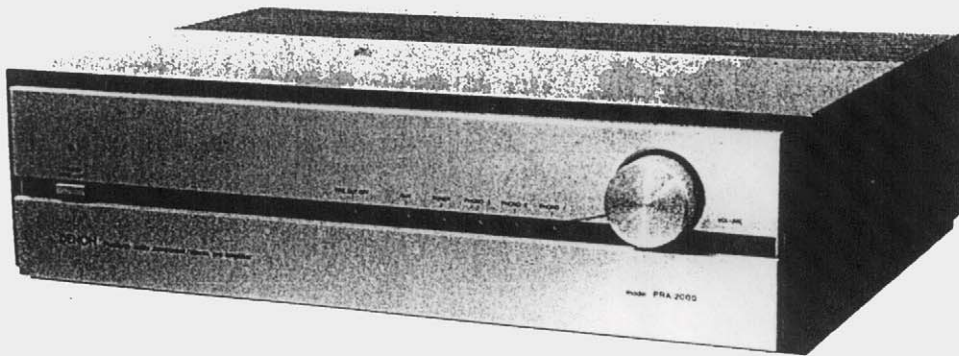


DENON

Hi-Fi Component Pre Amplifier

SERVICE MANUAL MODEL PRA-2000



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NIPPON COLUMBIA CO., LTD.

SPECIFICATIONS

EQUALIZER AMPLIFIER SECTION (PHONO IN ~ REC OUT)

Input Sensitivity/Input Impedance: PHONO-1: 2.5 mV/50 k ohm
 PHONO-2: 2.5 mV/100 ohm, 50 k ohm
 PHONO-3: 0.125 mV/100 ohm

Max. Allowable Input: 380 mV (1 kHz)
 Max. Output/Rated Output: 23 V / 150 mV

Total Harmonic Distortion Factor: 0.002% Max., 20 Hz ~ 20 kHz 4V OUT
 RIAA Deviation: 20 Hz ~ 100 kHz ± 0.2 dB
 S/N Ratio: 86 dB (IHFA curve)
 Separation: 20 Hz, 1 kHz 100 dB Min., 20 kHz 90 dB Min.
 Gain: 35.6 dB (1 kHz)

FLAT AMPLIFIER SECTION (AUX IN ~ PRE OUT)

Input Sensitivity/Input Impedance: TUNER: 150 mV / 50 k ohm
 AUX: 150 mV / 50 k ohm
 PB-1: 150 mV / 50 k ohm
 PB-2: 150 mV / 50 k ohm

Max. Output/Rated Output: 25 V / 1.5 V

Total Harmonic Distortion Factor: 0.002% Max., 20 Hz ~ 20 kHz
 Transmission Frequency: 10 Hz ~ 500 kHz $\begin{matrix} +0 \\ -1 \end{matrix}$ dB
 (10 Hz ~ 100 kHz $\begin{matrix} +0 \\ -0.1 \end{matrix}$ dB)

S/N Ratio: 105 dB Min.
 Separation: 100 dB Min., Vol Max. 20 Hz ~ 20 kHz 80 dB Min., Vol -20 dB 20 Hz ~ 20 kHz -20 dB, - ∞ (PRE OUT OFF, indicated by LED)

Muting: Filter: Subsonic 16 Hz, 12 dB/OCT
 TIM Distortion Factor: 0.003% Max.
 IM Distortion Factor: 0.002% Max.

MC HEAD AMPLIFIER SECTION (PHOTO-3 IN ~ REC OUT)

Max. Allowable Input: 19 mV (1 kHz)
 Frequency Characteristic (RIAA Deviation): 20 Hz ~ 100 kHz ± 0.2 dB
 Total Harmonic Distortion Factor: 0.003% Max., 20 Hz ~ 20 kHz
 Separation: 70 dB Min., 20 Hz ~ 20 kHz
 S/N Ratio: 79 dB (noise level converted to input, -157 dB Vrms)

OTHERS

Major Circuit Elements and Components: 14 FET's, 149 transistors, 3 rectifier stacks, 68 diodes, 1 IC, 7 reed relays, 2 relays, 6 LED's

AC Outlets

(for U.S. and Canada): Switched x 2, 500 W (Total)
 Unswitched x 1, 500 W

Power Requirement:

Germany and France: AC 220 V, 50 Hz
 U.S.A.: AC 120 V, 60 Hz

Power Consumption:

37 W (U.S.A.) (UL)
 37 W (at maximum output) (IEC)

Cabinet Dimensions:

455 mm(W) x 132 mm(H) x 357 mm(D)
 (incl. knobs and feet)

Weight:

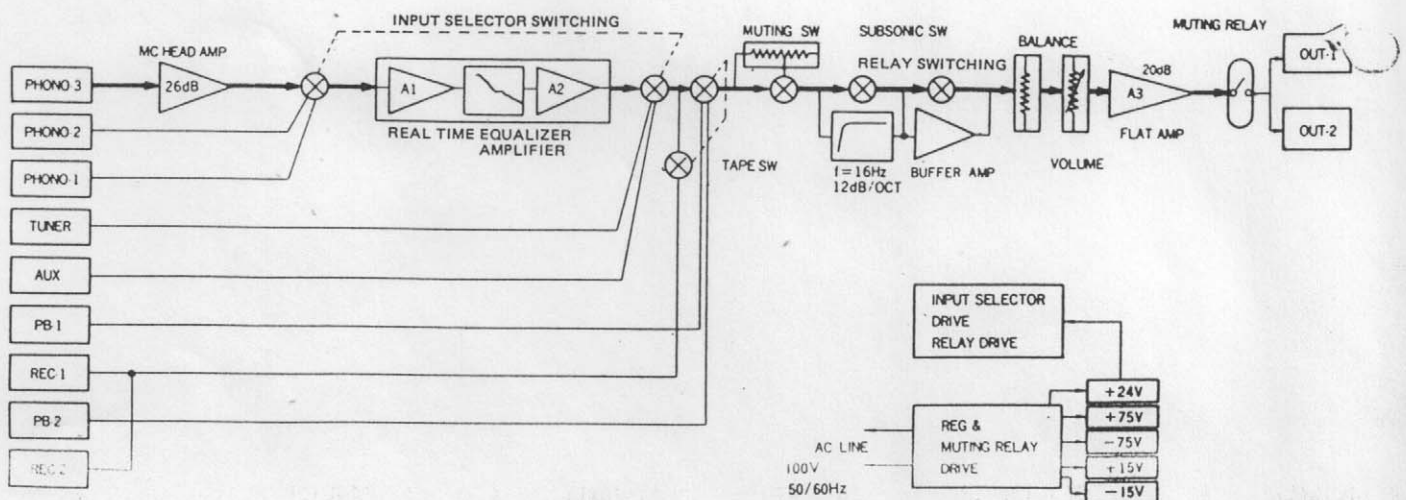
10.5 kg

Accessory:

Low-capacitance signal line cord, one
 Design and specifications subject to change without notice because of improvement.

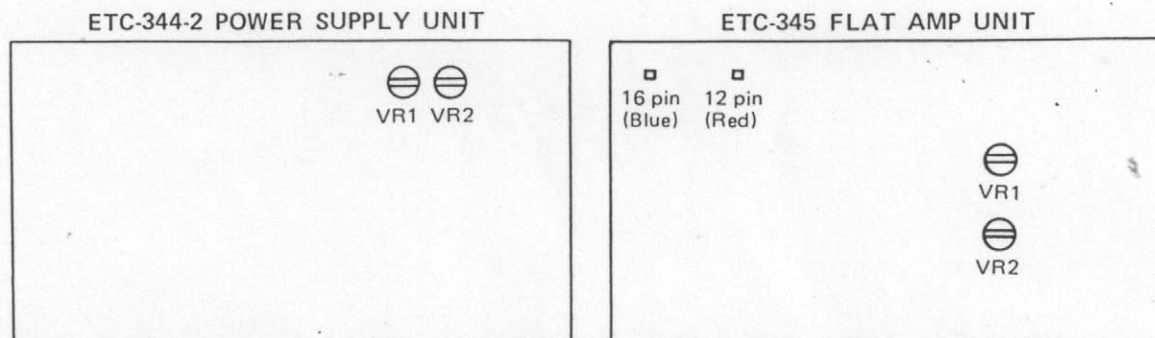
NOTE: The following codes correspond to the appropriate models.
 E2 for Europe, E3 for U.S.A..

BLOCK DIAGRAM



METHOD OF ADJUSTMENTS

ADJ. POINT



ADJUSTMENT

1. Power Supply Voltage

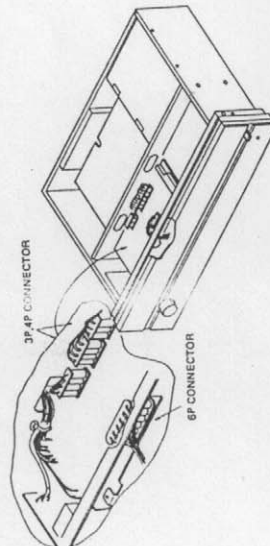
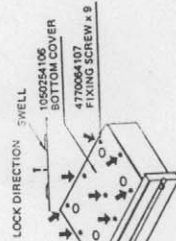
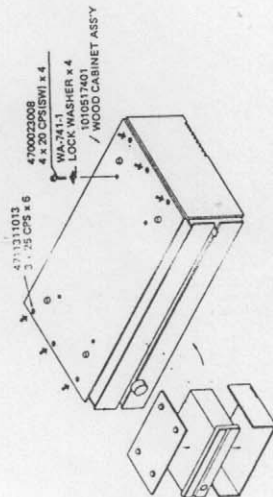
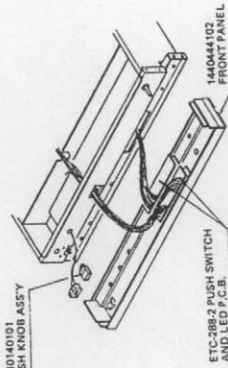
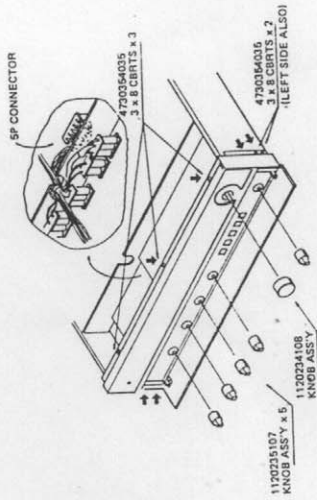
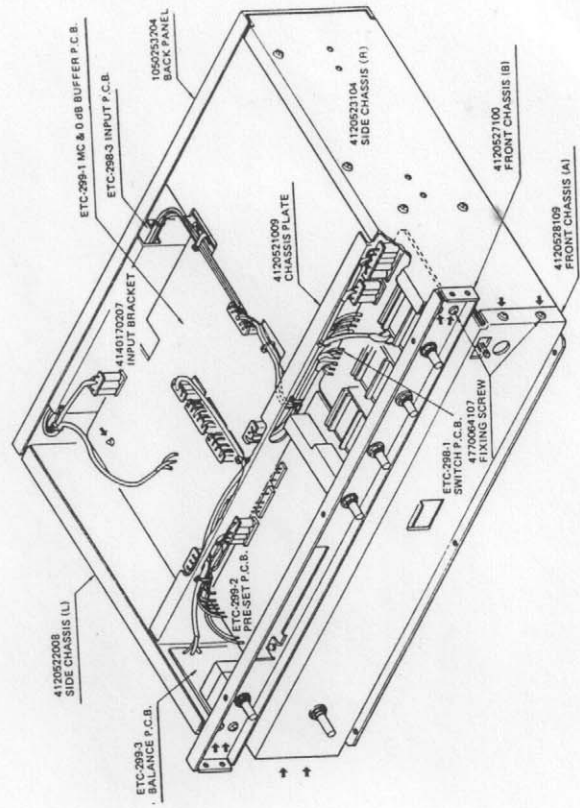
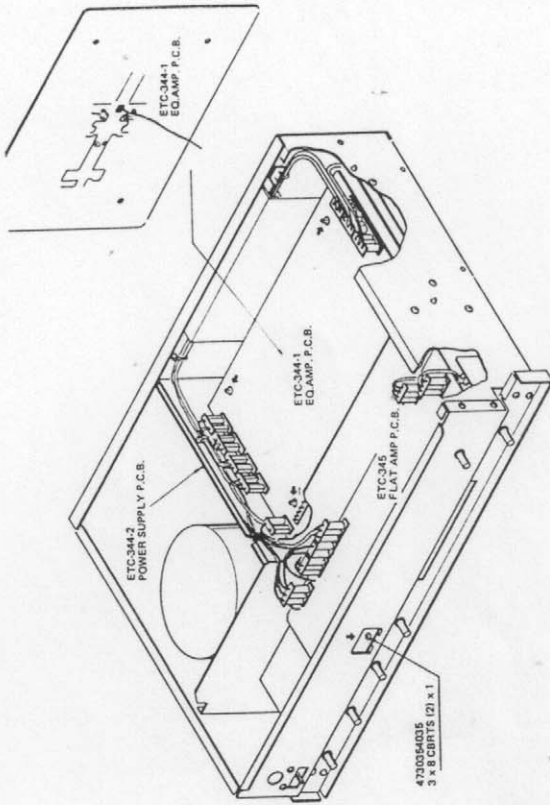
- 1 Turn Power Switch ON, and set volume control to MIN.
- 2 Warm-up for 3 minutes.
- 3 Connect digital voltmeter across No. 12 Red terminal on ETC-345 (Flat Amp P.C.B) and chassis ground. Then adjust VR1 on ETC-344-2 (Power Supply P.C.B) so as the digital voltmeter indicates $72 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}$ V.
- 4 Connect digital voltmeter across No. 16 Blue terminal on ETC-345 and adjust VR2 on ETC-344-2 so as the digital voltmeter indicates $-(72 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix})$ V.

2. Neutral Point Adjustment

- 1 Connect digital voltmeter to Output terminal 1L. Adjust VR1 on ETC-345 so as the digital voltmeter indicates 0 mV.
- 2 Connect digital voltmeter to Output terminal 1R. Adjust VR2 on ETC-345 so as the digital voltmeter indicates 0 mV.

EXPLODED VIEW OF CHASSIS AND CABINET

⚠️ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



- (5) How to remove ETC-299 P.C.B (Fig. 6)
- 1 Detach ETC-299-1, MC and 0 dB Buffer Amp P.C.B. from four P.C.B. supports. (Fig. 6)
 - 2 Remove four fixing screws and detach ETC-299-2 Preset P.C.B with Front chassis (B).
 - 3 ETC 299-3 Balance P.C.B: refer to Fig. 6.
- (6) How to remove ETC-344-1 Equalizer Amp P.C.B from four supports.
- 1 Detach ETC-344-2 Power Supply P.C.B from two supports.
- (7) How to remove Flat Amp (Fig. 7)
- 1 Remove a 3x8CIRTS (2) screw.
 - 2 Undo main volume control nut.
 - 3 Disconnect connector.
 - 4 And now, ready to disassemble from volume control shaft.

