

STEREO
PRE AMPLIFIER
BETA II



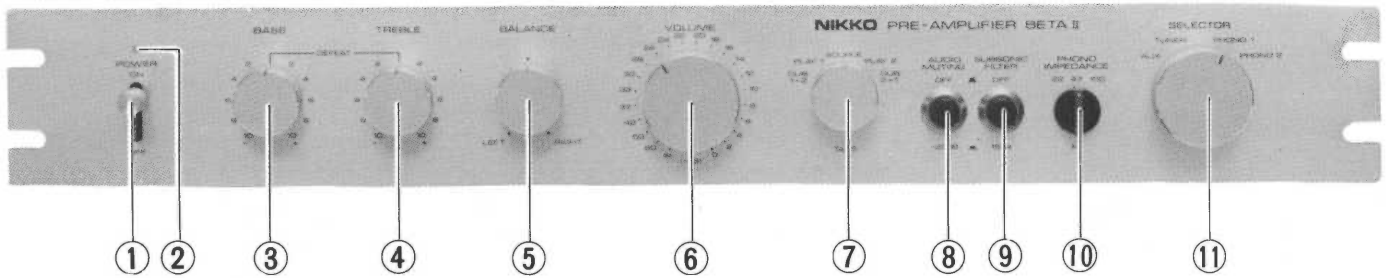
SERVICE MANUAL

TYPE AND VOLTAGE

W-TYPE UL and CSA type	120V
E-TYPE europe standard (universal) type	220/240V
N-TYPE DEMKO and SEMKO type	
D-TYPE DIN type	

NIKKO

OPERATING PARTS



1. POWER and 2. PILOT LAMP

To turn on the power, set the power switch to the ON position. The pilot lamp will light, indicating that the power is on. The unit will become active a few seconds later because of the employment of a built-in relay.

3. BASS

To increase bass tone, turn this control clockwise. The tone is flat at the center (DEFEAT) position.

4. TREBLE

To increase treble tone, turn this control clockwise. The tone is flat at the center (DEFEAT) position.

5. BALANCE

This control adjusts unbalance of volume between the left and right channels. Turning the control to left will increase the volume of left channel while decreasing the volume of right channel, and vice versa.

6. VOLUME

The 42-position, dual volume control adjusts the volume of both the left and right channels simultaneously with minimum error. Turning the knob clockwise will increase volume.

7. TAPE

This switch is used for tape playback or tape dubbing.

PLAY 1: For playing tape with tape deck connected to TAPE 1 terminals.

PLAY 2: For playing tape with tape deck connected to TAPE 2 terminals.

For tape dubbing from one tape deck to another, simply set the switch to DUB1-2 or DUB 2-1 position.

When you are not using tape deck, set the switch to SOURCE position.

8. AUDIO MUTING

By pressing this switch, the level of the signal fed to your power amplifier is reduced to -20dB (1/10). If you wish to reduce the volume for a brief period of time, simply press the switch until locks.

This feature is also useful for fine adjustment of volume control while listening at low volume. In this case, the volume control is normally set at the approximate center position.

9. SUBSONIC FILTER

Pressing this switch to ON will shut off extremely low frequency noise possibly generated from warped records.

10. PHONO IMPEDANCE Selector Switch

This 3-position switch selects the impedance of record player cartridge being used, 22K, 47K or 100K ohms. Normally, it is set to the "47" position.

11. SELECTOR

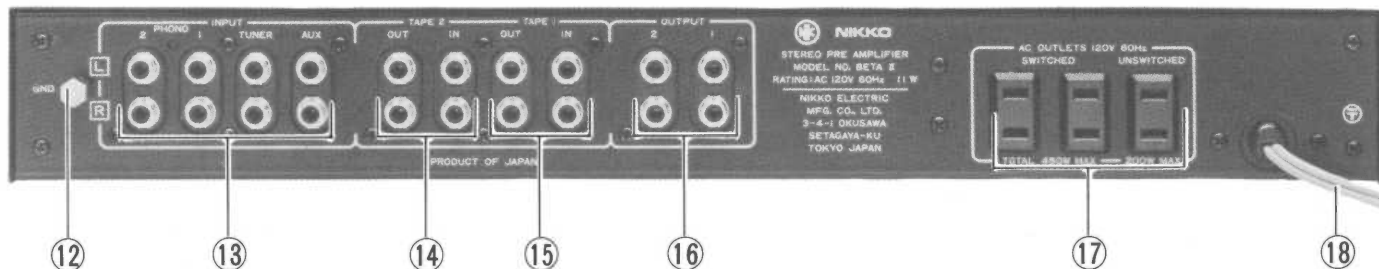
This switch is used to select and program source connected to the input terminals.

AUX: For playback of program connected to to AUX input.

TUNER: For reception of broadcast with stereo tuner.

PHONO 1,2: For playback with record player.

TERMINALS ON REARPANEL



12. GND

Connect the earth lead of your record player. The earth lead is provided on the motor or tonearm of the player.

13. INPUT Terminal

PHONO 1,2: Connect the left and right pin-plug cords of record player.

TUNER: Connect your stereo tuner.

AUX: Connect your second radio tuner, a tape player or a TV (audio section).

14. TAPE 2 Terminal

IN: Connect the output (LINE OUT) of your tape deck.

OUT: Connect the input (LINE IN) of your tape deck.

15. TAPE 1 Terminal

IN: Connect the output (LINE OUT) of your tape deck.

OUT: Connect the input (LINE IN) of your tape deck.

16. OUTPUT Terminal

Connect the input of your power amplifier to this terminal using a pin-plug cord. Two sets of output terminals are provided for connection to two power amplifiers.

17. AC OUTLETS

Connect power cords of your tuner, record player, etc., to the AC outlets provided. The AC outlet marked **UNSWITCHED** is powered at all times regardless of the position of the power switch, while the other outlet marked **SWITCHED** is interlocked with the power switch and, hence, it is powered when the power switch is turned on.

The allowable capacity of each **SWITCHED** outlet is 450W and that of the **UNSWITCHED** outlet is 200W. When using the two **SWITCHED** outlets, be sure that the total power consumption of your equipment does not exceed the wattage marked on the outlets.

18. AC POWER CORD

Before connecting the power cord to AC outlet, check to make sure that the volume control is turned fully counter-clockwise and the power switch is OFF.

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SPECIFICATIONS (W-TYPE, E-TYPE, N-TYPE)

	UNIT	NOMINAL	LIMIT
Input Sensitivity for 1 volt Output/Input Impedance			
PHONO 1,2	.mV/Kohm	.2/22, 47, 100	.2±2dB/22, 47, 100
TUNER, AUX, TAPE IN 1,2	.mV/Kohm	.110/43	.110±2dB/43
Maximum Input before Overload Distortion			
PHONO 1,2@0.01%THD	.mV	.270	.250
TUNER, AUX, TAPE IN @0.1%THD	.mV	.1000	.650
Output Level/Output Impedance			
PHONE 1,2→TAPE OUT 1,2	.mV/Kohm	.110/2.2	.110±2dB/2.2
TH Distortion@4 volt Output, 20Hz–20KHz			
PHONE 1,2→TAPE OUT 1,2	%		< 0.006
TH Distortion@1 volt Output, 1KHz			
TUNER, AUX, TAPE 1,2→OUTPUT	%		< 0.007
Frequency Response			
PHONO 1,2→TAPE OUT 1,2 (RIAA)	.dB@Hz–KHz		<±1@30–15
TUNER, AUX, TAPE IN 1,2→OUTPUT	.dB@Hz–KHz		<±2@10–100
Signal to Noise Ratio (IHFA– Network)			
PHONO 1,2→OUTPUT	.dB	.77	.75
TUNER, AUX, TAPE IN 1,2→OUTPUT	.dB	.85	.80
Tonal Compensation			
BASS CONTROL	±dB@50Hz	±10	±10±2
TREBLE CONTROL	±dB@10KHz	±10	±10±2
SUBSONIC FILTER	–dB@20Hz	–3	–3±2
Audio Muting	–dB@20Hz	–20	–20±2
Muting Delay Time	.second	.7	.7±2
Midpoint Voltage	.mV	.0	.0±100

SPECIFICATIONS (D – TYPE)

	UNIT	NOMINAL	LIMIT
Input Sensitivity for 1 volt Output/Input Impedance			
PHONO 1,2 . . . . .	.mV/Kohm . . . . .	.2/22, 47, 100 . . . . .	.2±2dB/22, 47, 100
TUNER, AUX, TAPE IN 1,2 . . . . .	.mV/Kohm . . . . .	.150/470	150±2dB/470
Maximum Input before Overload Distortion			
PHONO 1,2 @0.01%THD . . . . .	.mV . . . . .	.230 . . . . .	.200
TUNER, AUX, TAPE IN @0.1%THD . . . . .	.mV . . . . .	.1000 . . . . .	.800
Output Level/Output Impedance			
PHONE 1,2→TAPE OUT 1,2 . . . . .	.mV/Kohm . . . . .	.150/2.2	150±2dB/2.2
TH Distortion @4 volt Output, 20Hz–20KHz			
PHONE 1,2→TAPE OUT 1,2	%.		< 0.006
TH Distortion @1 volt Output, 1KHz			
TUNER, AUX, TAPE 1,2→OUTPUT	%.		< 0.01
Frequency Response			
PHONO 1,2→TAPE OUT 1,2 (RIAA) . . . . .	.dB@Hz–KHz		<±1@30–15
TUNER, AUX, TAPE IN 1,2→OUTPUT . . . . .	.dB@Hz–KHz		<±2@10–100
Signal to Noise Ratio			
PHONO 1,2→OUTPUT (with 2.2Kohm on input) . . . . .	.dB . . . . .	.61 . . . . .	.58
TUNER, AUX, TAPE IN 1,2→OUTPUT (with 47Kohm//250pF on input) . . . . .	.dB . . . . .	.79 . . . . .	.75
Tonal Compensation			
BASS CONTROL	±dB@50Hz	±10	±10±2
TREBLE CONTROL	±dB@10KHz	±10	±10±2
SUBSONIC FILTER	–dB@20Hz	–3	–3±2
Audio Muting	–dB@20Hz	–20	–20±2
Muting Delay Time . . . . .	.second . . . . .	.7 . . . . .	.7±2
Midpoint Voltage . . . . .	.mV . . . . .	.0	0±100

INSTRUMENT DISASSEMBLY

NOTE: Numbers of three figures put a (○) around on Photo 1 thru 7 relate to "KEY NO." marked with a (★) on parts list.

