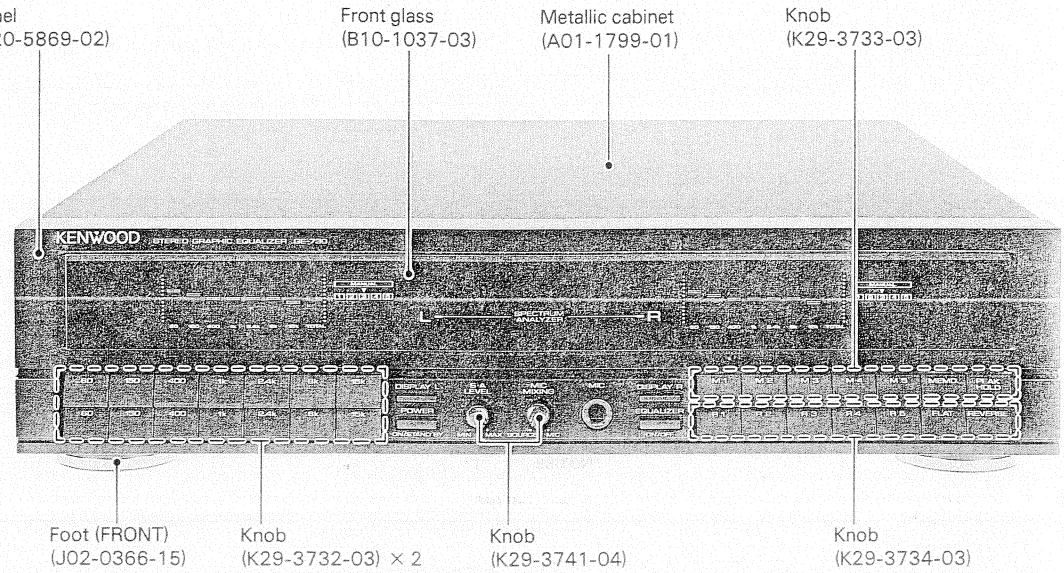
STEREO GRAPHIC EQUALIZER

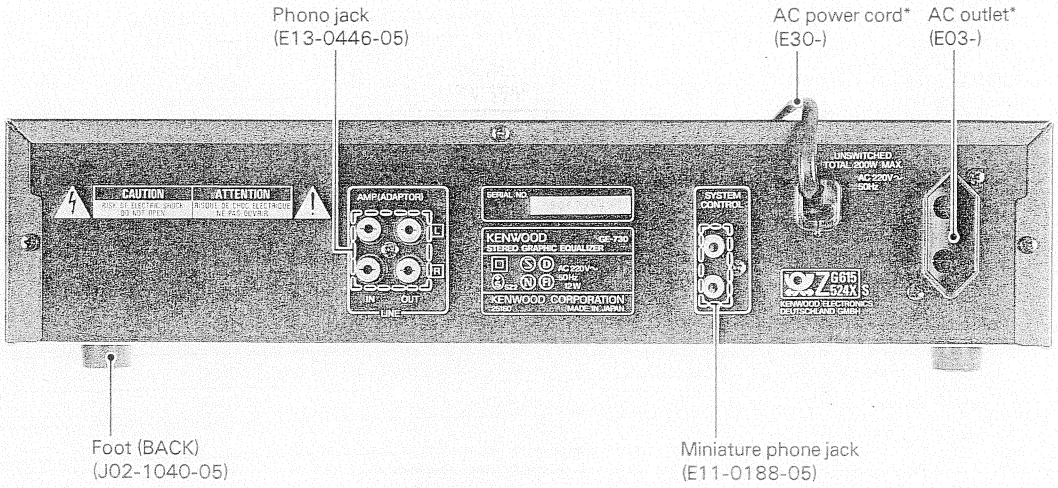
GE-730

SERVICE MANUAL

KENWOOD

B51-3974-00(B)1752





* Refer to parts list on page 18.

