

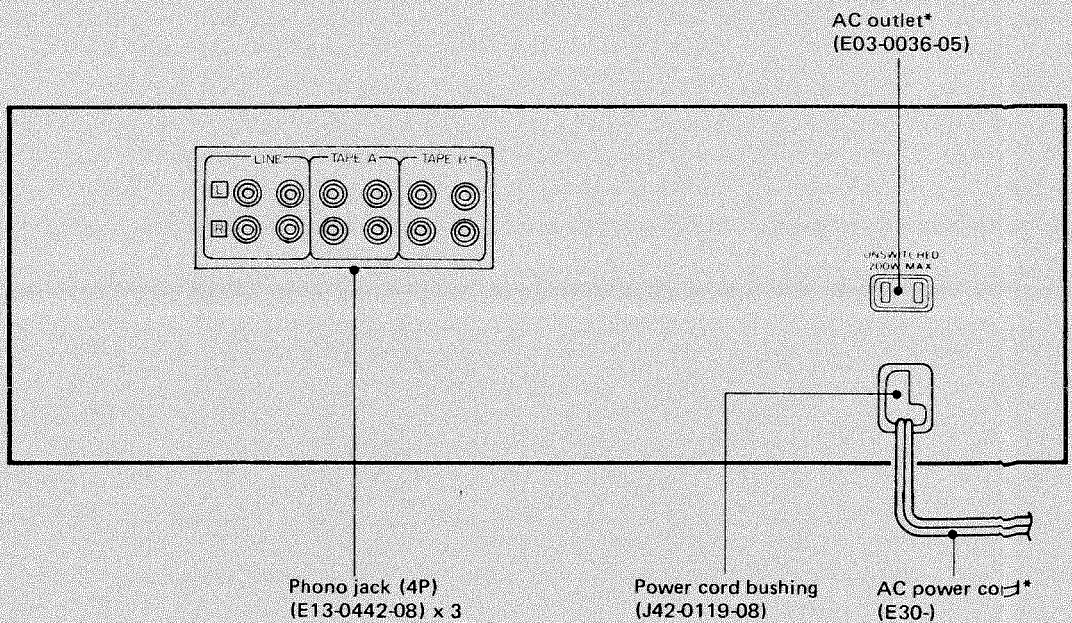
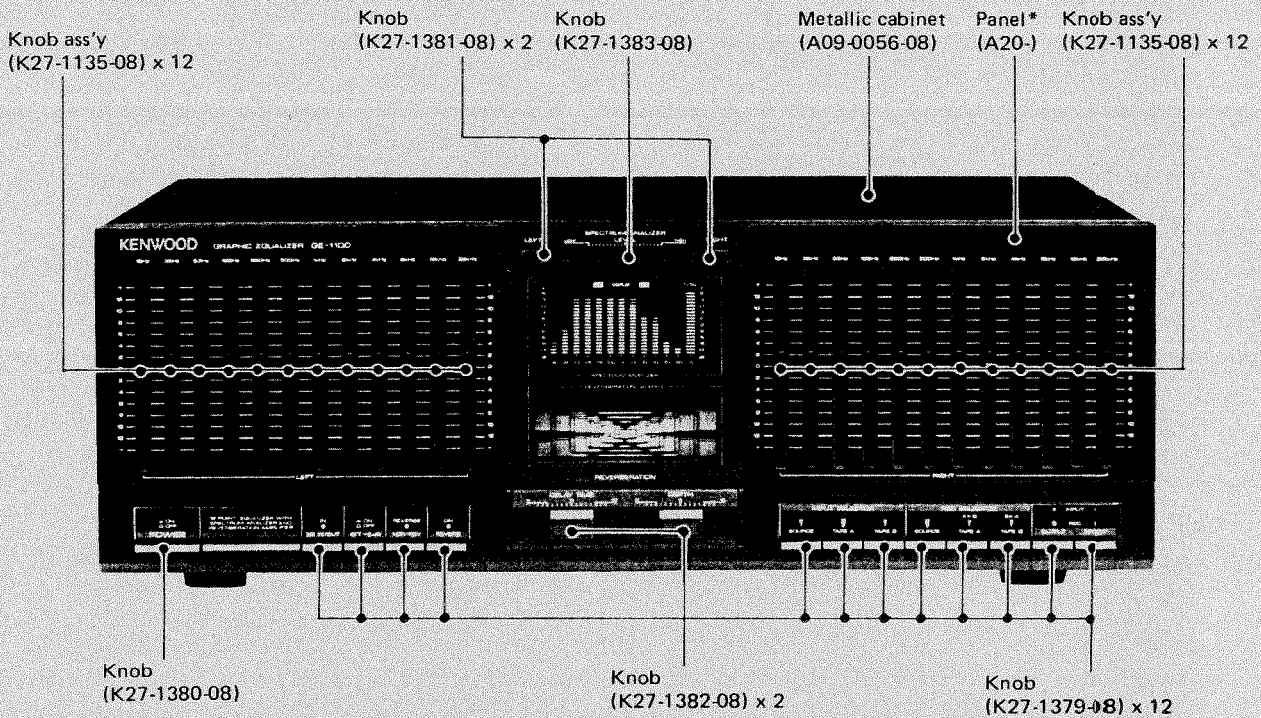
SERV.32078

KENWOOD

GE-1100

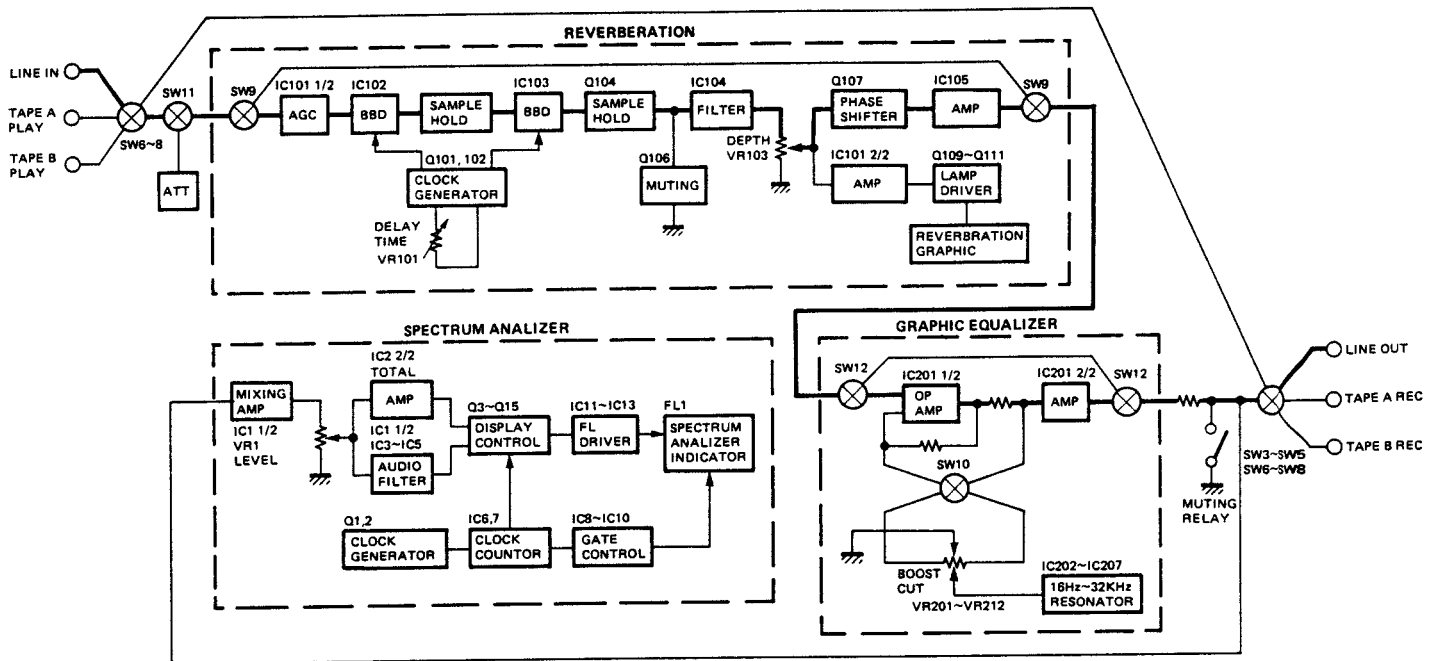
GRAPHIC EQUALIZER

SERVICE MANUAL



*Refer to parts list on page 8.

BLOCK DIAGRAM/CIRCUIT DESCRIPTION



Name	Function	Description
Q1,2	Clock generator	
Q3~15	Spectrum analyzer display control	Transistor switch for signal selection
Q101,102	Clock generator	
Q103,104	Sampling hold	
Q105	Buffer	
Q106	Muting	
Q107	Phase shifter	
Q108	Reverberation graphic lamp switch	
Q109~111	Reverberation graphic lamp driver	
Q501~504	AVR	
Q505,506	Muting relay driver	
IC1	Mixing amp, audio filter	
IC2	Total amp	For spectrum analyzer total stage.
IC3~5	Spectrum analyzer audio filter	16, 32, 64, 125, 250, 500, 1k, 2k, 4k, 8k, 16k and 32k filters.
IC6	Clock counter (4 bit binary counter)	Forms a scale of 13 counter together with IC7
IC7	Clock counter (4 to 16 line decoder)	Forms a scale of 13 counter together with IC6. Output 16 signals according to scale of 13 counter output.
IC8~10	Spectrum analyzer gate control	Controls the fluorescent display tube gates according to IC7 output.
IC11~13	Spectrum analyzer FL driver	Controls the grids of display tube according to the output level. (10 steps : -24, -18, -15, -12, -9, -6, -3, 0, 3, 6dB)
IC101	AGC amplifier of reverberation graphic	
IC102, 103	BBD	
IC104	Filter	
IC105	Amp	
IC201	OP Amp	
IC202~206	Frequency resonator	Resonating circuits for 12 frequencies between 16Hz and 32kHz.

