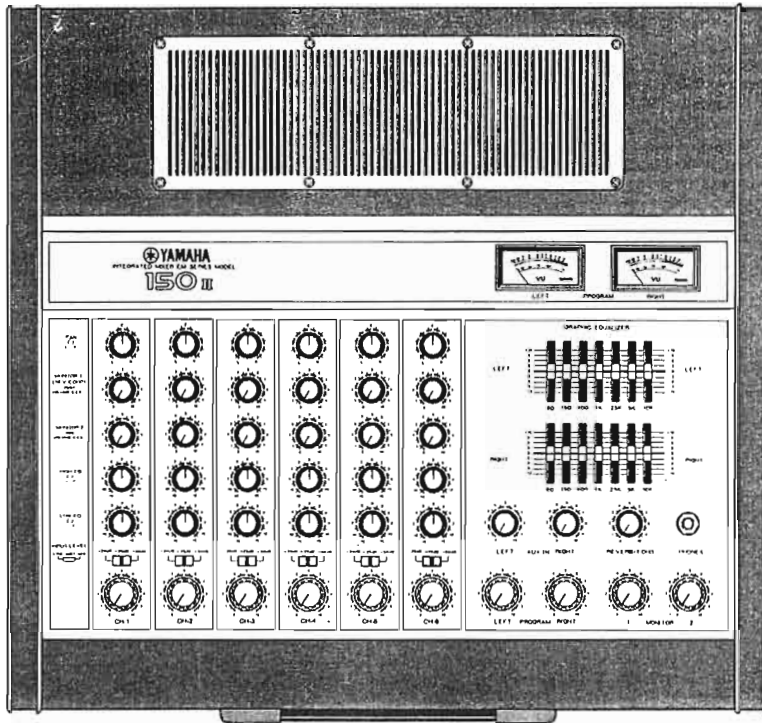


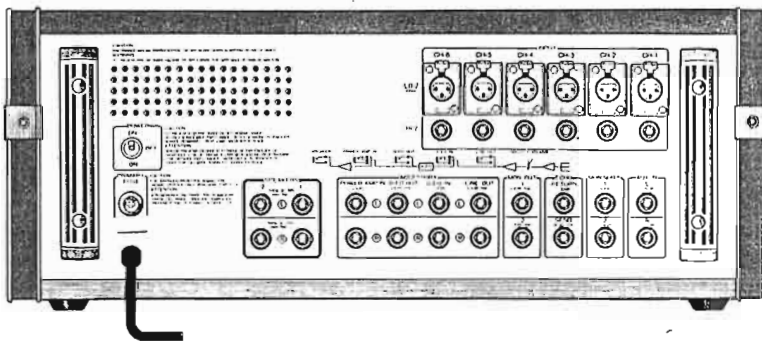
# EM-150II

## SERVICE MANUAL

### FRONT PANEL



### REAR PANEL U.S. Model



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2 K. Printed in Japan. 5.79

## OVERALL SPECIFICATIONS

Channel controls (CH1 ~ CH6)	PAN POT MONITOR 1 (REV/ECHO) MONITOR 2 HIGH-EQ LOW-EQ INPUT LEVEL switch (-20/-35/-50dB) Channel volume
Master controls	AUX IN controls, (L, R) REVERB/ECHO controls MONITOR master volume (1, 2) PROGRAM master volume (L, R) GRAPHIC EQUALIZER (L, R)
Others	VU meters
(Speaker out)	
Power out	100W per channel (4 Ω, 1kHz, T.H.D. 0.5%) 75W per channel (8 Ω, 1kHz, T.H.D. 0.5%) 65W per channel (8 Ω, 20Hz ~ 20kHz, T.H.D. 0.5%)
Frequency response	20Hz ~ 20kHz, 0 +1dB (35W, 8 Ω) -3dB
Total harmonic distortion	Less than 0.2% (1kHz, 65W, 8 Ω) Less than 0.5% (20Hz ~ 20kHz, 65W, 8 Ω)
Intermodulation distortion	Less than 0.5% (70Hz : 7kHz = 4 : 1, 35W, 8 Ω)
Hum and noise level	-118dB (Equivalent Input Noise) -44dB (MASTER VOLUME → Max.) (ALL INPUT VOLUME → Min.) -38dB (MASTER VOLUME → Max.) (ONE INPUT VOLUME → Max.)

(Monitor out)	
Maximum output levels	+18dB (10kΩ, 1kHz, T.H.D. 1%)
Frequency response	20Hz ~ 30kHz, +4dB, +1dB -3dB
Total harmonic distortion	Less than 0.2% (1kHz, +10dB, 10kΩ) Less than 0.5% (20Hz ~ 15kHz, +10dB, 10kΩ)
Hum and noise level	-118dB (Equivalent Input Noise) -71dB (MASTER VOLUME → Max.) (ALL INPUT MONITOR VOLUME → Min.) -64dB (MASTER VOLUME → Max.) (ONE INPUT MONITOR VOLUME → Max.)
Maximum gain	
SPEAKERS (L, R)	+80dB (CH IN → SPEAKER OUT)
MON OUT (1, 2)	+54dB (CH IN → MON OUT)
ECHO SEND	+30dB (CH IN → ECHO SEND)
LINE OUT (L, R)	+54dB (CH IN → LINE OUT)
G-EQ OUT (L, R)	+54dB (CH IN → G-EQ OUT)
AUX IN (L, R)	+50dB (AUX IN → SPEAKER OUT)
ECHO RETURN	+60dB (ECHO RETURN → SPEAKER OUT)
Equalizer	
LOW-EQ	+15dB (100Hz)
HIGH-EQ	+15dB (10kHz)
GRAPHIC-EQ	+12dB (60/150/400/1k/2.5k/5k/10k)Hz
Channel separation	Less than -55dB, 1kHz
Power supply	U.S. MODEL AC120V, 170W, 50/60Hz CANADIAN MODEL AC120V, 2A, 50/60Hz GENERAL MODELS AC220/240V, 500W, 50/60Hz
Dimensions (W x D x H)	560(W) x 508(D) x 214(H)mm (22 x 20 x 8-1/2")
Weight	24.5kg (54 lbs)

Nominal Value  
Specifications subject to change without notice.

## INPUT / OUTPUT SPECIFICATIONS

### Input jacks

Connection	Actual Load Impedance	For Use With Nominal	Sensitivity (at max. gain)	Input level		Connector
				Nominal	Max. before Clip	
INPUTS (1 ~ 6) -50 -35 -20	HI-Z 20KΩ LO-Z 1KΩ	HI-Z 3KΩ ~ 10KΩ LO-Z 150Ω ~ 600Ω	-50dB* (2.5mV) -35dB (14mV) -20dB (78mV)	-50dB (2.5mV) -35dB (14mV) -20dB (78mV)	-22dB (62mV) -7dB (346mV) +8dB (1.95V)	XLR-3-31 and Phone Jack
AUX IN (L, R)	30KΩ	5KΩ	-20dB (78mV)	-20dB (78mV)		Phone Jack
ECHO RETURN	30KΩ	5KΩ	-30dB (25mV)	-30dB (25mV)		Phone Jack
GEQ IN (L, R)	100KΩ	5KΩ	+4dB (1.23V)	+4dB (1.23V)	+18dB (6.2V)	Phone Jack
POWER AMP IN (L, R)	30KΩ	5KΩ	+4dB (1.23V)	+4dB (1.23V)		Phone Jack
MON. SUB IN (1, 2)	30KΩ	5KΩ	+4dB (1.23V)	+4dB (1.23V)	+24dB (12.3V)	Phone Jack

### Output jacks

Connection	Actual Source Impedance	For Use With Nominal	Output level (Power)		Connector
			Nominal	Max. before Clip	
SPEAKER OUT (L, R)	0.065 Ω	8 Ω (4Ω)	75W (100W)		Phone Jack
LINE OUT (L, R)	390 Ω	10KΩ 600 Ω	+4dB (1.23V) 0dB (775mV)	+18dB (6.2V) +14dB (3.9V)	Phone Jack
GEQ OUT (L, R)	390 Ω	10KΩ 600 Ω	+4dB (1.23V) 0dB (775mV)	+18dB (6.2V) +14dB (3.9V)	Phone Jack
MON OUT (1, 2)	390 Ω	10KΩ 600 Ω	+4dB (1.23V) 0dB (775mV)	+18dB (6.2V) +14dB (3.9V)	Phone Jack
ECHO SEND	220Ω	10KΩ	-20dB (78mV)	-6dB (0.39V)	Phone Jack
PHONES	130 Ω	8 Ω	+2dB (0.98V)		Phone Jack (Stereo)

Note: All the inputs and outputs are unbalanced.

## GENERAL ADJUSTMENT AND CHECK SPECIFICATIONS

- Use an oscilloscope and AC voltmeter/dB meter with an input impedance of over  $500k\Omega$  for measurement.
- To measure the noise level, use a AC voltmeter/dB meter with a bandwidth of 20Hz to 20kHz or a Low Pass Filter of 6dB/oct with  $f_c$  of 12.47kHz.
- Except those items that require measurement at every channel such as gain and equalizer variation response, perform measurement at CH-1 as a representative of all channels in such cases as distortion and maximum output power.
- Perform measurement at the phone jack, after making sure that there is no level difference when the inputs are applied to the connector (XLR) and the phone jack (P.J.) of each channel.
- Connect a  $4\Omega$  load resistance to the SPEAKERS jacks and a  $10k\Omega$  load resistance to the other output jacks. In the latter case, connection of the load resistance is necessary only for measurement.
  - \* Input impedance of XLR:  $1k\Omega$
  - Input impedance of P.J.:  $25k\Omega$

### I. GENERAL ADJUSTMENT

#### • Idling Current Adjustment (MA circuit board)

Adjust the variable resistor ( $B470\Omega$ ) so that the voltage across the test points RE(-) and CT(+) on MA circuit board is set to  $DC23\pm 2mV$  under no-signal condition.

\* Perform this adjustment within 30 seconds after setting the POWER switch to ON.

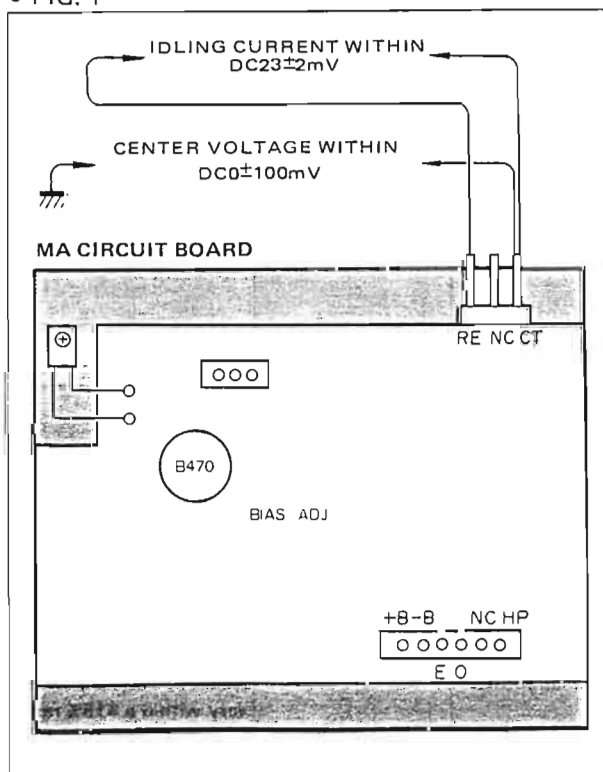
\* The acceptable variation in the idling current after adjustment is  $23\pm 10mV$  across the  $15^\circ C$  to  $45^\circ C$  temperature range of the radiator.