- (1) How to disassemble Cabinet (Fig. 1)
- Remove six 3x25CPS and four 4x20CPS (SW) screws on bottom plate.
- (2) How to remove bottom cover (Fig. 2)
- Remove nine fixing screws.
- (3) How to remove front panel (Fig. 3 ~ 5)
- 1 Disconnect 3P, 4P and 5P Connectors. (Fig. 3)
 - 2 Remove 5P connector, four 3x8CIRTS screws and 6 knob. (Fig. 4, 5)
- (4) How to remove ETC-298 P.C.B. (Fig. 5, 6)
- 1 Remove four fixing screw and detach ETC 298-1 P.C.B with Front Chassis B.
 - 2 Detach ETC-298-2 Push switch and LED P.C.B with Front Panel. (Fig. 5)
 - 3 Remove Input bracket: from four P.C.B supports and detach ETC-298-3 Input P.C.B. (Fig. 6)

EXPLODED VIEW OF PARTS LIST

Note: See addendum list below for the Parts with asterisk (*) on the Ref. No. and the other Part not included in this list.

Ref. No.	Part No.	Part Name & Descriptions
1	4120521009	CHASSIS PLATE
2	4120522008	SIDE CHASSIS (L)
3	4770064107	FIXING SCREW
4	4120523104	SIDE CHASSIS (R)
5	4120524200	PS CHASSIS
6	MD-5271	PCB SUPPORT
7	ETC0344-2	POWER SUPPLY UNIT
8	4150103002	PCB HOLDER
△ 9	2335255007	POWER TRANS.
10	4730454032	TAPPING SCREW (2) 4x8 BLACK
11	5130159101	FUSE LABEL
12	2030195019	1P CONNECTOR
13	2050003000	3T LUG
14	4730353036	TAPPING SCREW 3x6
15	2050086001	2P TERMINAL BLOCK
16	4730356017	TAPPING SCREW (2) 3x12
17	4150094001	INSULATING SHEET (B)
18	2020013004	FUSE HOLDER
19	4120238101	BRACKET
20	4700011007	CROSS PAN SCREW WITH S. WASHER 3x10
21	4756006008	3 NUT
△ 22	2061015029	FUSE (1A TIME LAG)
23	1050253301	BACK PANEL
24	1220007015	SPACER
25	5130446005	BLIND SHEET
26	ETC02983	INPUT UNIT
27	4711201039	CROSS PAN SCREW 2.6x4
△ 28	2032052008	AC SOCKET
29	2050043109	GND TERMINAL
30	4770088002	4.1 WASHER
31	4753100004	4 TOOTH WASHER
32	4770006000	4 NUT
△ *33	2062002002	AC CORD
△ *34	4450020005	CORD BUSH
△ *35	2124049005	PUSH SWITCH
36	4120525101	SWITCH BRACKET
37	4711303018	CROSS PAN SCREW 3x6
△ 38	2518001007	OIL CAPACITOR 0.01μF 450V
39	4120526101	SHIELD PLATE
40	4730354035	TAPPING SCREW (2) 3x8 BLACK
41	4120527100	FRONT CHASSIS
42	ETC02981	SWITCH UNIT
43	ETC02993	BALANCE UNIT

Ref. No.	Part No.	Part Name & Descriptions
44	ETC02992	PRE SET UNIT
45	EP-4772	CORD HOLDER
46	ETC0344	EQ. AMP UNIT
47	ETC02991	MC AMP UNIT
48	3930017021	PILOT LAMP
49	4450033005	WIRE CLAMP BAND
*50	1440444102	FRONT PANEL
51	1430041007	PILOT LENS
52	1440445402	DOOR
53	4010057214	SHAFT (R)
54	4010058116	SHAFT (L)
55	4712801014	FLAT HEAD SCREW 3x5 BLACK
56	1220039012	SPACER
57	4010076101	HINGE
58	4712305031	FLAT HEAD SCREW 3x10 BLACK
59	1440458208	SIDE PLATE (R)
60	4120529108	PANEL BRACKET (R)
61	4711301010	CROSS PAN SCREW 3x4
62	1440459100	SIDE PLATE (L)
63	4120530100	PANEL BRACKET (L)
64	1440460209	INNER PANEL
65	4700004001	CROSS PAN SCREW WITH S. WASHER 2.6x8
66	4751002007	2.6 WASHER
67	4700009006	CROSS PAN SCREW WITH S. WASHER 3x6
68	4751003006	3 WASHER
69	1140045102	KNOB GUIDE (B)
70	1140044006	KNOB GUIDE (A)
71	ETC0298-2	PUSH SWITCH, LED UNIT
72	ETC0298-2A	LED UNIT
73	ETC0298-2B	LED UNIT
74	1130140101	PUSH KNOB ASS
75	1130105104	PUSH KNOB
76	1130141100	
77	1050254106	BOTTOM COVER
78	1120234108	KNOB ASS
79	1120235107	KNOB ASS
80	1130139109	KNOB CAP
81	1010517508	WOOD CABINET ASS
82	WA-0741-1	WASHER
83	4700023008	CROSS PAN SCREW WITH S. WASHER 4x20

Ref. No.	Part No.	Part Name & Descriptions
PACKING & ACCESSORIES		
	5040055007	CABINET SHEET
	5030190105	CUSHION
	5030188104	CUSHION
	5010486046	CARTON CASE

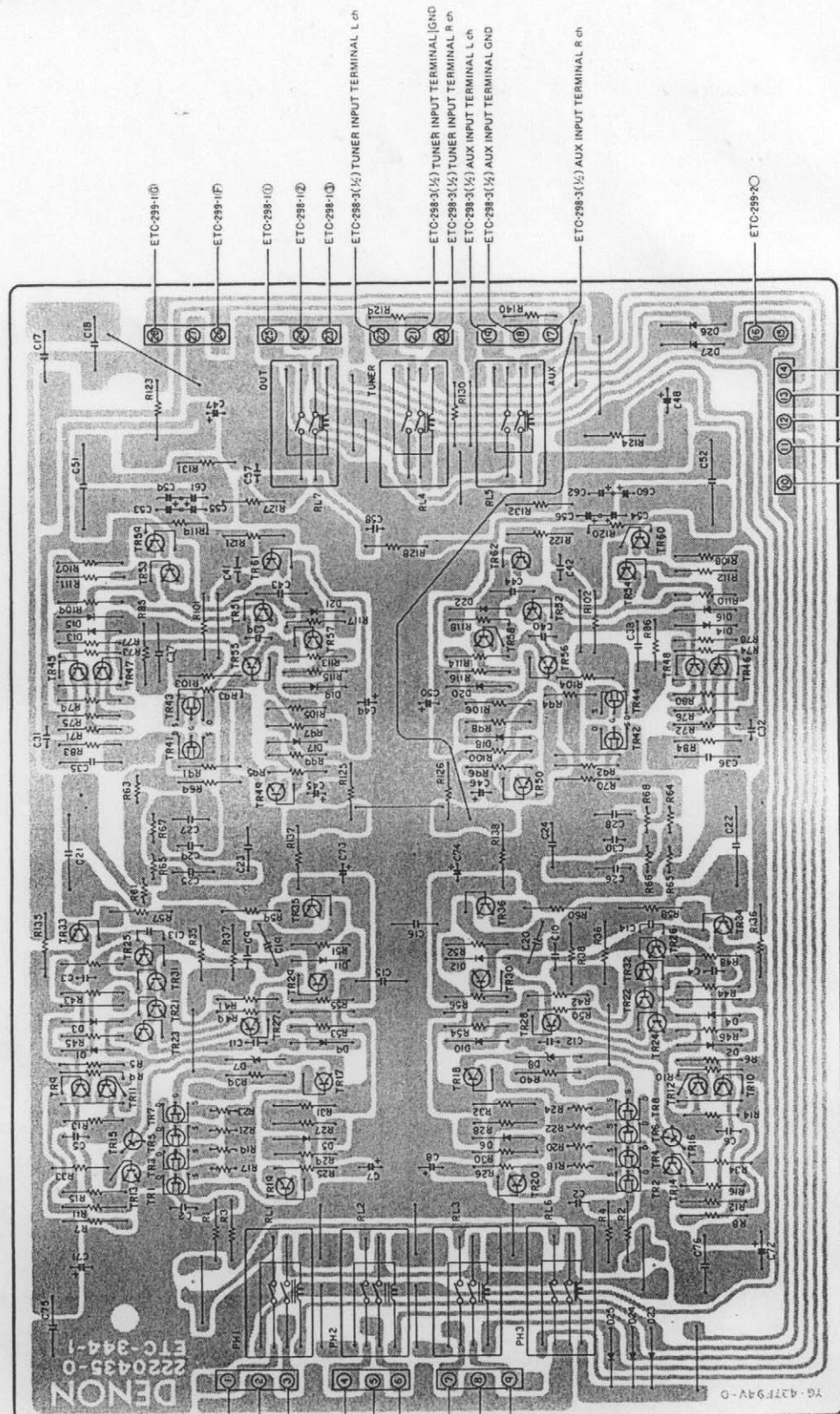
Ref. No.	Part No.	Part Name & Descriptions
	PC-3244	ENVELOPE
	5110818006	INST. MANUAL
	2048051006	2P PIN CORD

ADDENDUM LIST

Ref. No.	Part Name & Descriptions	E3 For U.S.A.		
△ 9	POWER TRANS	2335256006		
△ 22	FUSE	2061023024 (1.6A)		
23	BACK PANEL			
△ 33	AC CORD	2062019008		
△ 34	CORD BUSH	4450020005		
△ 35	PUSH SWITCH	2124049097		
△ 38	CAPACITOR	2568005121 (0.022μF)		
50	FRONT PANEL			
-	CAUTION SHEET	5130364006		

PRINTED CIRCUIT BOARD PATTERNS AND PARTS LIST
ETC-344-1 EQ. AMP UNIT

TR1,2: 25K1476R(C) D 5.7V	TR3,4: 25K1476R(C) D 5.7V	TR5,6: 25K1476R(C) D 5.7V	TR7,8: 25K1476R(C) D 5.7V	TR9,10: 25A9701(BL) C 72.5V	TR11,12: 25A9701(BL) C 72.5V	TR13,14: 25C1401(L) B 6.25V	TR15,16: 25C1401(L) B 6.25V	TR17,18: 25A4701(BL) B 1.6V	TR19,20: 25C2240(BL) B -4.1V	TR21,22: 25C2240(BL) B 72.6V	TR23,24: 25A4701(BL) B 72V	TR25,26: 25A4701(BL) B 72V	TR27,28: 25A9701(BL) B -72.4V	TR29,30: 25C2240(BL) B -72.4V	TR31,32: 25C2240(BL) B 72.5V	TR33,34: 25C1401(L) B 7.5V	TR35,36: 25A916(L) B 6.43V	TR37,38: 25A4701(BL) B 13.8V	TR39,40: 25A1015(V) C 38.4V	TR41,42: 25K1476R(C) D 13.9V	TR43,44: 25K1476R(C) D 13.9V	TR45,46: 25A1015(V) C 38.4V	TR47,48: 25A1015(V) C 38.4V	TR49,50: 25C1015(V) C 38.4V	TR51,52: 25A9701(BL) B -38.4V	TR53,54: 25A9701(BL) B 38.4V	TR55,56: 25A1015(V) C -35.1V	TR57,58: 25C2240(BL) B -35.1V	TR59,60: 25C1401(L) B 0.73V	TR61,62: 25A151(L) B 0.85V	TR63,64: 25K1476R(C) D 0.85V	TR65,66: 25C1401(L) B 0.85V	TR67,68: 25A4701(BL) B -42V	TR69,70: 25C2240(BL) B -42V
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- ETC-298-3 (1/2) PHONO INPUT TERMINAL 1 L ch
- ETC-298-3 (1/2) PHONO INPUT TERMINAL 1 GND
- ETC-298-3 (1/2) PHONO INPUT TERMINAL 1 R ch
- ETC-298-3 (1/2) PHONO INPUT TERMINAL 2 L ch
- ETC-298-3 (1/2) PHONO INPUT TERMINAL 2 GND
- ETC-298-3 (1/2) PHONO INPUT TERMINAL 2 R ch
- ETC-299-1 (1/2) ③
- ETC-299-1 (1/2) ④
- ETC-299-1 (1/2) ⑤
- ETC-299-2 (1/2) TUNER INPUT TERMINAL 1 ch
- ETC-299-2 (1/2) TUNER INPUT TERMINAL 1 GND
- ETC-299-2 (1/2) TUNER INPUT TERMINAL 2 ch
- ETC-299-2 (1/2) TUNER INPUT TERMINAL 2 GND
- ETC-299-3 (1/2) AUX INPUT TERMINAL 1 ch
- ETC-299-3 (1/2) AUX INPUT TERMINAL 1 GND
- ETC-299-3 (1/2) AUX INPUT TERMINAL 2 ch
- ETC-299-3 (1/2) AUX INPUT TERMINAL 2 GND
- ETC-298-B0
- ETC-298-B00
- ETC-298-B09
- ETC-298-B09
- ETC-298-B09
- ETC-298-B09