CONTENTS

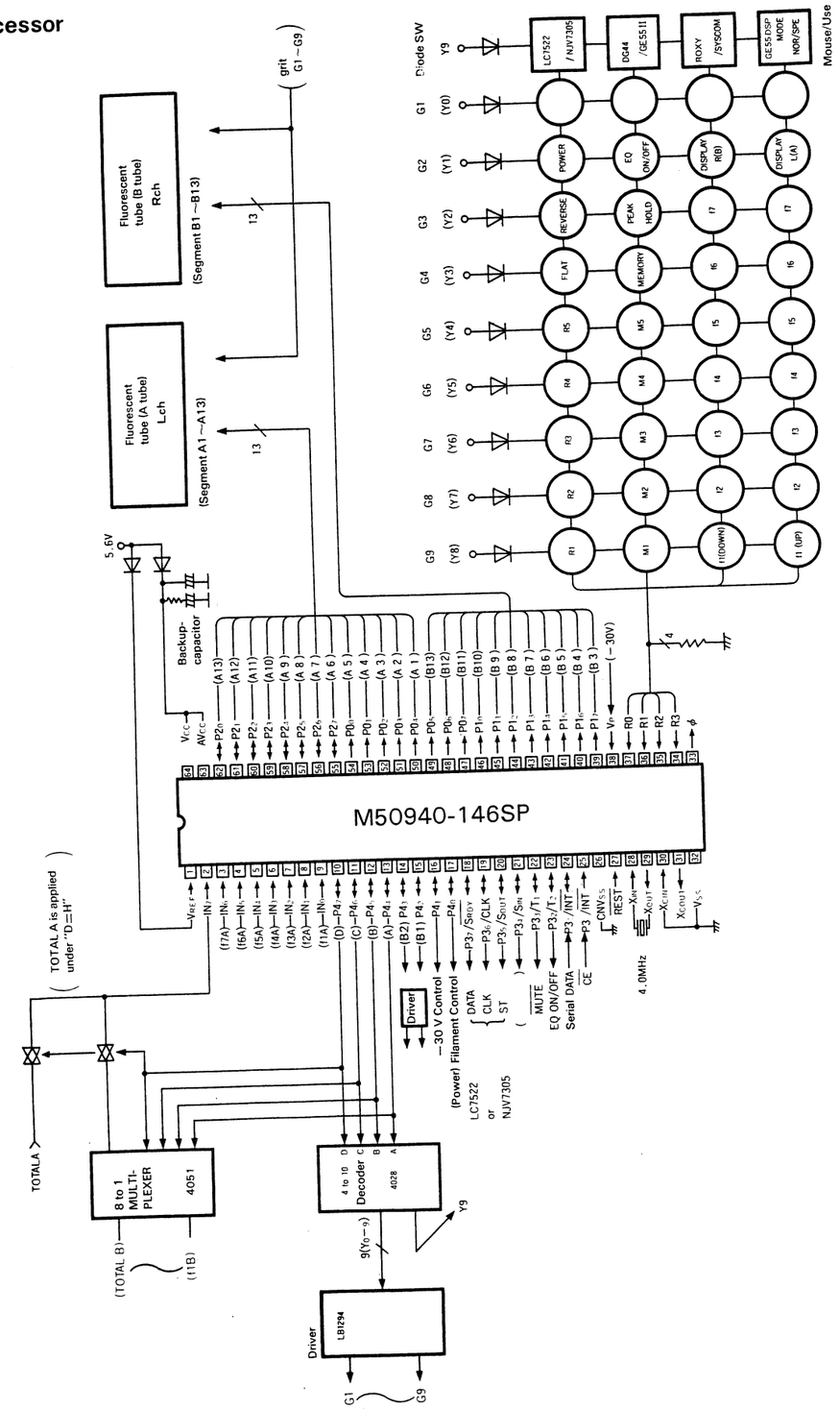
GE-730

CIRCUIT DESCRIPTION

Component	Component name	Use/Function	Operation/Condition
Q1	2SA733(A)(Q, P) 2SA933S(Q, R)	MUTE DRIVE	Drive signal from μ-com is inverted and applied to IC2.
Q2	2SA733(A)(Q, P) 2SA933S(Q, R)	FAST-OFF (−30 V)	When power is off, −30 V supplied center of FL's filament is gone off quickly.
Q3	2SC1740S(Q, R) 2SC945(A)(Q, P)	Filament Drive	Control Q4 with signal from μ-com.
Q4	2SA733(A)(Q, P) 2SA933S(Q, R)	Filament Drive	Convert the HIGH or Low signal of 5 V into 12 V and control Q5 and Q6.
Q5	2SC1740S(Q, R) 2SC945(A)(Q, R)	Filament Drive	Control 4.3 V AC (ON/OFF) suppling to FL's filaments at OFF, supplied half-wave rectification voltage to FL's filament by D13.
Q6	2SD1266		
Q7	2SA733(A)(Q, P) 2SA933S(Q, R)	−30 V control	Drive signal from μ-com is inverted and applied to Q8.
Q8	2SC1740S(Q, R) 2SC945(A)(Q, P)	−30 V control	Switch the −30 V which supplies to FL's filaments ON or OFF by the drive signal from Q7.
Q9	2SA954(L, K)	−5 V AVR	
Q10	2SB772(Q, P)	−30 V AVR	
Q11	2SD1266	12 V AVR	
Q12	2SC1740S(Q, R) 2SC945(A)(Q, P)	12 V AVR	
Q13	2SC1740S(Q, R) 2SC945(A)(Q, P)	12 V AVR	12 V error amplification
Q14	2SA733(A)(Q, P) 2SA933S(Q, R)	−12 V AVR	−12 V error amplification
Q15	2SA733(A)(Q, P) 2SA933S(Q, R)	12 V AVR	
Q16	2SD1266		
Q17	2SA733(A)(Q, P) 2SA933S(Q, R)	Switch signal	<table><tr><th>SIGNAL</th><th>Q17, 18 ON</th><th>Q17, 8 OFF</th></tr><tr><td>L-ch TOTAL</td><td>×</td><td>○</td></tr><tr><td>R-ch B.P.F.</td><td>○</td><td>×</td></tr></table>
Q18	2SC1740S(Q, R) 2SC945(A)(Q, P)		
Q19	2SC1740S(Q, R) 2SC945(A)(Q, P)	RESET	Generate reset signal and supply it to μ-com.
IC1	M5218P NJM4560D	Buffer	Graphic circuit's buffer.
IC2	TC9215P	Control for GE.	Control GE circuit (ON/OFF) and muting.
IC3	M5229P	EQ.	for R-ch
IC4	M5229P	EQ.	for L-ch
IC5	LC7522	EQ.	Electronic volume.
IC6	M5218P NJM4560D	Buffer	Buffer for Spectrum level meter.
IC7 ~10	AN6554 μPC4574C	Spectrum circuit	B.P.F. for Spectrum and TOTAL indicator.
IC11	M50940-146SP	Microprocessor (μ-com)	Control all of functions.
IC12	TC74HC4051AP	Multiplexer	Control R-ch B.P.F. signal and TOTAL by the signal from μ-com.
IC13	TC74HC4028SP	4 to 10 Decoder	Convert 4 signal from μ-com into 10 signal.
IC14, 15	LB1294	Driver	Control FL's grits.
IC16	PST529C	RESET IC	Generate RESET signal.
IC17	μPC4570C-A	MIC amp	

