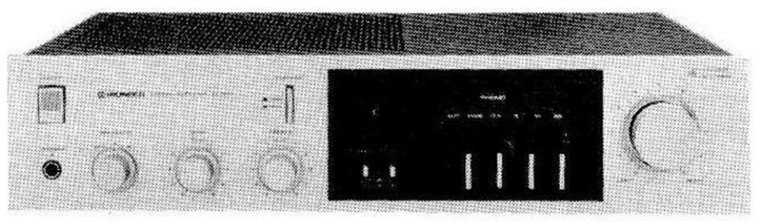
Service Manual

PIONEER®

REPAIR & ADJUSTMENTS



ORDER NO.
ART-643-0

STEREO AMPLIFIER

SA-520

MODEL SA-520 COMES IN SIX VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	120V only	U.S.A. model
S	110V, 120V, 220V and 240V (Switchable)	General export model
S/G	110V, 120V, 220V and 240V (Switchable)	U.S. Military model
YP	240V only	Australia model
HE	220V and 240V (Switchable)	Europe model
HB	220V and 240V (Switchable)	United Kingdom model

- **This service manual is applicable to the KU type (pp1 – 18), YP type (pp21 – 26) and S, S/G types (pp27 – 32). When repairing the HE, HB types, please see the additional service manual (ART-644).**
- **For the circuit description, please refer to the supplement of model SA-720 service manual (ART-765).**
- **Ce manuel d'instruction se refère au mode de réglage, en français.**
- **Este manual de servicio trata del método de ajuste escrito en español.**

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1. SPECIFICATIONS

Amplifier Section

Continuous power output is 32 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.03% total harmonic distortion.

Total Harmonic Distortion (20 Hertz to 20,000 Hertz, 8 ohms, from AUX)
15 watts per channel power output
. . . . . No more than 0.02%
Intermodulation Distortion (50 Hertz: 7,000 Hertz = 4 : 1 8 ohms, from AUX)
continuous rated power output . . No more than 0.03%
15 watts per channel power output
. . . . . No more than 0.02%
Damping Factor (20 Hertz to 20,000 Hertz, 8 ohms) . . 40
Input (Sensitivity/Impedance)
PHONO . . . . . 2.5mV/50 kilohms
TUNER . . . . . 150mV/50 kilohms
AUX . . . . . 150mV/50 kilohms
TAPE PLAY 1, 2/ADAPTOR . . . . 150mV/50 kilohms
Phono Overload Level (T.H.D. 0.05%, 1,000Hz)
PHONO 120mV
Output (Level)
TAPE REC 1, 2/ADAPTOR 150mV
Speaker . . . . . A, B, OFF
Frequency Response
PHONO (RIAA Equalization)
. . . . . 20Hz to 20,000Hz±0.3dB
TUNER, AUX, TAPE PLAY 1, 2/ADAPTOR
. . . . . 10Hz to 60,000Hz±3dB
Tone Control
BASS . . . . . ±10dB (100Hz)
TREBLE . . . . . ±10dB (10,000Hz)
Subsonic Filter . . . . . 15Hz (–6dB/oct)
Loudness Contour (Volume control set at –40dB position)
. . . . . +6dB (100Hz), +3dB (10,000Hz)
Hum and Noise (IHF, short-circuited, A network)
PHONO 82dB
TUNER, AUX, TAPE PLAY 1, 2/ADAPTOR 100dB

Miscellaneous

Power Requirements . . . . . AC 120V, 60Hz
Power Consumption . . . . . 80W (UL)
Dimensions . . . . . 420(W) x 94(H) x 349(D) mm
16-9/16(W) x 3-11/16(H) x 13-3/4(D) in
Weight (without package) . . . . . 6.0 kg (13 lb 4 oz)

Furnished Parts

Operating Instructions 1

NOTE:
Specifications and the design subject to possible modifications without notice due to improvements.

* *Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.*

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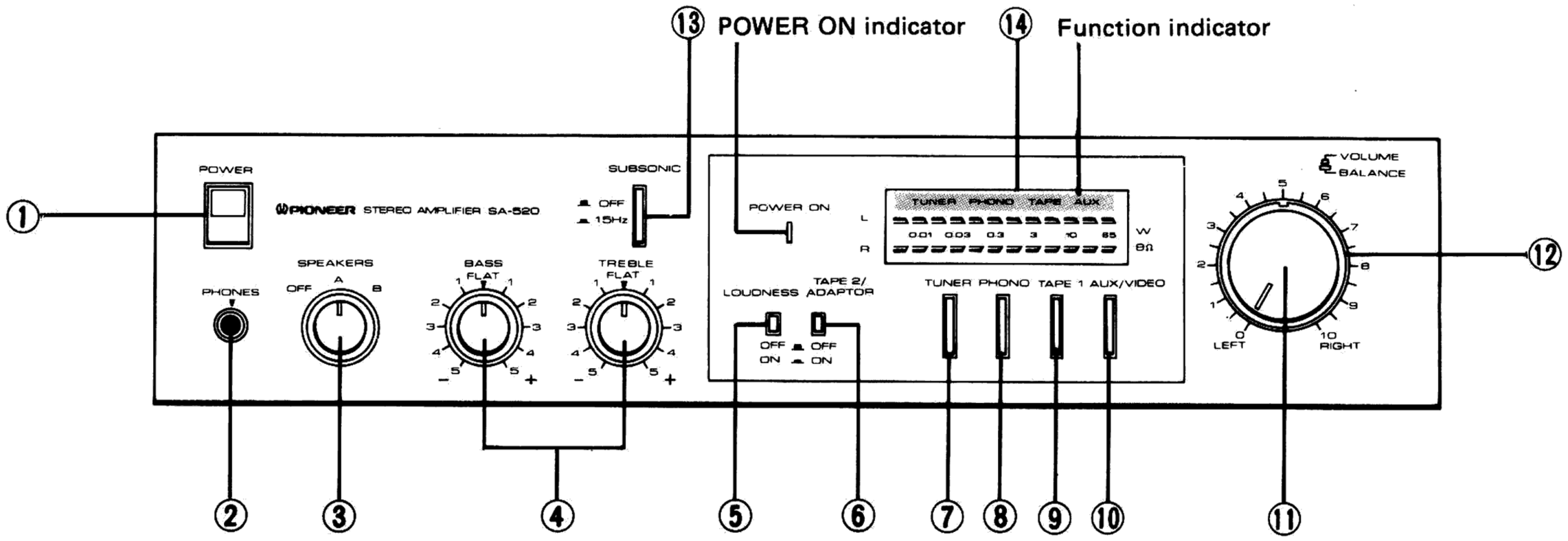
2. FRONT PANEL FACILITIES



① POWER SWITCH

Push this switch to turn on or turn off power. When switch is depressed, power is supplied and POWER ON indicator lights. When switch is released, power is turned OFF and POWER ON indicator is extinguished.

② PHONES JACK

Plug headphones into this jack for private listening through them. Set the SPEAKERS selection switch to OFF.

③ SPEAKERS SELECTOR

Change the setting of this switch to listen through headphones or in order to choose either of two pairs of connected speakers. Normally, the switch should be positioned at A.

OFF . . . Use this setting when listening through headphones (no sound comes out of the speakers).

A . . . . . Sound is heard from speakers connected to the A speaker terminals.

B . . . . . Sound is heard from speakers connected to the B speaker terminals.

④ BASS AND TREBLE CONTROLS

Use these controls to adjust the tone. The right one controls treble and the left one controls bass.

FLAT is the neutral position. Turning knob clockwise accentuates the bass or treble, and turning knob counter-clockwise attenuates the bass or treble.

⑤ LOUDNESS SWITCH

Set this switch to ON when listening at low volume. Bass and treble will be emphasized to compensate for human listening characteristics and provide natural listening curve.

⑥ TAPE 2/ADAPTOR SWITCH

Set this switch to ON when using a graphic equalizer or a second tape deck (or any equipment) connected to the TAPE 2/ADAPTOR terminal.

⑦ TUNER SWITCH

Push this switch to listen to an AM or FM broadcast or to record a radio program .

⑧ PHONO SWITCH

Push this switch to listen to records or to record ing from records to tape .

⑨ TAPE 1 SWITCH

Push this switch to listen to tape deck connected to TAPE 1 terminals or when dubbing from one tape deck to another .

⑩ AUX/VIDEO SWITCH

Push this switch to listen to a program source connected to the AUX/VIDEO terminals.

⑪ VOLUME CONTROL

Turn this control to adjust the output level of the speakers and the headphones. Output is minimum at 0 and increases as the control is turned clockwise.

⑫ BALANCE CONTROL

This control should normally be set to 5. When the output from the left and right speakers or headphones is not the same, adjust by turning the control clockwise or counterclockwise.

⑬ SUBSONIC SWITCH

Set this switch to the "15 Hz" position when listening to records. It serves to attenuate frequencies lower than 15 Hz and, therefore, it can be used to suppress the ultra-low-range noise which is generated by record warp and other factors. When listening to program sources other than records, set this switch to OFF.

⑭ POWER METER

The POWER meter shows the output level in watts when speaker systems with a nominal impedance of 8 ohms have been connected to the speaker terminals of this unit.