CIRCUIT DESCRIPTION

HD14520B

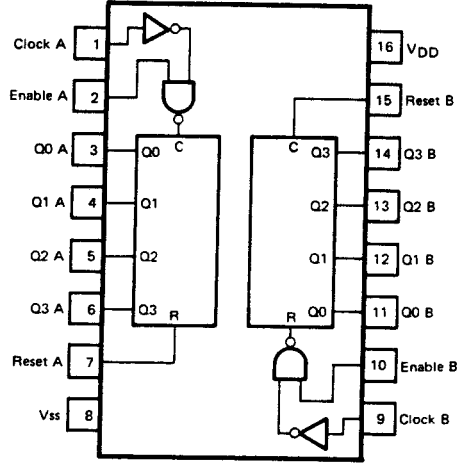
The HD14520B dual binary counter is constructed with MOS P-channel and N-channel enhancement mode devices in a single monolithic structure.

Each consists of two identical, independent, internally synchronous 4-stage counters.

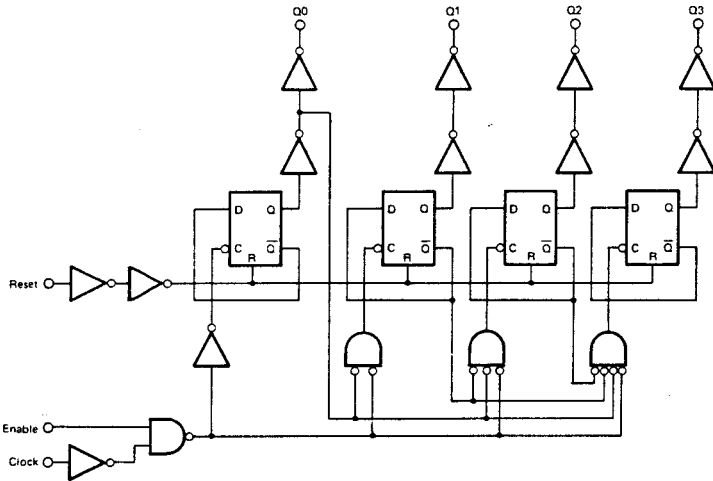
The counter stages are type D flip-flops, with interchangeable clock and Enable lines for incrementing on either the positive-going or negative-going transition as required when cascading multiple stages.

Each counter can be cleared by applying a high level on the reset line.

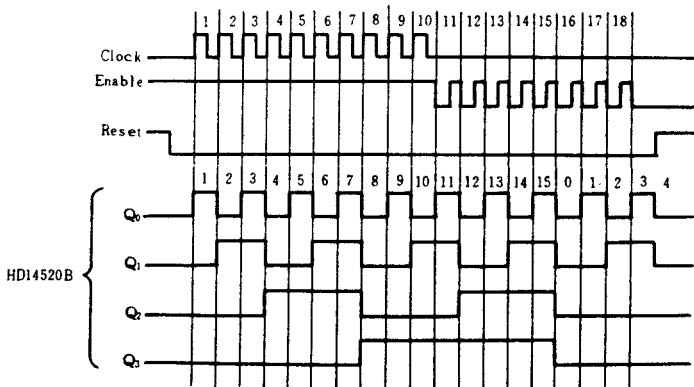
Pin connection



(Top View)



HD14520B (1/2)



Timing diagram

Truth table

Clock	Enable	Reset	Action
	1	0	Increment counter
0		0	Increment counter
	X	0	No change
X		0	No change
	0	0	No change
1		0	No change
X	X	1	Q0~Q3 = 1

X : Don't care

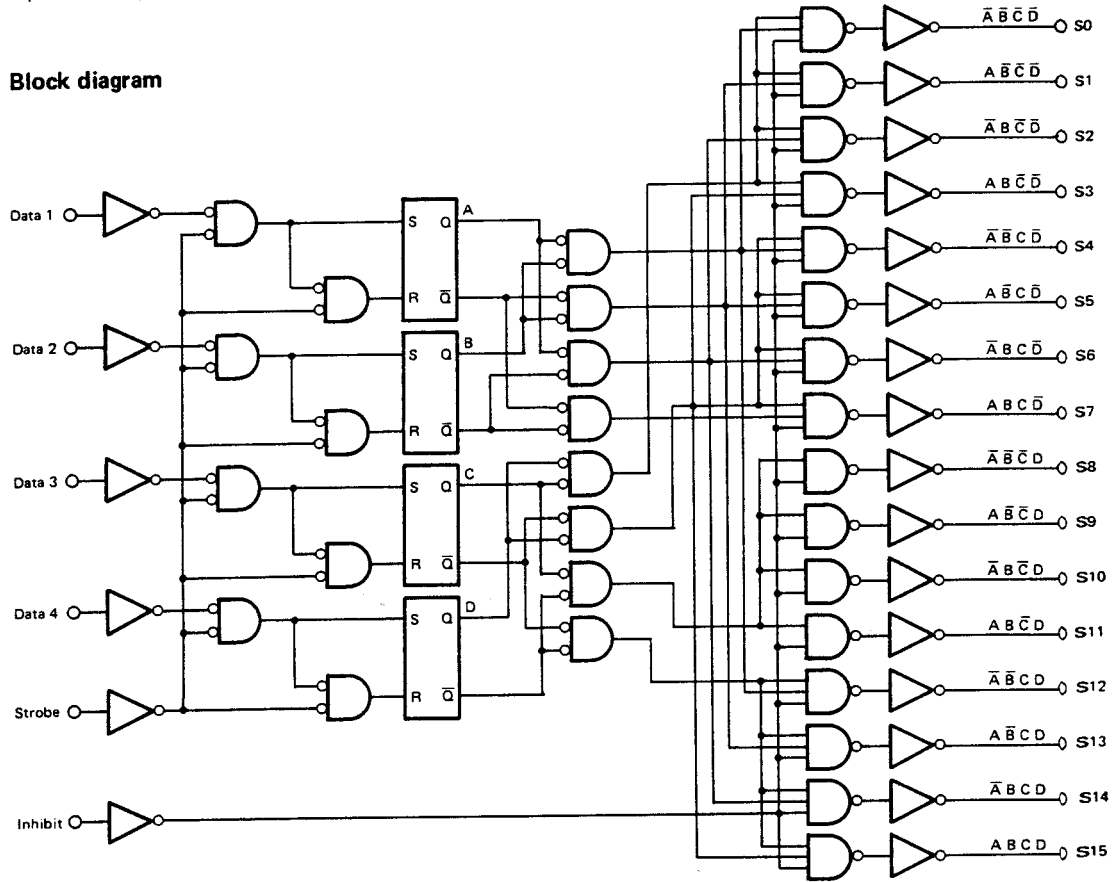
CIRCUIT DESCRIPTION

HD14514B

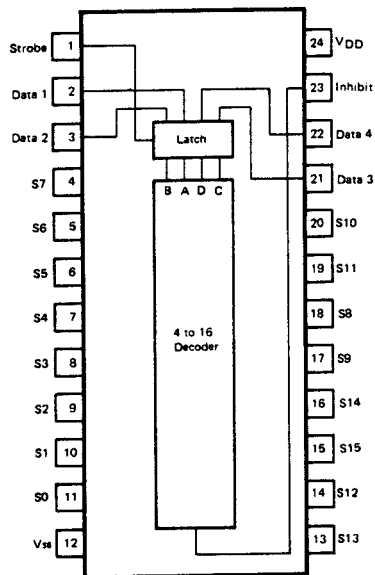
HD14514B is a 4 to 16 line decoder with latched inputs.

The HD14514B presents a logical "1" at the selected outputs, the latches are R-S type flip-flops which hold the last input data presented prior to the strobe transition from "1" to "0".