CABINET TOP STEEL COVER REMOVAL

Remove four (4) tapping screws (114) (1 thru 4), remove four (4) tapping screws (112) (5 thru 8), lift steel cover (111) up and out of the instrument (Photo 1). Do not lose these screws and four (4) washers. To reassemble, reverse above procedure.

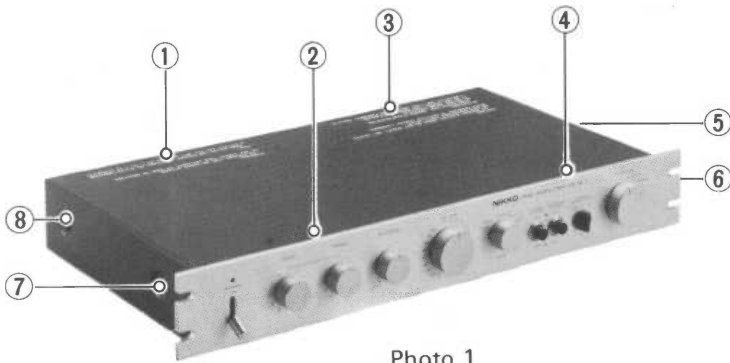


Photo 1

BOTTOM PLATE REMOVAL

Remove eight (8) tapping screws (116) (1 thru 8) from the bottom of the cabinet, lift bottom plate (115) up and out of the instrument. To reassemble, reverse above procedure.

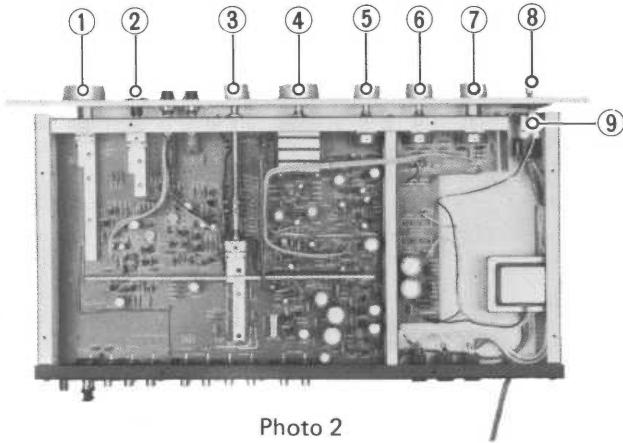


Photo 2

FRONT PANEL REMOVAL

1. Disconnect LED socket (9) connecting to LED (Photo 2).
2. Remove POWER knob (8) by pulling it out front panel (Photo 2).
3. Using hexagonal wrench, remove BASS, TREBLE, BALANCE, VOLUME, TAPE, PHONO IMPEDANCE, SELECTOR knobs (1 thru 7) (Photo 2). The PHONO IMPEDANCE knob's hexagonal set screw (3) is not visible from the front panel side but is located at the rear of front panel as indicated in Photo 3.
4. Remove two (2) nuts (1,2), lift out front panel (Photo 4).
5. To reassemble, reverse above procedure.

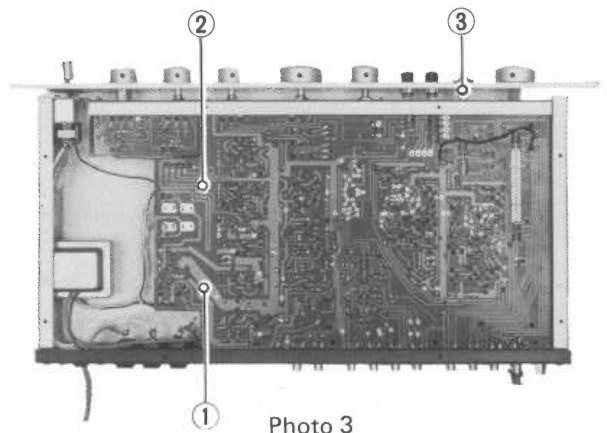


Photo 3

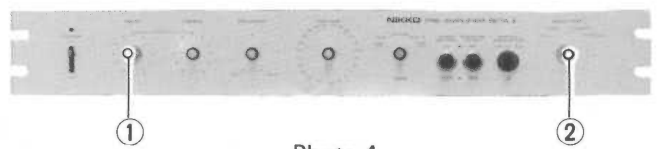


Photo 4

MAIN CIRCUIT BOARD REMOVAL

1. Disconnect all cables connecting to the circuit board from the outside.
2. Remove two (2) nuts (1,2), two (2) screws (3,4), and spacer # 785 (203) (5) (Photo 5).
3. Remove two (2) tapping screws (1,2) (Photo 3).
4. Remove ten (10) tapping screws (2 thru 6, 11 thru 15) (Photo 6).
5. To remove the circuit board, remove six (6) tapping screws (1,7 thru 10, 16) and slide back plate back a short distance. The circuit board is now free to be pulled off chassis (Photo 6).
6. To reassemble, reverse above procedure.

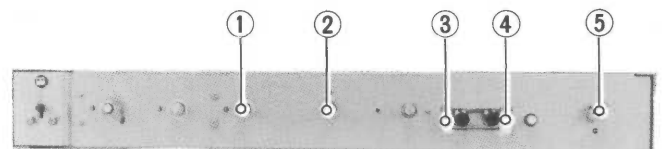


Photo 5

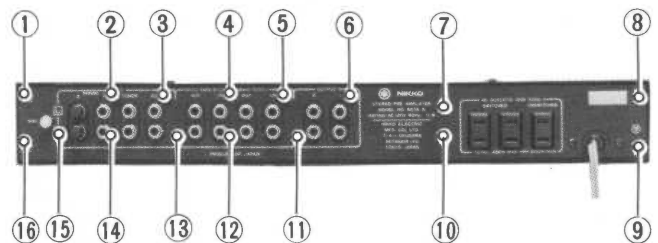
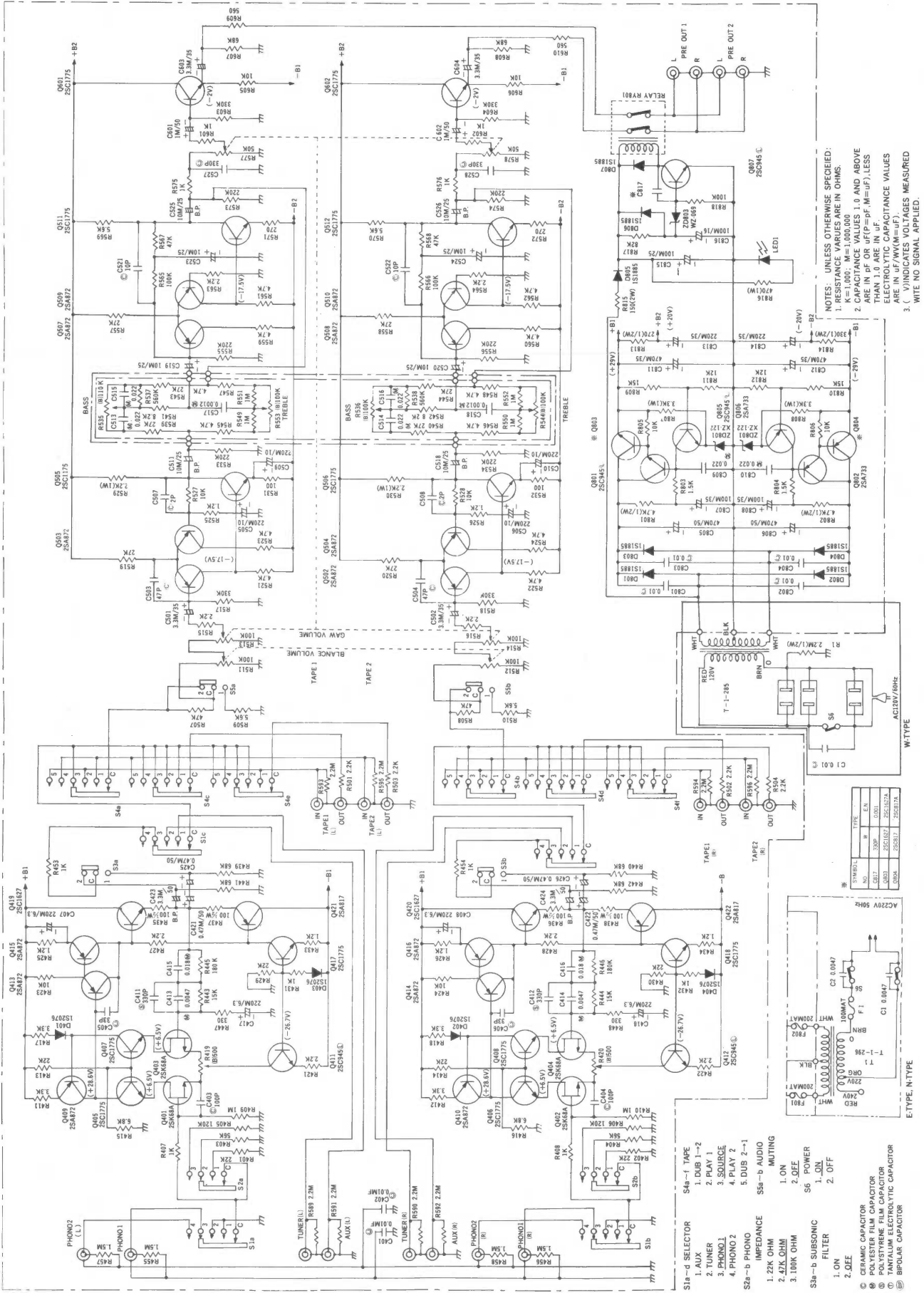


Photo 6

OVERALL SCHEMATIC DIAGRAM (W-TYPE, E-TYPE, N-TYPE)

(W-TYPE, E-TYPE, N-TYPE)



NOTES: UNLESS OTHERWISE SPECIFIED:
 1. RESISTANCE VALUES ARE IN OHMS.
 2. CAPACITANCE VALUES 1.0 AND ABOVE ARE IN PF OR (P=PF, M=UF), LESS THAN 1.0 ARE IN UF.
 ELECTROLYTIC CAPACITANCE VALUES ARE IN UF/WV(M=UF).
 3. () INDICATES VOLTAGES MEASURED WITH NO SIGNAL APPLIED.

