping, ⊕4×10(4)
N18 Ⓢ	XTB3+6BFZ	Tapping, ⊕3×6 (5)
N19 Ⓢ	XTB3+6BFZ	Tapping, ⊕3×6 (1)
N20 Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (3)
N21 Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (2)
N22 Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (4)
N23 ○	SEN2095—4	Cabinet (6)
N23 Ⓚ	SNE2095—5	Cabinet (6)
N24 Ⓢ	XSN3+6FZS	SP SW, ⊕3×6 (2)
PACKING PARTS		
P1(EK) ○	SPG4837	Carton Box (1)
P1(EK) Ⓚ	SPG4837—1	Carton Box (1)
P1(EF)	SPG4819	Carton Box (1)
P1(EW,XA, PA,PE)	SPG4820	Carton Box (1)
P1(other)	SPG4818	Carton Box (1)
P2(EW,EK, XA,PA,PE)	SPS4289—4	Pad, Left Side (1)
P2(other)	SPS4289—5	Pad, Left Side (1)
P3(EW,EK, XA,PA,PE)	SPS4291—4	Pad, Right Side (1)
P3(other)	SPS4291—5	Pad, Right Side (1)
P4	SPP730	Polyethylene Bag (1)
ACCESSORIES		
A1(XA)	SQF12054	Instruction Book (1)
A1(PA,PE)	SQF12055	Instruction Book (1)
A1(other)	SQF12052	Instruction Book (1)
A2(PA,PE) ⚠	SJP9215	Plug
A2(XA) ⚠	SJP5213—1	Plug
A2(XA) ⚠	SJP5215	Plug

Printed in Japan
840608300 Ⓝ YK / KS / TN

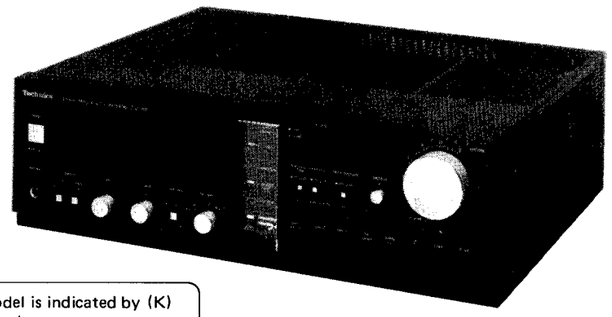
ORDER NO. HAD84042756C1

Service Manual

Stereo Integrated DC Amplifier

SU-V6X(K)

[M], [MC]



* The black type model is indicated by (K) in the Service Manual.
* The colors of this model is black type only.

Areas

* [M] is available in the U.S.A.
* [MC] is available in Canada.

Specifications

(Specifications are subject to change without notice for furthet improvement.)
(Weights and dimensions shown are approximate.)

(IHF '78)

■ AMPLIFIER SECTION

Rated minimum sine wave RMS power output
20 Hz~20 kHz both channels driven
0.003% total harmonic distortion
100W per channel (8 ohms)
20 Hz~20 kHz both channels driven
0.007% total harmonic distortion
100W per channel (4 ohms)

1 kHz continuous power output	
both channels driven	
0.001% total harmonic distortion	100W per channel (8 ohms)
0.0015% total harmonic distortion	100W per channel (4 ohms)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.003% (8 ohms)
half power at 20 Hz~20 kHz	0.002% (8 ohms)
half power at 1 kHz	0.001% (8 ohms)
SMPTE intermodulation distortion	0.007% (8 ohms)
Frequency response	
PHONO	RIAA standard curve ±0.5 dB
TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2	0.7 Hz~140 kHz, −3 dB 20 Hz~20 kHz, +0 dB, −0.2 dB
Input sensitivity	
PHONO MM	0.25 mV (2.5 mV, IHF '66)
MC	17 μV (170 μV, IHF '66)
TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2	15 mV (150 mV, IHF '66)
S/N (IHF, A)	
PHONO MM	77 dB (88 dB, IHF '66 2.5mV input)
MC	77 dB (72 dB, IHF '66 250μV input)
TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2	82 dB (104 dB, IHF '66)
Maximum input voltage	
PHONO MM	170 mV (210 mV, 1 kHz)
MC	12 mV (15 mV, 1 kHz)
Input impedance	
PHONO MM	47 kilohms
MC	220 ohms
TUNER, CD, TV/AUX 1, VIDEO/AUX 2, TAPE 1/DA TAPE, TAPE 2	18 kilohms
Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
Subsonic filter	30 Hz, −6 dB/oct.
Loudness control (volume at −30 dB)	50 Hz, +9 dB
Muting	−20 dB
Output voltage	
TAPE 1, 2 REC OUT	150 mV
Low frequency damping factor	80 (8 ohms) 40 (4 ohms)
Load impedance	
MAIN or REMOTE	4~16 ohms
MAIN and REMOTE	8~16 ohms

■ GENERAL

Power consumption	420W, 520 VA
Power supply	AC 120V, 60 Hz
Dimensions (W×H×D)	430 × 142 × 380 mm (16-15/16" × 5-9/16" × 14-15/16")
Weight	11 kg (24.2 lb.)

Note:
Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

Technics

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Secaucus. New Jersey 07094

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91-238 Kauhi St. Ewa Beach
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Ave, 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

SU-V6X

■ CONTENTS

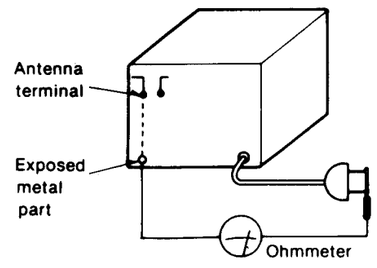
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

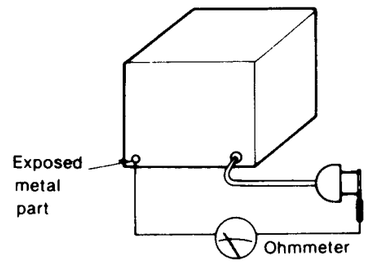
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ

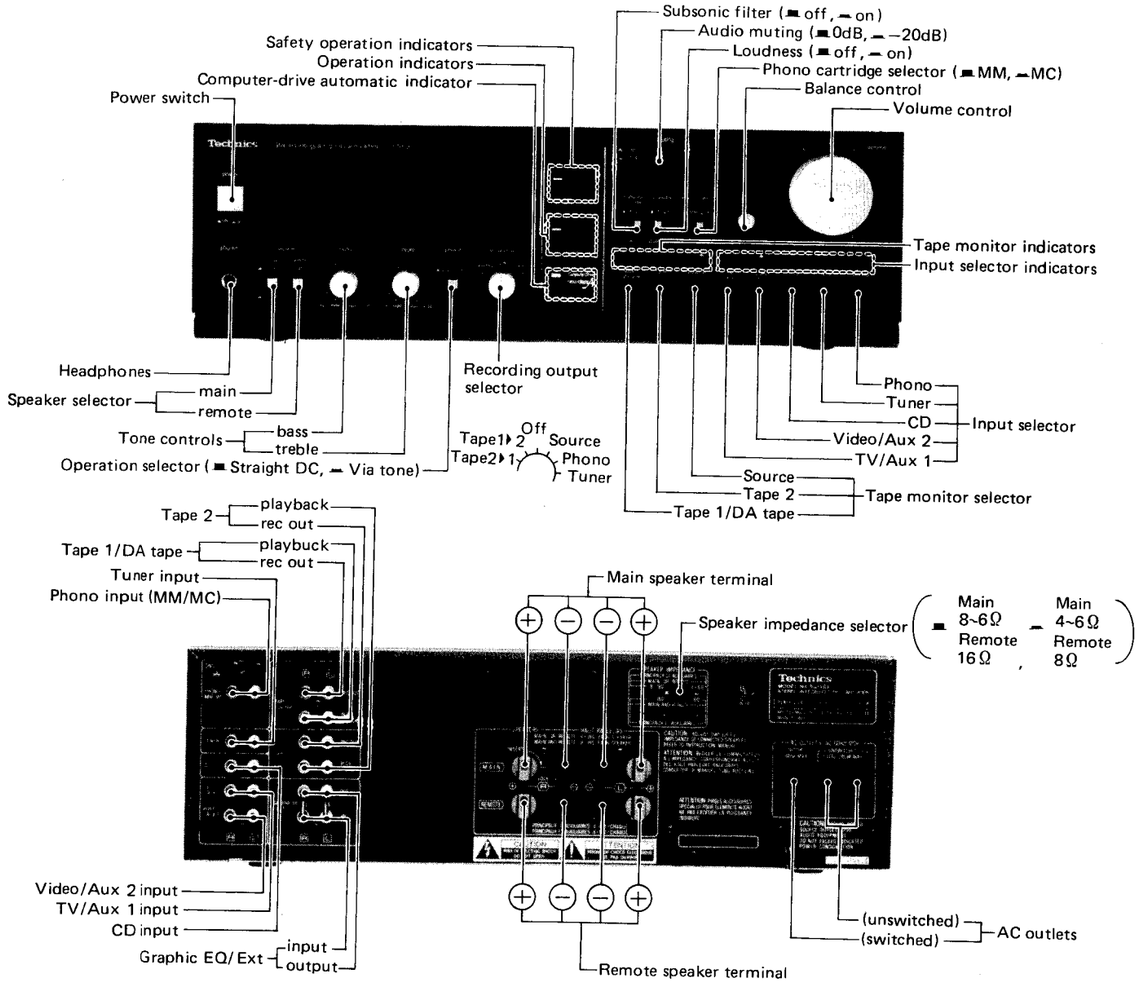


(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ LOCATION OF CONTROLS



*Phono input capacitance is about 150pF

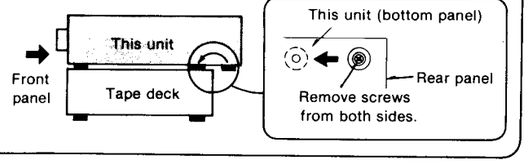
Speaker impedance selector

Set to the position corresponding to the impedance of the speaker systems being used. If this setting is not correctly made, the result may be a deterioration of performance.

- **If either the main or the remote speaker systems are used:**
  4~6Ω (■→▬):
  For speaker impedance of 4~6Ω.
  8~16Ω (▬→■):
  For speaker impedance of 8~16Ω.
- **If both main and remote speaker systems are used:**
  8Ω (■→▬):
  For speaker impedance of 8Ω or more and less than 16Ω.
  16Ω (▬→■):
  For speaker impedance of 16Ω.

- **When units are stacked**

If the rear feet must be removed (because the unit below is smaller), attach the two feet at a position more toward the front.



■ PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.

