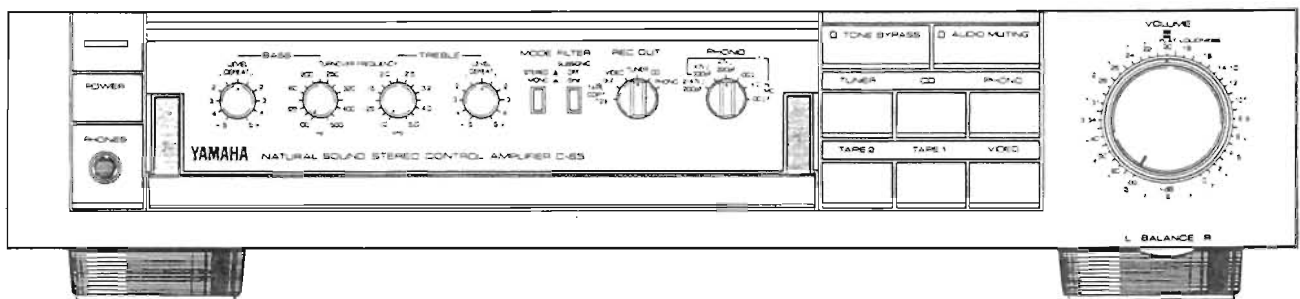


STEREO CONTROL AMPLIFIER C-65

SERVICE MANUAL

FRONT PANEL



IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the units indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

CAUTION:

The bus bar used in the PC board for this unit serves not only as a ground, but also for +B and -B power sources. Please take care when taking readings.

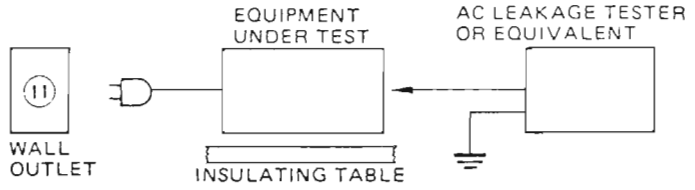
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TO SERVICE PERSONNEL	1	ADJUSTMENT POINTS	5
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■ TO SERVICE PERSONNEL

- Critical Components Information.**
Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
- Leakage Current Measurement (For 120V Model Only).**
When service has been completed, it is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.
 - Meter impedance should be equivalent to 1500 ohm shunted by 0.15 μ F.
 - Leakage current must not exceed 0.5mA.
 - Be sure to test for leakage with the AC plug in both polarities.



■ SPECIFICATIONS

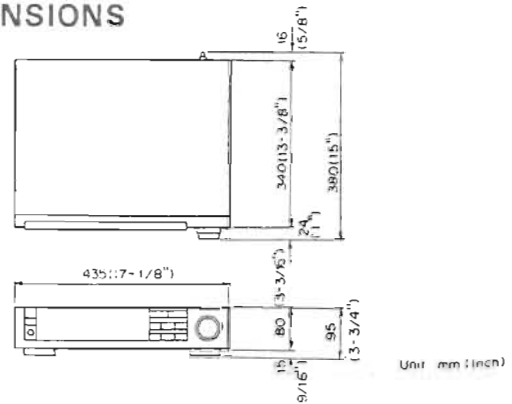
Input Sensitivity/Impedance	
Phono 1 MC	100 μ V/100 Ω
MM	2.5 mV/220 P 47 k Ω 2.5 mV/330 P 47 k Ω
Phono 2 MM	2.5 mV/47 k Ω
CD/AUX/TAPE/TUNER	150 mV/47 k Ω
Input Sensitivity (New IHF)	
Phono MC	33 μ V
MM	0.83 mV
AUX/TAPE/TUNER	50 mV
Maximum Input Signal	
Phono MC	20 mV
MM	500 mV
Output Level/Impedance	
Rec Out	150 mV/600 Ω
Pre Out	1.5 V/47 Ω
Maximum Voltage Output	
20 Hz ~ 20 kHz 1% THD	
Pre Out	8.5 V
Headphone Jack Rated Output/Impedance	
0.01% THD 1 kHz	6 V/100 Ω
Frequency Response (Tone Bypass ON)	
20 Hz ~ 20 kHz	
CD/AUX/TAPE/TUNER	+0, -0.2 dB
RIAA Equalization Deviation	
20 ~ 20 kHz	
(Phono MC/MM, RIAA)	\pm 0.2 dB
10 ~ 100 kHz	
(Phono MC/MM, RIAA)	\pm 0.5 dB
Total Harmonic Distortion	
Phono MC to Rec Out 3 V	0.002%
MM to Rec Out 3 V	0.001%
CD/AUX/TAPE/TUNER to Pre Out 3 V	0.001%
Intermodulation Distortion	
CD/AUX/TAPE/TUNER (Tone Bypass ON)	
5V Output	0.002% (R.U.C.)
Signal to Noise Ratio (IHF-A-Network)	
Phono MC (500 μ V Input Shorted)	90 dB (R.U.C.)
MM (5 mV Input Shorted)	95 dB (R.U.C.)
CD/AUX/TAPE/TUNER (150 mV Input Shorted, Tone Bypass ON)	106 dB (R.V.C.)
Signal to Noise Ratio (New IHF)	
Phono MC	80 dB (R.U.C.)
MM	83 dB (R.U.C.)
CD/AUX/TAPE/TUNER	103 dB (R.U.C.)
Input Equivalent Noise	
Phono MC	-156 dBV (A.G.B.)
MM	-138 dBV (A.G.B.)
Residual Noise (IHF-A-Network)	
	1.5 μ V (R.U.C.)

Channel Separation	
Phono MM/AUX. TAPE	40 Hz, 85 dB/85 dB
Short/5.1 k Ω	1 kHz, 80 dB/70 dB
	10 kHz, 70 dB/50 dB
Tone Control Characteristics	
BASS boost/cut	\pm 10 dB
BASS turnover frequency	100 ~ 500 Hz
TREBLE boost/cut	\pm 10 dB
turnover frequency	1 K ~ 5 kHz
Filter Characteristics	
Low (Subsonic)	15 Hz, -12 dB/Oct
Continuous Loudness Control (Level-related equalization)	
Attenuation	40 dB (1 kHz)
Loudness Control (Vol-30 dB Level-related equalization)	
Audio Muting	
	-20 dB
Gain tracking error (0 ~ -60 dB)	
	2 dB
Power Supply	
• U.S.A & Canadian models	AC 120V 60 Hz
• Australian, British & European models	AC 220 ~ 240 V 50 Hz
• Other model	AC 110 ~ 120 V 50/60 Hz
Power Consumption	
	30 W (U.C.R.)
AC Outlet	
Switched	200 W (max) (U.C.R.)
Unswitched	800 W (max) (U.C.R.)
Dimensions (W x H x D)	
	435 x 95 x 380 mm (17-1/8" x (3-3/4") x (15")
Weight	
	6.8 kg (15 lbs)

* Specifications subject to change without notice.

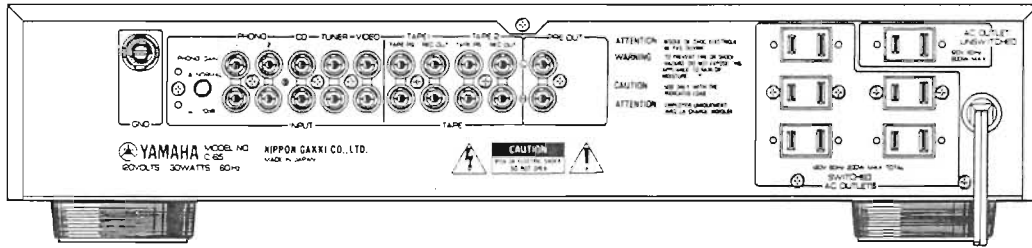
- | | |
|--------------------------------|------------------------------|
| (U) U.S.A. model | (B) British model |
| (C) Canadian model | (G) European model |
| (A) Australian model | (R) Others model |