L . . . . . Output of left speaker

R . . . . . Output of right speaker

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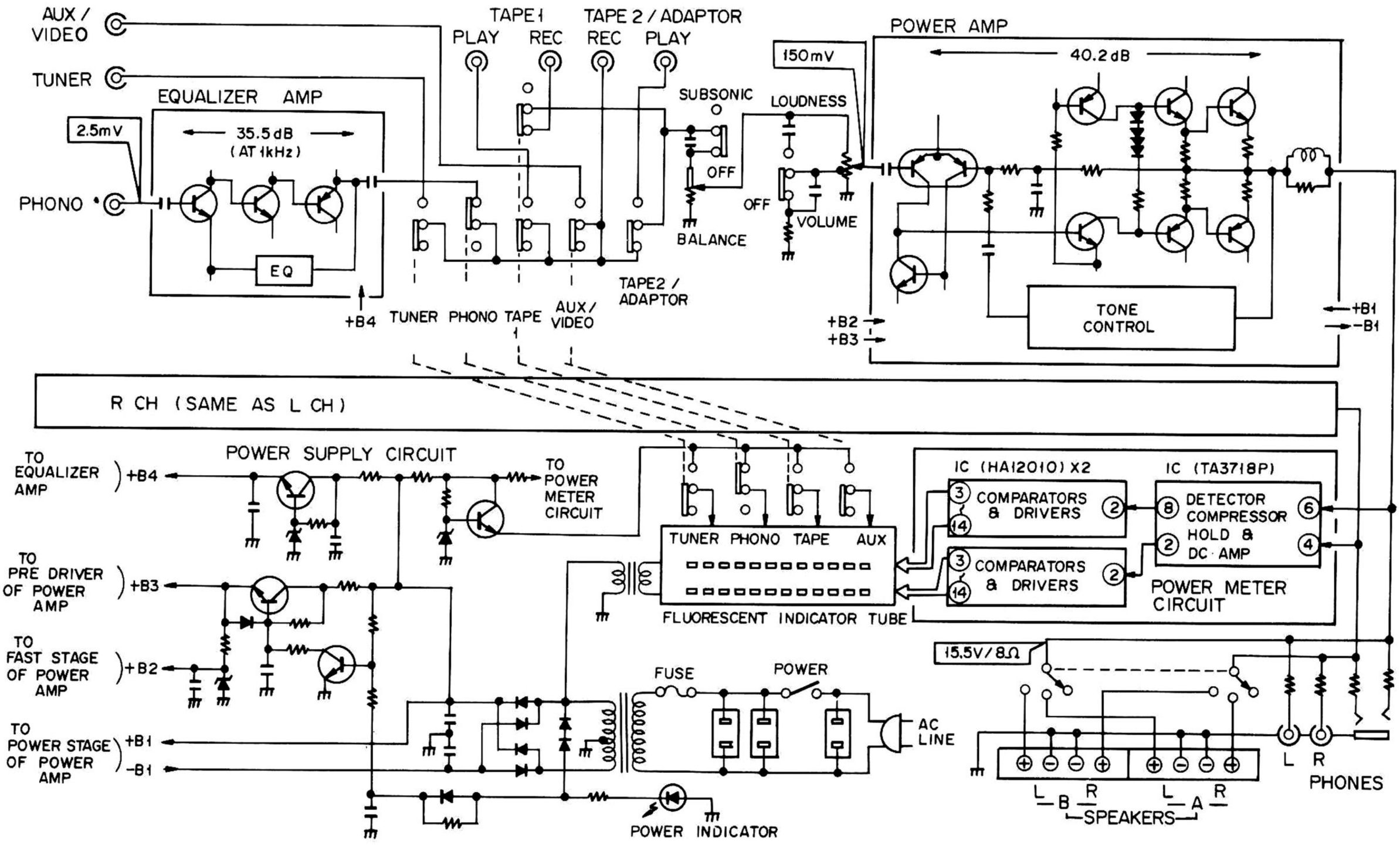
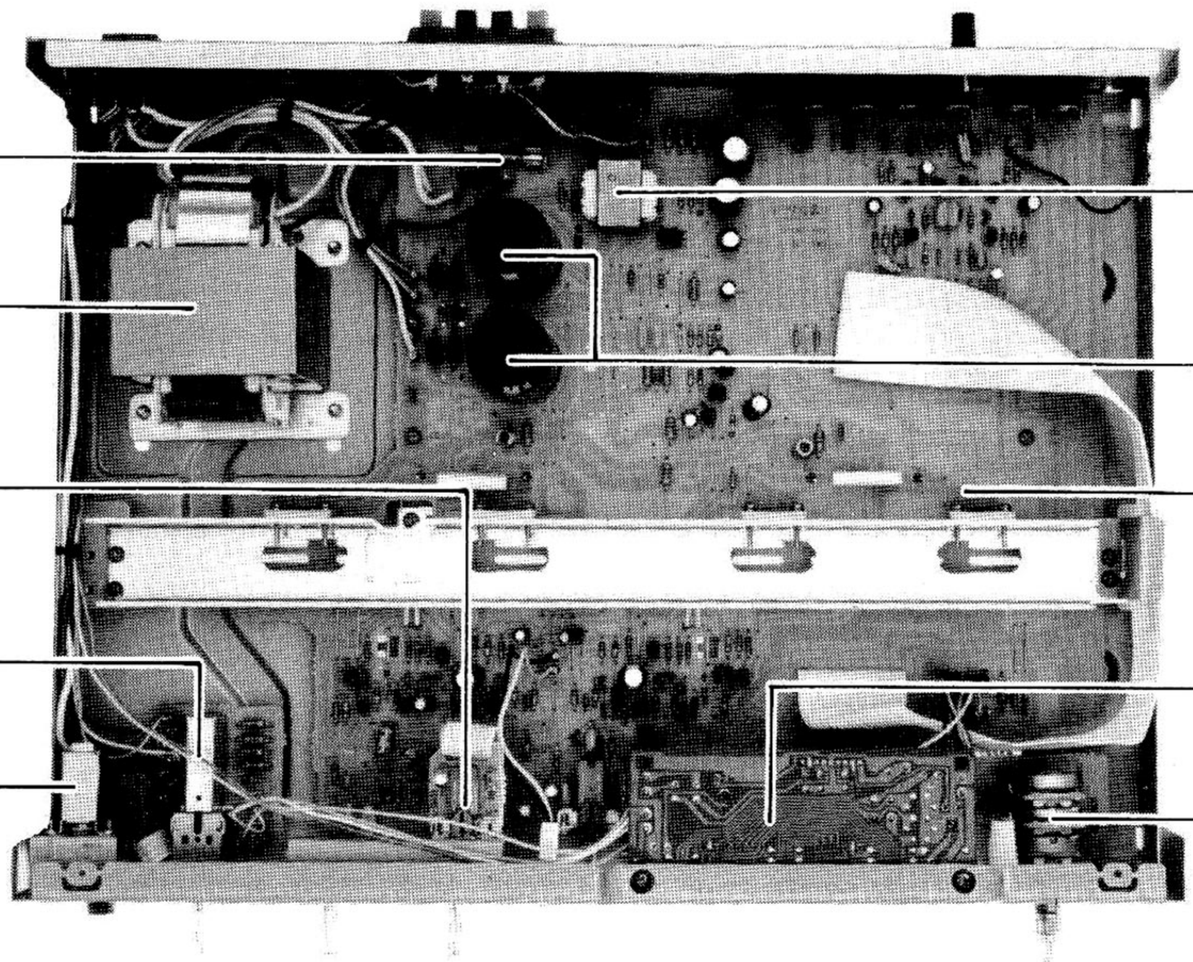
3. BLOCK DIAGRAM



Top View



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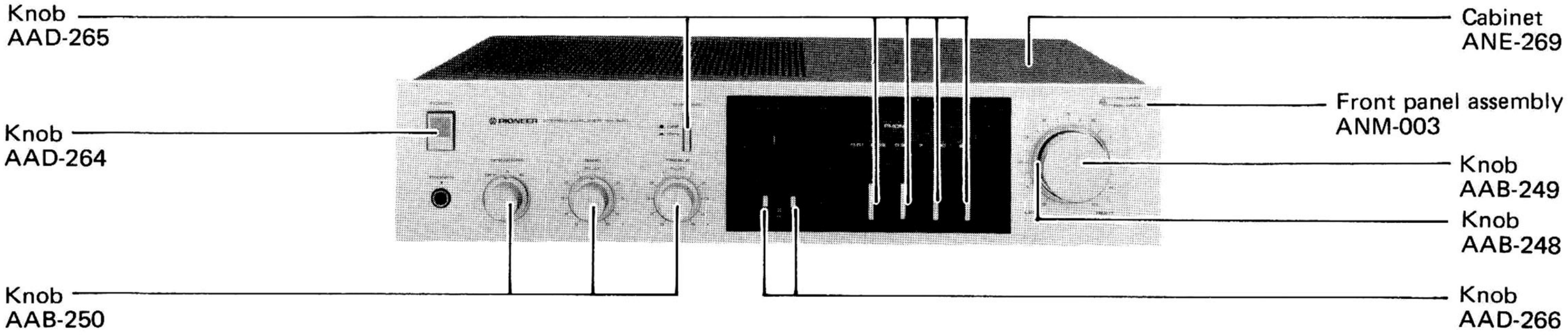
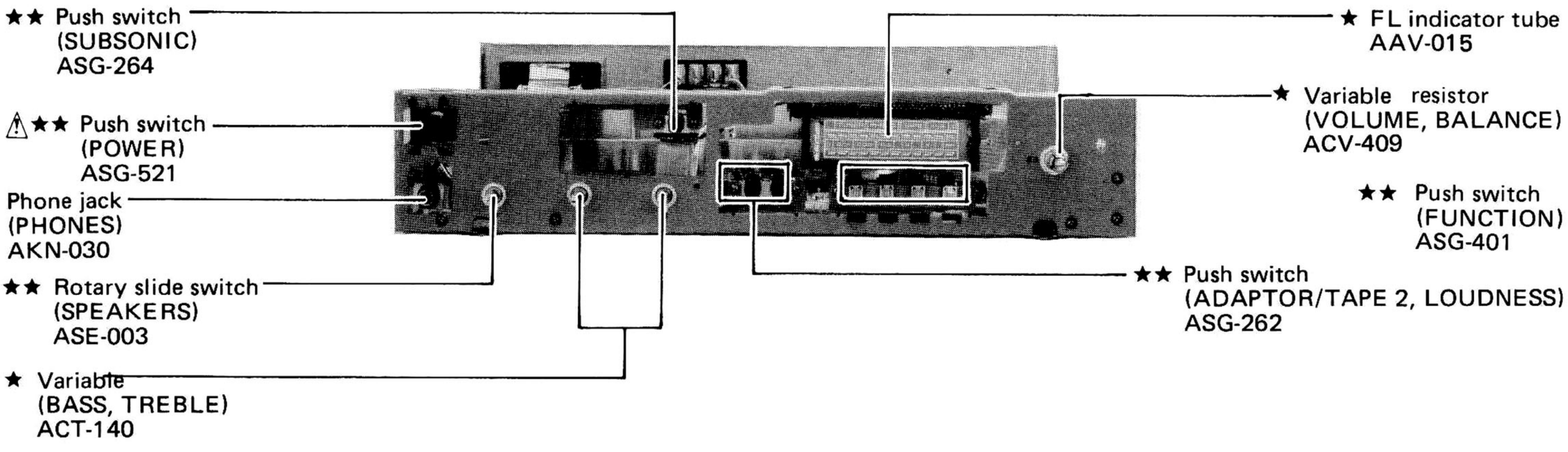
4. PARTS LOCATION

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number , temperature, humidity, etc.