ETC-344-1 PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions	Ref. No.	Part No.	Part Name & Descriptions
SEMICONDUCTORS					
TR01	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	TR59	2730186001	2SC1940(L) TRANSISTOR
TR02	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	TR60	2730186001	2SC1940(L) TRANSISTOR
TR03	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	TR61	2710093004	2SA915(L) TRANSISTOR
TR04	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	TR62	2710093004	2SA915(L) TRANSISTOR
TR05	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	D01	2760200009	MV-11 DIODE
TR06	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	D02	2760200009	MV-11 DIODE
TR07	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	D03	2760200009	MV-11 DIODE
TR08	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	D04	2760200009	MV-11 DIODE
TR09	2710094016	2SA970(BL) TRANSISTOR	D05	2760049008	1S2076 DIODE
TR10	2710094016	2SA970(BL) TRANSISTOR	D06	2760049008	1S2076 DIODE
TR11	2710094016	2SA970(BL) TRANSISTOR	D07	2760177019	MZ-306A DIODE
TR12	2710094016	2SA970(BL) TRANSISTOR	D08	2760177019	MZ-306A DIODE
TR13	2730186001	2SC1940(L) TRANSISTOR	D09	2760049008	1S2076 DIODE
TR14	2730186001	2SC1940(L) TRANSISTOR	D10	2760049008	1S2076 DIODE
TR15	2730186001	2SC1940(L) TRANSISTOR	D11	2760200009	MV-11 DIODE
TR16	2730186001	2SC1940(L) TRANSISTOR	D12	2760200009	MV-11 DIODE
TR17	2710094016	2SA970(BL) TRANSISTOR	D13	2760049008	1S2076 DIODE
TR18	2710094016	2SA970(BL) TRANSISTOR	D14	2760049008	1S2076 DIODE
TR19	2730187013	2SC2240(BL) TRANSISTOR	D15	2760049008	1S2076 DIODE
TR20	2730187013	2SC2240(BL) TRANSISTOR	D16	2760049008	1S2076 DIODE
TR21	2730187013	2SC2240(BL) TRANSISTOR	D17	2760049008	1S2076 DIODE
TR22	2730187013	2SC2240(BL) TRANSISTOR	D18	2760049008	1S2076 DIODE
TR23	2710094016	2SA970(BL) TRANSISTOR	D19	2760049008	1S2076 DIODE
TR24	2710094016	2SA970(BL) TRANSISTOR	D20	2760049008	1S2076 DIODE
TR25	2710094016	2SA970(BL) TRANSISTOR	D21	2760200009	MV-11 DIODE
TR26	2710094016	2SA970(BL) TRANSISTOR	D22	2760200009	MV-11 DIODE
TR27	2710094016	2SA970(BL) TRANSISTOR	D23	2760237001	RV06 DIODE
TR28	2710094016	2SA970(BL) TRANSISTOR	D24	2760237001	RV06 DIODE
TR29	2730187013	2SC2240(BL) TRANSISTOR	D25	2760237001	RV06 DIODE
TR30	2730187013	2SC2240(BL) TRANSISTOR	D26	2760237001	RV06 DIODE
TR31	2730187013	2SC2240(BL) TRANSISTOR	D27	2760237001	RV06 DIODE
TR32	2730187013	2SC2240(BL) TRANSISTOR	RESISTORS		
TR33	2730205005	2SC1941(L) TRANSISTOR	R01	2410266005	10 ohm ±5% ¼W CARBON FILM
TR34	2730205005	2SC1941(L) TRANSISTOR	R02	2410266005	10 ohm ±5% ¼W CARBON FILM
TR35	2710110000	2SA916(L) TRANSISTOR	R03	2410355000	51 kohm ±5% ¼W CARBON FILM
TR36	2710110000	2SA916(L) TRANSISTOR	R04	2410355000	51 kohm ±5% ¼W CARBON FILM
TR41	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	R05	2410293007	130 ohm ±5% ¼W CARBON FILM
TR42	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	R06	2410293007	130 ohm ±5% ¼W CARBON FILM
TR43	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	R07	2410342000	15 kohm ±5% ¼W CARBON FILM
TR44	2750023021	2SK147GR/BL(C) FIELD EFFECT TRANSISTOR	R08	2410342000	15 kohm ±5% ¼W CARBON FILM
TR45	2710102005	2SA1015(Y) TRANSISTOR	R09	2410293007	130 ohm ±5% ¼W CARBON FILM
TR46	2710102005	2SA1015(Y) TRANSISTOR	R10	2410293007	130 ohm ±5% ¼W CARBON FILM
TR47	2710102005	2SA1015(Y) TRANSISTOR	R11	2410360008	82 kohm ±5% ¼W CARBON FILM
TR48	2710102005	2SA1015(Y) TRANSISTOR	R12	2410360008	82 kohm ±5% ¼W CARBON FILM
TR49	2730198015	2SC1815(BL) TRANSISTOR	R13	2410360008	82 kohm ±5% ¼W CARBON FILM
TR50	2730198015	2SC1815(BL) TRANSISTOR	R14	2410360008	82 kohm ±5% ¼W CARBON FILM
TR51	2710094016	2SA970(BL) TRANSISTOR	R15	2410308002	560 ohm ±5% ¼W CARBON FILM
TR52	2710094016	2SA970(BL) TRANSISTOR	R16	2410308002	560 ohm ±5% ¼W CARBON FILM
TR53	2710094016	2SA970(BL) TRANSISTOR	R17	2412000049	10 ohm ±5% ¼W CARBON FILM
TR54	2710094016	2SA970(BL) TRANSISTOR	R18	2412000049	10 ohm ±5% ¼W CARBON FILM
TR55	2710102005	2SA1015(Y) TRANSISTOR	R19	2412000049	10 ohm ±5% ¼W CARBON FILM
TR56	2710102005	2SA1015(Y) TRANSISTOR	R20	2412000049	10 ohm ±5% ¼W CARBON FILM
TR57	2730187013	2SC2240(BL) TRANSISTOR	R21	2412000049	10 ohm ±5% ¼W CARBON FILM
TR58	2730187013	2SC2240(BL) TRANSISTOR	R22	2412000049	10 ohm ±5% ¼W CARBON FILM
			R23	2412000049	10 ohm ±5% ¼W CARBON FILM
			R24	2412000049	10 ohm ±5% ¼W CARBON FILM
			R25	2410186004	1.1 kohm ±5% ¼W CARBON FILM
			R26	2410186004	1.1 kohm ±5% ¼W CARBON FILM
			R27	2410342000	15 kohm ±5% ¼W CARBON FILM
			R28	2410342000	15 kohm ±5% ¼W CARBON FILM
			R29	2410338001	10 kohm ±5% ¼W CARBON FILM
			R30	2410338001	10 kohm ±5% ¼W CARBON FILM
			R31	2440105026	3.9 kohm ±5% 2W METAL OXIDE FILM
			R32	2440105026	3.9 kohm ±5% 2W METAL OXIDE FILM
			R33	2410360008	82 kohm ±5% ¼W CARBON FILM
			R34	2410360008	82 kohm ±5% ¼W CARBON FILM

(Con.)

Ref. No.	Part No.	Part Name & Descriptions
R35	2410326000	3.3 kohm ±5% ¼W CARBON FILM
R36	2410326000	3.3 kohm ±5% ¼W CARBON FILM
R37	2410364004	120 kohm±5% ¼W CARBON FILM
R38	2410364004	120 kohm±5% ¼W CARBON FILM
R39	2410284003	56 ohm ±5% ¼W CARBON FILM
R40	2410284003	56 ohm ±5% ¼W CARBON FILM
R41	2410366002	150 kohm±5% ¼W CARBON FILM
R42	2410366002	150 kohm±5% ¼W CARBON FILM
R43	2410323003	2.4 kohm ±5% ¼W CARBON FILM
R44	2410323003	2.4 kohm ±5% ¼W CARBON FILM
R45	2410290000	100 ohm ±5% ¼W CARBON FILM
R46	2410290000	100 ohm ±5% ¼W CARBON FILM
R47	2410290000	100 ohm ±5% ¼W CARBON FILM
R48	2410290000	100 ohm ±5% ¼W CARBON FILM
R49	2410366002	150 kohm±5% ¼W CARBON FILM
R50	2410366002	150 kohm±5% ¼W CARBON FILM
R51	2410293007	130 ohm ±5% ¼W CARBON FILM
R52	2410293007	130 ohm ±5% ¼W CARBON FILM
R53	2410330009	4.7 kohm ±5% ¼W CARBON FILM
R54	2410330009	4.7 kohm ±5% ¼W CARBON FILM
R55	2410330009	4.7 kohm ±5% ¼W CARBON FILM
R56	2410330009	4.7 kohm ±5% ¼W CARBON FILM
R57	2410286001	68 ohm ±5% ¼W CARBON FILM
R58	2410286001	68 ohm ±5% ¼W CARBON FILM
R59	2410286001	68 ohm ±5% ¼W CARBON FILM
R60	2410286001	68 ohm ±5% ¼W CARBON FILM
R61	2452013096	1.6 kohm ±1% ¼W METAL OXIDE COMPOSIT
R62	2452013096	1.6 kohm ±1% ¼W METAL OXIDE COMPOSIT
R63	2452013070	620 ohm ±1% ¼W METAL OXIDE COMPOSIT
R64	2452013070	620 ohm ±1% ¼W METAL OXIDE COMPOSIT
R65	2452013083	1.3 kohm ±1% ¼W METAL OXIDE COMPOSIT
R66	2452013083	1.3 kohm ±1% ¼W METAL OXIDE COMPOSIT
R67	2452011027	56 kohm ±1% ¼W METAL OXIDE COMPOSIT
R68	2452011027	56 kohm ±1% ¼W METAL OXIDE COMPOSIT
R69	2410765001	1M ohm ±1% ¼W CARBON FILM
R70	2410765001	1M ohm ±5% ¼W CARBON FILM
R71	2410308002	560 ohm ±5% ¼W CARBON FILM
R72	2410308002	560 ohm ±5% ¼W CARBON FILM
R73	2410378003	470 kohm±5% ¼W CARBON FILM
R74	2410378003	470 kohm±5% ¼W CARBON FILM
R75	2410308002	560 ohm ±5% ¼W CARBON FILM
R76	2410308002	560 ohm ±5% ¼W CARBON FILM
R77	2410361007	91 kohm ±5% ¼W CARBON FILM
R78	2410361007	91 kohm ±5% ¼W CARBON FILM
R79	2410361007	91 kohm ±5% ¼W CARBON FILM
R80	2410361007	91 kohm ±5% ¼W CARBON FILM
R83	2410335004	7.5 kohm ±5% ¼W CARBON FILM
R84	2410335004	7.5 kohm ±5% ¼W CARBON FILM
R85	2410335004	7.5 kohm ±5% ¼W CARBON FILM
R86	2410335004	7.5 kohm ±5% ¼W CARBON FILM
R91	2412010013	2.2 ohm ±5% ¼W CARBON FILM
R92	2412010013	2.2 ohm ±5% ¼W CARBON FILM
R93	2412010013	2.2 ohm ±5% ¼W CARBON FILM
R94	2412010013	2.2 ohm ±5% ¼W CARBON FILM
R95	2410316007	1.2 kohm ±5% ¼W CARBON FILM
R96	2410316007	1.2 kohm ±5% ¼W CARBON FILM
R97	2410343009	16 kohm ±5% ¼W CARBON FILM
R98	2410343009	16 kohm ±5% ¼W CARBON FILM
R99	2410351004	36 kohm ±5% ¼W CARBON FILM
R100	2410351004	36 kohm ±5% ¼W CARBON FILM

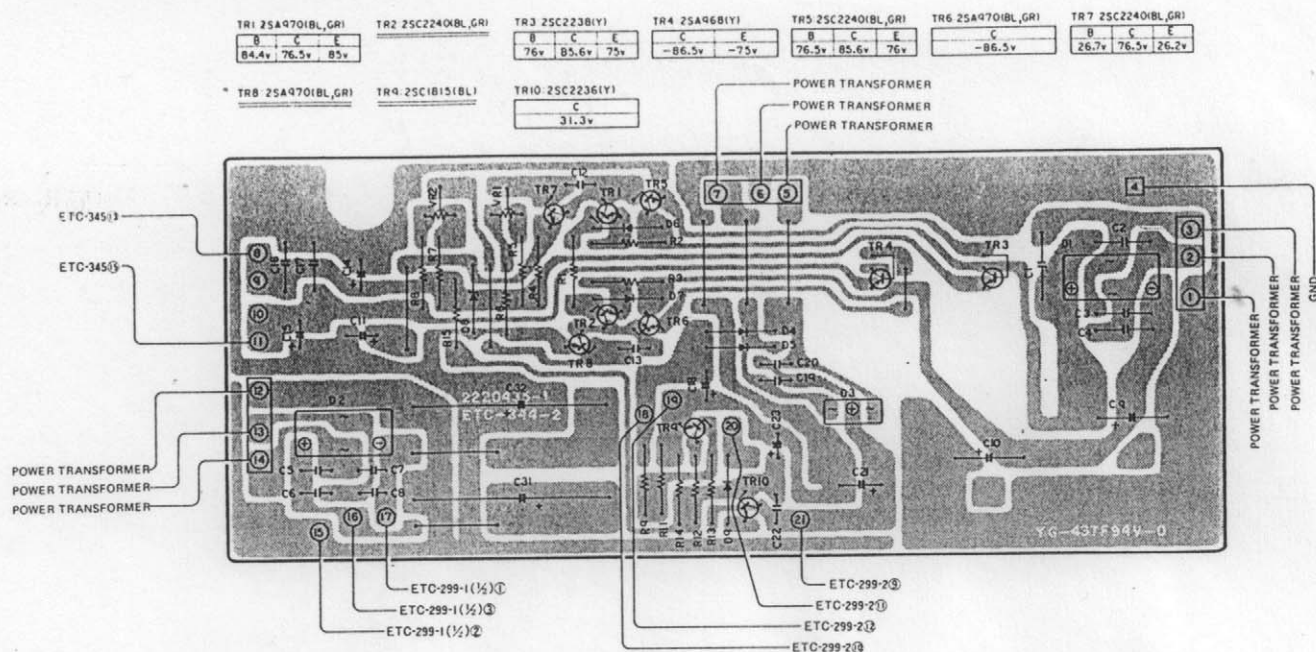
Ref. No.	Part No.	Part Name & Descriptions
R101	2410322004	2.2 kohm ±5% ¼W CARBON FILM
R102	2410322004	2.2 kohm ±5% ¼W CARBON FILM
R103	2410294006	150 ohm ±5% ¼W CARBON FILM
R104	2410294006	150 ohm ±5% ¼W CARBON FILM
R105	2410193000	2.2 kohm ±5% ¼W CARBON FILM
R106	2410193000	2.2 kohm ±5% ¼W CARBON FILM
R107	2410320006	1.8 kohm ±5% ¼W CARBON FILM
R108	2410320006	1.8 kohm ±5% ¼W CARBON FILM
R109	2410290000	100 ohm ±5% ¼W CARBON FILM
R110	2410290000	100 ohm ±5% ¼W CARBON FILM
R111	2410290000	100 ohm ±5% ¼W CARBON FILM
R112	2410290000	100 ohm ±5% ¼W CARBON FILM
R113	2410331008	5.1 kohm ±5% ¼W CARBON FILM
R114	2410331008	5.1 kohm ±5% ¼W CARBON FILM
R115	2410331008	5.1 kohm ±5% ¼W CARBON FILM
R116	2410331008	5.1 kohm ±5% ¼W CARBON FILM
R117	2410304006	390 ohm ±5% ¼W CARBON FILM
R118	2410304006	390 ohm ±5% ¼W CARBON FILM
R119	2410274000	22 ohm ±5% ¼W CARBON FILM
R120	2410274000	22 ohm ±5% ¼W CARBON FILM
R121	2410274000	22 ohm ±5% ¼W CARBON FILM
R122	2410274000	22 ohm ±5% ¼W CARBON FILM
R123	2440044022	1.8 kohm ±5% 1W METAL OXIDE FILM
R124	2440044022	1.8 kohm ±5% 1W METAL OXIDE FILM
R125	2440044022	1.8 kohm ±5% 1W METAL OXIDE FILM
R126	2440044022	1.8 kohm ±5% 1W METAL OXIDE FILM
R127	2410282005	47 ohm ±5% ¼W CARBON FILM
R128	2410282005	47 ohm ±5% ¼W CARBON FILM
R129	2410357008	62 kohm ±5% ¼W CARBON FILM
R130	2410357008	62 kohm ±5% ¼W CARBON FILM
R131	2410378003	470 kohm±5% ¼W CARBON FILM
R132	2410378003	470 kohm±5% ¼W CARBON FILM
R135	2442007070	39 ohm ±5% ¼W METAL OXIDE FILM
R136	2442007070	39 ohm ±5% ¼W METAL OXIDE FILM
R137	2442007070	39 ohm ±5% ¼W METAL OXIDE FILM
R138	2442007070	39 ohm ±5% ¼W METAL OXIDE FILM
R139	2410357008	62 kohm ±5% ¼W CARBON FILM
R140	2410357008	62 kohm ±5% ¼W CARBON FILM
CAPACITORS		
C01	2556079004	150pF ±5% 50V PLASTIC FILM
C02	2556079004	150pF ±5% 50V PLASTIC FILM
C03	2556075008	100pF ±5% 50V PLASTIC FILM
C04	2556075008	100pF ±5% 50V PLASTIC FILM
C05	2556085001	270pF ±5% 50V PLASTIC FILM
C06	2556085001	270pF ±5% 50V PLASTIC FILM
C07	2544036004	33µF 35V ELECTROLYTIC
C08	2544036004	33µF 35V ELECTROLYTIC
C09	2556152044	30pF ±5% 250V PLASTIC FILM
C10	2556152044	30pF ±5% 250V PLASTIC FILM
C11	2556152057	39pF ±5% 250V PLASTIC FILM
C12	2556152057	39pF ±5% 250V PLASTIC FILM
C13	2556152002	12pF ±5% 250V PLASTIC FILM
C14	2556152002	12pF ±5% 250V PLASTIC FILM
C15	2561018005	1µF ±10% 250V METALIZED
C16	2561018005	1µF ±10% 250V METALIZED
C17	2561018005	1µF ±10% 250V METALIZED
C18	2561018005	1µF ±10% 250V METALIZED
C19	2561016007	0.068µF ±10% 400V METALIZED
C20	2561016007	0.068µF ±10% 400V METALIZED
C21	2561019004	1µF ±10% 100V METALIZED
C22	2561019004	1µF ±10% 100V METALIZED
C23	2554070089	0.22µF ±1% 100V PLASTIC FILM
C24	2554070089	0.22µF ±1% 100V PLASTIC FILM
C25	2551137035	0.03µF ±5% 50V PLASTIC FILM
C26	2551137035	0.03µF ±5% 50V PLASTIC FILM
C27	2554074069	0.033µF ±1% 100V PLASTIC FILM

(Con.)