CIRCUIT DESCRIPTION

croprocessor



GE-730

CIRCUIT DESCRIPTION

Pin Description

Pin No.	Pin name	I/O	Name	Description
1	VREF			Power supply for A/D converter (5V).
2	IN7	I		A/D input for multiplexer and L-ch TOTAL signal.
3~9	IN6~IN8	I	f7A~f1A	A/D input of L-ch.
10~13	P47~P44	O	D~A	Control for multiplexer and 4 to 10 decoder.
14, 15	P43, P42	O	B2, B1	Drive for R-ch segments.
16	P41	O		Control power supply for indicator (—30 V) L: ON, H: OFF.
17	P40	O		Control power supply for filament of Indicator L: OFF, H: ON.
18	P37	O	DATA	Data terminal for LC722.
19	P36	O	CLK	Clock terminal for LC722.
20	P35	O	ST	ST terminal for LC722.
21	P34	O		No use.
22	P33	O	$\overline{\text{MUTE}}$	Control mute when power is ON/OFF and EQ is ON/OFF L: ON, H: OFF.
23	P32	O	EQ ON/OFF	Control EQ circuit L: OFF, H: ON.
24	P31	I	S. DATA	Synchro-data input.
25	P30	I	$\overline{\text{CE}}$	Detection of Backup L: BACKUP.
26	CNVSS			Mode change in microprocessor. (GND)
27	$\overline{\text{RESET}}$			Reset terminal L: RESET.
28, 29	XIN, XOUT			System clock terminal (4 MHz).
30, 31	XCIN, XCOUT			No use.
32	Vss			GND of power supply.
33	ϕ			1/4-divider of system clock (no use).
34~37	R3~R0	I		Key inputs.
38	VP			Pull-down power supply (—30 V).
39~49	P17~P05	O	B3~B13	Drive segments (3~13) of R-ch.
50~62	P04~P20	O	A1~A13	Drive segments (3~13) of L-ch.
63	AVcc			Power supply for A/D converter (5 V).
64	Vcc			Power supply for microprocessor (5 V).

<TEST MODE>

1. **Insert AC plug to the power supply under pressing FLAT key.**
2. **Confirm the following checks.**

2-1. At first, all of segments turn on.

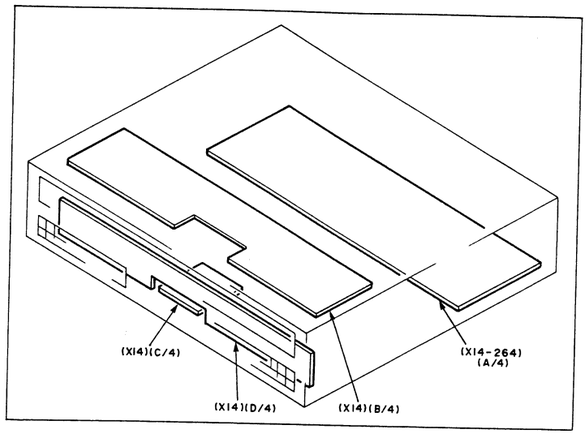
2-2. MAX segments (+12 dB) of all frequency turn on when pressing M-2 key.

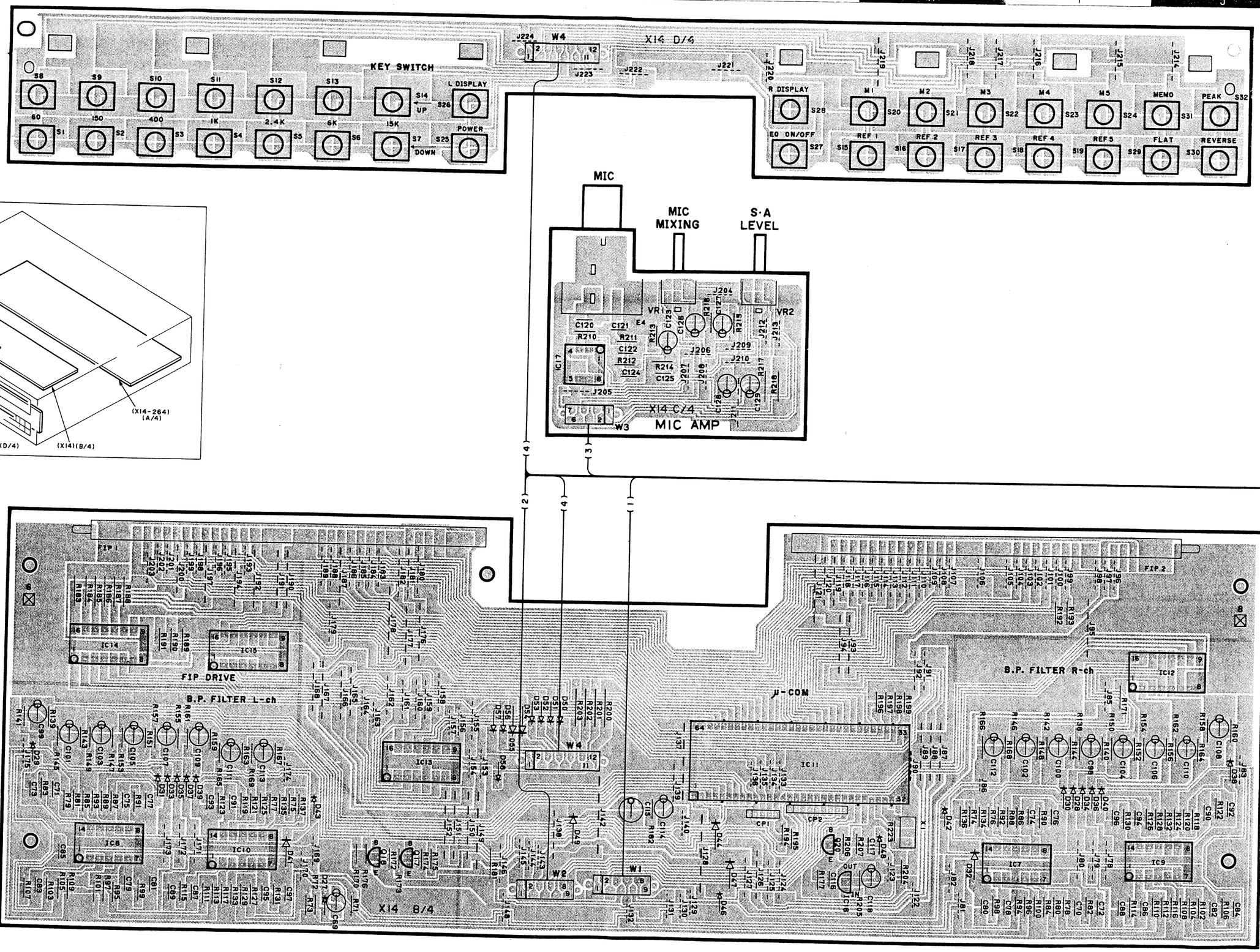
2-3. Min segments (—12 dB) of all frequency turn on when pressing M-3 key.

