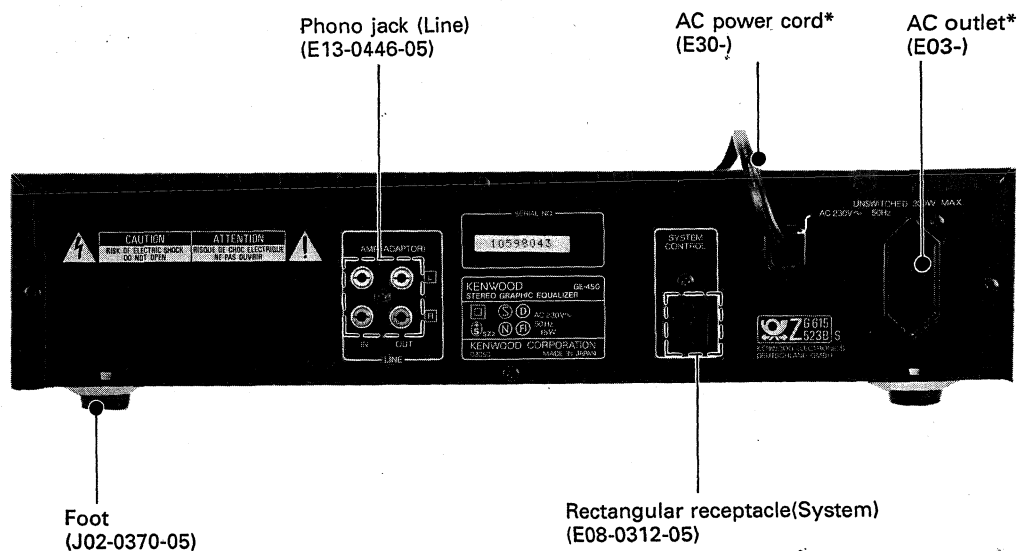
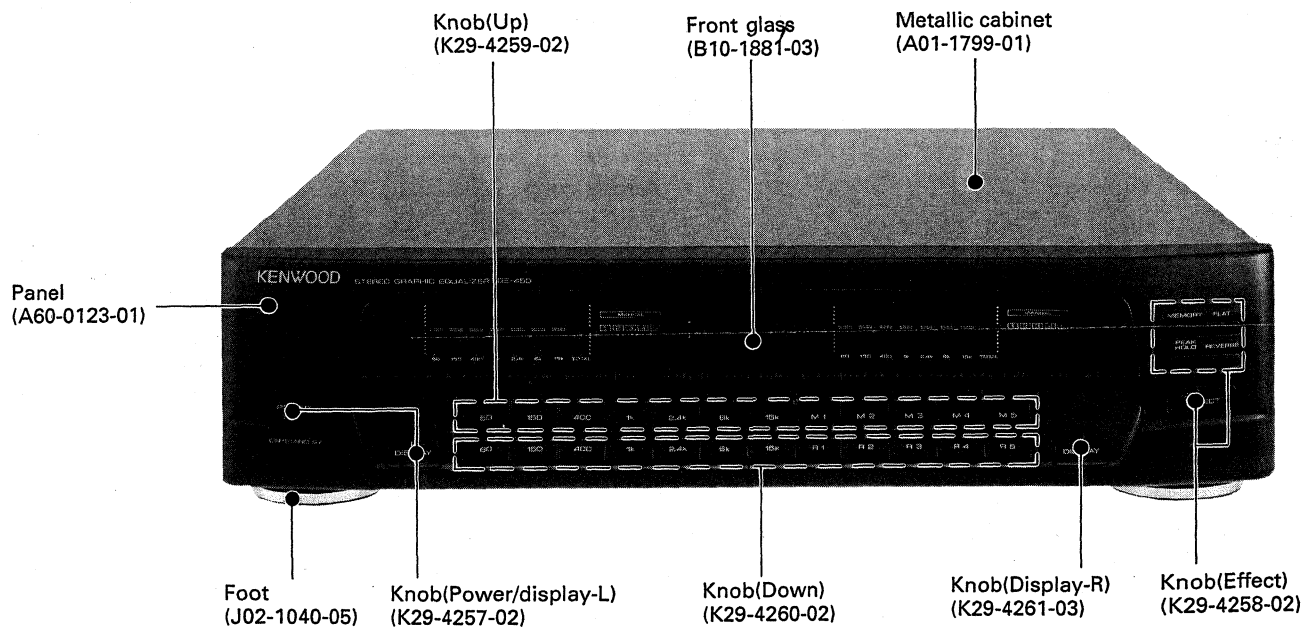


STEREO GRAPHIC EQUALIZER
GE-450
 SERVICE MANUAL

KENWOOD

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 B51-4350-00(O)1941



*Refer to parts list on page 12.

