TA-3650

UK Model
AEP Model

INTEGRATED STEREO AMPLIFIER

SPECIFICATIONS

GENERAL

Power Requirements: 110, 127, 220 or 240 V ac adjustable, 50/60 Hz

Power Consumption: 320 W (UK model)
540 W (AEP model)

Dimensions: Approx.
460 (w) x 170 (h) x 325 (d) mm
18 1/8 (w) x 6 5/8 (h) x 12 7/8 (d) inches
Including projecting parts and controls

Weight: Approx. 12.0 kg, 26 lb 8 oz (net)
Approx. 14.5 kg, 32 lb (with shipping carton)

POWER AMPLIFIER SECTION

Continous RMS Power Output: (rated output) (Less than 0.1 % harmonic distortion)
Both channels driven simultaneously
At 20 – 20,000 Hz
55 + 55 W (8 Ω)
At 1 kHz
60 + 60 W (8 Ω)
70 + 70 W (4 Ω) (AEP model)
According to DIN 45500
55 + 55 W (8 Ω)

Dynamic Power Output: (IHF constant power supply method)
170 W (8 Ω)
200 W (4 Ω) (AEP model)

Power Bandwidth: 5 – 40,000 Hz, IHF

Damping Factor: 35 (8 Ω, at 1 kHz)

Harmonic Distortion: Less than 0.1 % at rated output
Less than 0.03 % at 1 W output

IM Distortion: (60 Hz : 7 kHz = 4 : 1)
Less than 0.1 % at rated output
Less than 0.03 % at 1 W output

Frequency Response: (at 1 W output)
3 – 100,000 Hz $^{+0}_{-2}$ dB

S/N Ratio: Greater than 110 dB, short-circuited input

Residual Noise: Less than 0.008 μW (8 Ω)

Inputs: POWER IN
Sensitivity 1.0 V (for rated output)
Impedance 47 kΩ

Outputs: SPEAKER A, B
Accept speakers of 8 Ω or more. (UK model)
Accept speakers of 4 – 16 Ω (AEP model)
HEADPHONES
Accepts low and high impedance headphones

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SONY®
SERVICE MANUAL

PREAMPLIFIER SECTION

Inputs:

	Sensitivity	Impedance	Maximum Input Capability (THD 0.1 %)	S/N (weighting network, input level)
PHONO 1, 2	2.5 mV (-50 dB)	50 kΩ	210 mV	70 dB (B. 2.5 mV)
TUNER AUX TAPE 1, 2 REC/PB	150 mV (-14.5 dB)	100 kΩ		90 dB (A. 150 mV)

Outputs:

	Output Level	Impedance
REC OUT 1, 2	150 mV	10 kΩ
REC/PB	17 mV	82 kΩ
PRE OUT	1.0 V	1.8 kΩ

Harmonic Distortion: Less than 0.05 % at rated output

IM Distortion: (60 Hz : 7 kHz = 4 : 1) Less than 0.05 % at rated output

Frequency Response: PHONO 1, 2 RIAA equalization curve ±0.5 dB
TUNER, AUX, TAPE 1, 2, REC/PB (input): 10 Hz – 100 kHz $^{+0}_{-2}$ dB

Tone Controls:
BASS
±10 dB at 50 Hz (TURNOVER FREQ 250 Hz)
±10 dB at 100 Hz (TURNOVER FREQ 500 Hz)
TREBLE
±10 dB at 10 kHz (TURNOVER FREQ 2.5 kHz)
±10 dB at 20 kHz (TURNOVER FREQ 5 kHz)

Filters: LOW 6 dB/oct. below 30 Hz
HIGH 6 dB/oct. above 10 kHz

Loudness: (att. 30 dB) +10 dB at 50 Hz, +3 dB at 10 kHz

Presence: (att. 30 dB) +2.5 dB at 1 kHz

Residual Noise: Less than 0.15 μV (VOLUME minimum; TONE, FILTERS, LOUDNESS, and PRESENCE off)

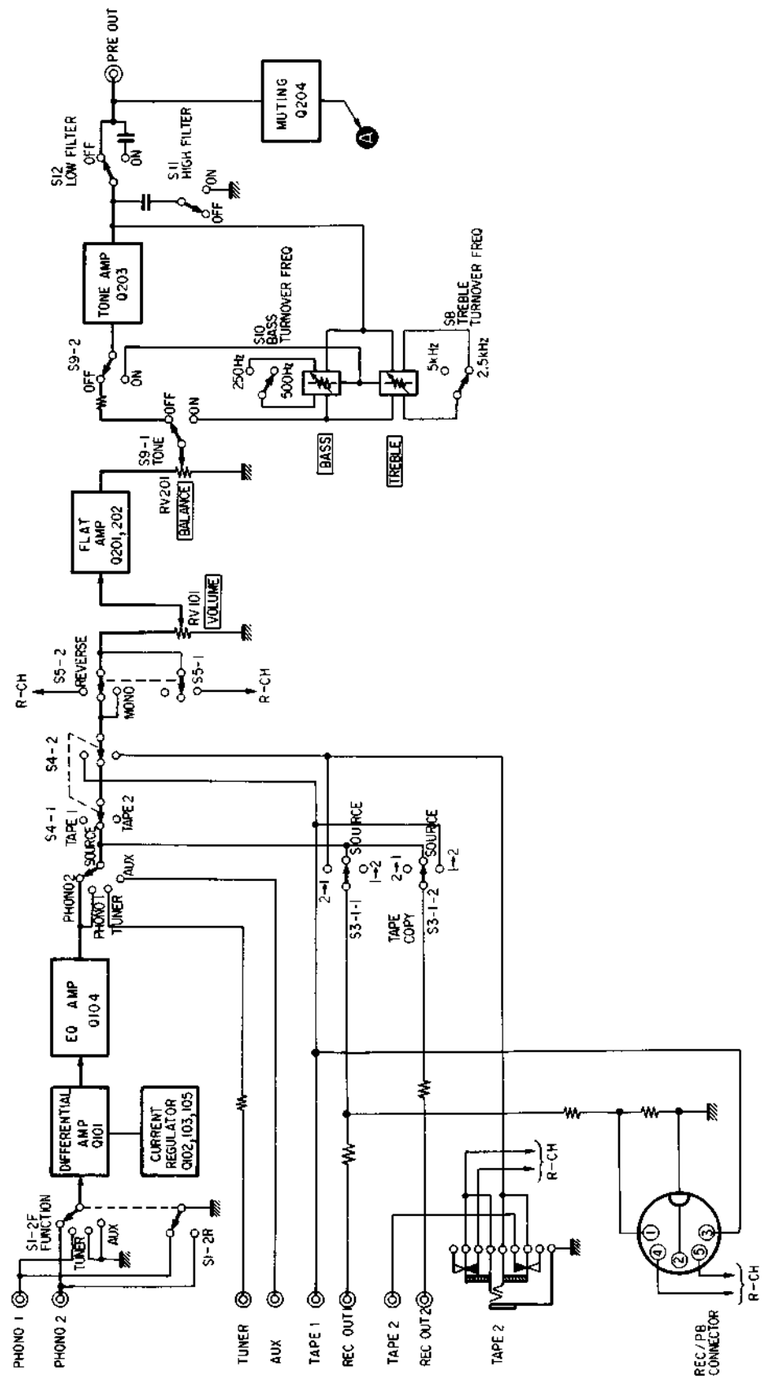
SECTION 1
OUTLINE

IDENTIFICATION OF SET

TA-3650 is classified by the specification label as shown below.