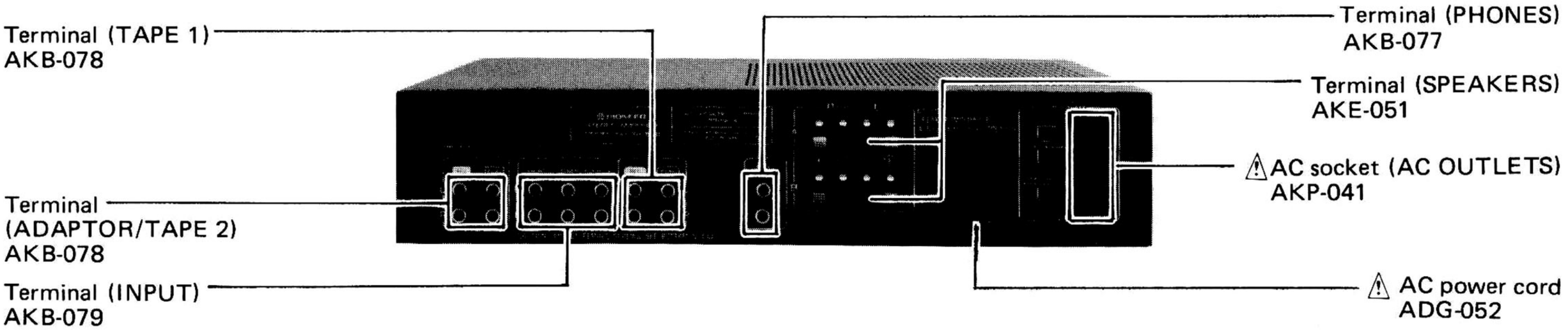
Front Panel View



Front View with Panel Removed



Rear Panel View



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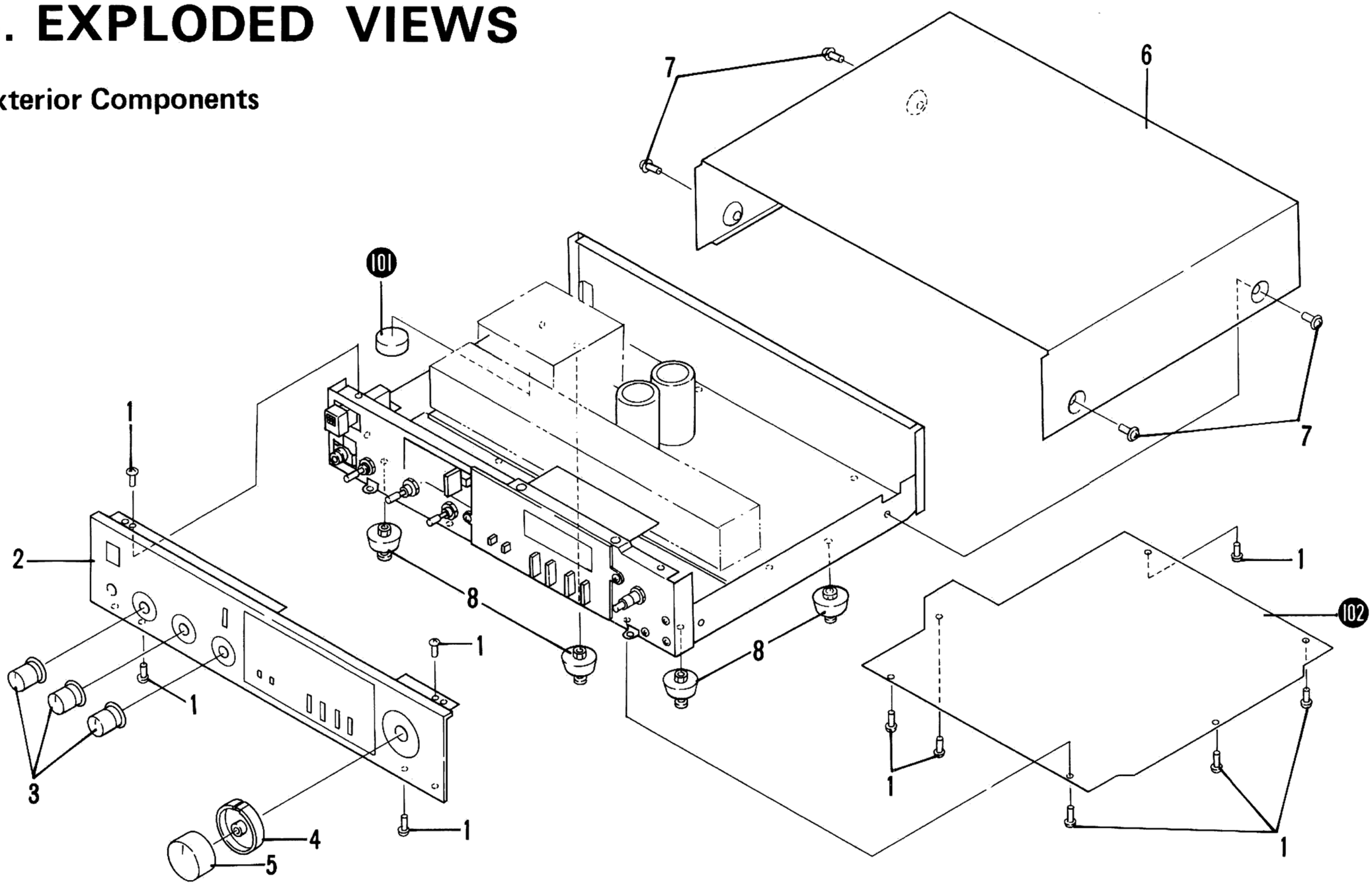
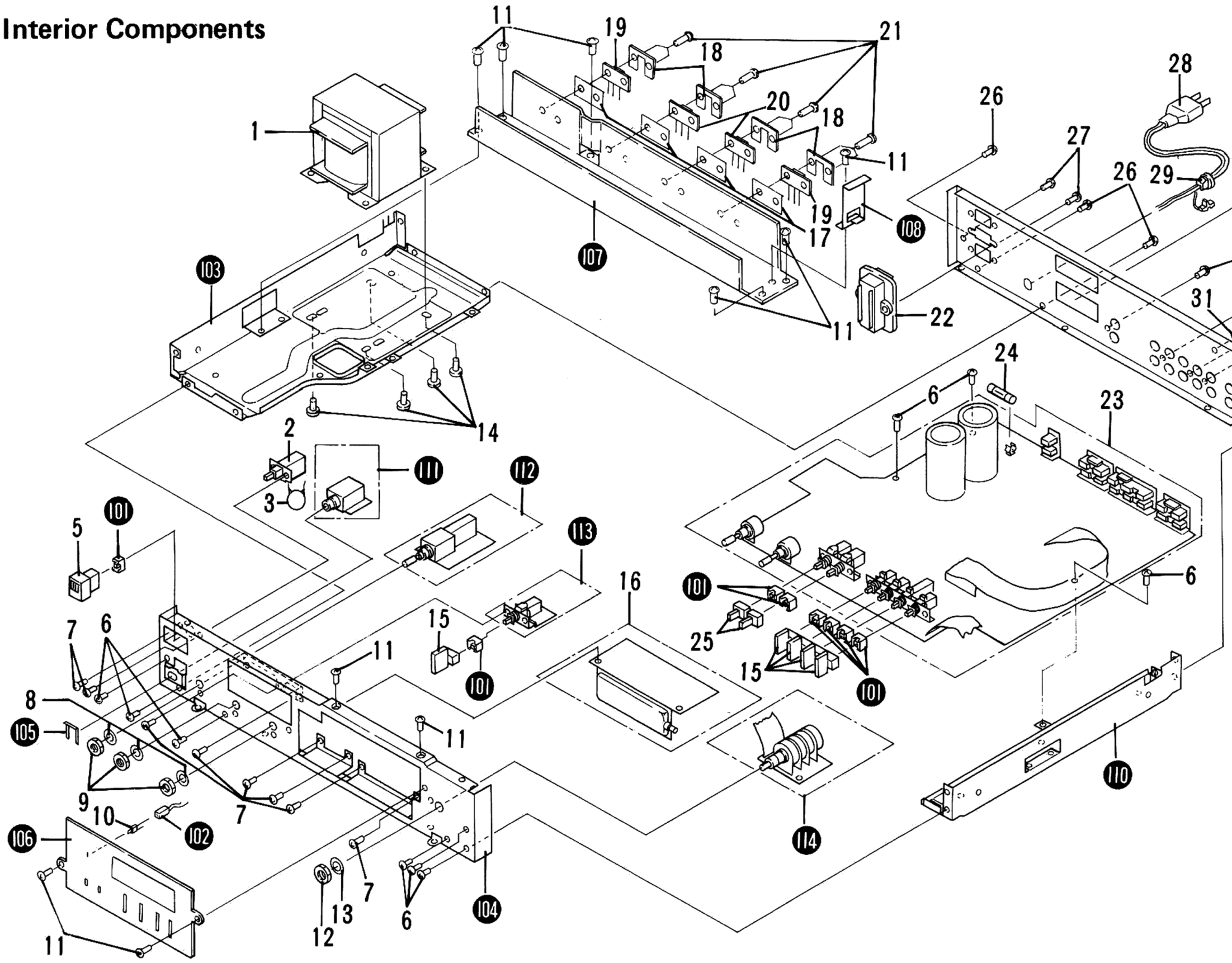
5. EXPLODED VIEWS

Exterior Components



Interior Components



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NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Parts List of Exterior Components

Mark	No.	Part No.	Description
	1.	VBZ30P060FMC	Screw 3x6
	2.	ANM-003	Front panel assembly
	3.	AAB-250	Knob (SPEAKERS, BASS, TREBLE)
	4.	AAB-248	Knob (BALANCE)
	5.	AAB-249	Knob (VOLUME)
	6.	ANE-269	Cabinet
	7.	FBT40P080FZK	Screw 4x8
	8.	AEC-672	Foot assembly
	101		Leg
	102		Bottom plate

Parts List of Interior Components

Mark	No.	Part No.	Description
⚠ ★	1.	ATT-666	Power transformer (120V)
⚠ ★★	2.	ASG-521	Push switch (POWER)
⚠	3.	ACG-017	Ceramic capacitor (0.01/AC125V)
	4.	.....	
	5.	AAD-264	Knob (POWER)
	6.	PMZ30P060FMC	Screw 3x6
	7.	VBZ30P060FMC	Screw 3x6
	8.	WA92F140U100	Washer
	9.	NK90FUC	Nut
★	10.	AEL-334	LED
	11.	VBZ30P080FMC	Screw 3x8
	12.	NKX1FUC	Nut
	13.	WAX1F160U050	Washer
	14.	VXZ40P080FMC	Screw 4x8
	15.	AAD-265	Knob (FUNCTION, SUBSONIC)
	16.	AWV-018	FL assembly
	17.	AEC-759	Insulator wafer
	18.	AKH-008	Insulator spacer
★★	19.	2SD883A-Q* (2SD883A-R*)	Transistor
★★	20.	2SB773A-Q* (2SB773A-R*)	Transistor

*hfe should have the same value.

Mark	No.	Part No.	Description
	21.	ABA-257	Screw 2.5x16
⚠	22.	AKP-041	AC socket (AC OUTLETS)
	23.	GWK-170	AF assembly
⚠ ★★	24.	AEK-101	Fuse (3A)
	25.	AAD-266	Knob (TAPE 2, LOUDNESS)
	26.	BBT30P080FZK	Screw 3x8
	27.	MTZ30P100FZK	Screw 3x10
⚠	28.	ADG-052	AC power cord
	29.	AEC-327	Strain relief
	30.	AKE-051	Terminal (SPEAKERS)
	31.	WA35F100N080	Washer
	101		Flexible ring
	102		LED socket
	103		Frame
	104		Panel stay
	105		Mounting plate
	106		Stay mold
	107		Heat sink
	108		Wire holder
	109		Rear panel
	110		Right frame
	111		Headphones jack assembly
	112		Switch assembly B
	113		Switch assembly A
	114		Volume assembly
	115		Terminal (GND)

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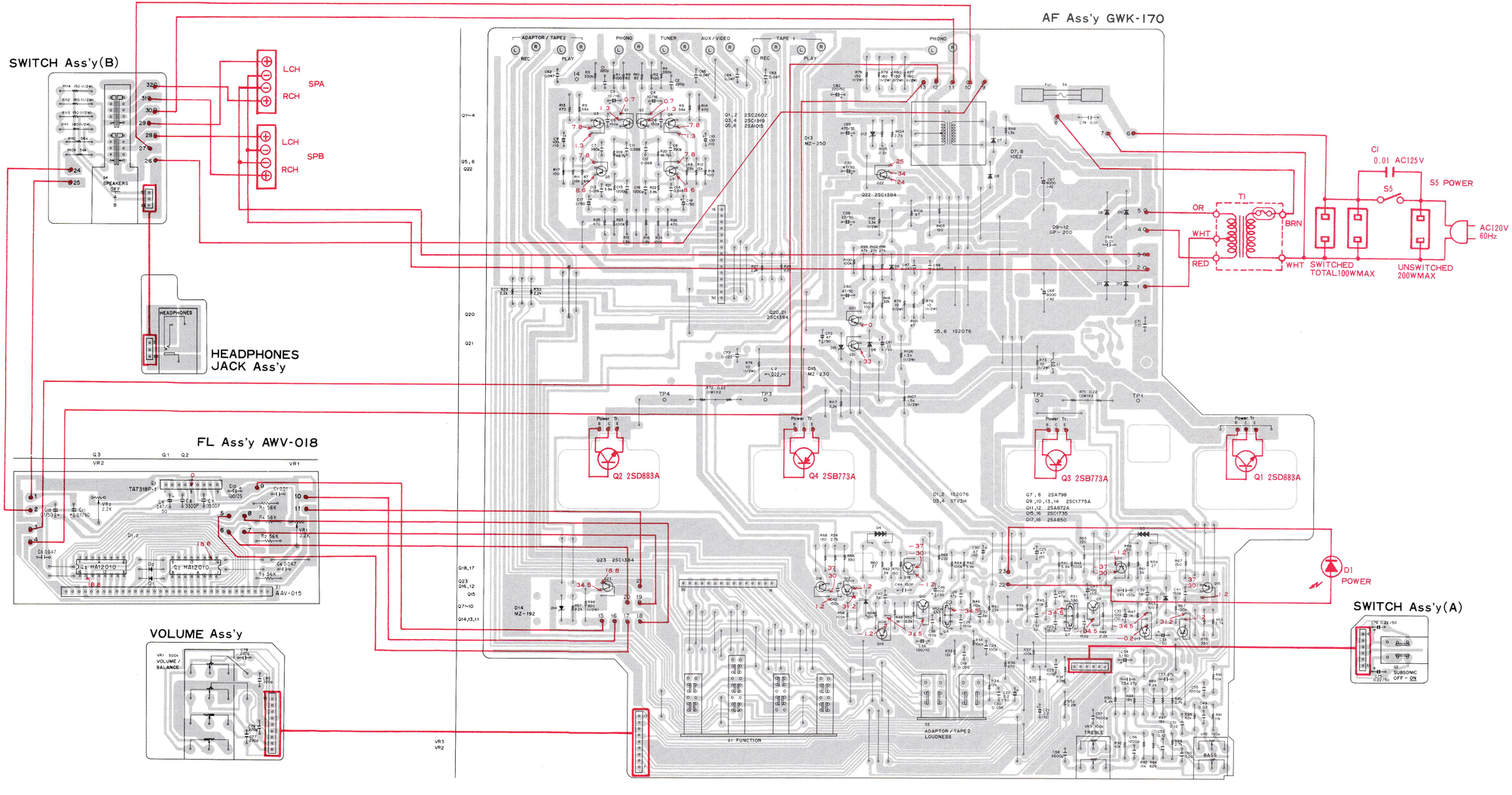
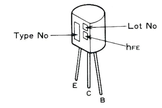
6. P.C. BOARDS CONNECTION DIAGRAM