GE-450

CONTENTS / ACCESSORIES

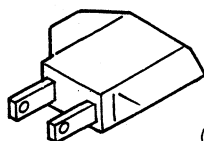
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SPECIFICATION.....	BACK COVER

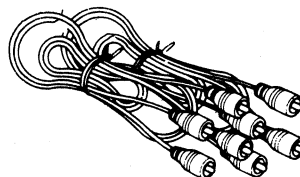
Accessories

AC plug adaptor 1



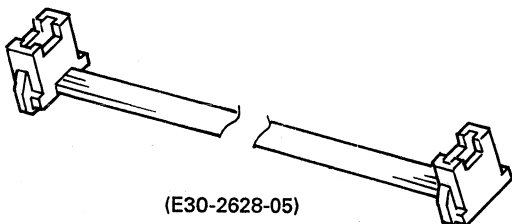
(E03-0115-05)

Audio cord 2



(E30-0505-05)

System control cord 1

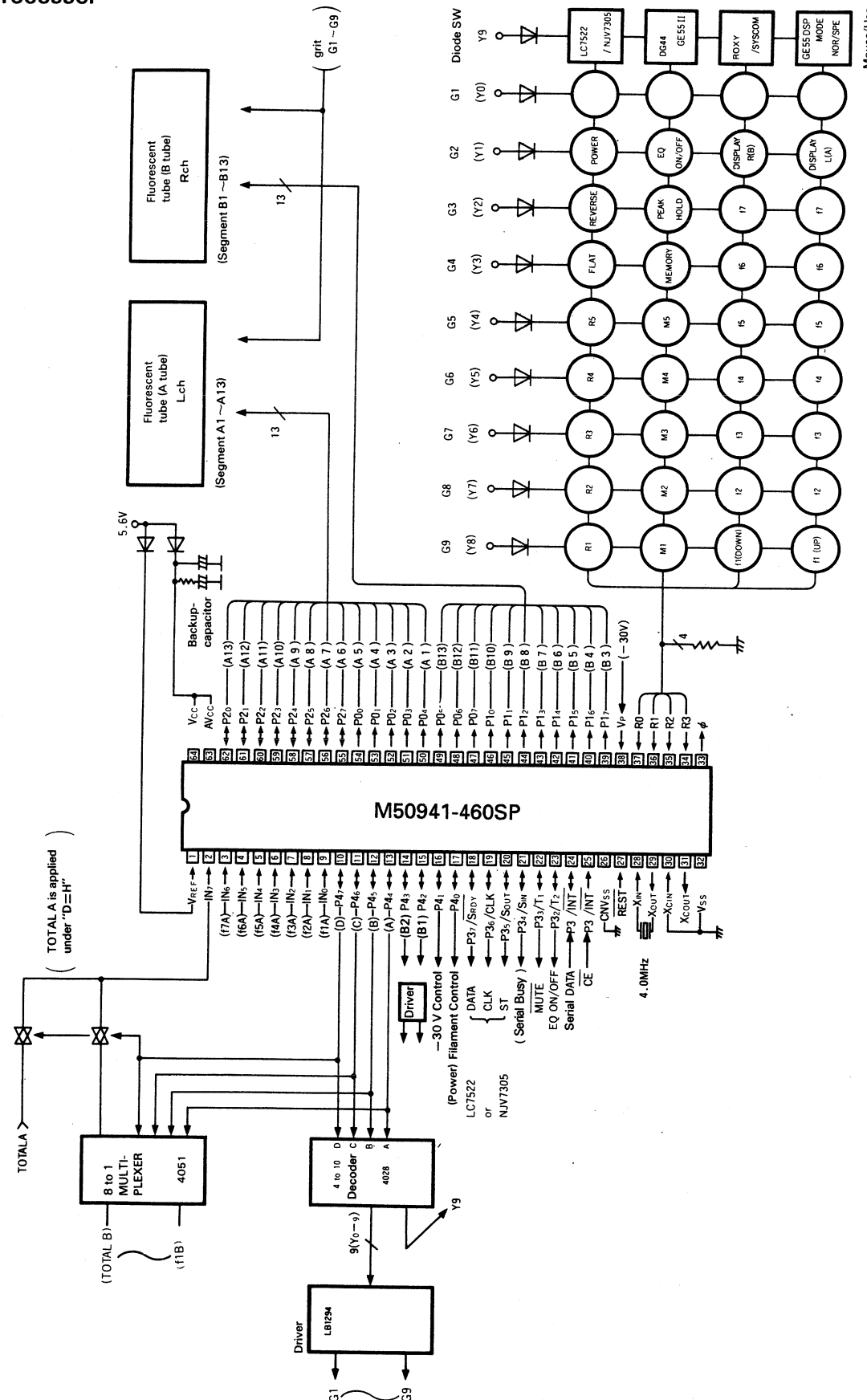


(E30-2628-05)

GE-450

CIRCUIT DESCRIPTION

Microprocessor



GE-450

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~IN0	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	I/O	S BUSY	Serial Busy I/O.
22	P33	O	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	CE	Detection of Backup L: BACKUP.
26	CNVSS			Mode change in microprocessor. (GND)
27	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).**