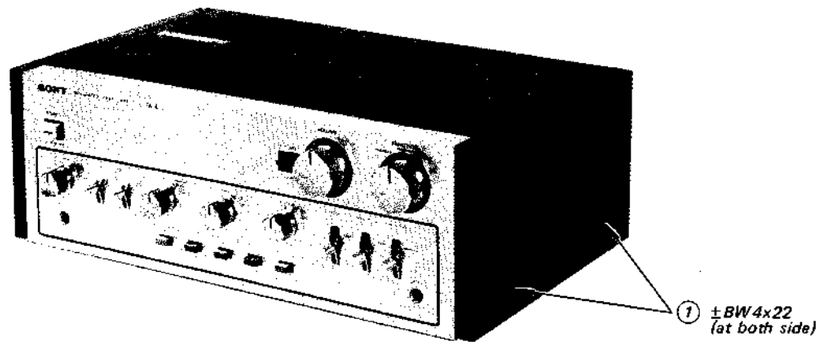
	Specification Label
UK Model	SONY® INTEGRATED STEREO AMPLIFIER MODEL NO. TA-3650 AC 110.127.220.240V~ 50/60Hz 320W SERIAL NO. MADE IN JAPAN
AEP Model	SONY® INTEGRATED STEREO AMPLIFIER MODEL NO. TA-3650 AC 110.127.220.240V~ 50/60Hz 540W SERIAL NO. MADE IN JAPAN