Ref. No.	Part No.	Part Name & Descriptions
C28	2554074069	0.033 μ F \pm 1% 100V PLASTIC FILM
C29	2554073086	0.015 μ F \pm 1% 100V PLASTIC FILM
C30	2554073086	0.015 μ F \pm 1% 100V PLASTIC FILM
C31	2556082004	200pF \pm 5% 50V PLASTIC FILM
C32	2556082004	200pF \pm 5% 50V PLASTIC FILM
C35	2561016036	0.047 μ F \pm 10% 400V METALIZED
C36	2561016036	0.047 μ F \pm 10% 400V METALIZED
C37	2561016036	0.047 μ F \pm 10% 400V METALIZED
C38	2561016036	0.047 μ F \pm 10% 400V METALIZED
C39	2556152031	27pF \pm 5% 250V PLASTIC FILM
C40	2556152031	27pF \pm 5% 250V PLASTIC FILM
C41	2556152028	24pF \pm 5% 250V PLASTIC FILM
C42	2556152028	24pF \pm 5% 250V PLASTIC FILM
C43	2561016007	0.068 μ F \pm 10% 400V METALIZED
C44	2561016007	0.068 μ F \pm 10% 400V METALIZED
C45	2544035005	10 μ F 35V ELECTROLYTIC
C46	2544035005	10 μ F 35V ELECTROLYTIC
C47	2544059007	100 μ F 63V ELECTROLYTIC
C48	2544059007	100 μ F 63V ELECTROLYTIC
C49	2544059007	100 μ F 63V ELECTROLYTIC
C50	2544059007	100 μ F 63V ELECTROLYTIC
C51	2561019017	1.3 μ F \pm 10% 100V METALIZED
C52	2561019017	1.3 μ F \pm 10% 100V METALIZED
C53	2544066016	22 μ F 50V ELECTROLYTIC
C54	2544066016	22 μ F 50V ELECTROLYTIC
C55	2544066016	22 μ F 50V ELECTROLYTIC
C56	2544066016	22 μ F 50V ELECTROLYTIC
C57	2556099000	0.001 μ F \pm 5% 50V PLASTIC FILM
C58	2556099000	0.001 μ F \pm 5% 50V PLASTIC FILM

Ref. No.	Part No.	Part Name & Descriptions
C59	2549022000	22 μ F 25V ELECTROLYTIC
C60	2549022000	22 μ F 25V ELECTROLYTIC
C61	2549022000	22 μ F 25V ELECTROLYTIC
C62	2549022000	22 μ F 25V ELECTROLYTIC
C71	2544063019	220 μ F 80V ELECTROLYTIC
C72	2544063019	220 μ F 80V ELECTROLYTIC
C73	2544063019	220 μ F 80V ELECTROLYTIC
C74	2544063019	220 μ F 80V ELECTROLYTIC
C75	2561016007	0.068 μ F \pm 10% 400V METALIZED
C76	2561016007	0.068 μ F \pm 10% 400V METALIZED
OTHER PARTS		
	2220435204	P.W BOARD
	2050112056	5P CONNECTOR BASE
	2050112030	3P CONNECTOR BASE
	2050112027	2P CONNECTOR BASE
	2090008159	JUMPER SHORT LEAD P=5mm USED 1
	2090008120	JUMPER SHORT LEAD P=10mm USED 5
	2090008117	JUMPER SHORT LEAD P=12.5mm USED 19
	2090008104	JUMPER SHORT LEAD P=15mm USED 3
RL01	2140036000	REED RELAY DC12V
RL02	2140036000	REED RELAY DC12V
RL03	2140036000	REED RELAY DC12V
RL04	2140036000	REED RELAY DC12V
RL05	2140036000	REED RELAY DC12V
RL06	2140036000	REED RELAY DC12V
RL07	2140036000	REED RELAY DC12V

ETC-344-2 POWER SUPPLY UNIT

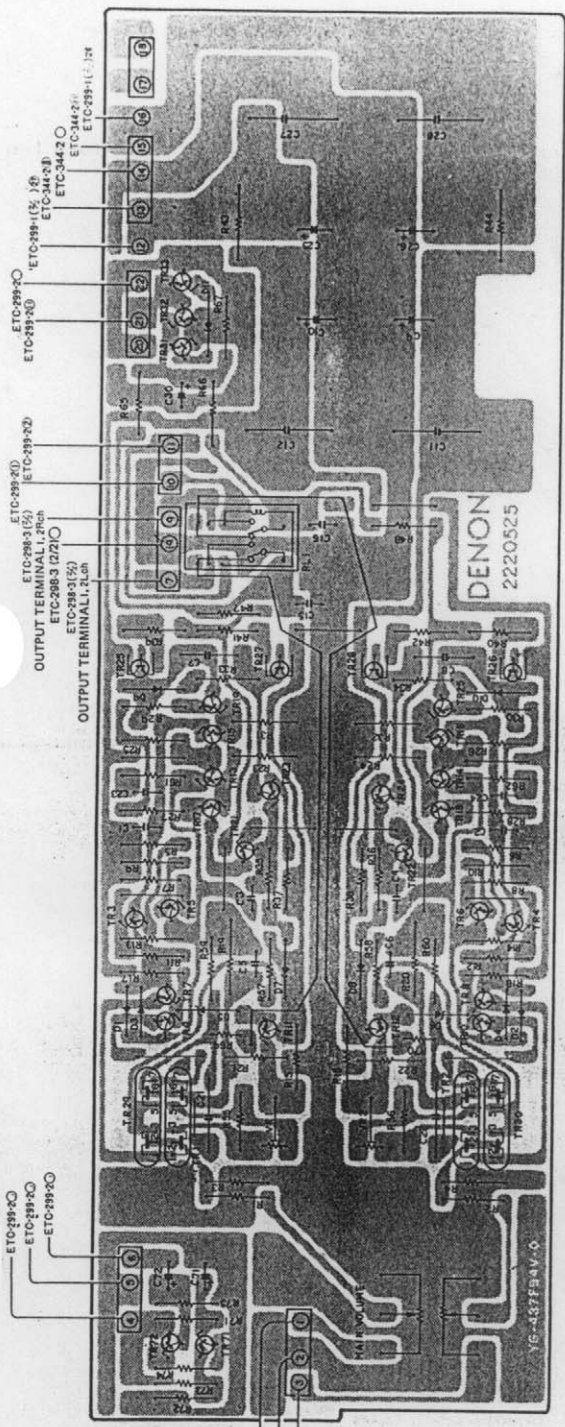


ETC-344-2 PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions	
SEMICONDUCTORS			
TR01	2710094016	2SA970(BL)	TRANSISTOR
TE02	2730187000	2SC2240(GR)	TRANSISTOR
TR03	2730199001	2SC2238(Y)	TRANSISTOR
TR04	2710104003	2SA968(Y)	TRANSISTOR
TR05	2730187000	2SC2240(GR)	TRANSISTOR
TR06	2710094016	2SA970(BL)	TRANSISTOR
TR07	2730187000	2SC2240(GR)	TRANSISTOR
TR08	2710094016	2SA970(BL)	TRANSISTOR
TR09	2730198015	2SC1815(BL)	TRANSISTOR
TR10	2730201009	2SC2236(Y)	TRANSISTOR
D01	2760245006	S1RBA40F	DIODE
D02	2760194018	S1RBA10F	DIODE
D03	2760242012	S2VC10F	DIODE
D04	2760237001	RV06	DIODE
D05	2760237001	RV06	DIODE
D06	2760200009	MV-11	DIODE
D07	2760200009	MV-11D	DIODE
D08	2760188008	MZ324-B	DIODE
D09	2760237001	RV06	DIODE
RESISTORS			
R01	2410238004	160 kohm ±5% ½W	CARBON FILM
R02	2410306004	470 ohm ±5% ¼W	CARBON FILM
R03	2410306004	470 ohm ±5% ¼W	CARBON FILM
R04	2410348004	27 kohm ±5% ¼W	CARBON FILM
R05	2410353002	43 kohm ±5% ¼W	CARBON FILM
R06	2410346006	22 kohm ±5% ¼W	CARBON FILM
R07	2410358007	68 kohm ±5% ¼W	CARBON FILM
R08	2410358007	68 kohm ±5% ¼W	CARBON FILM
R09	2410344008	18 kohm ±5% ¼W	CARBON FILM
R10		MISSING	
R11	2410330009	4.7 kohm ±5% ¼W	CARBON FILM
R12	2410274000	22 ohm ±5% ¼W	CARBON FILM
R13	2410356009	56 kohm ±5% ¼W	CARBON FILM
R14	2410342000	15 kohm ±5% ¼W	CARBON FILM
R15	2410348004	27 kohm ±5% ¼W	CARBON FILM
CAPACITORS			
C01	2561017019	0.01µF ±10% 630V METALIZED	
C02	2561017019	0.01µF ±10% 630V METALIZED	
C03	2561017019	0.01µF ±10% 630V METALIZED	
C04	2561017019	0.01µF ±10% 630V METALIZED	
C05	2561017019	0.01µF ±10% 630V METALIZED	
C06	2561017019	0.01µF ±10% 630V METALIZED	
C07	2561017019	0.01µF ±10% 630V METALIZED	
C08	2561017019	0.01µF ±10% 630V METALIZED	
C09			
C10			
C11	2544036004	33µF 35V ELECTROLYTIC	
C12	2556075008	100pF ±5% 50V PLASTIC FILM	
C13	2556075008	100pF ±5% 50V PLASTIC FILM	
C14	2544060009	10µF 100V ELECTROLYTIC	
C15	2544060009	10µF 100V ELECTROLYTIC	
C18	2544043000	0.47µF 50V ELECTROLYTIC	
C19	2531024003	0.01µF +80 -20% 50V CERAMIC	
C20	2531024003	0.01µF +80 -20% 50V CERAMIC	
C21	2544051005	220µF 50V ELECTROLYTIC	
C22	2533659007	150pF ±10% 50V CERAMIC	
C23	2544036004	33µF 35V ELECTROLYTIC	
C31	2542037005	1000µF 25V ELECTROLYTIC	
C32	2542037005	1000µF 25V ELECTROLYTIC	
OTHER PARTS			
	2220435217	P.W. BOARD	
	EP-6071	BASE PIN	
	2050112030	3P CONNECTOR BASE USED 3	
	20360780	4P CONNECTOR	
	2034114070	3P CONNECTOR	
	2034132007	3P CONNECTOR CORD	
	2034131024	3P CONNECTOR CORD	
VR01	2116001001	SEMI FIXED RESISTOR 4.7 kohm	
VR02	2116001001	SEMI FIXED RESISTOR 4.7 kohm	
	2090008133	JUMPER SHORT LEAD P=7.5mm USED 1	
	2090008104	JUMPER SHORT LEAD P=15mm USED 6	
	4170078201	RADIATOR	
	4150137007	INSULATING WASHER	
	4150052001	INSULATING SHEET	
	4700012006	CROSS PAN SCREW WITH S. WASHER	
		3x12	
	4751003006	3 WASHER	
	4756006008	3 NUT	
	4730454016	TAPPING SCREW (2) 4x8	
	2050003000	3T LUG	

ETC-345 FLAT AMP UNIT

ETC-345 PARTS LIST



TR1,2 μPA68H(M)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
TR1,2 μPA68H(M)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