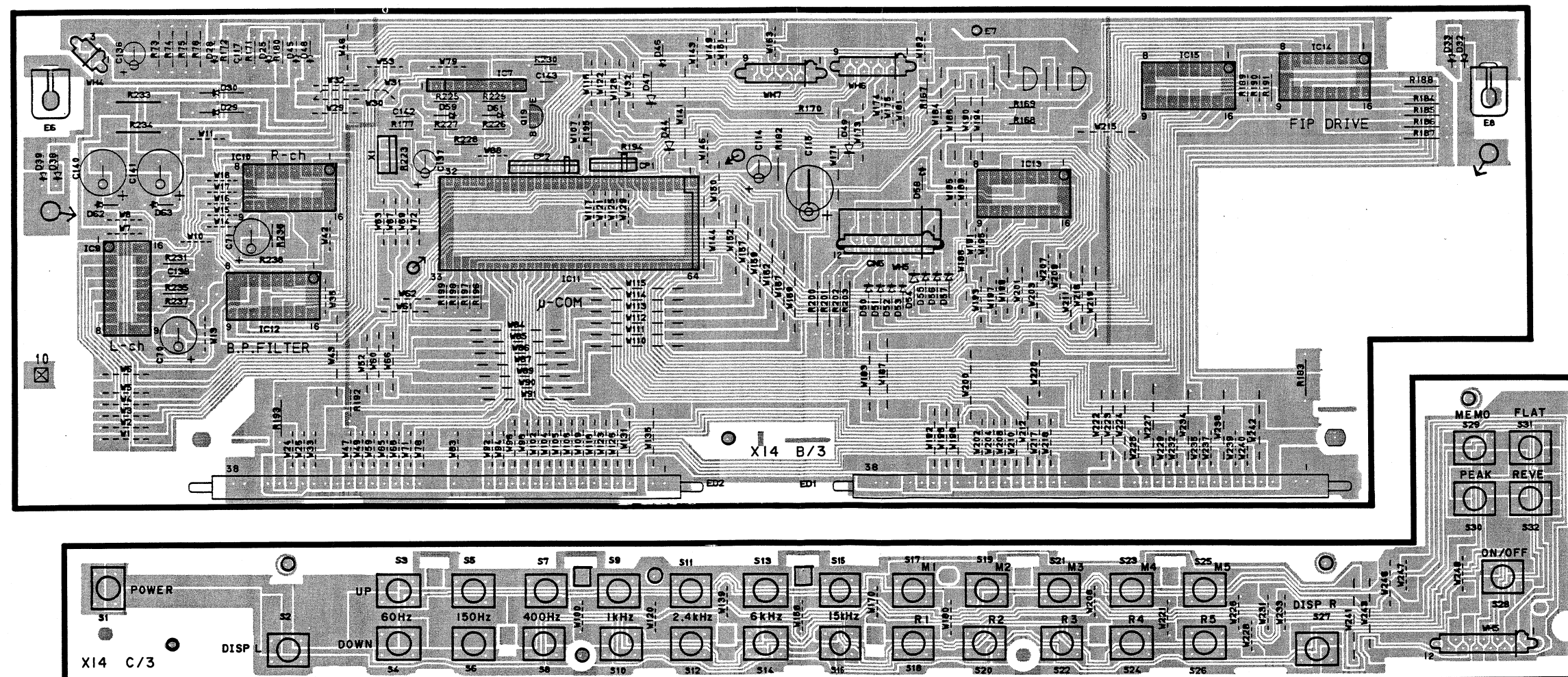
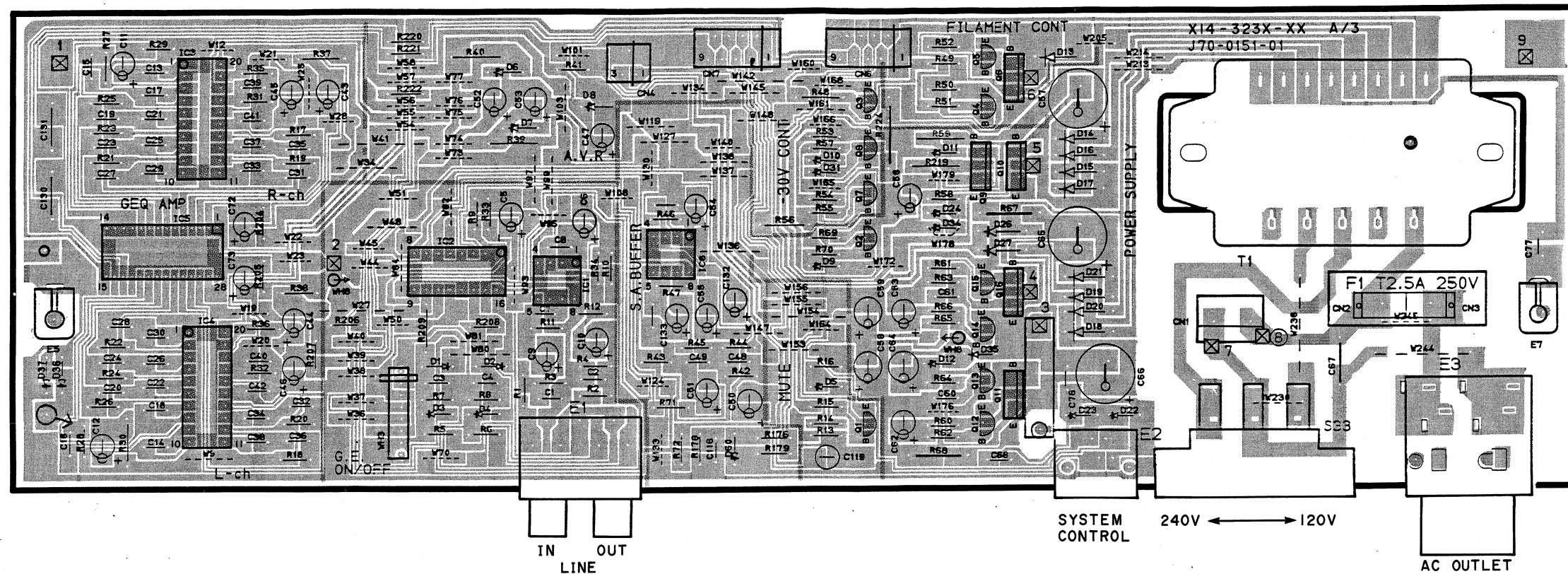
Factory shipment setting

