

# Service Manual

Stereo Integrated DC Amplifier

## SU-V2A

[E], [EG], [XGH], [EB],  
[XA], [XAL]

## SU-V2A(K)

[E], [EG], [XGH],  
[EB], [XA]

\* The cabinet, front panel and knob are available in black color and silver types.  
The black type model is provided with (K) in the Service Manual.

### Areas

- \* [E] and [EG] are available in Scandinavia and European except Belgium, United Kingdom, Switzerland, Holland and France.
- \* [XGH] is available in Holland.
- \* [EB] is available in Belgium.
- \* [XA] is available in Asia, Latin America, Middle East and Africa.
- \* [XAL] is available in Australia.

### TECHNICAL SPECIFICATIONS (DIN 45 500)

Specifications are subject to change without notice for further improvement.

#### AMPLIFIER SECTION

20 Hz~20 kHz continuous power output both channels driven	2 × 45W (4Ω) 2 × 40W (8Ω)
40 Hz~16 kHz continuous power output both channels driven	2 × 45W (4Ω) 2 × 40W (8Ω)
1 kHz continuous power output both channels driven	2 × 55W (4Ω) 2 × 45W (8Ω)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.03% (4Ω) 0.02% (8Ω)
rated power at 40 Hz~16 kHz	0.03% (4Ω) 0.02% (8Ω)
rated power at 1 kHz	0.02% (4Ω) 0.02% (8Ω)
half power at 20 Hz~20 kHz	0.015% (8Ω)
half power at 1 kHz	0.003% (8Ω)
-26 dB power at 1 kHz	0.1% (4Ω)
50 mW power at 1 kHz	0.15% (4Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz=4:1, 4Ω	0.03%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.02%
Power bandwidth	
both channels driven, -3 dB	(THD 0.03%) 5 Hz~30 kHz (4Ω) (THD 0.02%) 5 Hz~30 kHz (8Ω)
Residual hum and noise	0.5 mV

Damping factor	25 (4Ω), 50 (8Ω)
Input sensitivity and impedance	
PHONO	2.5 mV/47kΩ
TUNER, AUX	150 mV/27kΩ
TAPE 1 REC/PLAY	180 mV/33kΩ
TAPE	150 mV/27kΩ
PHONO maximum input voltage (1 kHz, RMS)	150 mV
S/N	
rated power (4Ω)	
PHONO	73 dB (IHF, A: 80 dB)
TUNER, AUX	85 dB (IHF, A: 95 dB)
-26 dB power (4Ω)	
PHONO	63 dB
TUNER, AUX	63 dB
50 mW power (4Ω)	
PHONO	60 dB
TUNER, AUX	60 dB
Frequency response	
PHONO	RIAA standard curve ±0.8 dB (30 Hz~15 kHz) 5 Hz~100 kHz (-3 dB) +0 dB, -0.3 dB (20 Hz~20 kHz)
TUNER, AUX, TAPE	
Tone controls	
BASS	50 Hz, +10 dB~ -10 dB
TREBLE	20 kHz, +10 dB~ -10 dB
Subsonic filter	30 Hz, -6 dB/oct.
High-cut filter	7 kHz, -6 dB/oct.
Loudness control (volume at -30 dB)	50 Hz, +9 dB
Output voltage and impedance	
REC OUT	150 mV
TAPE 1 REC/PLAY	30 mV/82kΩ
Channel balance, AUX 250 Hz~6,300 Hz	±1 dB
Channel separation, AUX 1 kHz	52 dB

# Technics

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

Headphones output level and impedance	420 mV/330Ω	Dimensions (W×H×D)	430 × 142 × 257 mm (16-15/16" × 5-19/32" × 10-1/8")
Load Impedance		Weight	6.9 kg (15.2 lb.)
MAIN or REMOTE	4Ω~16Ω		
MAIN and REMOTE	8Ω~16Ω		
<b>GENERAL</b>			
Power consumption	500W	<b>Note:</b>	
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V	Total harmonic distortion is measured by the digital spectrum analyzer (HP. 3045 system).	

## TECHNISCHE DATEN (DIN 45 500)

Spezifikationen können infolge von verbesserungen ohne Ankündigung geändert werden.

### VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz		-26 dB Leistung (4 Ω)	
beide Kanäle angesteuert	2 × 45W (4 Ω)	Phono	63 dB
	2 × 40W (8 Ω)	Tuner, Aux	63 dB
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz		50 mW Leistung (4 Ω)	
beide Kanäle angesteuert	2 × 45W (4 Ω)	Phono	60 dB
	2 × 40W (8 Ω)	Tuner, Aux	60 dB
Dauerton-Ausgangsleistung bei 1 kHz		Frequenzgang	
beide Kanäle angesteuert	2 × 55W (4 Ω)	Phono	RIAA-Standardkurve
	2 × 45W (8 Ω)		±0,8 dB (30 Hz ~ 15 kHz)
Gesamtklirrfaktor		Tuner Aux, Tape	5 Hz ~ 100 kHz( -3 dB)
Nennleistung bei 20 Hz ~ 20 kHz	0,03% (4 Ω)		+0 dB, -0,3 dB (20 Hz ~ 20 kHz)
	0,02% (8 Ω)	Klangregler	
Nennleistung bei 40 Hz ~ 16 kHz	0,03% (4 Ω)	Baßregler (BASS)	50 Hz, +10 dB ~ -10 dB
	0,02% (8 Ω)	Höhenregler (TREBLE)	20 kHz, +10 dB ~ -10 dB
Nennleistung bei 1 kHz	0,02% (4 Ω)	Tiefenfilter	30 Hz, -6 dB/Okt.
	0,02% (8 Ω)	Rauschfilter	7 kHz, -6 dB/Okt.
halbe Nennleistung bei 20 Hz ~ 20 kHz	0,015% (8 Ω)	Gehörriichtige Lautstärkekorrektur (Loudness)	
halbe Nennleistung bei 1 kHz	0,003% (8 Ω)	(bei -30 dB Ausgangsleistung)	50 Hz, +9 dB
-26 dB Leistung bei 1 kHz	0,1% (4 Ω)	Ausgangsspannung und -impedanz	
50 mW Leistung bei 1 kHz	0,15% (4 Ω)	Aufnahmeausgang (REC OUT)	150 mV
Intermodulationsfaktor		Tape 1 Aufnahme/Wiedergabe (TAPE 1 REC/PLAY)	
Nennleistung bei 250 Hz: 8 kHz = 4:1, 4 Ω	0,03%		30 mV/82 kΩ
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8 Ω	0,02%	Kanalabweichung (Aux, 250 Hz ~ 6300 Hz)	±1 dB
Leistungsbandbreite		Übersprechdämpfung (Aux, 1 kHz)	52 dB
beide Kanäle angesteuert bei -3 dB		Kopfhörerpegel und -impedanz	420 mV/330 Ω
(THD 0,03%) 5 Hz ~ 30 kHz (4 Ω)		Lautsprecherimpedanz	
(THD 0,02%) 5 Hz ~ 30 kHz (8 Ω)		MAIN oder REMOTE	4 Ω ~ 16 Ω
Restbrumm und Geräusch	0,5 mV	MAIN und REMOTE	8 Ω ~ 16 Ω
Dämpfungsfaktor	25 (4 Ω), 50 (8 Ω)	<b>ALLGEMEINE DATEN</b>	
Eingangsempfindlichkeit und -impedanz		Leistungsaufnahme	500 W
Phono	2,5 mV/47 kΩ	Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Tuner, Aux	150 mV/27 kΩ	Abmessungen (B×H×T)	430 × 142 × 257 mm
Tape 1 Aufnahme/Wiedergabe (TAPE 1 REC/PLAY)	180 mV/33 kΩ	Gewicht	6,9 kg
Tape 2 (TAPE 2)			
	150 mV/27 kΩ		
Maximale TA-Eingangsspannung (1 kHz, eff.)	150 mV		
Geräuschabstand			
Nennleistung (4 Ω)			
Phono	73 dB (nach IHF, A: 80 dB)		
Tuner, Aux	85 dB (nach IHF, A: 95 dB)		

**Bemerkung:**  
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage HP. 3045) gemessen.

## DONNEES TECHNIQUES (DIN 45 500)

Sujet à changement sans préavis.

### SECTION AMPLIFICATEUR

Puissance de sortie continue de 20 Hz~20 kHz, les deux canaux en circuit	2 × 45W (4Ω) 2 × 40W (8Ω)
Puissance de sortie continue de 40 Hz~16 kHz, les deux canaux en circuit	2 × 45W (4Ω) 2 × 40W (8Ω)
Puissance de sortie continue à 1 kHz les deux canaux en circuit	2 × 55W (4Ω) 2 × 45W (8Ω)

Distorsion harmonique totale	
à puissance nominale (20 Hz~20 kHz)	0,03% (4Ω) 0,02% (8Ω)
à puissance nominale (40 Hz~16 kHz)	0,03% (4Ω) 0,02% (8Ω)
à puissance nominale (1 kHz)	0,02% (4Ω) 0,02% (8Ω)
à demi-puissance (20 Hz~20 kHz)	0,015% (8Ω)
à demi-puissance (1 kHz)	0,003% (8Ω)
puissance de -26 dB à 1 kHz	0,1% (4Ω)
puissance de 50 mW à 1 kHz	0,15% (4Ω)

**Distorsion d'intermodulation**  
à puissance nominale à 250 Hz: 8 kHz=4:1, 4Ω 0,03%  
à puissance nominale à 60 Hz: 7 kHz=4:1, SMPTE, 8Ω 0,02%

**Réponse de fréquences**  
les deux canaux en circuit, -3 dB  
(THD 0,03%) 5 Hz~30 kHz (4Ω)  
(THD 0,02%) 5 Hz~30 kHz (8Ω)

**Bruit et ronflement résiduels** 0,5 mV

**Coefficient d'amortissement** 25 (4Ω), 50 (8Ω)

**Sensibilité et impédance d'entrée**

PHONO 2,5 mV/47kΩ  
SYNTHONISATEUR, AUX (TUNER, AUX) 150 mV/27kΩ  
BANDE 1, ENREGISTREMENT/LECTURE  
(TAPE 1 REC/PLAY) 180 mV/33kΩ  
BANDE 2,  
(TAPE 2) 150 mV/27kΩ

PHONO (tension d'entrée maximum, 1 kHz RMS) 150 mV

**Signal/Bruit**  
à puissance nominale (4Ω)  
PHONO 73 dB (IHF, A: 80 dB)  
SYNTHONISATEUR, AUX (TUNER, AUX) 85 dB (IHF, A: 95 dB)

puissance de -26 dB (4Ω)  
PHONO 63 dB  
SYNTHONISATEUR, AUX (TUNER, AUX) 63 dB

puissance de 50 mW (4Ω)  
PHONO 60 dB  
SYNTHONISATEUR, AUX (TUNER, AUX) 60 dB

**Réponse de fréquence**  
PHONO Courbe nominale RIAA  
±0,8 dB (30 Hz~15 kHz)  
SYNTHONISATEUR, AUX, BANDE (TUNER, AUX, TAPE)  
5 Hz~100 kHz (-3 dB)  
+0 dB, -0,3 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.  
**Filtre coupe-hauts** 7 kHz, -6 dB/oct.  
**Compensateur physiologique (volume à -30 dB)** 50 Hz, +9 dB

**Tension de sortie et impédance**  
**SORTIE ENREGISTREMENT (REC OUT)** 150 mV  
**ENREGISTREMENT/LECTURE BANDE 1**  
**(TAPE 1 REC/PLAY)** 30 mV/82kΩ  
**Equilibrage des canaux, AUX 250 Hz~6 300 Hz** ±1 dB  
**Séparation des canaux, AUX 1 kHz** 52 dB  
**Niveau de sortie des casques et impédance** 420 mV/330Ω  
**Impédance de charge**  
**PRINCIPALE ou AUXILIAIRE (MAIN or REMOTE)** 4Ω~16Ω  
**PRINCIPALE et AUXILIAIRE (MAIN and REMOTE)** 8Ω~16Ω

## DIVERS

**Consommation** 500W  
**Alimentation** CA 50 Hz/60 Hz, 110V/120V/220V/240V  
**Dimensions (L×H×Pr)** 430 × 142 × 257 mm  
**Poids** 6,9 kg

## Remarque:

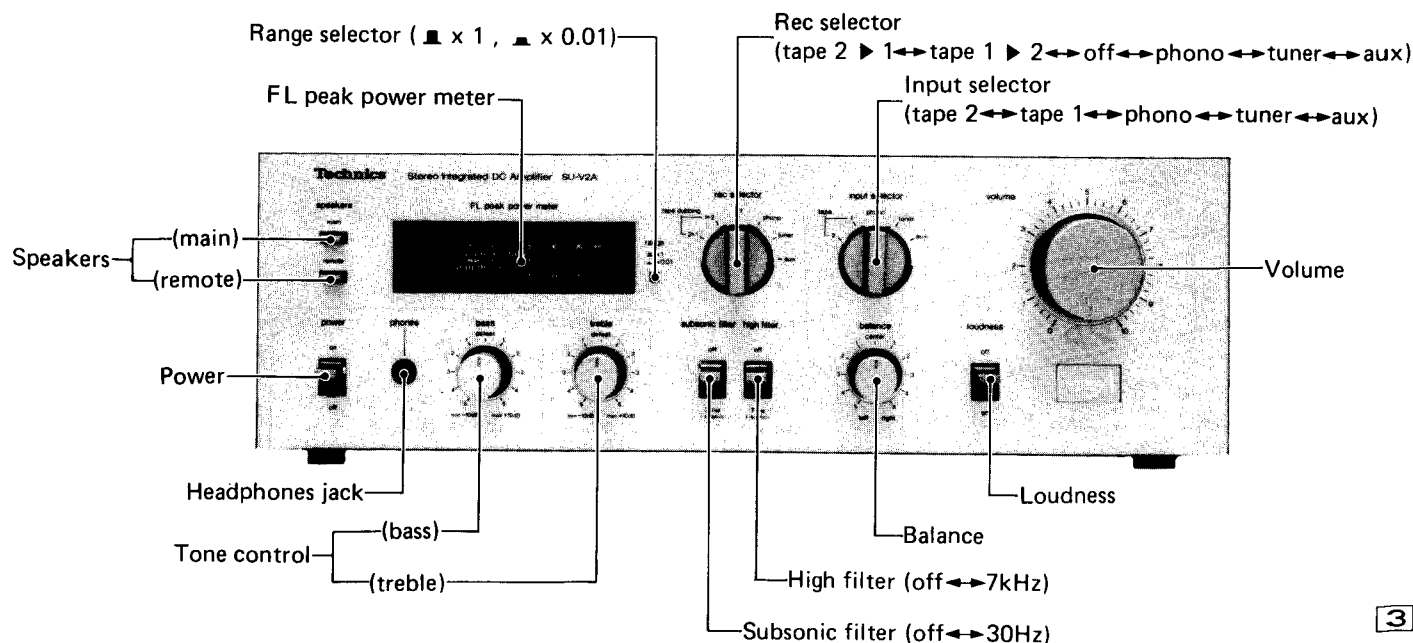
On mesure la distorsion harmonique totale au moyen d'un analyseur de spectre digital (Système HP. 3045).