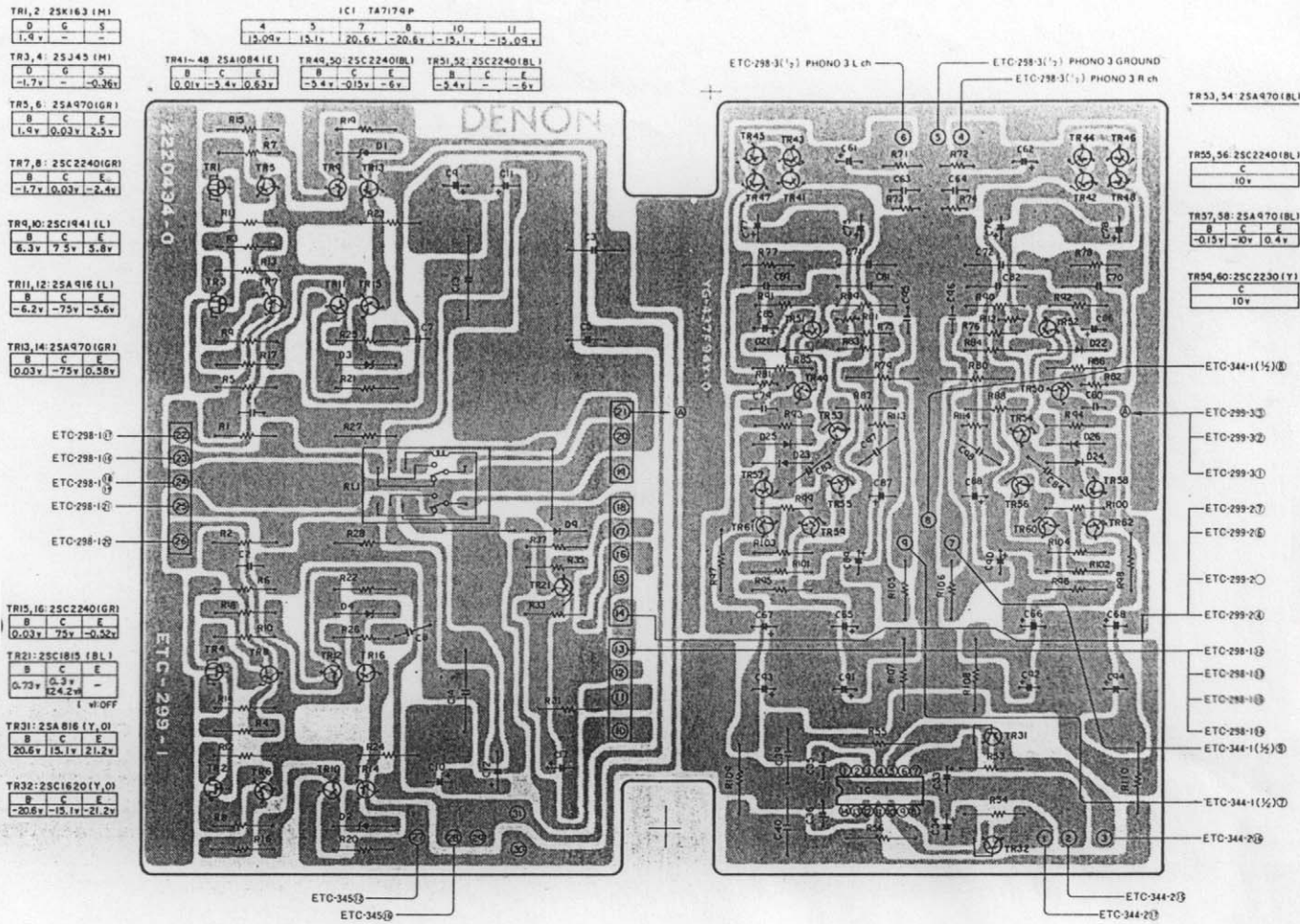
Ref. No.	Part No.	Part Name & Descriptions
SEMICONDUCTORS		
TR01	2750024020	μPA68H(M)FIELD EFFECT TRANSISTOR
TR02	2750024020	μPA68H(M)FIELD EFFECT TRANSISTOR
TR03	2710102005	2SA1015(Y) TRANSISTOR
TR04	2710102005	2SA1015(Y) TRANSISTOR
TR05	2710102005	2SA1015(Y) TRANSISTOR
TR06	2710102005	2SA1015(Y) TRANSISTOR
TR07	2730198015	2SC1815(BL) TRANSISTOR
TR08	2730198015	2SC1815(BL) TRANSISTOR
TR09	2730198015	2SC1815(BL) TRANSISTOR
TR10	2730198015	2SC1815(BL) TRANSISTOR
TR11	2710094016	2SA970(BL) TRANSISTOR
TR12	2710094016	2SA970(BL) TRANSISTOR
TR13	2730198015	2SC1815(BL) TRANSISTOR
TR14	2730198015	2SC1815(BL) TRANSISTOR
TR15	2730198015	2SC1815(BL) TRANSISTOR
TR16	2730198015	2SC1815(BL) TRANSISTOR
TR17	2710094016	2SA970(BL) TRANSISTOR
TR18	2710094016	2SA970(BL) TRANSISTOR
TR19	2710094016	2SA970(BL) TRANSISTOR
TR20	2710094016	2SA970(BL) TRANSISTOR
TR21	2710102995	2SA1015(Y) TRANSISTOR
TR22	2710102005	2SA1015(Y) TRANSISTOR
TR23	2730187013	2SC2240(BL) TRANSISTOR
TR24	2730187013	2SC2240(BL) TRANSISTOR
TR25	2730132000	2SC1628(Y) TRANSISTOR
TR26	2730132000	2SC1628(Y) TRANSISTOR
TR27	2710067001	2SA818(Y) TRANSISTOR
TR28	2710067001	2SA818(Y) TRANSISTOR
TR29	2750024020	μPA68H(M)FIELD EFFECT TRANSISTOR
TR30	2750024020	μPA68H(M)FIELD EFFECT TRANSISTOR
TR31	2730198015	2SC1815(BL) TRANSISTOR
TR32	2730198015	2SC1815(BL) TRANSISTOR
TR33	2710102005	2SA1015(Y) TRANSISTOR
TR71	2730198015	2SC1815(BL) TRANSISTOR
TR72	2710102005	2SA1015(Y) TRANSISTOR
D01	2760049008	1S2076 DIODE
D02	2760049008	1S2076 DIODE
D03	2760049008	1S2076 DIODE
D04	2760049008	1S2076 DIODE
D05	2760177019	MZ-306A DIODE
D06	2760177019	MZ-306A DIODE
D07	2760049008	1S2076 DIODE
D08	2760049008	1S2076 DIODE
D09	2760200009	MV-11 DIODE
D10	2760200009	MV-11 DIODE
D11	2760237001	RV06 DIODE
RESISTORS		
R01	2410312001	820 ohm ±5% ¼W CARBON FILM
R02	2410312001	820 ohm ±5% ¼W CARBON FILM
R03	2410362006	100 kohm ±5% ¼W CARBON FILM
R04	2410362006	100 kohm ±5% ¼W CARBON FILM
R05	2412169003	130 ohm ±2% ¼W CARBON FILM
R06	2412169003	130 ohm ±2% ¼W CARBON FILM
R07	2410342000	15 kohm ±5% ¼W CARBON FILM
R08	2410342000	15 kohm ±5% ¼W CARBON FILM
R09	2412169003	130 ohm ±2% ¼W CARBON FILM
R10	2412169003	130 ohm ±2% ¼W CARBON FILM
R11	2410360008	82 kohm ±5% ¼W CARBON FILM
R12	2410360008	82 kohm ±5% ¼W CARBON FILM
R13	2410360008	82 kohm ±5% ¼W CARBON FILM
R14	2410360008	82 kohm ±5% ¼W CARBON FILM
R15	2410352003	39 kohm ±5% ¼W CARBON FILM
R16	2410352003	39 kohm ±5% ¼W CARBON FILM
R17	2410355000	51 kohm ±5% ¼W CARBON FILM

(Con.)

Ref. No.	Part No.	Part Name & Descriptions
R18	2410355000	51 kohm ±5% ¼W CARBON FILM
R19	2410337002	9.1 kohm ±5% ¼W CARBON FILM
R20	2410337002	9.1 kohm ±5% ¼W CARBON FILM
R21	2410314009	1 kohm ±5% ¼W CARBON FILM
R22	2410314009	1 kohm ±5% ¼W CARBON FILM
R23	2410362006	100 kohm±5% ¼W CARBON FILM
R24	2410362006	100 kohm±5% ¼W CARBON FILM
R25	2410316007	1.2 kohm ±5% ¼W CARBON FILM
R26	2410316007	1.2 kohm ±5% ¼W CARBON FILM
R27	2410290000	100 ohm ±5% ¼W CARBON FILM
R28	2410290000	100 ohm ±5% ¼W CARBON FILM
R29	2410290000	100 ohm ±5% ¼WCCARBON FILM
R30	2410290000	100 ohm ±5% ¼W CARBON FILM
R31	2410362006	100 kohm±5% ¼W CARBON FILM
R32	2410362006	100 kohm±5% ¼W CARBON FILM
R33	2410294006	150 ohm ±5% ¼W CARBON FILM
R34	2410294006	150 ohm ±5% ¼W CARBON FILM
R35	2410331008	5.1 kohm ±5% ¼W CARBON FILM
R36	2410331008	5.1 kohm ±5% ¼W CARBON FILM
R37	2410331008	5.1 kohm ±5% ¼W CARBON FILM
R38	2410331008	5.1 kohm ±5% ¼W CARBON FILM
R39	2410286001	68 ohm ±5% ¼W CARBON FILM
R40	2410286001	68 ohm ±5% ¼W CARBON FILM
R41	2410286001	68 ohm ±5% ¼W CARBON FILM
R42	2410286001	68 ohm ±5% ¼W CARBON FILM
R43	2440100021	1.5 kohm ±5% 2W METAL OXIDE FILM
R44	2440100021	1.5 kohm ±5% 2W METAL OXIDE FILM
R47	2410290000	100 ohm ±5% ¼W CARBON FILM
R48	2410290000	100 ohm ±5% ¼W CARBON FILM
R55	2410290000	100 ohm ±5% ¼W CARBON FILM
R56	2410290000	100 ohm ±5% ¼W CARBON FILM
R57	2410352003	39 kohm ±5% ¼W CARBON FILM
R58	2410352003	39 kohm ±5% ¼W CARBON FILM
R59	2420203003	10M ohm ±10% ¼W CARBON COMPOSIT
R60	2420203003	10M ohm ±10% ¼W CARBON COMPOSIT
R61	2410306004	470 ohm ±5% ¼W CARBON FILM
R62	2410306004	470 ohm ±5% ¼W CARBON FILM
R65	2410374007	330 kohm±5% ¼W CARBON FILM
R66	2410374007	330 kohm±5% ¼W CARBON FILM
R67	2410362006	100 kohm±5% ¼W CARBON FILM
R69	2412022072	39 kohm ±5% ¼W CARBON FILM
R70	2412022072	39 kohm ±5% ¼W CARBON FILM
R71	2410765001	1M ohm ±5% ¼W CARBON FILM
R72	2410326000	3.3 kohm ±5% ¼W CARBON FILM
R73	2410354001	47 kohm ±5% ¼W CARBON FILM
R74	2410354001	47 kohm ±5% ¼W CARBON FILM
R75	2410356009	56 kohm ±5% ¼W CARBON FILM
CAPACITORS		
C01	2556083003	220pF ±5% 50V PLASTIC FILM
C02	2556083003	220pF ±5% 50V PLASTIC FILM
C03	2556152060	47pF ±5% 50V PLASTIC FILM
C04	2556152060	47pF ±5% 50V PLASTIC FILM
C05	2556152015	15pF ±5% 50V PLASTIC FILM
C06	2556152015	15pF ±5% 50V PLASTIC FILM
C07	2561016007	0.068μF ±10% 400V METALIZED
C08	2561016007	0.068μF ±10% 400V METALIZED
C09	2544059010	220μF 63V ELECTROLYTIC
C10	2544059010	220μF 63V ELECTROLYTIC
C11	2561019004	1μF ±10% 100V METALIZED
C12	2561019004	1μF ±10% 100V METALIZED
C15	2556083003	220pF ±5% 50V PLASTIC FILM
C16	2556083003	220pF ±5% 50V PLASTIC FILM
C21	2561018005	1μF ±10% 250V METALIZED
C22	2561018005	1μF ±10% 250V METALIZED
C23	2556087009	330pF ±5% 50V PLASTIC FILM
C24	2556087009	330pF ±5% 50V PLASTIC FILM

Ref. No.	Part No.	Part Name & Descriptions
C25	2544063019	220μF 80V ELECTROLYTIC
C26	2544063019	220μF 80V ELECTROLYTIC
C27	2561019017	1.3μF ±10% 100V METALIZED
C28	2561019017	1.3μF ±10% 100V METALIZED
C30	2544054002	22μF 16V ELECTROLYTIC
C71	2544015009	10μF 16V ELECTROLYTIC
C72	2544034006	4.7μF 35V ELECTROLYTIC
OTHER PARTS		
	2220525004	P.W BOARD
	2034114083	3P CONNECTOR
	2050112030	3P CONNECTOR BASE USED 5
	2050112027	2P CONNECTOR BASE USED 1
	2030197017	1P CONTACT (D) ASS
	2090008117	JUMPER SHORT LEAD P=12.5mm USED 12
	2090008133	JUMPER SHORT LEAD P=7.5mm USED 2
RL01	2140039007	RELAY
	2110204008	VARIABLE RESISTOR 10 kohm
VR01	2116016009	SEMI FIXED RESISTOR 100 ohm
VR02	2116016009	SEMI FIXED RESISTOR 100 ohm
	4140116106	SHIELD COVER

ETC-299-1 MC AMP UNIT



ETC-299-1 PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions	Ref. No.	Part No.	Part Name & Descriptions
SEMICONDUCTORS					
IC01	2630086007	TA7179P INTEGRATED CIRCUIT	TR54	2710094016	2SA970(BL) TRANSISTOR
TR01	2750020008	2SK163(M) FIELD EFFECT TRANSISTOR	TR55	2730187013	2SC2240(BL) TRANSISTOR
TR02	2750020008	2SK163(M) FIELD EFFECT TRANSISTOR	TR56	2730187013	2SC2240(BL) TRANSISTOR
TR03	2750025003	2SJ45(M) FIELD EFFECT TRANSISTOR	TR57	2710094016	2SA970(BL) TRANSISTOR
TR04	2750025003	2SJ45(M) FIELD EFFECT TRANSISTOR	TR58	2710094016	2SA970(BL) TRANSISTOR
TR05	2710094003	2SA970(GR) TRANSISTOR	TR59	2730201009	2SC2236(Y) TRANSISTOR
TR06	2710094003	2SA970(GR) TRANSISTOR	TR60	2730201009	2SC2236(Y) TRANSISTOR
TR07	2730187000	2SC2240(GR) TRANSISTOR	TR61	2710105002	2SA966(Y) TRANSISTOR
TR08	2730187000	2SC2240(GR) TRANSISTOR	TR62	2710105002	2SA966(Y) TRANSISTOR
TR09	2730205005	2SC1941(L) TRANSISTOR	D01	2760177019	MZ-306A DIODE
TR10	2730205005	2SC1941(L) TRANSISTOR	D02	2760177019	MZ-306A DIODE
TR11	2710110000	2SA916(L) TRANSISTOR	D03	2760177019	MZ-306A DIODE
TR12	2710110000	2SA916(L) TRANSISTOR	D04	2760177019	MZ-306A DIODE
TR13	2710094003	2SA970(GR) TRANSISTOR	D09	2760237001	RV06 DIODE
TR14	2710094003	2SA970(GR) TRANSISTOR	D21	2760049008	1S2076 DIODE
TR15	2730187000	2SC2240(GR) TRANSISTOR	D22	2760049008	1S2076 DIODE
TR16	2730187000	2SC2240(GR) TRANSISTOR	D23	2760200009	MV-11 DIODE
TR21	2730198015	2SC1815(BL) TRANSISTOR	D24	2760200009	MV-11 DIODE
TR31	2710088019	2SA816(O) TRANSISTOR	D25	2760200009	MV-11 DIODE
TR32	2730177007	2SC1626(Y) TRANSISTOR	D26	2760200009	MV-11 DIODE
TR41	2710106001	2SA1084(E) TRANSISTOR	RESISTORS		
TR42	2710106001	2SA1084(E) TRANSISTOR	R01	2410306004	470 ohm ±5% 1/4W CARBON FILM
TR43	2710106001	2SA1084(E) TRANSISTOR	R02	2410306004	470 ohm ±5% 1/4W CARBON FILM
TR44	2710106001	2SA1084(E) TRANSISTOR	R03	2410280007	39 ohm ±5% 1/4W CARBON FILM
TR45	2710106001	2SA1084(E) TRANSISTOR	R04	2410280007	39 ohm ±5% 1/4W CARBON FILM
TR46	2710106001	2SA1084(E) TRANSISTOR	R05	2410375006	360 kohm ±5% 1/4W CARBON FILM
TR47	2710106001	2SA1084(E) TRANSISTOR	R06	2410375006	360 kohm ±5% 1/4W CARBON FILM
TR48	2710106001	2SA1084(E) TRANSISTOR	R07	2410324002	2.7 kohm ±5% 1/4W CARBON FILM
TR49	2730187013	2SC2240(BL) TRANSISTOR	R08	2410324002	2.7 kohm ±5% 1/4W CARBON FILM
TR50	2730187013	2SC2240(BL) TRANSISTOR	R09	2410324002	2.7 kohm ±5% 1/4W CARBON FILM
TR51	2730187013	2SC2240(BL) TRANSISTOR	R10	2410324002	2.7 kohm ±5% 1/4W CARBON FILM
TR52	2730187013	2SC2240(BL) TRANSISTOR	R11	2410303007	360 ohm ±5% 1/4W CARBON FILM
TR53	2710094016	2SA970(BL) TRANSISTOR	R12	2410303007	360 ohm ±5% 1/4W CARBON FILM

(Con.)