\* When readjusting all over again, make sure to turn the variable resistor counterclockwise.

#### • Center Voltage (MA circuit board)

Check that the voltage across the test point CT and the earth on MA circuit board in Fig. 1 is within  $DC0\pm 100mV$  under no-signal condition.

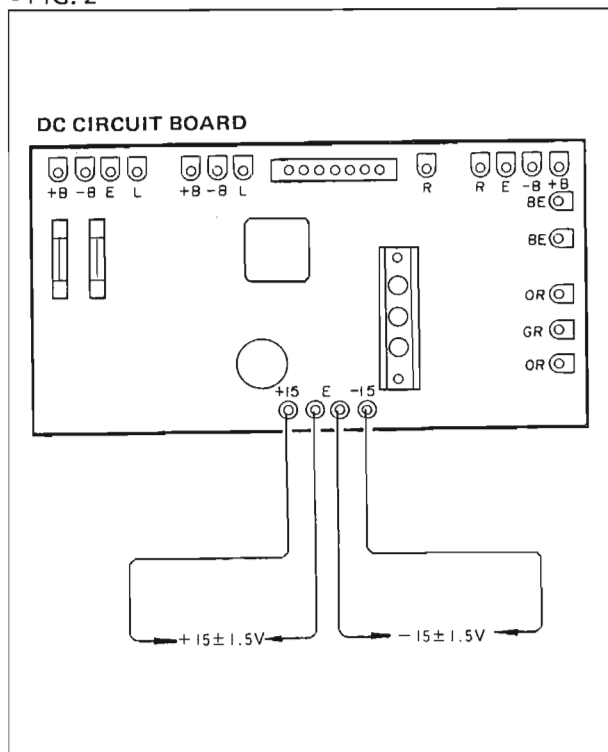
#### • FIG. 1



#### • Power Supply Voltage Check (DC circuit board)

Check that at the terminals +15 and -15 on DC circuit board the specified voltages are obtained. (Fig. 2)

#### • FIG. 2



#### • Relay Circuit (DC circuit board)

Check that the relay turns ON  $3\pm 2$  seconds after the POWER switch is set to ON and turns OFF within a second after the POWER switch is set to OFF.

## II. CHECK SPECIFICATION

	Check item	Set position of control	Measurement conditions	Specifications	Remarks
1	Gain	Table 2	Apply a $-55\text{dBm}$ 1kHz sine wave signal to each of the INPUT jacks.	Output jack: output level listed in Table 3.	The difference in level between the channels for all the outputs must be within 2dB.
2	Distortion	Table 2	Apply a 1kHz sine wave signal to the INPUT jacks and set the output level of the SPEAKERS jack to $+25\text{dBm}$ (47.5W).	T.H.D. less than 0.2%	
3	Frequency response	Table 2	Apply 20Hz, 1kHz and 20kHz/ $-55\text{dBm}$ sine wave signals to the INPUT jack.	Frequency response: Within $-1\pm 2\text{dB}$ with 1kHz as a standard, within $\pm 2\text{dB}$ of the basic curve of FLAT given in Fig. 3.	Refer to FLAT in Fig. 3.
4	Equalizer response	Table 2	Apply 100Hz and 10kHz/ $-70\text{dBm}$ sine wave signals to the INPUT jacks and measure the output levels when the LO-EQ and HI-EQ controls are set to the maximum and minimum positions.	Variation range: $\pm 14(\pm 2)\text{dB}$ with FLAT as a standard	Refer to Fig. 3.
5	Maximum output power	Table 2 Make either the L or R PAN the measurement channel.	Apply a 1kHz sine wave signal to the CH-1 INPUT jack.	SPEAKERS jack: $28.2\text{dBm}$ (100W/ $4\Omega$ ) with the T.H.D. less than 0.5%	
6	Separation	Table 2	Turn the measurement channel PAN control to the R channel side and adjust the input signal level so that the output of the R channel is $+25\text{dBm}$ . Perform the same adjustment on the L channel.	L channel output: $-30\text{dBm}$ (separation 55dB) R channel output: $-30\text{dBm}$ (separation 55dB)	
7	AUX IN (L,R)	Table 2	Apply a $-30\text{dBm}$ 1kHz sine wave signal to either L or R of AUX IN jacks and measure the output level at the SPEAKERS jacks.	SPEAKERS JACK: $+20\pm 2\text{dBm}$	
8	MONITOR 1, 2	Table 2 Set MONITOR 1 and MONITOR 2 controls to their maximum positions.	Apply a $-55\text{dBm}$ 1kHz sine wave signal to the INPUT jack.	MON OUT 1, 2 jacks: $-1\pm 2\text{dBm}$ ECHO SEND jack: $-25\pm 3\text{dBm}$	
9	MON SUB IN	Table 2	Apply a $-6\text{dBm}$ 1kHz sine wave signal to MON SUB IN 1 and 2 jacks.	MON OUT 1, 2 jacks: $-6\pm 2\text{dBm}$	
10	REVERB/ECHO	Table 2 Set the REVERB/ECHO control to its maximum position.	Apply a $-40\text{dBm}$ 1kHz sine wave signal to the ECHO RETURN jack.	SPEAKERS jack: $+20\pm 2\text{dBm}$	
11	GRAPHIC EQUALIZER	Table 2	Apply a $-70\text{dBm}$ sine wave signal to the INPUT jack and check that the specified frequencies display a variation within the specified variation range when each of the band controls of the graphic equalizer is set to the maximum and minimum positions.	Variation range: $\pm 12(\pm 1.5)\text{dB}$	Refer to Fig. 4. Specified frequencies: 60Hz, 150Hz, 400Hz, 1kHz, 2.5kHz, 5kHz, 10kHz (Each of the specified frequencies may vary within a $\pm 15\%$ range)

12	Noise level	Table 2	Short the INPUT jack with a $150\Omega$ resistance and measure the noise level at the SPEAKERS jacks. Also measure the residual noise level when the MASTER VOLUME control is set to its minimum position.	Noise level: less than $-37\text{dBm}$ Residual noise level: less than $-62\text{dBm}$	
13	PHONES	Table 2	Apply a $-55\text{dBm}$ 1kHz sine wave signal to the INPUT jack and measure the output at the PHONES jack when a $+25\text{dBm}$ output is obtained at the SPEAKERS jacks.	PHONES jack: $-3\pm 2\text{dBm}$	Connect the load resistance given in Fig. 5
14	dBm meter	Table 2	Check the dBm meter when a $27\text{dBm}$ ( $75\text{W}/4\Omega$ ) output is obtained at the SPEAKERS jacks.	dBm meter $0\pm 1\text{VU}$	

Table 1

● TABLE 2 MEASUREMENT CONDITIONS

Switch, control	Set position
Channel Volume	Max for measurement channel only, all others to minimum position
EQ (Hi, Low)	Center
MONITOR 1, 2	Max for measurement channel only, all others to minimum position
INPUT LEVEL switch	$-50$ (no conditions)
PAN POT	Center
AUX IN (L,R)	Max for measurement only otherwise minimum
REVERB/ECHO	Max for measurement only, otherwise minimum
GRAPHIC EQUALIZER (L,R)	Center (Max or min for measurement only)
PROGRAM master Volume (L,R)	Max
Monitor master Volume	Max

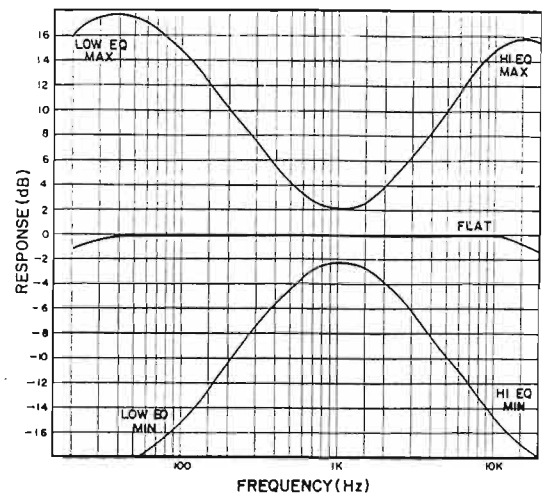
● TABLE 3 OUTPUT LEVEL (CH1 ~ CH6)

	INPUT LEVEL	LINE OUT	G-EQ OUT	SPEAKER OUT
CH INPUT	$-50$	$-1$	$-1$	$+25$
CH1 ~ 6	$-35$	$-16$	$-16$	$+10$
	$-20$	$-31$	$-31$	$-5$

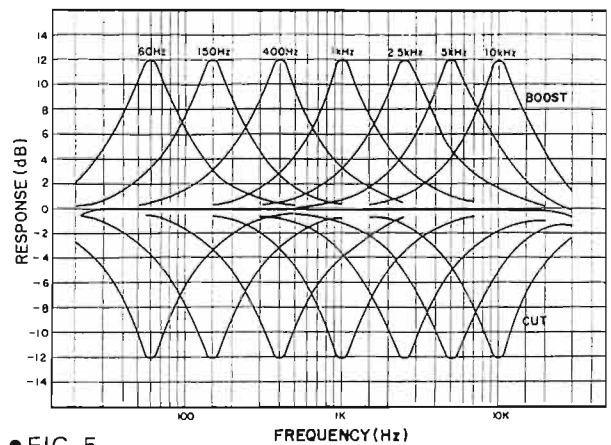
(Unit : dBm)

• The difference in level between the channels for all the outputs must be within 2dB.