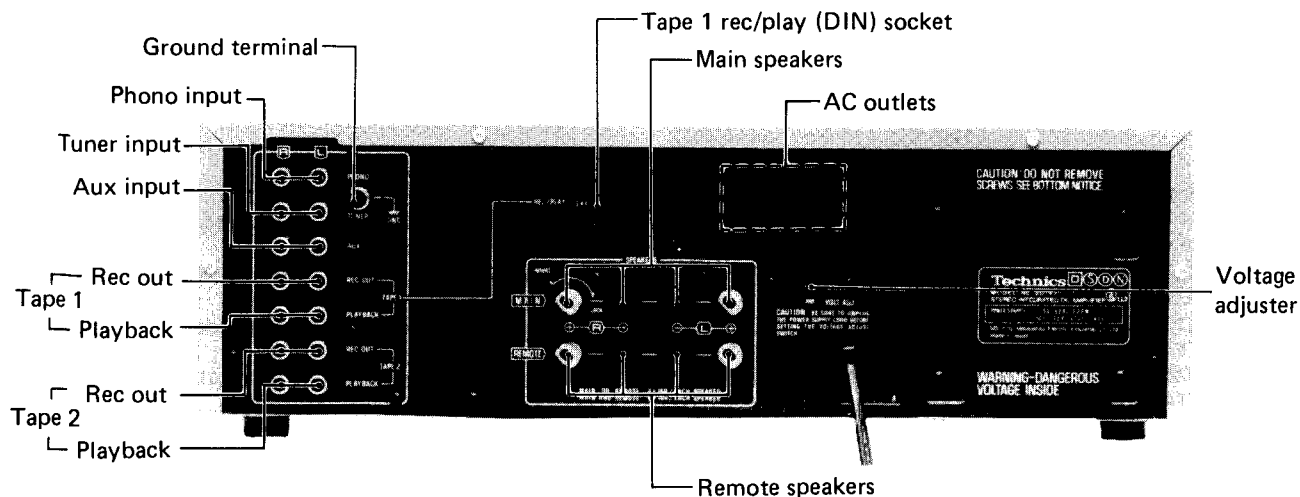
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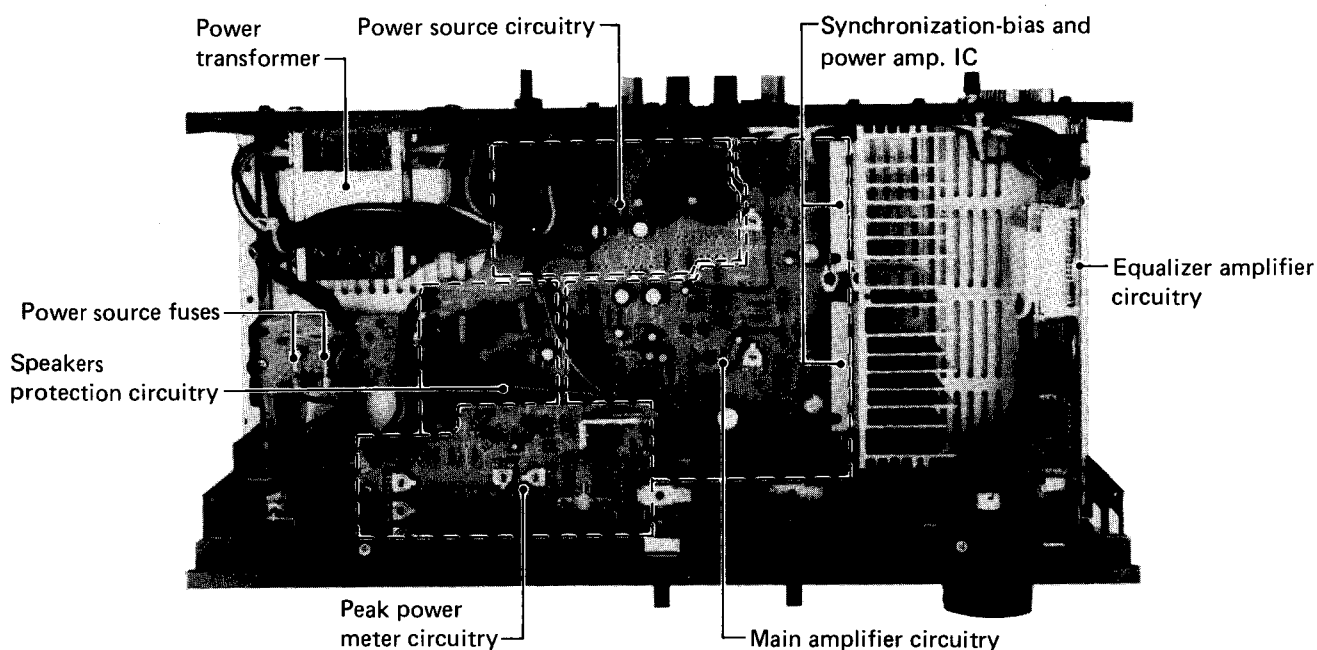
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## LOCATION OF CONTROLS





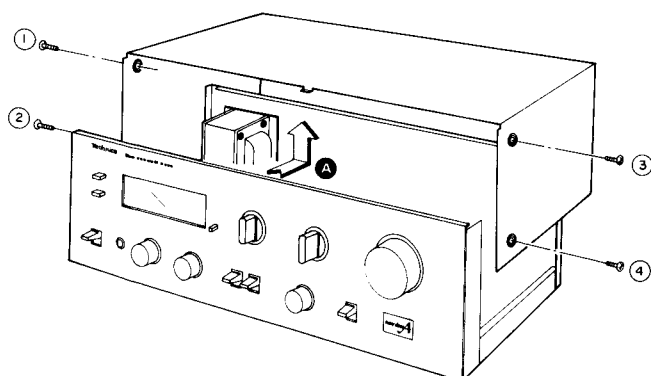
- The products for destination [XA] is equipped with AC outlet.



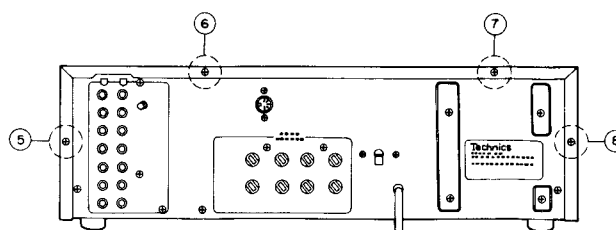
## DISASSEMBLY INSTRUCTIONS

### • How to remove the cabinet

1. Remove the 4 setscrews (Fig. 1 : ①~④) on the side and 4 setscrews (Fig. 2 : ⑤~⑧) on the back of the cabinet.
2. Shift the cabinet backward and lift it upward. (Arrow A in Fig. 1)



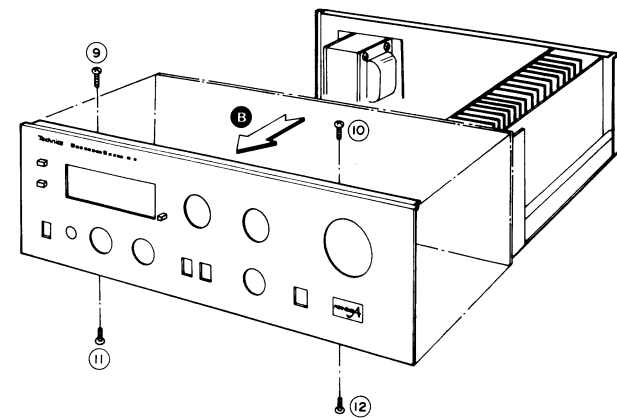
[Fig. 1]



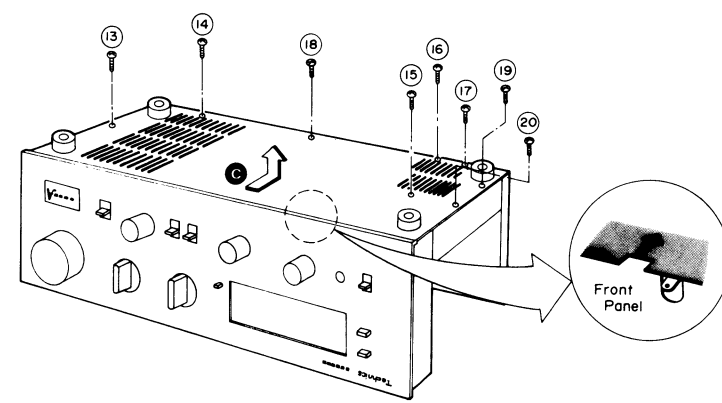
[Fig. 2]

● How to remove the front panel and the bottom board

1. Remove the 4 setscrews (Fig. 3 : ⑨~⑫) holding the front panel.
2. Pull the front panel outward from the front of the unit. (Arrow ⑬ in Fig. 3)
3. To remove the bottom board, remove the 8 setscrews (Fig. 4 : ⑬~⑳) holding the bottom board.



[Fig. 3]



[Fig. 4]

■ ADJUSTING INSTRUCTIONS ENGLISH

● Setting of controls and instruments to be used

1. Speaker switch . . . . . main
2. Volume . . . . . 0 (minimum)
3. DC voltmeter (capable to measure 5mV)

1. Adjustment of clamp voltage and Ica

No.	Adjustment	DC Voltmeter Connections	Adjusting Point	Adjustment Procedure
1	Clamp Voltage	L channel Between TP301 and TP303 (minus probe)	R355 (L channel)	* Turn Ica semi-fixed resistors R363, 364 to minimum. (counter-clockwise direction) * Adjust R355 (L ch) and R356 (R ch) to approx. 0.4mV after ten minutes warm-up time.
		R channel Between TP302 and TP304 (minus probe)	R356 (R channel)	
2	Ica (Adjustment using a DC voltmeter)	L channel Between TP301 and TP303 (minus probe)	R363 (L channel)	* Adjust R363 (L ch) and R364 (R ch) to approx. 9mV after ten minutes warm-up time.
		R channel Between TP302 and TP304 (minus probe)	R364 (R channel)	

2. Adjustment of FL power meter

● Setting of controls and instruments to be used

1. Input selector . . . . . tuner
2. Speaker switch . . . . . main
3. Meter range switch. . . . . X0.01 or X1
4. Sound volume. . . . . 10 (max.)
5. Low frequency oscillator
6. AC electronic voltmeter
7. 8-ohm load resistor

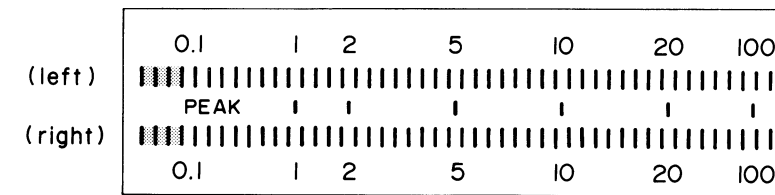
2-1.

- 1) Connect the low frequency oscillator to the tuner terminals for both channels, and the AC electronic voltmeter to the speaker terminals in parallel with the load resistor.
- 2) Set the meter range switch to "X0.01" position.
- 3) Add 1kHz signal from the low frequency oscillator, and regulate the input level so that the AC electronic voltmeter indicates 0.15V.
- 4) Adjust VR801 (L ch), VR802 (R ch) while observing the FL peak power meter until the first segment is about to turn on (Refer to Fig. 5).

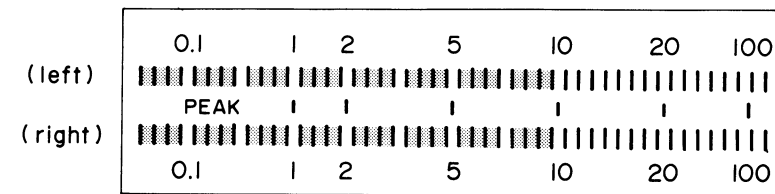
2-2.

- 1) Set the meter range switch to "X1" position.
- 2) Regulate the input level so that the AC electronic voltmeter indicates 8.9V.
- 3) Make the adjustment in the same way as mentioned in 2-1 by regulating VR803 (L ch), VR804 (R ch) so that the 8th segment to turn on. (Refer to Fig. 6) \* Each segment consists of four bars.
- 4) Next, make the adjustment in 2-1 by regulating the input level. (Repeat step 2-1)
- 5) Again regulate the input level to make the output 8.9V, and make sure that the segment at 10W (Refer to Fig. 6) position is on.

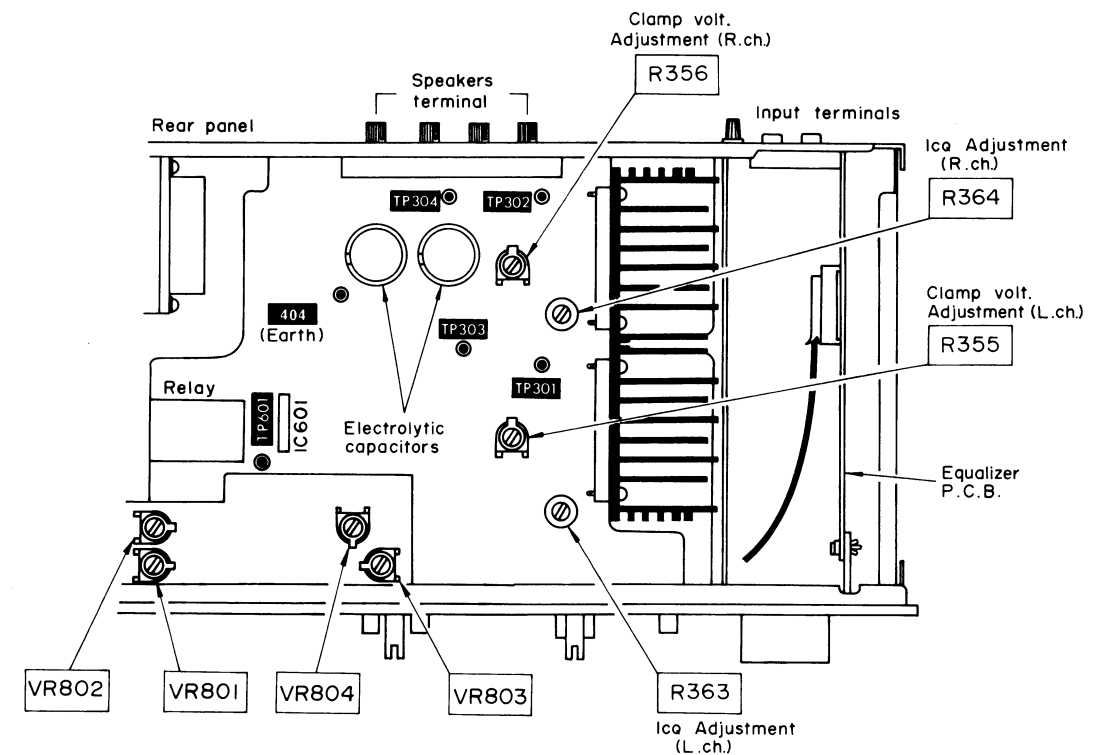
5



[Fig. 5] Abb. 1



[Fig. 6] Abb. 2



■ EINSTELLUNGSANWEISUNGEN DEUTSCH

● Einstellung der zu benutzenden Regler und Instrumente

1. Lautsprecherschalter . . . . . Hauptlautsprecher ("main")
2. Lautstärke . . . . . "0" (Minimalstellung)
3. Gleichstromvoltmeter. . . . . 5mV Meßbereich erforderlich.