■ DIMENSIONS

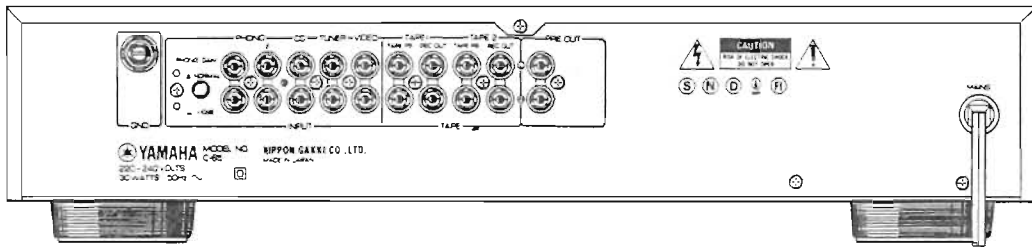


REAR PANELS

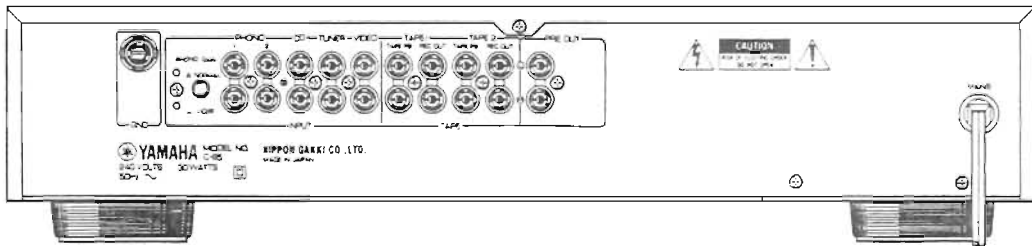
U.S.A. & Canadian models



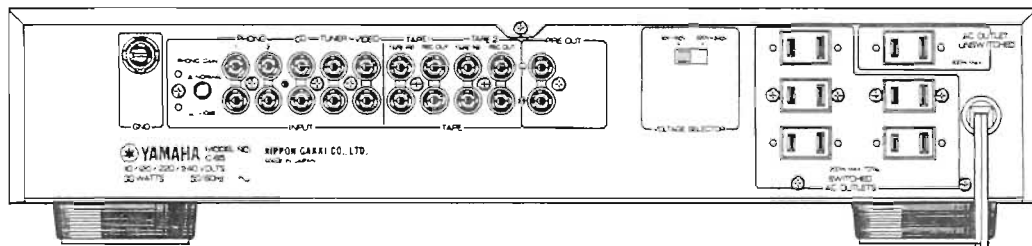
European model



Australian model

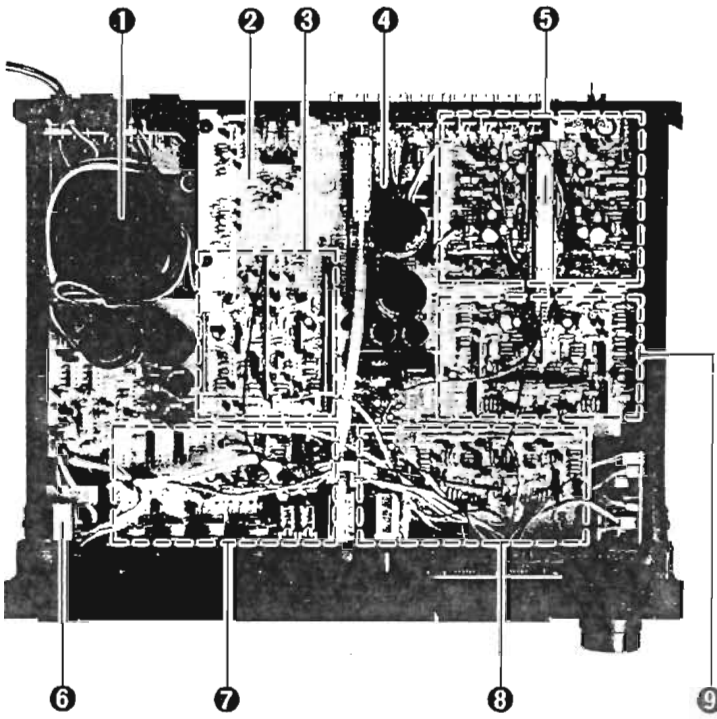


Others model



C-65

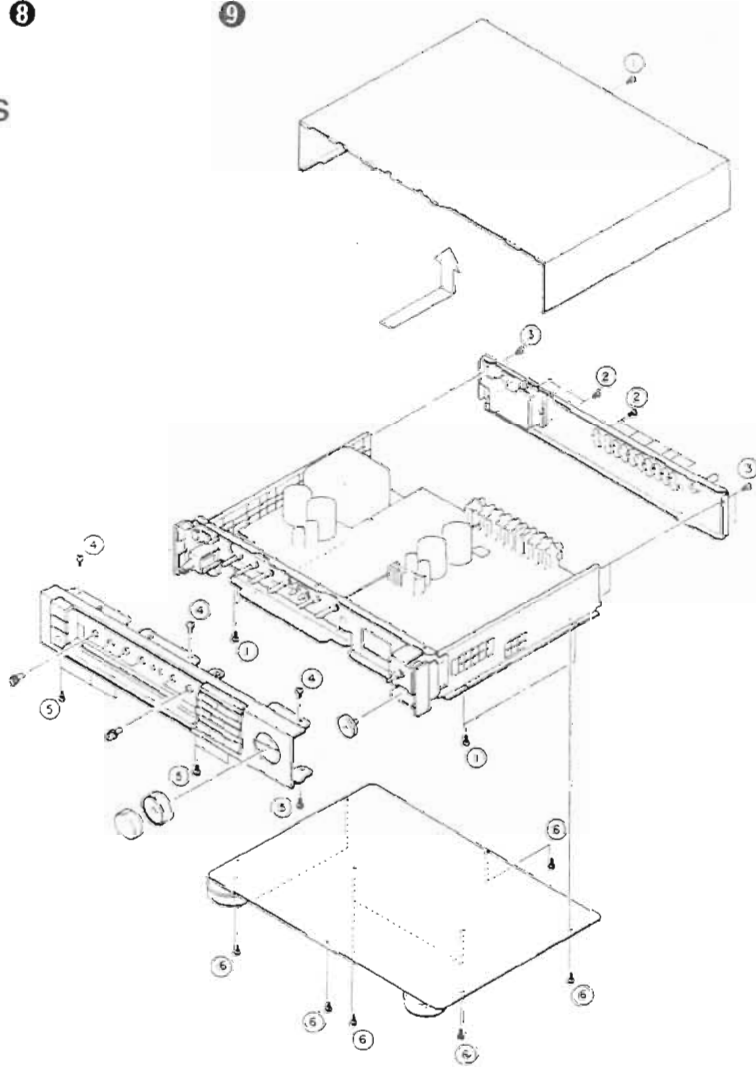
■ INTERNAL VIEW



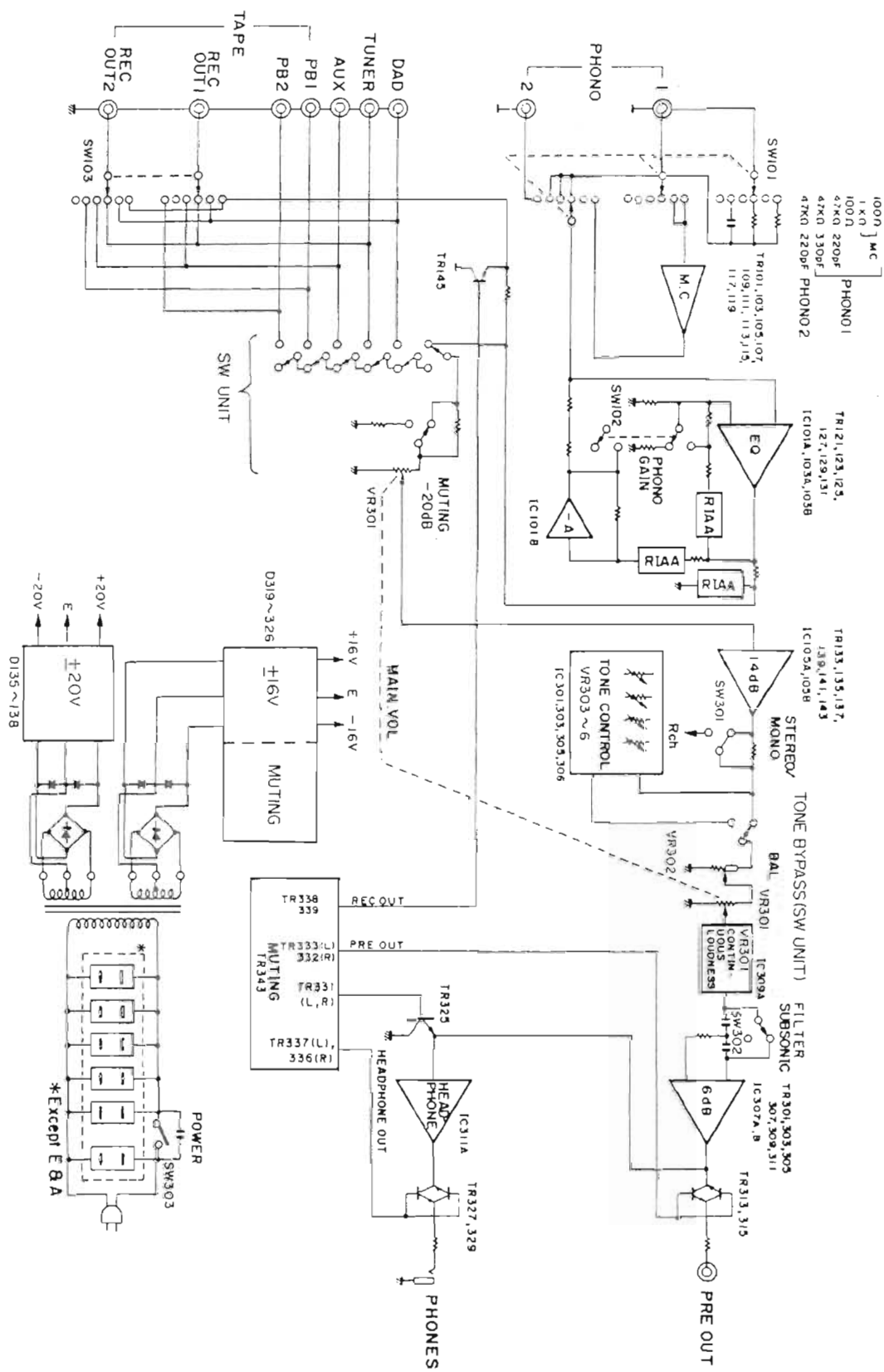
- ❶ POWER TRANSFORMER
General model: GA67500
U.S.A. & Canadian models: GA67500
Australian & European models: GA67800
- ❷ TONE CONTROL CIRCUIT BOARD
- ❸ 6dB FLAT AMP SECTION
- ❹ EQUALIZER CIRCUIT BOARD
- ❺ MC AMP SECTION
- ❻ POWER SWITCH
- ❼ PARAMETRIC TONE CONTROL SECTION
- ❽ 14dB FLAT AMP SECTION
- ❾ EQ AMP SECTION

■ DISASSEMBLY PROCEDURES

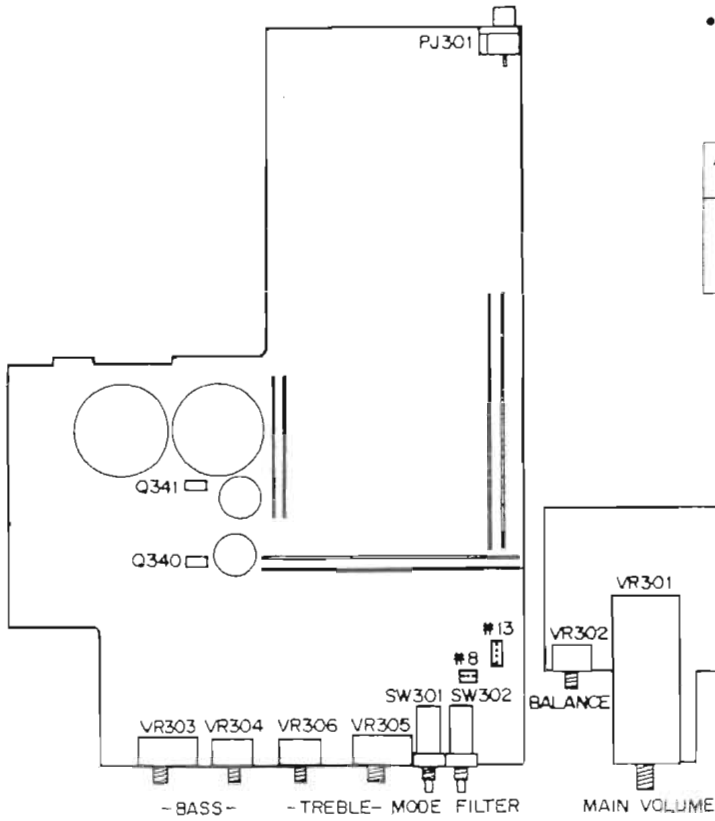
1. Removal of Top Cover
 - a. Remove 5 screws (❶) in Fig. 1.
2. Removal of Rear Panel
 - a. Remove 18 screws (❷) in Fig. 1.
3. Removal of Bottom cover
 - a. Remove 8 screws (❸) in Fig. 1.
4. Removal of Front Panel
 - a. Remove of knobs.
 - b. Remove 12 screws (❹) in Fig. 1.



■ BLOCK DIAGRAM



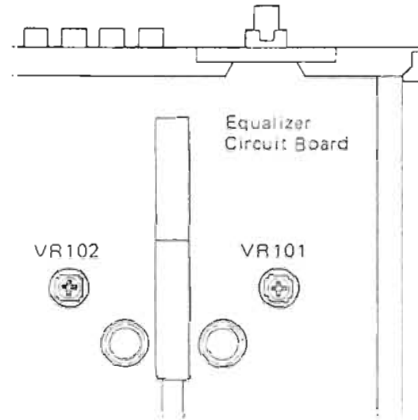
ADJUSTMENT POINTS



- Set the controls to the following positions.

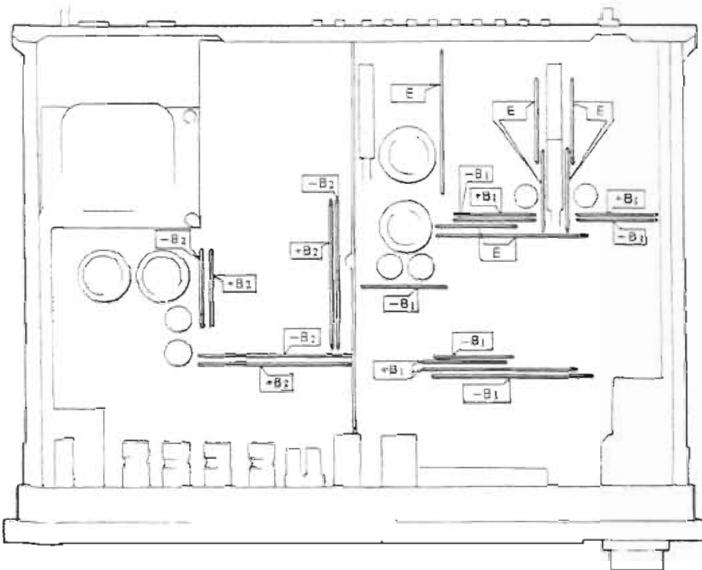
PHONO → MC
REC OUT → PHONO

Adjustment item	Test point	Instrument required	Adjustment points	Rating
MC AMP DC offset	REC OUT	DCVM	VR101 (Lch) VR102 (Rch) [EQUALIZER]	$0V \pm 100mV$



CAUTION:

The bus bar used in the PC board for this unit serves not only as a ground, but also for +B and -B power sources. Please take care when taking readings.

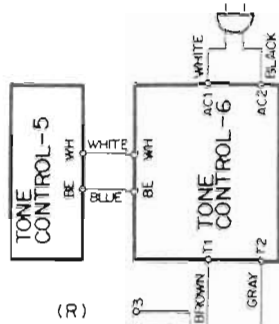
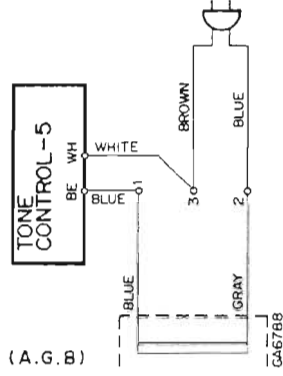
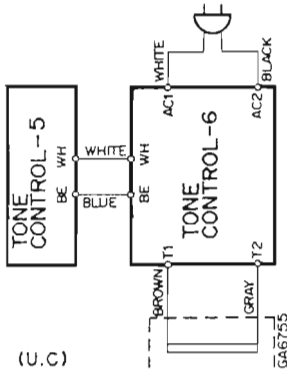
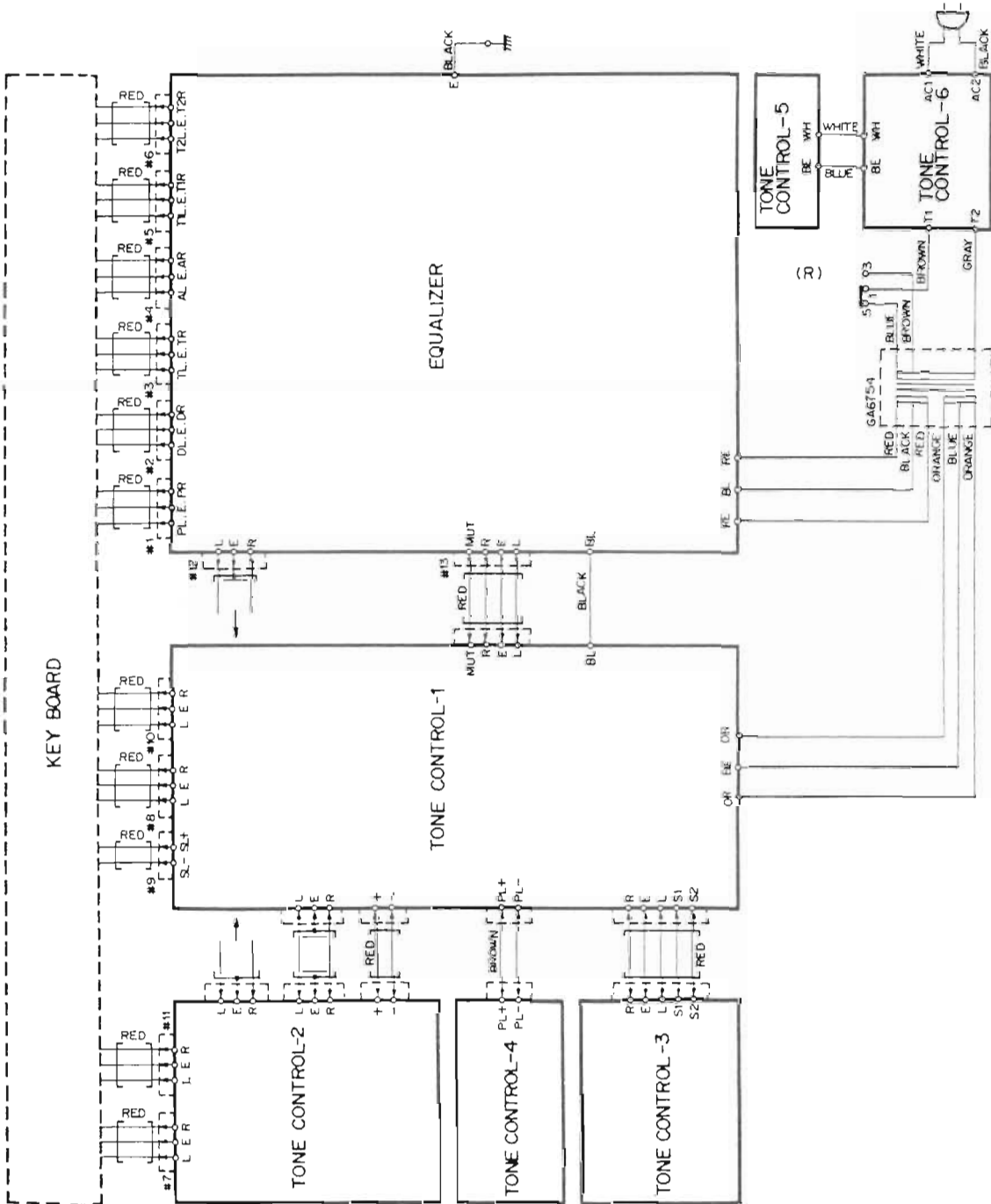