- EQ Memory Mode : MANUAL
- EQ : 0dB, all flat
- Contents of MANUAL EQ Memory : M1 to M5 are initialized curve
- EQ ON/OFF : OFF
- Display Mode : Spectrum
- Peak Hold ON/OFF : ON

How to set factory shipment setting

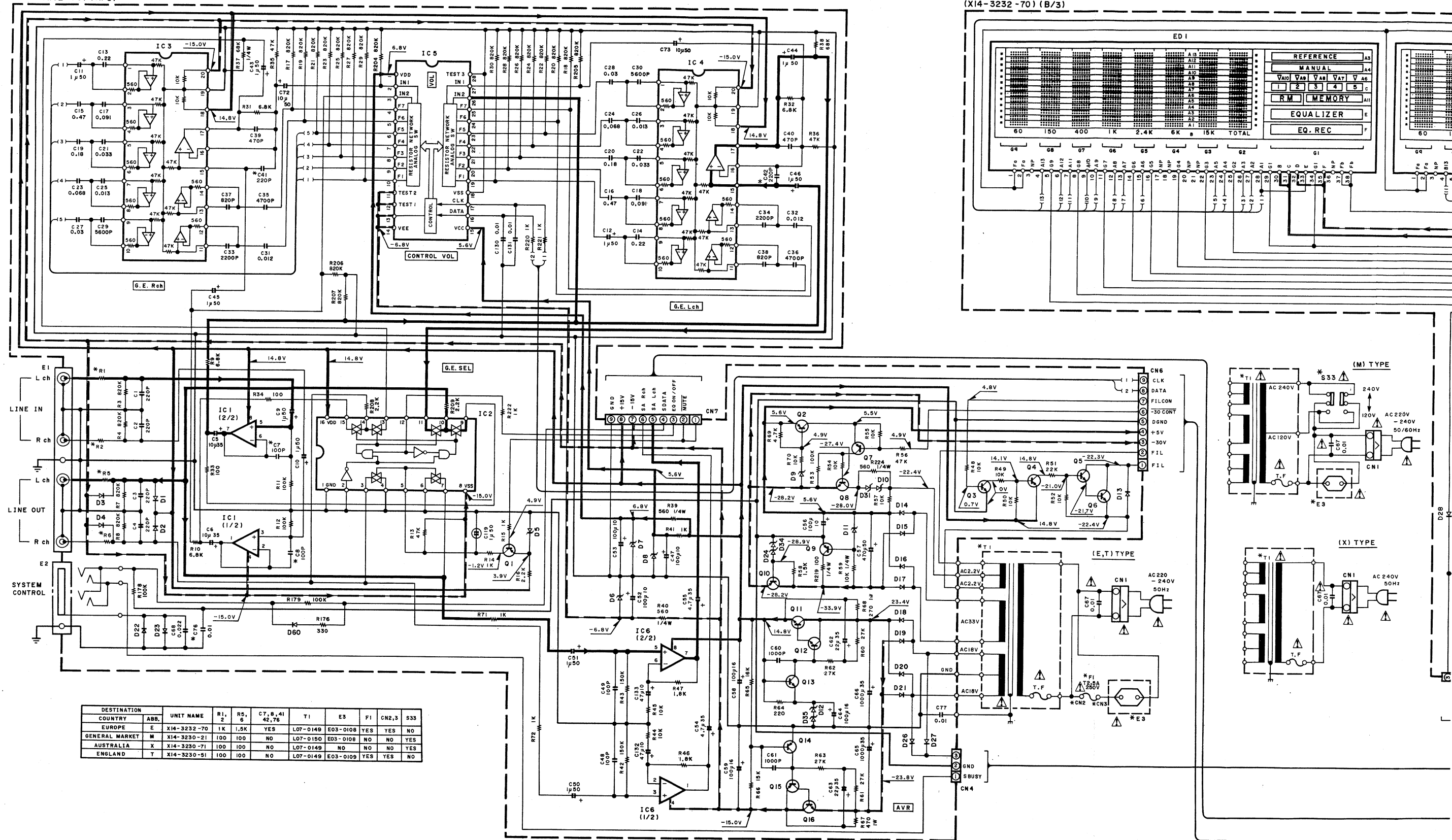
- Discharge backup capacitor
- Insert AC plug to the power supply under pressing EQ MEMORY key

PC BOARD(COMPONENT SIDE VIEW)