BLOCK DIAGRAM

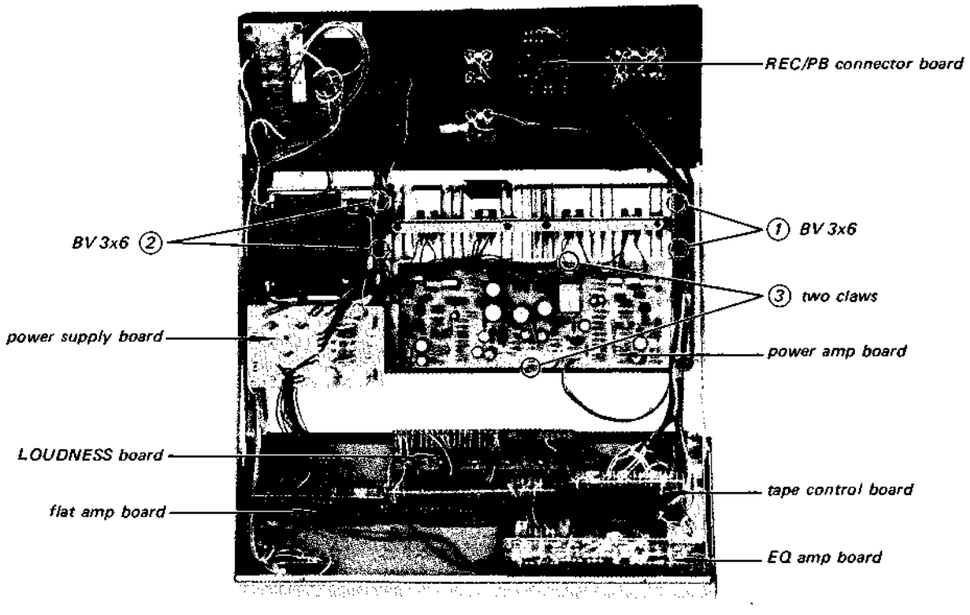


SECTION 2
DISASSEMBLY

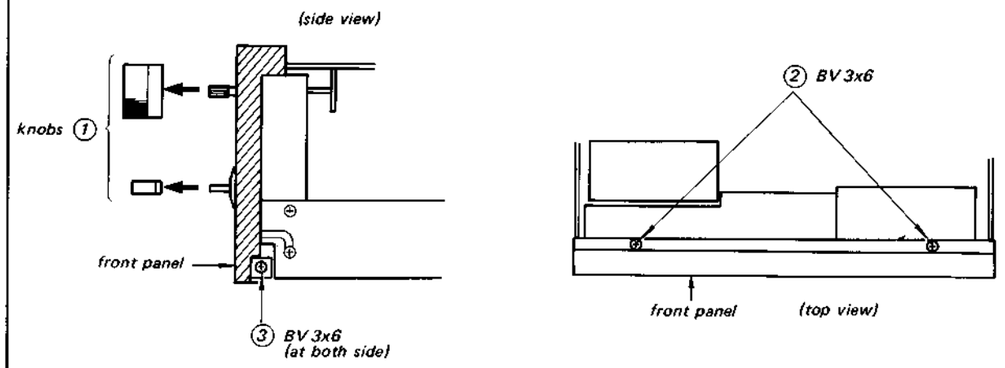
SIDE BOARD and TOP COVER REMOVAL



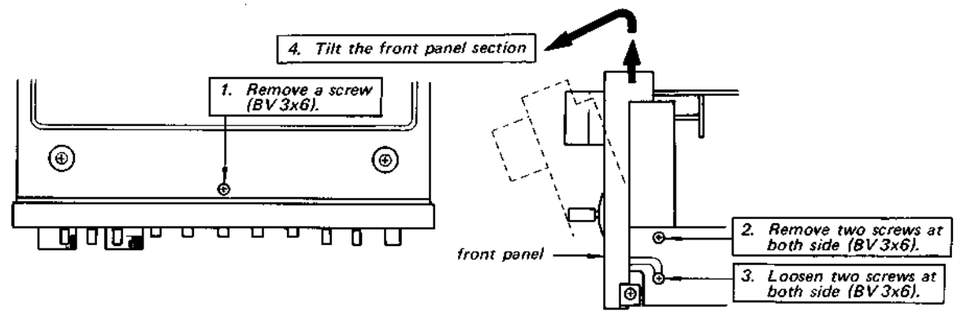
POWER AMP BOARD REMOVAL



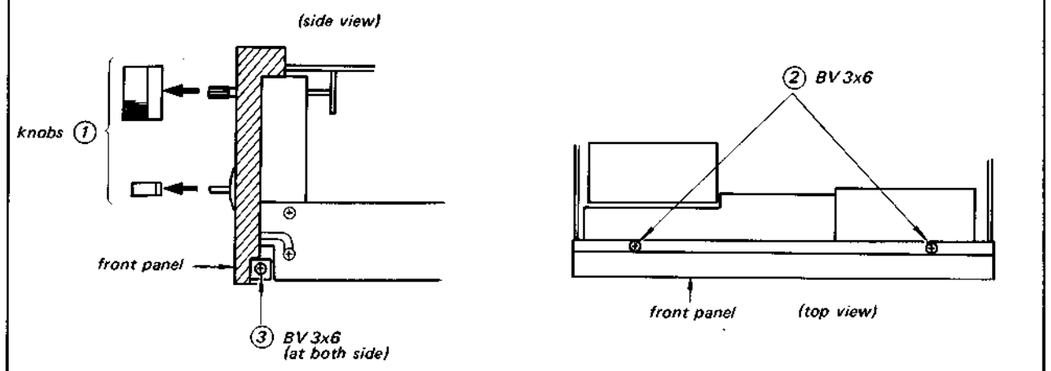
FRONT PANEL REMOVAL



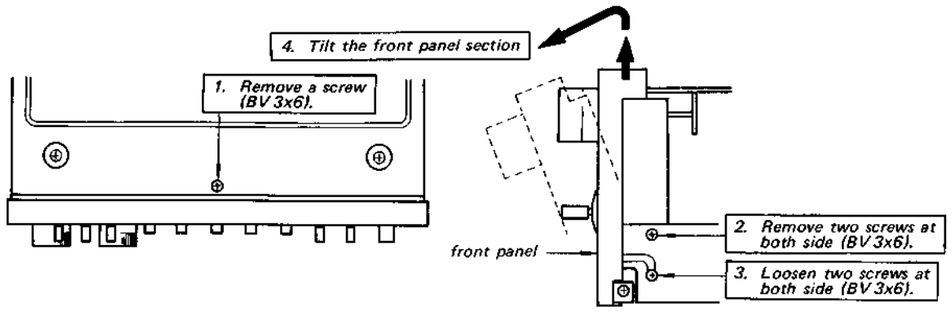
HOW TO RAISE THE CIRCUIT BOARDS (FLAT AMP, EQ AMP, TAPE CONTROL and LOUDNESS BOARDS)



FRONT PANEL REMOVAL

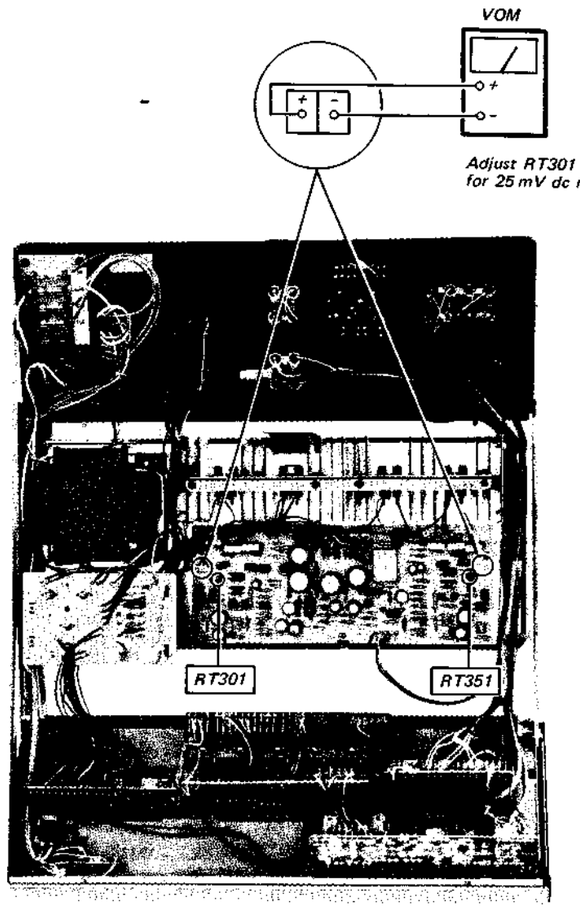


HOW TO RAISE THE CIRCUIT BOARDS
(FLAT AMP, EQ AMP, TAPE CONTROL and LOUDNESS BOARDS)