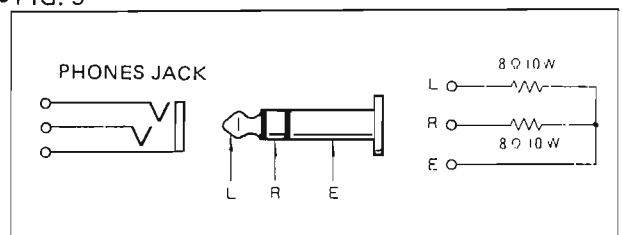
● FIG. 3 HI-EQ LO-EQ VARIATION



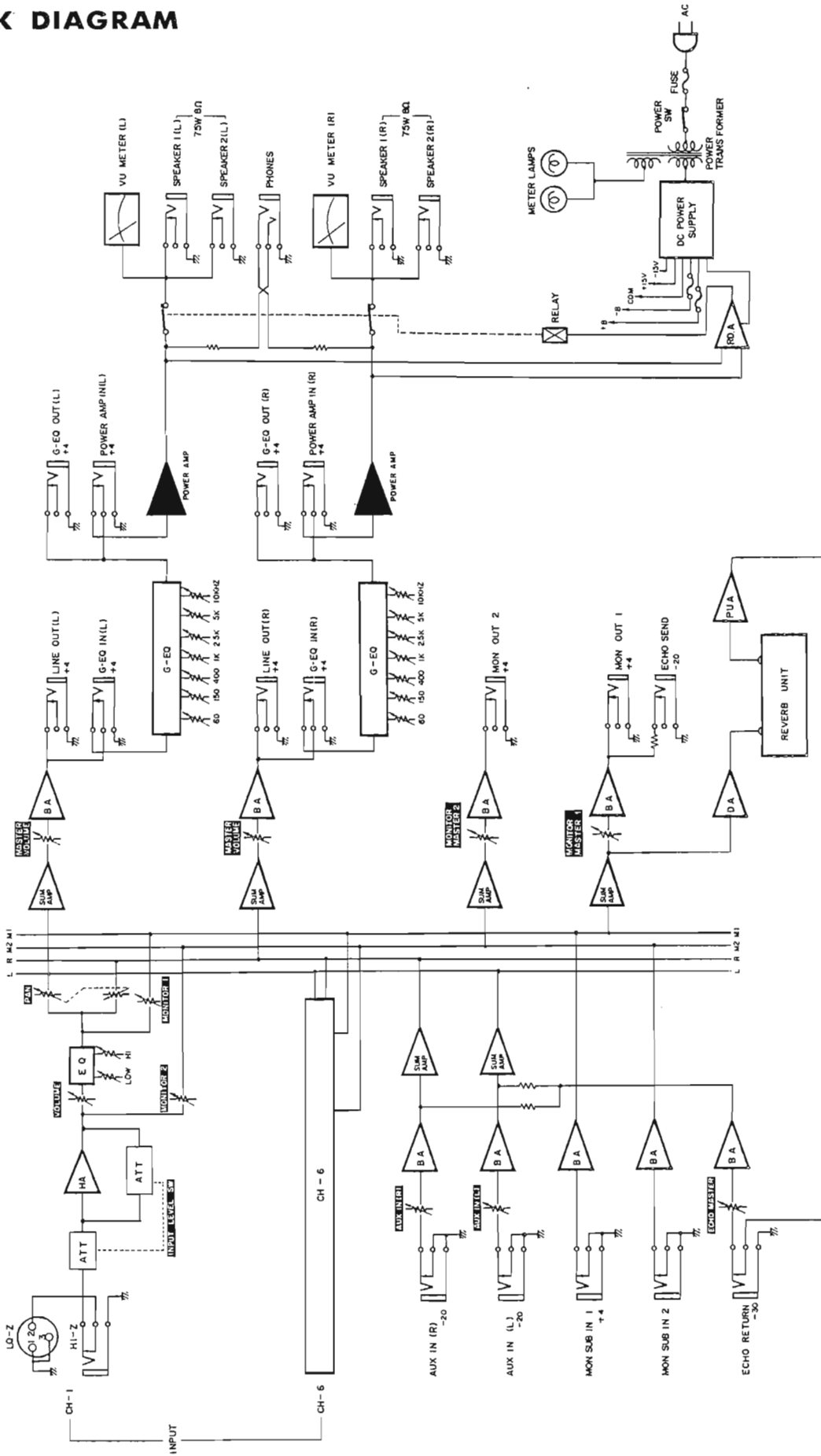
● FIG. 4 G-EQ VARIATION



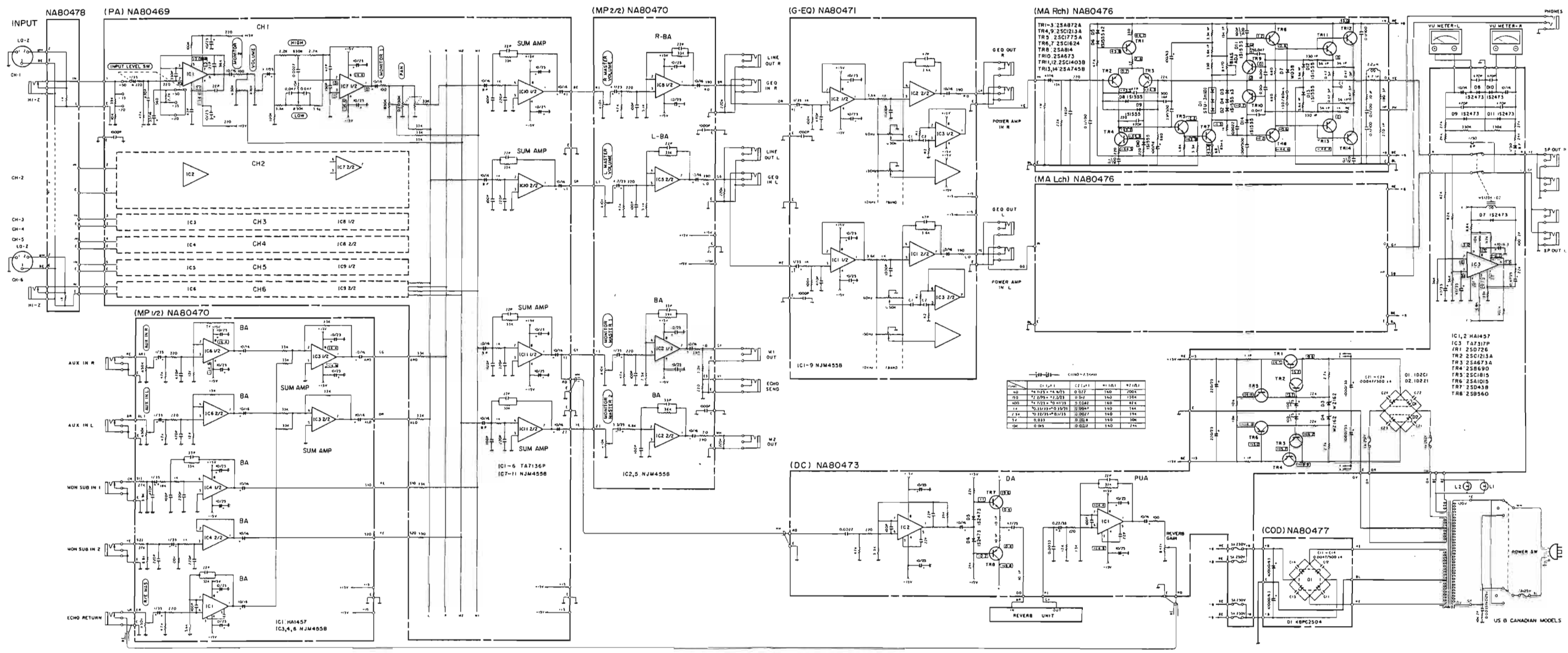
● FIG. 5



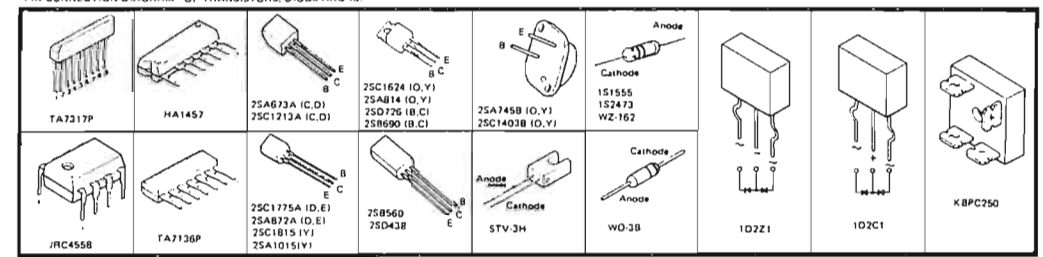
# BLOCK DIAGRAM



# SCHEMATIC DIAGRAM



PIN-CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND IC.

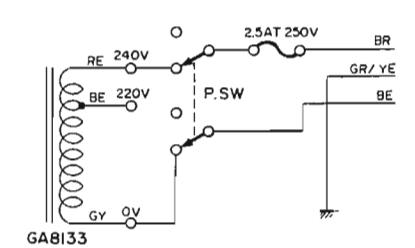


R	NO MARK	Carbon Resistor
	1P, 2P, 3P	Metalized Oxidation Resistor
	5 P	Cement Molded Resistor
	∩	Metal Plate Resistor
C		Tantalum Capacitor

● WIRE COLOR ABBREVIATIONS

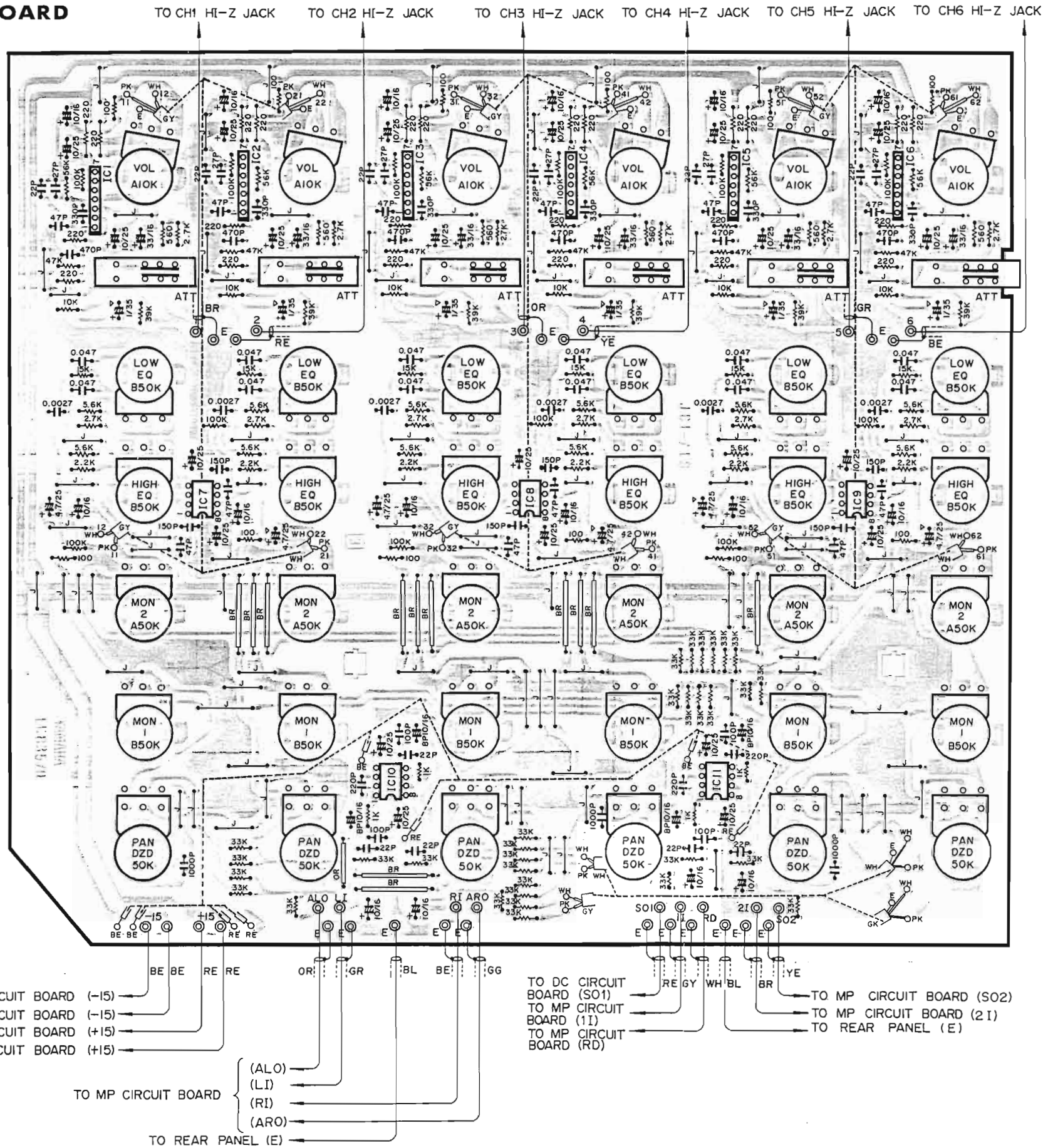
- BL ▶ Black
- BR ▶ Brown
- RE ▶ Red
- OR ▶ Orange
- YE ▶ Yellow
- GR ▶ Green
- BE ▶ Blue
- VI ▶ Violet
- GY ▶ Gray
- WH ▶ White
- GG ▶ Grass Green
- SB ▶ Sky Blue
- PK ▶ Pink