2-4. 3 points (+12 dB, 0 dB, —12 dB) of segments turn on in all frequency when UP or DOWN key is pressed.

3. **Pull the AC plug out when power switch on (reset).**

PC BOARD (COMPONENT SIDE VIEW)

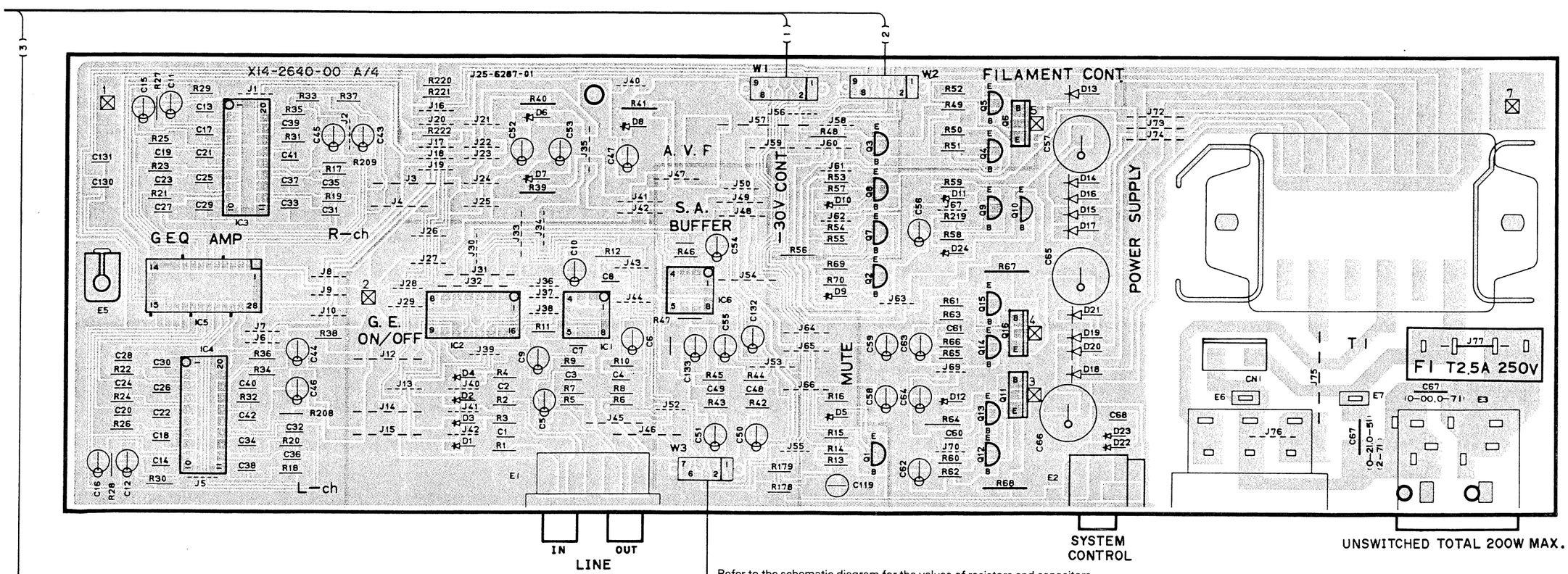




K L M N O P Q R S T

X14-2640-00

Ref. No. IC	Ref. No. Q	Address	Ref. No. IC	Ref. No. Q	Address
	1	6O	1		6N
	2	5O	2		6M
	3	5O	3		5L
	4	5P	4		6L
	5	4P	5		5L
	6	4P	6		5N
	7	5O	7		6I
	8	5O	8		6B
	9	5P	9		6J
	10	5P	10		6C
	11	6P	11		6G
	12	6P	12		5J
	13	6P	13		6E
	14	6P	14		5B
	15	5P	15		5C
	16	6P	16		6H
	17	6E	17		3F
	18	6D	18		