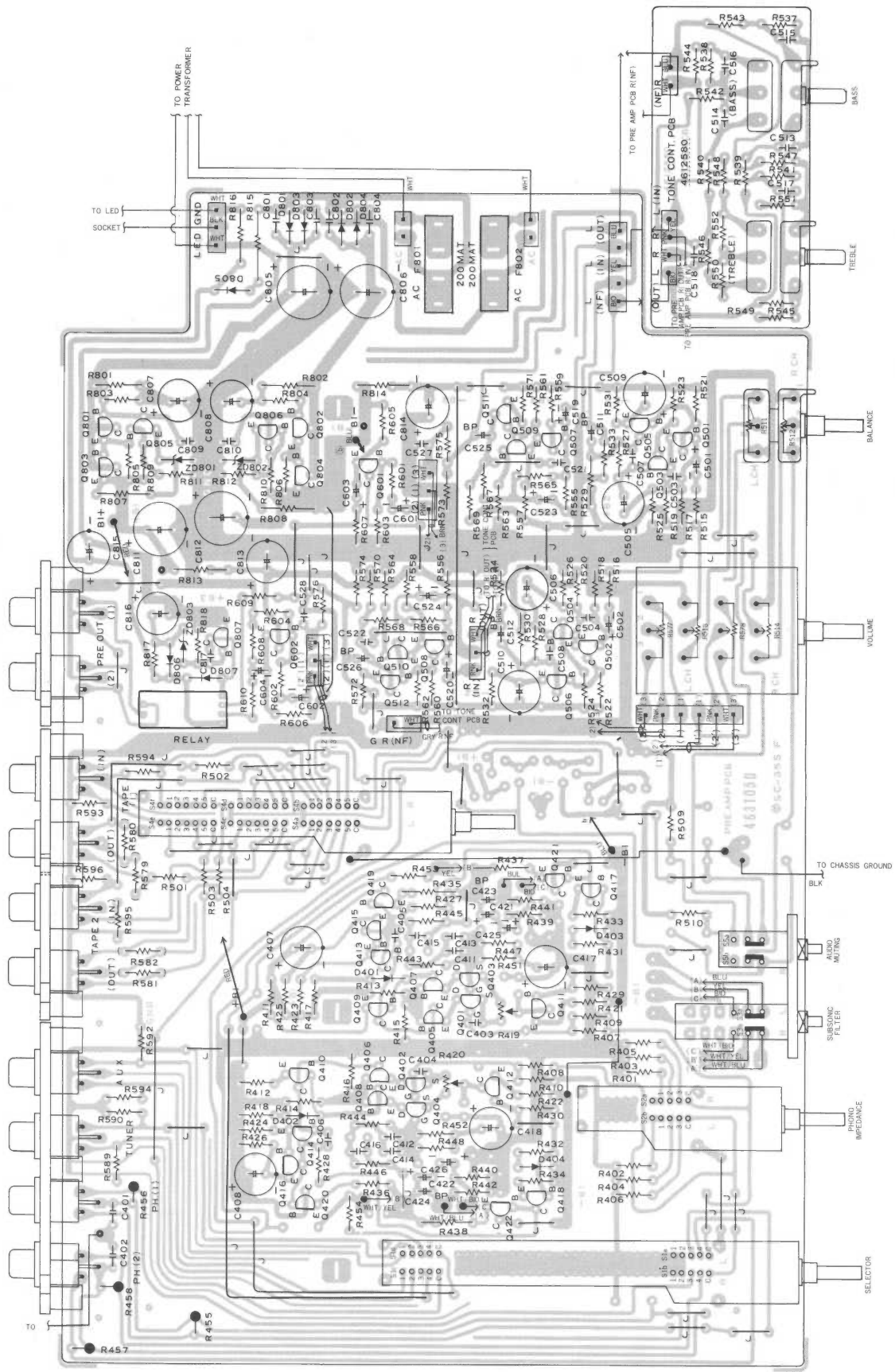
SYMBOL	TYPE	EA
R1-R100	RES	0.001
C1-C50	CAP	0.001
Q1-Q10	TR	25C1127
T-1, T-2	TR	25C1127
RELAY	REL	25C1174

- S4-a-1 SELECTOR**
1. DUB 1-2
 2. TUNER
 3. PHONO1
 4. PHONO2
- S5-a-1 PHONO**
1. ON
 2. OFF
- S5-b AUDIO MUTING**
1. ON
 2. OFF
- S6 POWER**
1. ON
 2. OFF
- S7-a SUBSONIC FILTER**
1. ON
 2. OFF
- IMPEDANCE**
1. 22K OHM
 2. 47K OHM
 3. 100K OHM
- S8-a CAPACITOR**
1. CERAMIC CAPACITOR
 2. POLYESTER FILM CAPACITOR
 3. TANTALUM ELECTROLYTIC CAPACITOR
 4. BIPOLAR CAPACITOR

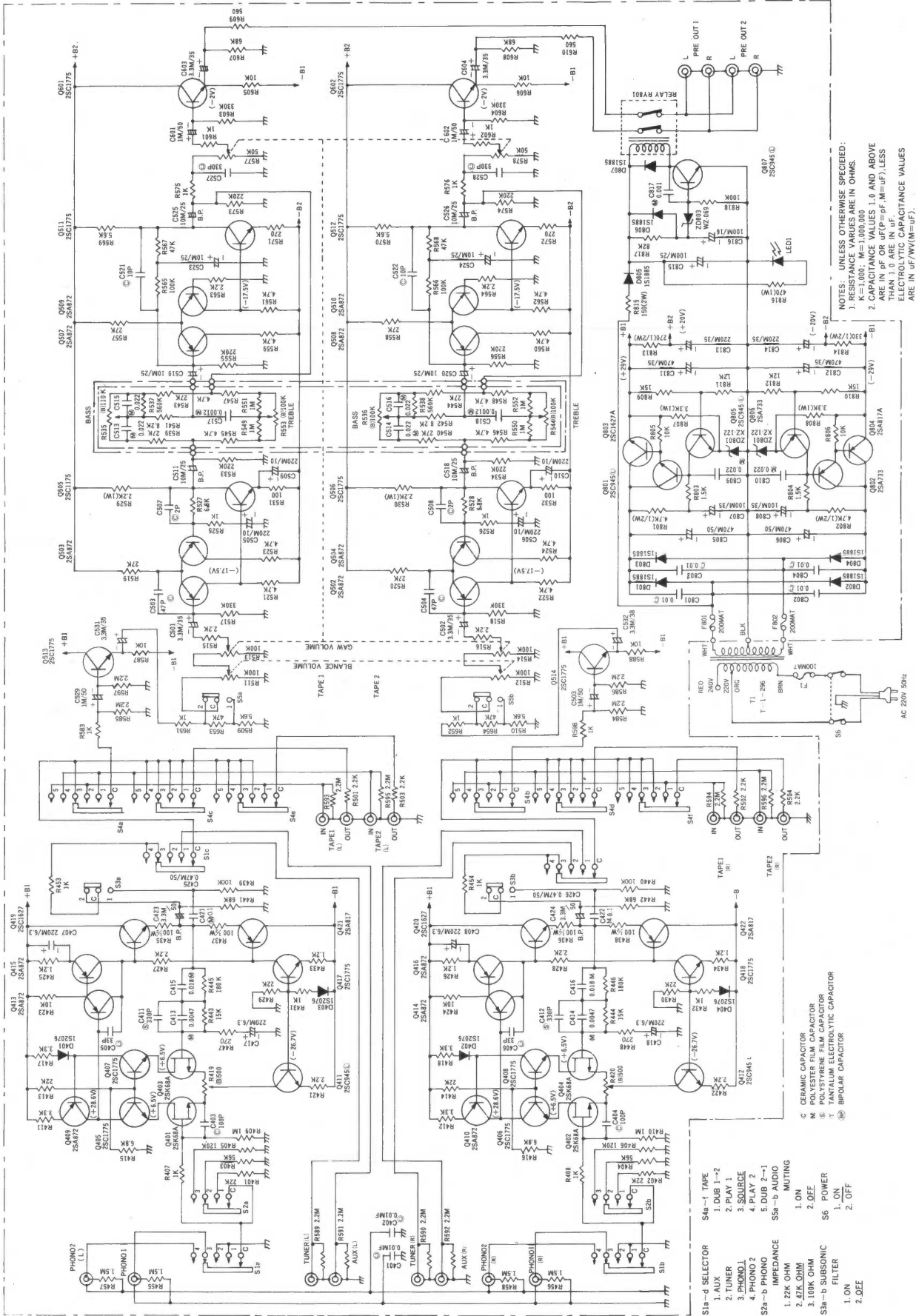
W-TYPE

E-TYPE, N-TYPE

PREAMP PCB&TONE PCB



OVERALL SCHEMATIC DIAGRAM (D-TYPE)