If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note

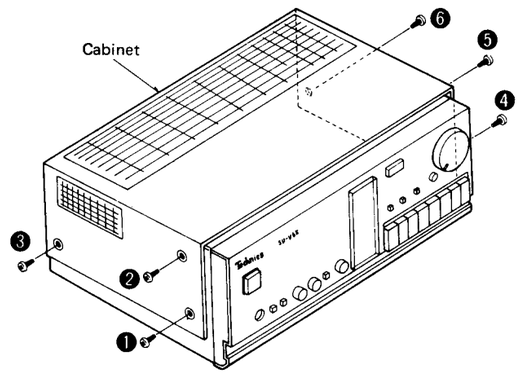
When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

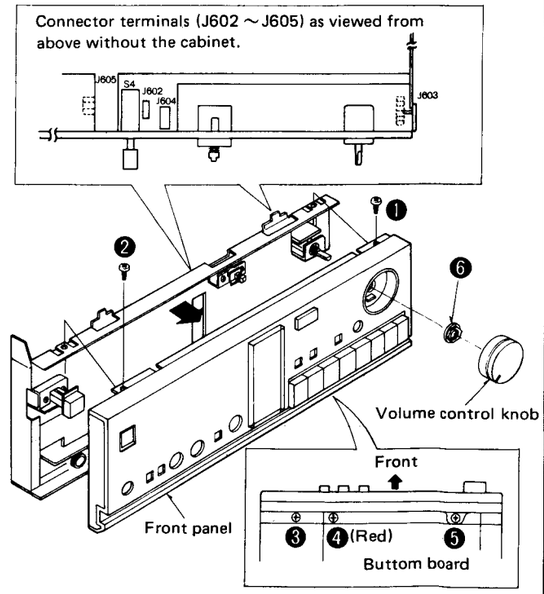
■ BEFORE REPAIR AND ADJUSTMENT

1. Turn off the power supply and short-circuit of power supply capacitors (C701, C702, 15,000μF) at resistance (about 10Ω, 5W) in order to descharge the charged voltage. Do not short between C701 and C702 by screwdriver. It may damage the component.
2. Before turning on the power supply after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed carrent at 120V, 60Hz in no-signal mode is 330 ~ 600mA.

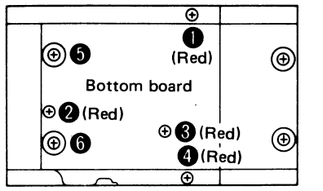
■ DISASSEMBLY INSTRUCTIONS

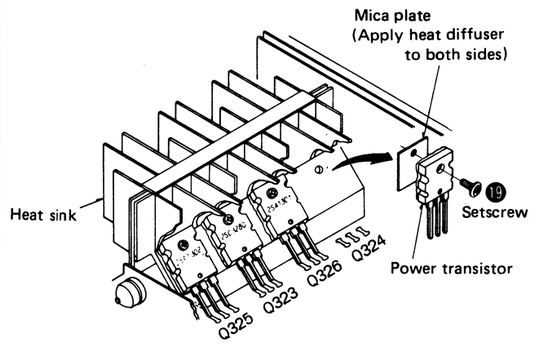
Ref.No. 1	How to remove the cabinet	Ref. No. 2	How to remove the front panel
Procedure 1	● Remove the 6 setscrews	Procedure 1→2	● Remove the 5 setscrews of front panel. ● Pull out the volume control knob and remove the nut ❻. ● Pull out the connector terminals (J602 ~ J605) and remove the front panel in the direction of the arrow (➡).





Ref. No. 3	How to remove the Power Transistors
Procedure 1→3	● Remove the 6 setscrews of buttom board ● Remove the setscrew of power transistor ● When mounting the power Transistors, apply heat diffuser to both sides of mica plate.





When mounting the Power Transistors, apply silicone compound (SZZOL15) equivalent heat diffuser to the rear side of the mica plate (AC–262) and Power Transistors.

Ref. No. 4	How to remove the selector and push button
Procedure 1→2→4	● Remove the claw (Fig. A) that fastens the selector button from the back of front panel, and push it forward. ● Fit the power switch button and subsonic filter switch button in the position as in Fig.B.

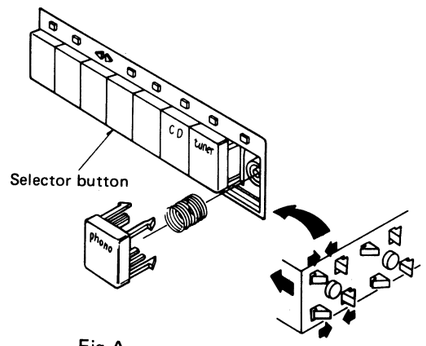


Fig.A

Back of front panel

Fig.B

■ MEASUREMENTS AND ADJUSTMENTS

- **Setting and Equipment used**
  1. Audio oscillator.
  2. AC, DC, electronic voltmeters (VTVM).
  3. Frequency counter.
  4. Oscilloscope.

1. Idling (ICQ) Adjustment (after reparing the main amp)

1. After the repair, set the sound volume to minimum before turning on the power switch, and connect nothing to the speaker terminals.
2. Completely turn ICQ control (VR301, 302) counter-clockwise.
3. Increase the voltage applied to the amplifier gradually from 0V by means of a power supply voltage controller and make sure of the that the consumed current 120V 60Hz in no-signal mode is 330 ~ 600mA before adjustment.
4. Connect the DC electronic voltmeter to TP302 (+) and TP301 (–) [Lch] or TP304 (+) and TP303 (–) [Rch].
5. Adjust VR301 [Lch] or VR302 [Rch] so that the voltage is 20mV about 15 ~ 20min after power switch "on".
   * In this set, ICQ is controlled by a microcomputer, and ICQ a little more than the normal level is applied by "PRE-HEAT" for about 14 ~ 16sec after power ON. After that, the output level and transistor temperature are detected by AUTO there automatically controlling ICQ.

2. Check of Muting with Power On/Off.

1. Connect AC voltmeter and 8Ω load (resistor or speaker) to main speaker terminals.
2. Set the sound volume to a proper level.
3. Apply 1 kHz 100 mV signal to AUX input terminal.
4. Make sure that output is gained 3 ~ 5 sec. after power switch "on" and that the output goes out immediately after power switch "off".

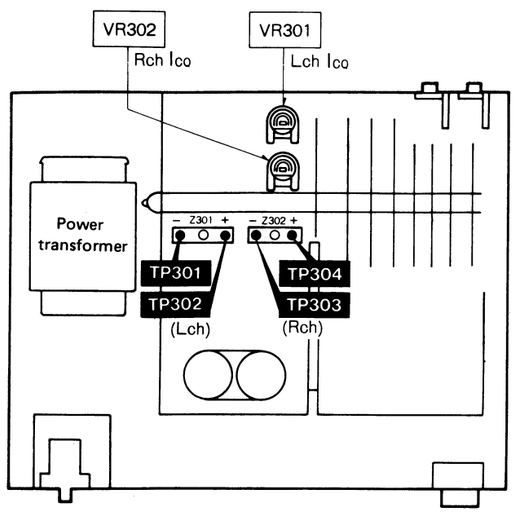
3. Check of Over load detection and Protection circuit

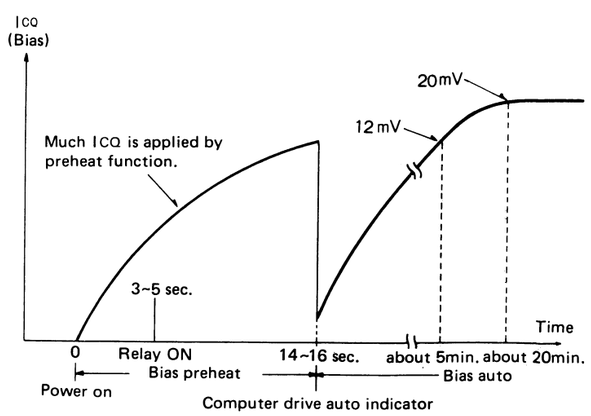
1. Set the volume control to maximum.
2. Connect the audio oscillator to the AUX terminal and apply the input signal of 1 kHz to the terminal.
   Then adjust the output level of the audio oscillator so that the output level of the speaker terminals becomes 1.5V.
3. With main speaker terminals [Lch] short-circuited by lead wire (as thick and short as possible):
   Make sure
   – relay is off.
   – "auto" indicator "on" goes out.
   – "safty operation" indicator blinks.
4. When relay is off, turn power "off" and unit for a while before turning it "on".
   Otherwise, the original conditions are not restored even when the circuit and load are normal.

4. Check of DC Detection Circut

1. Set the input selector to the "tuner" position.
2. Apply DC voltage +1V [Lch] the tape1 playback terminal. –1V [Rch] to the tape2 playback terminal.
3. Set the input selector to the "tape1" position.
   Make sure
   – relay is off.
   – "auto" indicator "on" goes out.
   – "safty operation" indicator blinks.

- **Adjustments points**

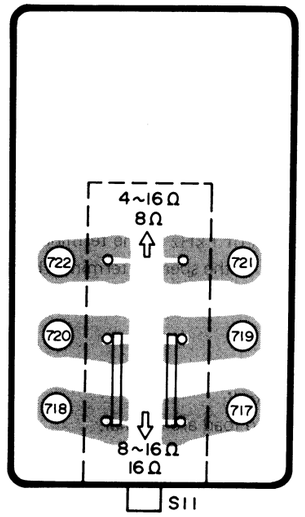




■ PRINTED CIRCUIT BOARDS

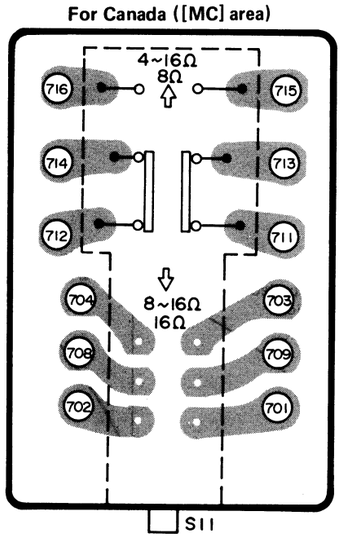
• SPEAKER INPEDANCE TO BE CHANGED AND THE AREAS

For the U.S.A ([M] area)



O SPERKER IMPEDANCE P.C.B.