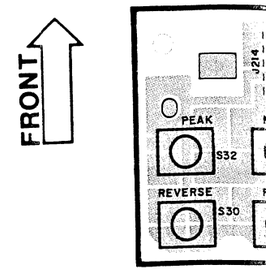


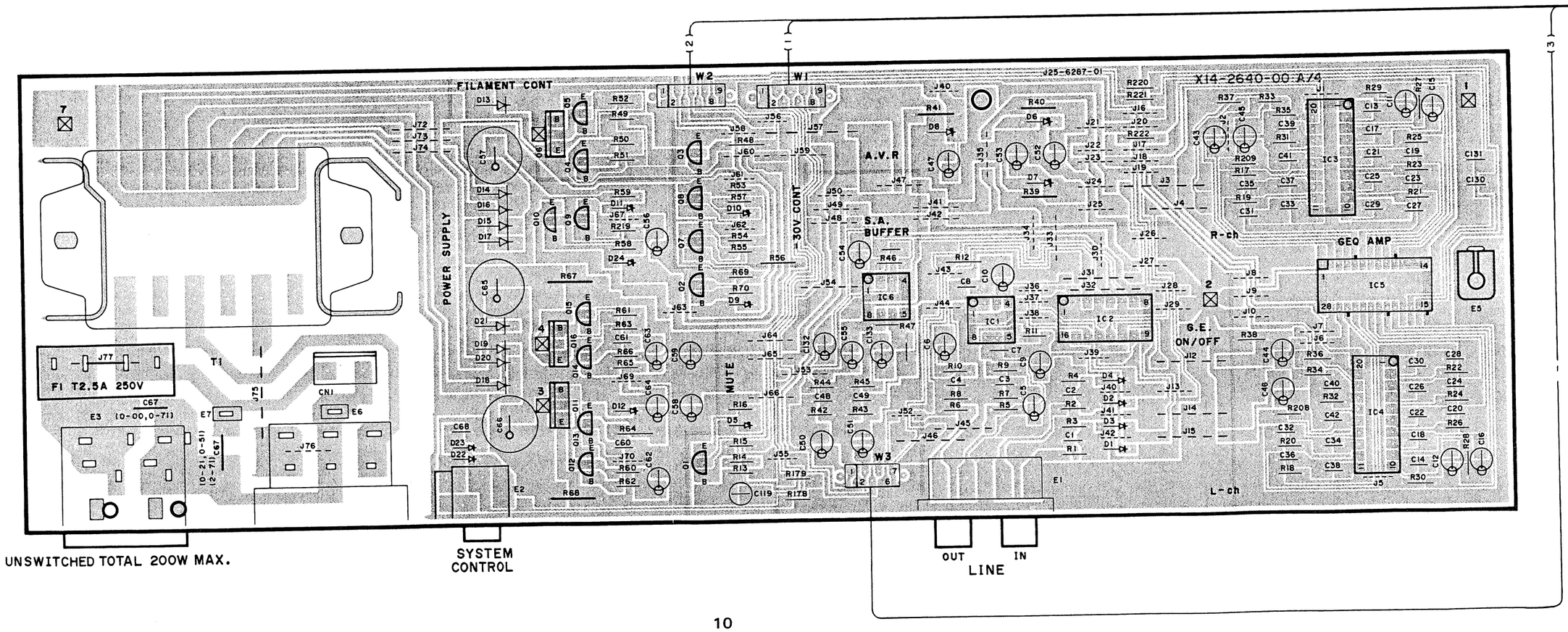
Refer to the schematic diagram for the values of resistors and capacitors.

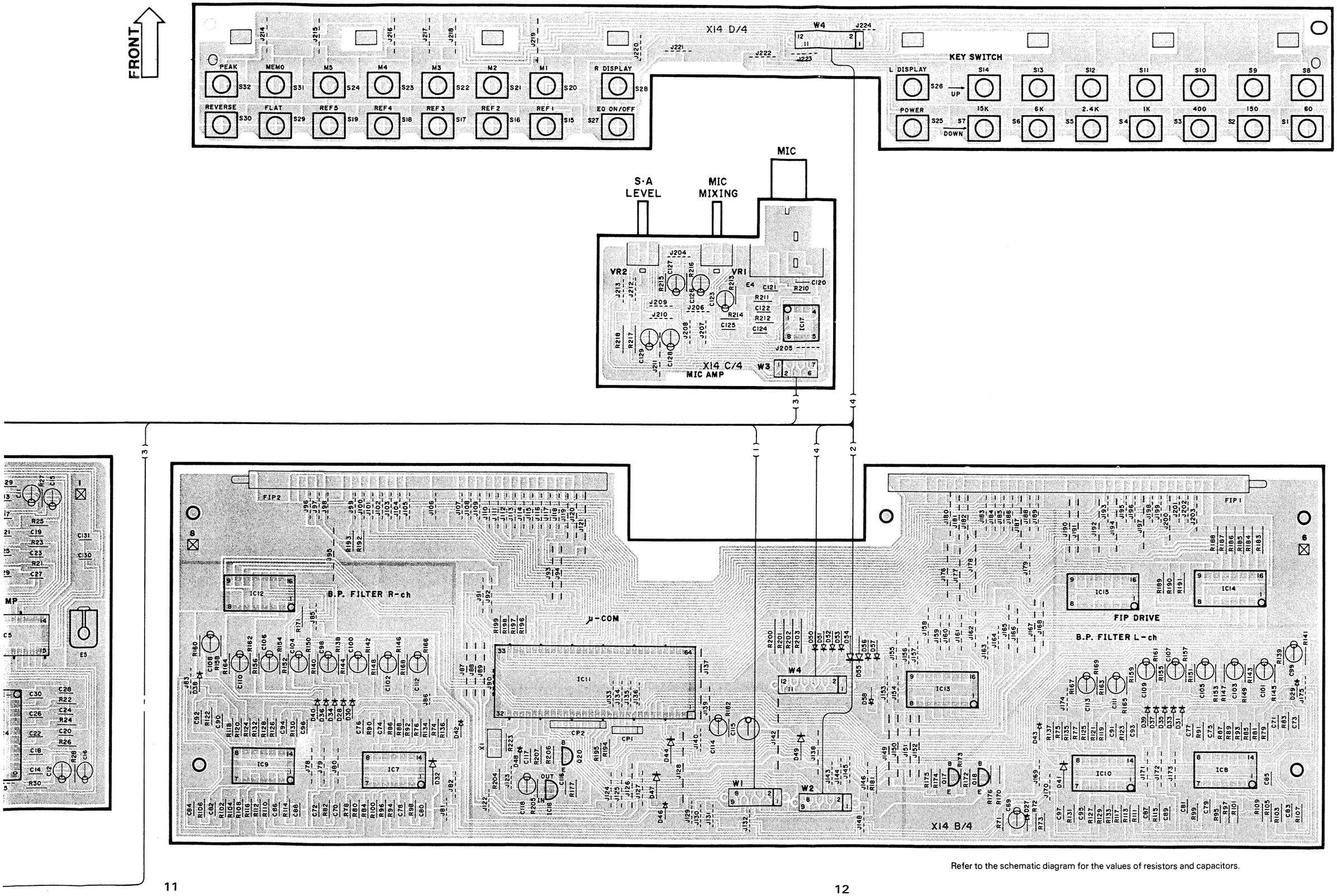
PC BOARD (FOIL SIDE VIEW)