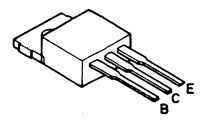
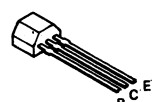


(X14-3232-70) (A/3)

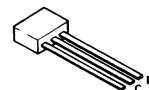
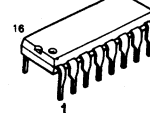
(X14-3232-70) (B/3)



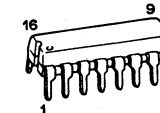
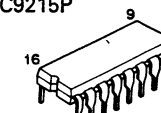
2SD1266

2SA933S
2SC1740S

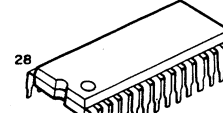
2SB941

2SA1309A
2SC3311AXR-1091DCP
XRU4028B
XRU4051B

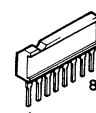
LB1294

TC4051BP
TC9215P

LC7522

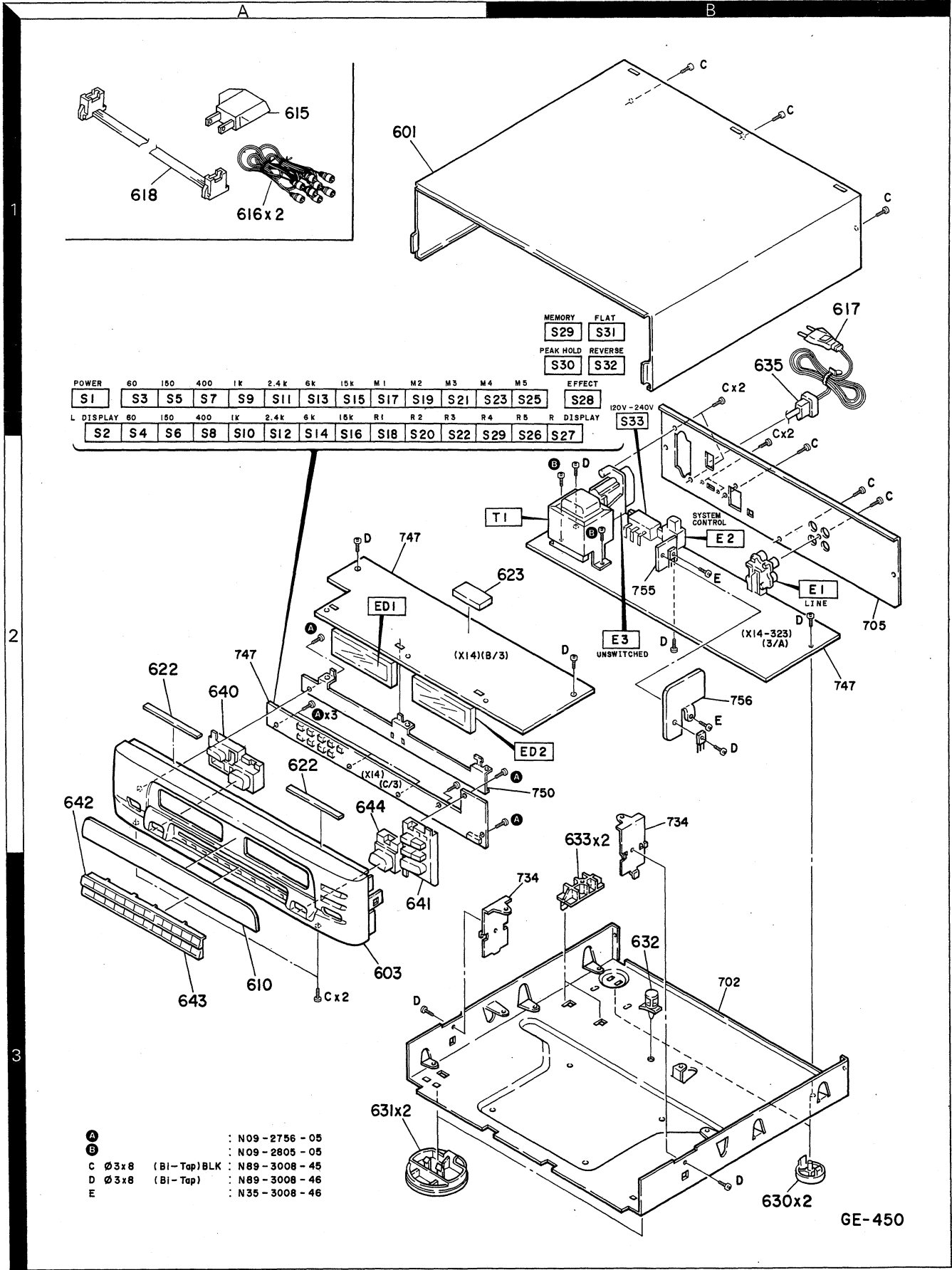


BA10393N



EXPLODED VIEW

PARTS LIST



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

2

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	
參照番號	位 置	新 號	部 品 番 號	部 品 名 / 規 格	向 應 商 標 註	
C25, 26			C092FM1H133J	MYLAR	E	
C27, 28			CF92FV1H303J	MF		
C29, 30			C092FM1H562J	MYLAR		
C31, 32			C092FM1H123J	MYLAR		
C33, 34			C092FM1H222J	MYLAR		
C35, 36			C092FM1H472J	MYLAR		
C37, 38			CK45FB1H821K	CERAMIC		
C39, 40			CK45FB1H471K	CERAMIC		
C41, 42			CK45FSL1H221J	CERAMIC		
C43, 44			CE04KV1H010M	ELECTRØ		
C47			CE04KV1A101M	ELECTRØ	E	
C48, 49			CC45FSL1H101J	CERAMIC		
C50, 51			CE04KV1H010M	ELECTRØ		
C52, 53			CE04KV1A101M	ELECTRØ		
C54, 55			CE04KV1V4R7M	ELECTRØ		
C56			CE04KV1A101M	ELECTRØ		
C57			CE04KV1H471M	ELECTRØ		
C58, 59			CE04KV1C101M	ELECTRØ		
C60, 61			CK45FB1H102K	CERAMIC		
C62, 63			CE04KV1V220M	ELECTRØ		
C64			CE04KV1C101M	ELECTRØ	E	
C65, 66			CE04KV1V102M	ELECTRØ		
C67			C91-0647-05	CERAMIC		
C68			CK45FB1H232Z	CERAMIC		
C70, 71			CE04KV1H010M	ELECTRØ		
C72, 73			CE04KV1H100M	ELECTRØ		
C76, 77			CK45FB1H103Z	CERAMIC		
C114			CE04KV1A101M	ELECTRØ		
C115			C90-1827-05	BACKUP		
C119			C90-1349-05	NP-ELEC		
C130, 131			C91-0749-05	CERAMIC	E	
C132, 133			CE04KV1A470M	ELECTRØ		
C136, 137			CE04KV1V220M	ELECTRØ		
C137			CE04KV1H4R7M	ELECTRØ		
C138			CK45FB1H102K	CERAMIC		
C140, 141			CE04DV0J102M	ELECTRØ		
C142, 143			CK45FF1H103Z	CERAMIC		
E1	2B		E13-0446-05	PHONE JACK (LINE INPUT)		EM T
E2	2B		E08-0312-05	RECTANGULAR RECEPTACLE (SYSTEM)		