GENERAL MODEL

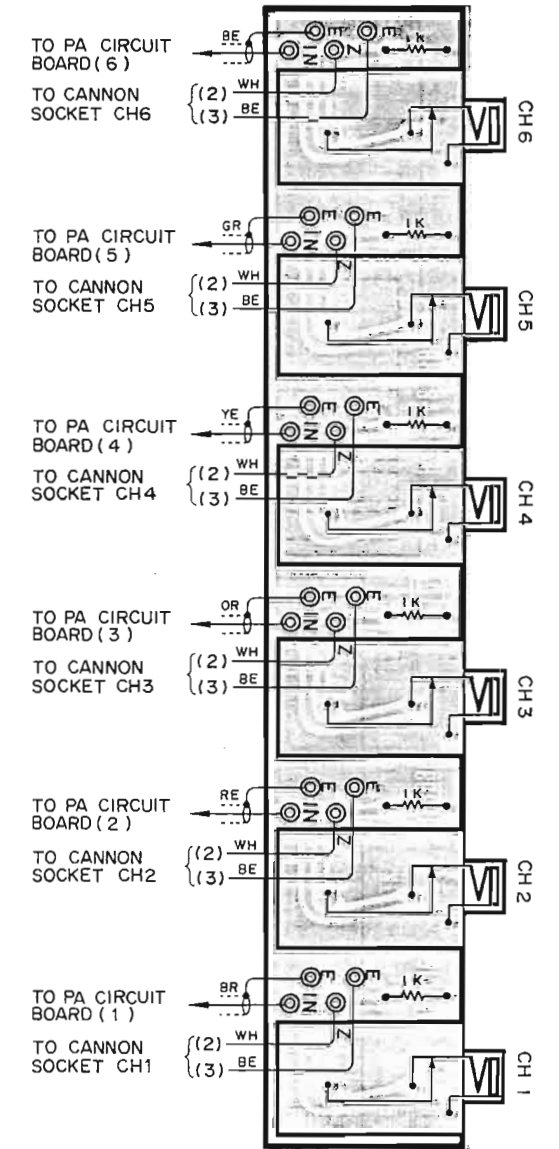


PRINTED CIRCUIT BOARD

PA CIRCUIT BOARD NA80469  
(Pattern Side)

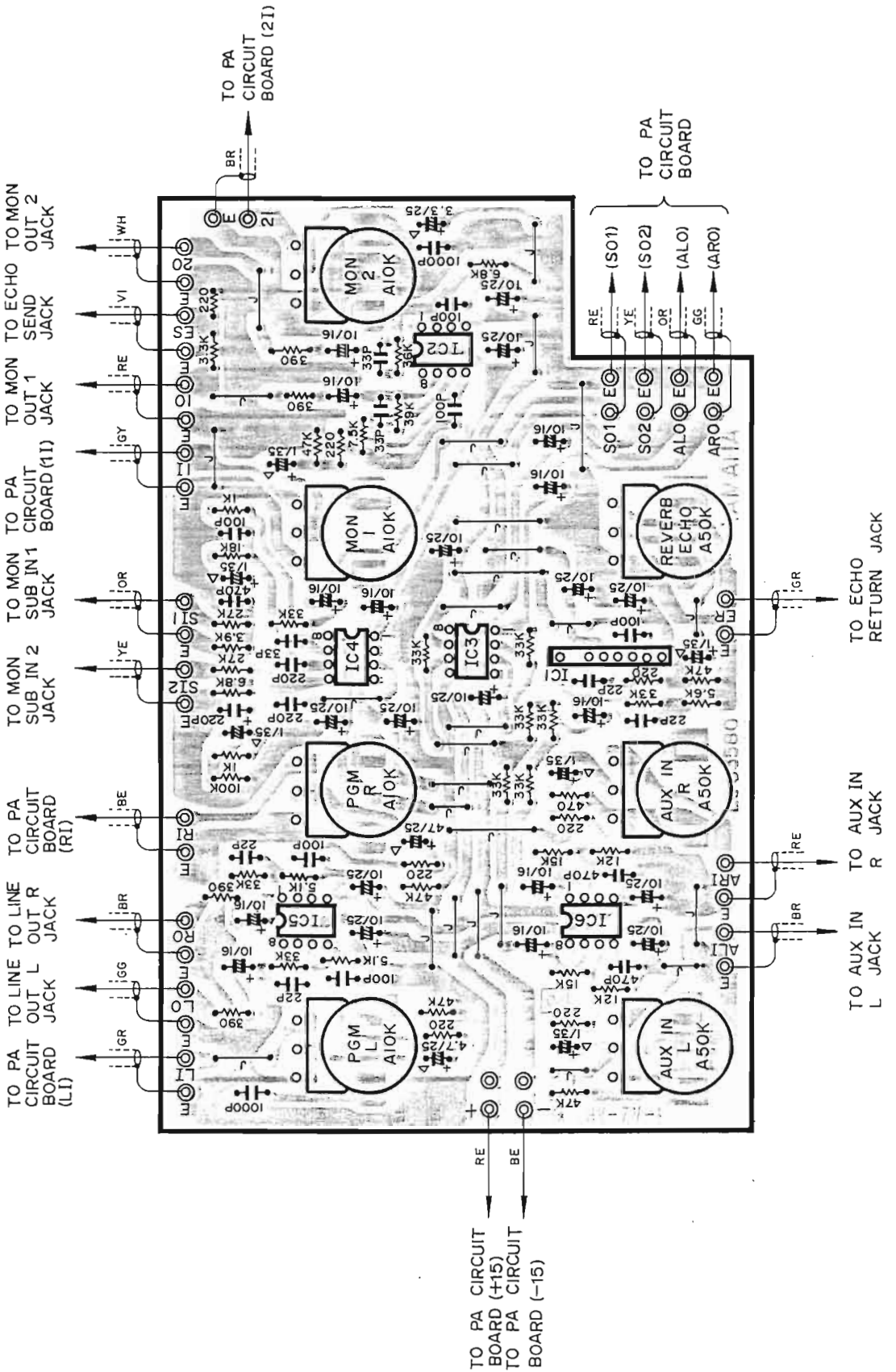


IN CIRCUIT BOARD NA80478 (Pattern Side)