SECTION 3
ADJUSTMENT

DC BIAS ADJUSTMENT

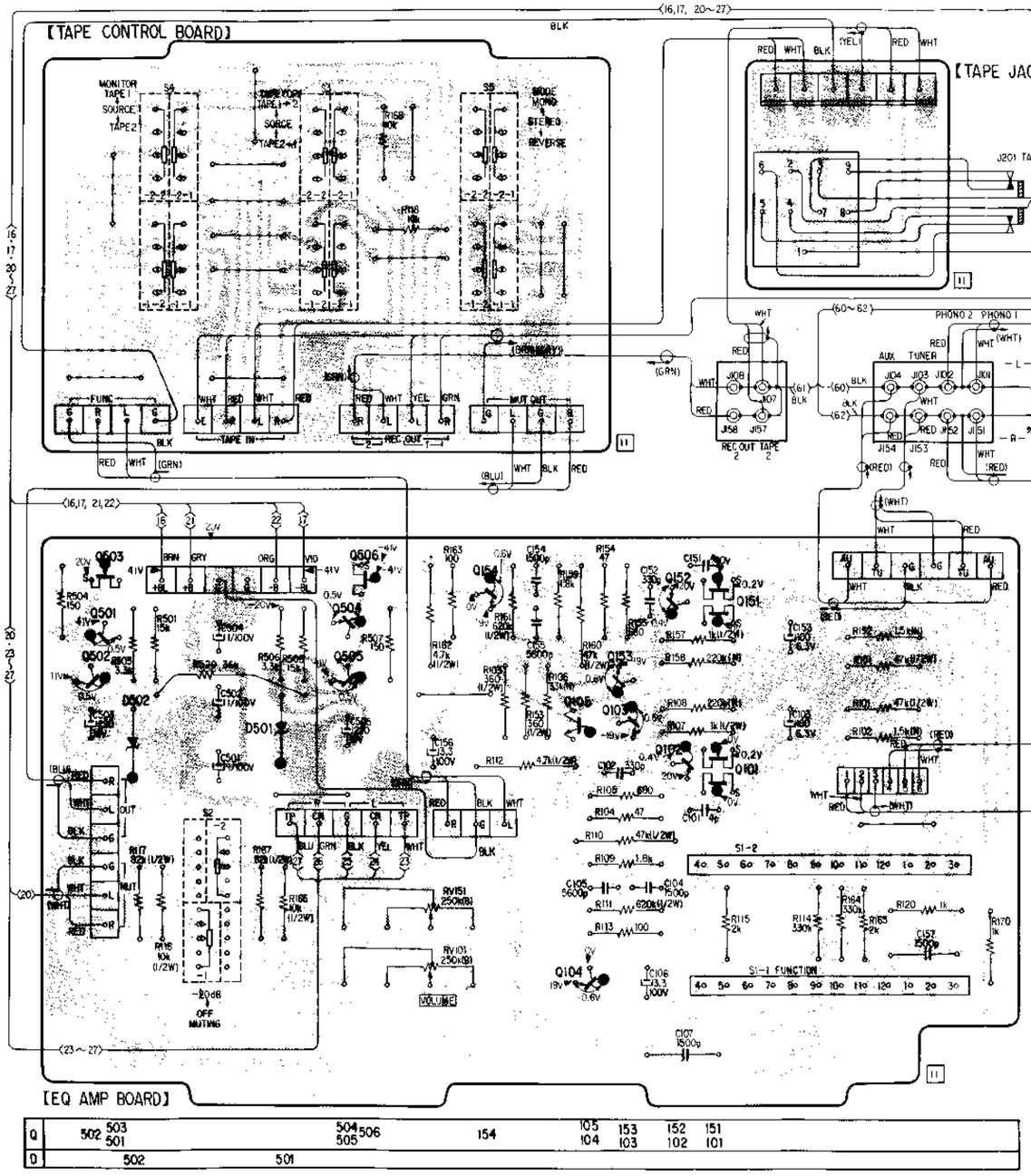


TA-3650 TA-3650

SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM – PREAMPLIFIER SECTION–

– Conductor Side –



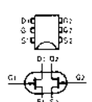
Q101, Q151 : 2SK58

Q102, 104, 202, Q152, 154, 252 : 2SA705

Q204, Q254 : 2SC1636

Q505 : 2SA678

Q103, 105, Q153, 201, Q251, 502 : 2SC1362



【TAPE JACK BOARD】

【REC/PB CONNECTOR BOARD】

【LOUDNESS BOARD】

【FLAT AMP BOARD】

Q	254	204	253	203	201 202	252	251

Q101 Q151 : 2SK58

Q102, 104, 202 Q152, 154, 252 : 2SA705

Q204 Q254 : 2SC1636

Q505: 2SA678

Q103, 105 Q153, 201 Q251, 502 : 2SC1362

Q203 Q253 : 2SC900

Q501: 2SC1061

Q504: 2SA671

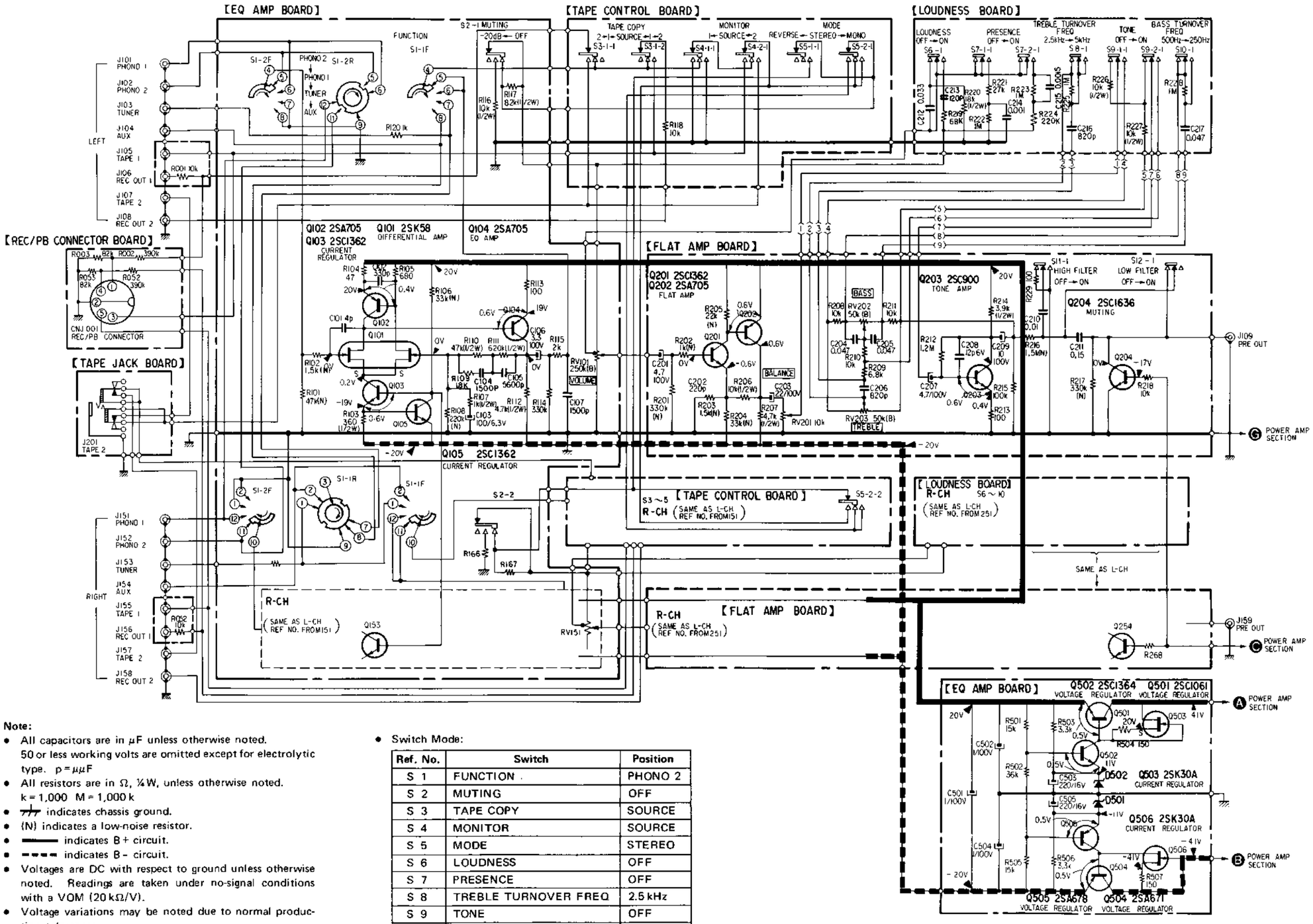
Q503 Q506 : 2SK30A

D501, 502: EQA01-11R

Note:

- B+ pattern
- B- pattern

4-2. SCHEMATIC DIAGRAM – PREAMPLIFIER SECTION –



Note:

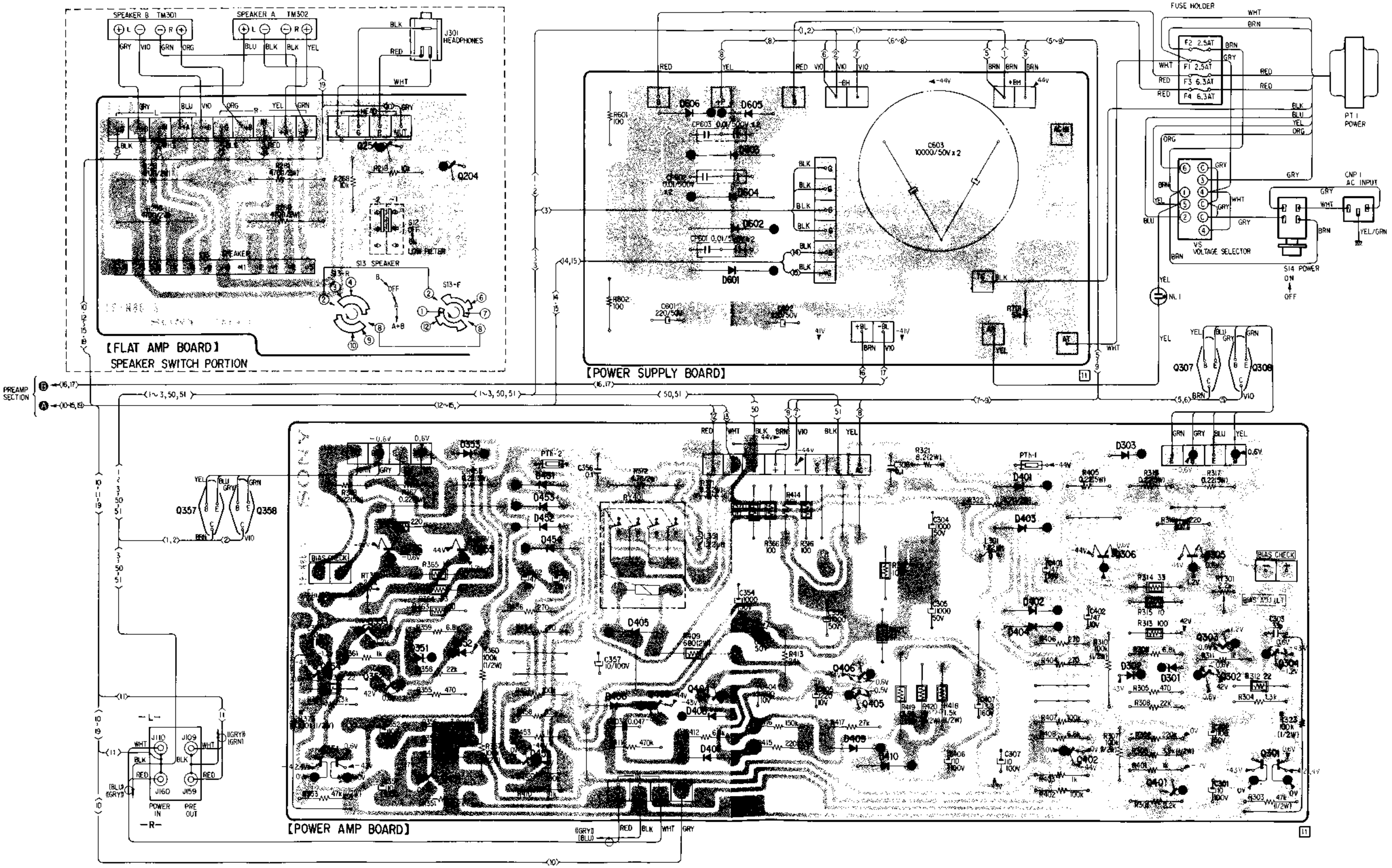
- All capacitors are in μF unless otherwise noted. 50 or less working volts are omitted except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000 k
- ⏚ indicates chassis ground.
- (N) indicates a low-noise resistor.
- ——— indicates B+ circuit.
- - - - indicates B- circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM (20 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.
- Voltage between base and emitter are measured with 2.5 V range.

- Switch Mode:

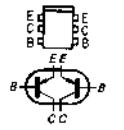
Ref. No.	Switch	Position
S 1	FUNCTION	PHONO 2
S 2	MUTING	OFF
S 3	TAPE COPY	SOURCE
S 4	MONITOR	SOURCE
S 5	MODE	STEREO
S 6	LOUDNESS	OFF
S 7	PRESENCE	OFF
S 8	TREBLE TURNOVER FREQ	2.5 kHz
S 9	TONE	OFF
S10	BASS TURNOVER FREQ	500 Hz
S11	HIGH FILTER	OFF
S12	LOW FILTER	OFF