Block diagram



Pin connection



(Top View)

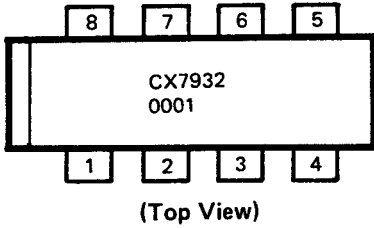
Truth table

Inhibit	Data inputs				Selected output (HD14514B = logic "1")
	D	C	B	A	
0	0	0	0	0	S0
0	0	0	0	1	S1
0	0	0	1	0	S2
0	0	0	1	1	S3
0	0	1	0	0	S4
0	0	1	0	1	S5
0	0	1	1	0	S6
0	0	1	1	1	S7
0	1	0	0	0	S8
0	1	0	0	1	S9
0	1	0	1	0	S10
0	1	0	1	1	S11
0	1	1	0	0	S12
0	1	1	0	1	S13
0	1	1	1	0	S14
0	1	1	1	1	S15
1	X	X	X	X	All inputs = 0

X : Don't care

CIRCUIT DESCRIPTION

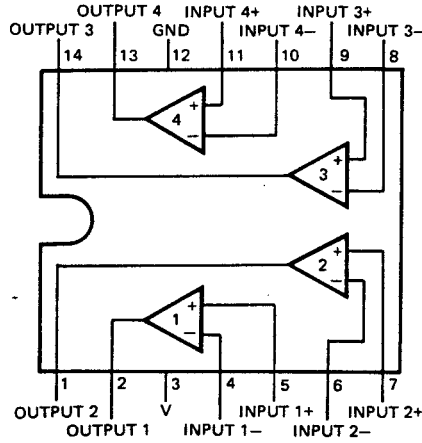
IC102,103 : CX7932 Pin connection



Terminal Function

Terminal No.	Input/Output	Symbol	Function
1	OUT	OUT	Signal output terminal (512 bits)
2		V _{DD}	Source terminal
3	IN		Clock inter terminal 1
4		V _{DD}	Source terminal
5	IN	V _{in}	Signal input terminal
6	IN		Clock input terminal 2
7			N.C
8		GND	Substrate terminal

**IC8~13 : LM339N
Pin connection and Block diagram**

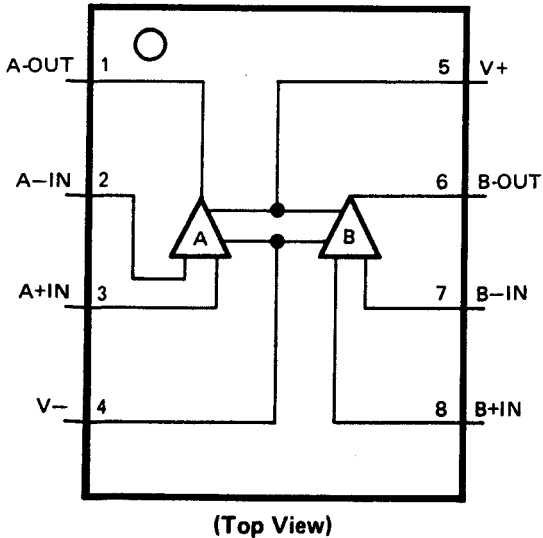


IC1,2,101,104,105,202~205,207 : NJM4558D-X

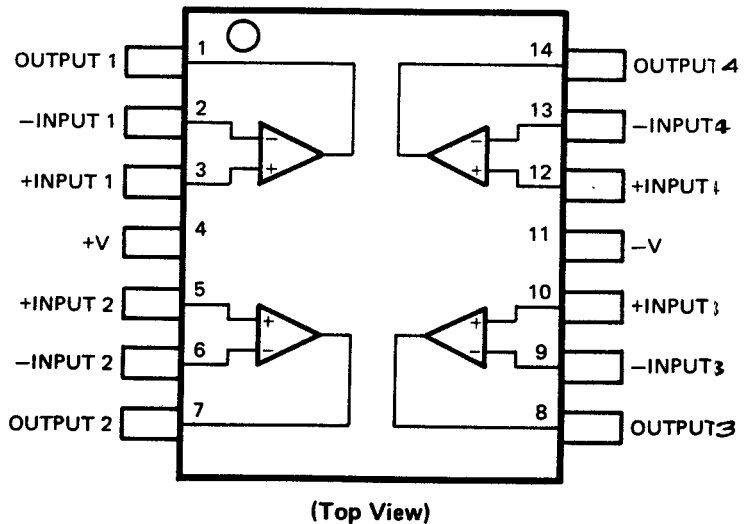
Pin connection and Block diagram

IC201,206 : NJM4559D-D

Pin connection and Block diagram

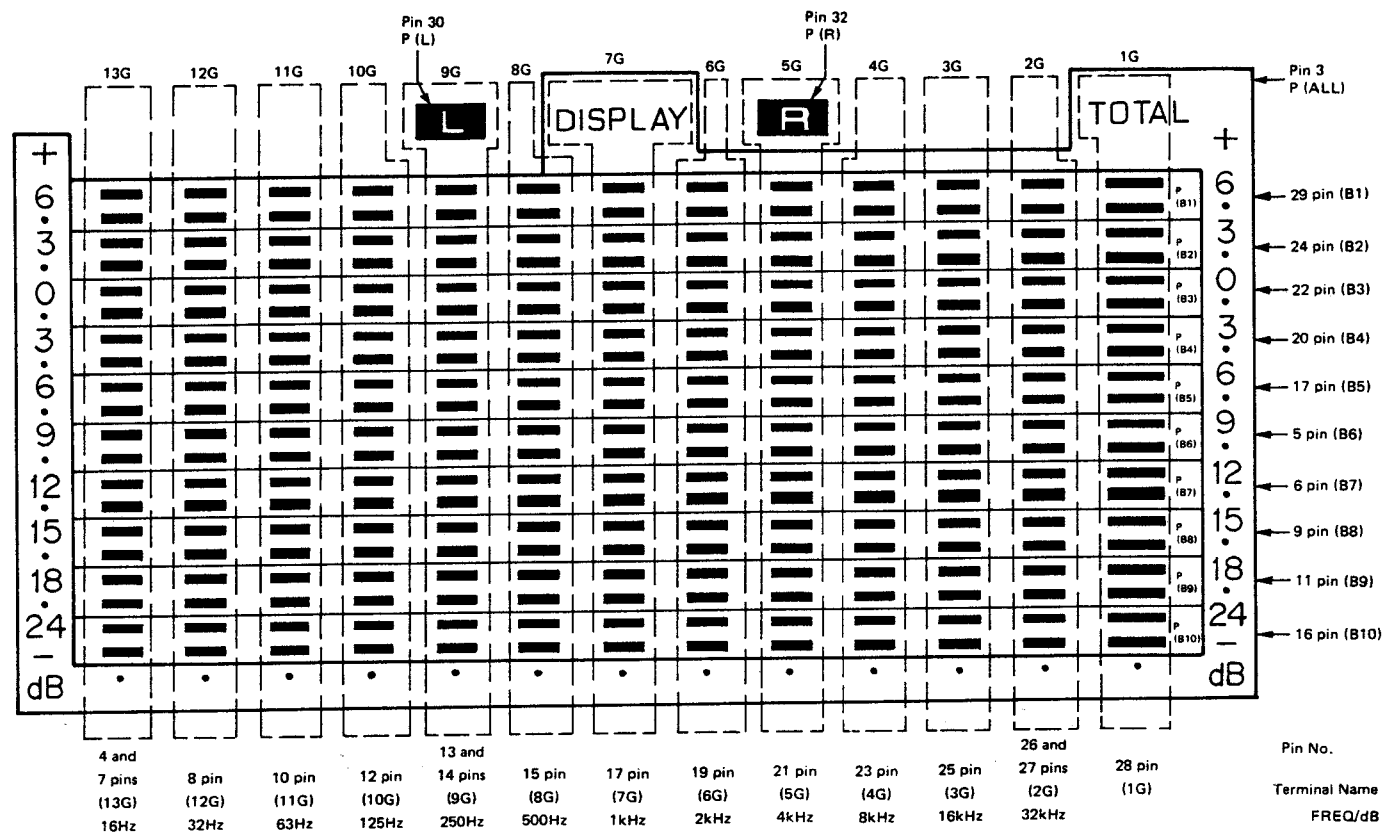


IC3~5 : NJM2058D Pin connection and Block diagram



CIRCUIT DESCRIPTION

SPECTRUM ANALIZER TUBE GRID PLATE DIVIDING CHART (FL1)



ADJUSTMENT/REGLAGE/ABGLEICH

ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	AMPLIFIER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	REVERBERATION TIME	400.0 Hz, 150 mV to L channel of LINE IN.	R channel of LINE OUT.	EQ: OUT REVERB: ON INPUT SELECTOR: SOURCE REC SELECTOR: SOURCE DELAY TIME: 10 DEPTH: 10	VR102	Short circuit (X) and (Y) terminals (R165) of W02-0611-08 and adjust VR102. 140mV	(a)

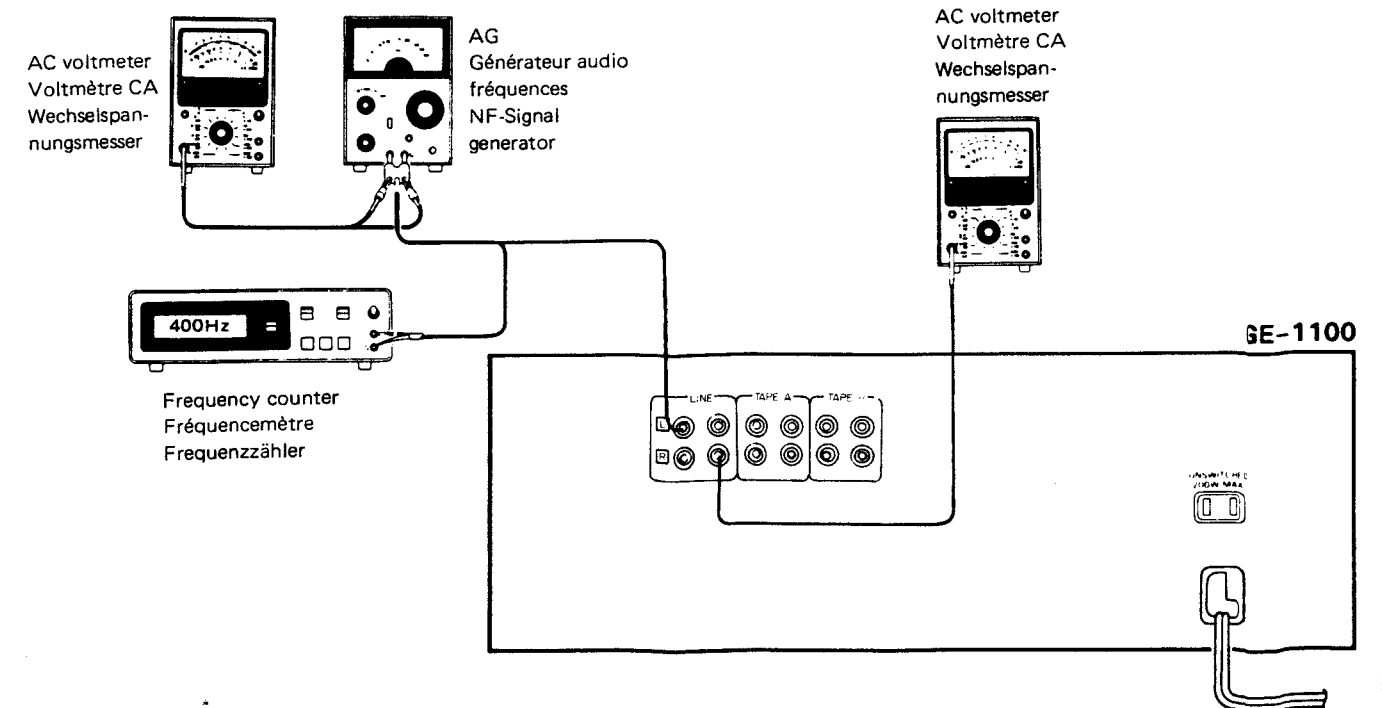
REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DE L'AMPLIFICATEUR	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
1	TEMPS DE REVERBERATION	400,0 Hz, 150 mV au canal gauche de la prise phons LINE IN.	Le canal droit de la prise phons LINE OUT.	EQ: OUT REVERB: ON INPUT SELECTOR: SOURCE REC SELECTOR: SOURCE DELAY TIME: 10 DEPTH: 10	VR102	Court-circuiter les bornes (X) et (Y) (R165) de W02-0611-08 et agir sur VR102. 140mV	(a)

ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	ABGLEICHE PUNKTE	ABGLEICHEN FÜR	ABB.
1	NACHHALL-DAUER	400,0 Hz, 150 mV auf linken Kanal von Phono-Buchse LINE IN.	Rechten Kanal von Phono-Buchse LINE OUT.	EQ: OUT REVERB: ON INPUT SELECTOR: SOURCE REC SELECTOR: SOURCE DELAY TIME: 10 DEPTH: 10	VR102	Die Klemmen (X) und (Y) (R165) von W02-0611-08 kurzschließen und VR102 so einstellen. 140mV	(a)

System connections



PC BOARD

EQUALIZER (W02-0612-08)

IC201	1	0V
	2	0V
	3	0V
	4	-
	5	0V
	6	0V
	7	-
	8	-
IC202	5	0V
	6	0V

MAIN (W02-0611-08)

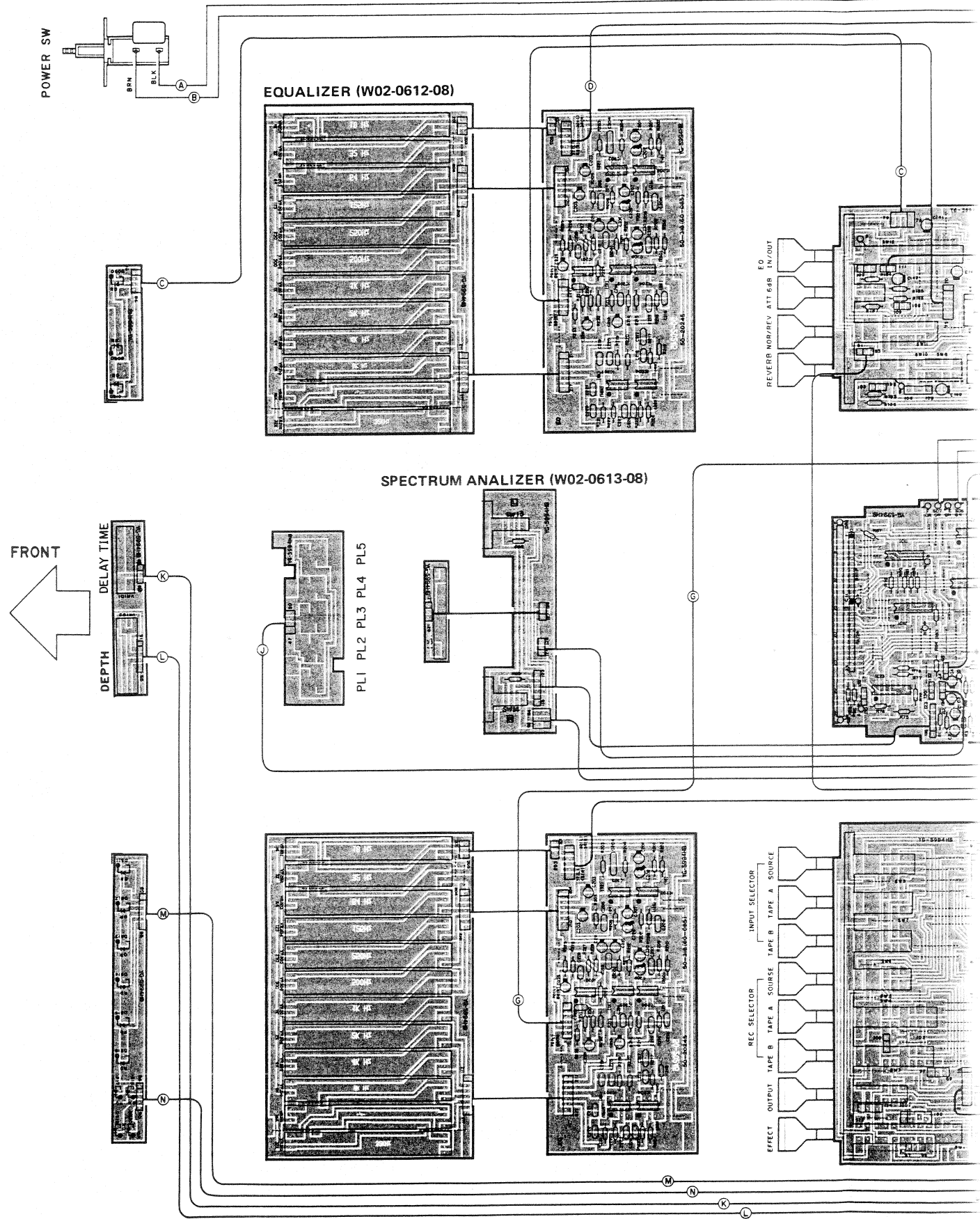
Q1	E	-
	C	13.5V
	B	18.6V
Q2	E	16.8V
	C	13.5V
Q3	E	0.2V
	B	0.1V
IC1	1	0V
	2	0V
	3	0V
IC2	1	0V
	2	0V
	3	0V
IC5	1	0.5V
	2	0.6V
IC10	6	0.4V
	4	3V
IC11	6	1.7V
	1	-17V
IC12	4	4.5V
	6	0.08V
	8	0.53V
IC13	10	1V
	4	13V
	6	11.3V
IC11	8	9.3V
	10	6.3V

SPECTRUM ANALYZER (W02-0613-08)