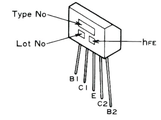


External Appearance of Transistors and ICs

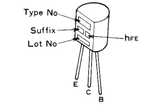
2SA1015



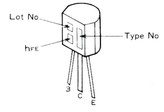
2SA798



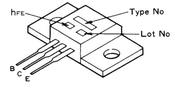
2SA872A
2SC1775A



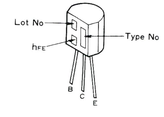
2SA850
2SC1735



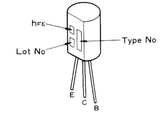
2SB773A
2SD883A



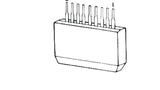
2SC2602
2SC1919



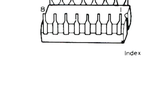
2SC1384



TA7318P

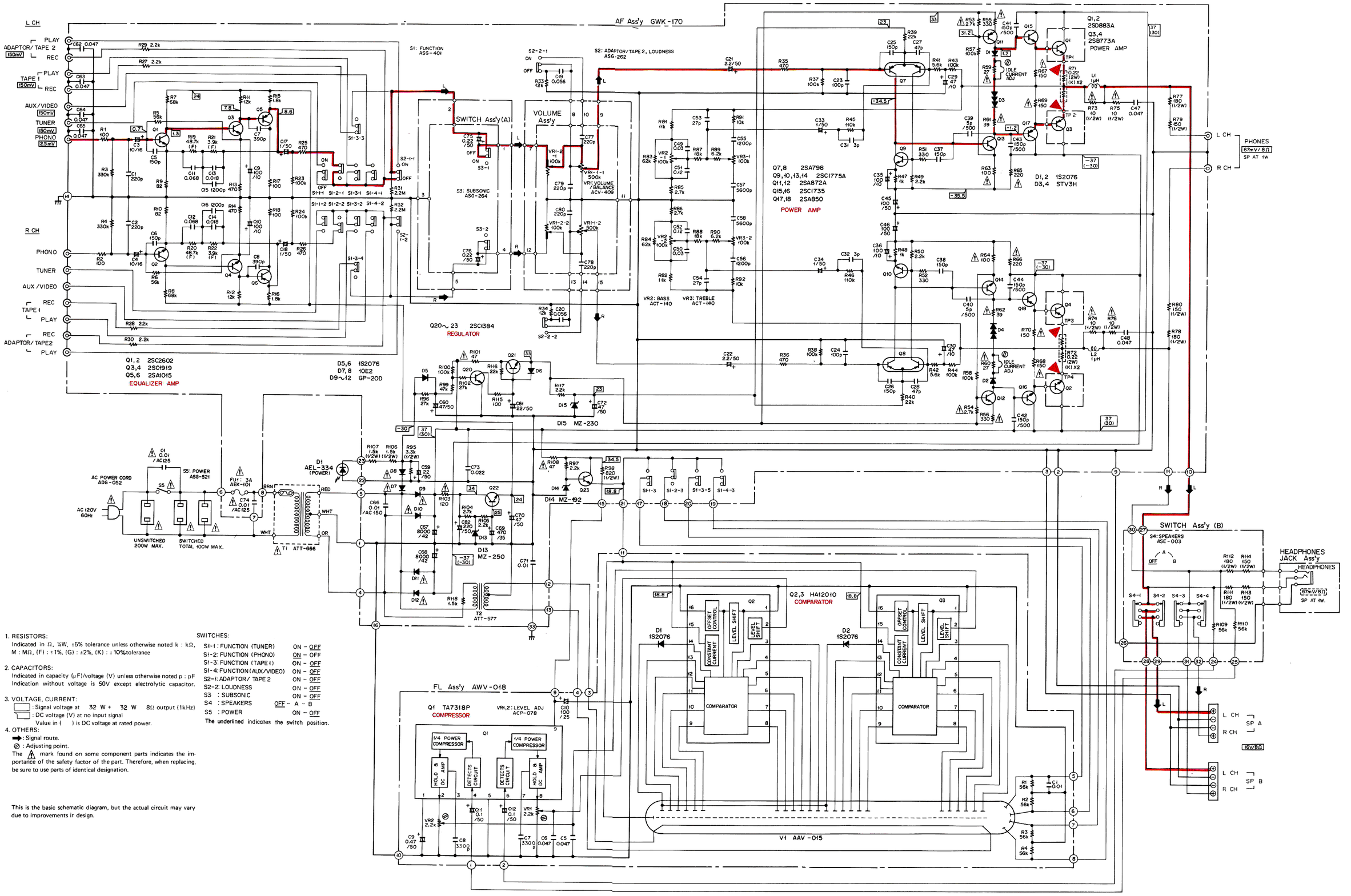


HA12010



7. SCHEMATIC DIAGRAM

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



1. RESISTORS:
   Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%tolerance

2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
   Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
   : Signal voltage at 32 W + 32 W 8Ω output (1kHz)
   : DC voltage (V) at no input signal
   Value in ( ) is DC voltage at rated power.

4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements ir design.

SWITCHES:

S1-1 : FUNCTION (TUNER)	ON – OFF
S1-2: FUNCTION (PHONO)	ON – OFF
S1-3: FUNCTION (TAPE 1)	ON – OFF
S1-4: FUNCTION (AUX/VIDEO)	ON – OFF
S2-1: ADAPTOR/ TAPE 2	ON – OFF
S2-2: LOUDNESS	ON – OFF
S3 : SUBSONIC	ON – OFF
S4 : SPEAKERS	OFF – A – B
S5 : POWER	ON – OFF

The underlined indicates the switch position.

8. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 x 10¹*	*561*	*RD¼PS 5 6 1 J*
47kΩ	*47 x 10³*	*473*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 x 100*	*5621*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number , temperature, humidity, etc.

Miscellaneous Parts

Mark		Part No.	Symbol & Description
⚠	★	ATT-666	T1 Power transformer (120V)
	★	AEL-334	D1 LED
⚠	★★	AEK-101	FU1 Fuse (3A)
⚠	★★	ASG-521	S5 Push switch (POWER)
⚠		ACG-017	C1 Capacitor (0.01/AC125V)
	★★	2SD883A-Q* (2SD883A-R*)	Q1, Q2
	★★	2SB773A-Q* (2SB773A-R*)	Q3, Q4
		*hfe of Q1—Q4 should have the same value.	
⚠		AKP-041	AC socket (AC OUTLETS)
⚠		ADG-052	AC power cord
		GWK-170	AF assembly
		AWV-018	FL assembly

AF Assembly (GWK-170)

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 221J 50	C1, C2
	ACH-224	C67, C68 Electrolytic (8000/42V)
⚠	ACG-017	C74 Ceramic (0.01/AC125V)
	ACG-019	C66 Ceramic (0.01/AC150V)
	CEA 220M 50L	C59, C61
	CEA 470M 10L	C29, C30
	CEA 470M 50L	C60, C70, C72
	CEA 101M 10L	C9, C10, C35, C36
	CEA 101M 50L	C45, C46
	CEA 221M 50L	C82
	CEA 471M 35L	C69
	CEANL 010M 50	C17, C18, C33, C34
	CEANL 2R2M 50	C21, C22
	CEANL 100M 16	C3, C4
	CQMA 122K 50	C15, C16, C55, C56
	CQMA 562K 50	C57, C58
	CQMA 473K 50	C47, C48
	CQMA 563K 50	C19, C20
	CQMA 124K 50	C51, C52
	CQMA 183J 50	C13, C14
	CQMA 303J 50	C49, C50
	CQMA 683J 50	C11, C12
	CCDSL 050D 500	C39, C40
	CCDSL 151K 500	C41—C44
	CCDSL 030C 50	C31, C32
	CCDSL 270J 50	C53, C54
	CCDSL 470J 50	C27, C28
	CCDSL 101J 50	C23, C24
	CCDSL 151J 50	C5, C6, C25, C26, C37, C38
	CKDYB 391K 50	C7, C8
	CKDYF 103Z 50	C71
	CKDYF 473Z 50	C62—C65
	CKDYF 223Z 50	C73

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark		Part No.	Symbol & Description
	★	ACT-140	VR2 Variable (100k-B) (BASS)
	★	ACT-140	VR3 Variable (100k-B) (TREBLE)
		ACN-070	R71, R72 Wire wound (0.22/2W x2)
		RN¼PQ □□□□ F	R19—R22
⚠		RD¼PMF □□□ J	R59—R70, R101, R103, R108
		RD½PS □□□ J	R73—R80, R95, R98, R106, R107
		RD¼PM □□□ J	R1—R18, R23—R58, R81—R92, R96, R97, R99, R102, R104, R105, R116—R118

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SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SC2602	Q1, Q2
★★	2SC1919	Q3, Q4
★★	2SA1015	Q5, Q6
★★	2SA798	Q7, Q8
★★	2SC1775A	Q9, Q10, Q13, Q14
★★	2SA872A	Q11, Q12
★★	2SC1735-D* (2SC1735-E*)	Q15, Q16
★★	2SA850-D* (2SA850-E*)	Q17, Q18
★★	2SC1384	Q20—Q23

*hfe of Q15—Q18 should have the same value.

Mark	Part No.	Symbol & Description
★	1S2076 (1S1555)	D1, D2, D5, D6
★	STV3H	D3, D4
⚠ ★	10E2 (SIB01-02)	D7, D8
⚠ ★	GP-20D	D9—D12
★	MZ-250 (WZ-250)	D13
★	MZ-192 (WZ-192)	D14
★	MZ-230	D15

OTHERS

Mark	Part No.	Symbol & Description
★★	ASG-401	S1 Push switch (FUNCTION)
★★	ASG-262	S2 Push switch (ADAPTOR/TAPE2, LOUDNESS)
	ATT-577	T1 Filament transformer
	AKB-077	Terminal (PHONES)
	AKB-078	Terminal (TAPE1, ADAPTOR/TAPE2)
	AKB-079	Terminal (INPUT)

Switch Assembly (A)

Mark	Part No.	Symbol & Description
★★	ASG-264	S3 Push switch (SUBSONIC)
	CEANL R22M 50	C75, C76

Switch Assembly (B)

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
★★	ASE-003	S4 Slide-rotary switch (SPEAKERS)
	RD½PS □□□ J	R111—R114
	RD¼PM 563J	R109, R110

Volume Assembly

Mark	Part No.	Symbol & Description
★	ACV-409	VR1 Variable (500k) (VOLUME/BALANCE)
	CCDSL 221J 50	C77—C80

Headphones Jack Assembly

Mark	Part No.	Symbol & Description
	AKN-030	Phone jack (PHONES)

FL Assembly (AWV-018)

CAPACITORS

Mark	Part No.	Symbol & Description
	CKDYF 103Z 50	C1
	CKDYF 473Z 50	C5, C6
	CKDYB 332K 50	C7, C8
	CEA R47M 50L	C9
	CEA 101M 25L	C10
	CEANL 0R1M 50	C11, C12