For Canada ([MC] area)

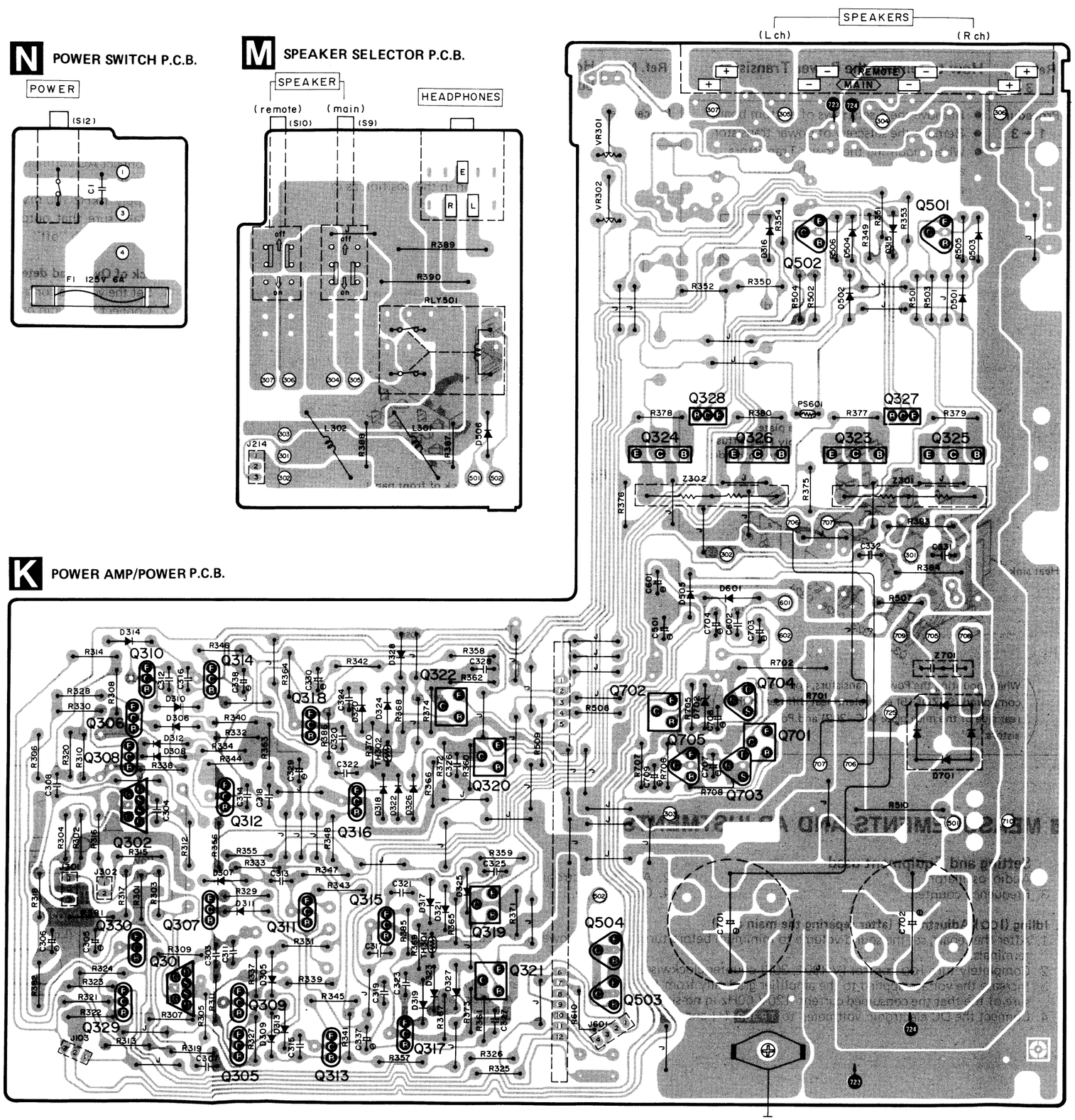


O SPEAKER IMPEDANCE P.C.B.

N POWER SWITCH P.C.B.

M SPEAKER SELECTOR P.C.B.

K POWER AMP/POWER P.C.B.


SPEAKERS
(Lch)
(Rch)
(REMOTE)
MAIN
VR301
VR302
Q501
Q502
Q328
Q327
Q324
Q326
Q323
Q325
PS601
Z302
Z301
Z701
Q702
Q704
Q705
Q701
Q703
Q504
Q503
Q310
Q314
Q322
Q318
Q306
Q308
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Q302
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D601
D701
R314
R348
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R358
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R330
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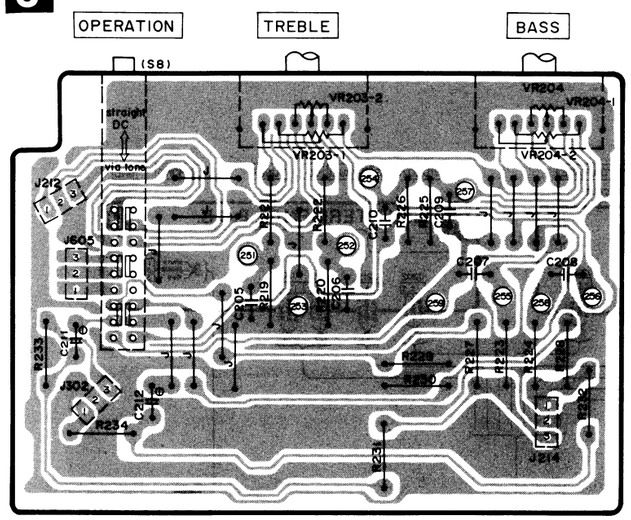
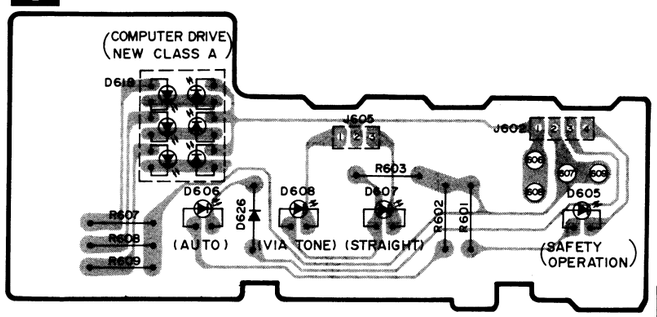
C418

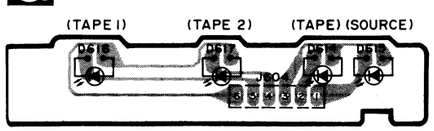
J TONE CONTROL P.C.B.



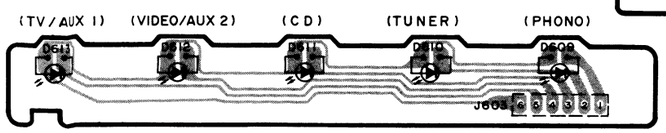
I INDICATOR P.C.B.



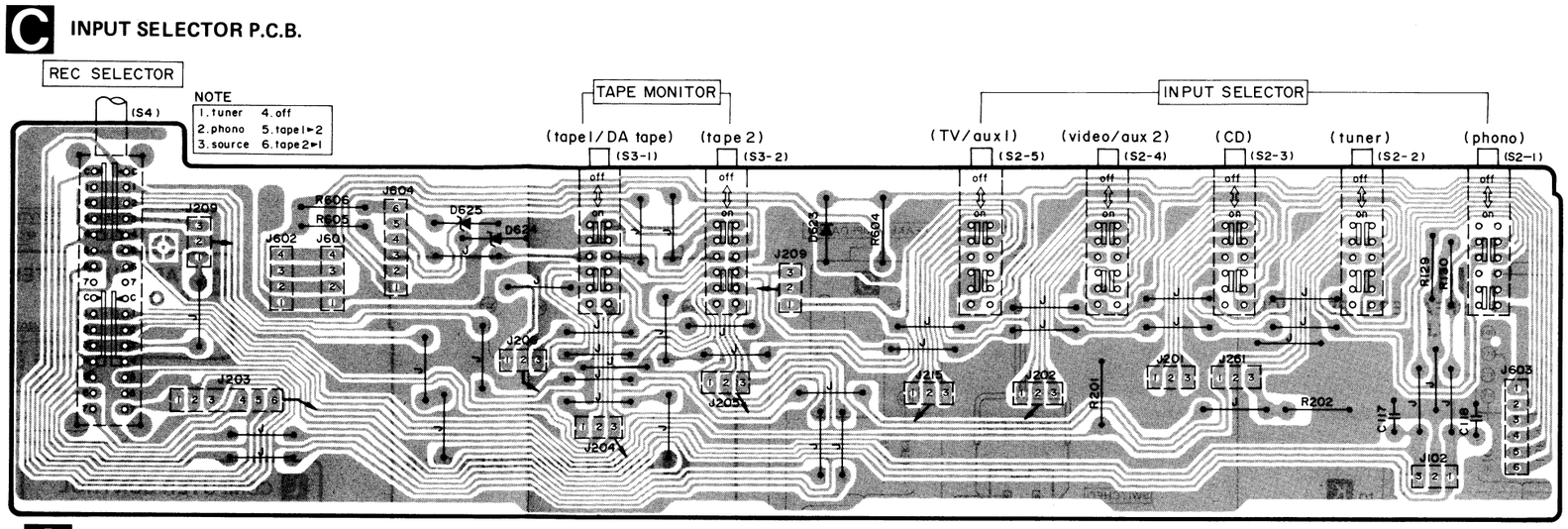
G TAPE MONITOR P.C.B.



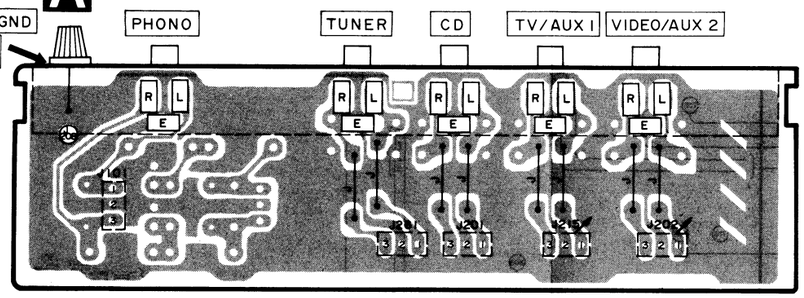
F INPUT INDICATOR P.C.B.



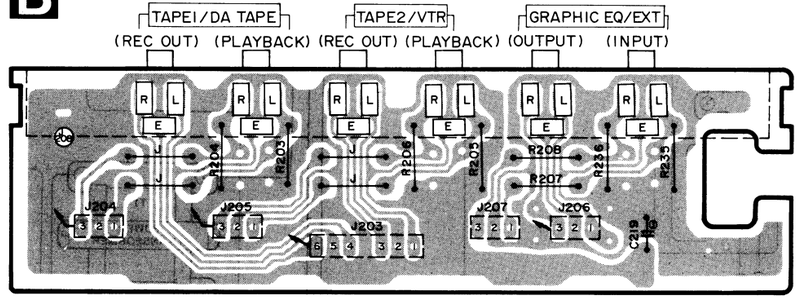
C INPUT SELECTOR P.C.B.



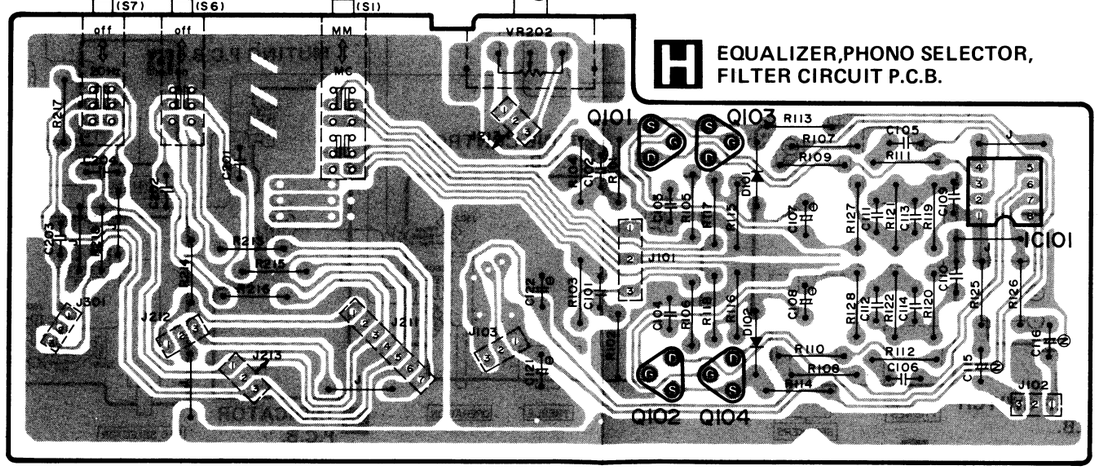
A INPUT TERMINAL P.C.B.