Q101	E	4.7V
	C	1.8V
	B	-5.7V
Q102	E	-
	C	-0.5V
Q103	E	-
	C	-
Q103	B	-5.2V

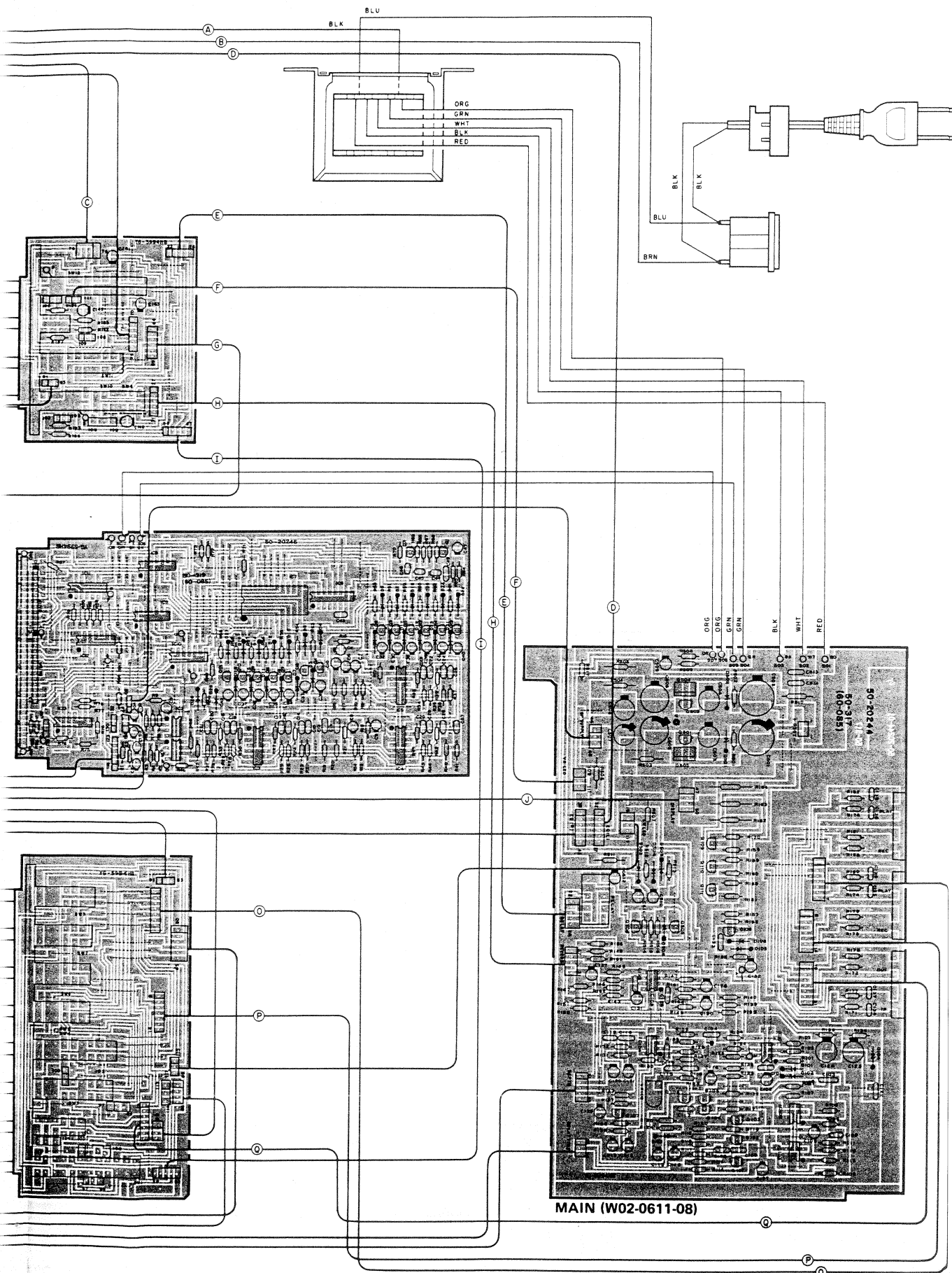
Q104	E	-
	C	-4.2V
	B	-
Q105	E	-5.9V
	C	-
Q106	E	-
	B	-
Q106	C	-5.9V
	B	-5.9V
Q108	E	-
	C	22V (20.6V)
Q108	B	-
	E	-
Q109	C	22.1V
	B	-21V
Q110	E	-
	C	22.1V
Q110	B	-2.1V
	E	-
Q111	C	22.1V
	B	-2.1V
Q501	E	17.8V
	C	22.1V
Q501	B	18.6V
	E	-
Q502	C	-
	B	17.8V
Q503	E	-17.8V
	C	-22.1V
Q503	B	-18.6V
	E	-
Q504	C	-22.1V
	B	-17.8V
Q505	E	8.6V
	C	3.9V
Q505	B	8.5V
	E	0V
Q506	C	0.1V
	B	-
IC101	1	0V
	2	0V
	3	0V
	4	-
	5	0V
	6	0V
	7	0V
	8	0V
IC102	1	-0.3V
	5	1.8V
	6	1.8V
IC103	1	1.0V
	5	1.5V
IC104	1	-
	2	0V
	3	0V
	4	-

IC104	5	0V
	6	0V
	7	0V
	8	-
IC105	1	-
	2	0V
	3	0V
	4	-
	5	0V
	6	0V
	7	0V
	8	-



Refer to the schematic diagram for the values of resistors and capacitors. The PC board drawing is viewing from the side easy to check.

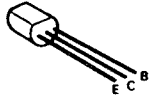
GE-1100



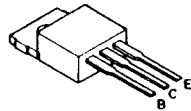
MAIN (W02-0611-08)

KENWOOD

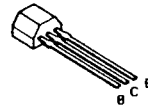
2SA1015
2SC1815
2SC2062B
2SD1153



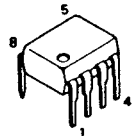
2SB703
2SD743



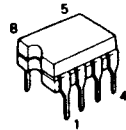
2SA1048
2SC2458



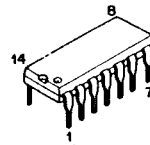
NJM4558-DX
NJM4559D-D



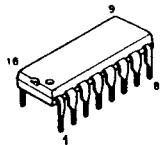
CX7932



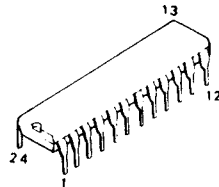
NJM2058D



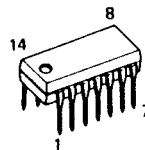
HD14520BP



HD14514BP



LM339N



Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

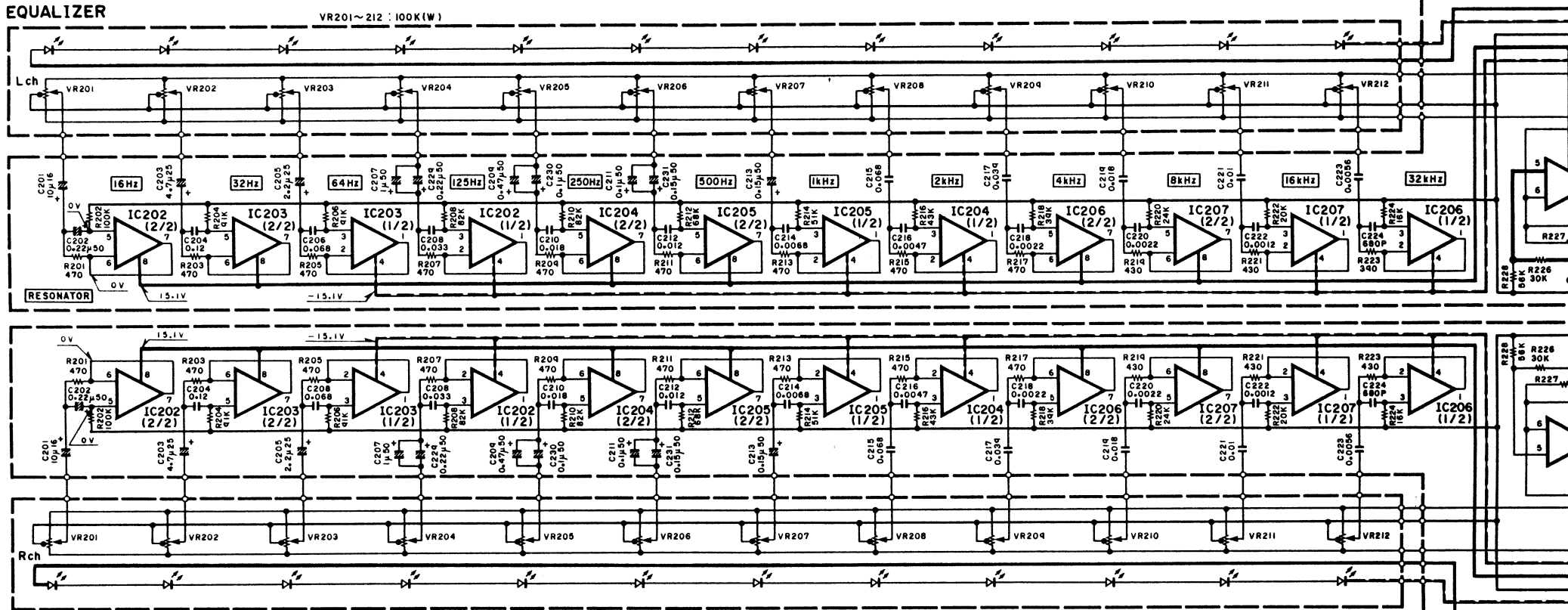
Kenwood poursuit une politique de progrès constants en ce qui concerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

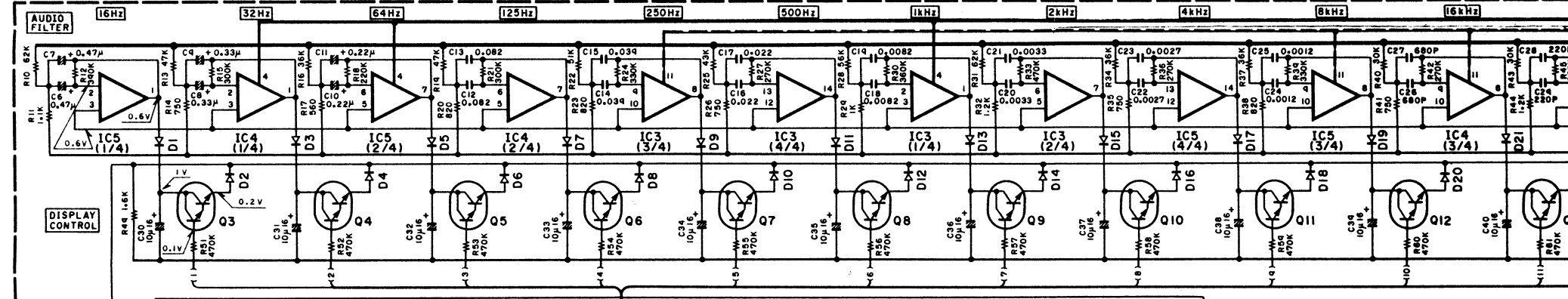
- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen instrumenten oder Geraten u.U. geringfügig.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