4-3. MOUNTING DIAGRAM – POWER AMPLIFIER SECTION –

– Conductor Side –



Q301 }
Q351 }: 2SA884



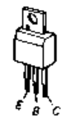
Q302 }
Q352 }
Q402 }: 2SA639S
Q452 }

Q303 }
Q353 }: 2SA896

Q404 }
Q304 }: 2SC1811
Q354 }

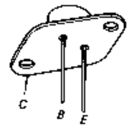
Q305 }
Q355 }: 2SC1663

Q306 }
Q356 }: 2SA835

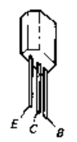


Q308 }
Q358 }: 2SB519

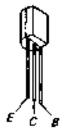
Q307 }
Q357 }: 2SD533



Q401 }
Q451 }: 2SC1636

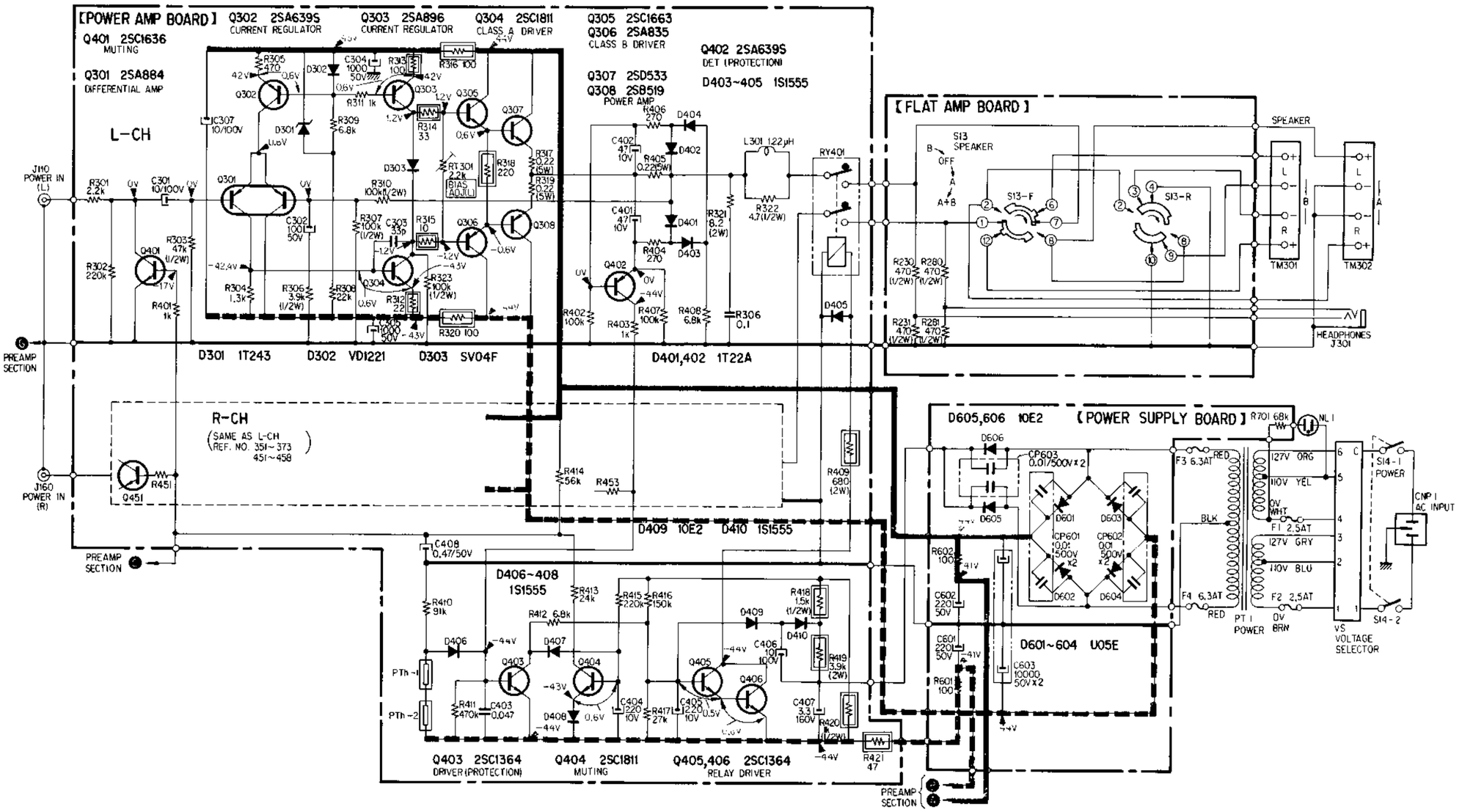


Q403 }
Q405 }: 2SC1364
Q406 }

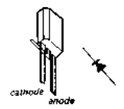


Q	357	358	354 351	353	356 352	451	355	452		403	404	406 405			402	306	401 305 307 303 308 302	301 304
D						351	353 352	451 452 453 454	406 405	606	408 605 407 601~604	409	410	401 402 403 404		303 302	301	

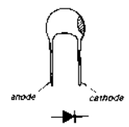
4-4. SCHEMATIC DIAGRAM – POWER AMPLIFIER SECTION –



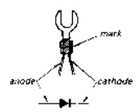
D301, D351 : 1T243



D302, D352 : VD1221



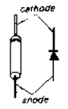
D303, D353 : SV04F



D401, 402, D451, 452 : 1T22A

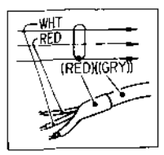
D403~405, D453, 454 : 1S1555

D605, 606: 10E2



D601~604: U05E

Note:

- ■ indicates parts on the conductor side.
- ●—— indicates lead wire connection on the conductor side.
- ○—— indicates lead wire connection through the component side.
- 