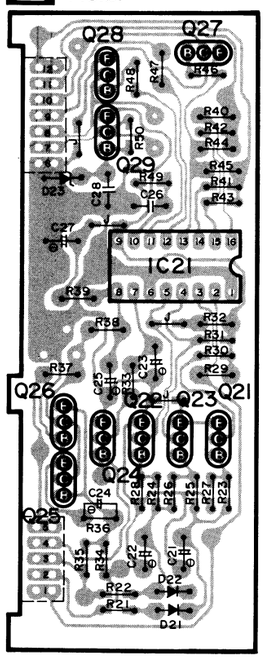
B OUTPUT TERMINAL P.C.B.



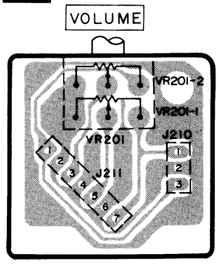
H EQUALIZER, PHONO SELECTOR, FILTER CIRCUIT P.C.B.



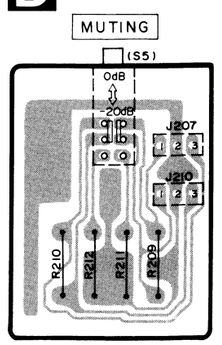
L COMPUTER CONTROL P.C.B.



E VOLUME P.C.B.

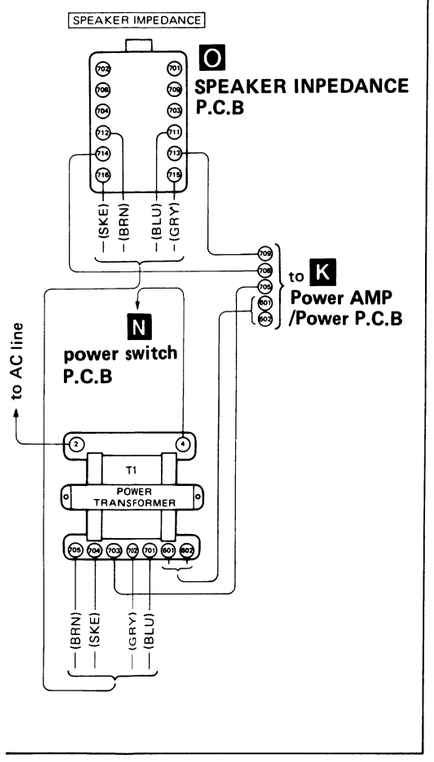


D MUTING P.C.B.

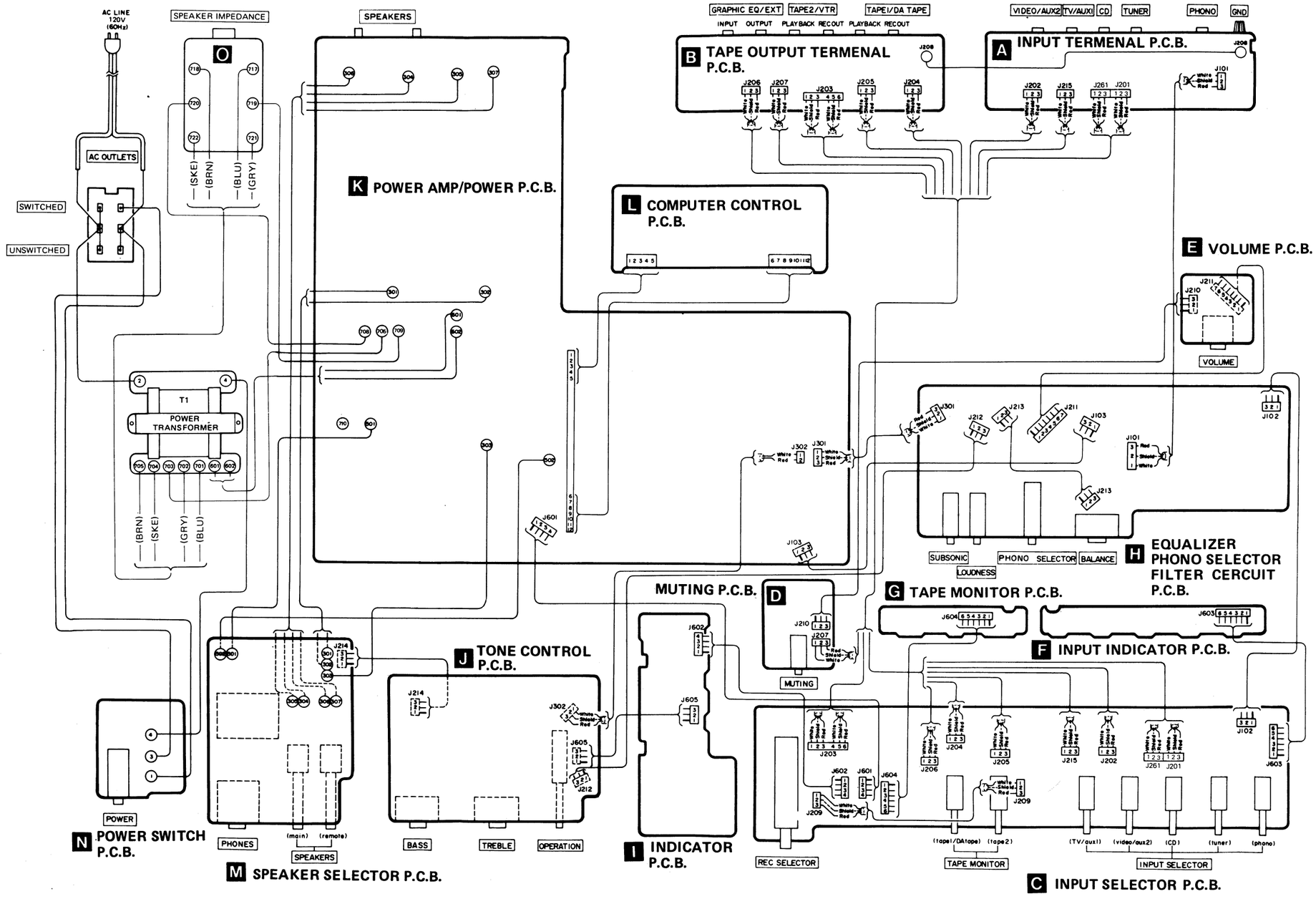


■ WIRING CONNECTION DIAGRAM

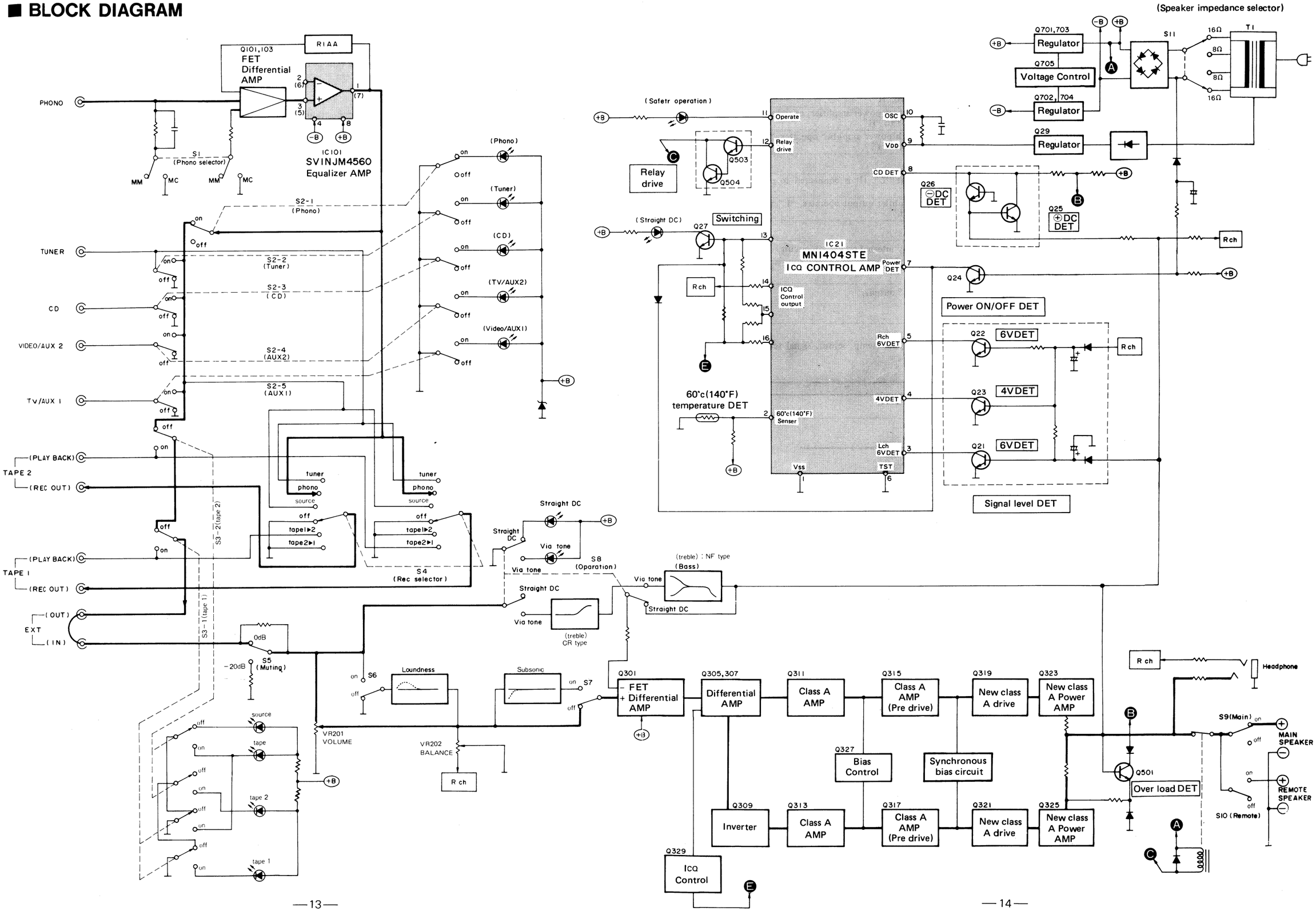
For Canada ([MC] area)



For the U.S.A ([M] area)