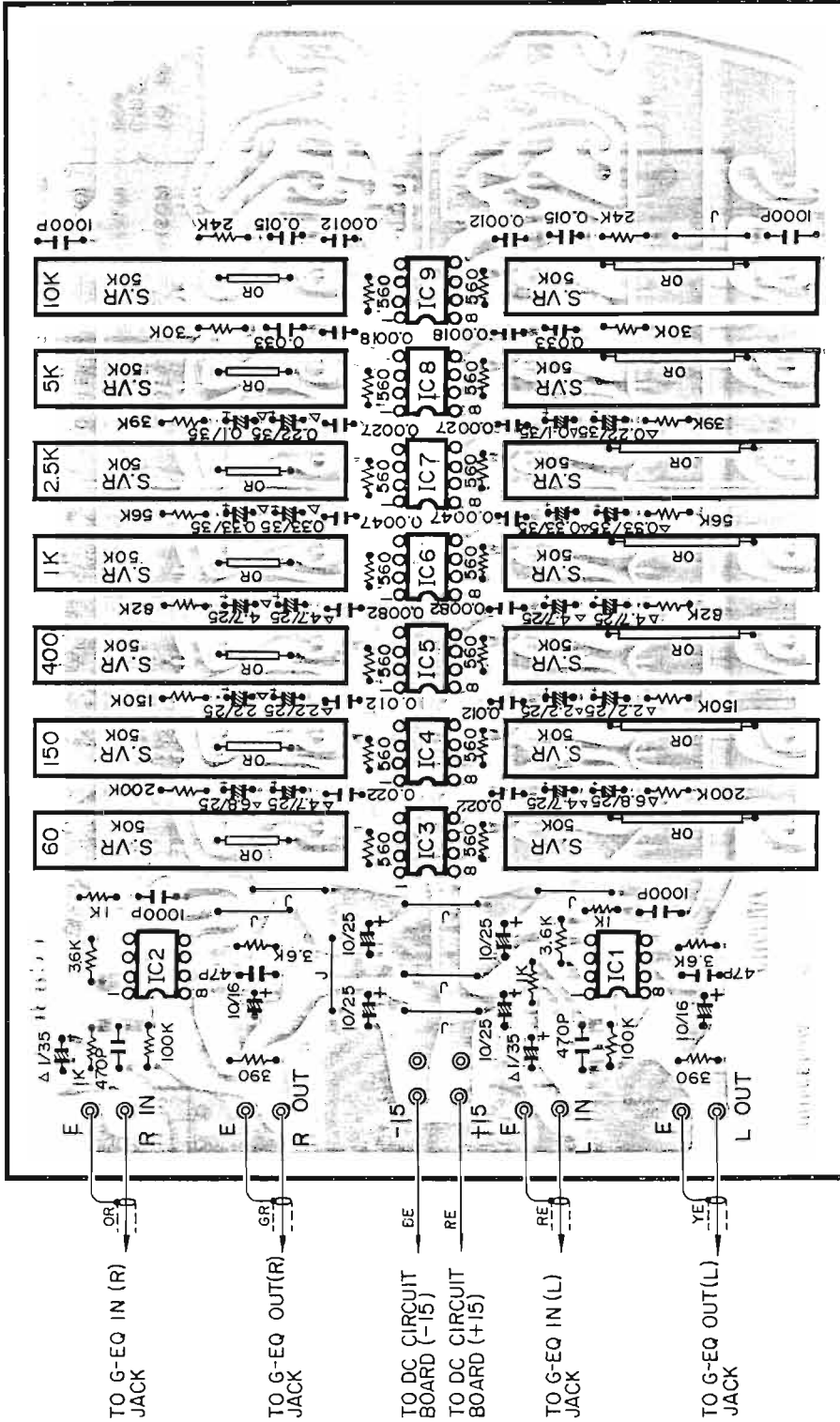




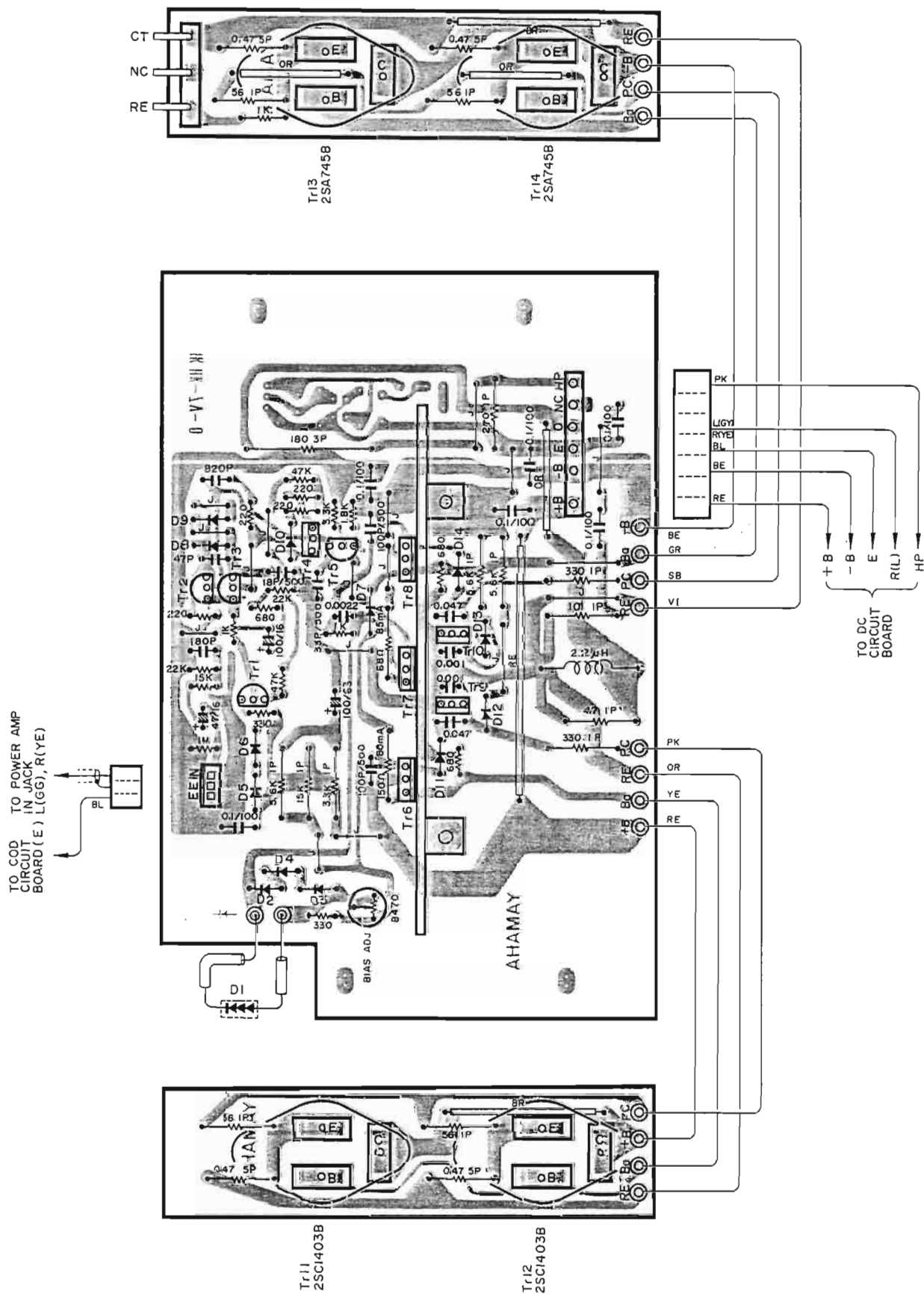
● MP CIRCUIT BOARD NA80470 (Pattern Side)



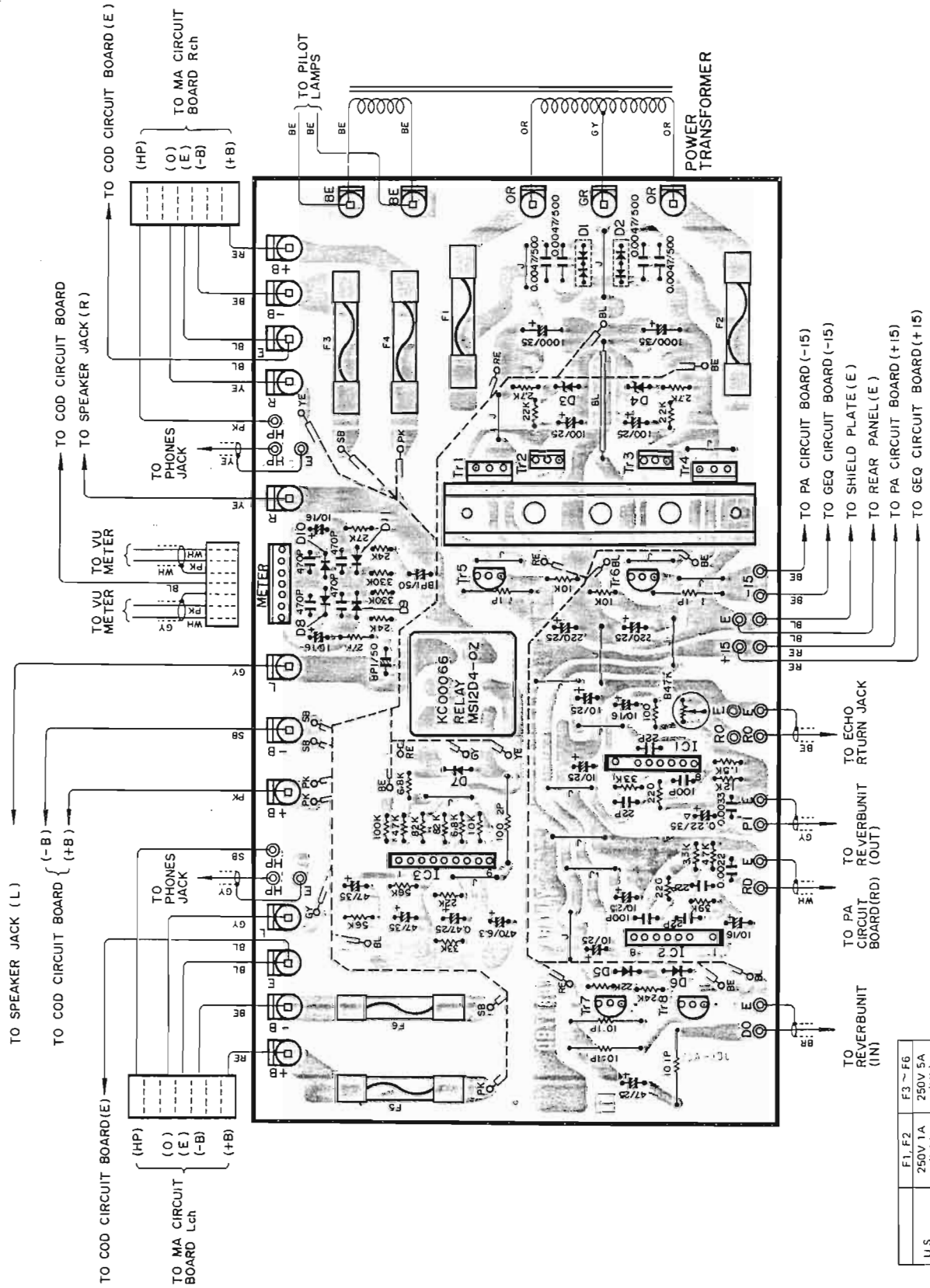
• G-EQ CIRCUIT BOARD NA80471 (Pattern Side)



● MA CIRCUIT BOARD NA80475 (Parts Side)



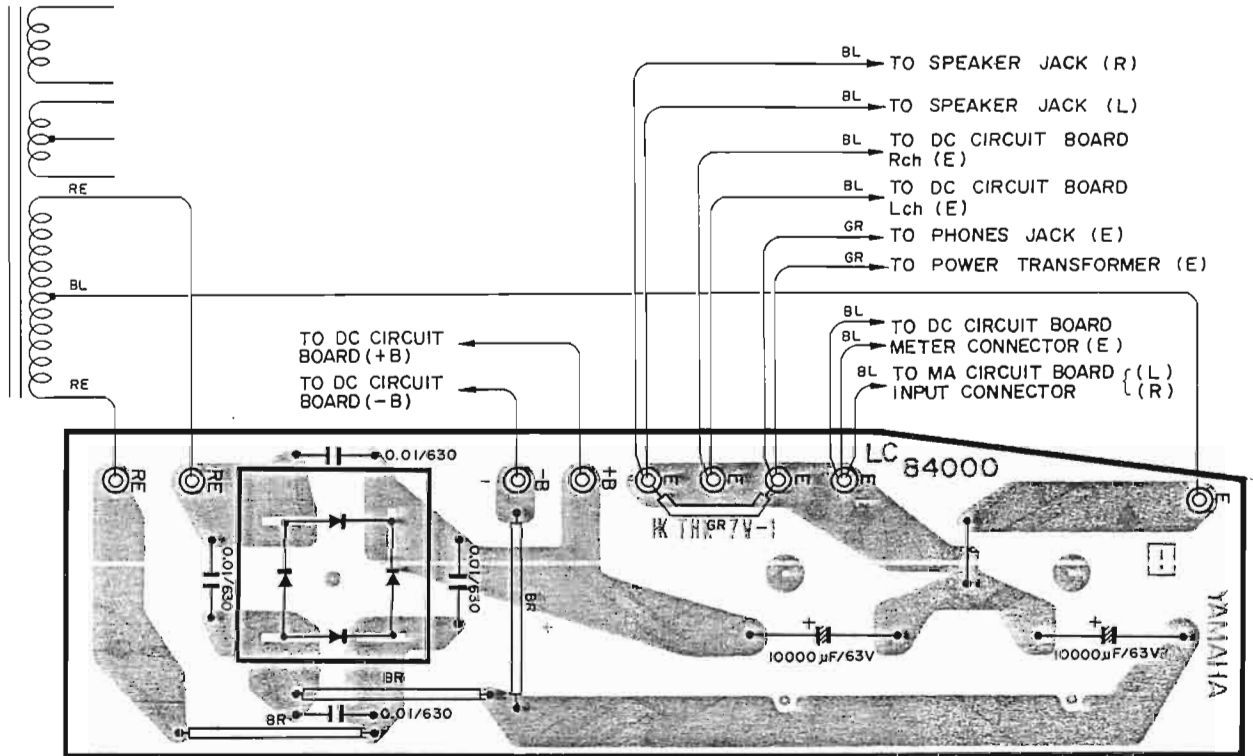
• DC CIRCUIT BOARD NA80472 (Parts Side)



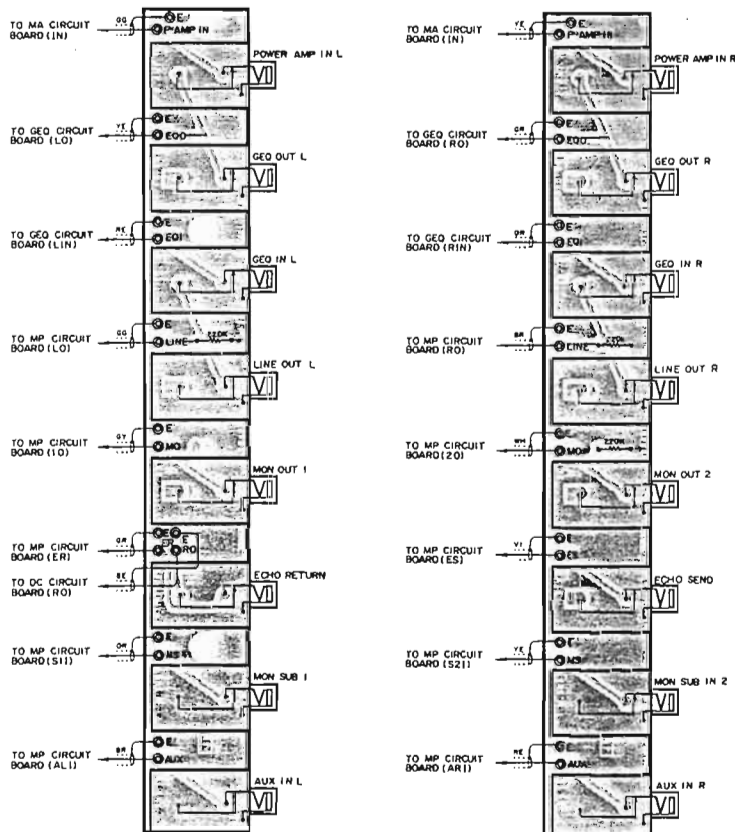
U.S. MODEL	F1, F2	F3 ~ F6
CANADIAN MODEL	250V 1A (UL)	250V 5A (UL)
GENERAL MODEL	K800102	K800170
	250V 1A	250V 5A
	K800033	K800040
	250V 1.0A T	250V 2.5A T
	(MINI)	(MINI)
	K800073	K800069