1	Klemmspannung	L-Kanal. Zwischen TP301 und TP303 (Minustest)	R355 (L-Kanal)	* Die Ica halbfeingestellten Widerstände R363 und R364 auf Minimalstellung drehen. (Entgegen dem Uhrzeigersinn) * R355 (L-Kanal) und R356 (R-Kanal) auf ungefähr 0.4mV, nach 10 Minuten Anwärmezeit, einstellen.
		R-Kanal. Zwischen TP302 und TP304 (Minustest)	R356 (R-Kanal)	
2	Ica (Einstellungen mit einem Gleichstromvoltmeter)	L-Kanal. Zwischen TP301 und TP303 (Minustest)	R363 (L-Kanal)	* R363 (L-Kanal) und R364 (R-Kanal) auf ungefähr 9mV, nach 10 Minuten Anwärmezeit einstellen.
		R-Kanal. Zwischen TP302 und TP304 (Minustest)	R364 (R-Kanal)	

2. Abgleichen des FL-Leistungsmeßgerätes

\* Einstellung der zu benutzenden Regler und Instrumente

1. Eingangsumschalter. . . . . tuner
2. Lautsprecherschalter . . . . . main
3. Meßbereichschalter . . . . . X0.01 oder X1
4. Lautstärke . . . . . 10 (max.)
5. Niederfrequenz-Oszillator
6. Wechselstrom-Elektronen-Voltmesser
7. 8 Ohm Belastungswiderstand

6

2-1.

- 1) An d
- 2) Meßb
- 3) Vom
- 4) Unter
- 5) Eing

2-2.

- 1) Meßb
- 2) Eing
- 3) Unter
- 4) Dann
- 5) Eing

■ INST

● Réglage de

1. Comm
2. Volum
3. Voltm

2. Réglage d

\* Condition

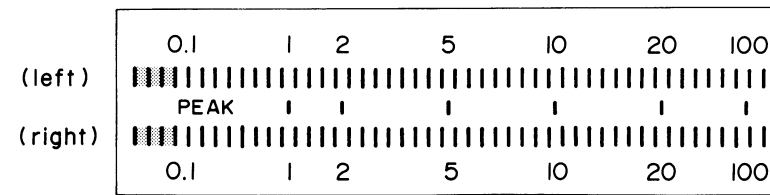
1. Sélecte
2. Commu
3. Commu
4. Volume

2-1.

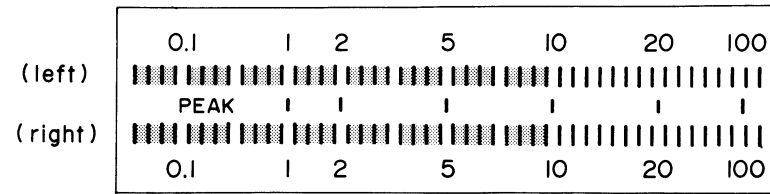
- 1) Brand
- 2) Placer
- 3) Alime
- 4) Régl

2-2.

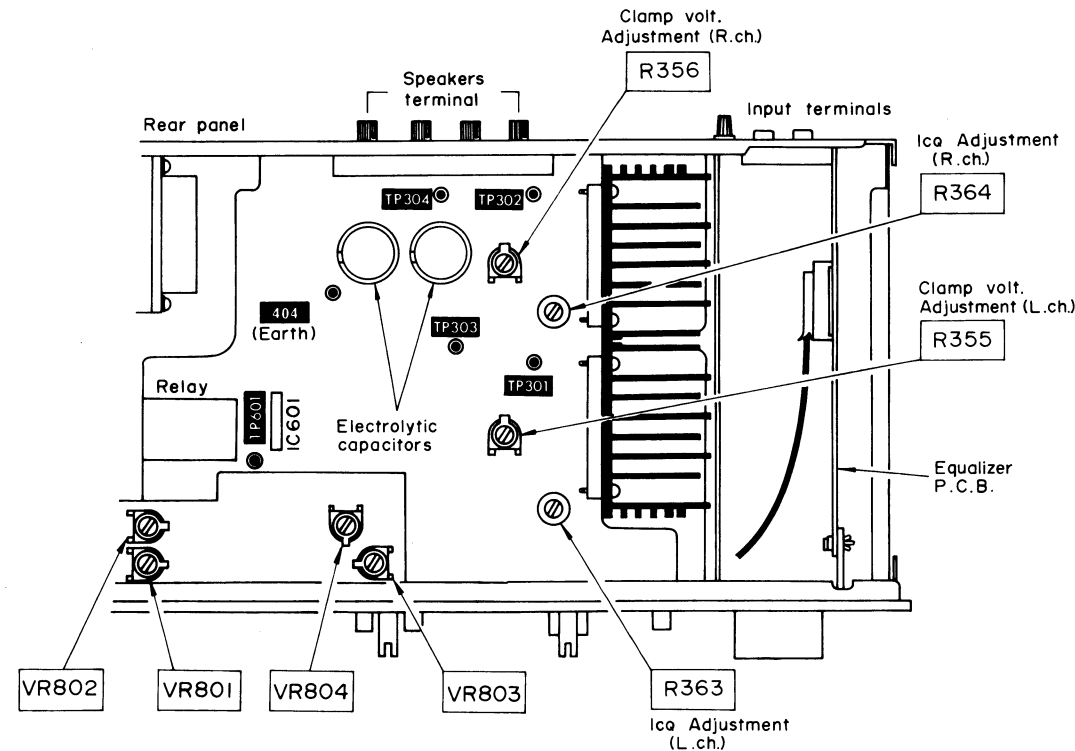
- 1) Régl
- 2) Régl
- 3) Faire
- 4) Effect
- 5) De no



[Fig. 5] Abb. 1



[Fig. 6] Abb. 2



## EINSTELLUNGSANWEISUNGEN DEUTSCH

### • Einstellung der zu benutzenden Regler und Instrumente

1. Lautsprecherschalter . . . . . Hauptlautsprecher ("main")
2. Lautstärke . . . . . "0" (Minimalstellung)
3. Gleichstromvoltmeter . . . . . 5mV Meßbereich erforderlich.

1	Klemmspannung	L-Kanal. Zwischen TP301 und TP303 (Minustest) R-Kanal. Zwischen TP302 und TP304 (Minustest)	R355 (L-Kanal) R356 (R-Kanal)	* Die Icα halbfeingestellten Widerstände R363 und R364 auf Minimalstellung drehen. (Entgegen dem Uhrzeigersinn) * R355 (L-Kanal) und R356 (R-Kanal) auf ungefähr 0.4mV, nach 10 Minuten Anwärmezeit, einstellen.
2	Icα (Einstellungen mit einem Gleichstromvoltmeter)	L-Kanal. Zwischen TP301 und TP303 (Minustest) R-Kanal. Zwischen TP302 und TP304 (Minustest)	R363 (L-Kanal) R364 (R-Kanal)	* R363 (L-Kanal) und R364 (R-Kanal) auf ungefähr 9mV, nach 10 Minuten Anwärmezeit einstellen.

### 2. Abgleichen des FL-Leistungsmeßgerätes

#### \* Einstellung der zu benutzenden Regler und Instrumente

1. Eingangsumschalter . . . . . tuner
2. Lautsprecherschalter . . . . . main
3. Meßbereichschalter . . . . . X0.01 oder X1
4. Lautstärke . . . . . 10 (max.)
5. Niederfrequenz-Oszillator
6. Wechselstrom-Elektronen-Voltmeter
7. 8 Ohm Belastungswiderstand

### 2-1.

- 1) An die Tunerklemmen der beiden Kanäle Niederfrequenz-Oszillator anschließen, und an die Lautsprecherklemme parallel mit Belastungswiderstand den Wechselstrom-Elektronen-Voltmeter anschließen.
- 2) Meßbereichschalter auf "X0.01" position.
- 3) Vom Niederfrequenz-Oszillator 1kHz Signal speisen, und Eingangspegel so einstellen, daß Wechselstrom-Elektronen-Voltmeter 0.15V anzeigt.
- 4) Unter Beobachten auf FL-Leistungsmeßgerät VR801 (L-Kanal), VR802 (R-Kanal) einstellen, bis das erste Segment fast aufzuleuchten beginnt. (Vgl Abb. 1)

### 2-2.

- 1) Meßbereichschalter auf "X1" position.
- 2) Eingangspegel so einstellen, daß Wechselstrom-Elektronen-Voltmeter 8.9V anzeigt.
- 3) Unter Einstellung von VR803 (L-Kanal), VR804 (R-Kanal) in gleicher Weise wie oben in 2-1 so abgleichen, daß das 8. Segment fast aufzuleuchten beginnt.
- 4) Dann Eingangspegel einstellen und wie in 2-1 abgleichen.
- 5) Eingangspegel wieder einstellen, damit der Eingang 8.9V wird, und sicherstellen, daß das Segment bei 10W aufleuchtet. (Vgl Abb. 2)

## INSTRUCTIONS DE REGLAGE FRANÇAIS

### • Réglage des commandes et instruments à utiliser

1. Commutateur du haut-parleur . . . . . Principal
2. Volume du son . . . . . 0 (minimum)
3. Voltmètre CC (pouvant mesurer 5mV)

1	Tension de blocage	Canal G. Entre TP301 et TP303 (sonde au moins) Canal D. Entre TP302 et TP304 (sonde au moins)	R355 (Canal G) R356 (Canal D)	* Tourner les résistances R363, 364 semifixes Icα sur le minimum. (à gauche) * Régler R355 (canal gauche) et R356 (canal droit) sur env. 1mV après 10 minutes de temps de chauffage.
2	Icα (réglage à l'aide d'un voltmètre CC)	Canal G. Entre TP301 et TP303 (sonde au moins) Canal D. Entre TP302 et TP304 (sonde au moins)	R363 (Canal G) R364 (Canal D)	* Régler les R363 (canal gauche) et R364 (canal droit) sur env. 10 ~ 15mV après 9mn. de préchauffage.

### 2. Réglage du compteur d'alimentation FL

#### \* Conditions de l'appareil et équipement utilisé

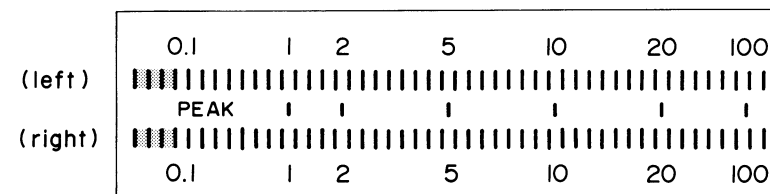
1. Sélecteur d'entrée . . . . . Commande d'accord
2. Commutateur de l'enceinte . . . . . Principal
3. Commutateur de la gamme du compteur . . . . . X0.01 or X1
4. Volume du son . . . . . 10 maxi.
5. Oscillateur de basse fréquence
6. Voltmètre électronique CA
7. Résistance de 8 ohms de charge

### 2-1.

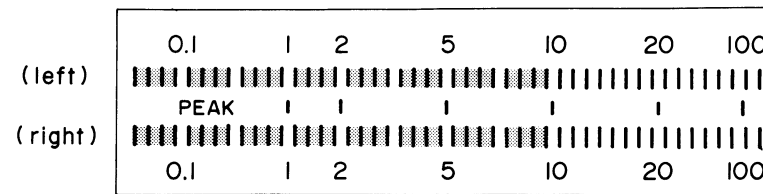
- 1) Brancher l'oscillateur de basse fréquence aux bornes de la commande d'accord des deux canaux; et le voltmètre électronique aux bornes de l'enceinte en parallèle avec la résistance de charge.
- 2) Placer le commutateur de gamme du compteur sur "X0.01" position.
- 3) Alimenter un signal de 1kHz par l'oscillateur de basse fréquence et régler le niveau d'entrée de telle sorte que le voltmètre électronique indique 0.15V.
- 4) Régler le VR801 (Canal G), VR802 (Canal D) tout en observant le compteur d'alimentation FL jusqu'à ce que le premier segment soit sur le point d'être branché. (Voir Fig. 5)

### 2-2.

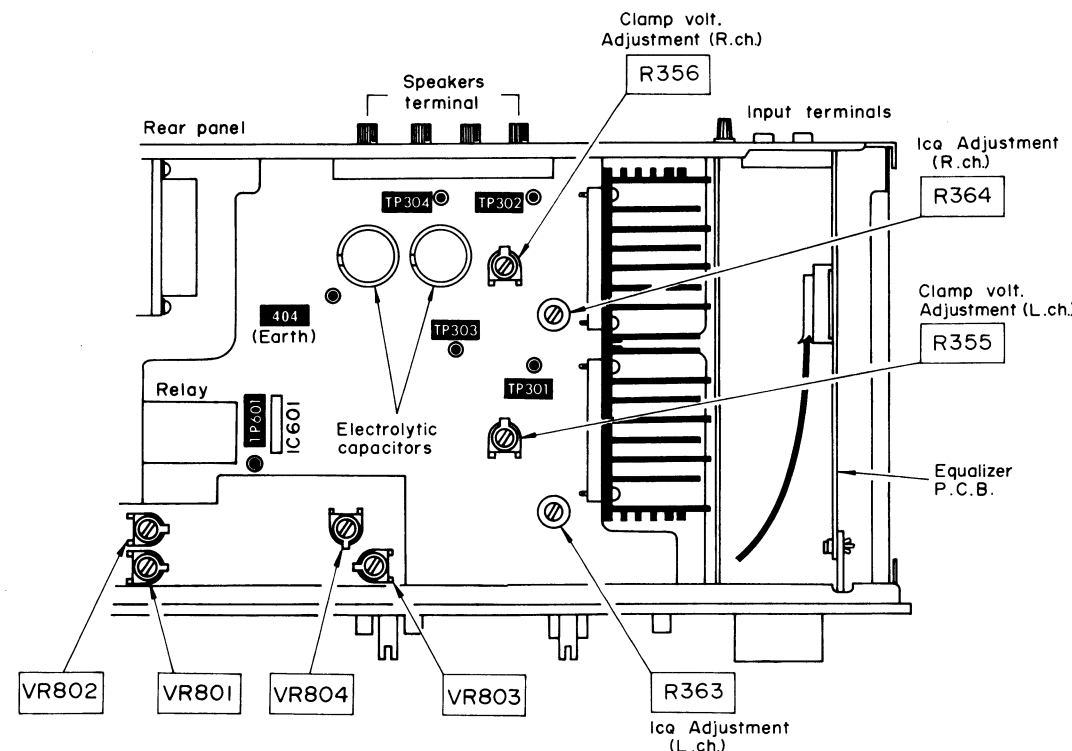
- 1) Régler le commutateur de gamme du compteur sur "X1".
- 2) Régler le niveau d'entrée de telle sorte que le compteur électronique indique 8.9V.
- 3) Faire le réglage de la même façon que le réglage mentionné dans le paragraphe 2-1 en réglant VR803 (Canal G), VR804 (Canal D) de telle sorte que le huitième segment soit sur le point d'être branché.
- 4) Effectuer le réglage comme dans le paragraphe 2-1 en réglant le niveau d'entrée.
- 5) De nouveau régler le niveau d'entrée pour donner une sortie de 8.9V et s'assurer que le segment à position 10W, est branché. (Voir Fig. 6)



[Fig. 5] Abb. 1



[Fig. 6] Abb. 2



## EINSTELLUNGSANWEISUNGEN DEUTSCH

### Einstellung der zu benutzenden Regler und Instrumente

1. Lautsprecherschalter ..... Hauptlautsprecher ("main")
2. Lautstärke ..... "0" (Minimalstellung)
3. Gleichstromvoltmeter ..... 5mV Meßbereich erforderlich.