Ref. No.	Part No.	Part Name & Descriptions
R13	2410304006	390 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R14	2410304006	390 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R15	2410310003	680 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R16	2410310003	680 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R17	2410310003	680 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R18	2410310003	680 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R19	2410354001	47 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R20	2410354001	47 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R21	2410354001	47 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R22	2410354001	47 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R23	2410290000	100 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R24	2410290000	100 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R25	2410306004	470 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R26	2410306004	470 ohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R27	2410362006	100 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R28	2410362006	100 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R31	2410338001	10 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R33	2410366002	150 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R35	2410332007	5.6 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R37	2410354001	47 kohm $\pm 5\%$ $\frac{1}{4}W$ CARBON FILM
R53	2410153008	47 ohm $\pm 5\%$ $\frac{1}{2}W$ CARBON FILM
R54	2410153008	47 ohm $\pm 5\%$ $\frac{1}{2}W$ CARBON FILM
R55	2440001023	0.47 ohm $\pm 5\%$ 1W METAL OXIDE FILM
R56	2440001023	0.47 ohm $\pm 5\%$ 1W METAL OXIDE FILM
R71	2452014008	160 ohm $\pm 1\%$ $\frac{1}{2}W$ METAL OXIDE COMPOSIT
R72	2452014008	160 ohm $\pm 1\%$ $\frac{1}{2}W$ METAL OXIDE COMPOSIT
R73	2452012026	270 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R74	2452012026	270 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R75	2462003012	390 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE MIXED
R76	2462003012	390 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE MIXED
R77	2462003009	160 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE MIXED
R78	2462003009	160 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE MIXED
R79	2442017002	1 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE FILM
R80	2442017002	1 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE FILM
R81	2452012026	270 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R82	2452012026	270 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R83	2410304006	390 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R84	2410304006	390 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R85	2410316007	1.2 kohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R86	2410316007	1.2 kohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R87	2410304006	390 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R88	2410304006	390 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R89	2410328008	3.9 kohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R90	2410328008	3.9 kohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R91	2410324002	2.7 kohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R92	2410324002	2.7 kohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R93	2410289008	91 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT

Ref. No.	Part No.	Part Name & Descriptions
R94	2410289008	91 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R95	2410278006	33 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R96	2410278006	33 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R97	2410278006	33 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R98	2410278006	33 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R99	2410323003	2.4 kohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R100	2410323003	2.4 kohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R101	2410258000	4.7 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R102	2410258000	4.7 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R103	2410258000	4.7 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R104	2410258000	4.7 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R105	2410278006	33 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R106	2410278006	33 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R107	2442013019	130 ohm $\pm 1\%$ 1W METAL OXIDE FILM
R108	2442013019	130 ohm $\pm 5\%$ 1W METAL OXIDE FILM
R109	2442013019	130 ohm $\pm 5\%$ 1W METAL OXIDE FILM
R110	2442013019	130 ohm $\pm 5\%$ 1W METAL OXIDE FILM
R111	2452012055	470 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R112	2452012055	470 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R113	2452013067	20 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT
R114	2452013067	20 ohm $\pm 1\%$ $\frac{1}{4}W$ METAL OXIDE COMPOSIT

CAPACITORS

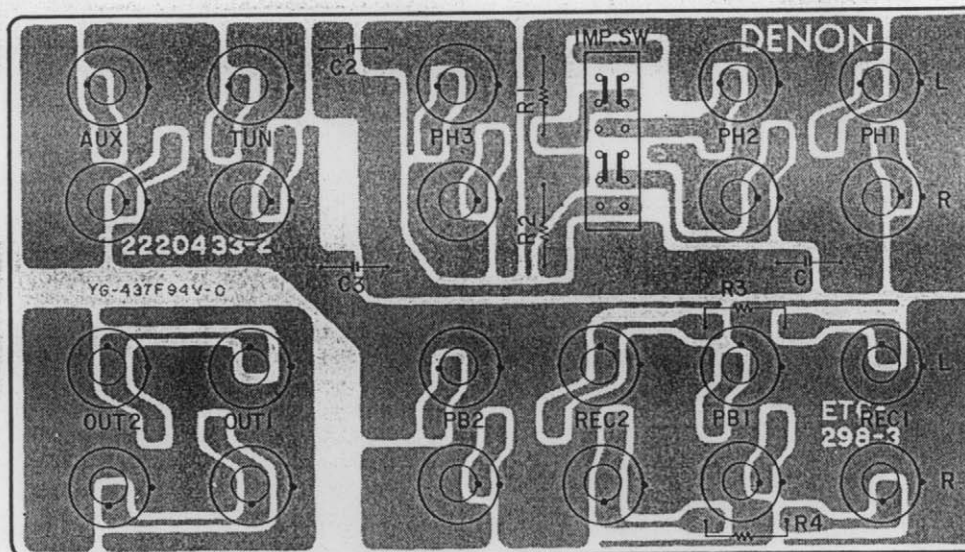
C01	2556152060	47pF $\pm 5\%$ 250V PLASTIC FILM
C02	2556152060	47pF $\pm 5\%$ 250V PLASTIC FILM
C03	2561017019	0.01 μ F $\pm 10\%$ 630V METALIZED
C05	2561017019	0.01 μ F $\pm 10\%$ 630V METALIZED
C07	2556091008	470pF $\pm 5\%$ 50V PLASTIC FILM
C08	2556091008	470pF $\pm 5\%$ 50V PLASTIC FILM
C09	2549022000	22 μ F 25V ELECTROLYTIC
C10	2549022000	22 μ F 25V ELECTROLYTIC
C11	2549022000	22 μ F 25V ELECTROLYTIC
C12	2549022000	22 μ F 25V ELECTROLYTIC
C13	2561019004	1 μ F $\pm 10\%$ 100V METALIZED
C14	2561019004	1 μ F $\pm 10\%$ 100V METALIZED
C17	2544003008	100 μ F 6.3V ELECTROLYTIC
C33	2544035005	10 μ F 35V ELECTROLYTIC
C34	2544035005	10 μ F 35V ELECTROLYTIC
C35	2551013007	0.01 μ F $\pm 10\%$ 50V PLASTIC FILM
C36	2551013007	0.01 μ F $\pm 10\%$ 50V PLASTIC FILM
C39	2561018005	1 μ F $\pm 10\%$ 250V METALIZED
C40	2561018005	1 μ F $\pm 10\%$ 250V METALIZED
C61	2549015046	470 μ F $\pm 10\%$ 10V ELECTROLYTIC
C62	2549015046	470 μ F $\pm 10\%$ 10V ELECTROLYTIC
C63	2556107002	0.0022 μ F $\pm 5\%$ 50V PLASTIC FILM
C64	2556107002	0.0022 μ F $\pm 5\%$ 50V PLASTIC FILM
C65	2544014000	1000 μ F 10V ELECTROLYTIC
C66	2544014000	1000 μ F 10V ELECTROLYTIC
C67	2544014000	1000 μ F 10V ELECTROLYTIC
C68	2544014000	1000 μ F 10V ELECTROLYTIC

(Con.)

Ref. No.	Part No.	Part Name & Descriptions
C69	2561017022	0.015 μ F \pm 10% 630V METALIZED
C70	2561017022	0.015 μ F \pm 10% 630V METALIZED
C71	2531027000	0.1 μ F +80 -20% 50V CERAMIC
C72	2531027000	0.1 μ F +80 -20% 50V CERAMIC
C75	2549015033	330 μ F \pm 10% 10V ELECTROLYTIC
C76	2549015033	330 μ F \pm 10% 10V ELECTROLYTIC
C77	2549016003	1000 μ F \pm 10% 6.3V ELECTROLYTIC
C78	2549016003	1000 μ F \pm 10% 6.3V ELECTROLYTIC
C79	2556152073	56pF \pm 5% 250V PLASTIC FILM
C80	2556152073	56pF \pm 5% 250V PLASTIC FILM
C81	2561017019	0.01 μ F \pm 10% 630V METALIZED
C82	2561017019	0.01 μ F \pm 10% 630V METALIZED
C83	2561016007	0.068 μ F \pm 10% 400V METALIZED
C84	2561016007	0.068 μ F \pm 10% 400V METALIZED
C85	2549022013	4.7 μ F 25V ELECTROLYTIC
C86	2549022013	4.7 μ F 25V ELECTROLYTIC
C87	2549015046	470 μ F \pm 10% 10V ELECTROLYTIC
C88	2549015046	470 μ F \pm 10% 10V ELECTROLYTIC
C89	2549016003	1000 μ F \pm 10% 6.3V ELECTROLYTIC

Ref. No.	Part No.	Part Name & Descriptions
C90	2549016003	1000 μ F \pm 10% 6.3V ELECTROLYTIC
C91	2544014000	1000 μ F 10V ELECTROLYTIC
C92	2544014000	1000 μ F 10V ELECTROLYTIC
C93	2544014000	1000 μ F 10V ELECTROLYTIC
C94	2544014000	1000 μ F 10V ELECTROLYTIC
C95	2556099000	0.001 μ F \pm 5% 50V PLASTIC FILM
C96	2556099000	0.001 μ F \pm 5% 50V PLASTIC FILM
C97	2561017019	0.01 μ F \pm 10% 630V METALIZED
C98	2561017019	0.01 μ F \pm 10% 630V METALIZED
OTHER PARTS		
	2220434205	P.W BOARD
	2090008104	JUMPER SHORT LEAD P=15mm USED 2
	2050112043	4P CONNECTOR BASE
	2050112056	5P CONNECTOR BASE USED 2
	2050112030	3P CONNECTOR BASE USED 4
	2034111028	3P CONNECTOR FOR EQ AMP
RL01	2140039007	RELAY DC24V

ETC-298-3 INPUT UNIT



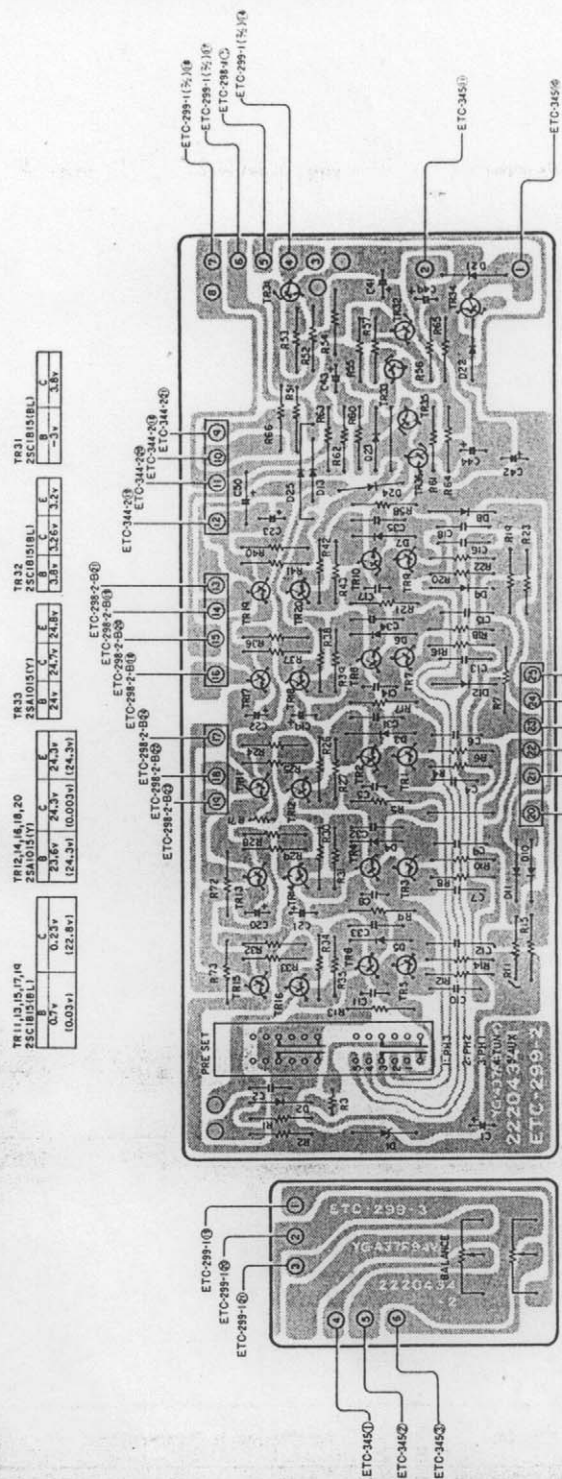
ETC-298-3 PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
RESISTORS		
R01	2410290000	100 ohm \pm 5% $\frac{1}{4}$ W CARBON FILM
R02	2410290000	100 ohm \pm 5% $\frac{1}{4}$ W CARBON FILM
R03	2410290000	100 ohm \pm 5% $\frac{1}{4}$ W CARBON FILM
R04	2410290000	100 ohm \pm 5% $\frac{1}{4}$ W CARBON FILM
CAPACITORS		
C01	2551088003	0.22 μ F \pm 10% 50V PLASTIC FILM
C02	2551088003	0.22 μ F \pm 10% 50V PLASTIC FILM
C03	2551088003	0.22 μ F \pm 10% 50V PLASTIC FILM
OTHER PARTS		
	2220433222	P.W. BOARD

Ref. No.	Part No.	Part Name & Descriptions
SW01	2124119008	SLIDE SWITCH
	2048007018	1P PIN JACK USED 8
	2048009016	1P PIN JACK USED 14
	4450033005	WIRE CLAMP BAND USED 3
	2038071009	5P CONNECTOR FOR P.B1, 2
	2034125001	3P CONNECTOR FOR PH1
	2034125014	3P CONNECTOR FOR PH2
	2034125027	3P CONNECTOR FOR PH3
	2034125027	3P CONNECTOR FOR TUN.
	2034125030	3P CONNECTOR FOR AUX
	2034125056	3P CONNECTOR FOR OUT
	2034125043	3P CONNECTOR FOR REC
	MD-5271	P.C.B SUPPORT USED 7
	4140170207	INPUT BRACKET
	2050003000	3T LUG