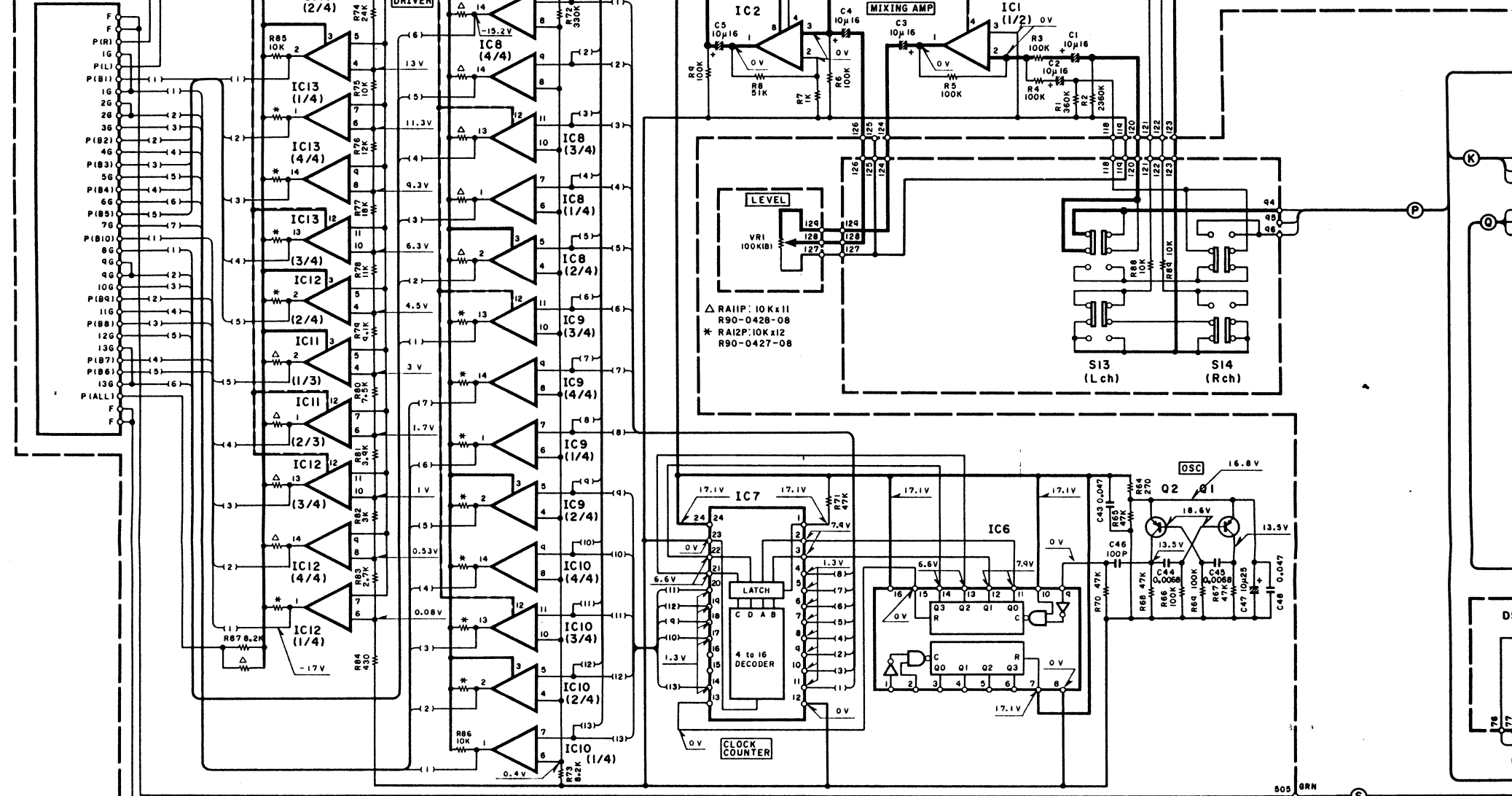
EQUALIZER



SPECTRUM ANALYZER

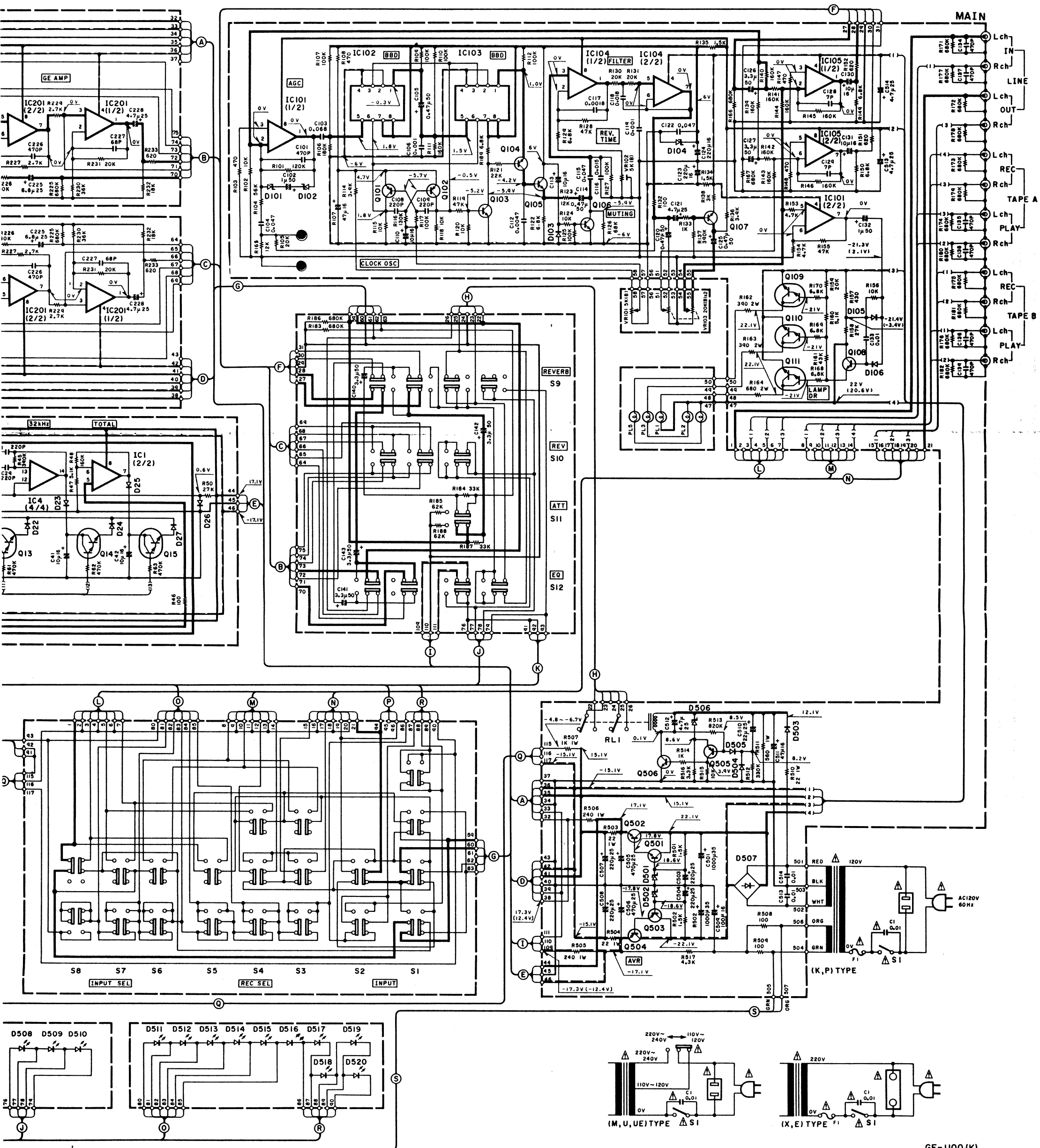


FL1



- | | | |
|--|---------------------|---|
| IC1, 2, 101, 104, 105, 202~205, 207 : NJM4558D-X | Q3~15 : 2SC2062 | D1~27, 103, 105, 106, 504, 505 : 1S1588 |
| IC3~5 : NJM2058D | Q101, 102 : 2SA1048 | D101, 102 : HZ3A-1 |
| IC6 : HD14520BP | Q103~108 : 2SC2458 | D104 : HZ12A-2 |
| IC7 : HD14514BP | Q109~111 : 2SD1153 | D501, 502 : HZ18-3 |
| IC8~13 : LM339N | Q501, 506 : 2SC1815 | D503 : 1N4002 |
| IC102, 103 : CX7932 | Q502 : 2SD743 | D506 : HZ3C-1 |
| IC201, 206 : NJM4559D-D | Q503, 505 : 2SA1015 | |
| | Q504 : 2SB703 | |

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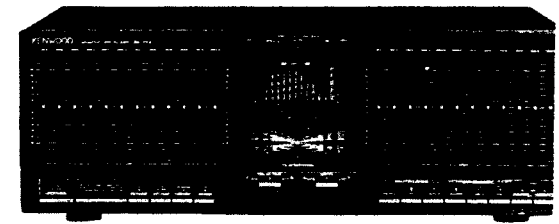


GE-1100 (K)

Δ Indicates safety critical component.