• COD CIRCUIT BOARD NA80477 (Pattern Side)

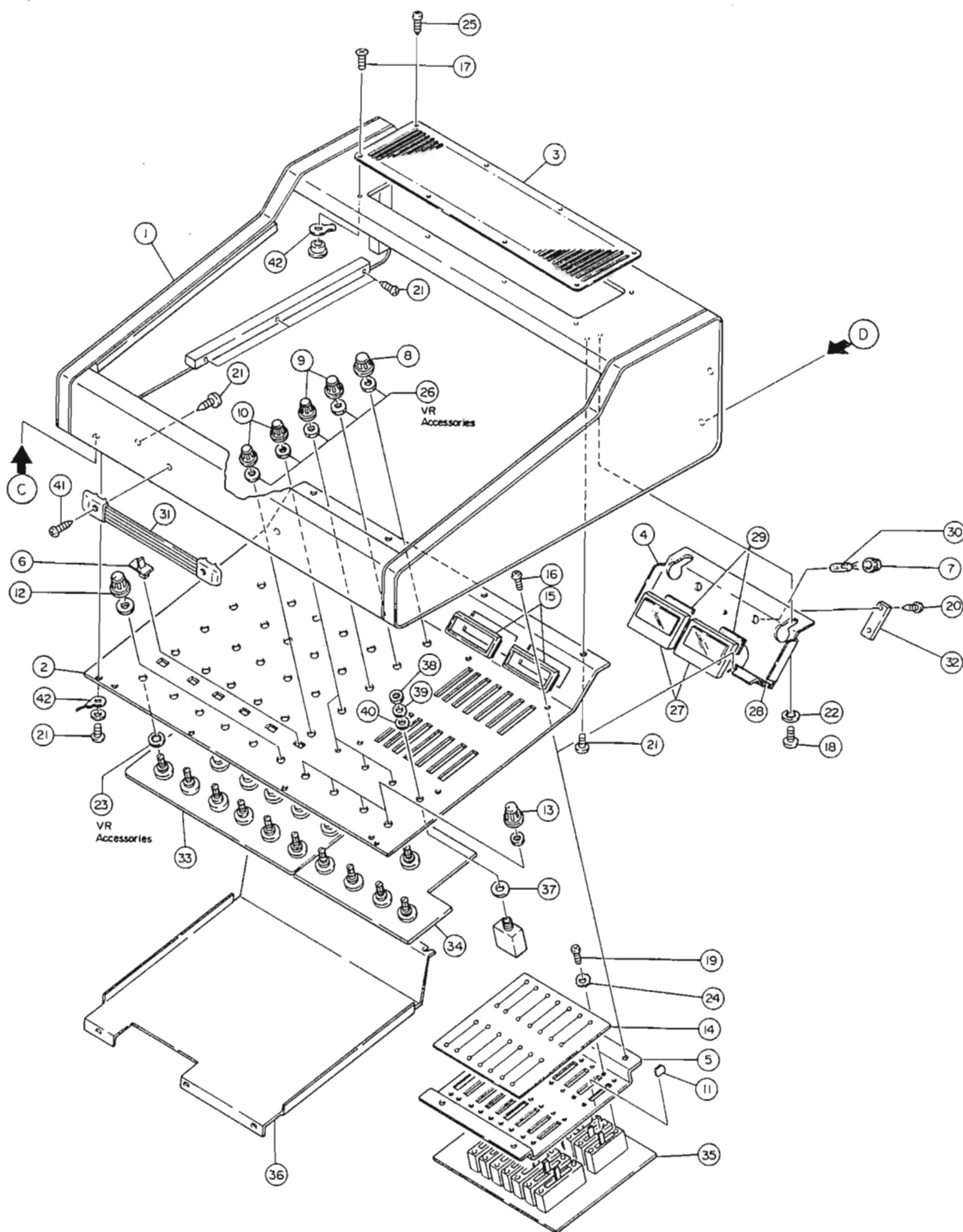
POWER TRANSFORMER



• JK CIRCUIT BOARD NA80534 (Pattern Side)



# ■ PARTS LIST



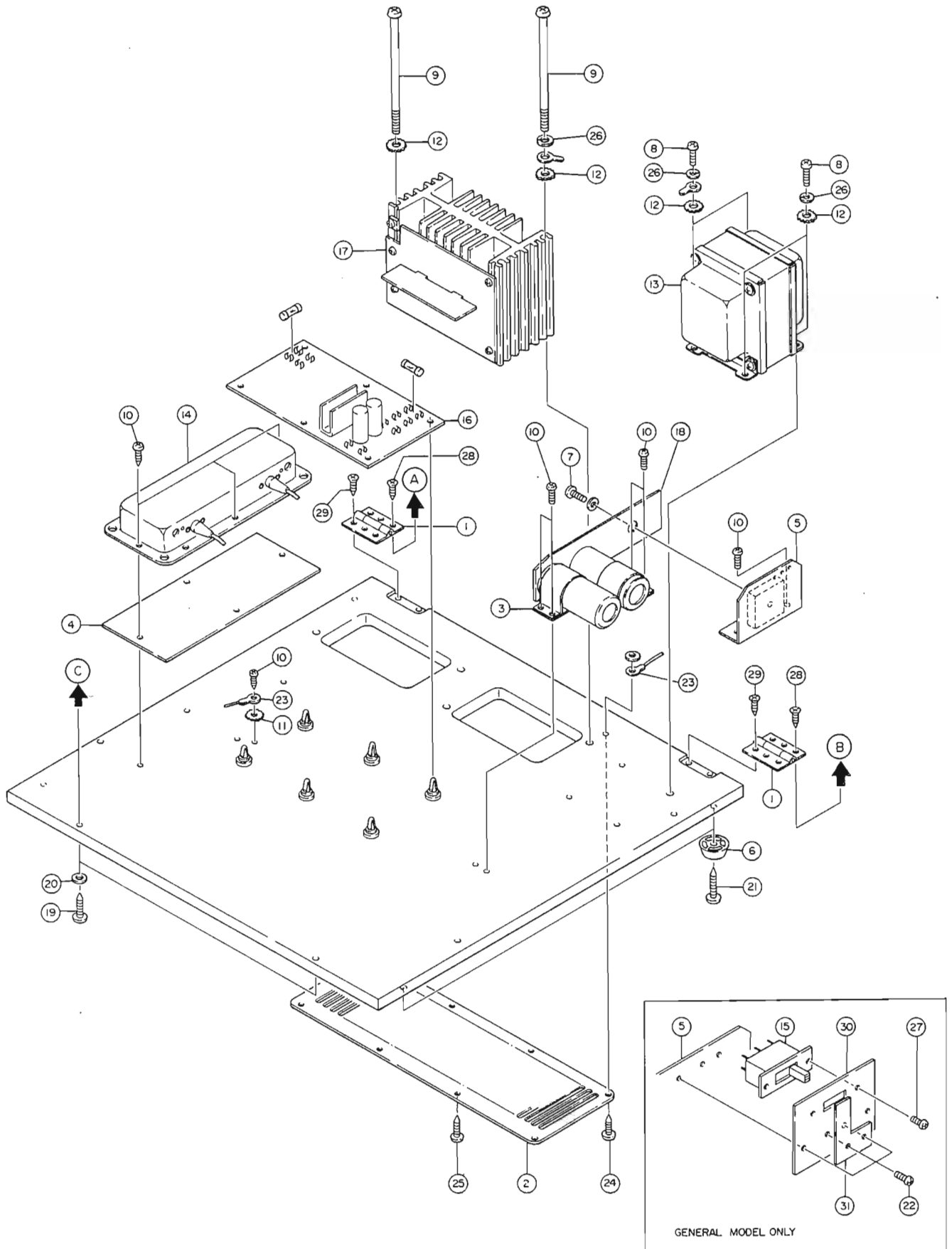
## DESTINATION ABBREVIATIONS

G : General C : Canadian  
U : US J : Japan

DX802610

Ref No.	Part No.	Description	(部 品 名)	Remarks	Common model		
※ 1	<del>30:56:20:00-00:00:30</del>	Case Ass'y	外装組上り				
※ 2	30:56:00:AA:80:95:90	Front Panel #80959	フロントパネル				
※ 3	30:56:00:AA:81:14:90	Radiator Grille (Top)	放熱グリル(上)				
※ 4	30:56:00:AA:80:98:40	Meter Sub-Panel #80984	メーターサブパネル				
5	30:56:00:AA:80:82:00	EQ Sub-Panel #80820	E Qサブパネル		EM200		
6	30:54:00:CB:80:52:30	Knob	ツマミ		PM430		
7	30:54:00:CB:06:86:20	Lamp Holder #06862	ランプホルダー				
8	30:56:00:CB:81:21:30	Knob - Yellow - #81213	ツマミ イエロー		EM-200		
9	30:56:00:CB:81:21:40	" - Ivory - #81214	" アイボリー		"		
10	30:56:00:CB:81:21:50	" - Gray - #81215	" グレー		"		
11	30:56:00:CB:81:21:60	" EQ - Ivory - #81216	E Qツマミ アイボリー		"		
12	30:56:00:CB:81:01:00	" L #81010	ツマミ(大)		EM-120		
※ 13	30:56:00:CB:81:33:60	" - Red - #81336	ツマミ レッド				
V 14	40:10:00:CB:81:23:00	Dust Proof Cover #81230	防塵カバー		EM200,300		
15	30:56:00:CB:81:22:80	Meter Escutcheon #81228	メーターエスカッション		"		
16	40:10:00:ED:33:00:50	Bind Head Screw 3 x 5 FCM3-Bℓ	バインド小ネジ				
17	40:10:00:ED:34:01:60	" 4 x 16 FCM3-Bℓ	"				
18	40:10:00:EJ:04:00:80	Pan Head Tapping Screw 4 x 8 ZMC2-Y	ナベタッピングネジ				
19	40:10:00:EA:02:00:40	Pan Head Screw 2 x 4 ZMC2-Y	ナベ小ネジ				
20	40:10:00:EJ:03:00:80	Pan Head Tapping Screw 3 x 8 ZMC2-Y	ナベタッピングネジ				
21	40:10:00:EQ:03:51:30	Round Head Wood Screw 3.5 x 13 ZMC2-Y	丸木ネジ				
22	40:10:00:EV:43:00:40	Toothed Lock Washer AB4S ZMC2-Y	歯付座金				
23	40:10:00:EV:41:00:70	" A7S ZMC2-Y	"				
24	40:10:00:EV:42:30:20	" B2S ZMC2-Bℓ	"				
25	40:10:00:EI:34:01:20	Bind Tapping Screw 4 x 12 FCM3-Bℓ	バインドタッピングネジ				
26		VR Accessory	ポリウム付属品				
※ 27	40:10:00:Ji:00:10:90	Meter #00109	メーター				
※ 28	40:10:00:CB:81:35:10	Meter Cushion A #81351	メータークッション A				
※ 29	40:10:00:CB:81:35:20	" B #81352	" B				
30	40:10:00:JB:00:02:30	Lamp (With Lead) 12V 60mA	リード付ランプ				
31	30:54:00:NB:80:15:40	Handle Ass'y	取手Ass'y				
32	40:10:00:LA:00:29:50	Lug CV-2P	カラー端子板				
※ 33	30:56:00:NA:80:46:90	PA Board #80469	P Aシート				
※ 34	30:56:00:NA:80:47:00	MP Board #80470	M Pシート				
※ 35	30:56:00:NA:80:47:10	GEQ Board #80471	G E Qシート				
※ 36	30:56:00:AA:80:96:80	Shield Plate #80968	P Aシールド				
37	40:10:00:EK:00:23:70	Fiber Washer	ファイバーワッシャー				
38	40:10:00:LX:20:00:60	Hexagonal Nut 9S FNM3	特殊六角ナット				
39	40:10:00:LX:20:00:10	Flat Washer 9S FNM3	特殊平座金				
40	30:56:00:CB:81:00:90	Insulation Nut	絶縁ナット				
41	40:10:00:EF:25:03:00	Oval Head Screw 5 x 30 FCrM3-3g	丸皿小ネジ				
42	40:10:00:LA:00:02:90	Eath Lug 4φ	アースラグ				