E3	2B		E03-0108-05	AC OUTLET		
F1		*	F05-2525-05	FUSE (SEMKO) (250V T2.5A)	E	
CN2, 3			J13-0075-05	FUSE CLIP	E	

PARTS LIST

2

* 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. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕	Re- marks 備考
GE-450					
C35 ,26		C922FM1H1331	MYLAR		
C37 ,28		CF92FV1H3031	MF		J
C39 ,30		C922FM1H5621	MYLAR		J
C31 ,32		C922FM1H1231	MYLAR		J
C33 ,34		C922FM1H2221	MYLAR		J
C35 ,36		C922FM1H4721	MYLAR		J
C37 ,38		CK45FB1H821K	CERAMIC		K
C39 ,40		CK45FB1H471K	CERAMIC		K
C41 ,42		CC45FS1H221J	CERAMIC		J
C43 ,46		CE04KW1H010M	ELECTRO		50WV
C47		CE04KW1A101M	ELECTRO		10WV
C48 ,49		CC45FS1H101J	CERAMIC		J
C50 ,51		CE04KW1H010M	ELECTRO		50WV
C52 ,53		CE04KW1A101M	ELECTRO		10WV
C54 ,55		CE04KW1V4R7M	ELECTRO		35WV
C56		CE04KW1A101M	ELECTRO		10WV
C58 ,59		CE04KW1A101M	ELECTRO		50WV
C60 ,61		CK45FB1H102K	CERAMIC		K
C62 ,63		CE04KW1V220R	ELECTRO		35WV
C64		CE04KW1C101M	ELECTRO		16WV
C65 ,66		CE04KW1V102M	ELECTRO		35WV
C67		C91-0647-05	CERAMIC		P
C68		CK45FB1H223Z	CERAMIC		Z
C70 ,71		CE04KW1H010M	ELECTRO		50WV
C72 ,73		CE04KW1H100M	ELECTRO		50WV
C76 ,77		CK45FB1H103Z	CERAMIC		Z
C114		CE04KW1A101M	ELECTRO		10WV
C115		C90-1827-05	BACKUP		5.5WV
C119		C90-1349-05	NP-ELEC		50WV
C130 ,131		C91-0769-05	CERAMIC		K
C132 ,133		CE04KW1A470M	ELECTRO		10WV
C136		CE04KW1V220M	ELECTRO		35WV
C137		CE04KW1H4R7M	ELECTRO		50WV
C138		CK45FB1H102K	CERAMIC		K
C140 ,141		CE04DW0J102M	ELECTRO		6.3WV
C142 ,143		CK45FB1H103Z	CERAMIC		Z
E1	2B	E13-0446-05	PHONE JACK (LINE INPUT)		
E2	2B	E08-0312-05	RECTANGULAR RECEPTACLE (SYSTEM)		EM
E3	2B	E03-0108-05	AC OUTLET		T
F1		F05-2525-05	FUSE (SEMØ) (250V T2.5A)		E
CN2 ,3		J13-0075-05	FUSE CLIP		E
X1		L78-0244-05	RESONATOR (4.00MHz)		
D		N89-3008-46	BINDING HEAD TAPITTE SCREW		
B		N35-3008-46	BINDING HEAD TAPITTE SCREW		
CP1		R90-0482-05	MULTI-COMP 100KX4		J 1/6W
CP2		R90-0803-05	MULTI-COMP 100KX7		J 1/4W
R39 ,40		RD14NB2E561J	RD		560 J 1/4W
R59		RD14NB2E103J	RD		10K J 1/4W
R67		RS14KB3A471J	FL-PRØØF RS 470		J 1W