X14-2640-00

Ref. No. IC	Ref. No. Q	Address	Ref. No. IC	Ref. No. Q	Address
	1	6Z	1		5AA
	2	5Z	2		5AB
	3	4Z	3		5AC
	4	4Y	4		5AD
	5	4Y	5		5AD
	6	4Y	6		5AA
	7	5Z	7		6AG
	8	5Z	8		6AM
	9	5Y	9		6AE
	10	5Y	10		6AL
	11	6Y	11		6AH
	12	6Y	12		6AE
	13	6Y	13		6AK
	14	6Y	14		5AM
	15	5Y	15		5AL
	16	6Y	16		6AH
	17	6AK	17		3AI
	18	6AK	18		







Refer to the schematic diagram for the values of resistors and capacitors.

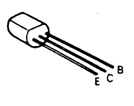
(X14-264X-XX) (A/4)

(X14-264X-XX) (B/4)

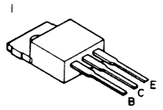
(X14-264X-XX) (C/4)

DESTINATION \ Ref. No.	R1,2,5,6	C7,8,41,42
2-71 (E)	470	YES
0-51 (T)	100	NO
0-71 (X)		
0-21 (M)		

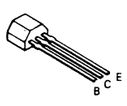
2SA733(A)
2SA954
2SB764
2SC945(A)



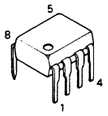
2SD1266



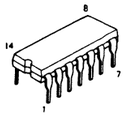
2SA933S
2SC1740S



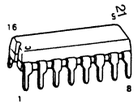
NJM4560D



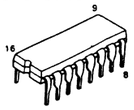
AN6554



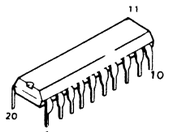
LB1294



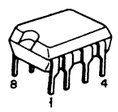
TC74HC4028P
TC74HC4051AP
TC9215P
UPC4574C