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
★	ACP-078	VR1, VR2 Semi-fixed (2.2k-B) (LEVEL ADJ)
	RD¼PM 563J	R1—R4

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	TA7318P-A	Q1
★★	HA12010	Q2, Q3
★	1S2076 (1S1555)	D1, D2

OTHER

Mark	Part No.	Symbol & Description
★	AAV-015	V1 FL indicator tube

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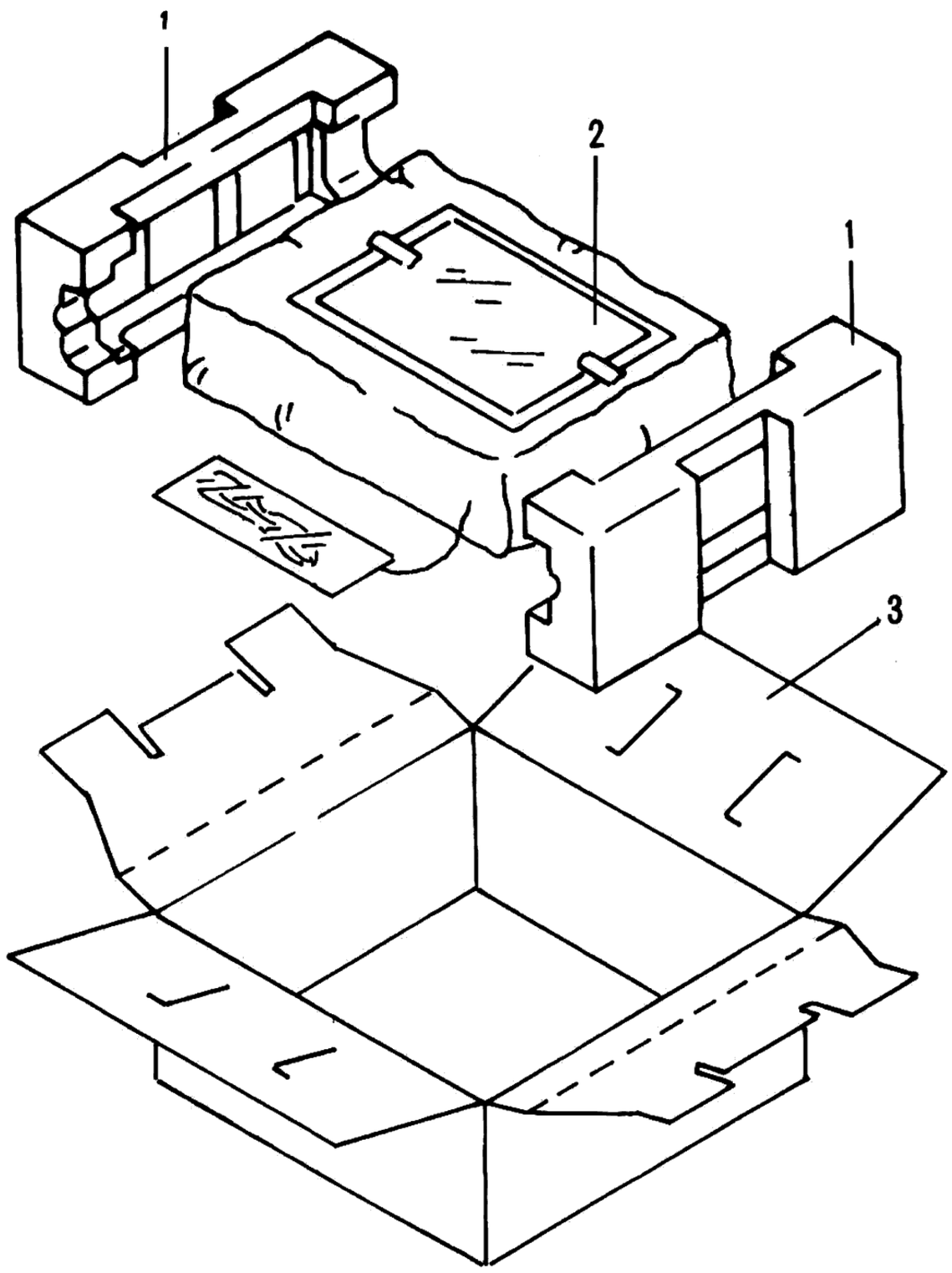
9. PACKING



Mark	No.	Part No.	Description
	1.	AHA-281	Side pad
	2.	ARB-407	Operating instructions (English)
	3.	AHD-904	Packing case

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10. ADJUSTMENTS

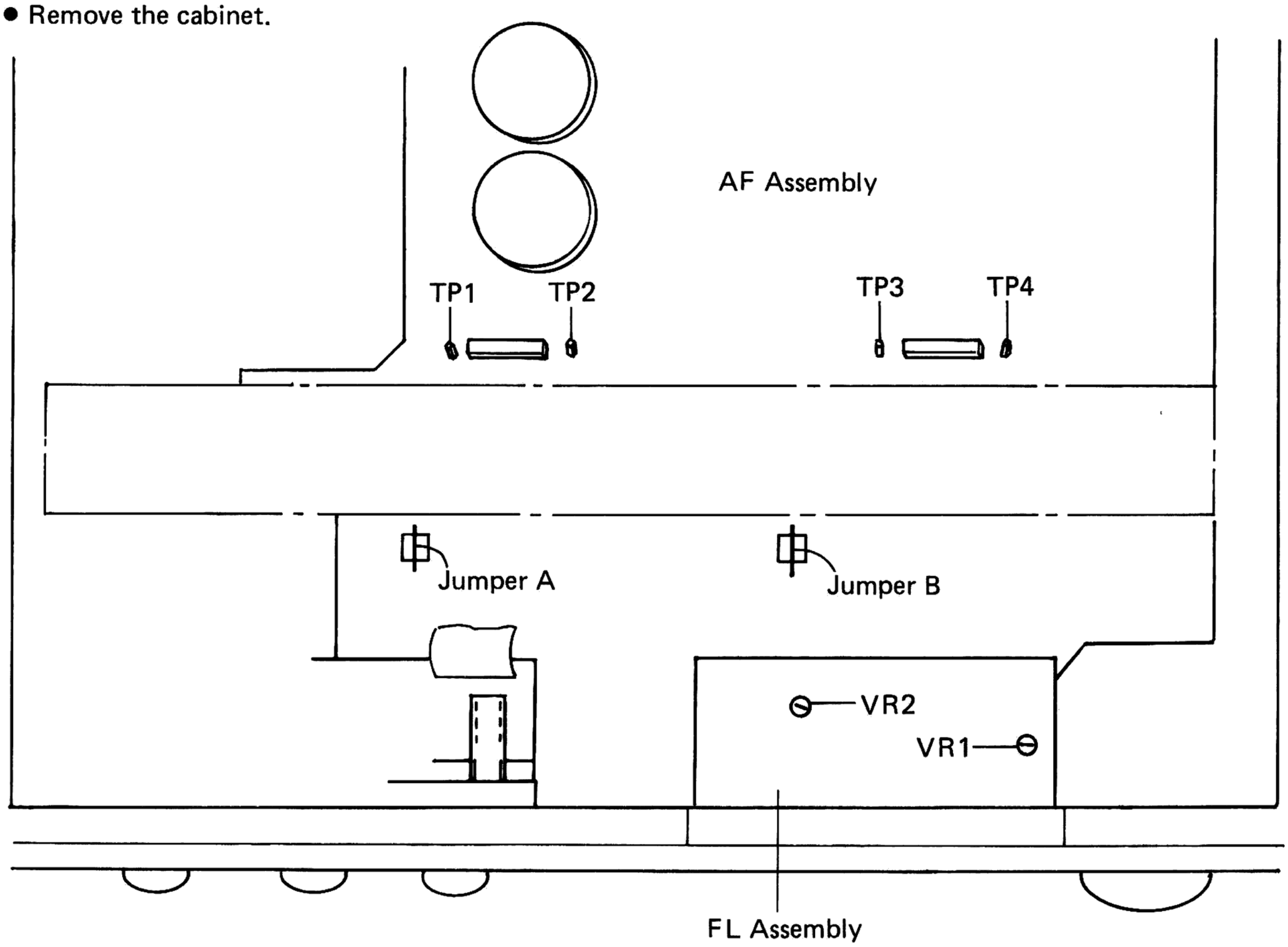
Idle Current Adjustment

1. Turn the VOLUME control down to minimum level, turn the power on, and wait about 10 minutes.
2. Connect a DC voltmeter to the TP terminals (L ch; TP1 ⊕ and TP2 ⊖, R ch; TP4 ⊕ and TP3 ⊖) of the AF assembly.
3. Check that the voltage between TP1 and TP2 (L ch) lies within the DC 2.2mV—50mV range. Then make a similar check for the R ch (between TP3 and TP4). If the voltage is less than 2.2mV, cut jumper A (L ch), and jumpter B (R ch). If the voltage exceeds 50mV, check for circuit failure.

Output Indicator Adjustment

1. Set the tone control to the flat position.
2. Set the SPEAKERS selector to the A position, and connect an 8Ω resistor and AC voltmeter to the speaker output terminals(SPEAKERS A).
3. Set the FUNCTION switch to the AUX position, and apply a 1kHz, 150mV signal to the AUX input terminals.
4. Adjust the VOLUME control so that the voltage on the output terminals (SPEAKERS) reads 9V (AC).
5. Adjust VR1 (L ch) and VR2 (R ch) of the F.L. assembly so that the output power indicator reads 10 watts.

● Remove the cabinet.



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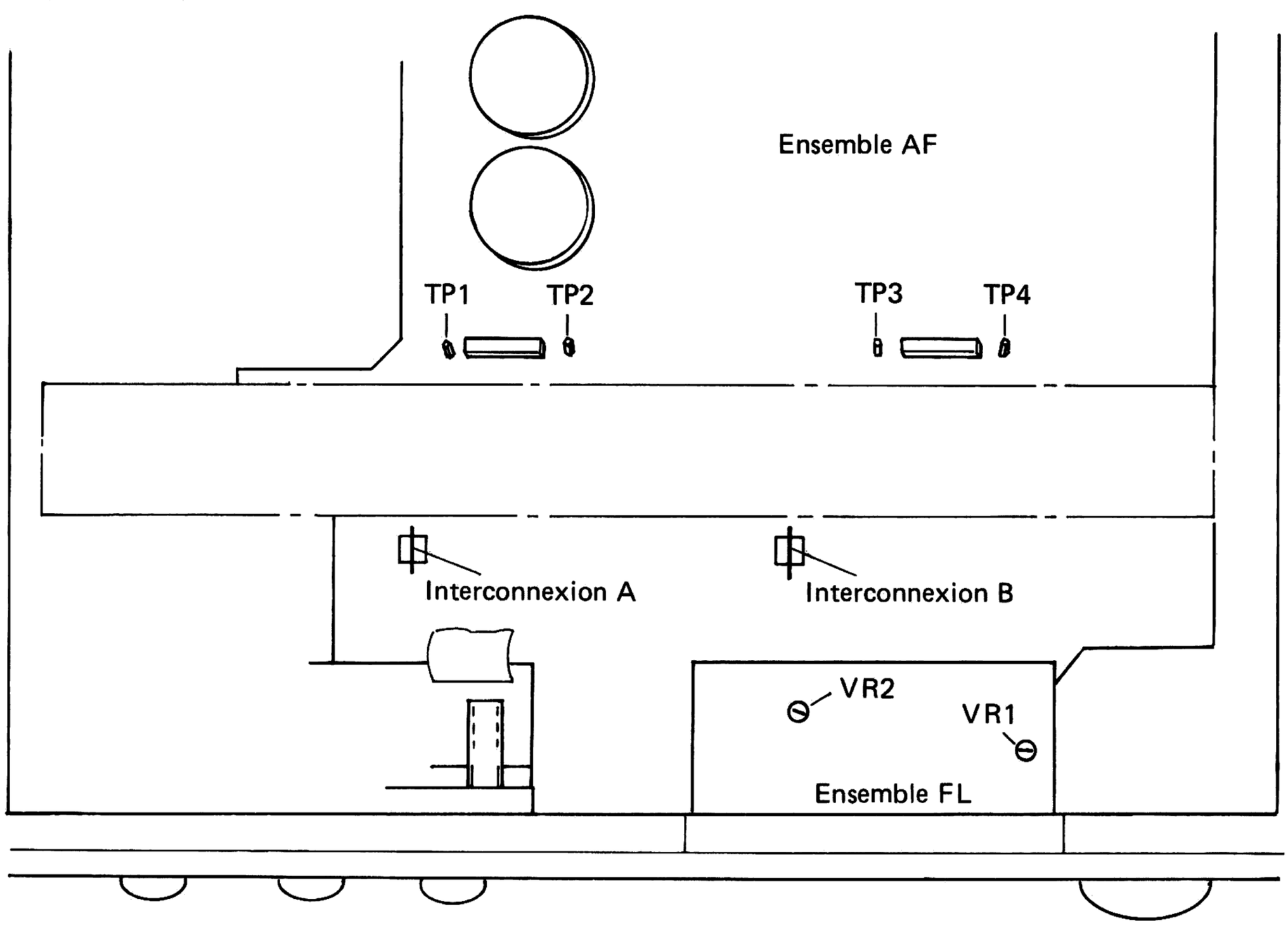
10. RÉGLAGE