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Y:PX(Far East, Hawaii) T:England EEurope
Y:AAFE(S)(Europe) X:Australia M:Other Areas
Δ indicates safety critical components

4

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Ref. No. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕	Re- marks 備考
IC11		M50941-460SP	IC(MICROPROCESSOR)		
IC12		T4051BP	IC(8CH MPX/ DE-MPX)		
IC13		XRU4051B	IC(MULTIPLXERS/DEMULTIPLXERS)		
IC13		TC4028BP	IC		
IC14 ,15		XRU4028B	IC(DECØDER)		
Q1 ,2		L81294	IC(6CH DARLINGTON DRIVER)		
Q1 ,2		2SA1309A(Q,R)	TRANSISTØR		
Q3		2SA933S(Q,R)	TRANSISTØR		
Q3		2SC1740S(Q,R)	TRANSISTØR		
Q3		2SC3311A(Q,R)	TRANSISTØR		
Q4		2SA1309A(Q,R)	TRANSISTØR		
Q4		2SA933S(Q,R)	TRANSISTØR		
Q5		2SC1740S(Q,R)	TRANSISTØR		
Q5		2SC3311A(Q,R)	TRANSISTØR		
Q6		2SD1266	TRANSISTØR		
Q7		2SA1309A(Q,R)	TRANSISTØR		
Q7		2SA933S(Q,R)	TRANSISTØR		
Q8		2SC1740S(Q,R)	TRANSISTØR		
Q8		2SC3311A(Q,R)	TRANSISTØR		
Q9 ,10		2SB941(Q,P)	TRANSISTØR		
Q11		2SD1266	TRANSISTØR		
Q12 ,13		2SC1740S(Q,R)	TRANSISTØR		
Q12 ,13		2SC3311A(Q,R)	TRANSISTØR		
Q14 ,15		2SA1309A(Q,R)	TRANSISTØR		
Q14 ,15		2SA933S(Q,R)	TRANSISTØR		
Q16		2SD1266	TRANSISTØR		
Q19		2SC1740S(Q,R)	TRANSISTØR		
Q19		2SC3311A(Q,R)	TRANSISTØR		

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Y:AAFE(S)(Europe) X:Australia M:Other Areas
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1

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Ref. No. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕	Re- marks 備考
GE-450					
601	1A	A01-1799-01	METALLIC CABINET		
603	3A	A60-0123-01	PANEL		
610	3A	B10-1881-03	FRONT GLASS	X	
-		B46-0096-23	WARRANTY CARD	E	
-		B46-0122-13	WARRANTY CARD	T	
-		B46-0143-13	WARRANTY CARD	E	
-		B58-0803-13	CAUTION CARD	E	
-		B60-0585-00	INSTRUCTION MANUAL (ENGLISH)		
-		B60-0586-00	INSTRUCTION MANUAL (F/G/D/I)	E	
-		B60-0587-00	INSTRUCTION MANUAL (SPANISH)	E	
-		B60-0653-00	INSTRUCTION MANUAL (CHINESE)	M	
615	1A	B03-0115-05	AC PLUG ADAPTER	M	
616	1A	B30-0505-05	AUDIO CORD	EM	
617	1B	B30-2592-15	AC POWER CORD	X	
617	1B	B30-2594-15	AC POWER CORD	X	
617	1B	B30-2602-05	AC POWER CORD	T	
618	1A	B30-2628-05	CORD WITH CONNECTØR		
622	2A	G11-0191-04	SOFT TAPE (90X5X2.5)		
623	2B	G11-1050-04	SOFT TAPE		
-		H10-5198-02	POLYSTYRENE FOAMED FIXTURE (L)		
-		H10-5199-02	POLYSTYRENE FOAMED FIXTURE (R)		
-		H15-0244-02	PROTECTION BAG (800X400X0.03)		
-		H25-0232-04	PROTECTION BAG (235X350X0.03)		
-		H50-0156-04	ITEM CARTON CASE		
630	3B	J02-0370-05	FOOT		
631	3A	J02-1040-05	FOOT		
632	3B	J19-2598-05	HOLDER (PC BOARD)		
633	2B	J19-3314-04	HOLDER (POWER TRANS)		
635	1B	J42-0083-05	POWER CORD BUSHING		
640	2A	K29-4257-02	KNØB (POWER/DISPLAY-L)		
641	3A	K29-4258-02	KNØB (EFFECT)		
642	2A	K29-4259-02	KNØB (UP)		
643	3A	K29-4260-02	KNØB (DOWN)		
644	2A	K29-4261-03	KNØB (DISPLAY-R)		
T1	2B	L07-0149-05	POWER TRANSFORMER	ETX	
T1	2B	L07-0150-05	POWER TRANSFORMER	M	
A		N09-2756-05	TAPITTE SCREW (2.6X10)		
B		N09-2805-05	TAPITTE SCREW		
C		N89-3008-45	BINDING HEAD TAPITTE SCREW		
D		N89-3008-46	BINDING HEAD TAPITTE SCREW		
CONTROL (X14-3232-70)					
C1 -4		CG45FSL1H221J	CERAMIC 220PF J		
C5 ,6		CE04KW1V100M	ELECTRO 10UF 35WV		
C7 ,8		CG45FSL1H101J	CERAMIC 100PF J		E
C9 -12		CE04KW1H010M	ELECTRO 1.0UF 50WV		
C13 ,14		CF92FV1H224J	MF 0.22UF J		
C15 ,16		CF92FV1H474J	MF 0.47UF J		
C17 ,18		CF92FV1H913J	MF 0.091UF J		
C19 ,20		CF92FV1H184J	MF 0.18UF J		
C21 ,22		CF92FV1H333J	MF 0.033UF J		
C23 ,24		CF92FV1H683J	MF 0.068UF J		