1	Klemmspannung	L-Kanal. Zwischen TP301 und TP303 (Minustest) R-Kanal. Zwischen TP302 und TP304 (Minustest)	R355 (L-Kanal) R356 (R-Kanal)	* Die $I_{c\alpha}$ halbfeingestellten Widerstände R363 und R364 auf Minimalstellung drehen. (Entgegen dem Uhrzeigersinn) * R355 (L-Kanal) und R356 (R-Kanal) auf ungefähr 0.4mV, nach 10 Minuten Anwärmezeit, einstellen.
2	$I_{c\alpha}$ (Einstellungen mit einem Gleichstromvoltmeter)	L-Kanal. Zwischen TP301 und TP303 (Minustest) R-Kanal. Zwischen TP302 und TP304 (Minustest)	R363 (L-Kanal) R364 (R-Kanal)	* R363 (L-Kanal) und R364 (R-Kanal) auf ungefähr 9mV, nach 10 Minuten Anwärmezeit einstellen.

### 2. Abgleichen des FL-Leistungsmeßgerätes

#### \*Einstellung der zu benutzenden Regler und Instrumente

1. Eingangsumschalter ..... tuner
2. Lautsprecherschalter ..... main
3. Meßbereichschalter ..... X0.01 oder X1
4. Lautstärke ..... 10 (max.)
5. Niederfrequenz-Oszillator
6. Wechselstrom-Elektronen-Voltmeter
7. 8 Ohm Belastungswiderstand

### 2-1.

- 1) An die Tunerklemmen der beiden Kanäle Niederfrequenz-Oszillator anschließen, und an die Lautsprecherklemme parallel mit Belastungswiderstand den Wechselstrom-Elektronen-Voltmeter anschließen.
- 2) Meßbereichschalter auf "X0.01" position.
- 3) Vom Niederfrequenz-Oszillator 1kHz Signal speisen, und Eingangspegel so einstellen, daß Wechselstrom-Elektronen-Voltmeter 0.15V anzeigt.
- 4) Unter Beobachten auf FL-Leistungsmeßgerät **VR801** (L-Kanal), **VR802** (R-Kanal) einstellen, bis das erste Segment fast aufzuleuchten beginnt. (Vgl Abb. 1)

### 2-2.

- 1) Meßbereichschalter auf "X1" position.
- 2) Eingangspegel so einstellen, daß Wechselstrom-Elektronen-Voltmeter 8.9V anzeigt.
- 3) Unter Einstellung von **VR803** (L-Kanal), **VR804** (R-Kanal) in gleicher Weise wie oben in 2-1 so abgleichen, daß das 8. Segment fast aufzuleuchten beginnt.
- 4) Dann Eingangspegel einstellen und wie in 2-1 abgleichen.
- 5) Eingangspegel wieder einstellen, damit der Eingang 8.9V wird, und sicherstellen, daß das Segment bei 10W aufleuchtet. (Vgl Abb. 2)

## INSTRUCTIONS DE REGLAGE FRANÇAIS

### Réglage des commandes et instruments à utiliser

1. Commutateur du haut-parleur ..... Principal
2. Volume du son ..... 0 (minimum)
3. Voltmètre CC (pouvant mesurer 5mV)

1	Tension de blocage	Canal G. Entre TP301 et TP303 (sonde au moins) Canal D. Entre TP302 et TP304 (sonde au moins)	R355 (Canal G) R356 (Canal D)	* Tourner les résistances R363, 364 semifixes $I_{c\alpha}$ sur le minimum. (à gauche) * Régler R355 (canal gauche) et R356 (canal droit) sur env. 1mV après 10 minutes de temps de chauffage.
2	$I_{c\alpha}$ (réglage à l'aide d'un voltmètre CC)	Canal G. Entre TP301 et TP303 (sonde au moins) Canal D. Entre TP302 et TP304 (sonde au moins)	R363 (Canal G) R364 (Canal D)	* Régler les R363 (canal gauche) et R364 (canal droit) sur env. 10 ~ 15mV après 9mn. de préchauffage.

### 2. Réglage du compteur d'alimentation FL

#### \* Conditions de l'appareil et équipement utilisé

1. Sélecteur d'entrée ..... Commande d'accord
2. Commutateur de l'enceinte ..... Principal
3. Commutateur de la gamme du compteur ..... X0.01 or X1
4. Volume du son ..... 10 maxi.
5. Oscillateur de basse fréquence
6. Voltmètre électronique CA
7. Résistance de 8 ohms de charge

### 2-1.

- 1) Brancher l'oscillateur de basse fréquence aux bornes de la commande d'accord des deux canaux; et le voltmètre électronique aux bornes de l'enceinte en parallèle avec la résistance de charge.
- 2) Placer le commutateur de gamme du compteur sur "X0.01" position.
- 3) Alimenter un signal de 1kHz par l'oscillateur de basse fréquence et régler le niveau d'entrée de telle sorte que le voltmètre électronique indique 0.15V.
- 4) Régler le **VR801** (Canal G), **VR802** (Canal D) tout en observant le compteur d'alimentation FL jusqu'à ce que le premier segment soit sur le point d'être branché. (Voir Fig. 5)

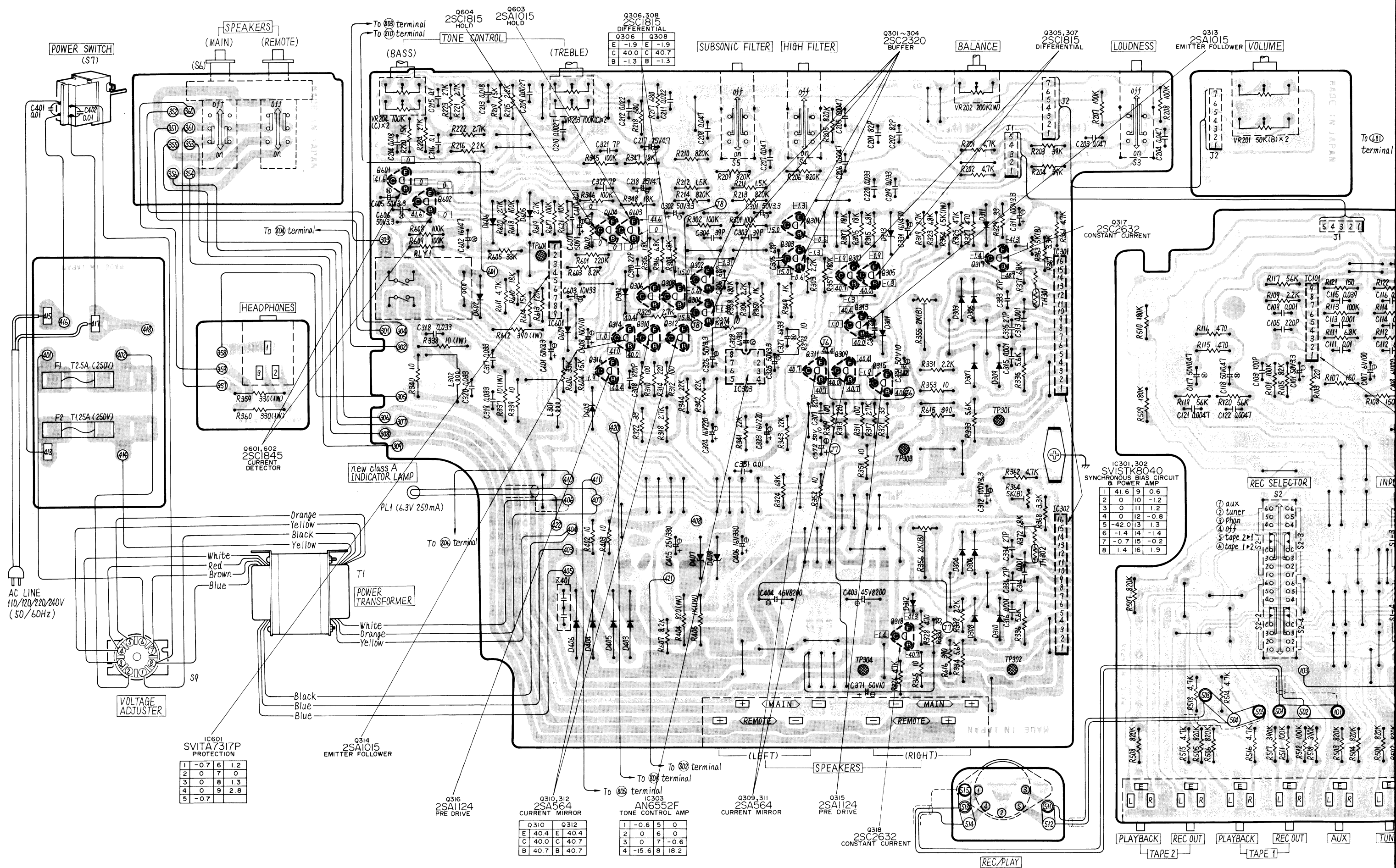
### 2-2.

- 1) Régler le commutateur de gamme du compteur sur "X1".
- 2) Régler le niveau d'entrée de telle sorte que le compteur électronique indique 8.9V.
- 3) Faire le réglage de la même façon que le réglage mentionné dans le paragraphe 2-1 en réglant **VR803** (Canal G), **VR804** (Canal D) de telle sorte que le huitième segment soit sur le point d'être branché.
- 4) Effectuer le réglage comme dans le paragraphe 2-1 en réglant le niveau d'entrée.
- 5) De nouveau régler le niveau d'entrée pour donner une sortie de 8.9V et s'assurer que le segment à position 10W, est branché. (Voir Fig. 6)



## PRINTED CIRCUIT BOARD WIRING VIEW

(Ground) Earth Lines



To 60 terminal

INP

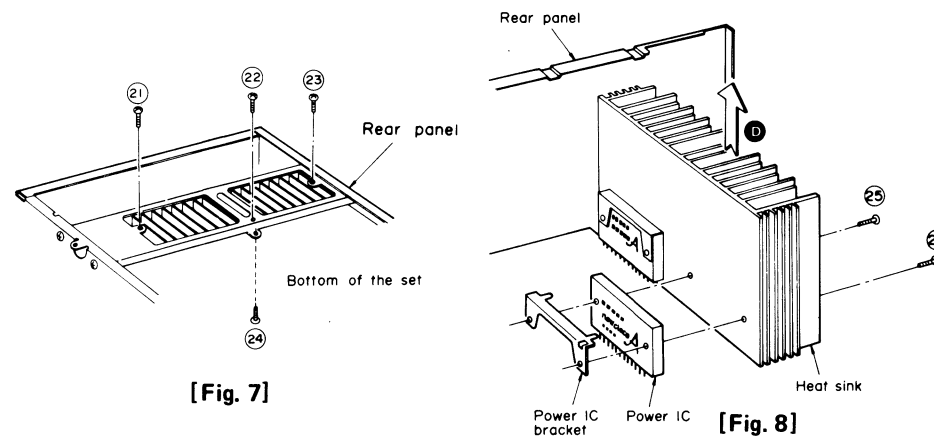
TUN





## HOW TO REMOVE THE POWER IC

1. Remove the cabinet and bottom board. (Refer to the sections "Disassembly instructions" on page 4.)
2. Unsolder of power IC for both L ch and R ch.
3. Remove the 4 setscrews (Fig. 7 : ②①~②④) at the bottom of the heat sink and then remove the heat sink along with the power IC in the direction of the arrow ①. (Refer to Fig. 8)
4. Remove the 2 setscrews (Fig. 8 : ②⑤, ②⑥) used to secure the power IC on the heat sink and then pull the power IC.
5. When mounting the power IC, apply silicone compound (or equivalent heat diffuser) to the rear side of power IC, and then follow the steps 1 ~ 4 reversely.