Réglage du courant déwatté

1. Tourner la commande de volume sur la position minimum, mettre l'appareil sous tension et attendre environ 10 minutes.
2. Connecter un voltmètre CC aux bornes TP (voie gauche: TP1 ⊕ et TP2 ⊖, voie droite: TP4 ⊕ et TP3 ⊖) d'ensemble AF.
3. Vérifier que la tension entre TP1 et TP2 (voie gauche) soit entre 2,2 mV et 50 mV CC. Vérifier de la même manière la voie droite (entre TP3 et TP4). Couper l'interconnexion A (voie gauche) et l'interconnexion B (voie droite) si la tension est inférieure a 2,2 mV. Lorsque la tension est supérieure a 50 mV, s'assurer de l'absence de panne de circuit.

Réglage de l'indicateur de sortie

1. Régler la commande de tonalité sur la position rectiligne.
2. Placer le sélecteur des enceintes acoustiques sur la position A et connecter un résisteur de 8 et un voltmètre CA aux bornes de sortie de l'enceinte acoustique (acoustiques A).
3. Placer le commutateur de fonctions sur la position AUX et transmettre un signal de 1 kHz, 150 mV aux bornes d'entrée AUX.
4. Régler la commande de volume afin que la tension indiquée sur les bornes de sortie (enceintes acoustiques) soit égale a 9 V (CA).
5. Régler VR1 (voie gauche) et VR2 (voie droite) de l'ensemble FL afin que l'indicateur de puissance de sortie affiche 10 watts.



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10. AJUSTE

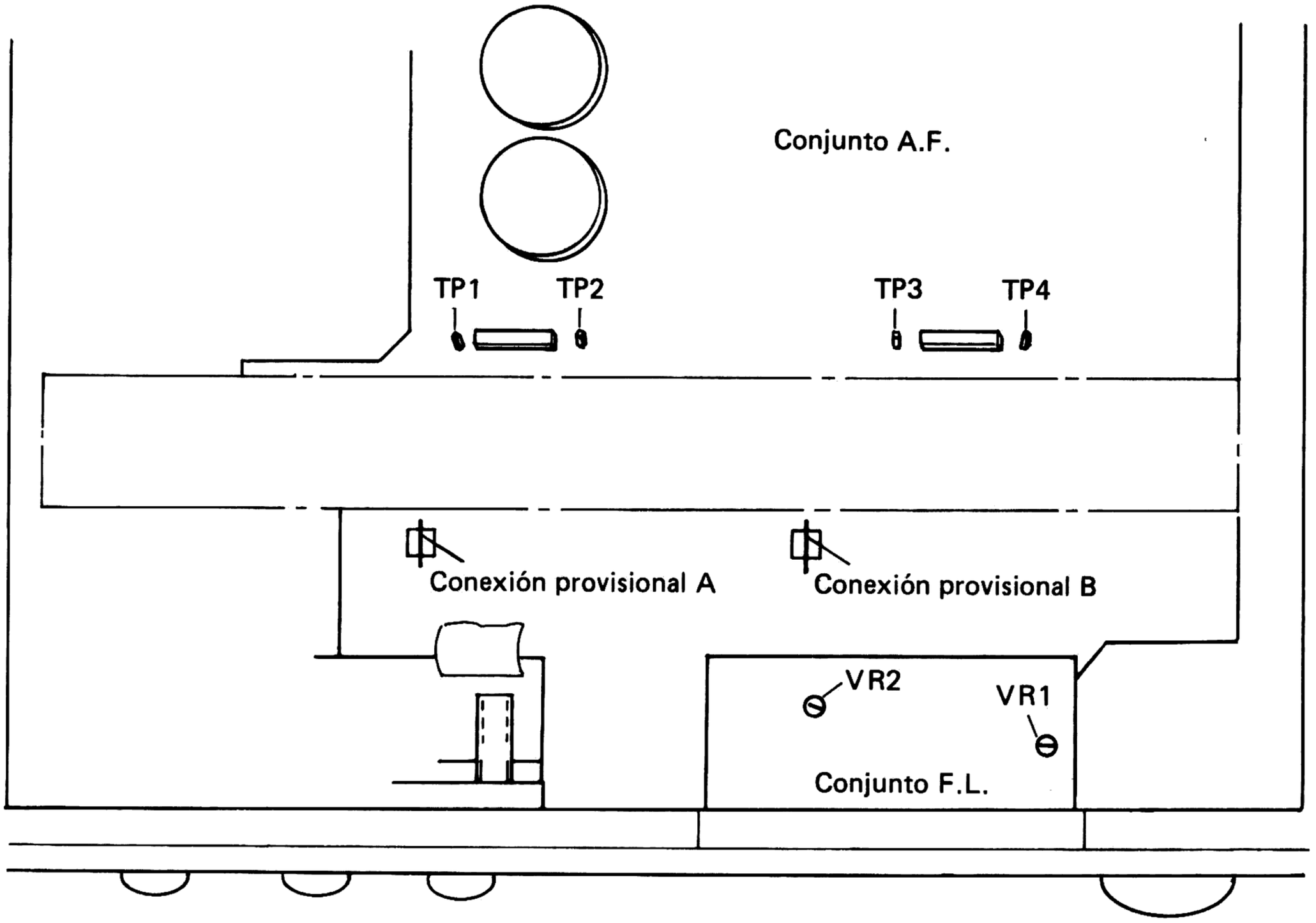
Ajuste de la corriente devatiada

1. Poner el control de volumen (VOLUME) en su posición de nivel mínimo, conectar la alimentación y esperar unos 10 minutos.
2. Conectar un voltímetro de CC a los terminales TP (canal Izq.; TP1 ⊕ y TP2 ⊖ , canal Der.; TP4 ⊕ y TP3 ⊖) del conjunto A.F.
3. Comprobar que la tensión entre TP1 y TP2 (canal Izq.) esté dentro del margen de 2,2 mV - 50 mV CC. Luego realizar una comprobación similar para el canal Der. (entre TP3 y TP4). Si la tensión es menor de 2,2 mV, cortar la conexión provisional A (canal Izq.), y conectar provisionalmente B (canal Der.). Si la tensión excede de 50 mV, comprobar que no haya ninguna avería en el circuito.

Ajuste del indicador de salida

1. Ajustar el control de tono a la posición de respuesta plana.
2. Poner el selector de altavoces (SPEAKERS) en la posición A y conectar un resistor de 8 ohmios y el voltímetro de CA a los terminales de salida de altavos (SPEAKERS A).
3. Poner el selector de función (FUNCTION) en la posición AUX, y aplicar una señal de 1 kHz, 150 mV a los terminales de entrada AUX.
4. Ajustar el control de volumen (VOLUME) de modo que la tensión en los terminales de salida (SPEAKERS) indique 9 V (CA).
5. Ajustar la VR1 (canal Izq.) y VR2 (canal Der.) del conjunto F.L. de modo que el indicador de potencia de salida indique 10 vatios.

Extraer la caja



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ADDITIONAL

Service Manual

PIONEER®

STEREO AMPLIFIER

SA-520 YP, S, S/G

This additional service manual is applicable to the YP type (Australia model), S type (General export model) and S/G type (U.S. Military model). The basic performance of the YP, S and S/G types is the same as the KU type (U.S.A. model), please refer to the KU type service manual (pp.1—18) with the exception of this supplements.

SPECIFICATIONS

The specifications for YP, S and S/G types are the same as the KU type except for following sections:

Miscellaneous

Power Requirements

YP type . . . . . AC 240V, 50/60Hz

S and S/G type . . . . . AC 110/120/220/240V (Switchable), 50/60Hz

Power Consumption

YP type 220W

S and S/G type 85W

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CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

P.C. BOARD ASSEMBLY

Mark	Symbol & Description	Part No.			
		KU type	S type	S/G type	YP type
	AF assembly	GWK-170	GWK-172	GWK-172	GWK-171

ELECTRICAL PARTS

Mark	Symbol & Description		Part No.			
			KU type	S type	S/G type	YP type
⚠ ★	T1	Power transformer (120V)	ATT-666	.....	.....	.....
⚠ ★	T1	Power transformer (110, 120, 220, 240V)	.....	ATT-712	ATT-712	.....
⚠ ★	T1	Power transformer (240V)	.....	.....	.....	ATT-716
⚠ ★★	FU1	Fuse (3A)	AEK-101	.....	AEK-101	.....
⚠ ★★	FU1	Fuse (1.5A)	.....	AEK-104	.....	.....
⚠ ★★	FU1	Fuse (T1A)	.....	.....	.....	AEK-402
⚠ ★★	FU3, FU4	Fuse (T2.5A)	.....	.....	.....	AEK-403
⚠ ★★	S5	Push switch (POWER)	ASG-521	ASG-520	ASG-520	ASG-522
⚠ ★★	S6	Line voltage selector	.....	AKR-031	AKR-031	.....
⚠	C1	Ceramic capacitor (0.01)	ACG-017	ACG-001	ACG-001	.....
⚠		AC socket (AC OUTLETS)	AKP-041	AKP-041	AKP-041	.....
⚠		AC power cord	ADG-052	ADG-046	ADG-046	ADG-043

PACKING AND FURNISHED PARTS

Mark	Symbol & Description	Part No.			
		KU type	S type	S/G type	YP type
⚠ ★★	Fuse (3A)	.....	AEK-101	AEK-101	.....
⚠ ★★	Fuse (1.5A)	.....	AEK-104	AEK-104	.....
	Operating instructions (English)	ARB-407	ARB-408	ARB-408	ARB-408
	Packing case	AHD-904	AHD-905	AHD-905	AHD-905