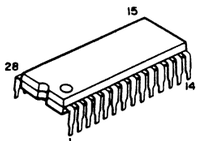
M5229P



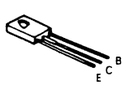
M5218P
UPC4570C-A

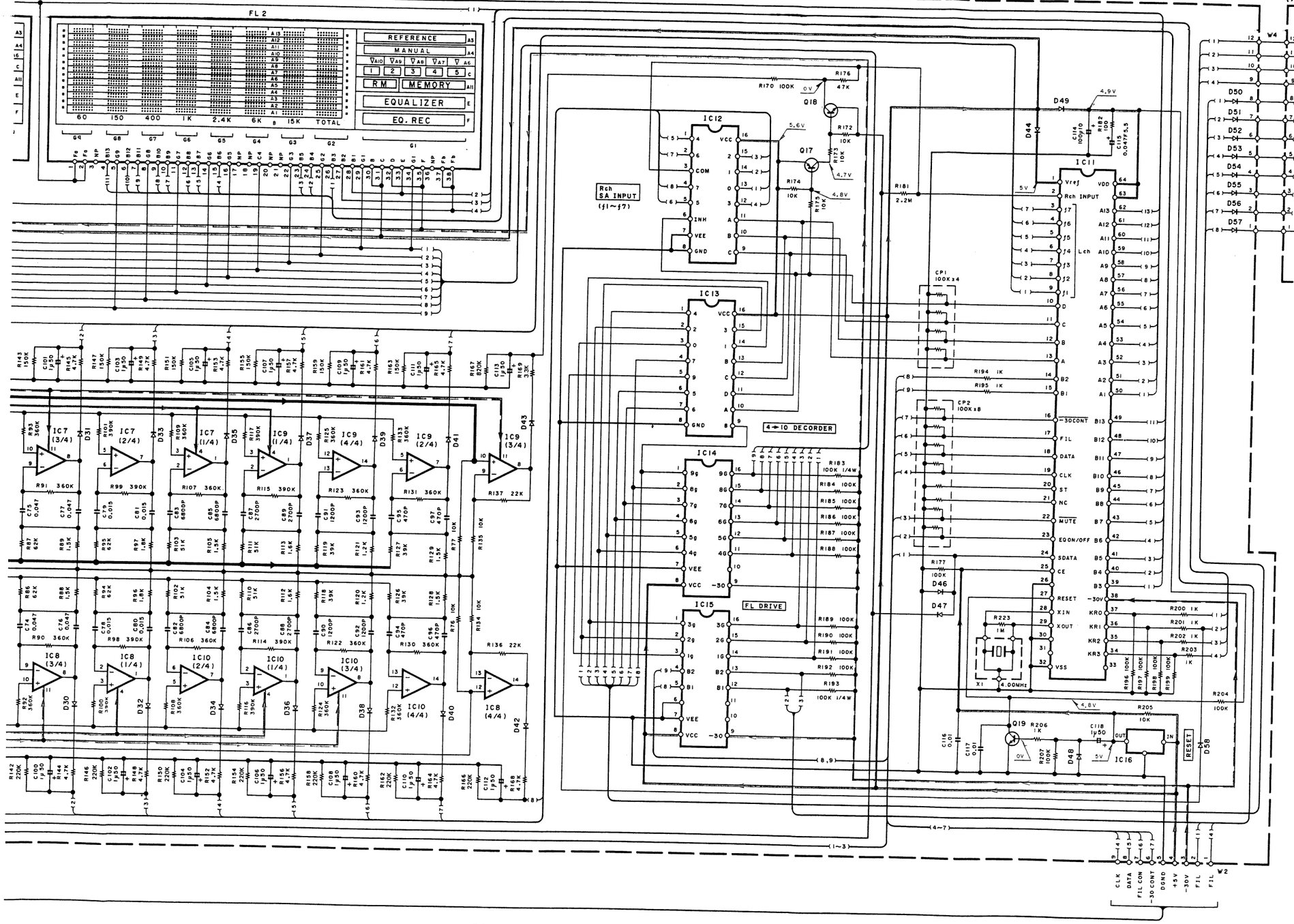


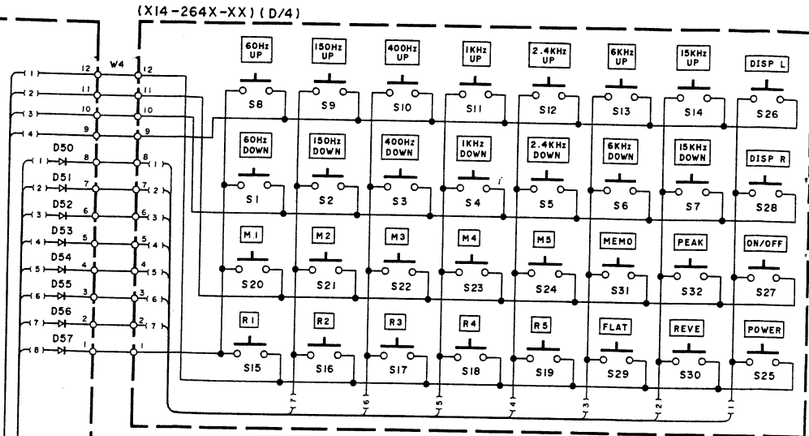
LC7522



PST529C







Q1,2,4,7,14,15,17	: 2SA733(A)(Q,P) or 2SA933S(Q,R)
Q3,5,8,12,13,18,19	: 2SC945(A)(Q,P) or 2SC1740S(Q,R)
Q6,11,16	: 2SD1266
Q9	: 2SA954(L,K)
Q10	: 2SB772(Q,P)
IC1,6	: NJM4560D or M5218P
IC2	: TC9215P
IC3,4	: M5229P
IC5	: LC7522
IC7~10	: μPC4574C or AN6554
IC11	: M50940-146SP
IC12	: TC74HC4051AP
IC13	: TC74HC4028P
IC14,15	: LB1294
IC16	: PST529C
IC17	: μPC4570C-A
D1~4,22,23,25~44,46~58	: HSS104 or ISS133
D5,8	: RD5.1ES(B2) or HZS5.1N(B2)
D6,7	: RD6.8ES(B2) or HZS6.8N(B2)
D9	: RD24ES(B) or HZS24N(B)
D10	: RD5.6ES(B2) or HZS5.6N(B2)
D11	: RD6.2ES(B2) or HZS6.2N(B2)
D12	: RD11ES(B2) or HZS11N(B2)
D13~21	: S5566B
D24	: RD30ES(B) or HZS30N(B)
FL1	: CPF1072EGR or FIP9FW19Y
FL2	: CPF1072FGR or FIP9FW19AY

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ 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.

- 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 Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

EXPLODED VIEW

GE-730

Parts with the exploded numbers larger than 700 are not supplied.

GE-730

PARTS LIST

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

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
			GE-730			
1	1B	*	A01-1799-01	METALLIC CABINET		
2	3A	*	A20-5869-02	PANEL		
3	2A	*	A22-1116-01	SUB PANEL		
4	2A	*	A22-1139-12	SUB PANEL ASSY		
8	2A	*	B10-1037-03	FRONT GLASS		
-			B46-0096-13	WARRANTY CARD		
-			B46-0122-13	WARRANTY CARD	X	
-			B46-0143-03	WARRANTY CARD	E	
-		*	B50-9883-00	INSTRUCTION MANUAL(ENGLISH)	T	
-		*	B50-9884-00	INSTRUCTION MANUAL(FRENCH)	ME	
-		*	B50-9886-00	INSTRUCTION MANUAL(SPANISH)	M	
-		*	B50-9887-00	INSTRUCTION MANUAL(D/G/I)	E	
			B58-0803-13	CAUTION CARD	E	
10	1A		E30-0505-05	AUDIO CORD		
11	1A		E30-1392-05	CORD WITH PLUG		
⚠ 12	1A	*	E30-2592-05	AC POWER CORD		
⚠ 12	1A	*	E30-2594-05	AC POWER CORD	ME	
⚠ 12	1A	*	E30-2602-05	AC POWER CORD	X	
-		*	H01-8604-04	ITEM CARTON CASE	T	
-		*	H10-3866-02	POLYSTYRENE FOAMED FIXTURE		
-			H25-0224-04	PROTECTION BAG (800X400X0.03)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
13	3B		J02-0366-15	FOOT(FRONT)		
14	3B		J02-1040-05	FOOT(BACK)		
⚠ 15	3B		J42-0166-05	POWER CORD BUSHING		
17	2A	*	K29-3732-03	KNOB(80/150/400)		
18	3A	*	K29-3733-03	KNOB(MEMO/PEAK HOLD)		
19	3A	*	K29-3734-03	KNOB(REVERSE/PLAY)		
20	3A		K29-3741-04	KNOB(SA/MIC)		
A	2A		N29-0216-05	RIVET		
B	2A		N88-3008-45	FLAT HEAD TAPTITE SCREW		
C	3B		N09-1522-05	SET SCREW (3X8)		
D	3A,3B		N89-3008-45	BINDING HEAD TAPTITE SCREW		
E	1A,2B		N89-3008-46	BINDING HEAD TAPTITE SCREW		
F	2B		N89-3012-45	BINDING HEAD TAPTITE SCREW		
			ELECTRIC UNIT (X14-2642-71:E, O-51:T, O-71:X, O-21:M)			
C1 -4			CC45FSL1H221J	CERAMIC 220PF J		
C5 ,6			CE04KW1V100M	ELECTRO 10UF 35WV		
C7 ,8			CC45FSL1H101J	CERAMIC 100PF J	E	
C9 ,10			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C11 ,12			CE04KW1H2R2M	ELECTRO 2.2UF 50WV		
C13 ,14			CF92FV1H124J	MF 0.12UF J		
C15 ,16			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C17 ,18			CF92FV1H473J	MF 0.047UF J		
C19 ,20			CF92FV1H334J	MF 0.33UF J		
C21 ,22			CF92FV1H183J	MF 0.018UF J		
C23 ,24			CF92FV1H124J	MF 0.12UF J		
C25 ,26			CF92FV1H822J	MF 8200PF J		
C27 ,28			CF92FV1H563J	MF 0.056UF J		
C29 ,30			CF92FV1H272J	MF 2700PF J		
C31 ,32			CF92FV1H183J	MF 0.018UF J		