LScandinavia KUSA PCanada
Y:PX(Far East, Hawaii) T:England EEurope
Y:AAFE(S)(Europe) X:Australia M:Other Areas
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3

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Ref. No. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕	Re- marks 備考
R68		RS14KB3A271J	FL-PRØØF RS 270 J 1W		
R219		RD14NB2E101J	RD 100 J 1/4W		
R233 ,234		RS14KB3A221J	FL-PRØØF RS 220 J 1W		
S1 -32	2B	S40-1064-05	PUSH SWITCH (POWER VOLTAGE)	M	
S33		S31-2131-05	SLIDE SWITCH		
D1 -4		HSS104	DIØDE		
D1 -4		1SS133	DIØDE		
D5		HZS31-9N(B2)	ZENER DIØDE		
D5		RD3.9ES(B2)	ZENER DIØDE		
D6 ,7		HZS6.8N(B2)	ZENER DIØDE		
D6 ,7		RD6.8ES(B2)	ZENER DIØDE		
D8		HZS5.6N(B2)	ZENER DIØDE		
D8		RD5.6ES(B2)	ZENER DIØDE		
D9		HZS24N(B)	ZENER DIØDE		
D9		RD24ES(B)	ZENER DIØDE		
D10		HZS2.7N(B2)	ZENER DIØDE		
D10		RD2.7ES(B2)	ZENER DIØDE		
D11 ,12		HZS6.2N(B2)	ZENER DIØDE		
D11 ,12		RD6.2ES(B2)	ZENER DIØDE		
D13 -21		S5668B	DIØDE		
D13 -21		1SR139-100	DIØDE		
D22 ,23		HSS104	DIØDE		
D22 ,23		1SS133	DIØDE		
D24		HZS15N(B)	ZENER DIØDE		
D24		RD15ES(B)	ZENER DIØDE		
D25 -30		HSS104	DIØDE		
D25 -30		1SS133	DIØDE		
D31		HZS2.7N(B2)	ZENER DIØDE		
D31		RD2.7ES(B2)	ZENER DIØDE		
D34		HZS15N(B)	ZENER DIØDE		
D34		RD15ES(B)	ZENER DIØDE		
D35		HZS6.2N(B2)	ZENER DIØDE		
D35		RD6.2ES(B2)	ZENER DIØDE		
D44 -58		HSS104	DIØDE		
D44 -58		1SS133	DIØDE		
D59		HZS2.7N(B2)	ZENER DIØDE		
D59		RD2.7ES(B2)	ZENER DIØDE		
D60 ,61		HSS104	DIØDE		
D60 ,61		1SS133	DIØDE		
D62 ,63		HZS5.1N(B2)	ZENER DIØDE		
D62 ,63		RD5.1ES(B2)	ZENER DIØDE		
ED1 ,2	2A,2B	CPF1072BGR	FLUORESCENT INDICATOR TUBE		
ED1 ,2	2A,2B	CPF1072FGR	FLUORESCENT INDICATOR TUBE		
ED1 ,2	2A,2B	FIP9FW19AY	FLUORESCENT INDICATOR TUBE		
ED1 ,2	2A,2B	FIP9FW19Y	FLUORESCENT INDICATOR TUBE		
IC1		NJM4565D	IC(OP AMP X2)		
IC1		RC4565D	IC(OP AMP X2)		
IC2		TC9215P	IC(ANALØG SWITCH X 6)		
IC3 ,4		M5229P	IC(7CH GRAPHIC EQUALIZER)		
IC5		LC7522	IC(7CH GRAPHIC EQUALIZER)		
IC6		NJM4565D	IC(OP AMP X2)		
IC6		RC4565D	IC(OP AMP X2)		
IC7		BA10393N	IC(DUAL COMPARATOR)		
IC9 ,10		XR-1091DCP	IC(6E DISPLAY FILTER)		

LScandinavia KUSA PCanada
Y:PX(Far East, Hawaii) T:England EEurope
Y:AAFE(S)(Europe) X:Australia M:Other Areas
Δ indicates safety critical components