■ BLOCK DIAGRAM



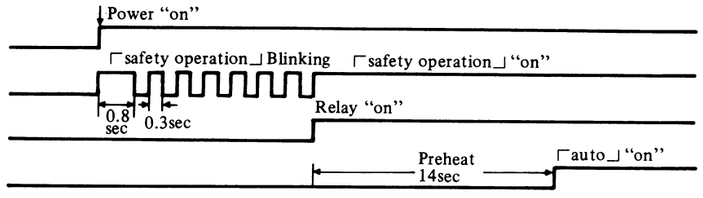
■ FUNCTION OF TERMINAL (Ico CONTROLLER IC 21)

No.	Symbol	Name of block	Description of terminal
1	VSS	Power supply input terminal	Grounded. (0V)
2	A13	Input port A	Temperature detection circuit. When 60°C (140°F) sensor of power amplifier operates, "H" is put in causing the outputs of terminals 14 ~ 16 to go "H".
3	A12		When effective output 5V signal sensor of L-ch power amplifier operates, "L" is put in causing the output of terminal 14 to go "H".
4	A11		When effective output 2V signal sensors of both-ch power amplifiers operate, "L" is put in causing the output of terminal 15 to go "H".
5	A10		When effective output 5V signal sensor of R-ch power amplifier operates, "L" is put in causing the output of terminal 16 to go "H".
6	TST	Test input terminal	Terminal for testing LSI. (Ground)
7	$\overline{RST}$	Reset input terminal	All outputs are cleared or reset with input at "L". (It is connected to power supply circuit)
8	SNSO	Sensor input terminal	When overload detection circuit of power amplifier output operates, "L" is put in causing the output of terminal 12 to go "L".
9	VDD	Power supply input terminal	Apply 5V.
10	OSC	OSC input terminal	Clock signal (about 415kHz) can be obtained by internal oscillation circuit.
11	CO5	Output port C	When protection circuit operates, "H" and "L" outputs are repeated and "safety operation" indicator blinks.
12	CO4		Output relay and meter relay turn ON with "H" output.
13	CO3		Indicator "auto" lights up at "H".
14	CO2		Ico control signal is emitted from A input port (temp. sensor, signal sensor). ("H" output)
15	CO1		
16	CO0		

No.	Symbol	Time chart

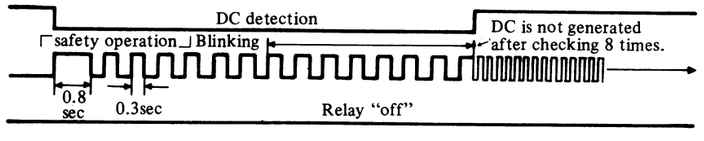
<Power "on" mode>

7	$\overline{RST}$	5V / 0V
11	CO5	5V / 0V
12	CO4	5V / 0V
13	CO3	5V / 0V



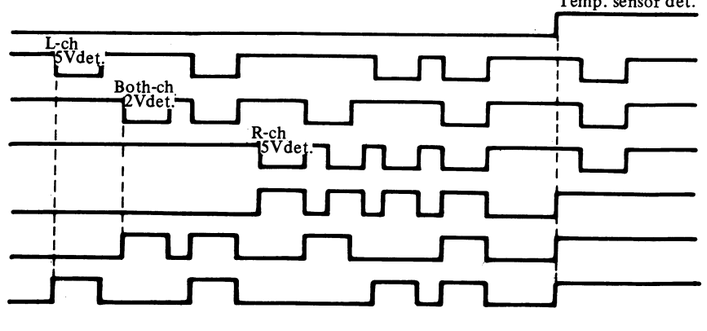
<DC detection or load shorting mode>

8	SNSO	5V / 0V
11	CO5	5V / 0V
12	CO4	5V / 0V



<Ico control operation mode>

2	A13	5V / 0V
3	A12	5V / 0V
4	A11	5V / 0V
5	A10	5V / 0V
14	CO2	5V / 0V
15	CO1	5V / 0V
16	CO0	5V / 0V



■ SCHEMATIC DIAGRAM

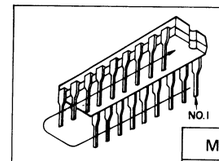
(This schematic diagram may be modified at any time with the development of new technology.)

- The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement parts, please use the part No. in the replacement parts list.

Notes:

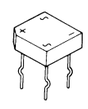
1. **S1** : Phono cartridge selector switch in **"MM"** position. (MM↔MC)
2. **S2–1 ~ 2–5** : Input selector switch in **"Phono"** position.
   S2–1 : Phono **S2–4** : Video/aux 2
   S2–2 : Tuner **S2–5** : TV/aux 1
   S2–3 : CD
3. **S3–1 ~ 3–2** : Tape monitor selector switch in **"off"** position.
   S3–1 : Tape 1/DA tape **S3–2** : Tape 2
4. **S4** : Recording output selector in **"off"** position. (Tape 2▶1↔Tape 1▶2↔off↔source↔phono↔tuner)
5. **S5** : Audio muting switch in **"OdB"** position. (OdB↔–20dB)
6. **S6** : Loudness switch in **"off"** position.
7. **S7** : Subsonic filter switch in **"off"** position.
8. **S8** : Operation switch in **"straight DC"** position. (straight DC↔via tone)
9. **S9** : Main speaker switch in **"on"** position. (off↔on)
10. **S10** : Remoto speaker switch in **"off"** position. (off↔on)
11. **S11** : Speaker impedance selector switch in **"8 ~ 16Ω /16Ω "** position. (8 ~ 16Ω /16Ω ↔4 ~ 6Ω /8Ω)
12. **S12** : Power switch in **"on"** position.

• TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

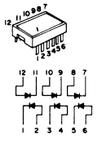


MN1404STE	16pin
SVINJM4560DX	8pin

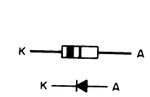
SVDS10VB20F



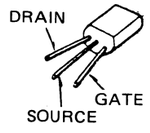
LN0603GP3G



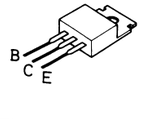
MA162, MA27W–A



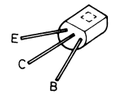
2SK369



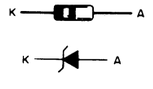
2SA1112, 2SC2592



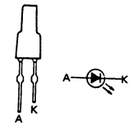
2SA1123, 1124
2SC1815, 1845, 2631
2SC2632



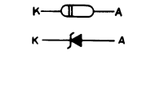
MA1062M, MA182
MA1030,



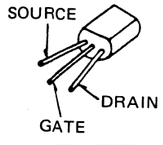
SVDAY5533K
SVDPR5533K–M



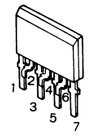
SVDMZ□□□□



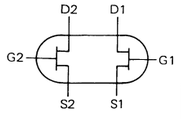
2SK34



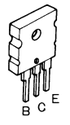
2SK389



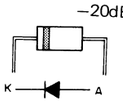
1. D1
2. G1
3. S1
4. sub
5. S2
6. G2
7. D2