GRAPHIC EQUALIZER

GE-1100



SPECIFICATIONS

[Equalizer Section]

Equalizer Characteristics

Variable Range.....	± 12 dB
Individual Channel Adjust.....	16 Hz, 32 Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, 16 kHz, 32 kHz
Total Harmonic Distortion.....	All controls defeated 0.005% (1 V output at 20 Hz-20 kHz) 0.003% (1 V output at 1 kHz)
Maximum Output Voltage.....	9 V at 1 kHz, 0.01% THD
Frequency Response.....	10 Hz to 50 kHz, +0 dB, -1.0 dB
Signal to Noise Ratio (IHF-A).....	105 dB at 1 V

[Spectrum Analyzer Section]

Input Impedance.....	50 kohms
Output Impedance.....	600 ohms
Signal Level (Volume Max.)	
Both Channel Driven.....	140 mV at 0 dB (Total)

[Reverberation Amplifier Section]

Delay Time.....	Variable from 30 msec to 100 msec
Reverberation Time.....	Variable from 0 sec to 3 sec

[General]

Power Requirements.....	AC 120 V, 60 Hz: U.S.A. models AC 240 V, 50/60 Hz: U.K. models AC 240 V, 50 Hz: Australia models AC 220-240 V, 50 Hz: Europe models AC 110-120 V/220-240 V (Switchable), 50/60 Hz: Ot countries
Power Consumption.....	0.28 A (UL: U.S.A. models) 30 watts (Other countries)
AC Outlet.....	Unswitched x 1
Dimensions.....	W 440 mm (17-5/16") H 163 mm (6-7/16") D 350 mm (13-3/4")
Weight (Net).....	6.2 kg (13.6 lb)

GE-1100 GE-1100

PARTS LIST

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnés dans le Parts No. ne sont pas fournis
Teile ohne Parts No. werden nicht geliefert

Ref. No.	Address	New Parts	Parts No.	Description	Destination	Remarks
参照番号	位置	新	部品番号	部品名 / 規格	仕向	備考
GE-1100						
1	1A	*	A09-0056-08	METALLIC CABINET		
2	2A	*	A20-4170-08	PANEL	KMUUE	
2	2A	*	A20-4170-08	PANEL	EX	
2	2A	*	A20-4174-08	PANEL	T	
5	2A	*	A29-0052-08	GUIDE PANEL(L)		
6	2A	*	A29-0053-08	GUIDE PANEL(R)		
10	2A	*	B07-1362-08	ESCUTCHEON (FRONT)		
11	2A	*	B07-1363-08	ESCUTCHEON (L)		
12	2A	*	B07-1364-08	ESCUTCHEON (R)		
13	2A	*	B11-0074-08	FILTER (FRONT)		
14	2A	*	B11-0075-08	FILTER (L)		
15	2A	*	B11-0076-08	FILTER (R)		
16	1B	*	B11-0077-08	FILTER (CBLGR)		
17	2A	*	B11-0078-08	FILTER (DISPLAY A)		
18	2A	*	B11-0079-08	FILTER (DISPLAY B)		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	UUE	
-			B46-0095-03	WARRANTY CARD	UUE	
-			B46-0096-03	WARRANTY CARD	X	
-			B46-0097-03	WARRANTY CARD	T	
-			B46-0098-03	WARRANTY CARD	E	
-		*	B50-5346-00	INSTRUCTION MANUAL(ENGLISH)	KUMUE	
-		*	B50-5346-00	INSTRUCTION MANUAL(ENGLISH)	XE	
-		*	B50-5347-00	INSTRUCTION MANUAL(FRENCH)	MXE	
-		*	B50-5348-00	INSTRUCTION MANUAL(SPANISH)	M	
-		*	B50-5349-00	INSTRUCTION MANUAL(ARABIC)	M	
-		*	B50-5350-00	INSTRUCTION MANUAL(G.D.I)	E	
-		*	B50-5351-00	INSTRUCTION MANUAL(ENGLISH)	T	
-			B58-0222-14	CAUTION CARD(PRESET 220V)	UUE	
-			B58-0223-04	CAUTION CARD(PRESET 120V)	U	
-			B58-0245-23	CAUTION CARD(FTZ)	E	
-			B58-0269-04	CAUTION CARD	K	
-			B59-0092-00	SUB-INSTRUCTION MANUAL	UUE	
Δ C1	1B		CK45E2H103P	CERAMIC 0.01UF P		
Δ 22	1C	*	E03-0036-05	AC OUTLET	KMUUE	
Δ 23	2A	*	E15-0059-08	LAMP CASE		
Δ 24	1C	*	E30-0651-08	AC POWER CORD	E	
Δ 24	1C	*	E30-0658-08	AC POWER CORD	MUUE	
Δ 24	1C	*	E30-0659-08	AC POWER CORD	K	
Δ 24	1C	*	E30-0660-08	AC POWER CORD	T	
Δ 24	1C	*	E30-0661-08	AC POWER CORD	X	
25	1B	*	E30-0942-08	AUDIO CORD ASSY		
28	2B	*	F15-0260-08	SHADE(A)		
29	2B	*	F15-0261-08	SHADE(B)		
30	2A	*	F15-0262-08	SHADE(C)		
-		*	H01-5296-08	ITEM CARTON BOX		
-		*	H10-1761-08	POLYSTYRENE FOAMED FIXTURE		
-		*	H25-0078-04	PROTECTION BAG(235X315)	UUE	
-		*	H25-0077-08	PROTECTION BAG(650X600)		
33	2B,2C	*	J02-0160-08	FOOT		

E: Scandinavia & Europe H: Audio Club K: USA P: Canada
S: South Africa T: England U: PX(Far East, Hawaii)
UUE: AAFES(Europe) X: Australia M: Other Areas

Δ indicates safety critical components

PARTS LIST

* New Parts
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参照番号	位置	新	部品番号	部品名 / 規格	仕向	備考
Δ 34	1C	*	J42-0119-08	POWER CORD BUSHING		
37	2A,2B	*	K27-1135-08	KNØB ASSY (GE FREQ)		
38	2B	*	K27-1379-08	KNØB(BUTTON) (SELECTOR)		
39	2A	*	K27-1380-08	KNØB(BUTTON) (POWER)		
40	2B	*	K27-1381-08	KNØB(BUTTON) (LEFT,RIGHT)		
41	2A	*	K27-1382-08	KNØB(BUTTON) (DELAY TIME,DEPTH)		
42	2A	*	K27-1383-08	KNØB(BUTTON) (LEVEL)		
Δ 45	1B	*	L01-3861-08	POWER TRANSFORMER		K
Δ 45	1B	*	L01-3862-08	POWER TRANSFORMER		EX
Δ 45	1B	*	L01-3864-08	POWER TRANSFORMER		MUUE
Δ 45	1B	*	L01-3867-08	POWER TRANSFORMER		T
48	1C	*	N09-1346-08	SCREW(Ø2.6XB)		MUUE
49	1C,2B	*	N29-0083-08	PUSH RIVET		
50	1A	*	N09-1419-08	SCREW(Ø4XB,BI-S TITE)BLK		
51	1A	*	N09-1420-08	SCREW(Ø3XB,BI-TP)BLK		
52	1C	*	N09-1421-08	SCREW(Ø3XB,PAN-TP)BLK		
53	2A,2B	*	N09-1422-08	SCREW(Ø2.6XB,PAN-TP)		
54	2B	*	N09-1423-08	SCREW(M3X6,FLAT)		
55	1B,2B	*	N09-1424-08	SCREW(M2X3,PAN)		
56	1B	*	N09-1425-08	SCREW(M3XB,FLANGE)		
57	2A	*	N09-1426-08	SCREW(Ø3XB,FLANGE-TP)BLK		
58	2A	*	N09-1427-08	SCREW(Ø3XB,FLAT-TP)		
59	1C,2C	*	N09-1428-08	SCREW(Ø3XB,PAN-TP)		
Δ S1	1B	*	S40-2334-08	PUSH SWITCH(POWER)		
Δ S2	1C	*	S31-2087-08	SLIDE SWITCH		MUUE
MAIN (W02-0611-08)						
D508-510	2A	*	B30-1059-08	LED(LED I/O,NØR/REV,REVERB)		
D511-513	2B	*	B30-1060-08	LED(INPUT SELECTOR)		
D514-517	2B	*	B30-1059-08	LED(REC SELECTOR,OUTPUT REC)		
D518	2B	*	B30-1060-08	LED(OUTPUT INPUT)		
D519	2B	*	B30-1059-08	LED(EFFECT REC)		
D520	2B	*	B30-1060-08	LED(EFFECT INPUT)		
PL1-5	2A	*	B30-1058-08	LAMP (REVERBERATION)		
C101		*	C91-0771-08	POLYPRØ 470PF	K	
C102			CE04W1H1R0M	ELECTRØ 1.0UF	50WV	
C103			CØ92M1H683J	MYLAR 0.068UF	J	
C104			CØ92M1H473J	MYLAR 0.047UF	J	
C105			CE04W1HR47M	ELECTRØ 0.47UF	50WV	
C106			CØ92M1H102J	MYLAR 1000PF	J	
C107			CE04W1C470M	ELECTRØ 47UF	16WV	
C108,109			CK45B1H221K	CERAMIC 220PF	K	
C110			CE04W1C100M	ELECTRØ 10UF	16WV	
C112			CØ92M1H472J	MYLAR 4700PF	J	
C113			CE04W1C100M	ELECTRØ 10UF	16WV	
C114			CE04W1HR47M	ELECTRØ 0.47UF	50WV	
C115			CØ92M1H473J	MYLAR 0.047UF	J	
C116			CØ92M1H153J	MYLAR 0.015UF	J	
C117			CØ92M1H182J	MYLAR 1800PF	J	
C118			CØ92M1H183J	MYLAR 0.018UF	J	
C119			CØ92M1H102J	MYLAR 1000PF	J	
C120			CE04W1HR47M	ELECTRØ 0.47UF	50WV	
C121			CE04W1E4R7M	ELECTRØ 4.7UF	25WV	