[Fig. 7]

[Fig. 8]

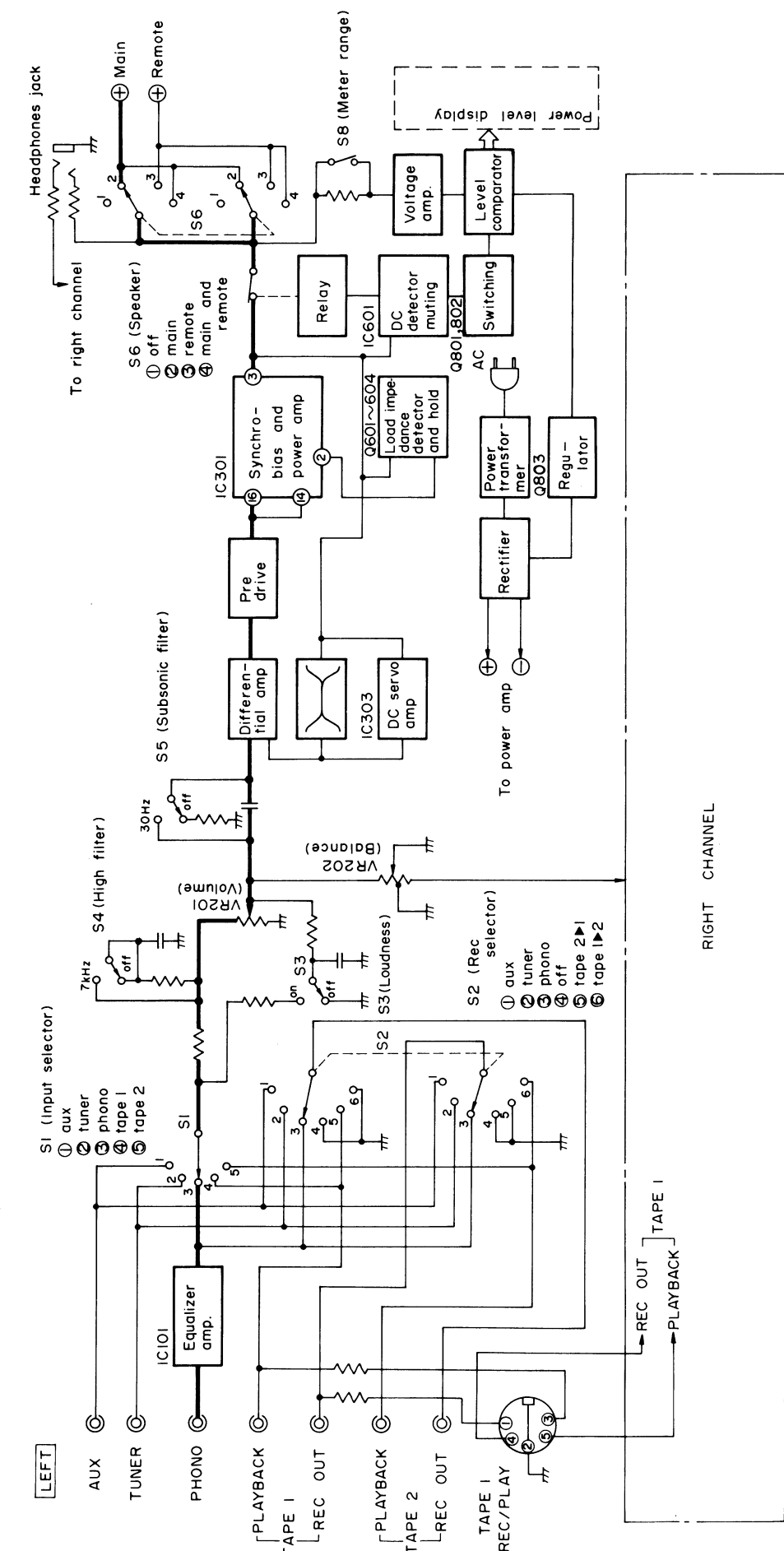
## REPLACEMENT PARTS LIST.....Electric Parts

- Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number of parts orders.
  2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
  3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description
<b>INTEGRATED CIRCUIT</b>		
IC101, 102 IC301, 302	SVITA7322P SVISTK8040	IC, Equalizer Amplifier IC, Synchronous Bias Circuit and Power Amplifier
IC303	AN6552F	IC, Tone Control Amplifier and Voltage Amplifier
IC601 IC801, 802 IC803	SVITA7317P SVIBA663 AN6552F	IC, Speakers Protection IC, FL Comparator and Driver IC, Voltage Amplifier
<b>TRANSISTORS</b>		
Q301, 302, 303 Q304	2SC2320L-F	Transistor, Buffer
Q305, 306, 307 Q308	2SC1815-Y	Transistor, Differential
Q309, 310, 311 Q312	2SA666A1-R	Transistor, Current Mirror
Q313, 314, 603	2SA1015-Y	Transistor, Emitter Follower, Relay Hold Circuit
Q315, 316 Q317, 318 Q601, 602 Q604 Q801, 802 Q803	2SA1124-R 2SC2632-E 2SC1845-E 2SC1815-Y 2SC1685-T 2SD762-O	Transistor, Pre Driver Transistor, Constant Current Transistor, Current Detector Transistor, Relay Hold Circuit Transistor, Muting Transistor, Regulator
<b>DIODES</b>		
D301, 302 D303 ~ 310 D311, 312, 601 602, 605, 606	MA162A 20A90 MA162A	Diode, Detector Diode, Detector Diode, Detector
D313 D403 ~ 406 D407 D408 D603 D801 ~ 805 D806	MA1150A SVDS3V40 MA2180B MA2150B SVDSR1K2 MA162A SVDEQA0122RA	Diode, 5V Zener Rectifier Diode, 8V Zener Diode, 5V Zener Diode, Bias Diode, Detector Diode, 22V Zener
<b>COILS and TRANSFORMER</b>		
L301, 302 T1	SLQY15G-30 SLT5P187-I	Coil, Choke Transformer, Power Source

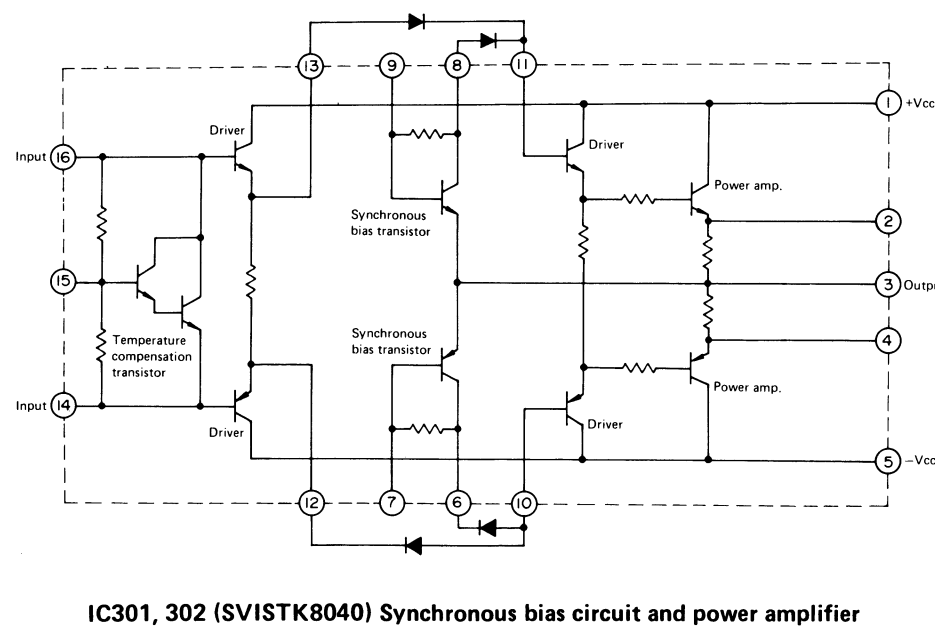
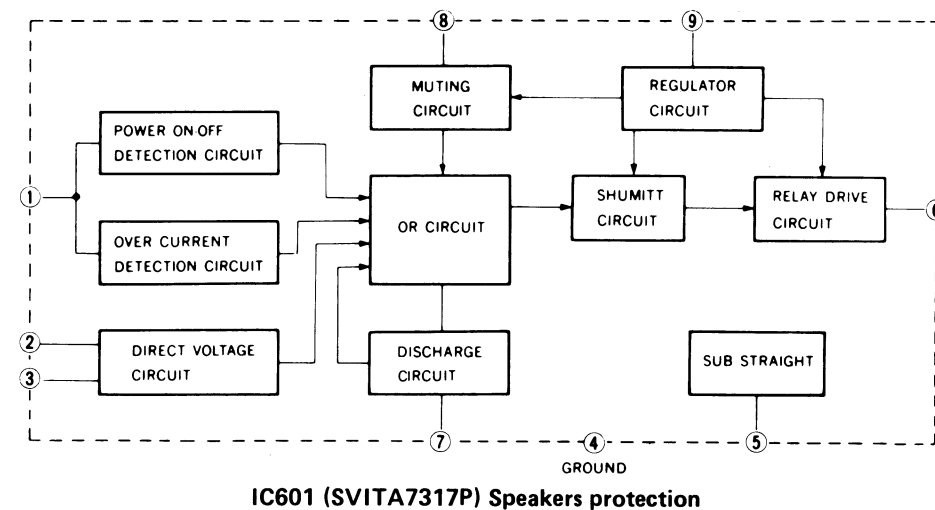
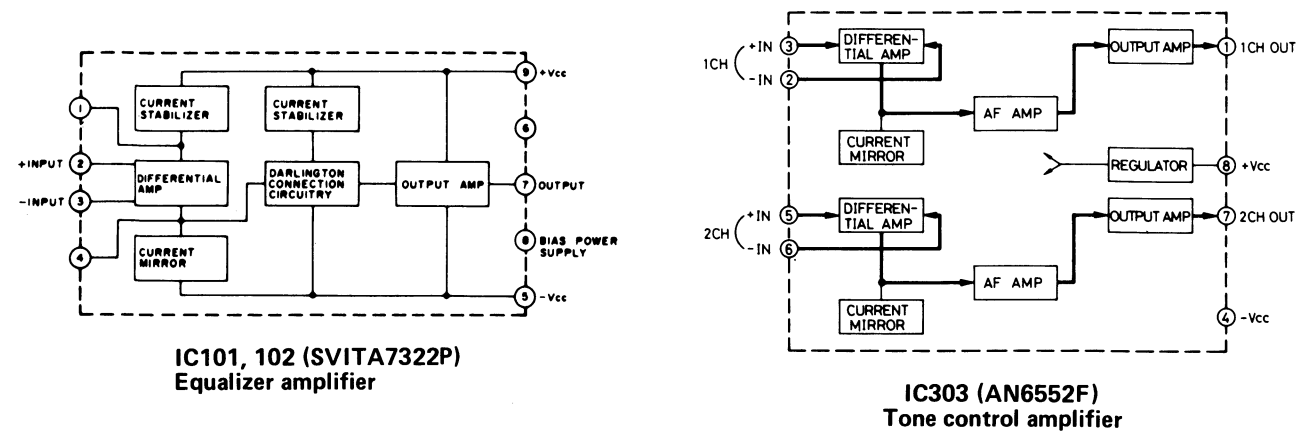
Ref. No.	Part No.	Part Name & Description
<b>VARIABLE RESISTORS</b>		
VR201 VR202 VR203 VR204	EW6LA031BF5 EVHHPA505G25 EWJFD0090C15 EWJFDY090530	Volume Control, 50kΩ (B) Balance Control, 200kΩ (W) Treble Control, 100kΩ (C) Bass Control, 100kΩ (C)
R355, 356 R363, 364 VR801, 802 VR803, 804	EVTS3MA00B23 EVTR4SA00B53 EVTS3MA00B52 EVTS3MA00B14	Clamp Voltage Adjustment, 2kΩ (B) Ica Adjustment, 5kΩ (B) FL Power Meters Adjustment, 500Ω (B) FL Power Meters Adjustment, 10kΩ (B)
<b>COMPONENT COMBINATION</b>		
Z401	EXRFS203ZS	Component Combination, 0.01μF (X2)
<b>THERMISTORS</b>		
TH301, 302	ERTD2FHL332S	Thermistor, Temperature Compensation, 3.3kΩ
<b>FUSES</b>		
F1 F2	⚠ XBA2C25TR0 ⚠ XBA2C12TR0	Fuse, T2.5A (250V), Power Primary Fuse, T1.25A (250V), Power Primary
<b>SWITCHES</b>		
S1, 2 S3, 4, 5	ESA2682 SSL145	Switch, Input and Rec Mode Selector Switch, Loudness, High Filter, and Subsonic Filter
S6 S7 S8 S9	SSH281 ESL21210S SSH105 ESE37200	Switch, Speakers Selector Switch, Power Source Switch, Meter Range Switch, Voltage Adjuster
<b>RELAY</b>		
RLY1	⚠ SSY69	Relay, Speaker Protection
<b>LAMP</b>		
PL1	⚠ XAMR73S350A	Lamp, New Class A Badge, 250mA (6.3V)
<b>METER</b>		
	SADBG78Z	Meter, Fluorescent Peak Power

## BLOCK DIAGRAM

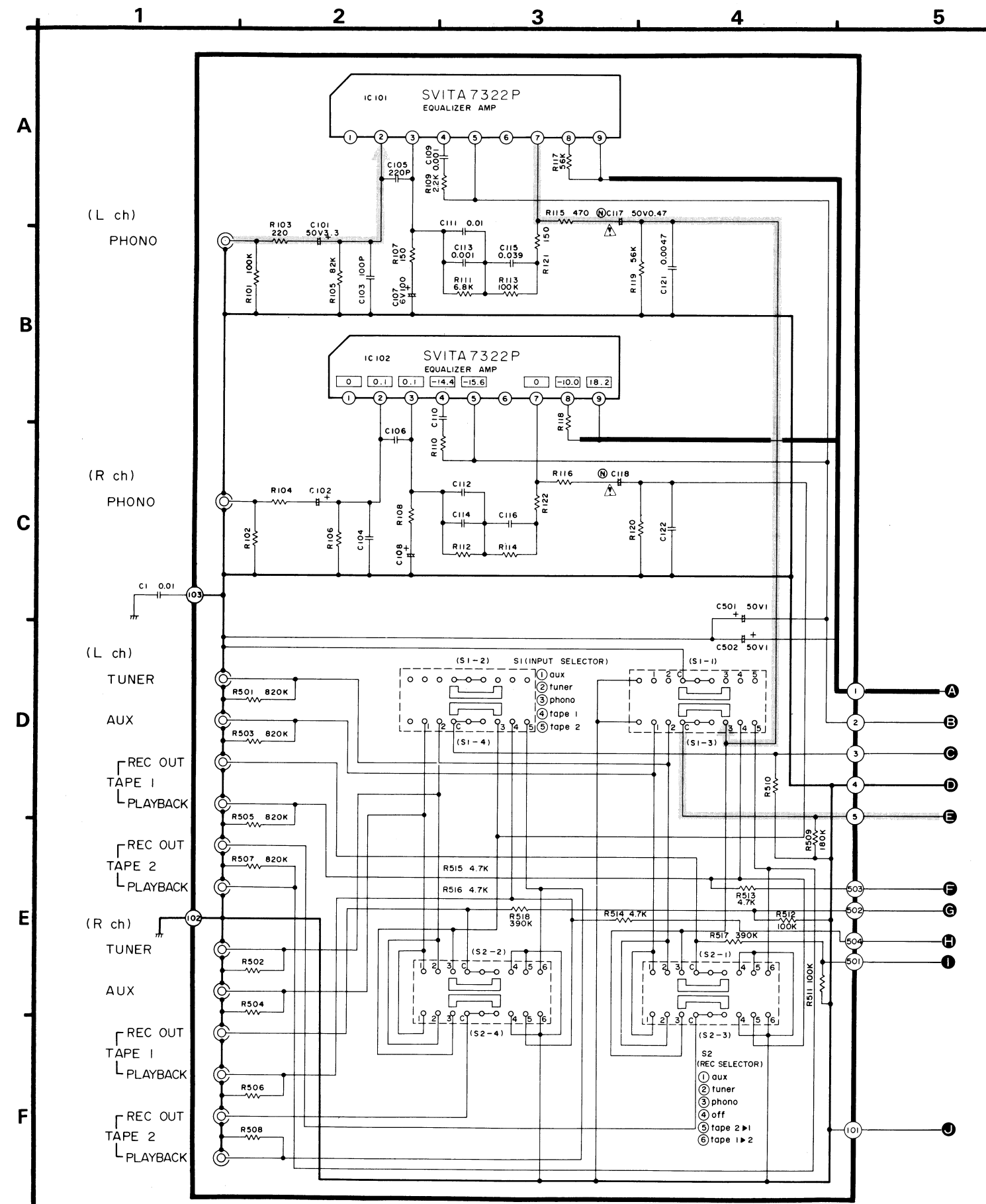


## ■ BLOCK DIAGRAM OF IC'S

- This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.