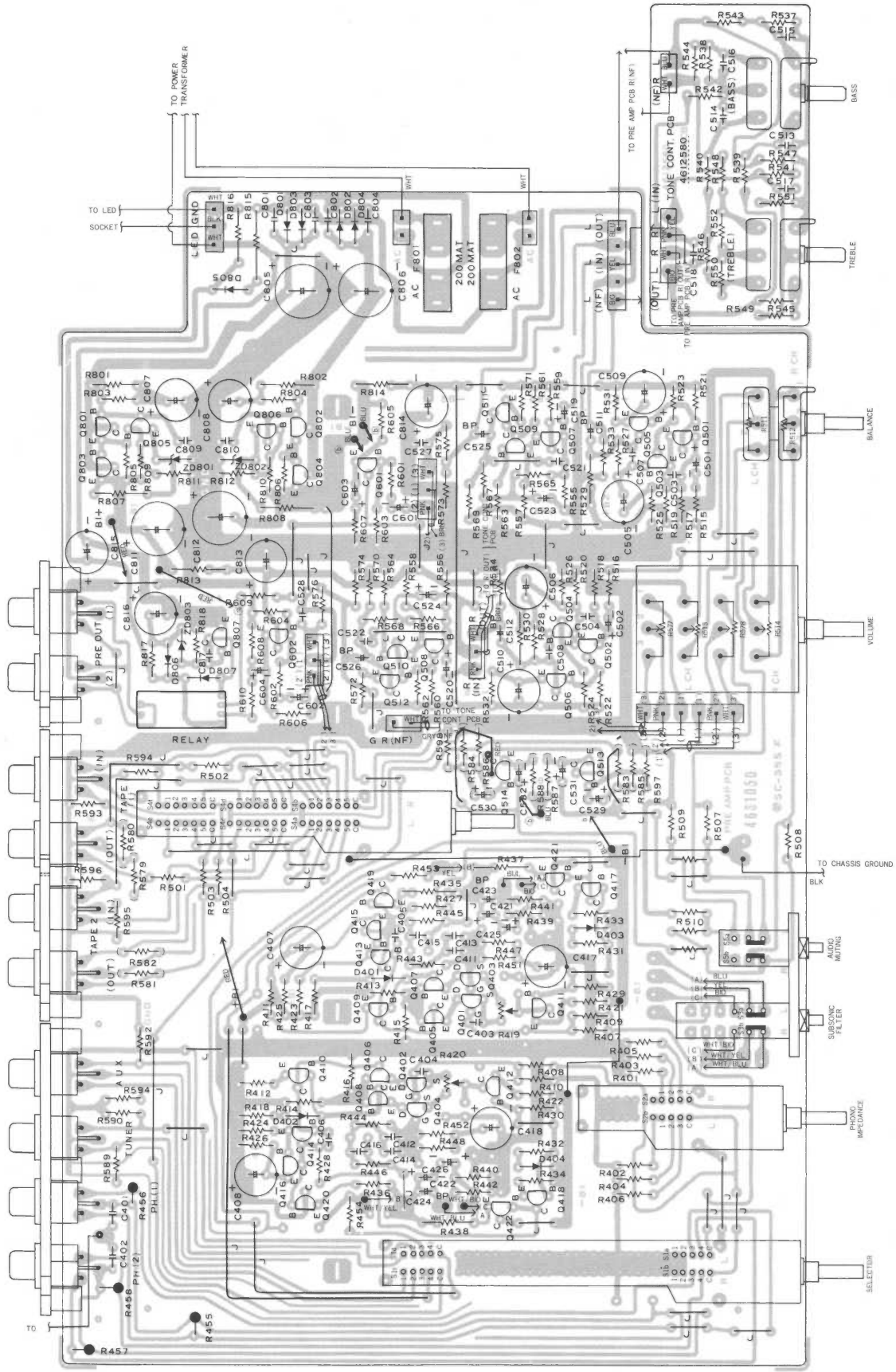
NOTES: UNLESS OTHERWISE SPECIFIED:
 1. RESISTANCE VALUES ARE IN OHMS.
 2. CAPACITANCE VALUES 1.0 AND ABOVE ARE IN μ F OR μ F-PF, M= μ F, LESS ARE IN nF/W/M= μ F).
 3. () INDICATES VOLTAGES MEASURED WITH NO SIGNAL APPLIED.

- S1-b SELECTOR
- 1. AUX
- 2. TUNER
- 3. PHONO1
- 4. PHONO 2
- 5. DUB 2-1
- S2-b PHONO
- IMPEDANCE
- 1. 2.2K OHM
- 2. 4.7K OHM
- 3. 100K OHM
- S3-b SUBSONIC FILTER
- 1. ON
- 2. OFF
- S4-b MUTING
- 1. ON
- 2. OFF
- S5 POWER
- 1. ON
- 2. OFF

- C CERAMIC CAPACITOR
- M POLYESTER FILM CAPACITOR
- P POLYSTYRENE FILM CAPACITOR
- BP BIPOLAR CAPACITOR

AC 220V 50Hz

PREAMP PCB&TONE PCB (D-TYPE)



PARTS LOCATION

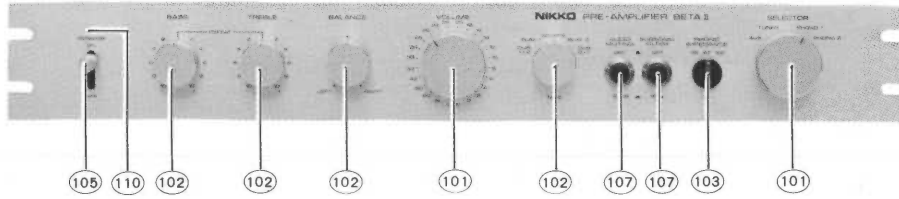


Photo 7

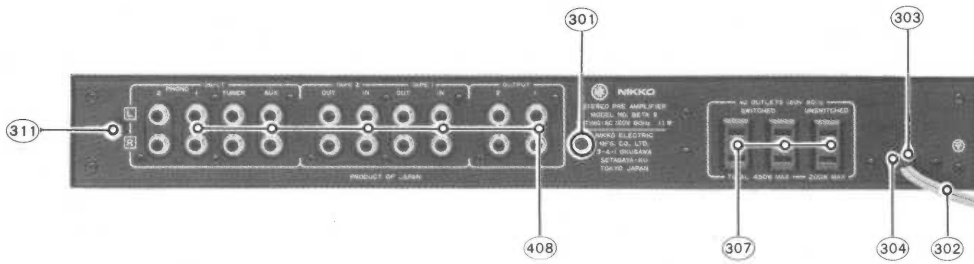


Photo 8

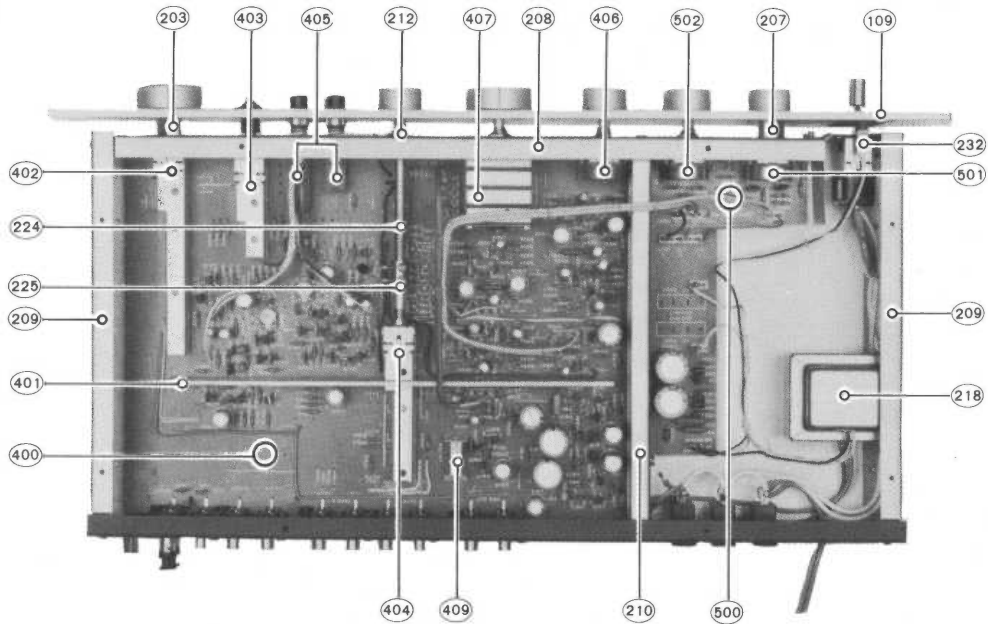


Photo 9

PARTS LIST

NOTES

- "KEY NO." marked with a (★) on parts list relate to number of three figures put a () around on Photo 1 thru 9.
- + Numbers in file indicate the quantity of parts used in one type.
- ++ TR: Transistor
FET: Field effect transistor
IC: Integrated circuit
VR: Volume control (Variable resistor)
POT: Potentiometer (Semi-fixed variable resistor)
RES: Carbon film fixed resistor
MO-RES: Metal oxide film fixed resistor
CEM-RES: Cemented wire-wound fixed resistor
FP: Flame proof
C-CAP: Ceramic capacitor
E-CAP: Aluminium electrolytic capacitor

- M-CAP: Polyester film capacitor
S-CAP: Polystyrene film capacitor
T-CAP: Tantalum electrolytic capacitor
BP-CAP: Bipolar electrolytic capacitor

E-CAP, T-CAP and BP-CAP values(1x10uF) are in (1)uF, (10)V.

- Assemblies and parts is subject to change without notice.
- Parts ordering procedure:
Include in any order
a. Part number.
b. Part description.
c. Model number.
(any of the above lacking from an order may delay shipment of the order.)

KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
001		1 1 1 1	CARTON BOX	9825300
002		2 2 2 2	STYROL PAD	9840660
003		1 1 1 1	VINYL CLOTH BAG-POLY SACK	9640680
004		1 1 1 1	VINYL CLOTH BAG-POLY SACK #13	9640320
005a		1 - - -	INSTRUCTION MANUAL E	960188E
005b		- 1 1 -	INSTRUCTION MANUAL K	960200K
005c		1 - - -	INSTRUCTION MANUAL G	960203G
006		1 - - -	WARRANTY CARD (N)	967003A
007		1 1 1 1	POLISHING CLOTH	9690040
008		1 1 1 1	DRYER-SILICA GEL	9690010
009		1 1 1 1	PIN PLUG CORD 2T	962012J

CABINET ASSEMBLY

(CHAMPAGNE-GOLD TYPE)

★101a		2 2 2 2	KNOB 2GL-34D (selector, gain)	7851460
★102a		4 4 4 4	KNOB 2GL-23D (bass, treble, balance, tape)	7851670
★103		1 1 1 1	KNOB 2BK-16LBD (phono impedance)	7851490
104	↑	1 1 1 1	WASHER-POLY WASH 15φ	7001770
★105a		1 1 1 1	KNOB PC-16 (power)	7850590
106	↑	1 1 1 1	DUST COVER	7001760
★107		2 2 2 2	PUSHBUTTON P10B (subsonic filter, audio muting)	7851680
108	↓	2 2 2 2	PUSHBUTTON GUIDE	7851690
★109a		1 1 1 1	FRONT PANEL-PNL BETA II	7883820
★110	↑	1 1 1 1	LED 3φ x 4.5 GD-4-207RD	506001S
★111a		1 - - -	STEEL COVER-COV BETA II	7820740
111b		- 1 1 1	STEEL COVER-COV BETA II D	7820750
112	↑	4 4 4 4	SCREW TETS 4 x 10 B	887410W
113	↑	4 4 4 4	WASHER W 4φ B	893104W
114	↑	4 4 4 4	SCREW PTS 3 x 6 B	814306W
115		1 1 1 1	BOTTOM PLATE-BTM PLT	7324720
116	↑	8 8 8 8	SCREW PTS 3 x 6	814306S
117		4 4 4 4	FOOT (TG) 22 x 10	7401350
118	↑	4 4 4 4	SCREW PTS 3 x 8	814308S

(BLACK TYPE)

101b		2 2	KNOB 2BK-34D (selector, gain)	7851740
102b		4 4	KNOB 2BK-23D (bass, treble, balance, tape)	7851770

KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
★103		1 1	KNOB 2BK-16LVD (phono impedance)	7851490
104	↑	1 1	WASHER-POLY WASH 15	7001770
105b		1 1	KNOB PC-16B (power)	7851790
106	↑	1 1	DUST COVER	7001760
★107		2 2	PUSHBUTTON P10B (sobsonic filter, audio muting)	7851680
108	↓	2 2	PUSHBUTTON GUIDE	7851690
109b		1 -	FRONT PANEL-PNL BETA II B	7883830
108c		- 1	FRONT PANEL-PNL BETA II B D	7883840
★110	↑	1 1	LED 3 x 4.5 GD-4-207RD	506001S
★111a		1 -	STEEL COVER-COV BETA II	7820740
111b		- 1	STEEL COVER-COV BETA II D	7820750
112	↑	4 4	SCREW TETS 4 x 10 B	887410W
113	↑	4 4	WASHER W 4 B	893104W
114	↑	4 4	SCREW PTS 3 x 6 B	814306W
115		1 1	BOTTOM PLATE BTM PLT	7324720
116	↑	8 8	SCREW PTS 3 x 6	814306S
117		4 4	FOOT (TG) 22 x 10	7401350
118	↑	4 4	SCREW PTS 3 x 8	814308S

CHASSIS ASSEMBLY

300			(BACK PLATE ASSEMBLY)	
201	↑	6 5 6 5	SCREW PTS 3 x 6 B	814306W
202	↑	5 5 5 5	SCREW PTS 3 x 8 B	814308W
202	↑	5 6 5 6	SCREW PTS 3 x 8 B	814308W
400			(PRE AMP PCB ASS)	
★203	↑	1 1 1 1	SPACER #785 (selector)	7152330
204	↑	2 2 2 2	SCREW PTS 3 x 8 (c. angle)	814308S
205	↑	1 1 1 1	WASHER TW(I) 3 (c. angle)	893403U
206	↑	2 2 2 2	SCREW PMS 3 x 6 (push sw)	810306S
500			(TONE PCB ASS)	
★207	↑	1 1 1 1	SPACER#885 (bass)	7152230
★208		1 1 1 1	FRONT PLATE	7324700
★209		2 2 2 2	SIDE ANGLE	7226290
★210		1 1 1 1	CENTER ANGLE	7226300
211	↑	6 6 6 6	SCREW PTS 3 x 6	814306S
★212		1 1 1 1	BEARING (tape)	7152340
213	↑	1 1 1 1	NUT SN 9φ	892249S
214	↑	1 1 1 1	WASHER TW(II) 9φ	893409V
★215a		1 - - -	SWITCH LV SW SYO2 U74SM TV-5 (power)	4025090
215b		- 1 1 1	SWITCH LV SW SYO2 80DV (power)	4025150
216	↑	2 2 2 2	SCREW PMS 3 x 6	810306S
★217a		1 - - -	C-CAP 0.0047uF 125V AC	239472C
217b		- 2 2 -	C-CAP 0.0047uF 250V AC	238472E

PART ORDERING PROCEDURE ----- Include in any order: A. Part number, B. Part description, C. Model number.
(any of the above lacking from an order may delay shipment of that order.)

KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.	KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
★218a		1---	POWER TRANSFORMER T-1-285 120V	1102850	PREAMP CIRCUIT BOARD				
218b		-111	POWER TRANSFORMER T-1-296 220V/240V	1102960	★400a		1---	COMPLETE CIRCUIT BOARD PRE AMP PCB ASS W	231103Z
219	↑	2222	SCREW PMS 4 x 8	810408S	400b		-1--	COMPLETE CIRCUIT BOARD PRE AMP PCB ASS E	232330K
220	↑	2222	PT STOPPER PLATE	7031290	400c		--1-	COMPLETE CIRCUIT BOARD PRE AMP PCB ASS N	211032V
221		-111	MIDGET FUSE (S) 100MAT	4720430	400d		---1	COMPLETE CIRCUIT BOARD PRE AMP PCB ASS D	211032V
222		-111	MIDGET FUSE HOLDER 1P	4581430	(EQ AMP SECTION)				
223	↑	-111	SCREW PTS 3 x 8	814308S	C401		1111	C-CAP 0.01uF + 80, -20% 50V YG	231103Z
★224		1111	SHAFT (tape)	7152370	C402		1111	C-CAP 0.01uF + 80, -20% 50V YG	231103Z
★225		1111	JOINT	7121060	C403		1111	C-CAP 100pF 10% 50V SL	232101K
226	↑	4444	SCREW-SET SCW 3 x 4	7121070	C404		1111	C-CAP 100pF 10% 50V SL	232101K
227		1111	EARTH LUG	4400000	C405		1111	C-CAP 33pF 10% 50V SL	232330K
228	↑	1111	SCREW PTS 3 x 6	814306S	C406		1111	C-CAP 33pF 10% 50V SL	232330K
229		1111	WASHER TW(I) 3φ	893403U	C407		1111	E-CAP 6.3R220uF	211032V
★230		1111	SHIELD PLATE	7031540	C408		1111	E-CAP 6.3R220uF	211032V
231	↑	2222	SCREW PTS 3 x 6	814306S	C411		1111	S-CAP 330pF 5% 50V	223331V
★232		1111	LED SOCKET-MINI SKT 3021-2-N LED	4510090	C412		1111	S-CAP 330pF 5% 50V	223331V
BACK PLATE ASSEMBLY					C413		1111	M-CAP 0.0047uF 5% 50V	222472J
300a		1---	COMPLETE BACK PLATE ASSEM- BLY Wu	9512950	C414		1111	M-CAP 0.0047uF 5% 50V	222472J
300b		-1--	COMPLETE BACK PLATE ASSEM- BLY Eu	9512960	C415		1111	M-CAP 0.018uF 5% 50V	222183J
300c		--1-	COMPLETE BACK PLATE ASSEM- BLY Nd	9512970	C416		1111	M-CAP 0.018uF 5% 50V	222183J
300d		---1	COMPLETE BACK PLATE ASSEM- BLY D	9513020	C417		1111	E-CAP 6.3R 220uF	211032V
★301a		1---	BACK PLATE W	7324710	C418		1111	E-CAP 6.3R 220uF	211032V
301b		-111	BACK PLATE END	7324870	C421		111-	E-CAP 50R0.47uF	211505Q
★302a		1---	POWER SUPPLY CORD KP-2	606002J	C421		---1	M-CAP 0.1uF 10% 50V	222104K
302b		-11-	POWER SUPPLY CORD CEE-2T	600506J	C422		---1	M-CAP 0.1uF 10% 50V	222104K
302c		---1	POWER SUPPLY CORD CEE-3T BLK	601809A	C423		1111	BP-CAP 50R3.3uF	215513N
★303a		1---	CORD STOPPER SR-3P-4	7400620	C424		1111	EP-CAP 50R3.3uF	215513N
303b		-1-	CORD STOPPER SR-4N-4	7400690	C425		111-	E-CAP 50R0.47uF	211505Q
303c		---1	CORD STOPPER SR-6W-1	7400740	C426		111-	E-CAP 50R0.47uF	211505Q
★304a		1---	CORD BRACKET (UL)	7029300	D401				
304b		-111	CORD BRACKET (EH)	7029800	~D404		4444	DIODE 1S2076	501019S
305	↑	2121	SCREW PTS 3 x 6 B	814306W	Q401		1111	FET 2SK68A	516019S
306	↑	-1-1	SCREW PTS 3 x 8 B	814308W	Q402		1111	FET 2SK68A	516019S
★307		3---	AC OUTLET AC SKT	4500150	Q403		1111	FET 2SK68A	516019S
308	R1	1---	RES 2.2M 1/2W	325225K	Q404		1111	FET 2SK68A	516019S
309		1---	EARTH LUG	440000D	Q405		1111	TR 2SC1775 (D,E)	511015S
310		1111	GROUND TERMINAL SHAFT	7152050	Q406		1111	TR 2SC1775 (D,E)	511015S
★311	↑	1111	GROUND TERMINAL NUT	7152060	Q407		1111	TR 2SC1775 (D,E)	511015S
312	↑	1111	WASHER W 3φ	893203D	Q408		1111	TR 2SC1775 (D,E)	511015S
313	↑	1111	NUT IN 3φ	892013S	Q409		1111	TR 2SA872 (D,E)	510043S
314	↑	1111	WASHER TW(I) 3φ	893403U	Q410		1111	TR 2SA872 (D,E)	510043S
315		1111	EARTH LUG	4400000	Q411		1111	TR 2SC945 L (P,Q)	515077S
316		1111	T-LUG 2L4P	442241W	Q412		1111	TR 2SC945 L (P,Q)	515077S
317	↑	2222	SCREW PMS 3 x 8 B	810308W	Q413		1111	TR 2SA872 (D,E)	510043S
318	↑	2222	NUT IN 3φ	892013S	Q414		1111	TR 2SA872 (D,E)	510043S
319	↑	2222	WASHER TW (I) 3	893403U	Q415		1111	TR 2SA872 (D,E)	510043S
320		1111	BLIND PLATE	7031690	Q416		1111	TR 2SA872 (D,E)	510043S
321		2222	SHORT PIN PLUG	4440180	Q417		1111	TR 2SC1775 (D,E)	511015S
					Q418		1111	TR 2SC1775 (D,E)	511015S
					Q419		1111	TR 2SC1627 (O,Y)	511017S
					Q420		1111	TR 2SC1627 (O,Y)	510047S
					Q421		1111	TR 2SA817 (o,Y)	510047S
					Q422		1111	TR 2SA817 (O,Y)	510047S
					R401		1111	RES 22kohm 5% 1/4W	328223J
					R402		1111	RES 22Kohm 5% 1/4W	328223J
					R403		1111	RES 56Kohm 5% 1/4W	328563J
					R404		1111	RES 56Kohm 5% 1/4W	328563J
					R405		1111	RES 120Kohm 5% 1/4W	328124J

KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
R406	1 1 1 1	RES	120Kohm 5% 1/4W	328124J
R407	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R408	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R409	1 1 1 1	RES	1Mohm 5% 1/4W	328105J
R410	1 1 1 1	RES	1Mohm 5% 1/4W	328105J
R411	1 1 1 1	RES	3.3Kohm 5% 1/4W	328332J
R412	1 1 1 1	RES	3.3Kohm 5% 1/4W	328332J
R413	1 1 1 1	RES	22Kohm 5% 1/4W	328223J
R414	1 1 1 1	RES	22Kohm 5% 1/4W	328223J
R415	1 1 1 1	RES	6.8Kohm 5% 1/4W	328682J
R416	1 1 1 1	RES	6.8Kohm 5% 1/4W	328682J
R417	1 1 1 1	RES	3.3Kohm 5% 1/4W	328332J
R418	1 1 1 1	RES	3.3Kohm 5% 1/4W	328332J
R421	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R422	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R423	1 1 1 1	RES	10Kohm 5% 1/4W	328103J
R424	1 1 1 1	RES	10Kohm 5% 1/4W	328103J
R425	1 1 1 1	RES	1.2Kohm 5% 1/4W	328122J
R426	1 1 1 1	RES	1.2Kohm 5% 1/4W	328122J
R427	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R428	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R429	1 1 1 1	RES	22Kohm 5% 1/4W	328223J
R430	1 1 1 1	RES	22Kohm 5% 1/4W	328223J
R431	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R432	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R433	1 1 1 1	RES	1.2Kohm 5% 1/4W	328122J
R434	1 1 1 1	RES	1.2Kohm 5% 1/4W	328122J
R435	1 1 1 1	FP-MO-RES	100 ohm 5%	329101N
R436	1 1 1 1	FP-MO-RES	100 ohm 5%	329101N
R437	1 1 1 1	FP-MO-RES	100 ohm 5%	329101N
R438	1 1 1 1	FP-MO-RES	100ohm 5%	329101N
R439	1 1 1 1	RES	68Kohm 5% 1/4W	328683J
R440	1 1 1 1	RES	68Kohm 5% 1/4W	328683J
R441	1 1 1 1	RES	100Kohm 5% 1/4W	328104J
R442	1 1 1 1	RES	100Kohm 5% 1/4W	328104J
R443	1 1 1 1	M-RES	15Kohm 2% 1/4W	304153G
R444	1 1 1 1	M-RES	15Kohm 2% 1/4W	304153G
R445	1 1 1 1	M-RES	180Kohm 2% 1/4W	304184G
R446	1 1 1 1	M-RES	180Kohm 2% 1/4W	304184G
R447	1 1 1 1	RES	270ohm 5% 1/4W	328271J
R448	1 1 1 1	RES	270ohm 5% 1/4W	328271J
R453	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R454	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R455	1 1 1 1	RES	1.5Mohm 5% 1/4W	328155J
R456	1 1 1 1	RES	1.5Mohm 5% 1/4W	328155J
R457	1 1 1 1	RES	1.5Mohm 5% 1/4W	328155J
R458	1 1 1 1	RES	1.5Mohm 5% 1/4W	328155J
(TONE AMP SECTION)				
C501	1 1 1 1	E-CAP	35R3.3uF LC	211413L
C502	1 1 1 1	E-CAP	35R3.3uF LC	211413L
C503	1 1 1 1	C-CAP	47pF 10% 50V SL	232470K
C504	1 1 1 1	C-CAP	47pF 10% 50V SL	232470K
C505	1 1 1 1	E-CAP	10R220uF	211132V
C506	1 1 1 1	E-CAP	10R220uF	211132V
C507	1 1 1 1	C-CAP	2pF±0.5pF 50V SL	232209D
C508	1 1 1 1	C-CAP	2pF±0.5pF 50V SL	232209D
C509	1 1 1 1	E-CAP	10R220uF	211132V
C510	1 1 1 1	E-CAP	10R220uF	211132V
C511	1 1 1 1	BP-CAP	25R10uF	215320N
C512	1 1 1 1	BP-CAP	25R10uF	215320N
C519	1 1 1 1	E-CAP	25R10uF LC	211320L
C520	1 1 1 1	E-CAP	25R10uF LC	211320L
C521	1 1 1 1	C-CAP	10pF±5pF 50V SL	232100D
C522	1 1 1 1	C-CAP	10pF±5pF 50VSL	232100D
C523	1 1 1 1	E-CAP	25R10uF	211320Q

KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
C524	1 1 1 1	E-CAP	25R10uF	211320Q
C525	1 1 1 1	BP-CAP	25R10uF	215320N
C526	1 1 1 1	BP-CAP	25R10uF	215320N
C527	1 1 1 1	C-CAP	330pF 10% 50V SL	232331K
C528	1 1 1 1	C-CAP	330pF 10% 50V SL	232331K
C529	---	E-CAP	50R1uF LC	211510L
C530	---	E-CAP	50R1uF LC	211510L
C531	---	E-CAP	35R3.3uF LC	211413L
C532	---	E-CAP	35R3.3uF LC	211413L
Q501	1 1 1 1	TR	2SA872 (D,E)	510043S
Q502	1 1 1 1	TR	2SA872 (D,E)	510043S
Q503	1 1 1 1	TR	2SA872 (D,E)	510043S
Q504	1 1 1 1	TR	2SA872 (D,E)	510043S
Q505	1 1 1 1	TR	2SC1775 (D,E)	511015S
Q506	1 1 1 1	TR	2SC1775 (D,E)	511015S
Q507	1 1 1 1	TR	2SA872 (D,E)	510043S
Q508	1 1 1 1	TR	2SA872 (D,E)	
Q509	1 1 1 1	TR	2SA872 (D,E)	
Q510	1 1 1 1	TR	2SA872 (D,E)	510043S
Q511	1 1 1 1	TR	2SC1775 (D,E)	511015S
Q512	1 1 1 1	TR	2SC1775 (D,E)	511015S
Q513	---	TR	2SC1775 (D,E)	511015S
Q514	---	TR	2SC1775 (D,E)	511015S
Q601	1 1 1 1	TR	2SC1775 (D,E)	511015S
Q602	1 1 1 1	TR	2SC1775 (D,E)	511015S
R501	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R502	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R503	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R504	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R505			Out of use	
R506			Out of use	
R507	1 1 1 --	RES	47Kohm 5% 1/4W	328473J
R508	1 1 1 --	RES	47Kohm 5% 1/4W	328473J
R509	1 1 1 1	RES	5.6Kohm 5% 1/4W	328562J
R510	1 1 1 1	RES	5.6Kohm 5% 1/4W	328562J
R511			Out of use	
R512			Out of use	
R513			Out of use	
R514			Out of use	
R515	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R516	1 1 1 1	RES	2.2Kohm 5% 1/4W	328222J
R517	1 1 1 1	RES	330Kohm 5% 1/4W	328334J
R518	1 1 1 1	RES	330Kohm 5% 1/4W	328334J
R519	1 1 1 1	RES	27Kohm 5% 1/4W	328273J
R520	1 1 1 1	RES	27Kohm 5% 1/4W	328273J
R521	1 1 1 1	RES	4.7Kohm 5% 1/4W	328472J
R522	1 1 1 1	RES	4.7Kohm 5% 1/4W	328472J
R523	1 1 1 1	RES	4.7Kohm 5% 1/4W	328472J
R524	1 1 1 1	RES	4.7Kohm 5% 1/4W	328472J
R525	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R526	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R527	1 1 1 1	RES	6.8Kohm 5% 1/4W	328682J
R528	1 1 1 1	RES	6.8Kohm 5% 1/4W	328682J
R529	1 1 1 1	MO-RES	2.2Kohm 5% 1W	361222B
R530	1 1 1 1	MO-RES	2.2Kohm 5% 1W	361222B
R531	1 1 1 1	RES	100ohm 5% 1/4W	328101J
R532	1 1 1 1	RES	100ohm 5% 1/4W	328101J
R533	1 1 1 1	RES	220Kohm 5% 1/4W	328224J
R534	1 1 1 1	RES	220Kohm 5% 1/4W	328224J
R551	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R552	1 1 1 1	RES	1Kohm 5% 1/4W	328102J
R553	1 1 1 1	RES	47Kohm 5% 1/4W	328473J
R554	1 1 1 1	RES	47Kohm 5% 1/4W	328473J
R555	1 1 1 1	RES	220Kohm 5% 1/4W	328224J
R556	1 1 1 1	RES	220Kohm 5% 1/4W	328224J
R557	1 1 1 1	RES	27Kohm 5% 1/4W	328273J
R558	1 1 1 1	RES	27Kohm 5% 1/4W	328273J
R559	1 1 1 1	RES	4.7Kohm 5% 1/4W	328472J
R560	1 1 1 1	RES	4.7Kohm 5% 1/4W	328472J
R561	1 1 1 1	RES	4.7Kohm 5% 1/4W	328472J