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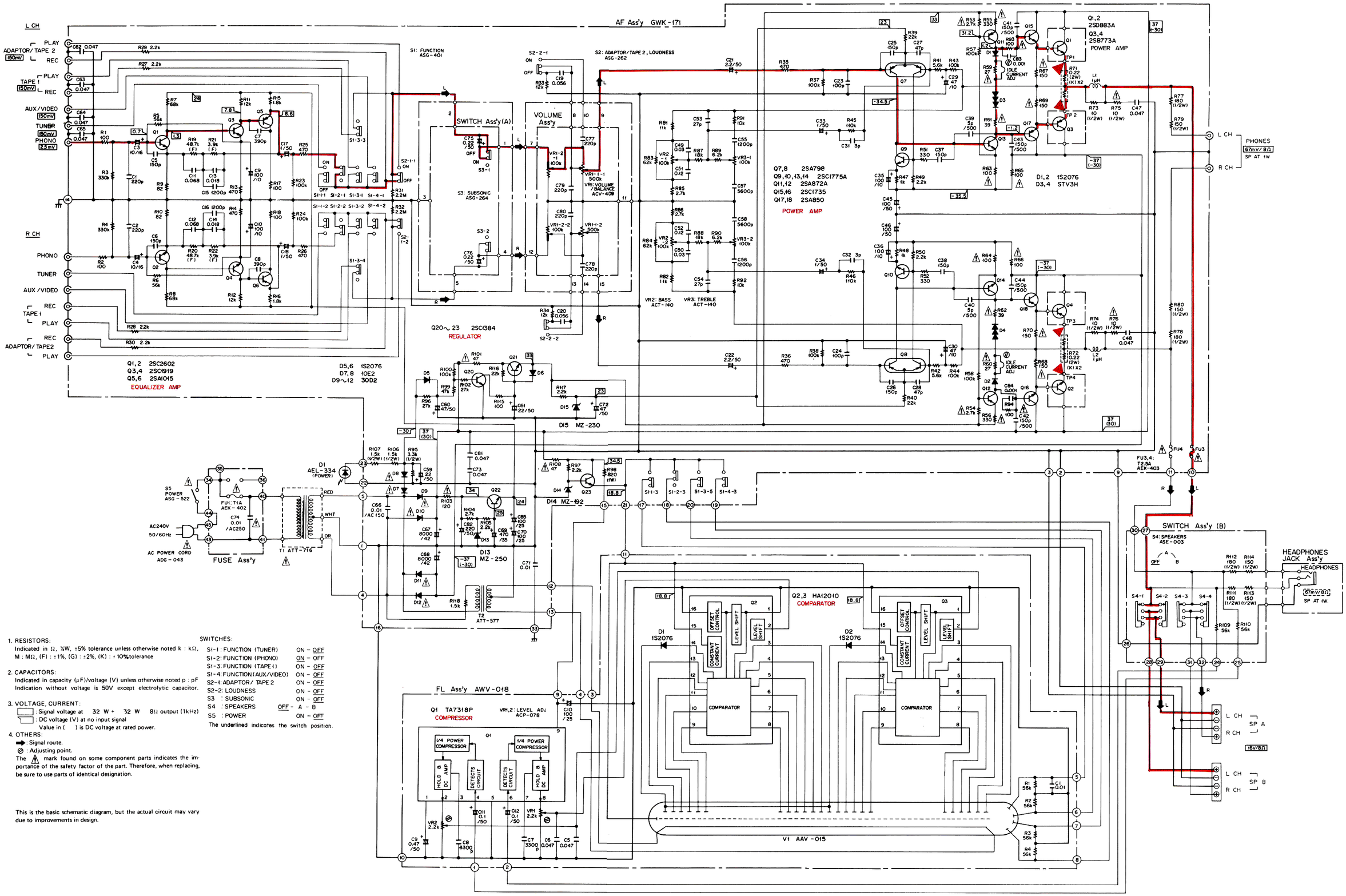
SCHEMATIC DIAGRAM FOR YP TYPE

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



1. RESISTORS:
Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
: Signal voltage at 32 W + 32 W 8Ω output (1kHz)
: DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.

4. OTHERS:
➡: Signal route.
⊘: Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

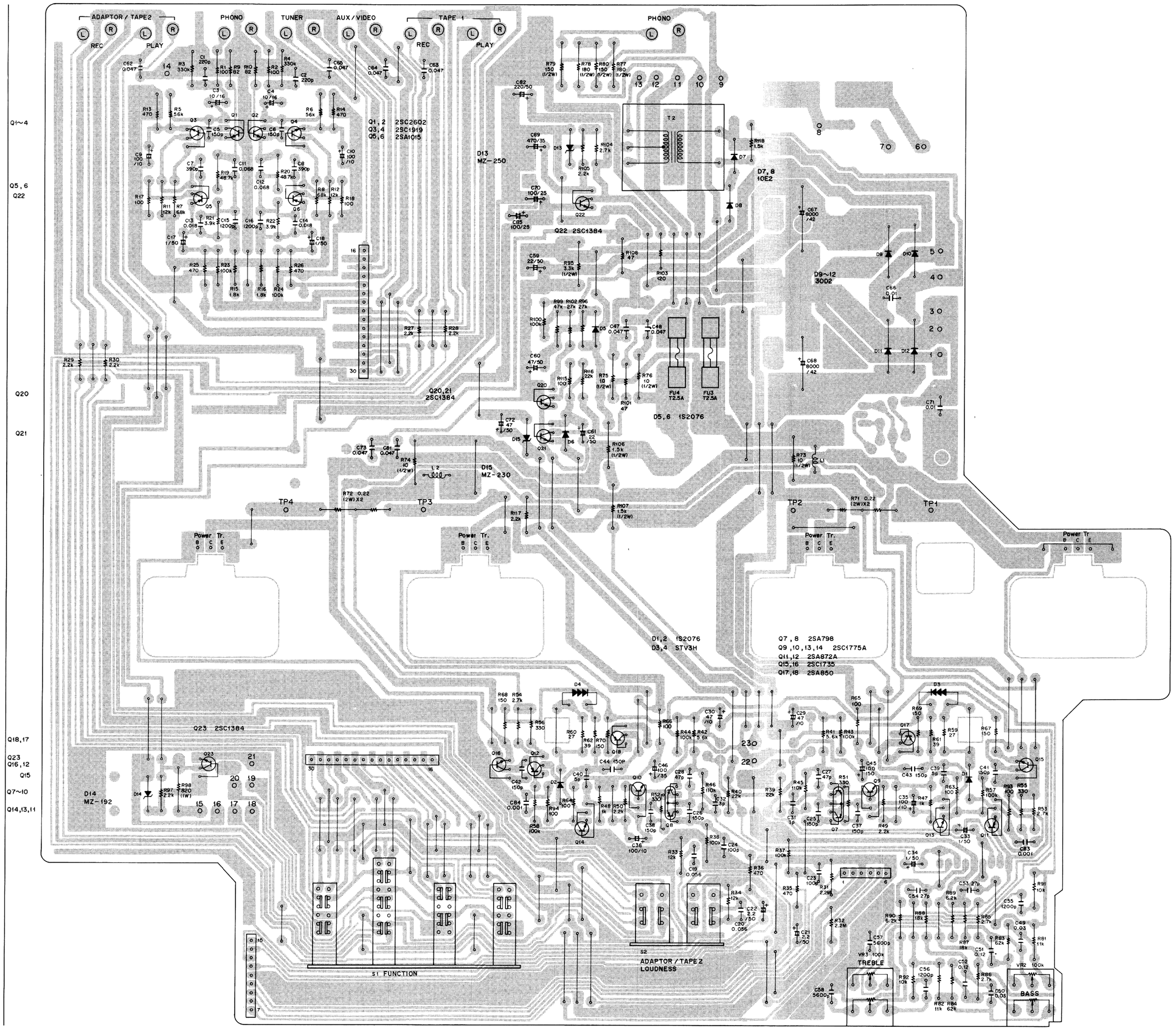
SWITCHES:

S1-1 : FUNCTION (TUNER)	ON – OFF
S1-2 : FUNCTION (PHONO)	ON – OFF
S1-3 : FUNCTION (TAPE 1)	ON – OFF
S1-4 : FUNCTION (AUX/VIDEO)	ON – OFF
S2-1 : ADAPTOR/TAPE 2	ON – OFF
S2-2 : LOUDNESS	ON – OFF
S3 : SUBSONIC	ON – OFF
S4 : SPEAKERS	OFF – A – B
S5 : POWER	ON – OFF

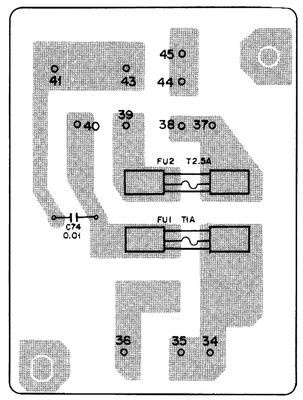
The underlined indicates the switch position.

P.C. BOARD ASSEMBLIES FOR YP TYPE

AF Assembly (GWK-171)



Fuse Assembly



Parts List of AF Assembly (GWK-171)

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 221J 50	C1, C2
	ACH-224	C67, C68 Electrolytic (8000/42V)
	ACG-019	C66 Ceramic (0.01/AC150V)
	CEA 220M 50L	C59, C61
	CEA 470M 10L	C29, C30
	CEA 470M 50L	C60, C72
	CEA 101M 10L	C9, C10, C35, C36
	CEA 101M 25L	C70, C85
	CEA 101M 50L	C45, C46
	CEA 221M 50L	C82
	CEA 471M 35L	C69
	CEANL 010M 50	C17, C18, C33, C34
	CEANL 2R2M 50	C21, C22
	CEANL 100M 16	C3, C4
	CQMA 122K 50	C15, C16, C55, C56
	CQMA 562K 50	C57, C58
	CQMA 473K 50	C47, C48
	CQMA 563K 50	C19, C20
	CQMA 124K 50	C51, C52
	CQMA 102J 50	C83, C84
	CQMA 183J 50	C13, C14
	CQMA 303J 50	C49, C50
	CQMA 683J 50	C11, C12
	CCDSL 050D 500	C39, C40
	CCDSL 151K 500	C41—C44
	CCDSL 030C 50	C31, C32
	CCDSL 270J 50	C53, C54
	CCDSL 470J 50	C27, C28
	CCDSL 101J 50	C23, C24
	CCDSL 151J 50	C5, C6, C25, C26, C37, C38
	CKDYB 391K 50	C7, C8
	CKDYF 103Z 50	C71
	CKDYF 473Z 50	C62—C65, C73, C81

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	ACN-070	R71, R72 Wire wound (0.22+0.22/2W)
	RD¼PM □□□ J	R1—R18, R23—R52, R57, R58, R81—R92, R96, R97, R99, R100, R102, R104, R105, R115—R118
	RN¼PQ3901F	R21, R22
	RN¼PQ4872F	R19, R20
	RS1P821J	R98
⚠	RD½PSF 100J	R75, R76
⚠	RD¼PMF □□□ J	R53—R56, R59—R66
	RD½PS □□□ J	R73, R74, R77—R80, R95, R106, R107
⚠	RD¼PMFL □□□ J	R67—R70, R93, R94, R101, R103, R108
★	ACT-140	VR2, VR3 Variable (BASS, TREBLE)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SC2602	Q1, Q2
★★	2SC1919	Q3, Q4
★★	2SA1015	Q5, Q6
★★	2SA798	Q7, Q8
★★	2SC1775A	Q9, Q10, Q13, Q14
★★	2SA872A	Q11, Q12
★★	2SC1735-D* (2SC1735-E)*	Q15, Q16
★★	2SA850-D* (2SA850-E)*	Q17, Q18
★★	2SC1384	Q20—Q23

*hfe of Q15-Q18 should have the same value.