+B ₁	+20V ± 1V
-B ₁	-20V ± 1V
+B ₂	+16V ± 1V
-B ₂	-16V ± 1V
E	GND

■ ADJUSTMENTS

Step	Item	Condition or Procedure	Check Point	Rated Value	Measuring Device	Reference	
1		Connect the secondary lead wires (ORANGE-BLUE-ORANGE) of the Power Transformer to the Terminals of each corresponding color.					
2	Supply Voltage	Apply 120 ± 1 V AC to the primary of Power Transformer	Emitter of Tr340	16 ± 1 V DC	DC VM DC VM		
			Emitter of Tr341	-16 ± 1 V DC			
3	6 dB Flat Amp	Conditions VR302 (BLANCE): Center position VR301A, B (MAIN): Full clockwise VR301C (LOUDNESS): Full clockwise SW301 (SUBSONIC): OFF Input Apply 1 kHz 0.5 V sine wave to Connector #9	PJ301 (Preamp out)	1 ± 0.1 V (1 kHz sine wave)	AC VM		
4	Inverter Amp	Conditions: Same as Step-3	PJ-301-2 (Inverter out)	1 ± 0.1 V (1 kHz sine wave)	AC VM		
5	Headphone Amp	Conditions: Same as Step-3 except that a Headphone Plug is plugged into the Headphone Jack	PJ301 (Preamp out)	0 V	AC VM		
			Headphone Terminal	5 ± 0.5 V			
6	Loudness	Same as Step-3 except VR301C: Fully counterclockwise	PJ301 (Preamp out)	10 ± 2 mV	AC VM		
7	Parametric Tone Control	1. Set the inner shafts of VR303 and VR305 to the center click position. Apply 1 kHz sine wave to Connector #13 and adjust its level to the point obtaining 1 V output on Connector #10. 2. Reset the inner shafts also outer shafts of VR303 and VR305 to the full clockwise position. VR304: Full counterclockwise VR306: Full clockwise 3. At signal frequency					
			40 Hz	Connector #10	+8 dB or over	AC VM	0 dB: 1 V
			15 kHz				
8	Muting	With the same conditions to Step-3, turn off the AC 120 V power supply. When turned it on again:	PJ301 (Preamp out)	The output must be recovered in 5 ± 1 second.	AC VM		
9	Subsonic Filter	Same as Step-3 except: (a) 15 Hz input signal (b) SW302 - ON	PJ301 (Preamp out)	-3 ± 1 dB	AC VM	Output level with SW302 -OFF as 0 dB	
10	Mode	Apply 1 kHz 1 V input signal to L ch of Connector #13.			AC VM	The opposite channel should be same.	
		SW301 (Mode)	OFF	R ch of Connector #8			Less than 10 mV
			ON			0.5 ± 0.1 V	

■ WIRING



PRINTED CIRCUIT BOARD (Pattern Side)

Note)
文字面 : Component Side

EQUALIZER CIRCUIT BOARD

1

2

3

4

5

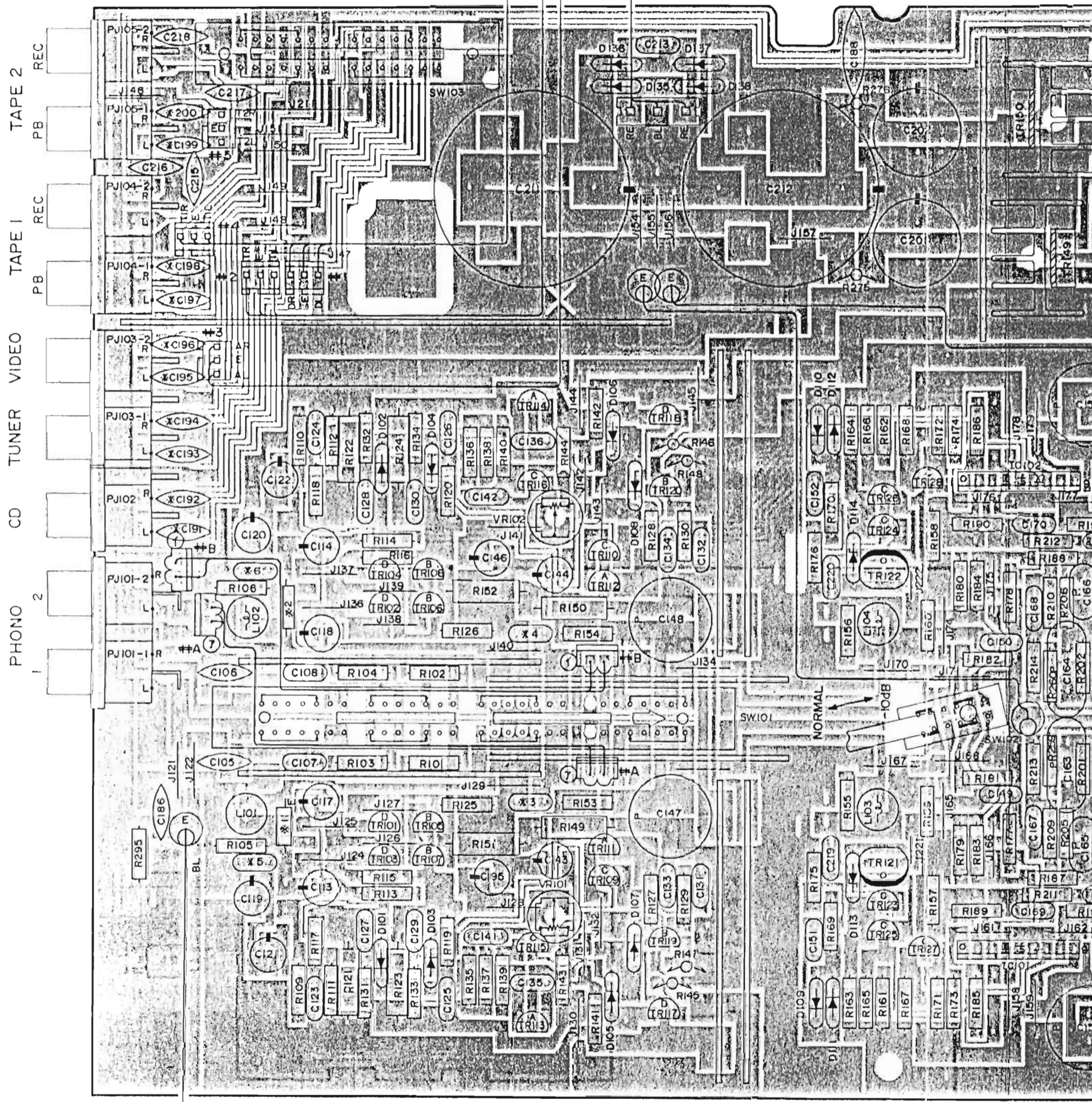
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7

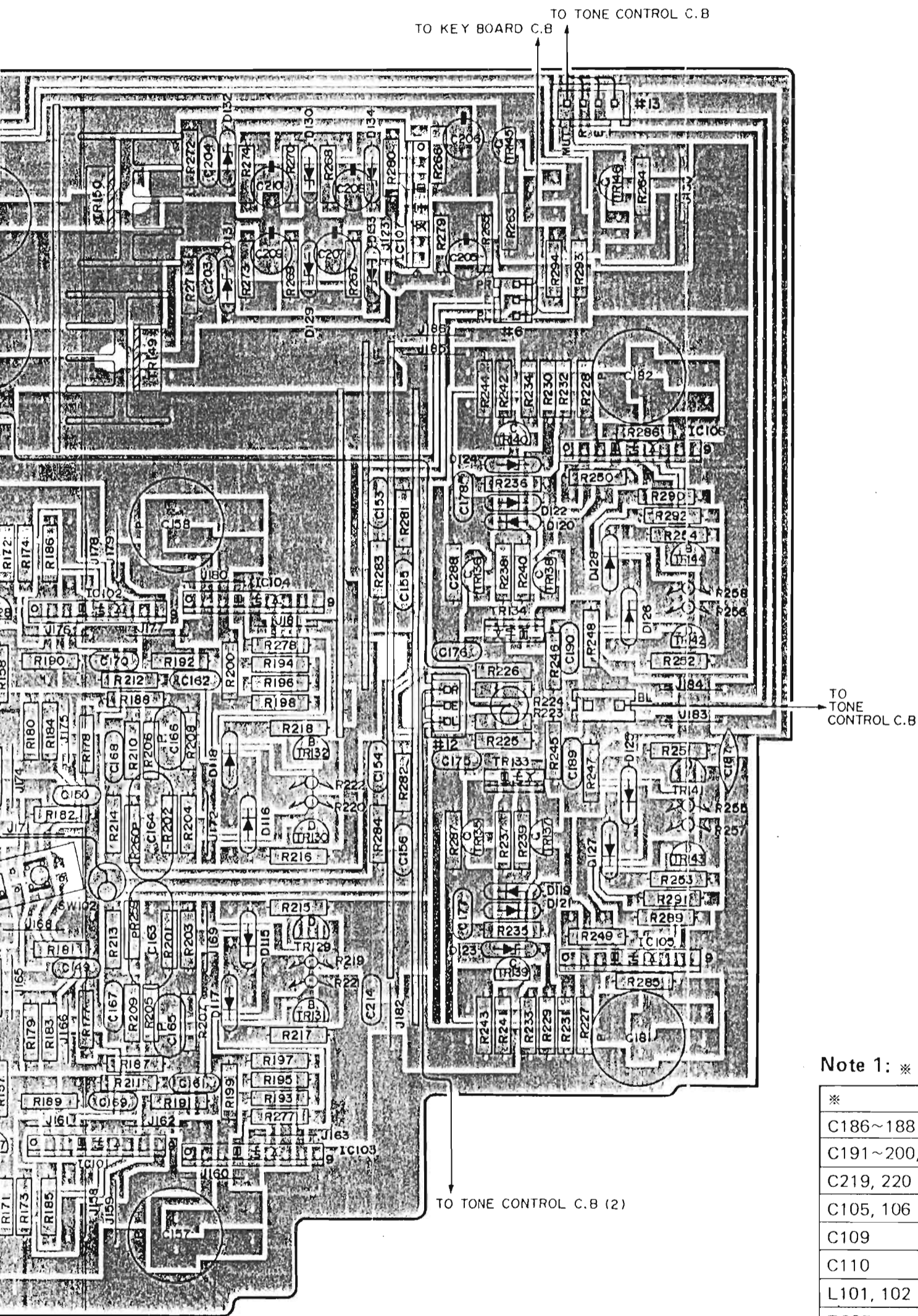
- 0.6 TAPE COPY 2-1
- 0.5 TAPE COPY 1-2
- 0.4 VIDEO
- 0.3 TUNER
- 0.2 CD
- 0.1 PHONO

TO KEY BOARD C. B

TO POWER TRANSFORMER



Chassis



Note 1: * marked

*	R.U.C	A.G.B
C186~188	/	0.01
C191~200,215~218	/	220P
C219, 220	/	82P
C105, 106	/	2200P
C109	* 3(0.01)	* 5(0.018)
C110	* 4(0.01)	* 6(0.0018)
L101, 102	/	15 μ H
R295	/	4.7
R107, 108	SHORT	* 1,* 2(220)
R155, 156	220	1.5K
C349	/	0.01

C-65

A

B

C

D

E

C-65

PRINTED CIRCUIT BOARD (Pattern Side)