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KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.	KEY NO.	SYMBOL NO.	TYPE ⁺ W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ⁺⁺	PART NO.
	R562	1 1 1 1	RES 4.7Kohm 5% 1/4W	328472J		R801	1 1 1 1	FP-MO-RES 4.7Kohm 5% 1/2W	329472N
	R563	1 1 1 1	RES 2.2Kohm 5% 1/4W	328222J		R802	1 1 1 1	FP-MO-RES 4.7Kohm 5% 1/2W	329472N
	R564	1 1 1 1	RES 2.2Kohm 5% 1/4W	328222J		R803	1 1 1 1	RES 1.5Kohm 5% 1/4W	328152J
	R565	1 1 1 1	RES 100Kohm 5% 1/4W	328104J		R804	1 1 1 1	RES 1.5Kohm 5% 1/4W	328152J
	R566	1 1 1 1	RES 100Kohm 5% 1/4W	328104J		R805	1 1 1 1	RES 10Kohm 5% 1/4W	328103J
	R567	1 1 1 1	RES 47Kohm 5% 1/4W	328473J		R806	1 1 1 1	RES 10Kohm 5% /4W	328103J
	R568	1 1 1 1	RES 47Kohm 5% 1/4W	328473J		R807	1 1 1 1	MO-RES 3.3Kohm 5% 1W	364332B
	R569	1 1 1 1	RES 5.6Kohm 5% 1/4W	328562J		R808	1 1 1 1	MO-RES 3.3Kohm 5% 1W	361332B
	R570	1 1 1 1	RES 5.6Kohm 5% 1/4W	328562J		R809	1 1 1 1	RES 15Kohm 5% 1/4W	328153J
	R571	1 1 1 1	RES 270ohm 5% 1/4W	328271J		R810	1 1 1 1	RES 15Kohm 5% 1/4W	328153J
	R572	1 1 1 1	RES 270ohm 5% 1/4W	328271J		R811	1 1 1 1	RES 12Kohm 5% 1/4W	328123J
	R573	1 1 1 1	RES 220Kohm 5% 1/4W	328224J		R812	1 1 1 1	RES 12Kohm 5% 1/4W	328123J
	R574	1 1 1 1	RES 220Kohm 5% 1/4W	328224J		R813	1 1 1 1	FP-MO-RES 270ohm 5% 1/2W	329271N
	R575	1 1 1 1	RES 1Kohm 5% 1/4W	328102J		R814	1 1 1 1	FP-MO-RES 330ohm 5% 1/2W	329331N
	R576	1 1 1 1	RES 1Kohm 5% 1/4W	328102J					
	R583	--- 1	RES 1Kohm 5% 1/4W	328102J		ZD801	1 1 1 1	ZENER DIODE XZ122	502020S
	R584	--- 1	RES 2.2Mohm 5% 1/4W	328225J		ZD802	1 1 1 1	ZENER DIODE XZ122	502020S
	R585	--- 1	RES 2.2Mohm 5% 1/4W	328225J					
	R586	--- 1	RES 2.2Mohm 5% 1/4W	328225J					
	R587	--- 1	RES 10Kohm 5% 1/4W	328103J					
	R588	--- 1	RES 10Kohm 5% 1/4W	328103J					
								(RELAY DRIVER SECTION)	
	R593	1 1 1 1	RES 2.2Mohm 5% 1/4W	328225J					
	R594	1 1 1 1	RES 2.2Mohm 5% 1/4W	328225J		C815	1 1 1 1	E-CAP 25R100uF	211330Q
	R595	1 1 1 1	RES 2.2Mohm 5% 1/4W	328225J		C816	1 1 1 1	E-CAP 16R100uF	211230Q
	R596	1 1 1 1	RES 2.2Mohm 5% 1/4W	328225J		C817	1 -- 1	C-CAP 330pF 10%50V SL	232331K
	R597	--- 1	RES 2.2Mohm 5% 1/4W	328225J		C817	- 1 1 -	M-CAP 0.001uF 10%50V	222102K
	R598	--- 1	RES 1Kohm 5% 1/4W	328102J					
	R601	1 1 1 1	RES 1Kohm 5% 1/4W	328102J		D805			
	R602	1 1 1 1	RES 1Kohm 5% 1/4W	328102J		~D807	3 3 3 3	DIODE 1S1885	560032S
	R603	1 1 1 1	RES 330Kohm 5% 1/4W	328334J					
	R604	1 1 1 1	RES 330Kohm 5% 1/4W	328334J		Q807	1 1 1 1	TR 2SC945 L (P,Q)	515077S
	R605	1 1 1 1	RES 10Kohm 5% 1/4W	328103J					
	R606	1 1 1 1	RES 10Kohm 5% 1/4W	328103J		R815	1 1 1 1	MO-RES150ohm 5% 2W	362121B
	R607	1 1 1 1	RES 68Kohm 5% 1/4W	328683J		R816	1 1 1 1	MO-RES470ohm 5% 1W	361471B
	R608	1 1 1 1	RES 68Kohm 5% 1/4W	328683J		R817	1 1 1 1	RES 82Kohm 5% 1/4W	328823J
	R609	1 1 1 1	RES 560ohm 5% 1/4W	328561J		R818	1 1 1 1	RES 100Kohm 5% 1/4W	328104J
	R610	1 1 1 1	RES 560ohm 5% 1/4W	328561J		ZD803	1 1 1 1	ZENER DIODE WZ069	502035S
			(REGUATOR SECTION)					(OTHERS)	
	C801	1 1 1 1	C-CAP 0.01uF + 80, -20% 50V YG	231103Z	★401		1 1 1 1	PCB STAY	7031280
	C802	1 1 1 1	C-CAP 0.01uF + 80, -20% 50V YG	231103Z	★402	S1	1 1 1 1	ROTARY SLIDE SWITCH SRZ-V124S 25R (selector)	4055100
	C803	1 1 1 1	C-CAP 0.01uF + 80, -20% 50V YG	231103Z					
	C804	1 1 1 1	C-CAP 0.01uF + 80, -20% 50V YG	231103Z	★403	S2	1 1 1 1	ROTARY SLIDE SWITCH SRZ-V043S 25R (impedance)	4055090
	C805	1 1 1 1	E-CAP 50R470uF	211535Q					
	C806	1 1 1 1	E-CAP 50R470uF	211535Q	★404	S4	1 1 1 1	ROTARY SLIDE SWITCH SRZ-V065N 25R (tape)	4055080
	C807	1 1 1 1	E-CAP 35R100uF	211430Q					
	C808	1 1 1 1	E-CAP 35R100uF	211430Q	★405	S3,S5	1 1 1 1	TWIN PUSHBUTTON SWITCH SUE-24 (subsonic filter, audio muting)	4040900
	C809	1 1 1 1	M-CAP 0.022uF 10% 50V	222223K					
	C810	1 1 1 1	M-CAP 0.022uF 10% 50V	222223K					
	C811	1 1 1 1	E-CAP 35R470uF	211435Q	★406	R511, ~R512	1 1 1 1	VR V24L5G4PHN IZ100Kohm x2 25R (balance)	4320760
	C812	1 1 1 1	E-CAP 35R470uF	211435Q					
	C813	1 1 1 1	E-CAP 35R220uF	211432Q	★407	R513, ~R514	1 1 1 1	VR AP355G 100Kohm x 2/ 50Kohm x 2 25R (gain)	4390110
	C814	1 1 1 1	E-CAP 35R220uF	211432Q					
	D801				★408		5 5 5 5	CB PIN TERMINAL 2P x 2 (SE)	4444030
	~D804	4 4 4 4	DIODE 1S1885	560032S	★409		1 1 1 1	REED RELAY	1700200
	Q801	1 1 1 1	TR 2SC945 L (P,Q)	515077S	410	R419	1 1 1 1	POT HV R RVA-7 B500ohm	4300830
	Q802	1 1 1 1	TR 2SA733 (O,R)	514074S	411	R420	1 1 1 1	POT H-VR RVA-7 B500ohm	4300830
	Q803	1 -- 1	TR 2SC1627 (O,Y)	511017S	412	F801	- 1 1 1	MIDGET FUSE (S) 200mA	4720440
	Q803	- 1 1 -	TR 2SC1627A (O,Y)	512101S	413	F802	- 1 1 1	MIDGET FUSE (S) 200mA	4720440
	Q804	1 -- 1	TR 2SA817 (O,Y)	510047S	414	↑	- 4 4 4	MIDGET FUSE HOLDER	7050430
	Q804	- 1 1 -	TR 2SA817A (O,Y)	510101S					
	Q805	1 1 1 1	TR 2SC945 L (P,Q)	515077S					
	Q806	1 1 1 1	TR 2SA733 (O,R)	514074S					