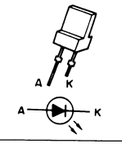
2SA1301, 2SC3280



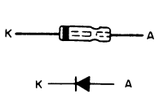
SVDSR1K2



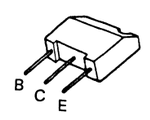
LN446YP, LN846RP
LN346GP

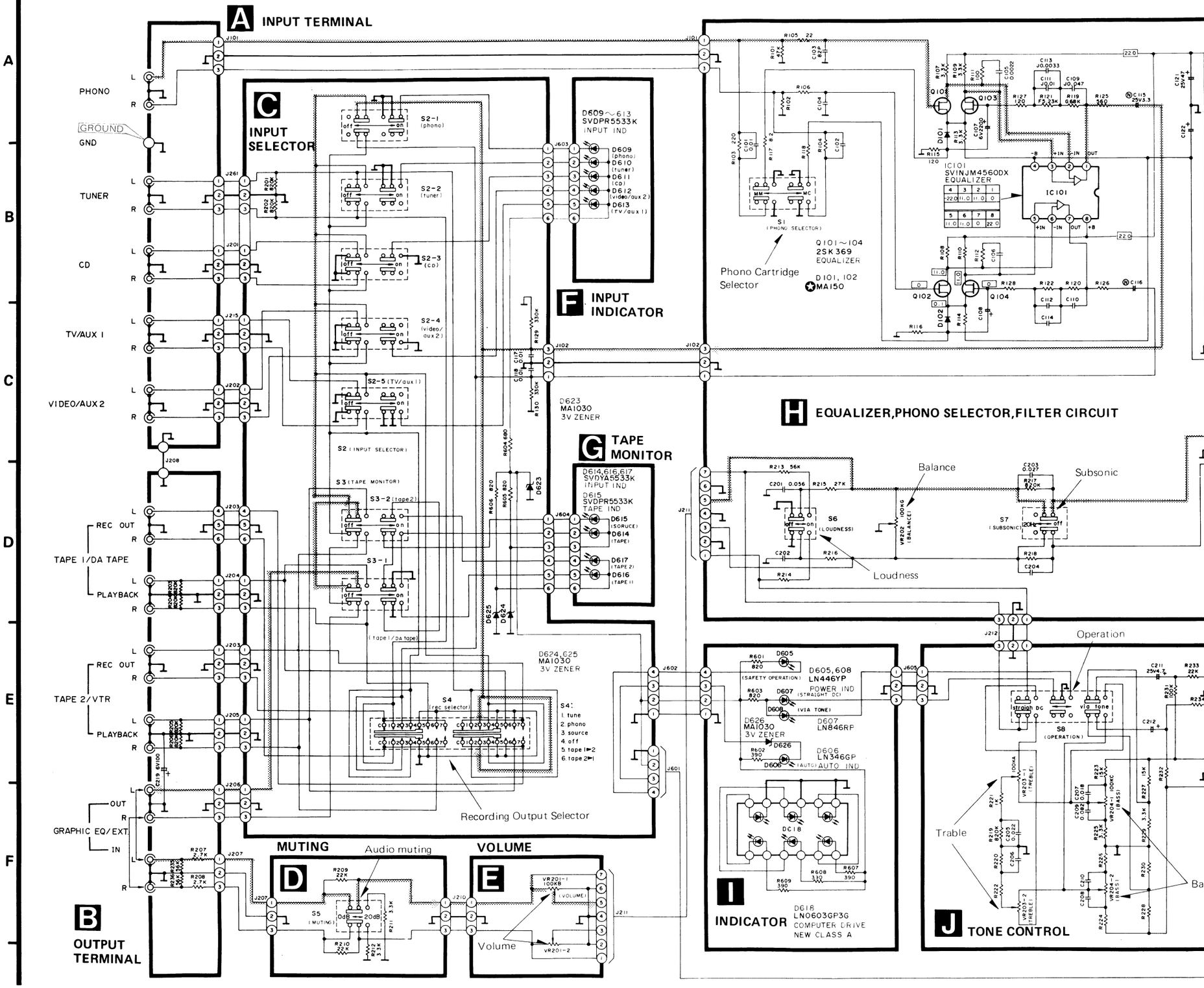


0A90

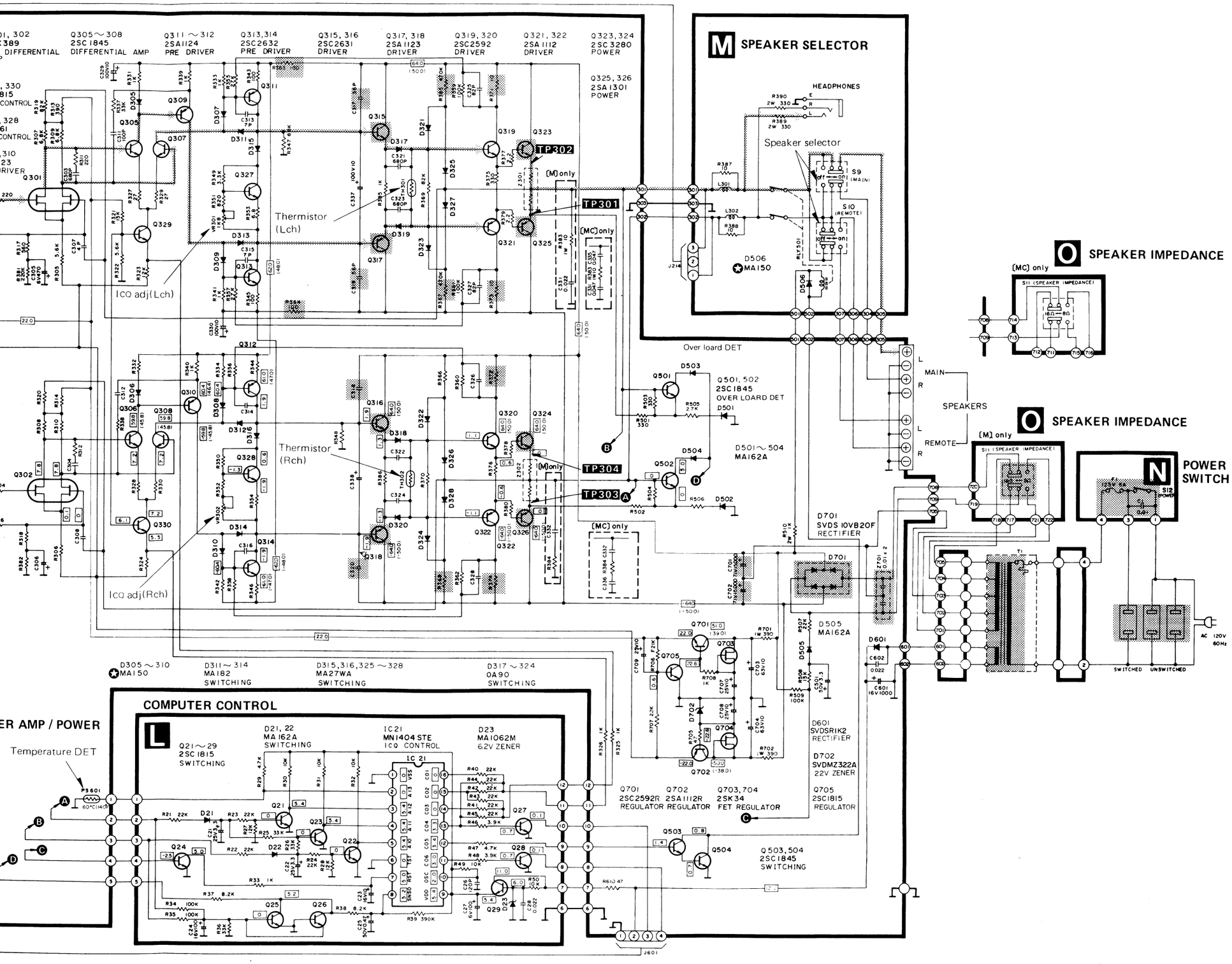


2SD661




A INPUT TERMINAL
PHONO
GROUND
GND
TUNER
CD
TV/AUX 1
VIDEO/AUX 2
REC OUT
TAPE 1/DA TAPE
PLAYBACK
TAPE 2/VTR
GRAPHIC EQ/EXT
IN
OUT
B OUTPUT TERMINAL
C INPUT SELECTOR
S2-1 (phone)
S2-2 (tuner)
S2-3 (cd)
S2-4 (video/aux 2)
S2-5 (TV/aux 1)
S2 (INPUT SELECTOR)
S3 (TAPE MONITOR)
S3-2 (tape2)
S3-1
(tape 1/DA tape)
S4 (rec selector)
S4: 1 tune 2 phono 3 source 4 off 5 tape 1►2 6 tape 2►1
Recording Output Selector
F INPUT INDICATOR
D609~613 SVDPR5533K INPUT IND
D609 (phono)
D610 (tuner)
D611 (cd)
D612 (video/aux 2)
D613 (TV/aux 1)
G TAPE MONITOR
D614,616,617 SVDYA5533K INPUT IND
D615 SVDPR5533K TAPE IND
D615 (SORUCE)
D614 (TAPE)
D617 (TAPE 2)
D616 (TAPE 1)
D623 MA1030 3V ZENER
D624,625 MA1030 3V ZENER
D MUTING
S5 (MUTING)
Audio muting
E VOLUME
Volume
H EQUALIZER,PHONO SELECTOR,FILTER CIRCUIT
Q101~104 2SK369 EQUALIZER
D101, 102 MA150
S1 (PHONO SELECTOR)
Phono Cartridge Selector
IC101 SVINJM4560DX EQUALIZER
S6 (LOUDNESS)
Loudness
Balance
S7 (SUBSONIC)
Subsonic
I INDICATOR
D605,608 LN446YP POWER IND (STRAIGHT DC)
D607 LN846RP (VIA TONE)
D606 LN346GP (AUTO) AUTO IND
D626 MA1030 3V ZENER
D618 LN0603GP3G COMPUTER DRIVE NEW CLASS A
J TONE CONTROL
S8 (OPERATION)
Operation
Trable
Bass
Q301, 302 2SK389 FET DIFFERENTIAL AMP
Q305~308 2SC1845 DIFFERENTIAL AMP
Q311~312 2SA1124 PRE DRIVER
Q329, 330 2SC1815 BIAS CONTROL
Q327, 328 2SD661 BIAS CONTROL
Q309, 310 2SA1123 PRE DRIVER
Q301
Q302
Q329
Q330
Ico adj(Lch)
Ico adj(Rch)
D305~310 MA150
D311~314 MA182 SWITCHIN
K POWER AMP / POWER
COMPUTER CONT
L
Q21~29 2SC1815 SWITCHING
Temperature DET

9 10 11 12 13 14 15 16 17 18



IMPORTANT SAFETY NOTICE

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

13. 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 mayexist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    - *Figures in [ ] stand for DC voltage in Impedance selector switch high (8~16Ω/16Ω) position.
    - *Figures in ( ) stand for DC voltage in Impedance selector switch low (4~6Ω/8Ω) position.
14. ——— Positive voltage lines
    ⋯⋯ Phono signal line (Lch)

■ RESISTORS, CAPACITORS & REPLACEMENT PARTS LIST

Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The " Ⓢ " mark is service standard parts and may differ from production parts.
4. The unit of resistance is Ω (ohm). K = 1000Ω, M = 1000kΩ.
5. The unit of capacitance is μF (microfarad). P = 10^{-6} μF.

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value
ERG	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type			Wattage			Tolerance		
ERD	:	Carbon	10	:	1/8W	J	:	± 5%
ERG	:	Metal Oxide	25	:	1/4W	G	:	± 2%
ERO	:	Metal Film	2	:	2W	K	:	±10%

ERD10TLJ□□□ → Chip type carbon
ERO10MKG□□□ → Chip type metal film

Numbering System of Capacitor

Example

ECKD	1H	103	Z	F		ECEA	50	M	R47	R
Type	Voltage	Value	Tolerance	Peculiarity		Type	Voltage	Peculiarity use	Value	Special use

Capacitor Type			Voltage: ECEA Type			Voltage: Others			Tolerance		
ECEA	:	Electrolytic	1A	:	10V	1H	:	50V DC	C	:	±0.25pF
ECET	:	Electrolytic	1C	:	16V	2H	:	500V DC	K	:	±10%
ECEA . . . N	:	Non Polar Electrolytic	1E	:	25V	7I	:	71V DC	Z	:	+80%, −20%
ECCD	:	Ceramic	1H	:	50V				J	:	± 5%
ECKD	:	Ceramic	50	:	50V						
ECQM	:	Polyester	0J	:	6.3V						
			2A	:	100V						

● RESISTORS

Ref. No.	Part No.	Value
R21,22	ERD10TLJ223U	22K
R23,24	ERD10TLJ223U	22K
R25,26	ERD10TLJ333U	33K
R27,28	ERD10TLJ123U	12K
R29 Ⓢ	ERD25FJ472	4.7K
R30,31	ERD10TLJ103U	10K
R32 Ⓢ	ERD25FJ103	10K
R33 Ⓢ	ERD10TLJ102U	1K
R34,35	ERD10TLJ104U	100K
R36	ERD10TLJ333U	33K
R37,38 Ⓢ	ERD25FJ822	8.2K
R39 Ⓢ	ERD25TJ394	390K
R40 Ⓢ	ERD25TJ223	22K
R41,42	ERD10TLJ223U	22K
R43	ERD10TLJ223U	22K
R44,45 Ⓢ	ERD25TJ223	22K
R46	ERD10TLJ392U	3.9
R47 Ⓢ	ERD25FJ472	4.7K
R48	ERD10TLJ392U	3.9K
R49	ERD10TLJ153U	15K
R50	ERD10TLJ103U	10K
R101,102 Ⓢ	ERD25TJ473	47K
R103,104 Ⓢ	ERD25FJ221	220
R105,106 Ⓢ	ERD25FJ220	22
R107,108 Ⓢ	ERD25FJ332	3.3K
R109,110 Ⓢ	ERD25FJ332	3.3K
R111,112 Ⓢ	ERD25FJ101	100
R113,114 Ⓢ	ERD25FJ332	3.3K
R115,116 Ⓢ	ERD25FJ121	120
R117,118 Ⓢ	ERD25FJ8R2	8.2

Ref. No.	Part No.	Value
R119,120	ER025CKG6802	68K
R121,122	ER025TKF5231	5.23K
R125,126 Ⓢ	ERD25FJ561	560
R127,128 Ⓢ	ERD25FJ121	120
R129,130 Ⓢ	ERD25TJ334	330K
R201,202 Ⓢ	ERD25TJ824	820K
R203,204 Ⓢ	ERD25TJ824	820K
R205,206 Ⓢ	ERD25TJ824	820K
R207,208 Ⓢ	ERD25FJ272	2.7K
R209,210 Ⓢ	ERD25TJ223	22K
R211,212 Ⓢ	ERD25FJ332	3.3K
R213,214 Ⓢ	ERD25TJ563	56K
R215,216 Ⓢ	ERD25TJ273	27K
R217,218 Ⓢ	ERD25TJ824	820K
R219,220 Ⓢ	ERD25TJ824	820K
R221,222 Ⓢ	ERD25FJ102	1K
R223,224 Ⓢ	ERD25TJ153	15K
R225,226 Ⓢ	ERD25FJ332	3.3K
R227,228 Ⓢ	ERD25TJ153	15K
R229,230 Ⓢ	ERD25FJ332	3.3K
R231,232 Ⓢ	ERD25TJ104	100K
R233,234 Ⓢ	ERD25TJ223	22K
R235,236 Ⓢ	ERD25TJ563	56K
R301,302 Ⓢ	ERD25TJ224	220K
R303,304 Ⓢ	ERD25FJ221	220
R305,306 Ⓢ	ERD25FJ562	5.6K
R307,308 Ⓢ	ERD25FJ682	6.8K
R309,310 Ⓢ	ERD25FJ682	6.8K
R311,312 Ⓢ	ERD25FJ221	220
R313,314 Ⓢ	ERD25FJ391	390