ETC-299-2 PRE SET UNIT,
ETC-299-3 BALANCE UNIT

ETC-299-2 PARTS LIST



34-7 ETC-299-3/1023

Ref. No.	Part No.	Part Name & Descriptions	
SEMICONDUCTORS			
TR01	2710102005	2SA1015(Y)	TRANSISTOR
TR02	2730198002	2SC1815(Y)	TRANSISTOR
TR03	2710102005	2SA1015(Y)	TRANSISTOR
TR04	2730198002	2SC1815(Y)	TRANSISTOR
TR05	2710102005	2SA1015(Y)	TRANSISTOR
TR06	2730198002	2SC1815(Y)	TRANSISTOR
TR07	2710102005	2SA1015(Y)	TRANSISTOR
TR08	2730198002	2SC1815(Y)	TRANSISTOR
TR09	2710102005	2SA1015(Y)	TRANSISTOR
TR10	2730198002	2SC1815(Y)	TRANSISTOR
TR11	2730198015	2SC1815(BL)	TRANSISTOR
TR12	2710102005	2SA1015(Y)	TRANSISTOR
TR13	2730198015	2SC1815(BL)	TRANSISTOR
TR14	2710102005	2SA1015(Y)	TRANSISTOR
TR15	2730198015	2SC1815(BL)	TRANSISTOR
TR16	2710102005	2SA1015(Y)	TRANSISTOR
TR17	2730198015	2SC1815(BL)	TRANSISTOR
TR18	2710102005	2SA1015(Y)	TRANSISTOR
TR19	2730198015	2SC1815(BL)	TRANSISTOR
TR20	2710102005	2SA1015(Y)	TRANSISTOR
TR21	2730198015	2SC1815(BL)	TRANSISTOR
TR22	2730198015	2SC1815(BL)	TRANSISTOR
TR23	2710102005	2SA1015(Y)	TRANSISTOR
TR24	2730198015	2SC1815(BL)	TRANSISTOR
TR25	2710102005	2SA1015(Y)	TRANSISTOR
TR26	2730198015	2SC1815(BL)	TRANSISTOR
D01	2760173039	HZ6-B2	DIODE
D02	2760049008	1S2076	DIODE
D03	2760049008	1S2076	DIODE
D04	2760049008	1S2076	DIODE
D05	2760049008	1S2076	DIODE
D06	2760049008	1S2076	DIODE
D07	2760049008	1S2076	DIODE
D08	2760049008	1S2076	DIODE
D09	2760049008	1S2076	DIODE
D10	2760049008	1S2076	DIODE
D11	2760049008	1S2076	DIODE
D12	2760049008	1S2076	DIODE
D13	2760049008	1S2076	DIODE
D22	2760200009	MV-11	DIODE
D25	2760049008	1S2076	DIODE
RESISTORS			
R01	2410327009	3.6 kohm ±5% 1/4W	CARBON FILM
R02	2410344008	18 kohm ±5% 1/4W	CARBON FILM
R03	2412020045	3.9 kohm ±5% 1/4W	CARBON FILM
R04	2410330009	4.7 kohm ±5% 1/4W	CARBON FILM
R05	2410314009	1 kohm ±5% 1/4W	CARBON FILM
R06	2410338001	10 kohm ±5% 1/4W	CARBON FILM
R07	2410362006	100 kohm ±5% 1/4W	CARBON FILM
R08	2410330009	4.7 kohm ±5% 1/4W	CARBON FILM
R09	2410314009	1 kohm ±5% 1/4W	CARBON FILM
R10	2410338001	10 kohm ±5% 1/4W	CARBON FILM
R11	2410362006	100 kohm ±5% 1/4W	CARBON FILM
R12	2410330009	4.7 kohm ±5% 1/4W	CARBON FILM
R13	2410314009	1 kohm ±5% 1/4W	CARBON FILM
R14	2410338001	10 kohm ±5% 1/4W	CARBON FILM
R15	2410362006	100 kohm ±5% 1/4W	CARBON FILM
R16	2410330009	4.7 kohm ±5% 1/4W	CARBON FILM
R17	2410314009	1 kohm ±5% 1/4W	CARBON FILM
R18	2410338001	10 kohm ±5% 1/4W	CARBON FILM
R19	2410362006	100 kohm ±5% 1/4W	CARBON FILM
R20	2410330009	4.7 kohm ±5% 1/4W	CARBON FILM
R21	2410314009	1 kohm ±5% 1/4W	CARBON FILM
R22	2410338001	10 kohm ±5% 1/4W	CARBON FILM

(Con.)

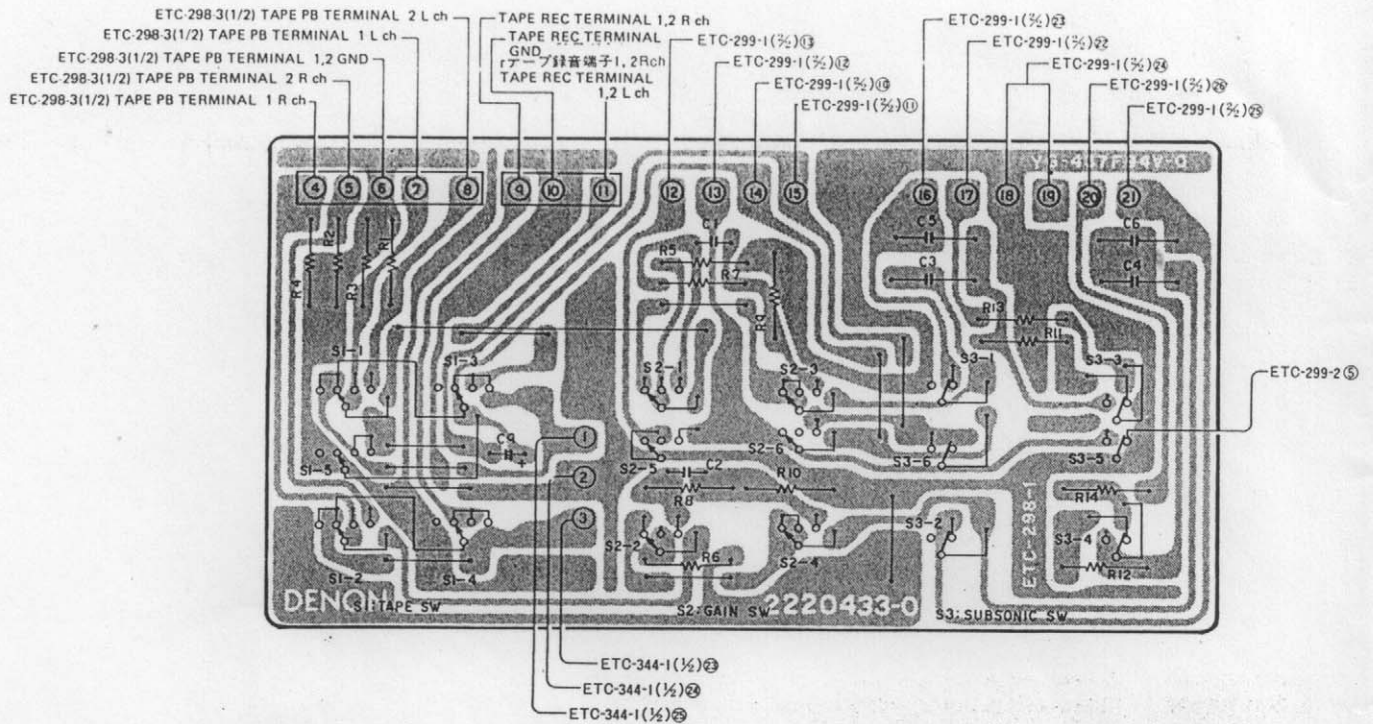
Ref. No.	Part No.	Part Name & Descriptions
R23	2410362006	100 kohm±5% ¼W CARBON FILM
R24	2410372009	270 kohm±5% ¼W CARBON FILM
R25	2410350005	33 kohm ±5% ¼W CARBON FILM
R26	2410345007	20 kohm ±5% ¼W CARBON FILM
R27	2410364004	120 kohm±5% ¼W CARBON FILM
R28	2410372009	270 kohm±5% ¼W CARBON FILM
R29	2410350005	33 kohm ±5% ¼W CARBON FILM
R30	2410345007	20 kohm ±5% ¼W CARBON FILM
R31	2410364004	120 kohm±5% ¼W CARBON FILM
R32	2410372009	270 kohm±5% ¼W CARBON FILM
R33	2410350005	33 kohm ±5% ¼W CARBON FILM
R34	2410345007	20 kohm ±5% ¼W CARBON FILM
R35	2410364004	120 kohm±5% ¼W CARBON FILM
R36	2410372009	270 kohm±5% ¼W CARBON FILM
R37	2410350005	33 kohm ±5% ¼W CARBON FILM
R38	2410345007	20 kohm ±5% ¼W CARBON FILM
R39	2410364004	120 kohm±5% ¼W CARBON FILM
R40	2410372009	270 kohm±5% ¼W CARBON FILM
R41	2410350005	33 kohm ±5% ¼W CARBON FILM
R42	2410345007	20 kohm ±5% ¼W CARBON FILM
R43	2410364004	120 kohm±5% ¼W CARBON FILM
R51	2410354001	47 kohm ±5% ¼W CARBON FILM
R52	2410330009	4.7 kohm ±5% ¼W CARBON FILM
R53	2410274000	22 ohm ±5% ¼W CARBON FILM
R54	2410769007	1.5M ohm±5% ¼W CARBON FILM
R55	2410348004	27 kohm ±5% ¼W CARBON FILM
R56	2410320006	1.8 kohm ±5% ¼W CARBON FILM
R57	2410346006	22 kohm ±5% ¼W CARBON FILM
R58	2410373008	300 kohm±5% ¼W CARBON FILM
R60	2410362006	100 kohm±5% ¼W CARBON FILM
R61	2410378003	470 kohm±5% ¼W CARBON FILM
R62	2410346006	22 kohm ±5% ¼W CARBON FILM
R63	2410320006	1.8 kohm ±5% ¼W CARBON FILM
R64	2410355000	51 kohm ±5% ¼W CARBON FILM
R65	2410355000	51 kohm ±5% ¼W CARBON FILM
R66	2410344008	18 kohm ±5% ¼W CARBON FILM
R71	2412022030	18 kohm ±5% ¼W CARBON FILM
R72	2410344008	18 kohm ±5% ¼W CARBON FILM
R73	2410344008	18 kohm ±5% ¼W CARBON FILM
CAPACITORS		
C01	2544015009	10µF 16V ELECTROLYTIC
C02	2531027000	0.1µF +80 -20% 50V CERAMIC
C04	2531027000	0.1µF +80 -20% 50V CERAMIC
C05	2531024003	0.01µF +80 -20% 50V CERAMIC
C06	2531027000	0.1µF +80 -20% 50V CERAMIC
C07	2531027000	0.1µF +80 -20% 50V CERAMIC
C08	2531024003	0.01µF +80 -20% 50V CERAMIC
C09	2531027000	0.1µF +80 -20% 50V CERAMIC
C10	2531027000	0.1µF +80 -20% 50V CERAMIC
C11	2531024003	0.01µF +80 -20% 50V CERAMIC
C12	2531027000	0.1µF +80 -20% 50V CERAMIC
C13	2531027000	0.1µF +80 -20% 50V CERAMIC
C14	2531024003	0.01µF +80 -20% 50V CERAMIC
C15	2531027000	0.1µF +80 -20% 50V CERAMIC
C16	2531027000	0.1µF +80 -20% 50V CERAMIC
C17	2531024003	0.01µF +80 -20% 50V CERAMIC
C18	2531027000	0.1µF +80 -20% 50V CERAMIC
C19	2544009002	47µF 10V ELECTROLYTIC
C20	2544009002	47µF 10V ELECTROLYTIC
C21	2544009002	47µF 10V ELECTROLYTIC
C22	2544009002	47µF 10V ELECTROLYTIC
C23	2544009002	47µF 10V ELECTROLYTIC
C31	2551084007	0.1µF ±10% 50V PLASTIC FILM
C32	2551084007	0.1µF ±10% 50V PLASTIC FILM
C33	2551084007	0.1µF ±10% 50V PLASTIC FILM
C34	2551084007	0.1µF ±10% 50V PLASTIC FILM

Ref. No.	Part No.	Part Name & Descriptions
C35	2551084007	0.1µF ±10% 50V PLASTIC FILM
C41	2549015004	22µF ±10% 10V ELECTROLYTIC
C42	2544003008	100µF 6.3V ELECTROLYTIC
C43	2549011011	2.2µF 50V ELECTROLYTIC
C44	2549011008	1µF 50V ELECTROLYTIC
C49	2544043000	0.47µF 50V ELECTROLYTIC
C50	2544043000	0.47µF 50V ELECTROLYTIC
OTHER PARTS		
	2220434218	P.W BOARD
	2050112043	4P CONNECTOR BASE
	2050112030	3P CONNECTOR BASE
	2038052099	5P CONNECTOR FOR MC AMP
	2050112069	6P CONNECTOR BASE
	5032036079	2P CONNECTOR FOR EQ AMP
	2032036066	2P CONNECTOR FOR FIAT AMP
	2034131008	3P CONNECTOR CORD
	2034131011	3P CONNECTOR CORD
	2090008117	JUMPER SHORT LEAD P=12.5mm USED 2
	2120149001	ROTARY SWITCH

ETC-299-3 BALANCE UNIT

Ref. No.	Part No.	Part Name & Descriptions
GENERAL		
	2220434221	P.W BOARD
	2034089095	3P CONNECTOR FOR MC AMP
	2034111031	3P CONNECTOR FOR MAIN VOL.
	2110203106	VARIABLE RESISTOR 100 kohm FOR BALANCE