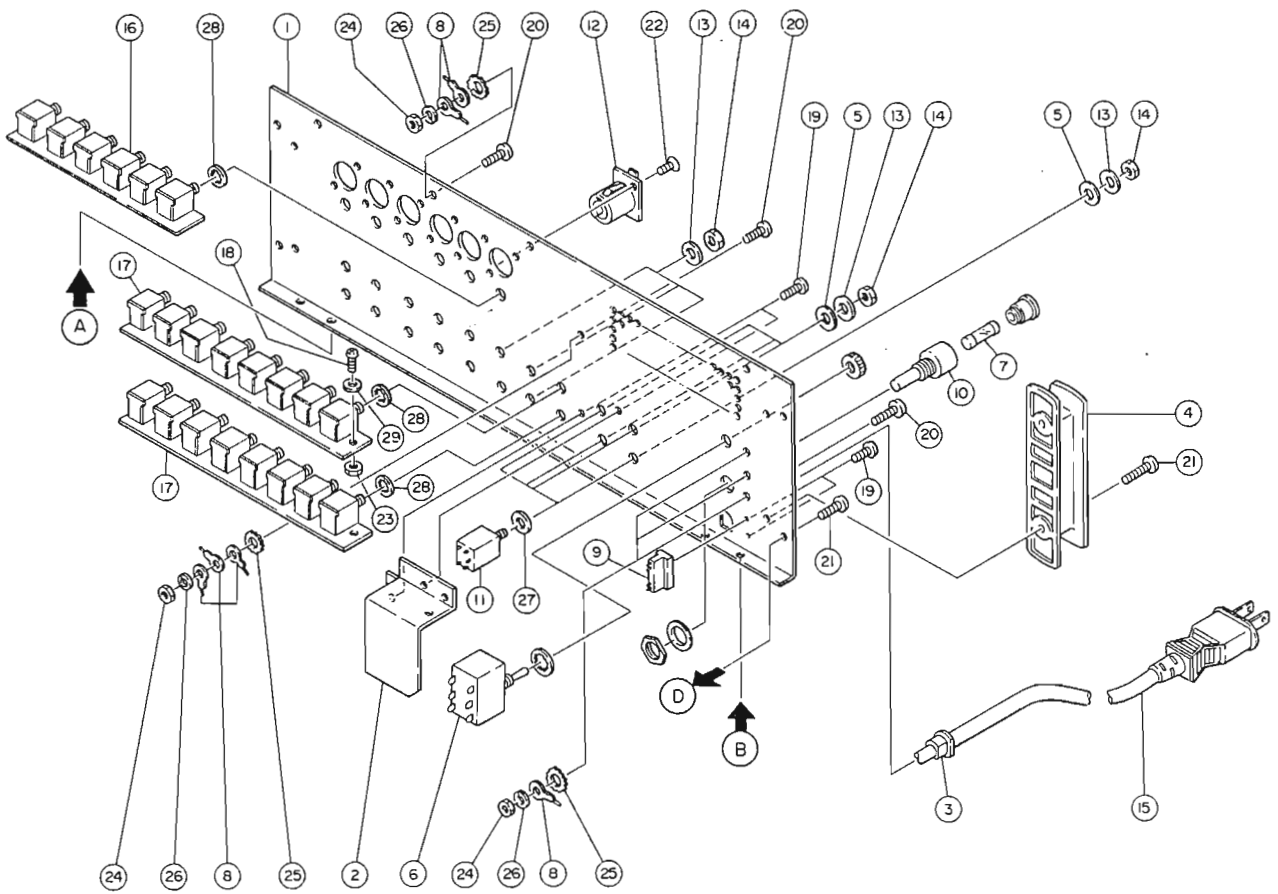
※ NEW PARTS





Ref No.	Part No.	Description	(部 品 名)	Remarks	Common model
	30:56:00:AA:80:11:20	Hinge #80112	蝶番		EM200,300
※	30:56:00:AA:80:96:90	Radiator Grille (Bottom) #81149	放熱グリル(下)		
	30:56:00:AA:80:81:70	Holder Electrolytic Cap.	コンデンサ取付バンド		EM200,300
※	30:56:00:AA:81:15:70	Shield Board #81157	REVシールド板		
	30:56:00:BA:80:33:30	Diode Radiator #80333	整流ブリッジ放熱板		EM200,300
	30:54:00:CB:02:32:00	Leg	滑り座		PM-400
	40:10:00:EA:04:01:60	Pan Head Screw 4 x 16 ZMC2-Y	ナベ小ネジ		
	40:10:00:EA:35:01:80	" 5 x 18 ZMC2-Bℓ	"		
※	40:10:00:EK:01:50:20	Pan Head Screw M4 x 136.9 ZMC2-Bℓ	丸先ナベ小ネジ		
	40:10:00:EQ:03:11:00	Round Head Wood Screw 3.1 x 10 ZMC2-Y	丸木ネジ		
	40:10:00:EV:41:00:30	Toothed Lock Washer A3S ZMC2-Y	歯付座金		
	40:10:00:EV:43:00:50	" AB5S ZMC2-Y	"		
※	40:10:00:GA:81:31:00	Power Transformer #81310	電源トランス	J	
※	40:10:00:GA:81:32:00	" #81320	"	U,C	
※	40:10:00:GA:81:33:00	" #81330	"	G	
	40:10:00:JH:00:00:70	Reverb Unit #00007	リバーブユニット		PM-200
	40:10:00:KA:40:04:10	Slide Switch #40041	スライドSW	G ✓	
※	30:56:00:NA:80:47:20	DC Board #80472	DCシート	J,C	
※	30:56:00:NA:80:47:30	" #80473	"	U	
※	30:56:00:NA:80:47:40	" #80474	"	G	
※	30:56:00:NB:81:29:40	MA Unit	MAユニット	J,C,G	
※	30:56:00:NB:81:29:50	"	"	U	
※	30:56:00:NA:80:47:70	COD Board #80477	CODシート		
	40:10:00:EQ:34:12:50	Round Head Wood Screw 4.1 x 25 FCM3-Bℓ	丸木ネジ		
	40:10:00:EV:20:35:00	Flat Washer 5φ FCM3-Bℓ	平座金		
	40:10:00:EP:33:52:00	Flat Head Wood Screw 3.5 x 20 FCM3-Bℓ	皿木ネジ		
	40:10:00:Ei:03:00:60	Bind Head Tapping Screw 3 x 6 ZMC2-Y	バインドタッピングネジ		
	40:10:00:LA:00:02:90	Ground Lug 4φ	アースラグ		
	40:10:00:ED:34:01:60	Bind Head Screw 4 x 16 FCM3-Bℓ	バインド小ネジ		
	40:10:00:Ei:34:01:20	Bind Head Tapping Screw 4 x 12 FCM3-Bℓ	バインドタッピングネジ		
	40:10:00:EV:30:35:00	Spring Lock Washer 5S ZMC2-Bℓ	バネ座金		
	40:10:00:EA:03:00:50	Pan Head Screw 3 x 5 ZMC2-Y	ナベ小ネジ		
	40:10:00:EB:03:00:50	Flat Head Screw 3 x 5 ZMC2-Y	皿小ネジ		
	40:10:00:EB:33:01:20	" 3 x 12 ZMC2-Bℓ	"		
	40:10:00:CB:80:68:40	Insulator, Voltage Selector	V S インシュレーター		
	40:10:00:CB:80:66:30	Stopper, Voltage Selector	V S ストッパー		

※ NEW PARTS



Ref No.	Part No.	Description	(部 品 名)	Remarks	Common model
※ 1	30:56:00:AA:80:96:00	Rear Panel #80960	リアパネル	J	
※	30:56:00:AA:80:96:20	" #80962	"	U	
※	30:56:00:AA:80:96:30	" #80963	"	C	
※	30:56:00:AA:80:96:60	" #80966	"	G	
、 2	30:56:00:AA:80:81:80	SP Shield Plate	S P シールド板		EM200,300
3	40:10:00:CB:80:68:50	Cord Stopper #80685	コードストッパー	J,C,U	
※	40:10:00:CB:03:28:40	" #03284	"	G	
4	30:54:00:CB:80:66:40	Cord Reel #80664	コードリール		
5	30:56:00:CB:81:06:90	Insulation Nut #81009	絶縁ナット		EM-120
6	40:10:00:KA:30:02:10	Toggle Switch #30021	トグルスイッチ	J	
	40:10:00:KA:30:03:50	" #30035	"	U	
	40:10:00:KA:30:04:40	" #30044	"	C	EM-200
	40:10:00:KA:30:03:70	" #30037	"	G	
7	40:10:00:KB:00:13:00	Fuse 250V 7A	ヒューズ	J,C	
	40:10:00:KB:00:15:20	" UL 125V 7A	"	U	
	40:10:00:KB:00:07:80	" Mini 250V 5AT	"	G	
8	40:10:00:LA:00:02:90	Ground Lug 4φ	アースラグ		
9	40:10:00:LA:00:07:60	Lug	カラー端子板		
10	40:10:00:LB:20:04:90	Fuse Holder #200499	ヒューズホルダー	J,U,C	
	40:10:00:LB:20:05:90	" #200590	"	G	
11 ✓	40:10:00:LB:20:11:20	Jack #20112	ジャック		
12	40:10:00:LB:30:01:50	Cannon Socket XLR-3-31	キャノンソケット		RM400
13	40:10:00:LX:20:00:10	Flat Washer 9S	特殊平座金		
14	40:10:00:LX:20:00:60	Hexagonal Nut 9S	特殊六角ナット		
15	40:10:00:MG:00:06:10	Power Cord #00061	電源コード	J	
	40:10:00:MG:00:02:70	" #00027	"	U,C	
	40:10:00:MG:00:04:50	Power Cord Ass'y	電源コード A'ssy	G	
※ 16	30:56:00:NA:80:47:80	IN Board #80478	I N シート		
※ 17	30:56:00:NA:80:53:40	JK Board #80534	J K シート		
18	40:10:00:EA:03:00:80	Pan Head Screw 3 x 8 ZMC2-Y	ナベ小ネジ		
19	40:10:00:ED:33:00:50	Bind Head Screw 3 x 5 FCM3-Bℓ	バインド小ネジ		
20	40:10:00:ED:34:01:20	" 4 x 12 FCM3-Bℓ	"		
21	40:10:00:EI:34:01:20	Bind Head Tapping Screw 4 x 12 ZMC2-Bℓ	バインドタッピングネジ		
22	40:10:00:EM:13:00:60	Oval Head Tapping Screw 3 x 6 FNM3-3g	丸皿タッピングネジ		
23	40:10:00:EV:10:00:30	Hexagonal Nut 3S ZMC2-Y	六角ナット		
24	40:10:00:EV:10:00:40	Hexagonal Nut 4S ZMC2-Y	六角ナット		
25	40:10:00:EV:46:00:40	Toothed Lock Washer B4S ZMC2-Y	歯付座金		
26	40:10:00:EV:30:00:40	Spring Lock Washer 4S ZMC2-Y	バネ座金		
27	40:10:00:EK:00:23:70	Fiber Washer	ファイバーワッシャー		
28	40:10:00:EV:40:00:90	Toothed Lock Washer A9S ZMC2-Y	歯付座金		
29	40:10:00:EV:20:00:30	Flat Washer 3S ZMC2-Y	平座金		