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C122 C123, 124 C125 C126, 127 C128, 129			CK45F1H473K CE04W1C221M CE04W1HR47M CE04W1H3R3M CC45SL1H7R0J	CERAMIC 0.047UF K ELECTR0 220UF 16WV ELECTR0 0.47UF 50WV ELECTR0 3.3UF 50WV CERAMIC 7.0PF J		
C130, 131 C132 C133 C134-139 C140-143			CE04W1C100M CE04W1H1R0M CQ92M1H103J * C91-0771-08 CE04W1H3R3M	ELECTR0 10UF 16WV ELECTR0 1.0UF 50WV MYLAR 0.010UF J POLYPR0 470PF K ELECTR0 3.3UF 50WV		
C501, 502 C503, 504 C505, 506 C507, 508 C509			CE04W1V102M CE04W1E221M CE04W1E471M CE04W1E221M CE04W1C101M	ELECTR0 1000UF 35WV ELECTR0 220UF 25WV ELECTR0 470UF 25WV ELECTR0 220UF 25WV ELECTR0 100UF 16WV		
C510 C511 C512-514 C513, 514			CE04W1E220M CE04W1C470M CE04W1E4R7M CQ92M1H103J	ELECTR0 22UF 25WV ELECTR0 47UF 16WV ELECTR0 4.7UF 25WV MYLAR 0.010UF J		
70	1C	*	E13-0442-08	PHONE JACK (4P)		
R162 R163, 164 R503, 504 R505, 506 R507			RS14GB3D681J RS14GB3D391J RS14GB3A220J RS14GB3A241J RS14GB3A102J	FL-PROOF RS 680 J 2W FL-PROOF RS 390 J 2W FL-PROOF RS 22 J 1W FL-PROOF RS 240 J 1W FL-PROOF RS 1K J 1W		
RS10 RS11 VR101 VR102 VR103			RS14GB3A220J RS14GB3A561J * R13-2004-08 * R13-2005-08 * R13-3020-08	FL-PROOF RS 22 J 1W FL-PROOF RS 560 J 1W POTENTIOMETER (5K) DELAY TIME TRIMMING P0T (5K) DELAY TIME POTENTIOMETER (20KBX2) DEPTH		
RL1 SW1 -8 SW9 -12			* S51-2076-08 * S40-8007-08 * S40-4058-08	RELAY PUSH SW (8KEY) SELECT0R (RIGHT) PUSH SW (4KEY) SELECT0R (LEFT)		
D101, 102 D103 D104 D105, 106 D501, 502			HZ3A-1 1S1588 HZ12A-2 1S1588 * HZ18-3	ZENER DIODE DIODE ZENER DIODE DIODE ZENER DIODE		
D503 D504, 505 D506 D507 IC101			1N4002 1S1588 HZ3C-1 * DF02M * NJM4558-DX	DIODE DIODE ZENER DIODE DIODE IC 0P AMP		
IC102, 103 IC104, 105 Q101, 102 Q103-108 Q109-111			* CX7932 * NJM4558-DX 2SA1048 (GR) 2SC2458 (GR) 2SD1153	IC BBD IC 0P AMP TRANSISTOR TRANSISTOR TRANSISTOR		
Q501 Q502 Q503 Q504 Q505			* 2SC1815 (GR) * 2SD743 (R) 2SA1015 (GR) * 2SB703 (R) 2SA1015 (GR)	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR		

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Q506			2SC1815 (GR)	TRANSISTOR		
EQUALIZER (W02-0612-08)						
D201-212	1A, 2C	*	B30-1061-08	LED (INCLUDED IN EQ VR)		
C201 C202 C203 C204 C205			CE04W1E100M CE04W1HR15M CE04W1E4R7M CQ92M1H124K CE04W1H2R2M	ELECTR0 10UF 25WV ELECTR0 0.15UF 50WV ELECTR0 4.7UF 25WV MYLAR 0.12UF K ELECTR0 2.2UF 50WV		
C206 C207 C208 C209 C210			CQ92M1H683K CE04W1HR47M CQ92M1H333K CE04W1HR22M CQ92M1H183K	MYLAR 0.068UF K ELECTR0 0.47UF 50WV MYLAR 0.033UF K ELECTR0 0.22UF 50WV MYLAR 0.018UF K		
C211 C212 C213 C214 C215			CE04W1HR12M CQ92M1H123K CE04W1HR1M CQ92M1H682K CQ92M1H683K	ELECTR0 0.12UF 50WV MYLAR 0.012UF K ELECTR0 0.1UF 50WV MYLAR 0.0068UF K MYLAR 0.068UF K		
C216 C217 C218 C219 C220			CQ92M1H472K CQ92M1H393K CQ92M1H222K CQ92M1H183K CQ92M1H222K	MYLAR 0.0047UF K MYLAR 0.039UF K MYLAR 0.0022UF K MYLAR 0.018UF K MYLAR 0.0022UF K		
C221 C222 C223 C224 C225			CQ92M1H103K CQ92M1H122K CQ92M1H562K CQ92M1H681K CE04W1E68M	MYLAR 0.01UF K MYLAR 1200PF K MYLAR 5600PF K MYLAR 680PF K ELECTR0 6.8UF 25WV		
C226 C227 C228 C229 C230			CQ92M1H471K CC45SL1H680K CE04W1E4R7M CE04W1HR15M CE04W1HR12M	MYLAR 470PF K CERAMIC 68PF K ELECTR0 4.7UF 25WV ELECTR0 0.15UF 50WV ELECTR0 0.12UF 50WV		
C231			CE04W1HR1M	ELECTR0 0.1UF 50WV		
VR201-212	1A, 2C	*	R13-5054-08	POTENTIOMETER (100K) EQ (WITH LED)		
IC201 IC202-205 IC206 IC207			* NJM4559D-D * NJM4558-DX * NJM4559D-D * NJM4558-DX	IC 0P AMP IC 0P AMP IC 0P AMP IC 0P AMP		
SPECTRUM ANALYZER (W02-0613-08)						
FL1	1B	*	B31-0331-08	FLUORESCENT DISPLAY (SPECTRUM)		
C1 -5 C6 ,7 C8 ,9 C10 ,11 C12 ,13			CE04W1C100M CE04W1HR47M CE04W1HR33M CE04W1HR22M CQ92M1H823K	ELECTR0 10UF 16WV ELECTR0 0.47UF 50WV ELECTR0 0.33UF 50WV ELECTR0 0.22UF 50WV MYLAR 0.082UF K		
C14 ,15 C16 ,17 C18 ,19 C20 ,21 C22 ,23			CQ92M1H393K CQ92M1H223K CQ92M1H822K CQ92M1H332K CQ92M1H272K	MYLAR 0.039UF K MYLAR 0.022UF K MYLAR 8200PF K MYLAR 0.0033UF K MYLAR 0.0027UF K		

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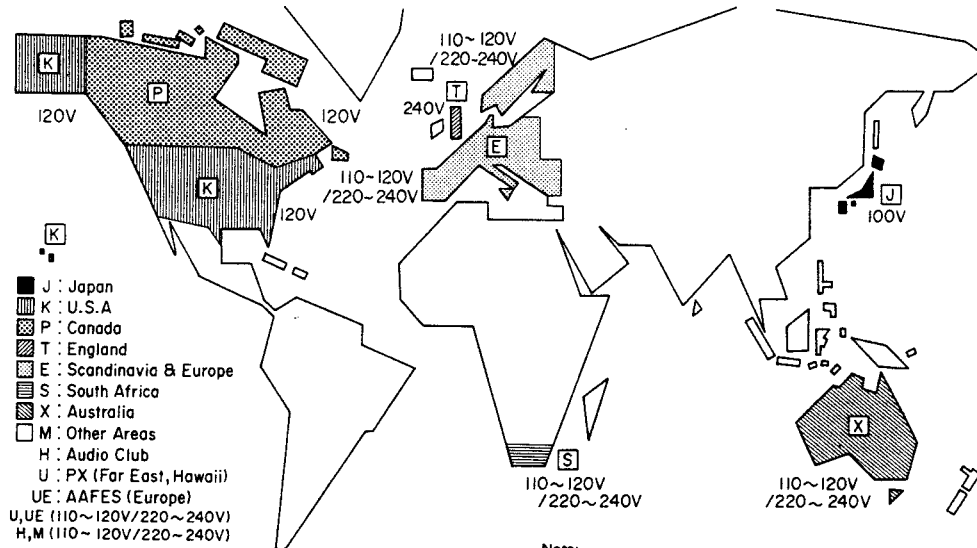
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C24 ,25			C092M1H122K	MYLAR 1200PF K		
C26 ,27			C092M1H681K	MYLAR 680PF K		
C28 ,29		*	C91-0772-08	POLYPR0 220PF K		
C30 -42			CE04W1C100M	ELECTR0 10UF 16WV		
C43			CK45F1H473K	CERAMIC 0.047UF K		
C44 ,45			C092M1H682K	MYLAR 0.0068UF K		
C46			CC45SL101K	CERAMIC 0.0068UF		
C47			CE04W1E100M	ELECTR0 10UF 25WV		
C48			CK45F1H473K	CERAMIC 0.047UF K		
80	1B	*	G13-0168-08	CUSHION (BEHIND FL1)		
RA11P		*	R90-0428-08	MULTI-COMP 10KX11		
RA12P		*	R90-0427-08	MULTI-COMP 10KX12		
VR1	1B	*	R13-5053-08	P0TENTI0METER(100KB)LEVEL		
S13 ,14	1B	*	S40-1091-08	PUSH SWITCH(1KEY)LEFT,RIGHT		
D1 -27			1S1588	DIODE		
IC1 ,2		*	NJM4558-DX	IC 0P AMP		
IC3 -5		*	NJM2058D	IC 0P AMP		
IC6		*	HD14520BP	IC DUAL BINARY UP COUNTER		
IC7		*	HD14514BP	IC 4-16 LINE DECODER		
IC8 -13		*	LM339N	IC QUAD COMPARATORS		
O1 ,2			2SA1048(GR)	TRANSISTOR		
O3 -15		*	2SC2062B	TRANSISTOR		

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WORLD MAP & AREA CORD



Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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