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KEY NO.	SYMBOL NO.	TYPE + W-type-u E-type-u N-type-d D-type-g	DESCRIPTION ++	PART NO.
STONE CONTROL CIRCUIT BOARD				
★500			COMPLETE CIRCUIT BOARD TONE PCB ASS	9441230
	C513	1 1 1 1	M-CAP 0.022uF 10% 50V	222223K
	C514	1 1 1 1	M-CAP 0.022uF 10% 50V	222223K
	C515	1 1 1 1	M-CAP 0.022uF 10% 50V	222223K
	C516	1 1 1 1	M-CAP 0.022uF 10% 50V	222223K
	C517	1 1 1 1	M-CAP 0.0012uF 10% 50V	222122K
	C518	1 1 1 1	M-CAP 0.0012uF 10% 50V	222122K
★501	R535, ~ R536	1 1 1 1	VR B100Kohm x 2 V24L5G4- PHN 25R (bass)	4320750
	R538	1 1 1 1	RES 560Kohm 5% 1/4W	328564J
	R538	1 1 1 1	RES 560Kohm 5% 1/4W	328564J
	R539	1 1 1 1	RES 27Kohm 5% 1/4W	328273J
	R540	1 1 1 1	RES 27Kohm 5% 1/4W	328273J
	R541	1 1 1 1	RES 8.2Kohm 5% 1/4W	328822J
	R542	1 1 1 1	RES 8.2Kohm 5% 1/4W	328822J
	R543	1 1 1 1	RES 27Kohm 5% 1/4W	328273J
	R544	1 1 1 1	RES 27Kohm 5% 1/4W	328273J
	R545	1 1 1 1	RES 4.7Kohm 5% 1/4W	328472J
	R546	1 1 1 1	RES 4.7Kohm 5% 1/4W	328472J
	R547	1 1 1 1	RES 4.7Kohm 5% 1/4W	328472J
	R548	1 1 1 1	RES 4.7Kohm 5% 1/4W	328472J
	R549	1 1 1 1	RES 1Kohm 5% 1/4W	328102J
	R550	1 1 1 1	RES 1Kohm 5% 1/4W	328102J
	R551	1 1 1 1	RES 1Kohm 5% 1/4W	328102J
	R552	1 1 1 1	RES 1Kohm 5% 1/4W	328102J
	R553, ~R554	1 1 1 1	VR B100Kohm x 2 V24L5G4- PHN 25R (treble)	4320740

SEMICONDUCTORS DATA

TRANSISTORS DATA

NOTES†

Ge : Germanium A : Alloy Df : Drift-field M : Mesa
 Si : Silicon B : Base E : Epitaxial P : Planar
 D : Diffused G : Grown Pc : Point-contact
 Dd : Double-diffused J : Junction Td : Triple-diffused

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (TA=25°C unless otherwise specified)					ELECTRICAL CHARACTERISTICS Typical Values: (TA=25°C unless otherwise specified)														MANUFACTURE	
			Collector-to-Base Voltage VCBO	Emitter-to-Base Voltage VEBO	Collector Current IC	Collector Dissipation PC	Junction Temperature Tj	Collector Cutoff Current		Static Forward-Current Transfer Ratio			Collector-Emitter Saturation Voltage			Gain-Bandwidth Product		Base Spreading Resistance		Output Capacitance Cob			
			(V)	(V)	(mA)	(mW)	(°C)	ICBO (uA)	VCB (V)	hFE	VCE (V)	IC (mA)	VCE(sat) (V)	IC (mA)	IB (mA)	fT (MHz)	VCE VCB* (V)	IE IC* (mA)	rbb' hie(real)* (Ω)	VCE VCB* (V)	IE (mA)		(pF)
2SA733 (Q,R)	AF	PNP Si-E	-50	-5	-100	250	125	-0.1	-40	90 -270	-6	-1	-0.5	-30	-3	180	-6	10				8	NEC
2SA817 (Q,Y)	AF, Voltage amp., Driver	PNP Si-E	-80	-5	-300	600	150	-0.1	-50	70 -240	-2	-50	-0.4	-200	-20	100	-10	10				14	TOSHIBA
2SA872 (D,E)	AF, Low noise small signal	PNP Si-E	-90	-5	-50	300	125	-0.5	-75	250 -800	-12	-2	-0.5	-10	-1.0								HITACHI
2SA941 (B,L)	AF, Low noise	PNP Si-E	-120	-5	-50	300	125	-0.1	-120	350 -700	-6	-2	-0.4	-10	-1	40	-5	0.1A				5.0 max	TOSHIBA
2SB536 (Q,R)	AF, Driver	PNP Si-E	-200	-5	-1.5A	20W (TC=25°C)	150	-1	-120	60 -180	-5	-3A	-2	-1A	-0.1A	40	-5	0.1A				35	NEC
2SB600 (Q,R)	AF, Power	PNP Si-E	-200	-5	-10A	200W (TC=25°C)	150	-100	-200	60 -200	-5	-2A	-3	-10A	-1A	4	-10	1A				400	NEC
2SC945D (P,Q)	AF, Low noise general	NPN Si-E	60	5	100	250	125	100	60	135 -400	6	1	0.15	100	10	250	6	-10				3.5	NEC
2SC1627 (Q,Y)	AF, Voltage amp., Driver	NPN Si-E	80	5	300	600	150	0.1	50	70 -240	12	50	0.5	200	10	100	10	-1				10	TOSHIBA
2SC1775 (D,E)	AF, Low noise Small Signal	NPN Si-E	90	5	50	300	125	0.5	75	250 -800	12	2	0.5	10	1.0							3.0 max	HITACHI
2SC2088 (B,L)	AF, Low noise	NPN Si-E	120	5	50	300	125	0.1	120	350 -700	6	2	0.3	10	1	150	6	-1				3.0 max	TOSHIBA
2SD381 (L,M)	AF, Driver	NPN Si-E	130	5	1.5A	20W (TC=25°C)	150	1	120	60 -160	5	3A	2	1A	0.1A	45	5	-0.1A				25	NEC
2SD555 (Q,R)	AF, Power	NPN Si-TdM	250	5	10A	200W (TC=25°C)	150	100	200	60 -200	5	2A	3	10A	1A	6	10	-1A				300	NEC

FIELD EFFECT TRANSISTORS DATA

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (TA = 25°C unless otherwise specified)					ELECTRICAL CHARACTERISTICS Typical Values: (TA = 25°C unless otherwise specified)												MANUFACTURE		
			Gate-to-Drain Voltage VGDO	Gate-to-Source Voltage BGSO	Gate Current IG	Drain Current ID	Total Power Dissipation Tj	Date Leak Current	Gate to Drain Breakdown Voltage		Drain Current	Gate to Source Cutoff Voltage		Forward Transfer Admittance	Feed back Capacitance	Power Gain (Common source)		Noise Figure				
			(V)	(V)	(mA)	(mA)	(mW)	Test Conditions	IGSS (nA)	V(BR) GDO (V)	Test Conditions	IDSS (mA)	Test Conditions	VGS (V)	Test Conditions	|yfs|	Test Conditions	CRSS (pF)	Test Conditions		GPS (dB)	Test Conditions	NF (dB)
2SK68A (L,M)	AF, Low noise	N-channel Junction FET	-50	-50	10	20	250	125		VGS = -1.0 max VGS = -20V typ VDS = 0		VDS = 10V min VGS = 3.0 typ VDS = 12 max		VDS = 10V ID = 0.5mA f = 1KHz	5.2	VDS = 10V VGS = 0 f = 1MHz	2.6			VDS = 10V max VGS = 0 RG = 1Kohm	10 max 1.5 max (1KHz)	NEC

ZENER DIODES DATA

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (TA=25°C unless otherwise specified)					ELECTRICAL CHARACTERISTICS Typical Values: (TA = 25°C unless otherwise specified)										MANUFACTURE
			Total Power Dissipation Pd (mW)	Zener Current IZ (A)	Junction Temperature Tj (°C)	Zener Voltage Vz			Differential Resistance rd		Temperature Coefficient γz		Reverse Current IR					
						MIN (V)	TYP (V)	MAX (V)	Iz (mA)	MAX	Iz (mA)	TYP (/ °C)	MAX (/ °C)	Iz (mA)	MAX (uA)	Vr (V)		
						Test Condition	TYP	MAX	Test Condition	TYP	MAX	Test Condition	Test Condition	Test Condition	Test Condition	Test Condition		
WZ069			500	6.5	6.9	7.3	10	10	10	0.041			1	2				
XZ122			500	11.6	12.2	12.8	5	15	5	0.069			1	10				
XZ225			500	21.4	22.5	23.6	5	30	5	0.0845			1	19.5				

DIODE LEDS DATA

DEVICE TYPE	APPLICATIONS	STRUCTURE†	MAXIMUM RATINGS Absolute-Maximum Values: (TA=25°C unless otherwise specified)								ELECTRICAL CHARACTERISTICS Typical Values: (TA=25°C unless otherwise specified)							MANUFACTURE		
			Reverse Surge Voltage VR surge (V)	Peak Reverse Voltage VRM (V)	Reverse Voltage VR (V)	Peak Forward Voltage VFM (V)	Peak Forward Current IFM (mA)	Average Rectified Current IO (mA)	Forward Surge Current IF surge (A)	Junction Temperature Tj (°C)	Total Power Dissipation PD (mW)	Forward Current IF min (mA)	Test Condition VF (V)	Forward Voltage VF (V)	Test Condition IR max (uA)	Reverse Current IR (uA)	Test Condition VR (V)			
5SVB20	Rectifier	Si-D		-200					6A	200 (TC=25°C)	150			1.05	3A	10				SHINDENGEN
VD1212		Si-D					30				50			1.24	1.5					NEC
IN34A	Logical circuit	Ge-P		-75	-60			150	50	0.5 (1 sec.)	70		5	1			30	-10	-50	HITACHI
1S1885		Si-A		-100		70			1A (TA=65°C)	60				1.2	1.5A	10	100			TOSHIBA
1S2076	Various Detector, Modulator, Demodulator	Si-EP		-35	-30			450	150	1	175	250		0.8	10	1	-30			HITACHI
1S2076A	Various detector, Modulator, Demodulator	Si-EP		-70	-60			450	150	1	175	250		0.8	10	1	-30			HITACHI
GD-4-207RD	LED				-3				IFDC = 50		100	100		1.7	20	100	3		Brightness MIN. 25ft-L (IF=20mA) TYP. 45ft-L	STANLEY

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