Note) 文字面 : Component Side

1 TONE CONTROL CIRCUIT BOARD (1)

1

2

3

4

5

6

7

SUBSONIC FILTER

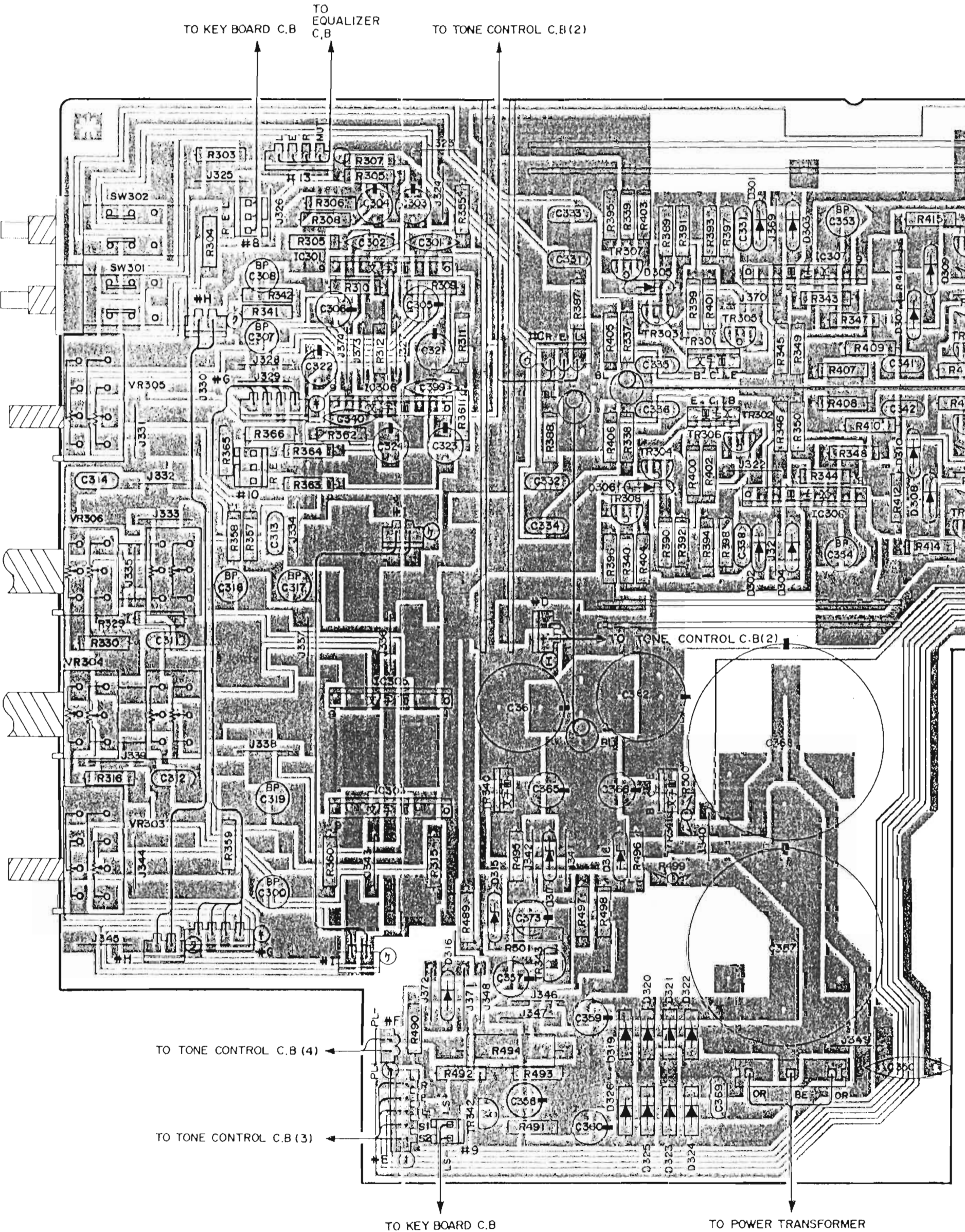
MODE MONO STEREO

TREBLE LEVEL

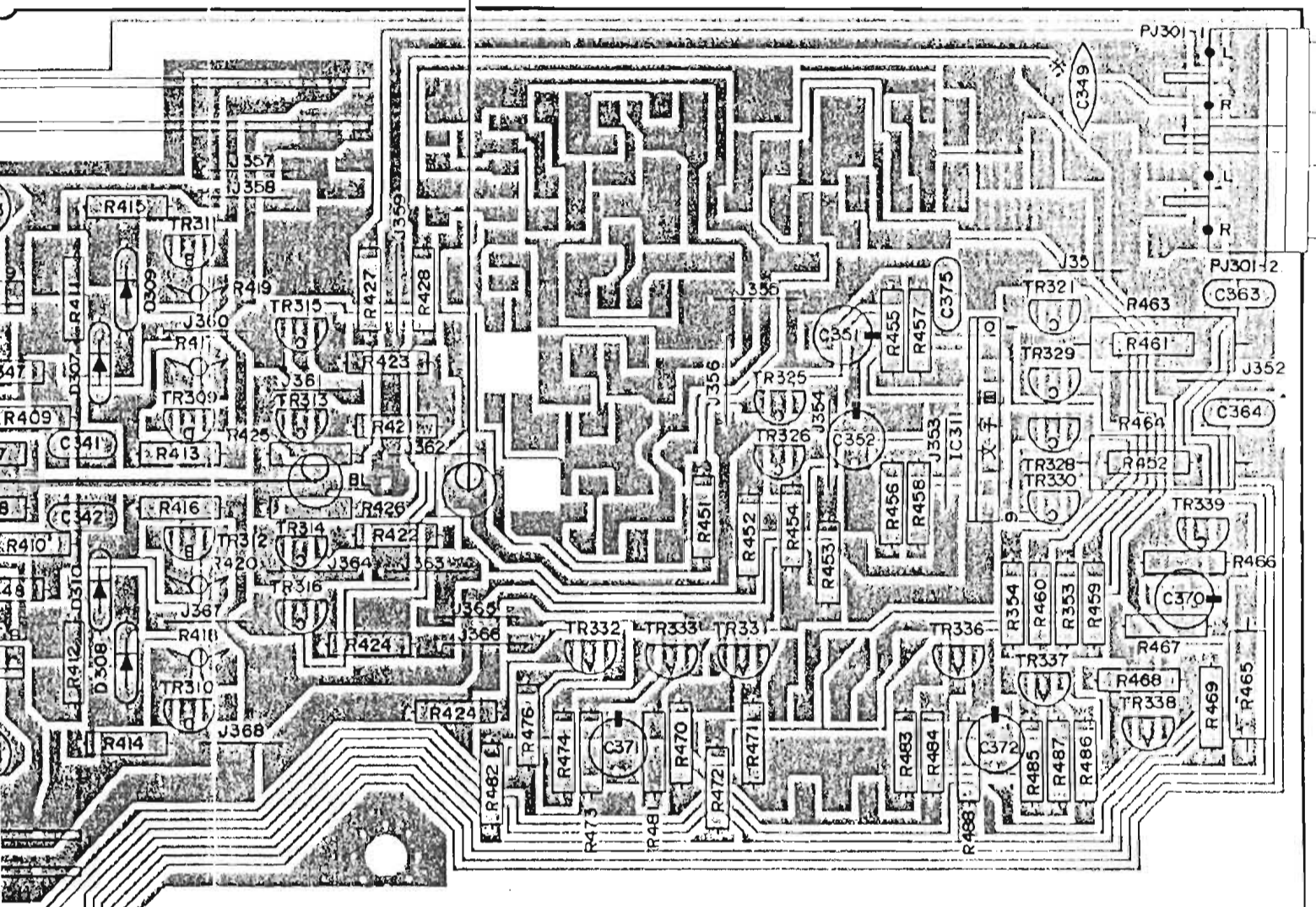
TURNOVER FREQUENCY

BASS LEVEL

TO KEY BOARD C.B TO EQUALIZER C.B TO TONE CONTROL C.B (2)

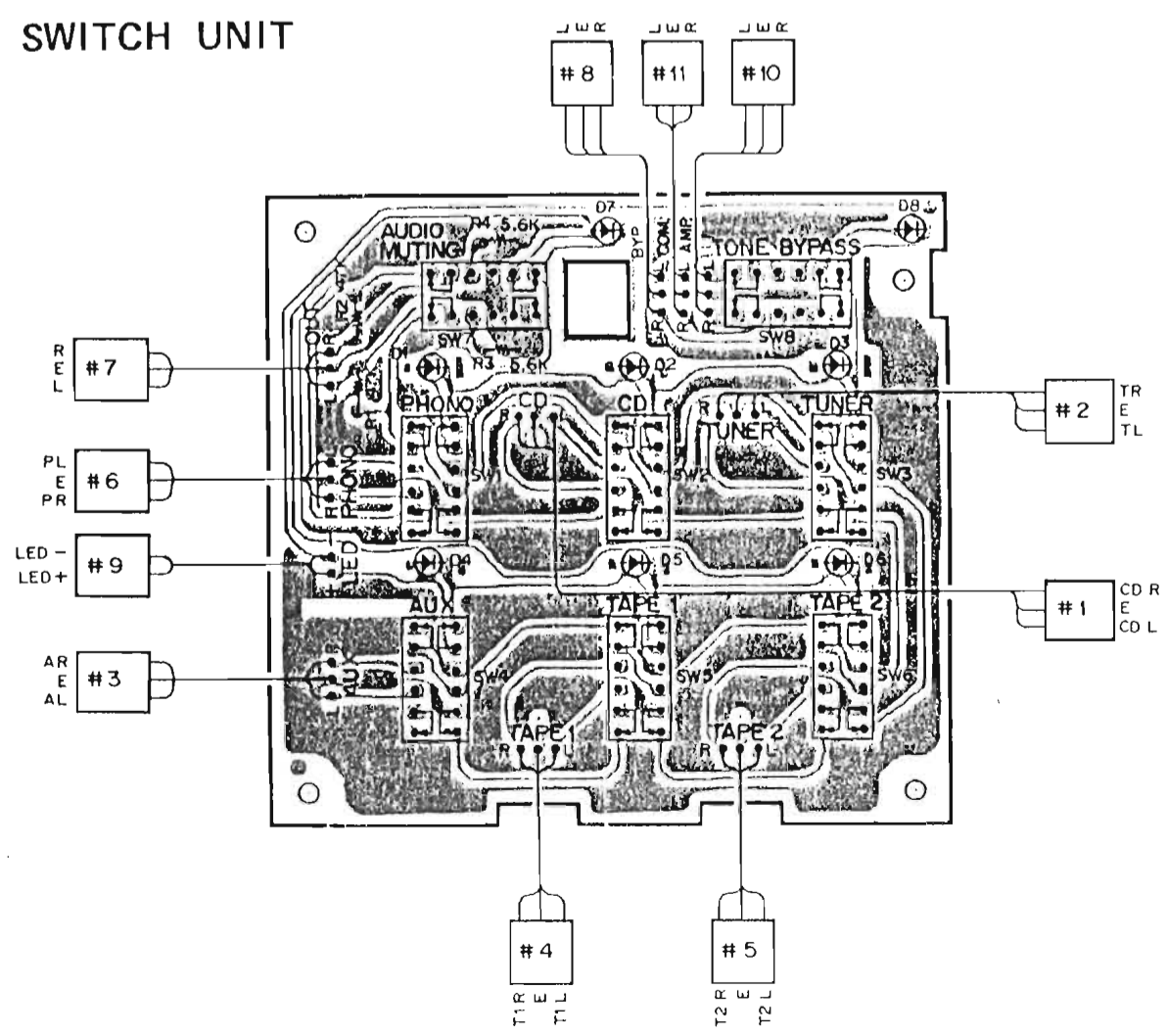


TO EQUALIZER C.B.
(R.U.C MODELS ONLY)



INVERT NORMAL
REC OUT

SWITCH UNIT



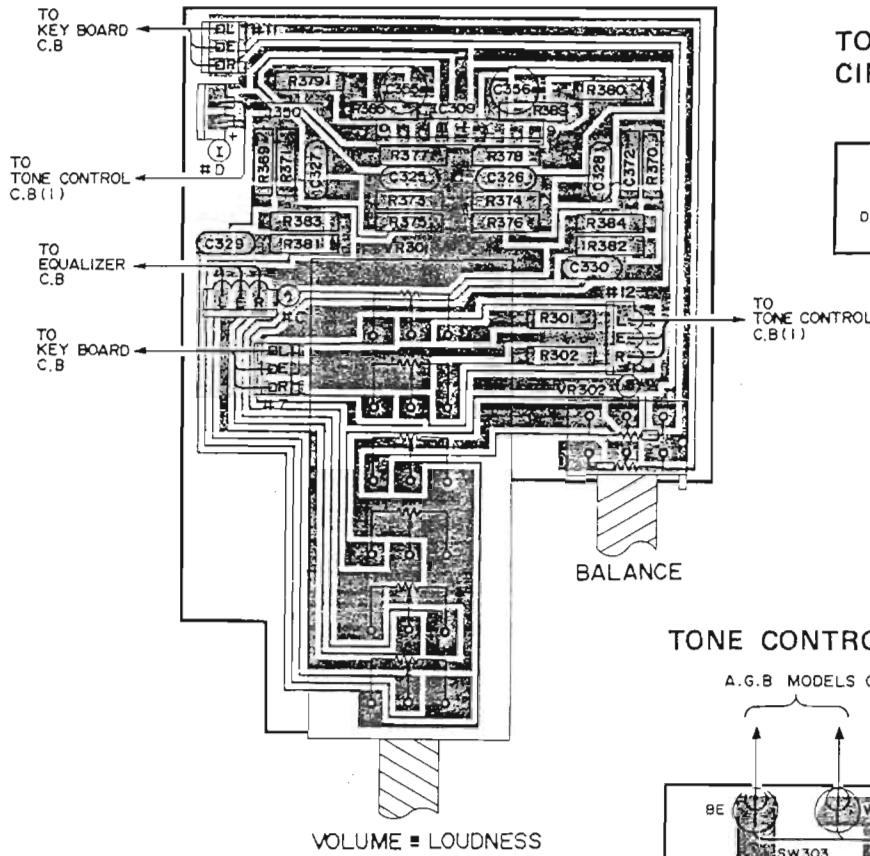
PRINTED CIRCUIT BOARD (Pattern Side)