※ NEW PARTS

## ELECTRIC PARTS

Ref No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	30:56:00:NA:80:47:70	COD Board	CODシート		
	40:10:00:FZ:00:15:10	Electrolytic Cap. 10,000 $\mu$ F/63V	ケミコン		EM200
V	40:10:00:IH:00:03:90	Bridge Rectifier KBPC250	整流ブリッジ		
	40:10:00:FZ:00:06:50	Mylar Capacitor 0.01 $\mu$ F/630V	マイラーコン		
※	30:56:00:NA:80:46:90	PA Board	PAシート		
	40:10:00:FM:09:71:00	BP Cap. 10 $\mu$ F/16V	BPケミコン		
	40:10:00:FP:34:64:70	Tantalum Cap. 4.7 $\mu$ F/25V	タンタルコン		
	40:10:00:FP:35:61:00	" 1 $\mu$ F/35V	"		
	40:10:00:IG:00:12:20	IC TA7136P	I C		EM-200
	40:10:00:IG:00:13:90	" JRC4558	"		
	40:10:00:HS:31:05:50	Variable Resistor A10K $\Omega$	ボリューム		
	40:10:00:HS:31:04:30	" A50K $\Omega$	"		EM-200
	40:10:00:HS:31:04:40	" B50K $\Omega$	"		EM-200
	40:10:00:HS:31:04:50	" DZD50K $\Omega$	"		
	40:10:00:KA:40:06:30	Slide Switch #40063	スライドスイッチ		EM85
※	30:56:00:NA:80:47:00	MP Board	MPシート		
	40:10:00:FP:35:61:00	Tantalum Cap. 1 $\mu$ F/35V	タンタルコン		
	40:10:00:FP:34:63:30	" 3.3 $\mu$ F/25V	"		
	40:10:00:FP:34:64:70	" 4.7 $\mu$ F/25V	"		
	40:10:00:IG:02:62:00	IC HA1457	I C		EM-200
	40:10:00:IG:00:13:90	" JRC4558	"		
	40:10:00:HS:31:05:50	Variable Resistor A10K $\Omega$	ボリューム		
	40:10:00:HS:31:04:30	" A50K $\Omega$	"		EM-200
※	30:56:00:NA:80:47:10	GEQ Board	GEQシート		
	40:10:00:FP:35:51:00	Tantalum Cap. 0.1 $\mu$ F/35V	タンタルコン		
	40:10:00:FP:35:52:20	" 0.22 $\mu$ F/35V	"		
	40:10:00:FP:35:53:30	" 0.33 $\mu$ F/35V	"		
	40:10:00:FP:35:54:70	" 0.47 $\mu$ F/35V	"		
	40:10:00:FP:35:61:00	" 1 $\mu$ F/35V	"		
	40:10:00:FP:34:62:20	" 2.2 $\mu$ F/35V	"		
	40:10:00:FP:34:64:70	" 4.7 $\mu$ F/25V	"		
	40:10:00:FP:34:66:80	" 6.8 $\mu$ F/25V	"		
	40:10:00:IG:00:13:90	IC JRC4558	I C		
	40:10:00:HQ:30:03:50	Slide Variable Resistor G50K $\Omega$	スライドボリューム		EM-200
※	30:56:00:NA:80:47:80	IN Board	INシート		
	40:10:00:LB:10:05:00	JACK #10050	ジャック		
※	30:56:00:NA:80:53:40	JK Board	JKシート		
	40:10:00:LB:10:05:00	JACK #10050	ジャック		

※ NEW PARTS

Ref No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	30:56:00:NA:80:47:20	DC Board	DCシート	J,C	
※	30:56:00:NA:80:47:30	"	"	U	
※	30:56:00:NA:80:47:40	"	"	G	
	40:10:00:FM:11:61:00	BP Cap. 1 $\mu$ F/50V	BPケミコン		
	40:10:00:FP:35:52:20	Tantalum Cap. 0.22 $\mu$ F/35V	タンタルコン		
	40:10:00:HL:31:31:00	Metal Oxide Film Resistor 1 $\Omega$ 1P	酸化抵抗		
	40:10:00:HL:31:41:00	" 10 $\Omega$ 1P	"		
	✓ 40:10:00:HL:32:51:00	" 100 $\Omega$ 2P	"		
	40:10:00:iG:02:62:00	IC HA1457	I C		EM-200
※	40:10:00:iG:03:48:00	" TA7317P	"		
	40:10:00:iH:00:02:80	Diode 1D2C1	ダイオード		
	40:10:00:iH:00:02:90	" 1D2Z1	"		
	40:10:00:iF:00:00:70	" 1S2473	"		
	40:10:00:iF:00:06:50	Zener Diode WZ-162	ツェナーダイオード		
	40:10:00:iA:06:73:10	Transistor 2SA673A (C,D)	トランジスター		
	40:10:00:iA:10:15:20	" 2SA1015 (Y)	"		E1010
	40:10:00:iB:06:90:00	" 2SB690 (B,C)	"		
	40:10:00:iC:12:13:10	" 2SC1213A (C,D)	"		
	40:10:00:iC:18:15:20	" 2SC1815 (Y)	"		E1010
	40:10:00:iD:07:26:00	" 2SD726 (B,C)	"		
	40:10:00:iB:05:60:00	" 2SB560	"		
	40:10:00:iD:04:38:00	" 2SD438	"		
	40:10:00:HT:41:01:40	Variable Resistor B47K $\Omega$	ソリッドボリューム		
	40:10:00:KC:00:06:60	Relay MS12D4-OZ	リレー		
	40:10:00:KB:00:03:30	Fuse 1A 250V	ヒューズ	J,C	
	40:10:00:KB:00:04:00	" 5A 250V	"	J,C	
	40:10:00:KB:00:10:20	" UL 1A 250V	"	U	
	40:10:00:KB:00:17:00	" " 5A 250V	"	U	
	40:10:00:KB:00:07:30	" Mini 1.0AT 250V	"	G	
	40:10:00:KB:00:06:90	" " 2.5AT 250V	"	G	
	40:10:00:LB:20:15:30	Fuse Holder Pin	ヒューズホルダーピン		
	30:54:00:BA:80:08:10	Heat Sink	放熱器		PM430

※ NEW PARTS

Ref No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	30:56:00:NA:80:47:50	MA Board	MA シート	J,C,G	
※	30:56:00:NA:80:47:60	"	"	U	
	30:54:00:BA:80:16:40	Heat Sink #80164	放熱板		
√	40:10:00:HL:31:34:70	Metal Oxide Film Resistor 4.7Ω 1P	酸化抵抗		
	40:10:00:HL:31:31:00	" 10Ω 1P	"		
	40:10:00:HL:31:45:60	" 56Ω 1P	"		
	40:10:00:HL:31:52:70	" 270Ω 1P	"		
	40:10:00:HL:31:53:30	" 330Ω 1P	"		
	40:10:00:HL:31:63:30	" 3.3KΩ 1P	"		
	40:10:00:HL:31:65:60	" 5.6KΩ 1P	"		
	40:10:00:HL:31:71:50	" 15KΩ 1P	"		
	40:10:00:HL:33:51:80	" 180Ω 3P	"		
	40:10:00:HM:75:24:70	Cement Molded Resistor 0.47Ω 5P	セメント抵抗		
	40:10:00:HW:10:46:80	Fuse Resistor 85mA 68Ω	ヒューズ抵抗	J,C,G	
	40:10:00:HW:20:46:80	" 85mA 68Ω	"	U	
	40:10:00:HW:11:51:50	" 80mA 150Ω	"	J,C,G	
	40:10:00:HW:21:51:50	" 80mA 150Ω	"	U	
	40:10:00:HW:79:52:20	" ¼W 220Ω	"		
	40:10:00:F:00:04:50	Varistor STV-3H (O)	バリスタ		
	40:10:00:F:00:00:40	Diode 1S1555	ダイオード		
	40:10:00:H:00:07:20	" WO3B	"		EM85
	40:10:00:GD:90:02:10	Coil 2.2μH	コイル		EM-200
	40:10:00:A:06:73:10	Transistor 2SA673A (C,D)	トランジスタ		
	40:10:00:A:08:72:10	" 2SA872A (D,E)	"		
	40:10:00:C:12:13:10	" 2SC1213A (C,D)	"		
	40:10:00:C:17:75:10	" 2SC1775A (D,E)	"		
	40:10:00:A:08:14:20	" 2SA814 (O,Y)	"		
√	40:10:00:C:16:24:20	" 2SC1624 (O,Y)	"		
	40:10:00:HT:41:01:20	Variable Resistor B470Ω	ソリッドボリューム		
	40:10:00:FC:02:51:00	Mylar Capacitor 0.1μF/100V	マイラーコン		
		The following parts are not included in MA Board.			
		次の部品はMAシートには含まれません。			
※	30:56:00:BA:80:37:00	Heat Sink #80370	放熱器		
	40:10:00:A:07:45:30	Transistor 2SA745B (O,Y)	トランジスタ		
	40:10:00:C:14:03:30	" 2SC1403B (O,Y)	"		
	40:10:00:L:00:04:40	Mica Base	マイカベース		
	40:10:00:LB:60:26:70	Socket	トランジスタソケット		
	40:10:00:EA:23:01:60	Pan Head Screw M3 x 16	ナベ小ネジ		
	40:10:00:EV:30:10:30	Spring Lock Washer 3S	バネ座金		
	40:10:00:Ei:03:50:60	Bind Head Tapping Screw 3.5 x 6 ZMC2-Y	バインドタッピングネジ		
	40:10:00:Ei:03:50:80	" 3.5 x 8 ZMC2-Y	"		
※	30:56:00:NB:81:29:40	MA Unit	MAユニット	J,C,G	
※	30:56:00:NB:81:29:50	"	"	U	

※ NEW PARTS