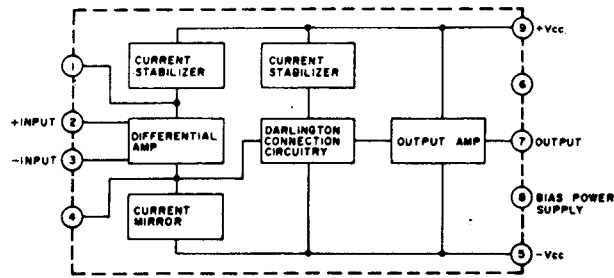


## ■ SCHEMATIC DIAGRAM

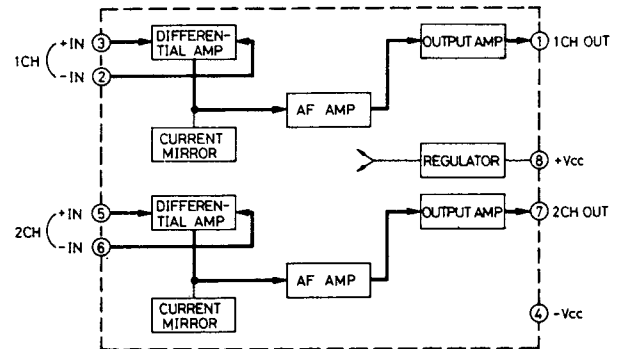


## BLOCK DIAGRAM OF IC'S

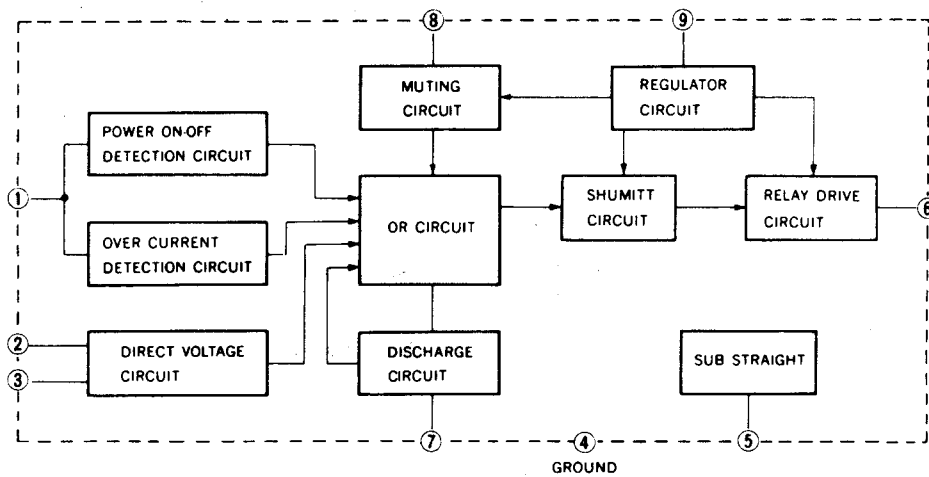
- This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.



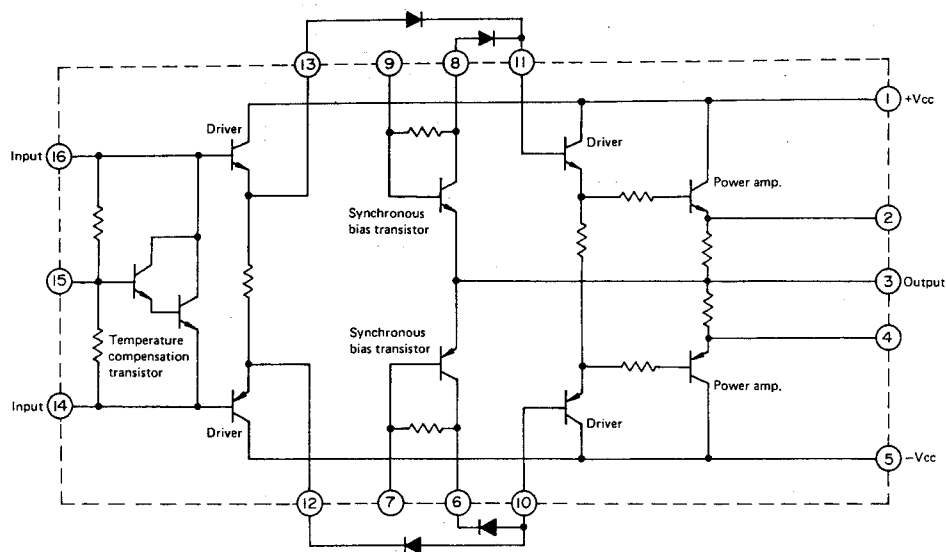
**IC101, 102 (SVITA7322P)**  
Equalizer amplifier



**IC303 (AN6552F)**  
Tone control amplifier

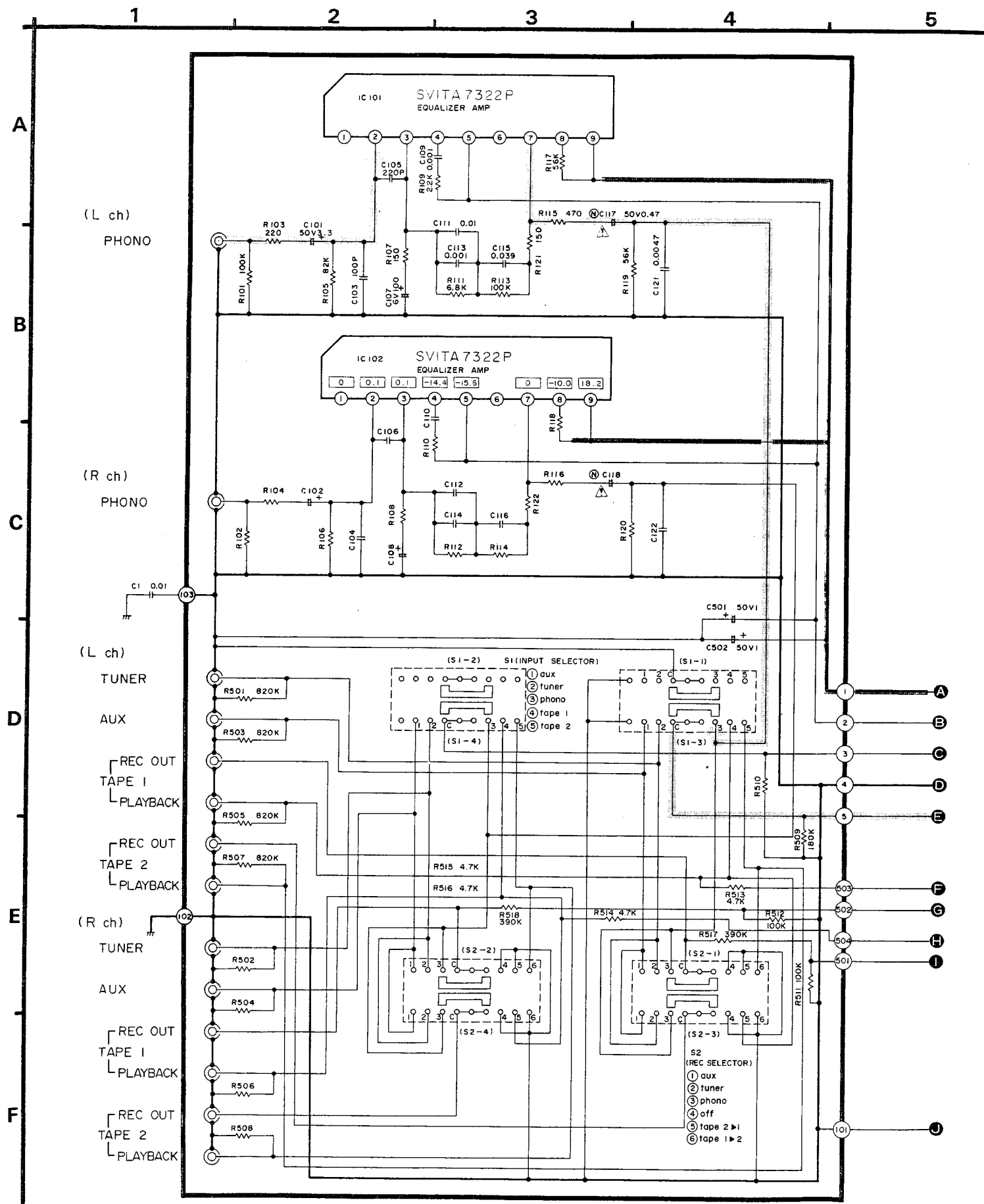


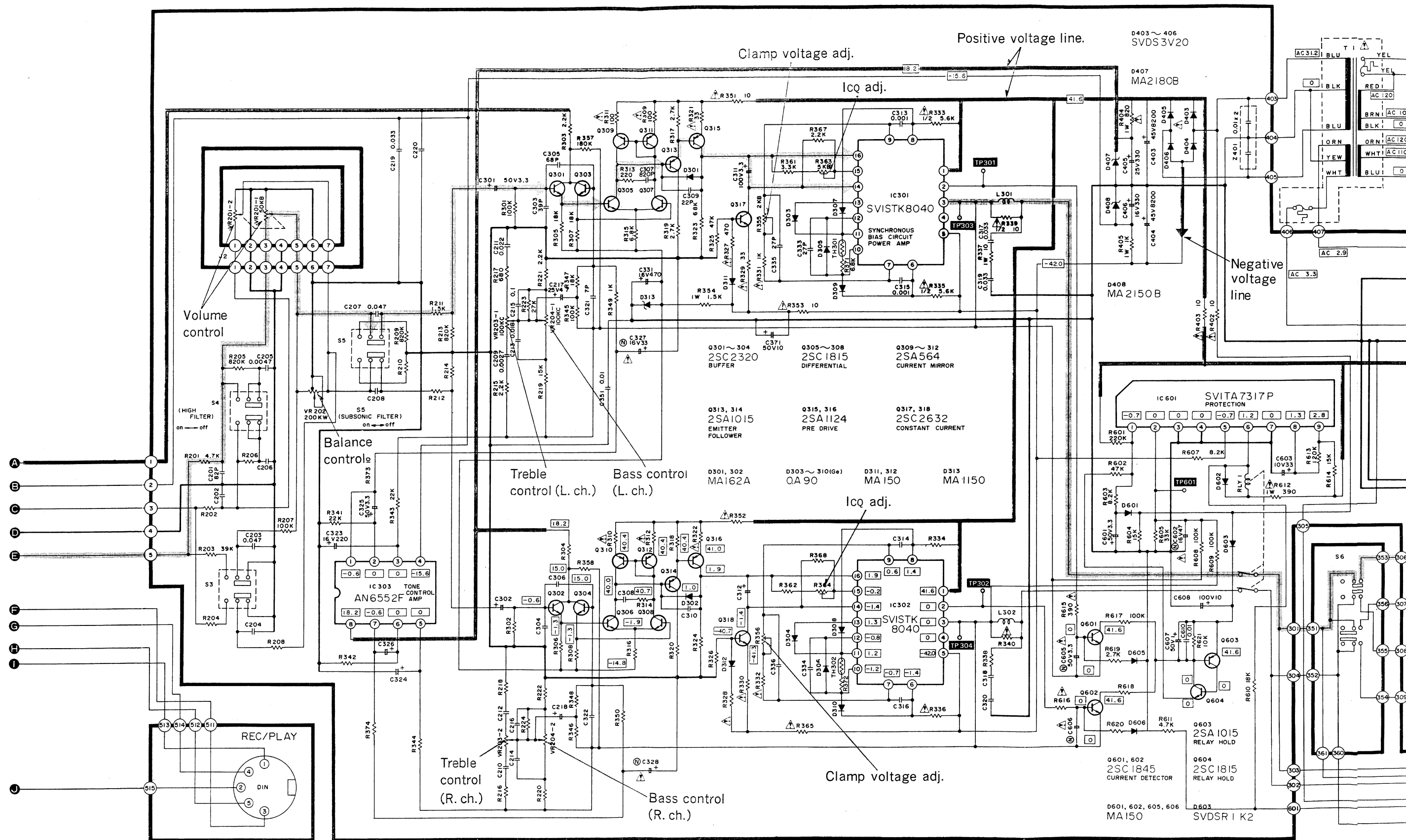
**IC601 (SVITA7317P)** Speakers protection