Note)
文字面 : Component Side

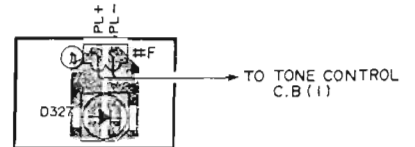
TONE CONTROL CIRCUIT BOARD (3)



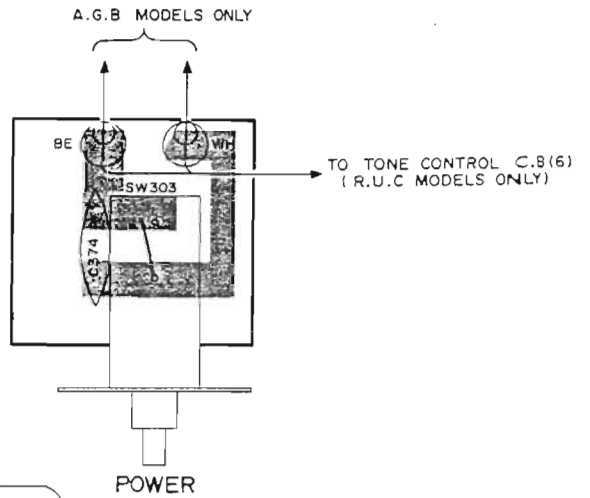
TONE CONTROL CIRCUIT BOARD (2)



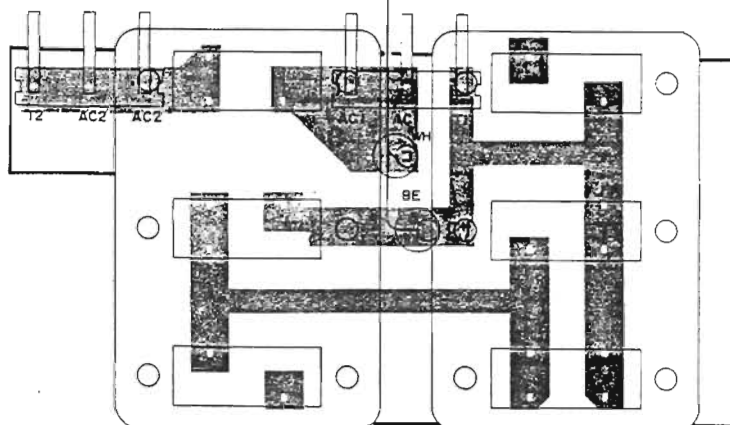
TONE CONTROL CIRCUIT BOARD (4)



TONE CONTROL CIRCUIT BOARD (5)



TO TONE CONTROL C.B.(5)
(R.U.C. MODELS ONLY)



TONE CONTROL CIRCUIT BOARD (6) R, U, C Models only

1

2

3

4

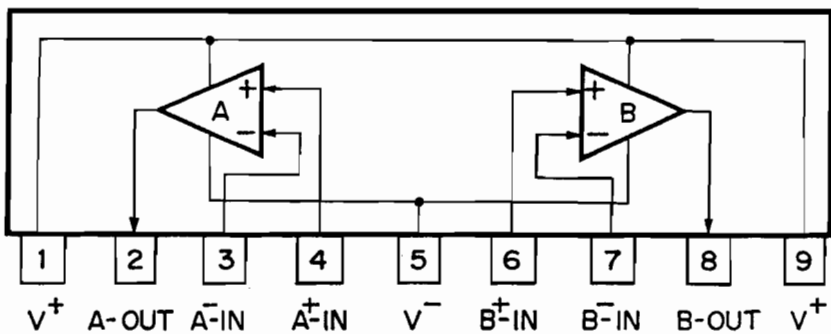
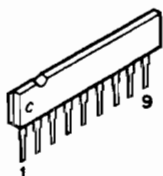
5

6

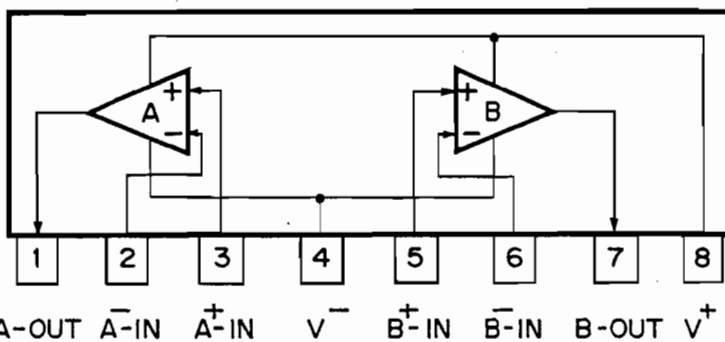
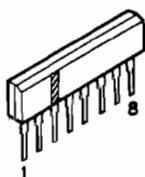
7

■ IC BLOCK DIAGRAM

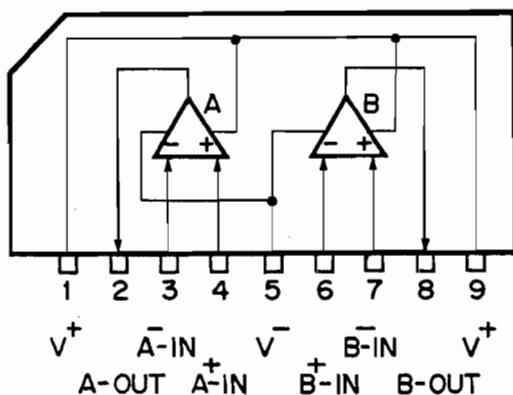
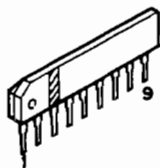
IC301, 303
 IC305, 306
 NJM4560S
 BA4561S



IC101, 102
 M5219L
 IC107
 M5220L



IC101 106
 IC307, 308
 NJM2041S
 IC309
 NJM4558S
 IC311
 NJM4556S-A



PARTS LIST

■ ELECTRICAL PARTS

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
	NA:09:02:20	Equalizer Circuit Board Ass'y	イコライザシート			R,U,C	
	NA:09:02:30	//	//			A,G,B	
	FH:23:41:00	Ceramic Cap.	セラコン	C188		A,G,B	
	FG:41:22:20	//	//	C191~200,215~218		A,G,B	
	FG:44:41:00	//	//	C186,187		A,G,B	
	FU:35:13:90	FE Mica Cap.	F E マイカコン	C135,136,141,142			
	FU:35:18:20	//	//	C219,220		A,G,B	
	FV:44:91:00	Electrolytic Cap.	プラスチックケミコン	C201,202			
	FZ:00:61:60	//	ブロックケミコン	C211,212			
*	FA:15:35:10	Mylar Cap.	マイラコン	C169,170			
	UA:25:41:60	//	//	C155,156			
	UA:25:42:00	//	//	C167,168			
	UA:25:43:90	//	//	C153,154			
	UJ:11:82:20	Electrolytic Cap.	ケミコン	C113,114,117,118			
	UW:93:81:00	//	//	C143,146			
	UJ:24:71:00	//	//	C119~122,205~210			
	UK:14:72:20	//	B. P コン	C147,148,157,158,181,182			
	UT:46:42:70	Polypropylene Film Cap.	ポリプロコン	C165,166			
	UT:46:51:00	//	//	C163,164			
	UT:45:21:00	//	//	C107,108,189,190,203,204			
	UT:45:21:80	//	//	C131~134			
	UT:45:22:20	//	//	C149,150,175,176			
	UT:45:23:30	//	//	C161,162			
	UT:45:24:70	//	//	C177,178,214			
	UT:45:26:80	//	//	C123~126			
	UT:45:28:20	//	//	C127~130			
	UT:45:31:20	//	//	C151,152			
	UT:45:32:20	//	//	C105,106		A,G,B	
	UT:45:41:00	//	//	C213			
	UT:45:41:00	//	//	C109,110		R,U,C	
	UT:65:41:80	//	//	//		A,B,B	
	GE:90:03:30	Coil	チョークコイル	L103,104			
	GE:90:08:40	//	コイル	L101,102			
	HV:45:32:20	Flame Prcot Carbon Resister	不燃可カーボン抵抗	R275,276			
	HV:45:34:70	//	//	R145~148,219~222,225~258			
	HZ:00:44:50	Carbon Resister	カーボン抵抗	R149~152			
	HZ:00:44:60	//	//	R121~			
	iA:10:15:21	Transistor	トランジスター	TR111~114			
	iB:07:50:00	//	//	TR150			
	iC:18:15:20	//	//	TR108,110,115,116,123~128,135~140,145,146			
	iD:12:75:10	//	//	TR149			
	iE:10:22:40	FET	F E T	TR121,122			
	iE:10:45:10	//	デュアル F E T	TR133,134			
	iB:05:60:00	Transistor	ベアトランジスター	TR119,120,131,132,143,144	Inter-changeable		
	iX:60:32:80	//	//	//			
	iD:04:38:00	//	//	TR117,118,129,130,141,142	Inter-changeable		
	iX:60:32:90	//	//	//			
	iB:07:37:00	//	//	TR105~108			
	iD:07:86:00	//	//	TR101~104			

* New Parts (新規部品)

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
	iF 00:06:70	Diode	1S2473	ダイオード	D101~112,115~122,125~128 } Inter-changeable		
	iF 00:00:40	//	1S1555	//			
	iH 00:14:30	//	1SR35-100A	//		D135~138	
	iF 00:15:10	Zener Diode	HZ6CIL	ツェナーダイオード	D113,114,123,124,129,130		
	iF 00:20:80	//	HZ16-3L	//	D131,132		
	iF 00:23:50	//	HZ12B2	//	D133,134		
	iG 07:69:00	IC	NJM2041S	I C	IC101,102 } Inter-changeable	R,U,C	
	iG 09:21:00	//	M5219L	//		//	A,G,B
	iG 07:69:00	//	NJM2041S	//		IC103~106	
	iG 09:20:00	//	M5220L	//		IC107	
	KA 90:68:60	Push Switch		プッシュSW	SW102		
	KA 90:69:10	Rotary Switch	4-6NS	ロータリSW	SW103		
	KA 90:69:20	//	8-6NS	//	SW101		
	LB 20:25:60	Pin Jack	2P	ピンジャク	PJ102		
	LB 40:12:90	//	4P	//	PJ104,105		
	LB 40:13:00	//	4P	//	PJ101		
	LB 40:13:10	//	4P	//	PJ103		
	LA 00:21:20	Wrapping Terminal I-Type	P=5 3P	I型ラッピング端子板			
	LB 91:80:30	Base Pin I-Type	3P	XHベースピンI型			
	LB 91:80:40	//	4P	//			
	LB 92:10:30	Connector Plug	3P	LPコネクタプラグI型			
	LA 00:21:10	Wrapping Terminal I-Type	P=5 2P	I型ラッピング端子板			
	AA 62:18:30	Holder, Gain Switch		ゲインSWホルダー			
	BA 08:09:10	Heat Sink	IC-2425	放 熱 板			
	BB 07:04:10	Bus Bar	#7041 & =55	バスバー			
	BB 07:04:20	//	#7042 & =100	//			
	ED 33:00:66	Binding Head Screw	3×6 FCRM3-BI	バインド小ネジ	PACK		
	NA 09:02:60	Tone Control Circuit Board Ass'y		トーンコントロールシート		R	
	NA 09:02:70	//		//		U,C	
	NA 09:02:80	//		//		A,G,B	
	FH 23:41:00	Ceramic Cap.	0.01μF 500V	セラコン	C350	A,G,B	
	Fi 41:41:00	//	0.01μF	//	C374		
	FG 21:21:00	//	100pF 50V	//	C339,340		
	FG 21:22:20	//	220pF 50V	//	C301,302		
	FG 44:41:00	//	0.01μF 50V	//	C349		
	FV 44:91:00	Electrolytic Cap.	1000μF 25V	プラスチックケミコン	C361,362		
	FZ 00:61:50	//	4700μF 35V	ブロックケミコン	C367,368		
	UA 25:31:50	Mylar Cap.	1500pF 50V	マイラーコン	C313,314		
	UA 25:43:90	//	0.039μF 50V	//	C331~334		
	FA 15:51:20	//	0.12μF 50V	//	C325~328		
	FA 15:51:50	//	0.15μF 50V	//	C311,312		
	UW 91:74:70	Electrolytic Cap.	47μF 6.3V	ケミコン	C303~306,321~324		
	UJ 24:71:00	//	10μF 25V	//	C351,352,355,356,358,371,372		
	UW 94:74:70	//	47μF 25V	//	C365,366		

* New Parts (新規部品)

Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
※	UH:05:72:20	Electrolytic Cap.	22 μ F 35V	ケ ミ コ ン	C357,359,360		
	UJ:16:61:00	//	1 μ F 50V	//	C370,373		
	UK:11:81:00	//	100 μ F 6.3V	B. P コ ン	C307,308,317~320		
	UK:14:72:20	//	22 μ F 25V	//	C353,354		
	UT:45:21:00	Polypropylen Film Cap.	100pF 100V	ポ リ プ ロ コ ン	C335,336,341,342		
	UT:45:24:70	//	470pF 100V	//	C329,330,337,338,363,364,375		
	UT:45:41:00	//	0.01 μ F 100V	//	C369		
HL:32:46:80	Metal Oxide Film Resistor	68 Ω 2P	酸 金 抵 抗	R463,464			
HL:32:62:20	//	2.2K Ω 2P	//	R494			
HL:31:62:20	//	2.2K Ω 1P	//	R465			
HV:45:34:70	Flame Proot Carbon Resistor	4.7 Ω	不 燃 化 カ ー ボ ン 抵 抗	R417~420,499,500			
HS:41:22:10	Potentiometer	30K Ω × 2	可 変 抵 抗	VR304,306			
HS:41:22:50	//	20K Ω MN	//	VR302			
HS:41:22:60	//	200K Ω × 2	//	VR303,305			
HY:00:18:90	//	(50K Ω + 10K Ω .53K Ω) × 2	//	VR301			
iA:10:15:21	Transistor	2SA1015(Y)	ト ラ ン ジ ス タ ー	TR331~333,336~338			
iB:07:86:00	//	2SB786	//	TR341	} Inter-changeable		
iB:09:37:00	//	2SB937	//	//			
iC:09:82:00	//	2SC982	//	TR343			
iC:18:15:20	//	2SC1815(Y)	//	TR303~308,339,342			
iC:33:27:00	//	2SC3327	//	TR313~316,325~330			
iD:09:47:00	//	2SD947 2	//	TR340	} Inter-changeable		
iD:12:60:00	//	2SD1260	//	//			
iB:05:60:00	//	2SB560	ベ ア ト ラ ン ジ ス タ ー	TR311,312	} Inter-changeable		
iX:60:32:80	//	2SA935	//	//			
iD:04:38:00	//	2SD438	//	TR309,310	} Inter-changeable		
iX:60:32:90	//	2SC2061	//	TR309,312			
iE:10:45:10	FET // T	2SK389(BL,V)	デュアル F E T	TR301,302			
iF:00:06:70	Diodo	1S2473	ダ イ オ ー ド	D301~304,307~310,316	} Inter-changeable		
iF:00:00:40	//	1S1555	//	//			
iH:00:14:30	//	1SR35-100A	//	D319~326			
iF:00:20:80	Zener Diodo	HZ16-3L	ツェナーダイオード	D317,318			
iF:00:18:40	//	RD3.0EB2	//	D305,306			
iF:00:33:20	//	HZ9C-3	//	D315			
iF:00:44:40	LED(RED)	SLV-56URC3H	L E D (アカ)	D327			
iG:07:68:00	IC	NJM4558S	I C	IC309			
iG:07:69:00	//	NJM2041S	//	IC307,308			
iG:07:74:10	//	NJM4556S-A	//	IC311			
iG:12:18:00	//	NJM4560S J	//	IC301,303,305,306	} Inter-changeable		
iG:13:30:00	//	BA4561S	//	//			
KA:80:32:90	Power Swich	SDLC1P002	パ ワ ー S W	SW303			
KA:80:44:80	Push Switch		プ ッ シ ュ S W	SW301,302			
LB:20:26:10	Pin Jack	2P	ピ ン ジャ ッ ク	PJ301		R,U,C	
LB:20:25:60	//	//	//	//		A,G,B	
VA:98:44:00	Jack		ホ ー ン ジャ ッ ク	JK301			
LA:00:24:00	Wrapping Terminal L-Type	P=7.5 3P	ラ ッ ピ ン グ 端 子 板 L 型				
LA:00:23:20	Wrapping Terminal I-Type	P=7.5 3P	ラ ッ ピ ン グ 端 子 板 I 型				

※ New Parts (新規部品)

MECHANISM EXPLODED VIEW

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2

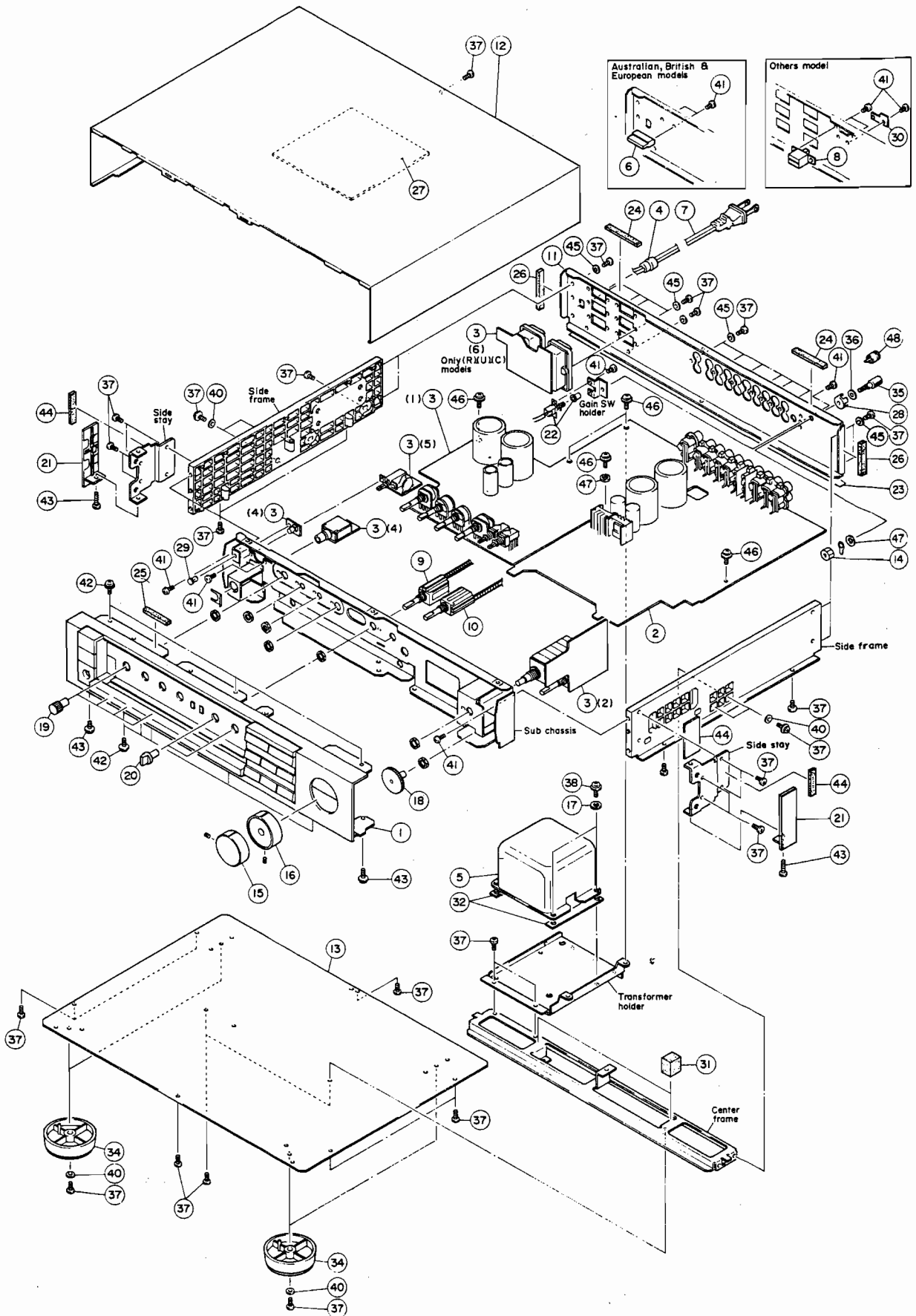
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MECHANISM PARTS

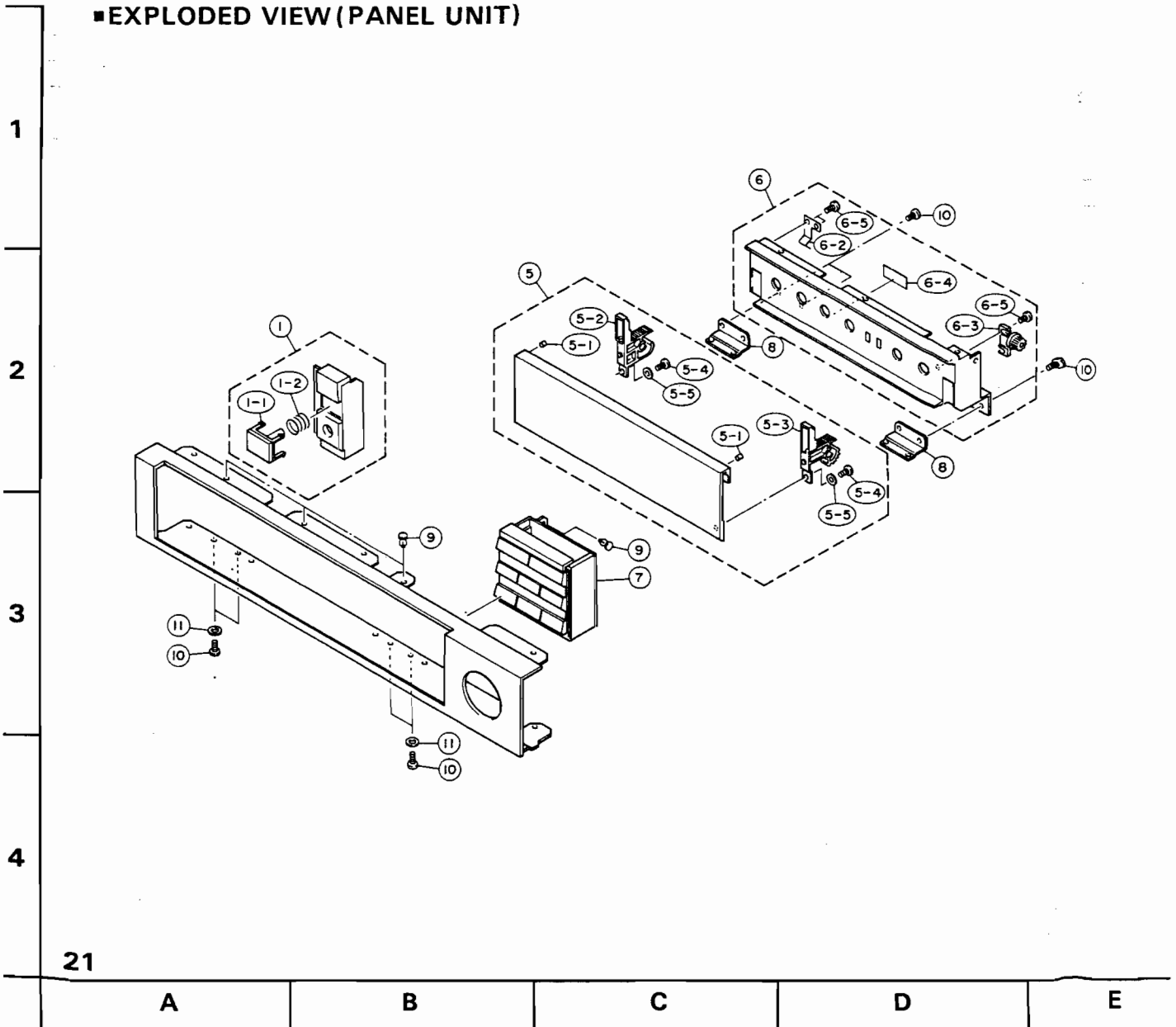
Ref. No.	Part No.	Description	部 品 名	Remarks	Common Model	Markets	ランク
* 1	NB:63:39:90	Panel Unit		パネルユニット			
* 2	NA:09:02:20	Equalizer Circuit Board		イコライザーシート		R,U,C	
* //	NA:09:02:30	//		"		A,G,B	
* 3	NA:09:02:60	Tone Control Circuit Board		トーンコントロールシート		R	
* //	NA:09:02:70	//		"		U,C	
* //	NA:09:02:80	//		"		A,G,B	
4	CB:62:02:00	Cord Stopper	CM-22C	コードストッパー		U,C	
//	CB:62:01:90	//	CM-22B	"		R,G,B	
5	GA:67:54:00	Power Transformer		電源トランス		R	
//	GA:67:55:00	//		"		U,C	
//	GA:67:88:00	//		"		A,G,B	
6	LA:00:10:00	Terminal Lug	CV-3P 94V-O	ラグ端子板		A,G,B	
7	MG:00:22:20	Power Cord	10A 125V 1.98m	電源コード		U,C	
//	MG:00:09:20	//	7.5A 250V 2.5m	"	} Inter-changeable	A	
//	MG:00:14:90	//	7.5A 250V 2.5m	"		A	
//	MG:00:23:10	//	7.5A 250V 2m	"		A	
//	MG:00:16:20	//	2.5A 250V 2m	"		G,B	
//	MG:00:16:30	//	6A 250V 2m	"		R	
8	KA:40:12:60	Slide Switch	SS-12 5A/40A	スライドスイッチ	Voltage Selector	R	
9	KA:90:68:70	Remote Rotary Actuator		リモートスイッチ操作部	REC OUT		
10	KA:90:68:80	//		"	PHONO		
* 11	AA:62:96:70	Rear Panel		リアパネル		R	
* //	AA:62:96:80	//		"		U,C	
* //	AA:62:96:90	//		"		A	
* //	AA:62:97:00	//		"		G,B	
12	AA:62:18:00	Top Cover		トップカバー		C-80	
13	AA:62:18:10	Bottom Cover		ボトムカバー		C-80	
14	AA:09:57:20	Bonding Nut		ボンディングナット			
15	BA:08:98:40	Knob		ツマミ	VOLUME	C-80	
16	BA:08:98:50	//		"	LOUDNESS	C-80	
17	CB:62:30:40	Isolation Bush		絶縁ブッシュ			
18	CB:62:99:30	Knob		ツマミ	BALANCE	C-80	
19	CB:62:08:20	//		"	BASS,TREBLE	A-1000	
20	CB:62:08:40	//		"	REC OUT,PHONO	A-1000	
21	CB:60:76:90	Side Plate		サイドプレート		C-70	
22	CB:62:72:40	Gain Switch, MM		MMゲインスイッチ	PHONO GAIN	C-2X	
23	CB:62:33:60	Isolation Spacer		絶縁スペーサー		C-80,40	
24	CB:62:38:70	Rubber Antivibration		防振ゴム		C-80,40	
25	CB:60:50:60	Damper		ダンパー			
26	CB:60:95:40	//		"			
27	CB:61:84:40	//		"			
28	CB:07:81:70	Saucer		受皿			
29	CB:06:88:80	Plastic River		プラスチックリベット			
30	CB:60:14:40	Stopper, VS		V S ストッパー		R	
31	CB:63:29:60	Damper		ダンパー		C-80	
32	CA:07:59:40	Spacer		トランススペーサー		C-80	
34	NB:62:01:40	Leg Ass'y		脚 Ass'y		C-80	
35	NB:08:14:80	Terminal Unit		ターミナルユニット			
36	EV:90:13:60	Sems Plain Washer	φ3.6×10t=0.8FNM3-3g	セムス平座金			
37	Ei:33:00:86	Binding Head Tapping Screw	3×8 FCM3-BI	バインドタッピングネジ	PACK		
38	Ei:34:01:06	//	4×10 FCM3-BI	"	PACK		