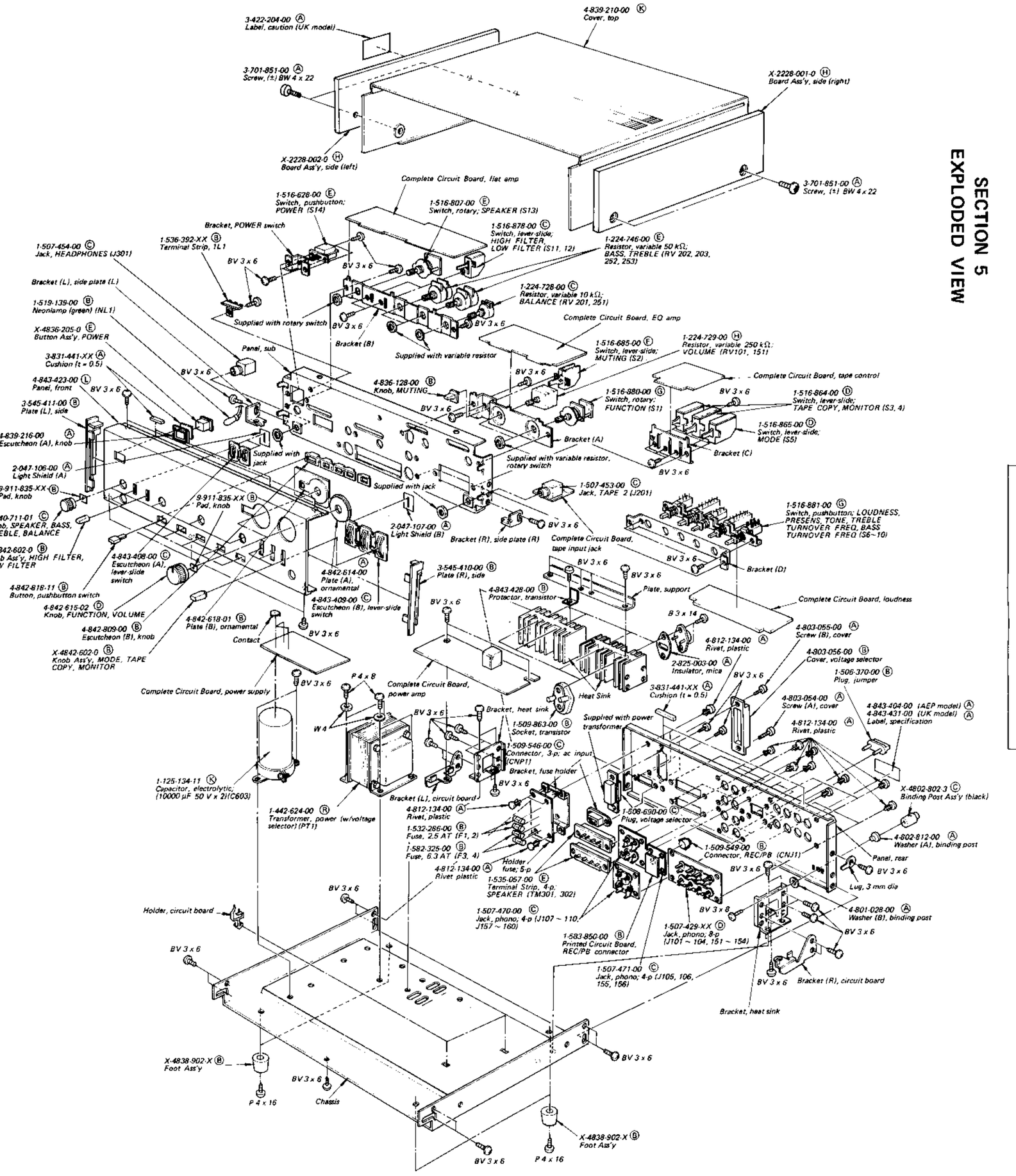
- B+ pattern
- B- pattern

Note:

- All capacitors are in μF unless otherwise noted. 50 or less working volts are omitted except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000 k
- ⏚ indicates chassis ground.
- (N) indicates a low-noise resistor.
- ——— indicates B+ circuit.
- - - - indicates B- circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM (20 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.
- Voltage between base and emitter are measured with 2.5V range.
- Switch Mode:

Ref. No.	Switch	Position
S13	SPEAKER	B
S14	POWER	OFF

SECTION 5
EXPLODED VIEW



Note: The mark of (A) to (Z): for European model.

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (-) = slotted head
- (□□T) shows the number of coils in spring.

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		PRINTED CIRCUIT BOARD
	1-583-850-00	Ⓑ REC/PB Connector
		SEMICONDUCTORS
		Transistors
Q101(151)		Ⓕ 2SK58
Q102(152)		Ⓑ 2SA705
Q103(153)		Ⓑ 2SC1362
Q104(154)		Ⓑ 2SA705
Q105		Ⓑ 2SC1362
Q201(251)		Ⓑ 2SC1362
Q202(252)		Ⓑ 2SA705
Q203(253)		Ⓑ 2SC900
Q204(254)		Ⓑ 2SC1636
Q301(351)		Ⓓ 2SA884
Q302(352)		Ⓒ 2SA639S
Q303(353)		Ⓒ 2SA896
Q304(354)		Ⓒ 2SC1811
Q305(355)		Ⓓ 2SC1663
Q306(356)		Ⓔ 2SA835
Q307(357)		Ⓗ 2SD533
Q308(358)		Ⓛ 2SB519
Q401(451)		Ⓑ 2SC1636
Q402(452)		Ⓒ 2SA639S
Q403		Ⓑ 2SC1364
Q404		Ⓒ 2SC1811
Q405,406		Ⓑ 2SC1364
Q501		Ⓓ 2SC1061
Q502		Ⓑ 2SC1364
Q503		Ⓑ 2SK30A
Q504		Ⓔ 2SA671
Q505		Ⓒ 2SA678
Q506		Ⓑ 2SK30A
		Diodes
D301(351)		Ⓑ 1T243
D302(352)		Ⓑ VD1221
D303(353)		Ⓑ SV04F
D401(451), D402(452)		Ⓑ 1T22A
D403~405 (D453~455)		Ⓑ 1S1555
D406~408		Ⓑ 1S1555
D409		Ⓑ 10E2
D410		Ⓑ 1S1555
D501,502		Ⓒ EQA01-11R
D601~604		Ⓒ U05E
D605,606		Ⓑ 10E2
PTh1,2	1-800-427-21	Ⓡ Thermistor (positive), PTh487B
		Transformer
PT1	1-442-624-00	Ⓡ Power (w/voltage selector)

CAPACITORS

All capacitors are in μF and of electrolytic type unless otherwise noted. (p = μμ)
50 or less working volts are omitted except for electrolytic type.

C101(151)	1-102-941-11	Ⓐ 4p		ceramic
C102(152)	1-102-820-11	Ⓐ 330p		ceramic
C103(153)	1-131-295-11	Ⓒ 100	6.3V	tantalum
C104(154)	1-130-061-11	Ⓑ 1500p	630V	polypropylene film
C105(155)	1-130-062-11	Ⓑ 5600p	630V	polypropylene film
C106(156)	1-121-995-11	Ⓑ 3.3	100V	
C107(157)	1-130-061-11	Ⓑ 1500p	630V	polypropylene film
C201(251)	1-121-918-11	Ⓐ 4.7	100V	
C203(253)	1-121-996-11	Ⓐ 22	100V	
C204(254), C205(255)	1-108-845-12	Ⓐ 0.047		mylar
C206(256)	1-103-773-11	Ⓐ 820p		polystyrol
C207(257)	1-121-918-11	Ⓐ 4.7	100V	

• The mark of Ⓐ to Ⓩ : for European model.

Ref. No.	Part No.			Description
C208(258)	1-102-949-11	Ⓐ	12p	ceramic
C209(259)	1-121-126-11	Ⓐ	10 100V	
C210(260)	1-108-837-12	Ⓐ	0.01	mylar
C211(261)	1-108-851-12	Ⓐ	0.15	mylar
C212(262)	1-108-843-12	Ⓐ	0.033	mylar
C213(263)	1-102-816-11	Ⓐ	120p	ceramic
C214(264)	1-108-825-12	Ⓐ	0.001	mylar
C215(265)	1-108-827-12	Ⓐ	0.0015	mylar
C216(266)	1-103-773-11	Ⓐ	820p	polystyrol
C217(267)	1-108-845-12	Ⓐ	0.047	mylar
C301(351)	1-121-126-11	Ⓐ	10 100V	
C302(352)	1-131-295-11	Ⓒ	100 6.3V	tantalum
C303(353)	1-102-963-11	Ⓐ	33p	ceramic
C304(354), C305(355)	1-123-061-11	Ⓒ	1000 50V	
C306(356)	1-108-849-12	Ⓐ	0.1	mylar
C307(357)	1-123-080-11	Ⓑ	10 100V	
C401(451), C402(452)	1-121-352-11	Ⓐ	47 10V	
C403	1-108-845-12	Ⓐ	0.047	mylar
C404,405	1-123-072-11	Ⓑ	220 10V	
C406	1-123-080-11	Ⓑ	10 100V	
C407	1-123-109-11	Ⓑ	3.3 160V	
C501,502	1-121-148-11	Ⓐ	1 100V	
C503	1-121-421-11	Ⓑ	220 16V	
C504	1-121-148-11	Ⓐ	1 100V	
C505	1-121-421-11	Ⓑ	220 16V	
C601,602	1-121-937-11	Ⓑ	220 50V	
C603	1-125-134-11	Ⓚ	10000+10000 50V	