Mark	Part No.	Symbol & Description
★	1S2076 (1S1555)	D1, D2, D5, D6
⚠ ★	30D2	D9—D12
⚠ ★	10E2 (SIB01-02)	D7, D8
★	MZ-250 (WZ-250)	D13
★	MZ-192 (WZ-192)	D14
★	MZ-230	D15
★	STV3H	D3, D4

OTHERS

Mark	Part No.	Symbol & Description
★★	ASG-401	S1 Push switch (FUNCTION)
★★	ASG-262	S2 Push switch (TAPE 2/ADAPTOR, LOUDNESS)
★	ATT-577	T2 Filament transformer
	AKB-077	Terminal (PHONES)
	AKB-078	Terminal (TAPE 1, ADAPTOR/TAPE 2)
	AKB-079	Terminal (INPUT)

Parts List of Fuse Assembly

Mark	Part No.	Symbol & Description
⚠	ACG-001	C74 Ceramic (0.01/AC 250V)

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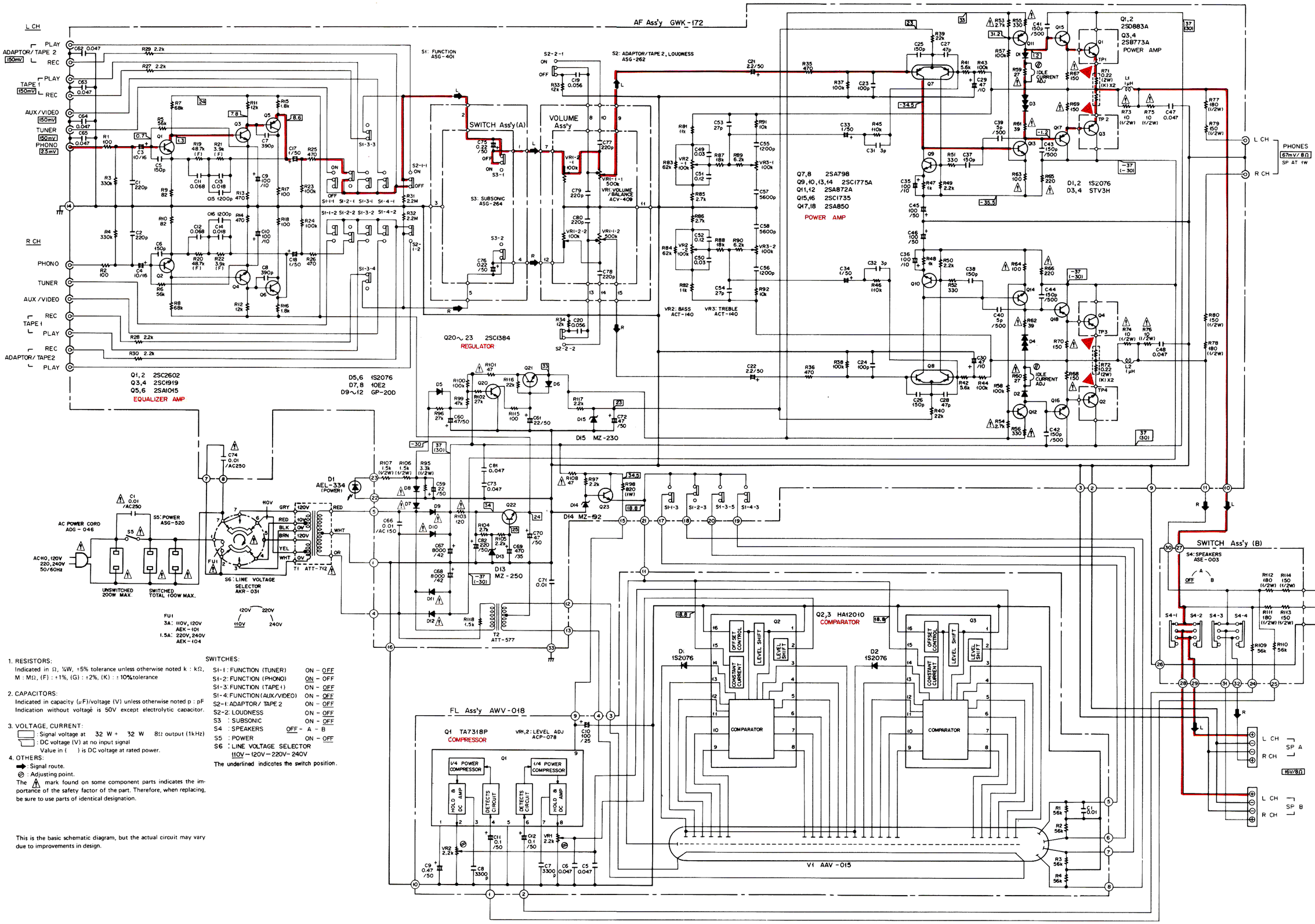
SCHEMATIC DIAGRAM FOR S AND S/G TYPES



1. RESISTORS:
   Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% tolerance

2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
   Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
   : Signal voltage at 32 W + 32 W 8Ω output (1kHz)
   : DC voltage (V) at no input signal
   Value in ( ) is DC voltage at rated power.

4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

SWITCHES:

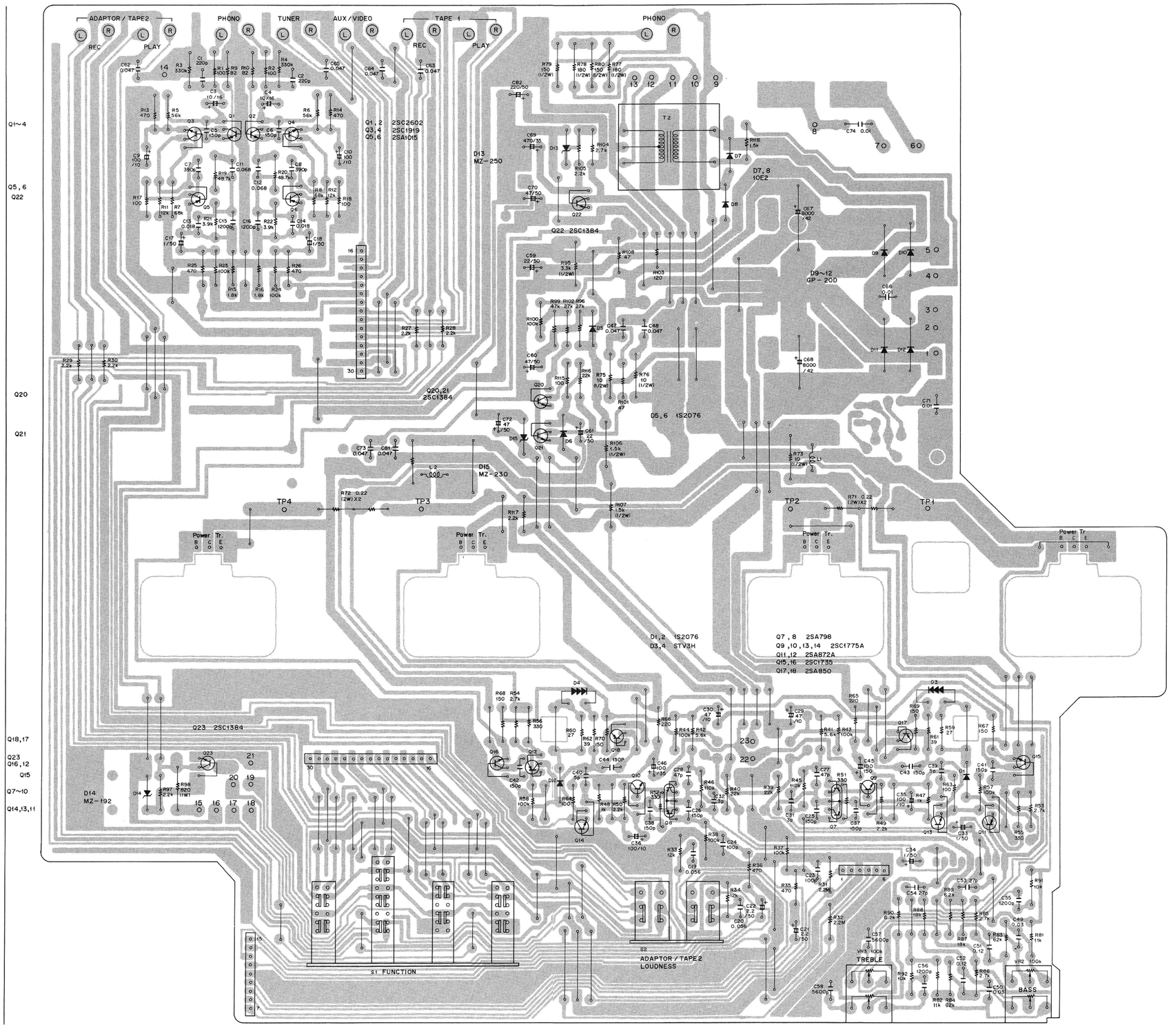
S1-1 : FUNCTION (TUNER)	ON – OFF
S1-2 : FUNCTION (PHONO)	ON – OFF
S1-3 : FUNCTION (TAPE 1)	ON – OFF
S1-4 : FUNCTION (AUX/VIDEO)	ON – OFF
S2-1 : ADAPTOR/ TAPE 2	ON – OFF
S2-2 : LOUDNESS	ON – OFF
S3 : SUBSONIC	ON – OFF
S4 : SPEAKERS	OFF – A – B
S5 : POWER	ON – OFF
S6 : LINE VOLTAGE SELECTOR	110V – 120V – 220V – 240V

The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

P.C. BOARD ASSEMBLY FOR S AND S/G TYPES

AF Assembly (GWK-172)



Parts List of AF Assembly (GWK-172)

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 221J 50	C1, C2
	ACH-224	C67, C68 Electrolytic (8000/42V)
	ACG-019	C66 Ceramic (0.01/AC 150V)
	CEA 220M 50L	C59, C61
	CEA 470M 10L	C29, C30
	CEA 470M 50L	C60, C70, C72
	CEA 101M 10L	C9, C10, C35, C36
	CEA 101M 50L	C45, C46
	CEA 221M 50L	C82
	CEA 471M 35L	C69
	CEANL 010M 50	C17, C18, C33, C34
	CEANL 2R2M 50	C21, C22
	CEANL 100M 16	C3, C4
	CQMA 122K 50	C15, C16, C55, C56
	CQMA 562K 50	C57, C58
	CQMA 473K 50	C47, C48
	CQMA 563K 50	C19, C20
	CQMA 124K 50	C51, C52
	CQMA 183J 50	C13, C14
	CQMA 303J 50	C49, C50
	CQMA 683J 50	C11, C12
	CCDSL 050D 500	C39, C40
	CCDSL 151K 500	C41—C44
	CCDSL 030C 50	C31, C32
	CCDSL 270J 50	C53, C54
	CCDSL 470J 50	C27, C28
	CCDSL 101J 50	C23, C24
	CCDSL 151J 50	C5, C6, C25, C26, C37, C38
	CKDYB 391K 50	C7, C8
	CKDYF 103Z 50	C71
	CKDYF 473Z 50	C62—C65, C73, C81
⚠	AGG-001	C74 Ceramic (0.01/AC 250V)

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	ACN-070	R71, R72 Wire wound (0.22+0.22/2W)
	RD¼PM □□□ J	R1—R18, R23—R52, R57, R58, R81—R92, R96, R97, R99, R100, R102, R104, R105, R115—R118
	RN¼PQ3901F	R21, R22
	RN¼PQ4872F	R19, R20
	RS1P821J	R98
⚠	RD½PSF100J	R73—R76
⚠	RD¼PMF □□□ J	R53—R56, R59—R62
	RD½PS □□□ J	R77—R80, R95, R106, R107
⚠	RD¼PMFL □□□ J	R63—R70, R101, R103, R108
★	ACT-140	VR2, VR3 Variable (BASS, TREBLE)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SC2602	Q1, Q2
★★	2SC1919	Q3, Q4
★★	2SA1015	Q5, Q6
★★	2SA798	Q7, Q8
★★	2SC1775A	Q9, Q10, Q13, Q14
★★	2SA872A	Q11, Q12
★★	2SC1735-D* (2SC1735-E)*	Q15, Q16
★★	2SA850-D* (2SA850-E)*	Q17, Q18
★★	2SC1384	Q20—Q23

*hfe of Q15-Q18 should have the same value.

★	1S2076 (1S1555)	D1, D2, D5, D6
⚠ ★	GP-20D	D9—D12
⚠ ★	10E2 (SIB01-02)	D7, D8
★	MZ-250 (WZ-250)	D13
★	MZ-192 (WZ-192)	D14
★	MZ-230	D15
★	STV3H	D3, D4

OTHERS

Mark	Part No.	Symbol & Description
★★	ASG-401	S1 Push switch (FUNCTION)
★★	ASG-262	S2 Push switch (TAPE 2/ ADAPTOR, LOUDNESS)
★	ATT-577	T2 Filament transformer
	AKB-077	Terminal (PHONES)
	AKB-078	Terminal (TAPE 1, ADAPTOR/ TAPE 2)
	AKB-079	Terminal (INPUT)

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