* New Parts (新規部品)

Ref. No.	Part No.	Description	部品名	Remarks	Common Model	Markets	ランク
39	EV 20:30:46	Plain Washer	φ4 FCM3-BI 平座金	PACK			
40	EV 20:30:36	//	φ3 FCM3-BI //	PACK			
41	ED 33:00:66	Binding Head Screw	3×6 FCM3-BI バインド小ネジ	PACK			
42	Ei 33:00:66	Binding Head Tapping Screw	3×6 FCM3-BI バインドタッピングネジ	PACK			
43	Ei 33:01:46	Bind Head Screw	3×14 FCM3-BI バインド小ネジ	PACK			
* 44	CA 07:62:80	Spacer	スペーサー				
45	EV 41:30:36	Toothed Locked Washer	φ3 FCRM3-BI 歯付座金	PACK			
46	EX 60:02:40	BW Head Tapping Screw	3×8.φ10 FCRM3-BI BWヘッドタッピンネジ				
47	CA 08:52:70	Spacer	スペーサー				
48	LB 10:01:80	Short Plug	ショートプラグ				
	CB 06:92:50	Binding Tie	Bk-1 インシュロックタイ				
		Accessories	付属品				
	Mi 06:62:10	Pin Cord	1.2m 出力コード				

*New Parts (新規部品)

■EXPLODED VIEW (PANEL UNIT)



Parts List for Carbon Resistor

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ353100	※	12K Ω	HJ357120	HF857120
1.8 "	HJ353180	※	15 "	HJ357150	HF857150
2.2 "	HJ353220	HF853220	18 "	HJ357180	HF857180
3.3 "	HJ353330	HF853330	22 "	HJ357220	HF857220
4.7 "	HJ353470	HF853470	27 "	HJ357270	HF857270
5.6 "	HJ353560	HF853560	33 "	HJ357330	HF857330
10 "	HJ354100	HF854100	39 "	HJ357390	HF857390
15 "	HJ354150	HF854150	47 "	HJ357470	HF857470
22 "	HJ354220	HF854220	56 "	HJ357560	HF857560
27 "	HJ354270	HF854270	68 "	HJ357680	HF857680
33 "	HJ354330	HF854330	82 "	HJ357820	HF857820
39 "	HJ354390	HF854390	91 "	HJ357910	HF857910
47 "	HJ354470	HF854470	100 "	HJ358100	HF858100
56 "	HJ354560	HF854560	120 "	HJ358120	HF858120
68 "	HJ354680	HF854680	150 "	HJ358150	HF858150
82 "	HJ354820	HF854820	180 "	HJ358180	HF858180
100 "	HJ355100	HF855100	220 "	HJ358220	HF858220
110 "	HJ355110	HF855110	270 "	HJ358270	HF858270
120 "	HJ355120	HF855120	330 "	HJ358330	HF858330
150 "	HJ355150	HF855150	390 "	HJ358390	HF858390
160 "	HJ355160	※	470 "	HJ358470	HF858470
180 "	HJ355180	HF855180	560 "	HJ358560	HF858560
220 "	HJ355220	HF855220	680 "	HJ358680	HF858680
270 "	HJ355270	HF855270	820 "	HJ358820	HF858820
330 "	HJ355330	HF855330	1.0M Ω	HJ359100	HF859100
390 "	HJ355390	HF855390	1.2 "	HJ359120	※
470 "	HJ355470	HF855470	1.5 "	HJ359150	HF859150
510 "	※	HF855510	1.8 "	HJ359180	HF859180
560 "	HJ355560	HF855560	2.2 "	HJ359220	HF859220
680 "	HJ355680	HF855680	3.3 "	HJ359330	HF859330
820 "	HJ355820	HF855820	3.9 "	HJ359390	※
910 "	HJ355910	HF855910	4.7 "	HJ359470	※
1.0K Ω	HJ356100	HF856100			
1.2 "	HJ356120	HF856120			
1.5 "	HJ356150	HF856150			
1.8 "	HJ356180	HF856180			
2.0 "	HJ356200	HF856200			
2.2 "	HJ356220	HF856220			
2.4 "	HJ356240	HF856240			
2.7 "	HJ356270	HF856270			
3.0 "	HJ356300	HF856300			
3.3 "	HJ356330	HF856330			
3.6 "	HJ356360	HF856360			
3.9 "	HJ356390	HF856390			
4.7 "	HJ356470	HF856470			
5.1 "	HJ356510	HF856510			
5.6 "	HJ356560	HF856560			
6.8 "	HJ356680	HF856680			
8.2 "	HJ356820	HF856820			
9.1 "	HJ356910	HF856910			
10 "	HJ357100	HF857100			