E: Scandinavia & Europe K: USA P: Canada
U: PX(Far East, Hawaii) T: England M: Other Areas
UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

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

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C33 ,34			CK45FB1H152K	CERAMIC 1500PF K		
C35 ,36			CF92FV1H822J	MF 8200PF J		
C37 -40			CK45FB1H471K	CERAMIC 470PF K		
C41 ,42			CC45FSL1H221J	CERAMIC 220PF J	E	
C43 -46			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C47			CE04KW1A101M	ELECTRO 100UF 10WV		
C48 ,49			CC45FSL1H101J	CERAMIC 100PF J		
C50 ,51			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C52 ,53			CE04KW1A101M	ELECTRO 100UF 10WV		
C54 ,55			CE04KW1V4R7M	ELECTRO 4.7UF 35WV		
C56			CE04KW1A101M	ELECTRO 100UF 10WV		
C57			CE04KW1H471M	ELECTRO 470UF 50WV		
C58 ,59			CE04KW1C101M	ELECTRO 100UF 16WV		
C60 ,61			CK45FB1H102K	CERAMIC 1000PF K		
C62 ,63			CE04KW1V220M	ELECTRO 22UF 35WV		
C64			CE04KW1C101M	ELECTRO 100UF 16WV		
C65 ,66			CE04KW1E102M	ELECTRO 1000UF 25WV		
C67			C91-0647-05	CERAMIC 0.01UF P		
C68			CK45FF1H223Z	CERAMIC 0.022UF Z		
C69			CE04KW1V100M	ELECTRO 10UF 35WV		
C70 -73			CF92FV1H124J	MF 0.12UF J		
C74 -77			CF92FV1H473J	MF 0.047UF J		
C78 -81			CF92FV1H153J	MF 0.015UF J		
C82 -85			CF92FV1H682J	MF 6800PF J		
C86 -89			CF92FV1H272J	MF 2700PF J		
C90 -93			CF92FV1H122J	MF 1200PF J		
C94 -97			CK45FB1H471K	CERAMIC 470PF K		
C98 -113			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C114			CE04KW1A101M	ELECTRO 100UF 10WV		
C115			C91-0928-05	BACKUP C 0.047F 5.5WV		
C116,117			CK45FF1H103Z	CERAMIC 0.010UF Z		
C118			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C119			C90-1349-05	NP-ELEC 1UF 50WV		
C120			CK45FF1H472Z	CERAMIC 4700PF Z		
C121			CC45FSL1H221J	CERAMIC 220PF J		
C122			CF92FV1H473J	MF 0.047UF J		
C123			CE04KW1V100M	ELECTRO 10UF 35WV		
C124			CC45FSL1H221J	CERAMIC 220PF J		
C125			CK45FB1H102K	CERAMIC 1000PF K		
C126,127			CE04KW1V100M	ELECTRO 10UF 35WV		
C128,129			CE04KW1C470M	ELECTRO 47UF 16WV		
C130,131			CK45FF1H103Z	CERAMIC 0.010UF Z		
C132,133			CE04KW1A470M	ELECTRO 47UF 10WV		
E1			E13-0446-05	PHONO JACK(4P)(LINE)		
⚠ E2			E11-0188-05	MINIATURE PHONE JACK(SYSTEM)		
⚠ E3		*	E03-0108-05	AC OUTLET	ME	
⚠ E3		*	E03-0109-05	AC OUTLET	T	
E4			E11-0159-05	PHONE JACK(3P)(MIC)		
⚠ F1			F05-2525-05	FUSE (SEMKO) (250V T2.5A)	E	
⚠ T1		*	L01-8982-05	POWER TRANSFORMER	E	
⚠ T1		*	L01-8984-05	POWER TRANSFORMER	M	
⚠ T1		*	L01-8987-05	POWER TRANSFORMER	XT	
X1		*	L78-0244-05	RESONATOR		

E: Scandinavia & Europe K: USA P: Canada
U: PX(Far East, Hawaii) T: England M: Other Areas
UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

GE-730

SPECIFICATIONS

Equalizer characteristic
Variable range ..... ± 12 dB
Center frequencies ..... 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz

Total harmonic distortion ..... Less than 0.004% (1 kHz)
Maximum output voltage ..... 3.6V (1 kHz)
S/N ratio ..... 100 dB (IHF-A network, 1V)
Input impedance ..... 47 kohms
Output impedance ..... 2.5 kohms
General
Power consumption ..... 12 W
Dimensions ..... W: 360 mm (14-3/16")
H: 89 mm (3-1/2")
D: 354 mm (13-15/16")
Weight ..... 3.1 kg (6.8 lb)

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

Note:
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the Europe (E) 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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