Ref. No.	Part No.	Value
R315,316 Ⓢ	ERD25FJ272	2.7K
R317,318 Ⓢ	ERD25FJ561	560
R319,320 Ⓢ	ERD25TJ823	82K
R321 Ⓢ	ERD25TJ153	15K
R322 Ⓢ	ERD25FJ562	5.6K
R323,324 Ⓢ	ERD25TJ123	12K
R325,326 Ⓢ	ERD25FJ102	1K
R327,328 Ⓢ	ERD25FJ270	27
R329,330 Ⓢ	ERD25FJ270	27
R331,332 Ⓢ⚠	ERD25FJ102	1K
R333,334 Ⓢ⚠	ERD25FJ102	1K
R337,338 Ⓢ	ERD25FJ333	33K
R339,340 Ⓢ⚠	ERD25FJ102	1K
R341,342 Ⓢ⚠	ERD25FJ102	1K
R343,344	ERD2FCG101	100
R345,346	ERD2FCG101	100
R347,348 Ⓢ	ERD25TJ683	68K
R349,350 Ⓢ	ERD25FJ332	3.3K
R351,352 Ⓢ⚠	ERD25FJ821	820
R353,354 Ⓢ⚠	ERD25FJ6R8	6.8
R355,356 Ⓢ	ERD25TJ273	27K
R357,358 Ⓢ	ERD25TJ273	27K
R359,360 Ⓢ	ERD25TJ104	100K
R361,362 Ⓢ	ERD25TJ104	100K
R363,364	ERD2FCG101	100
R365,366 Ⓢ	ERD25TJ474	470K
R367,368 Ⓢ	ERD25TJ474	470K
R369,370 Ⓢ	ERD25TJ823	82K
R371,372 Ⓢ⚠	ERD25FJ100	10
R373,374 Ⓢ⚠	ERD25FJ100	10

Ref. No.	Part No.	Value
R375,376 Ⓢ⚠	ERD25FJ331	330
R377,378 Ⓢ⚠	ERD25FJ2R2	2.2
R379,380 Ⓢ⚠	ERD25FJ2R2	2.2
R381,382 Ⓢ	ERD25TJ224	220K
R383,384 Ⓢ	ERG1ANJ100	10
R385,386 Ⓢ⚠	ERD25FJ102	1K
R387,388 Ⓢ⚠	ERD25FJ100	10
R389,390 Ⓢ	ERG2ANJ331	330
R501,502 Ⓢ	ERD25FJ331	330
R503,504 Ⓢ	ERD25FJ331	330
R505,506 Ⓢ	ERD25FJ272	2.7K
R507 Ⓢ	ERD25TJ223	22K
R508 Ⓢ	ERD25TJ153	15K
R509 Ⓢ	ERD25TJ104	100K
R510 Ⓢ	ERG2ANJ102	1K
R601 Ⓢ	ERD25FJ821	820
R602	ERD25FJ391	390
R603 Ⓢ	ERD25FJ821	820
R604	ERD25FJ681	680
R605,606 Ⓢ	ERD25FJ821	820
R607,608 Ⓢ	ERD25FJ391	390
R609 Ⓢ	ERD25FJ391	390
R610 ⚠	ERD25FJ470	47
R701,702 Ⓢ	ERG1ANJ391	390
R705 Ⓢ	ERD25FJ470	47
R706	ER025CKF2102	21K
R707 Ⓢ	ERD25TJ223	22K
R708 ⚠	ERD25FJ102	1K

● CAPACITORS

Ref. No.	Part No.	Value
C1 ⚠	ECKDKC103PF2	0.01
C21,22	ECEA1EU3R3	3.3
C23	ECEA1CU100	10
C24	ECEA1CU101	100
C25	ECEA1HUR47	0.47
C26 Ⓢ	ECCD1H121K	120P
C27	ECEA0JU101	100
C28 Ⓢ	ECKD1H223ZF	0.022
C101,102 Ⓢ	ECKD1H103ZF	0.01
C103,104 Ⓢ	ECCD1H820K	82P
C105,106 Ⓢ	ECKD1H222KB	0.0022
C107,108	ECEA0JU222	2200
C109,110	ECQM1H473JZ	0.047

Ref. No.	Part No.	Value
C111,112	ECQM1H103JZ	0.01
C113,114	ECQM1H332JV	0.0033
C115,116 ⚠	ECEA1EN3R3S	3.3
C117;118	ECQM1H103JZ	0.01
C121,122	ECEA1EU470	47
C201,202	ECQM1H563KV	0.056
C203,204	ECQM1H273KV	0.027
C205,206	ECQM1H223JZ	0.022
C207,208	ECQM1H183KV	0.018
C209,210	ECQM1H823JZ	0.082
C211,212	ECEA1EU4R7	4.7
C219	ECEA0JU101	100
C303,304 Ⓢ	ECKD1H681KB	680P

Ref. No.	Part No.	Value
C305,306	ECEA0JU471	470
C307,308 Ⓢ	ECCD1H040CC	4P
C311,312 Ⓢ	ECCD1H101K	100P
C313,314 Ⓢ	ECCD2H070D	7P
C315,316 Ⓢ	ECCD2H070D	7P
C317,318 Ⓢ	ECCD2H560K	56P
C319,320 Ⓢ	ECCD2H560K	56P
C321,322 Ⓢ	ECKD1H681KB	680P
C323,324 Ⓢ	ECKD1H681KB	680P
C325,326 Ⓢ	ECCD1H820K	82P
C327,328 Ⓢ	ECCD1H820K	82P
C329,330	ECEA2AU100	10
C331,332 Ⓢ (M)only	ECKD1H223ZF	0.022

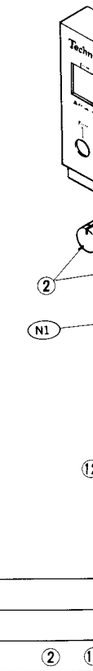
Ref. No.	Part No.	Value
C331,332 (MC)only	ECKD1H473ZF	0.047
C335,336 (MC)only	ECKD1H473ZF	0.047
C337,338	ECEA2AU100	10
C501	ECEA1HU3R3	3.3
C601	ECEA1CU102	1000
C602 Ⓢ	ECKD1H223ZF	0.022
C701,702	ECET71V153Z	15000
C703,704	ECEA1JS100	10
C707,708	ECEA1EU100	10
C709	ECEA1EU100	10

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS		
IC21	MN1404STE	ICQ Control
IC101	SVINJM4560DX	Equalizer AMP
TRANSISTORS		
Q21~29	2SC1815−Y	Switching
Q101~104	2SK369−GR	FET Differential AMP
(Use pair ranks as same as Q101,Q102,Q103 and Q104)		
Q301,302	2SK389−GR	FET Differential AMP
Q305~308, 501~504 Ⓢ	2SC1845−E	FET Differential AMP, Over Load Deft, Relay Drive.
Q309,310	2SA1123−R	Inverter
Q311,312	2SA1124−R	A Class AMP
Q313,314	2SC2632−R	A Class AMP
Q315,316	2SC2631−Q	Pre Drive
Q317,318	2SA1123−S	Pre Drive
(Use pair ranks as same as Q315,Q316,Q317 and Q318)		
Q319,320	2SC2592−R	Drive
Q321,322	2SA1112−R	Drive
(Use pair ranks as same as Q319,Q320,Q321 and Q322)		
Q323,324	2SC3280−R	Power AMP
Q325,326	2SA1301−R	Power AMP
(Use pair ranks as same as Q323,Q324,Q325 and Q326)		
Q327,328	2SD661−S	Bias Control
Q329,330,705	2SC1815−Y	Bias Control, Regulator
Q701	2SC2592−R	Regulator
Q702	2SA1112−R	Regulator
Q703,704 Ⓢ	2SK34−D1	Regulator
DIODES		
D21,22 Ⓢ	MA162A	Switching
D23	MA1062M	6.2V Zener
D101,102, 305~310,506 Ⓢ	MA162A	Switching
D311~314, 403~406	MA182	Switching
D315,316, 325~328	MA27W−A	Switching
D317~324 Ⓢ	20A90	Switching
D501~505 Ⓢ	MA162A	Signal Rectifier
D601 ⚠	SVDSR1K2	Rectifier
D605,608	LN446YP	Power, Via Tone IND
D606	LN346GP	Auto IND
D607	LN846RP	Straight DC IND
D609~613,615	SVDPR5533K	Input Selector IND
D614,616,617	SVDAY5533K−M	Tape Selector IND
D618	LN0603YP4	New Class A IND
D623~626	MA1030	3V Zener
D701 ⚠	SVDS10VB20F	Rectifier
D702	SVDMZ322A	22V Zener
COILS and TRANSFORMER		
L301,302	SLQY15G−30	Choke
T1 ⚠	SLT5Q139	Power Source

Ref. No.	Part No.	Part Name & Description
VARIABLE RESISTORS		
VR201	EWJKMA054B15	Volume Adj, 100kΩ (B)
VR202	EWHFKA002G15	Volume Balance Adj, 100kΩ(G)
VR203	EWCX8A011012	Tone Adj
VR204	EWCXEA011C15	Bass Adj
VR301,302	EVNK6AA00B13	ICQ Adj, 1kΩ(B)
FUSE		
F1 ⚠	XBA1F60NU14	125V, 7A
COMPONENT COMBINATIONS		
Z301,302 ⚠	ERF3GBKR22N	3W, 0.22Ω(×2)
Z701	SXRFS203ZSM	0.01μF(×2)
THERMISTORS		
TH301,302	ERTD2ZHL103S	10kΩ
PS601	SRPBG47101	Temperature Det (60°C, 140°F)
SWITCHES		
S1,6,7	SSH3065	Phono Selector, Loudness, Subsonic Filter
S2,3	SSH807	Input Selector, Tape Monitor
S4	SSR189	Rec Output Selector
S5	SSH1143	Audio Muting
S8	SSH1141	Operation
S9,10	SSH2017	Speaker Selector
S11(M)	ESB70221T	Speaker Impedance Selector
S11(MC)	SSH1157	Speaker Impedance Selector
S12 ⚠	SSH1109	Power Source
RELAY		
RLY501 ⚠	SSY105	Speaker Protection
CABINET and CHASSIS PAPTS		
1	SGWUV6X−KM	Front panel Ass'y (1)
2	SBN993−1	Knob, Bass, Treble, Rec (3)
3	SBN1181	Knob, Balance (1)
4	SBN1177	Knob, Volume (1)
5	SBC641−4A	Button, Phono (1)
6	SBC641−4B	Button, Tuner (1)
7	SBC641−4C	Button, CD (1)
8	SBC641−4D	Button, Video/aux 2 (1)
9	SBC641−4E	Button, TV/aux 1 (1)

Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PAPTS		
10	SBC641−4F	Button, Source (1)
11	SBC641−4G	Button, Tape 2 (1)
12	SBC641−4H	Button, Tape 1 (1)
13	SUS753−1	Spring, Input Selector (8)
14	SBC643−2	Button, Muting (1)
15	SUS123−3	Spring, Muting (1)
16	SBC399T	Button, Speaker, Operation (3)
17	SBC627	Button, Power (1)
18	SBC621	Button, Subsonic Filter, Loudness, Phono (3)
19	SJT345	Crip, Fuse (2)
20	SJJ71B	Jack, Headphone (1)
21	SML107−7	Plate, Power Transformer (1)
22	SKU8990−4	Bottom Board (1)
23	SKL249	Foot (4)
24	SMN1893	Fix Plate (1)
25	SJF4815−1	Terminal Board, Speaker (1)
26	SJF3059−8N	Terminal Board, Tape 1, Tape 2 (1)
27	SJF3059−2N	Terminal Board, Source input (1)
28(M)	SGPUV6X−KM	Rear Panel Ass'y (1)
28(MC)	SGPUV6X−KC	Rear Panel Ass'y (1)
29(M) ⚠	RJA9Y	AC Cord (1)
29(MC) ⚠	SJA109	AC Cord (1)
30(M) ⚠	SJS601−3	Socket, AC Outlet (1)
30(MC) ⚠	SJS603	Socket, AC Outlet (1)
31	SKC1590BB2	Cabinet (1)
32	SHR9717	Holder, P. C. B. (1)
33	SHR9720	Holder, P. C. B. (1)
34	SJP9205−2	Pin, (2)
35(M)	RHR111	Bushing (1)
35(MC)	SHR129	Bushing (1)
36	SUW2827−1	Plate, Speaker Switch (1)
37	SBC527	Button, Inpedance Selector (1)
38	SJT3319	Post(3 pin) (1)
38	SJT3213	Post(2 pin) (1)
39	SJS5331	Socket(3 pin) (1)
39	SJS5629	Socket(6 pin) (1)
40	SJT783	Terminal (11)

Ref. No.	Part No.
SCREWS, WASHERS and N	
N1 Ⓢ	XTB3+8BFZ
N2 Ⓢ	XTB3+8BFZ
N3 Ⓢ	XSN3+6S
N4 Ⓢ	XWA3B
N5 Ⓢ	XSN3+6S
N6 Ⓢ	XWA3B
N7 Ⓢ	XSN3+6S
N8 Ⓢ	XWA3B
N9 Ⓢ	XSN3+6S
N10 Ⓢ	XWA3B
N11	SNE4021
N12	SNE4021
N13	SNE4021
N14 Ⓢ	XTB3+8BFZ
N15 Ⓢ	XTB3+10BFN
N16 Ⓢ	XWG3
N17	XTB4+10BFN
N18 Ⓢ	XTB3+6BFZ
N19 Ⓢ	XTB3+6BFZ
N20 Ⓢ	XTB3+8BFZ
N21 Ⓢ	XTB3+8BFZ
N22 Ⓢ	XTB3+8BFZ
N23	SNE2095−5
N24 Ⓢ	XSN3+6FZS
PACKING PARTS	
P1(M)	SPG4820
P1(MC)	SPG4824
P2	SPS4289−4
P3	SPS4291−4
P4	SPP730
ACCESSORIES	
A1(M)	SQF12050
A1(MC)	SQF12051



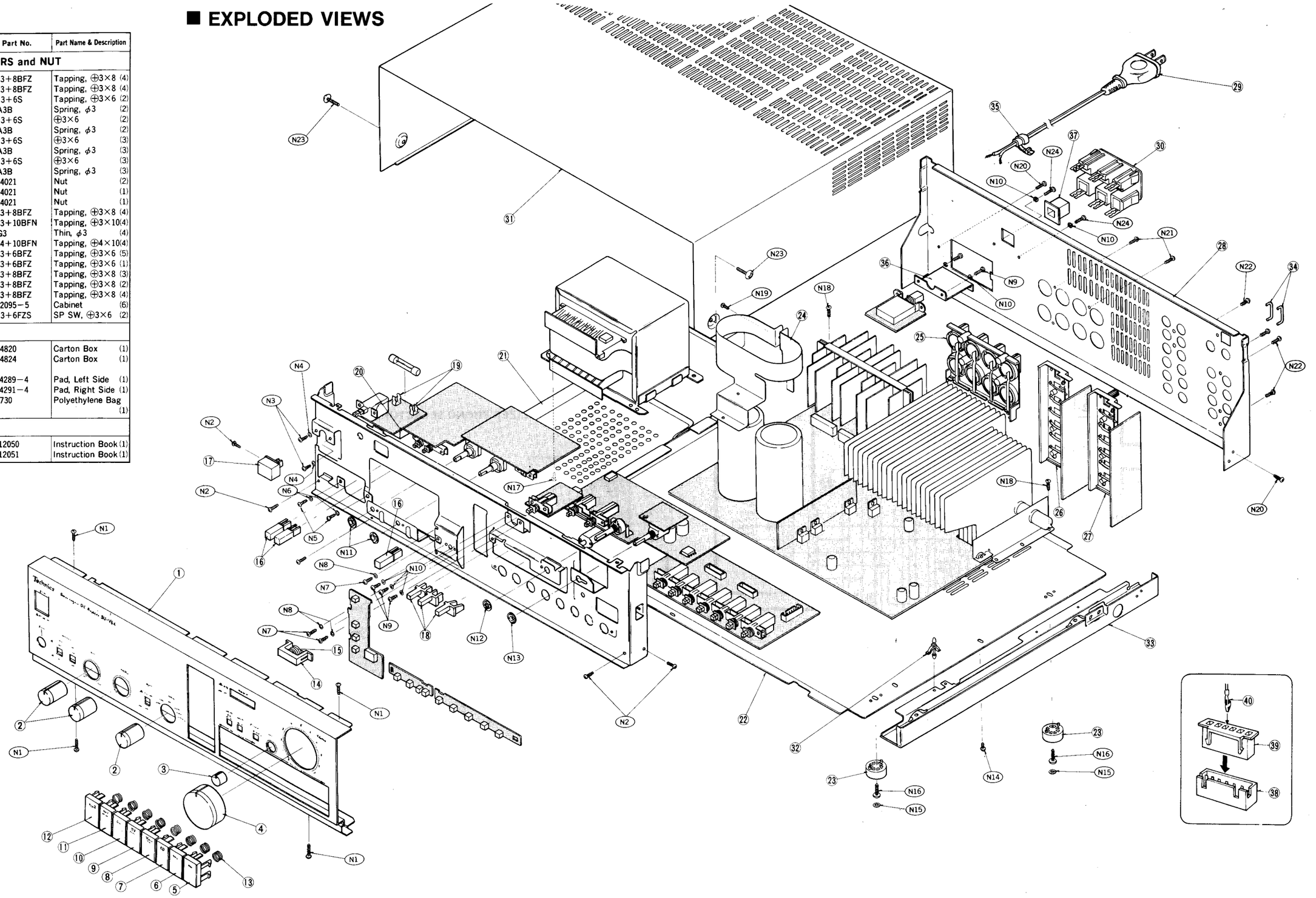
A	
B	
C	② ①

No.	Value
473ZF	0.047
473ZF	0.047
J100	10
J3R3	3.3
J102	1000
223ZF	0.022
153Z	15000
100	10
J100	10
J100	10

Name & Description
ton, Source (1)
ton, Tape 2 (1)
ton, Tape 1 (1)
ing, Input ector (8)
ton, Muting (1)
ing, Muting (1)
ton, Speaker, eration (3)
ton, Power (1)
ton, Subsonic er, Loudness, ono (3)
o, Fuse (2)
k, Headphone(1)
te, Power nsformer (1)
tom Board (1)
t (4)
Plate (1)
minal Board, eaker (1)
minal Board, e 1, Tape 2 (1)
minal Board, rce input (1)
r Panel Ass'y (1)
r Panel Ass'y (1)
Cord (1)
Cord (1)
ket, AC Outlet (1)
ket, AC Outlet (1)
inet (1)
der, P. C. B. (1)
der, P. C. B. (1)
(2)
shing (1)
shing (1)
te, Speaker tch (1)
ton, Inpedance ector (1)
t(3 pin) (1)
t(2 pin) (1)
ket(3 pin) (1)
ket(6 pin) (1)
minal (11)

Ref. No.		Part No.	Part Name & Description
SCREWS, WASHERS and NUT			
N1	Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (4)
N2	Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (4)
N3	Ⓢ	XSN3+6S	Tapping, ⊕3×6 (2)
N4	Ⓢ	XWA3B	Spring, φ3 (2)
N5	Ⓢ	XSN3+6S	⊕3×6 (2)
N6	Ⓢ	XWA3B	Spring, φ3 (2)
N7	Ⓢ	XSN3+6S	⊕3×6 (3)
N8	Ⓢ	XWA3B	Spring, φ3 (3)
N9	Ⓢ	XSN3+6S	⊕3×6 (3)
N10	Ⓢ	XWA3B	Spring, φ3 (3)
N11		SNE4021	Nut (2)
N12		SNE4021	Nut (1)
N13		SNE4021	Nut (1)
N14	Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (4)
N15	Ⓢ	XTB3+10BFN	Tapping, ⊕3×10(4)
N16	Ⓢ	XWG3	Thin, φ3 (4)
N17		XTB4+10BFN	Tapping, ⊕4×10(4)
N18	Ⓢ	XTB3+6BFZ	Tapping, ⊕3×6 (5)
N19	Ⓢ	XTB3+6BFZ	Tapping, ⊕3×6 (1)
N20	Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (3)
N21	Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (2)
N22	Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (4)
N23		SNE2095−5	Cabinet (6)
N24	Ⓢ	XSN3+6FZS	SP SW, ⊕3×6 (2)
PACKING PARTS			
P1〔M〕		SPG4820	Carton Box (1)
P1〔MC〕		SPG4824	Carton Box (1)
P2		SPS4289−4	Pad, Left Side (1)
P3		SPS4291−4	Pad, Right Side (1)
P4		SPP730	Polyethylene Bag (1)
ACCESSORIES			
A1〔M〕		SQF12050	Instruction Book (1)
A1〔MC〕		SQF12051	Instruction Book (1)

■ EXPLODED VIEWS



A	㉛ ㊱ ㉟ ㊲ ㉚ ㉘ ㉙ ㉞
B	① ⑰ ⑳ ⑯ ⑲ ㉑ ㉔ ㉕ ㉖ ㉗
C	② ⑫ ⑪ ⑩ ⑨ ⑧ ② ⑦ ⑥ ③ ⑤ ⑬ ④ ⑭ ⑮ ⑱ ㉒ ㉜ ㉓ ㉓ ㉝ ㊵ ㊳ ㊴

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