ETC-298-1 SWITCH UNIT

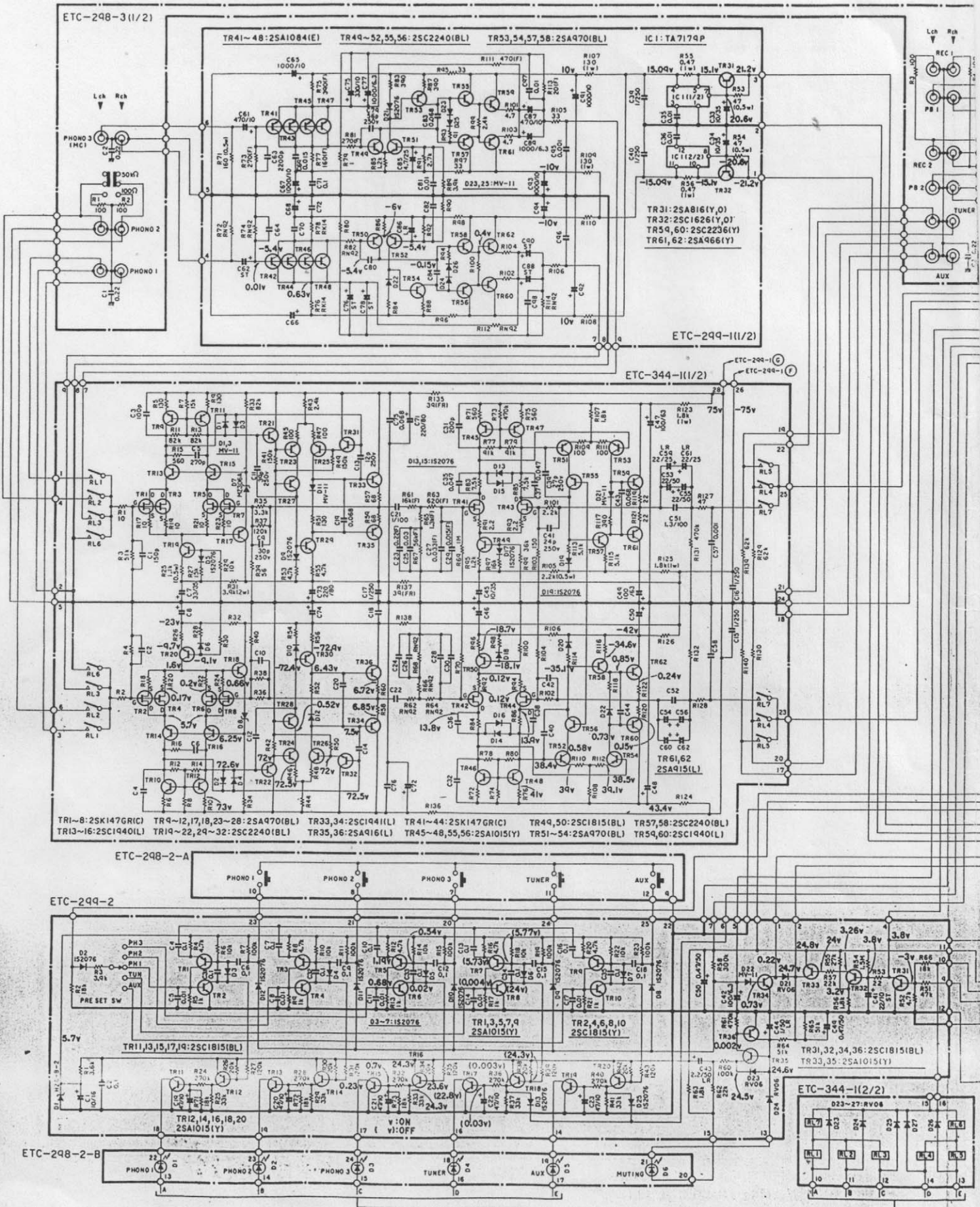


ETC-298-1 PARTS LIST

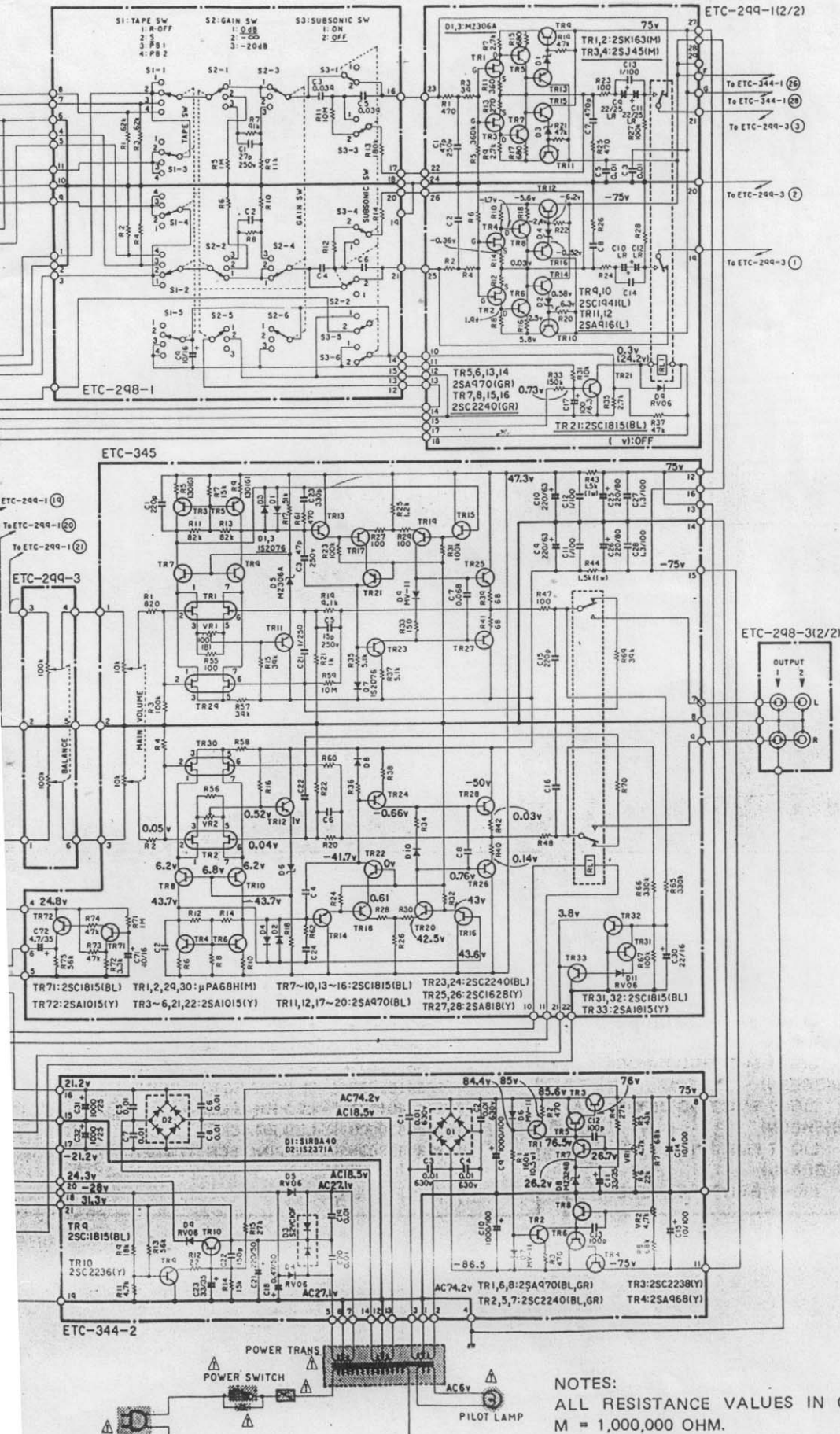
Ref. No.	Part No.	Part Name & Descriptions
RESISTORS		
R01	2410357008	62 kohm ±5% ¼W CARBON FILM
R02	2410357008	62 kohm ±5% ¼W CARBON FILM
R03	2410357008	62 kohm ±5% ¼W CARBON FILM
R04	2410357008	62 kohm ±5% ¼W CARBON FILM
R05	2410765001	1M ohm ±5% ¼W CARBON FILM
R06	2410765001	1M ohm ±5% ¼W CARBON FILM
R07	2410361007	91 kohm ±5% ¼W CARBON FILM
R08	2410361007	91 kohm ±5% ¼W CARBON FILM
R09	2410339000	11 kohm ±5% ¼W CARBON FILM
R10	2410339000	11 kohm ±5% ¼W CARBON FILM
R11	2420203003	10M ohm ±10% ¼W CARBON COMPOSIT
R12	2420203003	10M ohm ±10% ¼W CARBON COMPOSIT
R13	2410368000	180 kohm±5% ¼W CARBON FILM
R14	2410368000	180 kohm±5% ¼W CARBON FILM
CAPACITORS		
C01	2556152031	27pF ±5% 250V PLASTIC FILM
C02	2556152031	27pF ±5% 250V PLASTIC FILM
C03	2551137019	0.039µF ±5% 50V PLASTIC FILM

Ref. No.	Part No.	Part Name & Descriptions
C04	2551137019	0.039µF ±5% 50V PLASTIC FILM
C05	2551137019	0.039µF ±5% 50V PLASTIC FILM
C06	2551137019	0.039µF ±5% 50V PLASTIC FILM
C09	2544015009	10µF 16V ELECTROLYTIC
OTHER PARTS		
	2220433206	P.W BOARD
	2038072008	5P CONNECTOR
	2036078004	4P CONNECTOR
	2050112056	5P CONNECTOR BASE
	2050112030	3P CONNECTOR BASE
	2034111015	3P CONNECTOR
	2090008117	JUMPER SHORT LEAD P=12.5mm USED 10
SW01	2120148002	ROTARY SWITCH FOR TAPE WITH 9 NUT/9 TOOTH WASHER
SW02	2120147003	ROTARY SWITCH FOR GAIN WITH 9 NUT/9 TOOTH WASHER
SW03	2120146004	ROTARY SWITCH FOR S. SONIC WITH 9 NUT/9 TOOTH WASHER

WIRING DIAGRAM

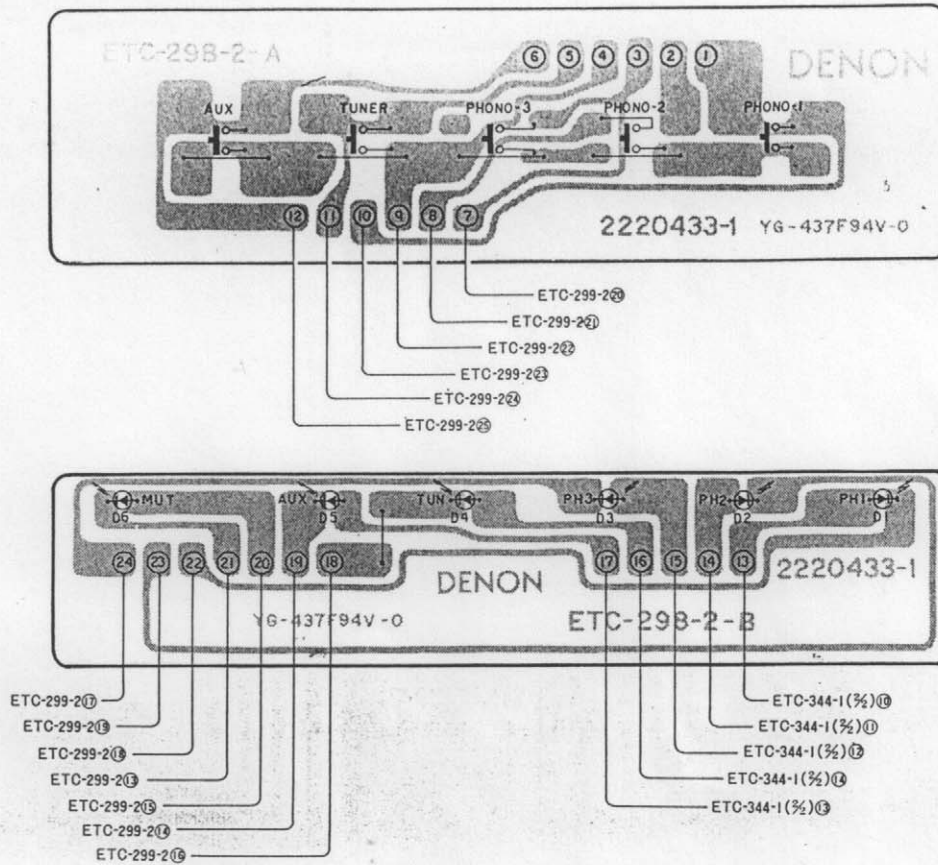


⚠ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



NOTES:
 ALL RESISTANCE VALUES IN OHM, K = 1,000 OHM,
 M = 1,000,000 OHM.
 ALL CAPACITANCE VALUES IN MICROFARAD, P = MICRO-
 MICRO FARAD.
 EVERY VOLTAGES AND CURRENTS IS MEASURED AT
 NO SIGNAL INPUT CONDITION.

ETC-298-2-A, B PUSH SWITCH & LED UNIT

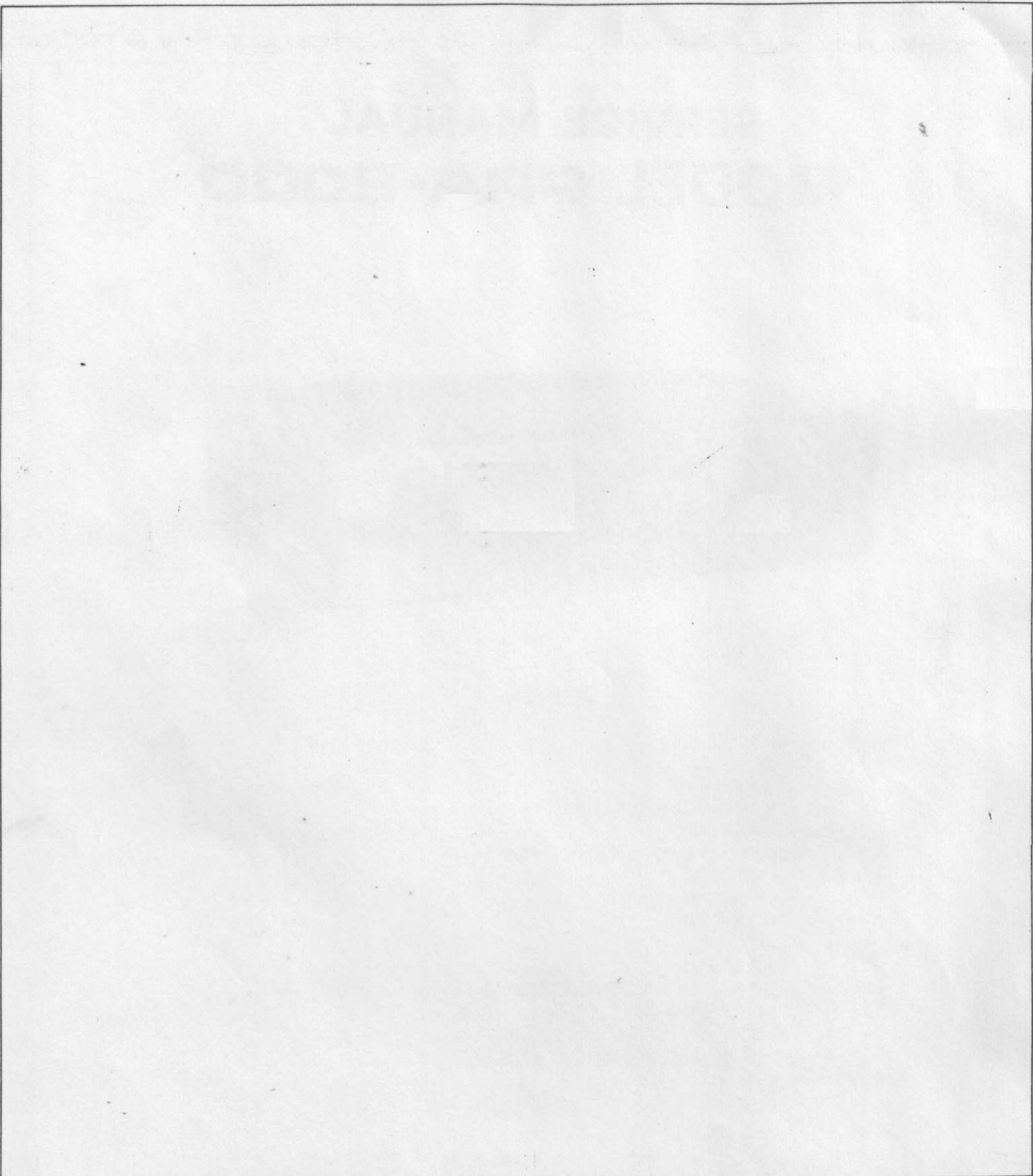


ETC-298-2-A, B PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
SEMICONDUCTORS		
D01	3939040002	TLG206(GREEN) LIGHT EMITTING DIODE
D02	3939040002	TLG206(GREEN) LIGHT EMITTING DIODE
D03	3939040002	TLG206(GREEN) LIGHT EMITTING DIODE
D04	3939040002	TLG206(GREEN) LIGHT EMITTING DIODE
D05	3939040002	TLG206(GREEN) LIGHT EMITTING DIODE
D06	3939040002	TLG206(GREEN) LIGHT EMITTING DIODE

Ref. No.	Part No.	Part Name & Descriptions
OTHER PARTS		
	2220433219	P.W BOARD
	2090008133	JUMPER SHORT LEAD P=7.5mm USED 1
	2124149007	PUSH SWITCH USED 5
	2040068000	6P CONNECTOR CORD
	2038080003	5P CONNECTOR CORD
	2036067031	4P CONNECTOR CORD
	2034105076	3P CONNECTOR CORD
	1440461208	LED RING USED 6
	4120520000	LED BRACKET
	4730353036	TAPPING SCREW 3x6

DENON



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