1/4W Type

HJ35○○○○

10mm

1/6W Type

HF85○○○○

5mm

JUL. '85

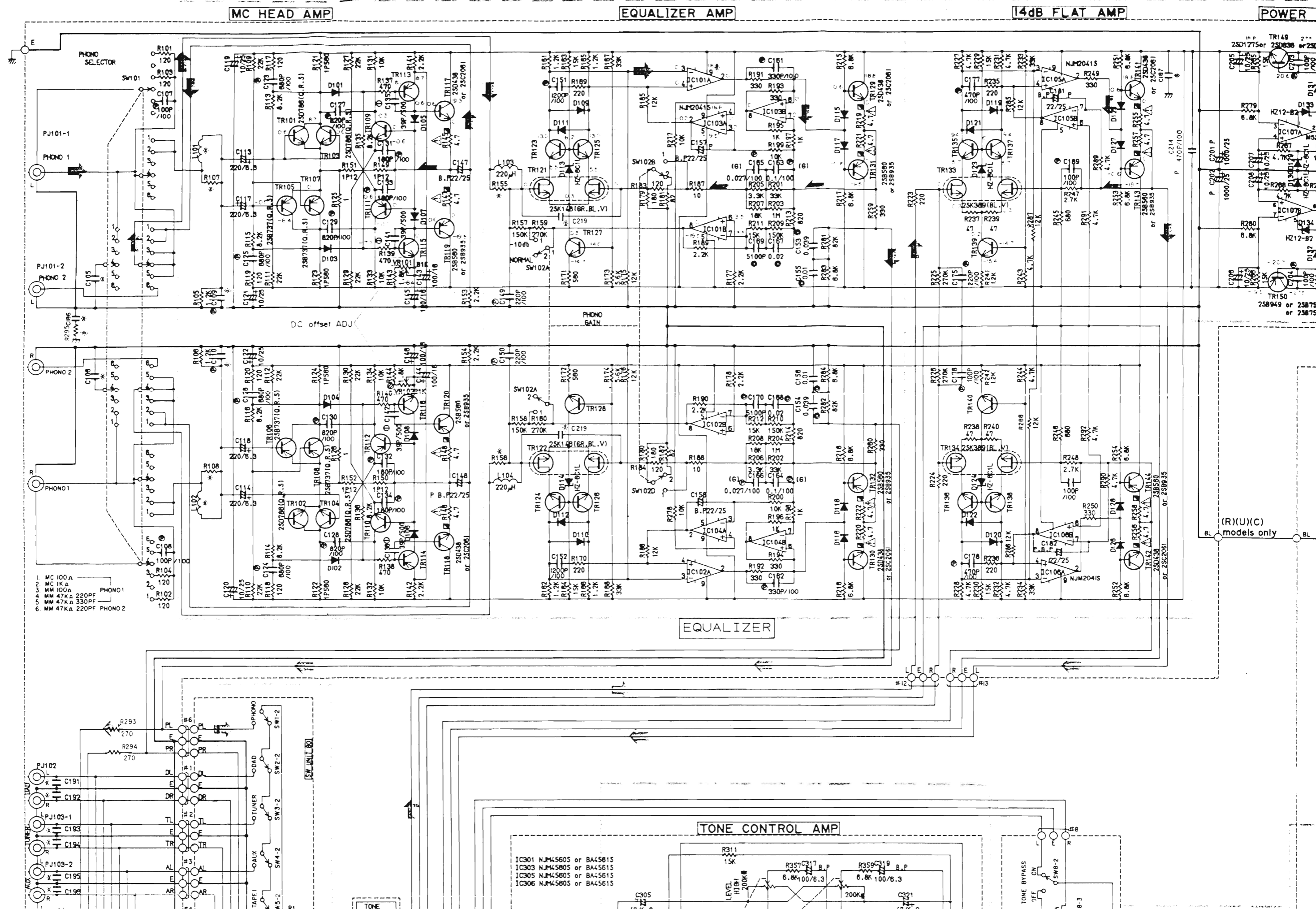
SCHEMATIC DIAGRAM

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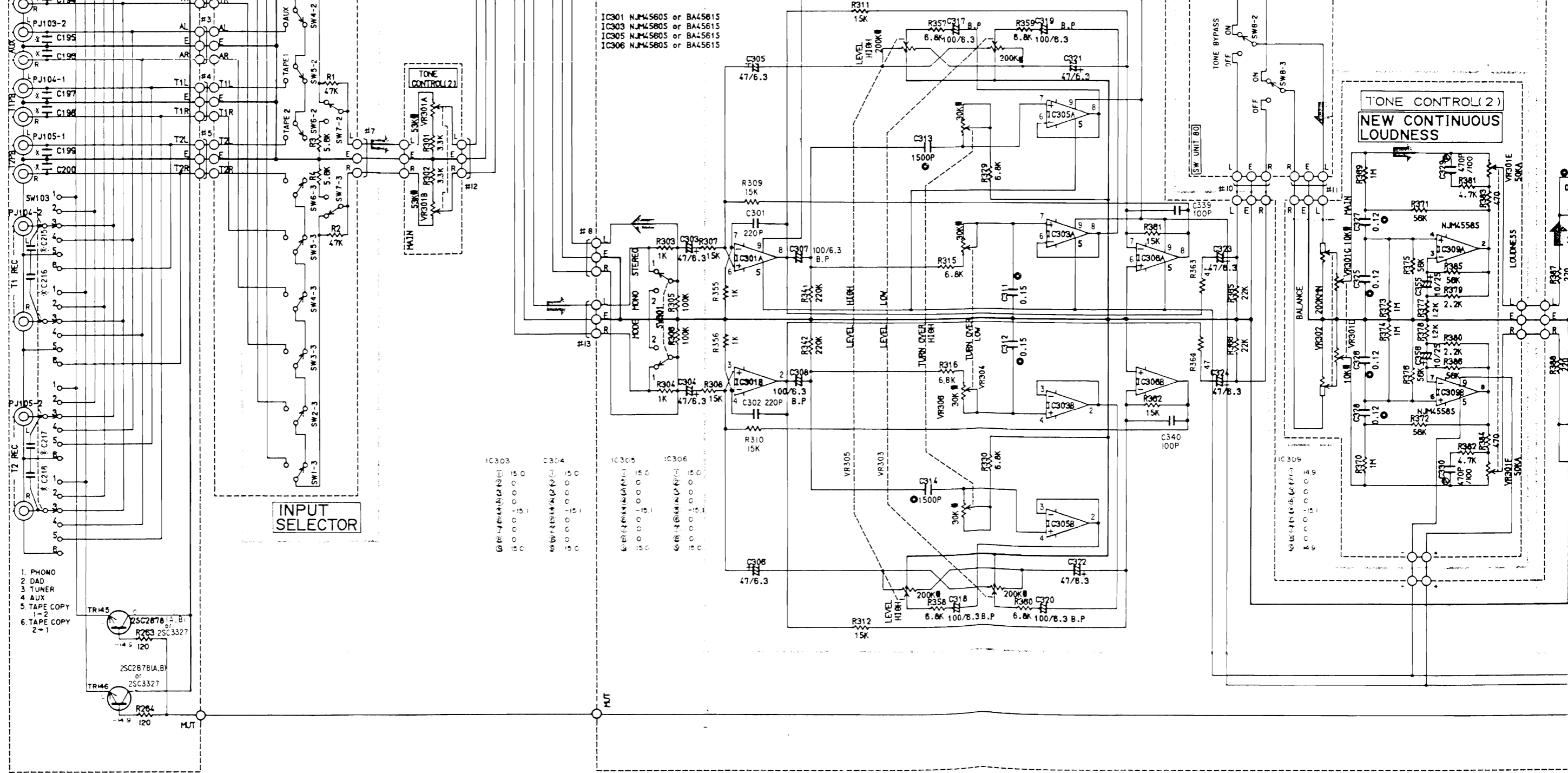
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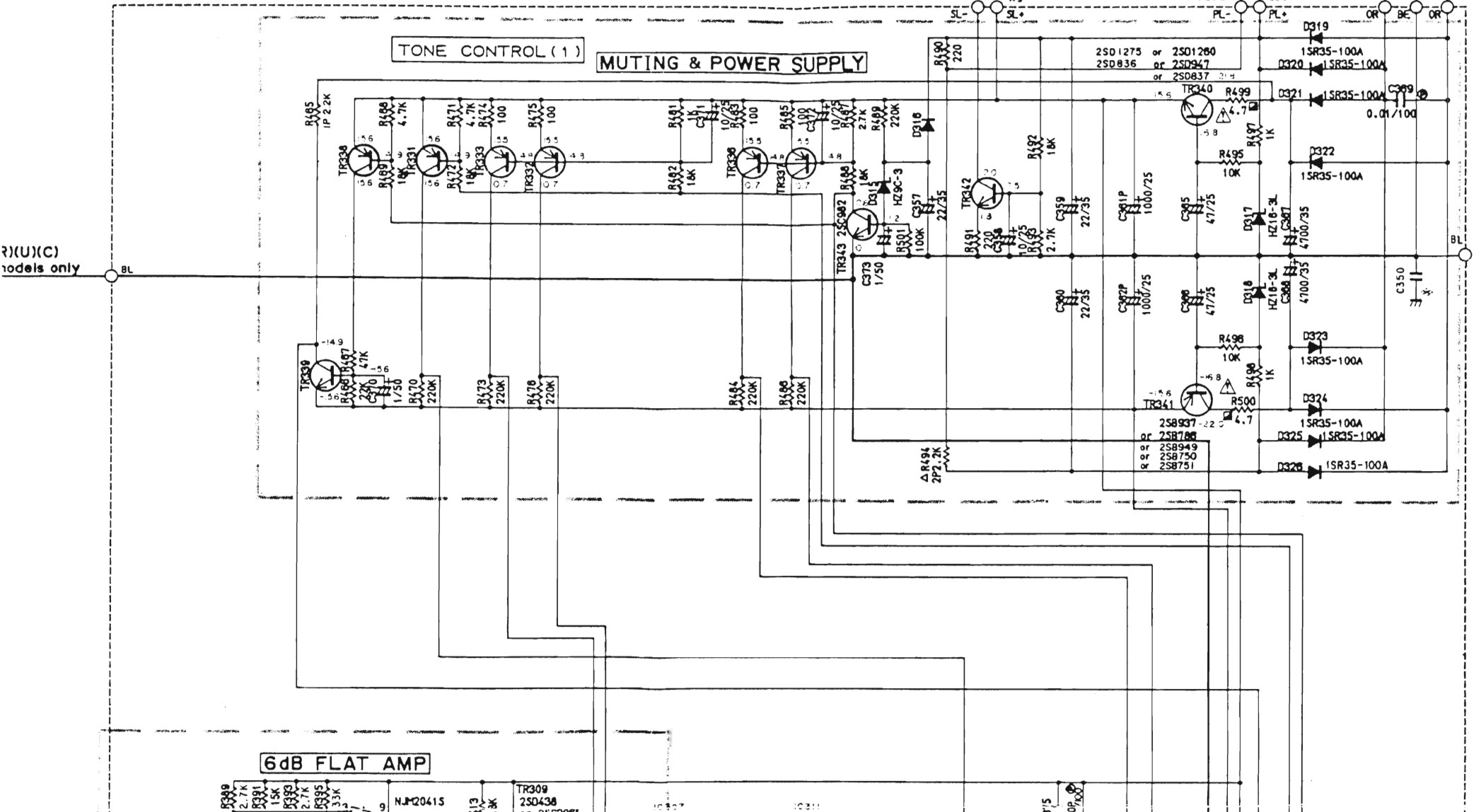
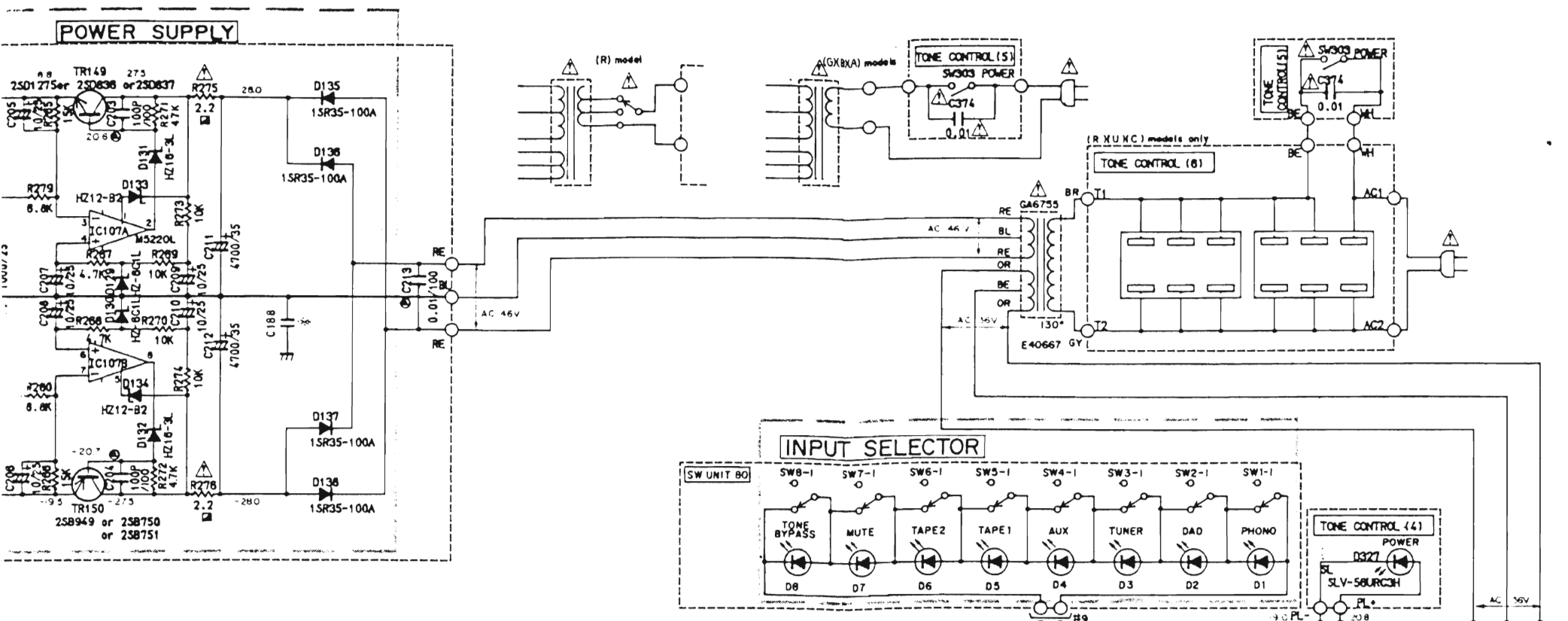
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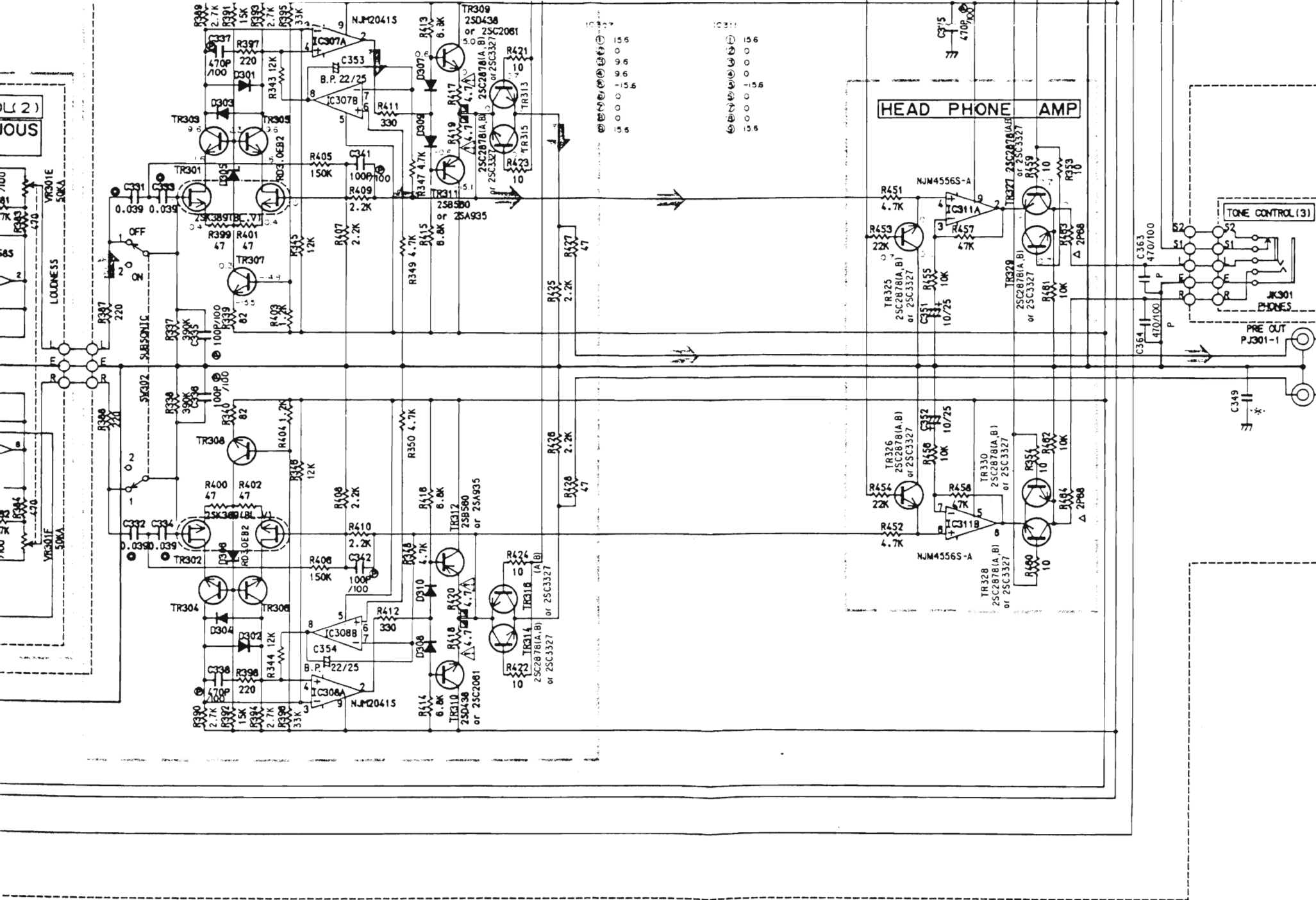


■ PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODE AND ICs.

8

<p>2SA935 2SA1015 (Y) 2SB560 2SB737 (Q.R.S) 2SC982 2SC1815 (Y) 2SC2061 2SC2878 (A, B) 2SC3327</p>	<p>2SD438 2SD439 2SD786 (Q.R.S) 2SD1260</p>	<p>2SB786 2SB937 2SD947 2SD1260</p>	<p>2SB750 2SB751 2SB949 2SD836 2SD837 2SD1275</p>	<p>2SK146 (GR.BL.V)</p>	<p>2SK389 (BL.V)</p>	<p>1S1555 1S2473 1SR35-100A HZ6C1L HZ9C-3 HZ12B2</p>	<p>HZ16-3L RD3.0EB2</p>	<p>NJM2041S NJM4556S-A NJM4558S</p>	<p>BA4561S NJM4560S</p>
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Power Supply Voltage Table

POINT	VOLTAGE
TR149 EMITTER	+20V ± 1V
TR150 EMITTER	-20V ± 1V
TR340 EMITTER	+16V ± 1V
TR341 EMITTER	-16V ± 1V

This schematic diagram is for U.S. and Canadian models. As the following parts and values differ from each model, so refer to the corresponding column.

* marked

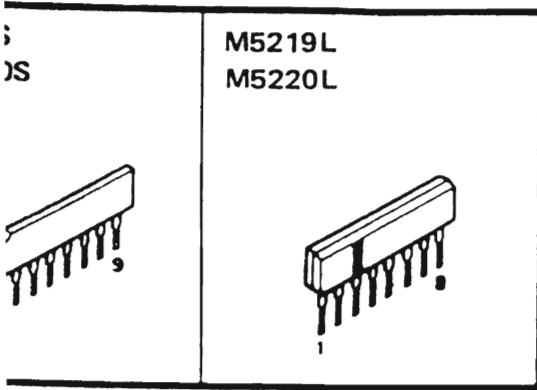
*	R.U.C	A.G.B
C188, 350	OPEN	0.01/500
C186, 187, 348, 349	OPEN	0.01
C105, 106	OPEN	2200P/100
C191~200, 215~218	OPEN	220P
C219, 220	OPEN	82P/500
C109, 110	0.01/100	0.018/100
L101, 102	OPEN	15μH
R107, 108	SHORT	220
R155, 156	220	1.5K
R295	OPEN	4.7
IC101, 102	NJM2041S	M5219L

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊕
NO MARK	CERAMIC CAPACITOR	
⊙	POLYESTEL FILM CAPACITOR (MYLAR)	⊕
○	POLYSTYRENE FILM CAPACITOR	
⊖	MICA CAPACITOR	
Ⓟ	POLY PROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
■	FIRE PROOF CARBON FILM RESISTOR
□	SEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
⊚	1/6W CARBON FILM RESISTOR



CAUTION

• Components having special characteristics are marked \triangle and must be replaced with parts having specifications equal to those originally installed.

* All voltages are measured with a 10MΩ/V DC electric volt meter.
* Schematic diagram is subject to change without notice.