RESISTORS

All resistors are in Ω. ¼W, ±5%, carbon resistors (except special type) are omitted. Check schematic diagram for the resistance values. (k = 1,000, M = 1,000 k)

Ref. No.	Part No.				Description
R101(151)	1-244-913-11	Ⓐ	47 k	½W	carbon
R103(153)	1-244-862-11	Ⓐ	360	½W	carbon
R107(157)	1-244-873-11	Ⓐ	1 k	½W	carbon
R110(160)	1-244-913-11	Ⓐ	47 k	½W	carbon
R111(161)	1-244-940-11	Ⓐ	620 k	½W	carbon
R112(162)	1-244-889-11	Ⓐ	4.7 k	½W	carbon
R116(166)	1-244-897-11	Ⓐ	10 k	½W	carbon
R117(167)	1-244-919-11	Ⓐ	82 k	½W	carbon
R206(256)	1-244-897-11	Ⓐ	10 k	½W	carbon
R207(257)	1-244-889-11	Ⓐ	4.7 k	½W	carbon
R214(264)	1-244-887-11	Ⓐ	3.9 k	½W	carbon
R220(270)	1-244-903-11	Ⓐ	18 k	½W	carbon
R226(276), R227(277)	1-244-897-11	Ⓐ	10 k	½W	carbon
R230(280), R231(281)	1-244-865-11	Ⓐ	470	½W	carbon
R303(353)	1-244-913-11	Ⓐ	47 k	½W	carbon
R306(356)	1-244-887-11	Ⓐ	3.9 k	½W	carbon
R307(357), R310(360)	1-244-921-11	Ⓐ	100 k	½W	carbon
R312(362)	1-211-506-11	Ⓐ	22	¼W	nonflammable
R313(363)	1-211-522-11	Ⓐ	100	¼W	nonflammable
R314(364)	1-211-510-11	Ⓐ	33	¼W	nonflammable
R315(365)	1-211-498-11	Ⓐ	10	¼W	nonflammable
R316(366)	1-211-522-11	Ⓐ	100	¼W	nonflammable
R317(367)	1-217-156-11	Ⓐ	0.22	5W	wire-wound
R318(368)	1-211-530-11	Ⓐ	220	¼W	nonflammable
R319(369)	1-217-156-11	Ⓐ	0.22	5W	wire-wound
R320(370)	1-211-522-11	Ⓐ	100	¼W	nonflammable
R321(371)	1-258-223-11	Ⓐ	8.2	2W	carbon
R322(372)	1-244-817-11	Ⓐ	4.7	½W	carbon
R323(373)	1-244-921-11	Ⓐ	100 k	½W	carbon
R405(455)	1-217-156-11	Ⓐ	0.22	5W	wire-wound
R409	1-206-660-11	Ⓐ	680	2W	metal oxide
R418	1-211-642-11	Ⓐ	1.5 k	½W	nonflammable
R419	1-206-678-11	Ⓐ	3.9 k	2W	metal oxide
R420	1-211-638-11	Ⓐ	1 k	½W	nonflammable
R421	1-211-514-11	Ⓐ	47	¼W	nonflammable
R501	1-244-901-11	Ⓐ	15 k	½W	carbon
R502	1-244-910-11	Ⓐ	36 k	½W	carbon
R503	1-244-901-11	Ⓐ	15 k	½W	carbon
RT301(351)	1-224-250-XX	Ⓒ	2.2 k, adjustable		
RV101(151)	1-224-729-00	Ⓗ	250 k, variable; VOLUME		

• The mark of Ⓐ to Ⓩ : for European model.

Ref. No.	Part No.	Description
RV201(251)	1-224-728-00	Ⓒ 10 k, variable; BALANCE
RV202(252), RV203(253)	1-224-746-00	Ⓔ 50 k, variable; BASS, TREBLE

SWITCHES

S1	1-516-880-00	Ⓖ Rotary, FUNCTION
S2	1-516-685-00	Ⓕ Lever-slide, MUTING
S3,4	1-516-864-00	Ⓓ Lever-slide, TAPE COPY, MONITOR
S5	1-516-865-00	Ⓓ Lever-slide, MODE
S6~10	1-516-881-00	Ⓖ Pushbutton, LOUDNESS, PRESENCE, TONE, TURNOVER FREQ (BASS, TREBLE)
S11,12	1-516-878-00	Ⓒ Lever-slide, HIGH FILTER, LOW FILTER
S13	1-516-807-00	Ⓔ Rotary, SPEAKER
S14	1-516-628-00	Ⓔ Pushbutton, POWER

JACKS

J101~104 (J151~154)	1-507-429-XX	Ⓓ Phono, 8-P
J105,106 (J155,156)	1-507-471-00	Ⓒ Phono, 4-P
J107~110 (J157~160)	1-507-470-00	Ⓒ Phono, 4-P
J201	1-507-453-00	Ⓒ TAPE 2
J301	1-507-454-00	Ⓒ HEADPHONES

• The mark of Ⓐ to Ⓩ : for European model.

Ref. No.	Part No.	Description

MISCELLANEOUS

CNJ1	1-509-549-00	Ⓑ Connector, REC/PB
CNP1	1-509-546-00	Ⓒ Connector, 3-P; ac input
CP601~603	1-102-355-11	Ⓑ Encapsulated Component
F1,2	1-532-286-00	Ⓑ Fuse, 2.5AT
F3,4	1-532-325-00	Ⓑ Fuse, 6.3AT
NL1	1-519-139-00	Ⓑ Neon lamp (green)
RY401	1-515-257-00	Ⓗ Relay
TM301,302	1-535-057-00	Ⓔ Terminal Strip, 4-P; SPEAKER
	1-506-370-00	Ⓑ Plug, jumper
	1-508-690-00	Ⓒ Plug, voltage selector
	1-509-863-00	Ⓑ Socket, transistor
	1-536-392-XX	Ⓑ Terminal Strip, 1L1

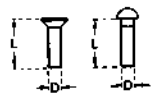
ACCESSORIES

	1-506-113-00	Ⓑ Plug, shorting
	1-534-819-00	Ⓖ Cord, power
	3-780-852-11	Ⓑ Manual, instruction

HARDWARE NOMENCLATURE

Screw:

P 3 x 10
- *L: Length in mm*
- *D: Diameter in mm*
- *Type of head*
- *Indicated slotted-head only. Unless otherwise indicated, it means cross-recessed head (Phillips type).*



Nut, Washer, Retaining ring:

N 3
- *Diameter of usable screw or shaft*
- *Reference designation*

Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazier-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

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