**IC301, 302 (SVISTK8040)** Synchronous bias circuit and power amplifier

# SCHEMATIC DIAGRAM







SCHEMATIC DIAGRAM

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

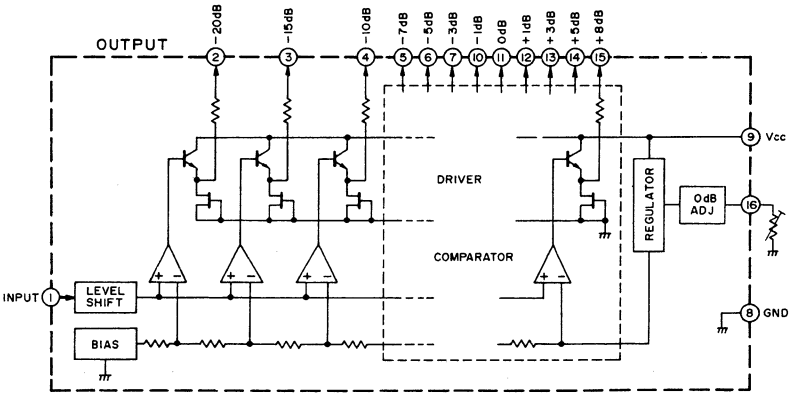
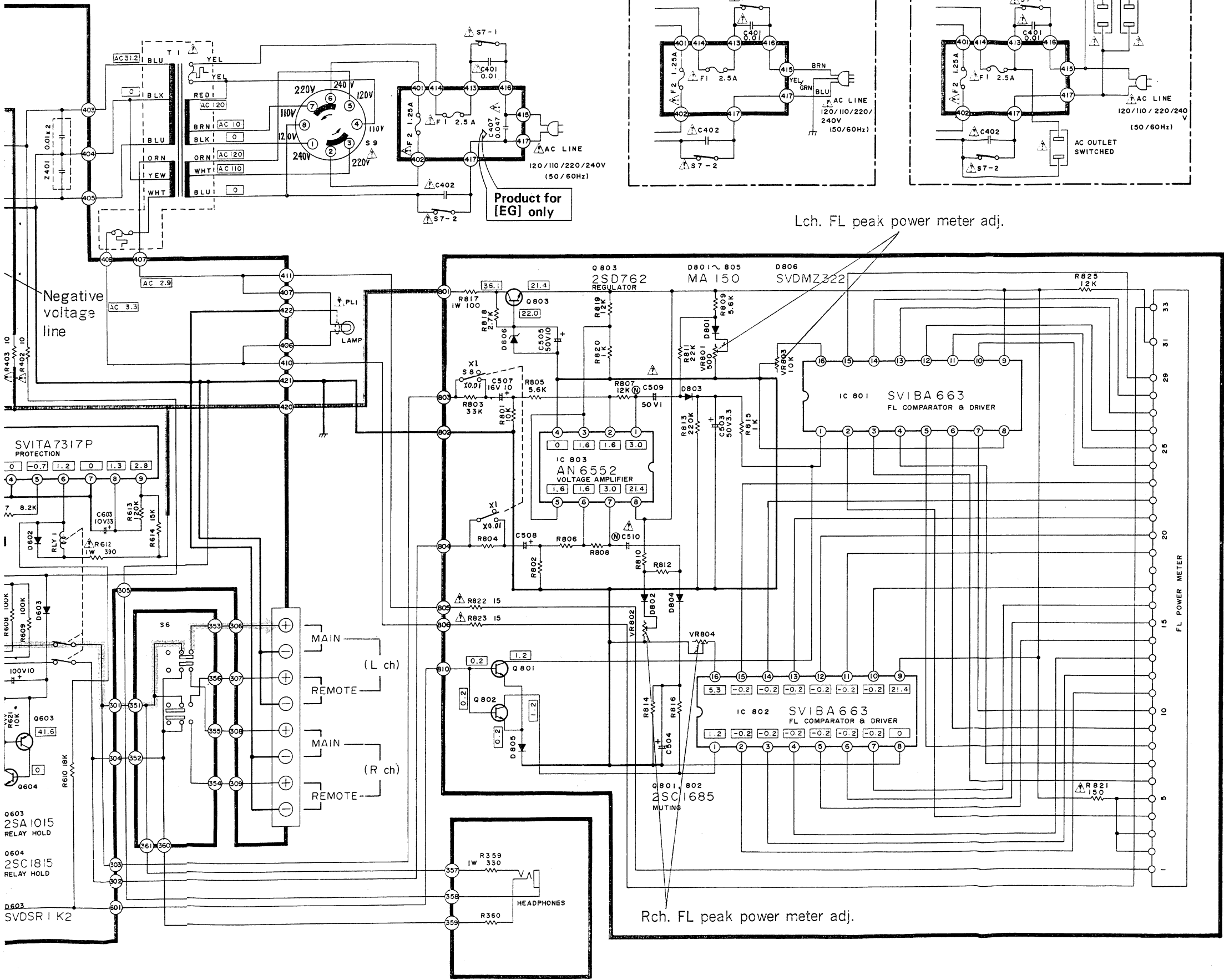
Notes:

- S1:** Input selector switch in "phono" position.  
① aux → ② tuner → ③ phono → ④ tape 1 → ⑤ tape 2
  - S2:** Rec selector switch in "phono" position,  
① aux → ② tuner → ③ phono → ④ off → ⑤ tape 2 → ⑥ tape 1 → 2
  - S3:** Loudness switch in "off" position.
  - S4:** High filter switch in "off" position.
  - S5:** Subsonic filter switch in "off" position.
  - S6:** Speakers selector switch in "main" position.
  - S7:** Power switch in "on" position.
  - S8:** Meter range selector switch in "X1" position.
  - S9:** Voltage adjustment switch in "220V" position.  
240V ↔ 220V ↔ 110V ↔ 120V
12. ⚠ Indicates that only parts specified by the manufacturer be used for safety.  
13. □ Indicated voltage values are the standard values for 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.
14. --- Phono signal lines of left channel  
15. — Positive (+B) voltage lines

• Power source circuits for [XAL] and [XA]

[XAL] . . . . Available in Australia

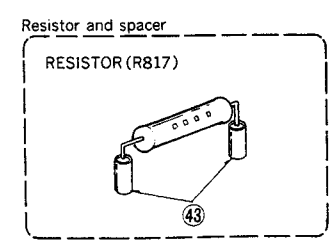
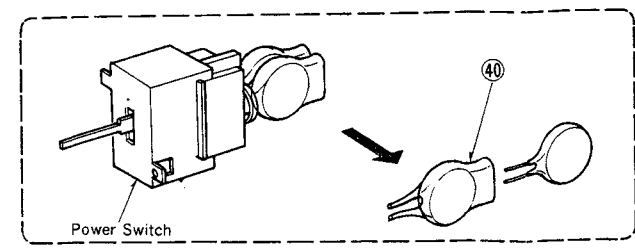
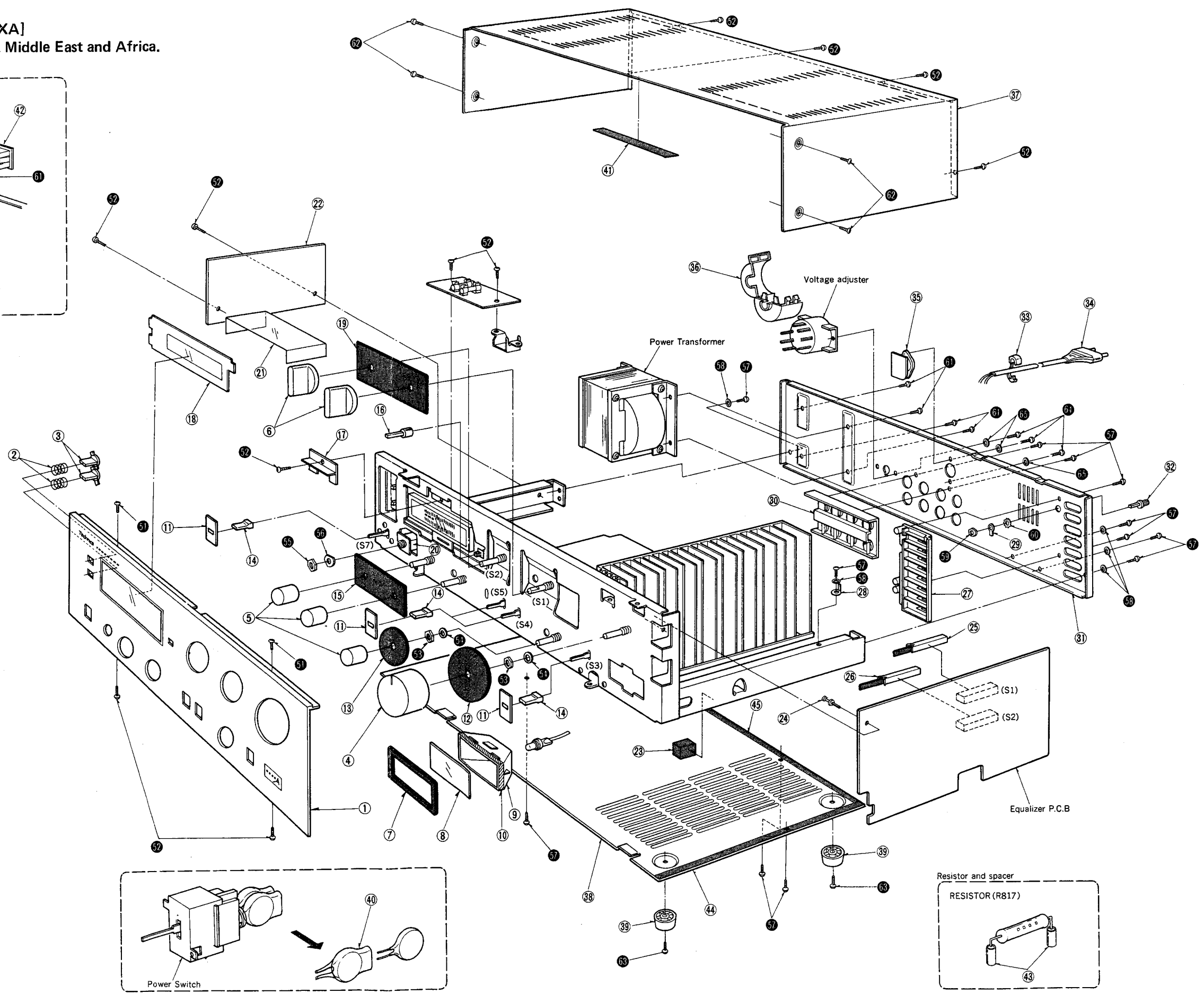
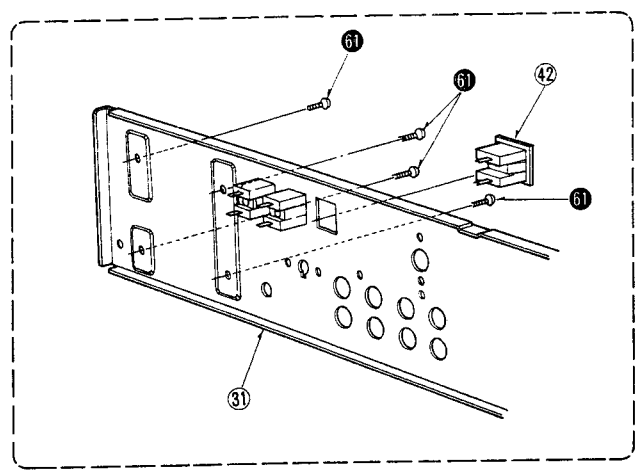
[XA] . . . . Available in Asia, Latin America, Middle East and Africa



IC801, 802 (SVIBA663)  
FL Comparator and driver

EXPLODED VIEWS

(Rear Panel and AC Outlet) . . . . . for [XA]  
[XA] is available in Asia, Latin America, Middle East and Africa.



## REPLACEMENT PARTS LIST.....Cabinet &amp; Chassis Parts

- Notes:** 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.  
 2.  $\Delta$  indicates that only parts specified by the manufacturer be used for safety.  
 3.  $\square$ -marked parts are used for black type only, while O-marked parts are for silver type only.  
 4. Parts other than  $\square$  and O-marked are used for both black and silver types.  
 5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Black type model No. SU-V2A (K)

Ref. No.	Part No.	Part Name & Description
<b>CABINET and CHASSIS PARTS</b>		
1	$\square$ SYW259-3	Panel, Front Ass'y
1	$\square$ SYW259-4	Panel, Front Ass'y (Black)
2	$\square$ SUS187	Spring, Push Switch Button
3	$\square$ SBC259	Button, Push Switch
3	$\square$ SBC259-1	Button, Push Switch
4	$\square$ SBN911	Knob, Volume
4	$\square$ SBN911-1	Knob, Volume (Black)
5	$\square$ SBN909	Knob, Balance, Treble and Bass
5	$\square$ SBN909-1	Knob, Balance, Treble and Bass (Black)
6	$\square$ SBN929	Knob, Rec Selector and Input Selector
6	$\square$ SBN929-1	Knob, Rec Selector and Input Selector (Black)
7	$\square$ SHG6089	Cushion, New Class A Badge
8	$\square$ SDE253	Filter, New Class A Badge
8	$\square$ SDE253-1	Filter, New Class A Badge (Black)
9	$\square$ SMP281	Holder, New Class A Badge
10	$\square$ SHS6111	Fiber, New Class A Badge
11	$\square$ SHR5089	Cover, Lever Switch Knobs
11	$\square$ SHR5089-1	Cover, Lever Switch Knobs (Black)
12	$\square$ SHP9299	Cover, Volume Knob
13	$\square$ SHP9301	Cover, Balance Knob
14	$\square$ SBD31	Knob, Lever Switches
14	$\square$ SBD31-1	Knob, Lever Switches (Black)
15	$\square$ SHP9297	Cover, Bass and Treble Knob
16	$\square$ SBC271	Button, Range Selector
16	$\square$ SBC271-1	Button, Range Selector (Black)
17	$\square$ SMM41	Escutcheon, Peak Power Meter M'tg
18	$\square$ SDU37	Filter, Peak Power Meter
18	$\square$ SDU37-1	Filter, Peak Power Meter
19	$\square$ SHP9303	Cover, Input Selector and Rec Selector
20	$\square$ XJC6P21B-A	Jack, Headphones
21	$\square$ SMX359	Cover, Fuse P.C.B.
22	$\square$ SMC811	Cover
23	$\square$ SHG1491	Cushion, Equalizer P.C.B.
24	$\square$ SHR401-1	Latch, Equalizer P.C.B. M'tg
25	$\square$ ESA3357B	Remote Control, Input Selector Switch (S1)
26	$\square$ ESA3356B	Remote Control, Rec Selector Switch (S2)
27	$\square$ SJF3043N	Terminal, Input
28	$\square$ RJT202B	Terminal, Ground 1 pin
29	$\square$ SJT215	Terminal, Ground 1 pin
30	$\square$ SJF5811	Terminal, Speaker
31 [E]	$\square$ SGP2270B	Rear Panel
31 [E, XGH, EG]	$\square$ SGP2270B	Rear Panel, SGP2270B with Name Plate (SGT21891)
31 [XAL]	$\square$ SGP2270-1B	Rear Panel
31 [XAL]	$\square$ SGP2270-2B	Rear Panel
32	$\square$ SJF4101	Terminal Ground
33 [E, EG, XGH, EB, XA]	$\square$ SFSR4N4	Bushing, AC Cord
33 [XAL]	$\square$ SHR131	Bushing, AC Cord
34 [E, EG, XGH, EB]	$\square$ SJA88	AC Cord, Power Source
34 [XAL]	$\square$ SJA111	AC Cord, Power Source
34 [XAL]	$\square$ QFC1207M	AC Cord, Power Source

## Areas

\* [E] and [EG] are available in Scandinavia and European except Belgium, United Kingdom, Switzerland, Holland and France.

\* [XGH] is available in Holland.

\* [EB] is available in Belgium.

\* [XA] is available in Asia, Latin America, Middle East and Africa.

\* [XAL] is available in Australia.

## RESISTOR AND CAPACITOR PARTS LIST

NOTE:  $\Delta$  indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description
<b>RESISTORS</b>		
R101, 102	$\square$ ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
R103, 104	$\square$ ERD25FJ221	Carbon, 220 $\Omega$ , 1/4W, $\pm$ 5%

Ref. No.	Part No.	Part Name & Description
R105, 106	$\square$ ERD25TJ823	Carbon, 82k $\Omega$ , 1/4W, $\pm$ 5%
R107, 108	$\square$ ERD25FJ151	Carbon, 150 $\Omega$ , 1/4W, $\pm$ 5%
R109, 110	$\square$ ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%

Ref. No.	Part No.	Description
35	$\square$ SJS6509	Socket, DIN
36	$\square$ SUV453	Cover, Voltage Adjuster
37	$\square$ SKC370H1	Cabinet
37	$\square$ SKC370B1	Cabinet
38	$\square$ SKU8310	Bottom Board
39	$\square$ SKL227	Foot, Set
40	$\square$ SMXA65	Cover, Capacitor (C401, 402)
41	$\square$ SHS6111	Fiber, Cabinet
42 [XA] only	$\Delta$ SJS466-2	Socket, AC Outlet
43	$\square$ SMX51	Spacer, Resistor (R817)
44	$\square$ SHS2445	Fiber, Bottom Board
45	$\square$ SHS2447	Fiber, Bottom Board
46 [EG] only	$\square$ SMX381	Spacer, Capacitor (C407)
<b>SCREWS, WASHERS and NUTS</b>		
$\square$	$\square$ XTS3+8B	Screw, Tapping, $\oplus$ 3 x 8 (Front Panel)
$\square$	$\square$ XTB3+8BFN	Screw, Tapping, $\oplus$ 3 x 8 (Front Panel, Fuse P.C.B. and Cabinet)
$\square$	$\square$ XTB3+8BFZ	Screw, Tapping, $\oplus$ 3 x 8 (Cabinet M'tg Screw only)
$\square$	$\square$ XNS8	Nut, M8 (Volume, Input Selector, Rec Selector etc.)
$\square$	$\square$ XWV8	Washer, Spring $\phi$ 8
$\square$	$\square$ XNS12	Nut, M12 (Headphones Jack)
$\square$	$\square$ SNE59-1	Washer, Wave Type (Headphones Jack)
$\square$	$\square$ XTB3+8BFZ	Screw, Tapping $\oplus$ 3 x 8 (Rear Panel, Input Terminal, Speakers Terminal and Bottom Board)
$\square$	$\square$ XWC3B	Washer, Toothed Lock, $\phi$ 3
$\square$	$\square$ XNG6E	Nut, M6 (Ground Terminal)
$\square$	$\square$ XWC6B	Washer, Toothed Lock, $\phi$ 6
$\square$	$\square$ XTB4+10BFZ	Screw, Tapping, $\oplus$ 4 x 10 (Power Transformer)
$\square$	$\square$ XTB4+8BFN	Screw, Tapping, $\oplus$ 4 x 8 (Cabinet)
$\square$	$\square$ XTB4+8BFZ	Screw, Tapping, $\oplus$ 4 x 8 (Cabinet)
$\square$	$\square$ XTB3+10BFZ	Screw, Tapping, $\oplus$ 3 x 10 (Foot)
$\square$	$\square$ XTB3+6BFZ	Screw, Tapping, $\oplus$ 3 x 6 (DIN Socket, Voltage Adjuster)
$\square$	$\square$ XWC3B	Washer, Toothed Lock, $\phi$ 3 (DIN Socket, Voltage Adjuster)
<b>ACCESSORIES</b>		
A1 [XA] only	$\Delta$ SJP5213-1	Plug Adapter, AC Power
A2 [XA] only	$\Delta$ SJP5215	Plug Adapter, AC Power
<b>PACKING PARTS</b>		
P1	$\square$ SPP649	Polyethylene Bag
P2	$\square$ SPS2505	Pad, Left Side
P2 [XAL] only	$\square$ SPS2505-1	Pad, Left Side
P3	$\square$ SPS2507	Pad, Right Side
P3 [XAL] only	$\square$ SPS2507-1	Pad, Right Side
P4 [E]	$\square$ SPG2745	Carton Box
P4 [XA]	$\square$ SPG2749	Carton Box
P4 [XAL]	$\square$ SPG2747	Carton Box
P4 [EG, XGH, EB]	$\square$ SPG2751	Carton Box
P5 [E, EG, XGH, EB]	$\square$ SQF10385-1	Instructions Book, Printed Matter
P5 [XAL]	$\square$ SQF10387-1	Instructions Book, Printed Matter
P5 [XA]	$\square$ SQF10553-1	Instructions Book, Printed Matter

Ref. No.	Part No.	Part Name & Description
R111, 112	$\square$ ERD25FJ682	Carbon, 6.8k $\Omega$ , 1/4W, $\pm$ 5%
R113, 114	$\square$ ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
R115, 116	$\square$ ERD25FJ471	Carbon, 470 $\Omega$ , 1/4W, $\pm$ 5%
R117, 118	$\square$ ERD25TJ563	Carbon, 56k $\Omega$ , 1/4W, $\pm$ 5%
R119, 120	$\square$ ERD25TJ563	Carbon, 56k $\Omega$ , 1/4W, $\pm$ 5%
R121, 122	$\square$ ERD25FJ151	Carbon, 150 $\Omega$ , 1/4W, $\pm$ 5%
R201, 202	$\square$ ERD25FJ472	Carbon, 4.7k $\Omega$ , 1/4W, $\pm$ 5%
R203, 204	$\square$ ERD25TJ393	Carbon, 39k $\Omega$ , 1/4W, $\pm$ 5%
R205, 206	$\square$ ERD25TJ824	Carbon, 820k $\Omega$ , 1/4W, $\pm$ 5%
R207, 208	$\square$ ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
R209, 210	$\square$ ERD25TJ824	Carbon, 820k $\Omega$ , 1/4W, $\pm$ 5%
R211, 212	$\square$ ERD25FJ152	Carbon, 1.5k $\Omega$ , 1/4W, $\pm$ 5%
R213, 214	$\square$ ERD25TJ824	Carbon, 820k $\Omega$ , 1/4W, $\pm$ 5%
R215, 216	$\square$ ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
R217, 218	$\square$ ERD25FJ681	Carbon, 680 $\Omega$ , 1/4W, $\pm$ 5%
R219, 220	$\square$ ERD25TJ153	Carbon, 15k $\Omega$ , 1/4W, $\pm$ 5%
R221, 222	$\square$ ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
R223, 224	$\square$ ERD25TJ273	Carbon, 27k $\Omega$ , 1/4W, $\pm$ 5%
R301, 302	$\square$ ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
R303, 304	$\square$ ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
R305, 306	$\square$ ERD25TJ183	Carbon, 18k $\Omega$ , 1/4W, $\pm$ 5%
R307, 308	$\square$ ERD25TJ183	Carbon, 18k $\Omega$ , 1/4W, $\pm$ 5%
R309, 310	$\square$ ERD25FJ101	Carbon, 100 $\Omega$ , 1/4W, $\pm$ 5%
R311, 312	$\square$ ERD25FJ101	Carbon, 100 $\Omega$ , 1/4W, $\pm$ 5%
R313, 314	$\square$ ERD25FJ221	Carbon, 220 $\Omega$ , 1/4W, $\pm$ 5%
R315, 316	$\square$ ERD25FJ682	Carbon, 6.8k $\Omega$ , 1/4W, $\pm$ 5%
R317, 318	$\Delta$ ERD25FJ272	Carbon, 2.7k $\Omega$ , 1/4W, $\pm$ 5%
R319, 320	$\square$ ERD25FJ272	Carbon, 2.7k $\Omega$ , 1/4W, $\pm$ 5%
R321, 322	$\Delta$ ERD25FJ330	Carbon, 33 $\Omega$ , 1/4W, $\pm$ 5%
R323, 324	$\square$ ERD25TJ683	Carbon, 68k $\Omega$ , 1/4W, $\pm$ 5%
R325, 326	$\square$ ERD25TJ473	Carbon, 47k $\Omega$ , 1/4W, $\pm$ 5%
R327, 328	$\Delta$ ERD25FJ471	Carbon, 470 $\Omega$ , 1/4W, $\pm$ 5%
R329, 330	$\Delta$ ERD25FJ330	Carbon, 33 $\Omega$ , 1/4W, $\pm$ 5%
R331, 332	$\Delta$ ERD25FJ102	Carbon, 1k $\Omega$ , 1/4W, $\pm$ 5%
R333, 334	$\Delta$ ERD50FJ562	Carbon, 5.6k $\Omega$ , 1/2W, $\pm$ 5%
R335, 336	$\Delta$ ERD50FJ562	Carbon, 5.6k $\Omega$ , 1/2W, $\pm$ 5%
R337, 338	$\square$ ERG1ANJ100	Metal Oxide, 10 $\Omega$ , 1W, $\pm$ 5%
R339, 340	$\Delta$ ERD50FJ100	Carbon, 10 $\Omega$ , 1/2W, $\pm$ 5%
R341, 342	$\square$ ERD25TJ223	Carbon, 22k $\Omega$ , 1/4W, $\pm$ 5%
R343, 344	$\square$ ERD25TJ223	Carbon, 22k $\Omega$ , 1/4W, $\pm$ 5%
R345, 346	$\square$ ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
R347, 348	$\square$ ERD25TJ183	Carbon, 18k $\Omega$ , 1/4W, $\pm$ 5%
R349, 350	$\square$ ERD25FJ102	Carbon, 1k $\Omega$ , 1/4W, $\pm$ 5%
R351, 352	$\Delta$ ERD25FJ100	Carbon, 10 $\Omega$ , 1/4W, $\pm$ 5%
R353	$\Delta$ ERD25FJ100	Carbon, 10 $\Omega$ , 1/4W, $\pm$ 5%
R354	$\square$ ERG1ANJ152	Metal Oxide, 1.5k $\Omega$ , 1W, $\pm$ 5%
R357, 358	$\square$ ERD25TJ184	Carbon, 180k $\Omega$ , 1/4W, $\pm$ 5%
R359, 360	$\square$ ERG1ANJ331	Metal Oxide, 330 $\Omega$ , 1W, $\pm$ 5%
R361, 362	$\square$ ERD25FJ332	Carbon, 3.3k $\Omega$ , 1/4W, $\pm$ 5%
R365	$\Delta$ ERD25FJ100	Carbon, 10 $\Omega$ , 1/4W, $\pm$ 5%
R367, 368	$\square$ ERD25FJ222	Carbon, 2.2k $\Omega$ , 1/4W, $\pm$ 5%
R371, 372	$\square$ ERD25FJ682	Carbon, 6.8k $\Omega$ , 1/4W, $\pm$ 5%
R373, 374	$\square$ ERD25FJ100	Carbon, 10 $\Omega$ , 1/4W, $\pm$ 5%
R402, 403	$\Delta$ ERD25FJ100	Carbon, 10 $\Omega$ , 1/4W, $\pm$ 5%
R404	$\square$ ERG1ANJ821	Metal Oxide, 820 $\Omega$ , 1W, $\pm$ 5%
R405	$\square$ ERG1ANJ102	Metal Oxide, 1k $\Omega$ , 1W, $\pm$ 5%
R501, 502	$\square$ ERD25TJ824	Carbon, 820k $\Omega$ , 1/4W, $\pm$ 5%
R503, 504	$\square$ ERD25TJ824	Carbon, 820k $\Omega$ , 1/4W, $\pm$ 5%
R505, 506	$\square$ ERD25TJ824	Carbon, 820k $\Omega$ , 1/4W, $\pm$ 5%
R507, 508	$\square$ ERD25TJ824	Carbon, 820k $\Omega$ , 1/4W, $\pm$ 5%
R509, 510	$\square$ ERD25TJ184	Carbon, 180k $\Omega$ , 1/4W, $\pm$ 5%
R511, 512	$\square$ ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
R513, 514	$\square$ ERD25FJ472	Carbon, 4.7k $\Omega$ , 1/4W, $\pm$ 5%
R515, 516	$\square$ ERD25FJ472	Carbon, 4.7k $\Omega$ , 1/4W, $\pm$ 5%
R517, 518	$\square$ ERD25FJ394	Carbon, 390k $\Omega$ , 1/4W, $\pm$ 5%
R601	$\square$ ERD25TJ224	Carbon, 220k $\Omega$ , 1/4W, $\pm$ 5%
R602	$\square$ ERD25TJ473	Carbon, 47k $\Omega$ , 1/4W, $\pm$ 5%
R603	$\square$ ERD25FJ822	Carbon, 8.2k $\Omega$ , 1/4W, $\pm$ 5%
R604	$\square$ ERD25TJ153	Carbon, 15k $\Omega$ , 1/4W, $\pm$ 5%
R605, 606	$\square$ ERD25TJ333	Carbon, 33k $\Omega$ , 1/4W, $\pm$ 5%
R607	$\square$ ERD25FJ822	Carbon, 8.2k $\Omega$ , 1/4W, $\pm$ 5%
R608, 609	$\square$ ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
R610	$\square$ ERD25TJ183	Carbon, 18k $\Omega$ , 1/4W, $\pm$ 5%
R611	$\square$ ERD25FJ472	Carbon, 4.7k $\Omega$ , 1/4W, $\pm$ 5%
R612	$\square$ ERG1ANJ391	Metal Oxide, 390 $\Omega$ , 1W, $\pm$ 5%
R613	$\square$ ERD25TJ124	Carbon, 120k $\Omega$ , 1/4W, $\pm$ 5%
R614	$\square$ ERD25TJ153	Carbon, 15k $\Omega$ , 1/4W, $\pm$ 5%

Ref. No.	Part No.	Part Name & Description
R615, 616	$\Delta$ ERD25FJ391	Carbon, 390 $\Omega$ , 1/4W, $\pm$ 5%
R617, 618	$\square$ ERD25TJ104	Carbon, 100k $\Omega$ , 1/4W, $\pm$ 5%
R619, 620	$\square$ ERD25FJ272	Carbon, 2.7k $\Omega$ , 1/4W, $\pm$ 5%
R621	$\square$ ERD25FJ103	Carbon, 10k $\Omega$ , 1/4W, $\pm$ 5%
R801, 802	$\square$ ERD25TJ103	Carbon, 10k $\Omega$ , 1/4W, $\pm$ 5%
R803, 804	$\square$ ERD25TJ333	Carbon, 33k $\Omega$ , 1/4W, $\pm$ 5%
R805, 806	$\square$ ERD25FJ562	Carbon, 5.6k $\Omega$ , 1/4W, $\pm$ 5%
R807, 808	$\square$ ERD25TJ123	Carbon, 12k $\Omega$ , 1/4W, $\pm$ 5%
R809, 810	$\square$ ERD25FJ562	Carbon, 5.6k $\Omega$ , 1/4W, $\pm$ 5%
R811, 812	$\square$ ERD25TJ223	Carbon, 22k $\Omega$ , 1/4W, $\pm$ 5%
R813, 814	$\square$ ERD25TJ224	Carbon, 220k $\Omega$ , 1/4W, $\pm$ 5%
R815, 816	$\square$ ERD25FJ102	Carbon, 1k $\Omega$ , 1/4W, $\pm$ 5%
R817	$\square$ ERG1ANJ101	Metal Oxide, 100 $\Omega$ , 1/4W, $\pm$ 5%
R818	$\square$ ERD25FJ272	Carbon, 2.7k $\Omega$ , 1/4W, $\pm$ 5%
R819	$\square$ ERD25TJ123	Carbon, 12k $\Omega$ , 1/4W, $\pm$