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## Technical Document Distribution

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<b>Brand:</b>	<b>Korg</b>
<b>Model</b>	<b>KEC-42</b>
<b>Product:</b>	<b>Equalizer/Compander</b>
<b>Description:</b>	<b>Service Manual</b>

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# KEC-42

# EQ/COMPANDER

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## 1. SPECIFICATIONS

### Number of Channels:

EQ 4CH

COMPANDER 2CH

### Frequency Response:

EQ EFFECT 20Hz ~ 30kHz ( $\pm 1$ dB)

BYPASS 20Hz ~ 30kHz ( $\pm 1$ dB)

COMP EFFECT 20Hz ~ 20kHz (+1dB, -3dB)

BYPASS 20Hz ~ 20kHz ( $\pm 1$ dB)

### Input:

EQ Typ -10dBm

MAX +21dBm

Impedance 100K $\Omega$  (25k $\Omega$  at link)

### Output:

EQ Typ -10dBm

MAX +21dBm

Impedance 1K $\Omega$

### S/N Ratio (typ):

EQ EFFECT 89dB

(IHF-A)

BYPASS 90dB

COMP EFFECT 79dB

BYPASS 88dB

### Dynamic Range:

EQ EFFECT 102dB

BYPASS 110dB

COMP EFFECT 94dB

BYPASS 108dB

### Equalizer:

Shelving LOW  $\pm 10$ dB at 100Hz

Shelving HIGH  $\pm 10$ dB at 10kHz

Peaking  $\pm 15$ dB, 100Hz ~ 10kHz

### Compander:

Ratio  $\infty$  1 ~ 1 1 ~ 1 2

Threshold Level -30dBm ~ +10dBm

Attack Time 15mS

Release Time 300mS

Max EXP Range 20dB

Max COMP Range 45dB

### Gate

Threshold Level  $-\infty$  ~ +10dBm

Attack Time 2mS

Decay Time ( $\curvearrowright$ ) 30mS ~ 1.8S

Decay Time ( $\sqcap$ ) 30mS ~ 1.8S

### Distortion :

EQ 0.05%

COMP 0.05%

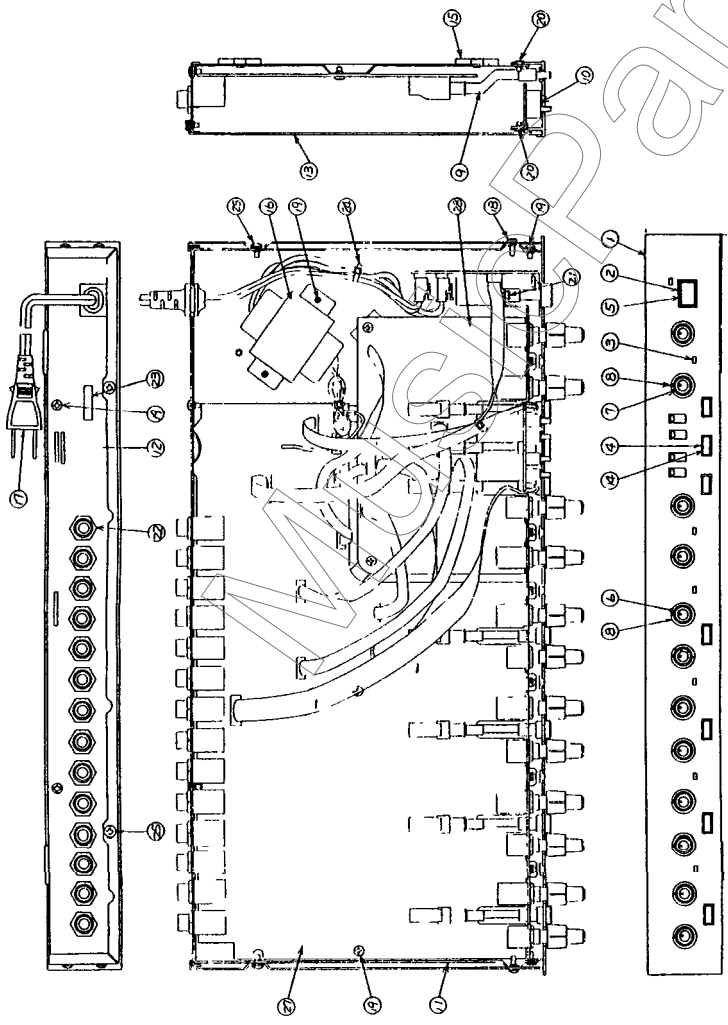
### Power Consumption

: 12W

Dimensions : 435(W) x 249(D) x 44(H)mm

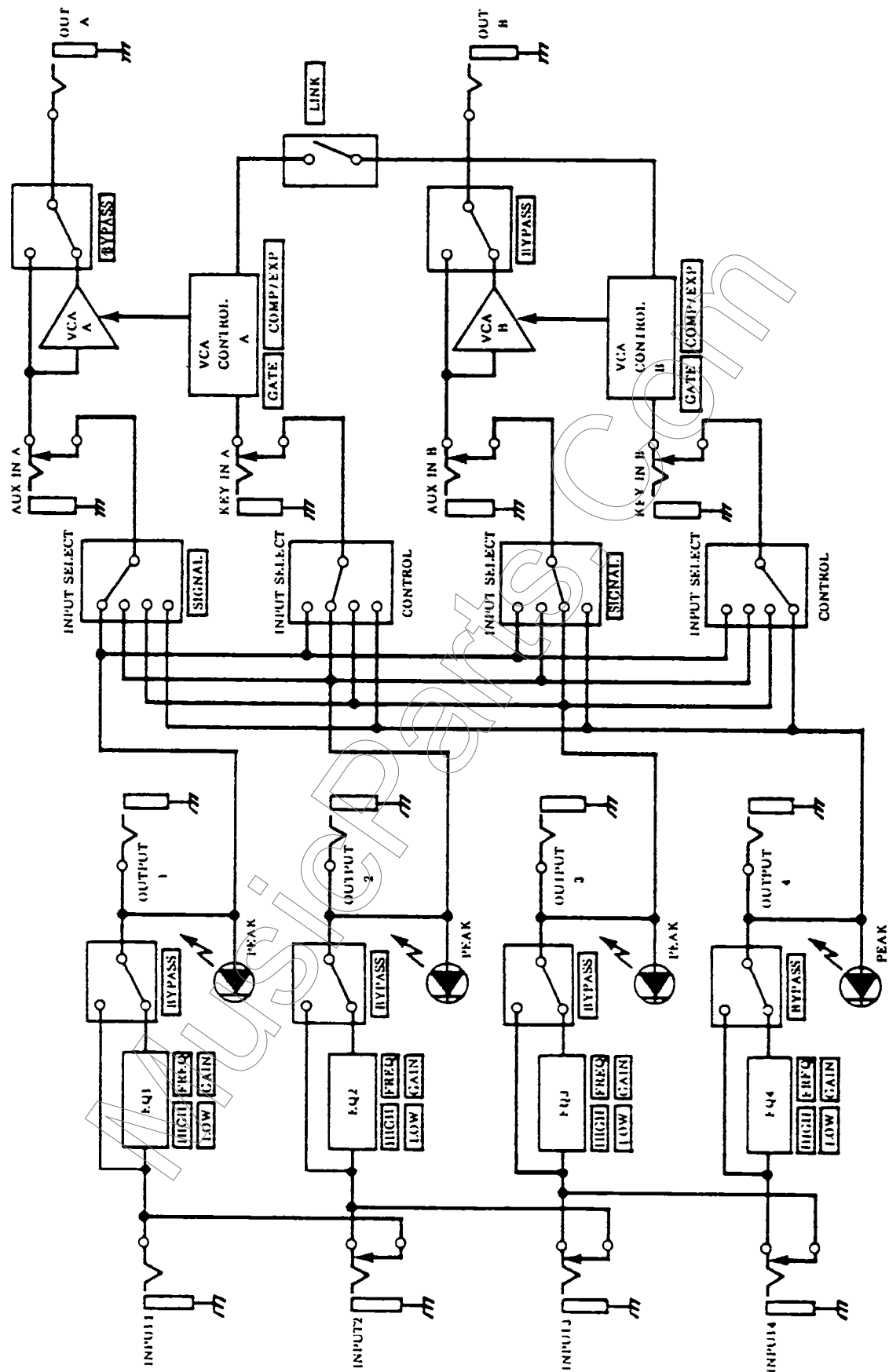
Weight : 2.6Kg

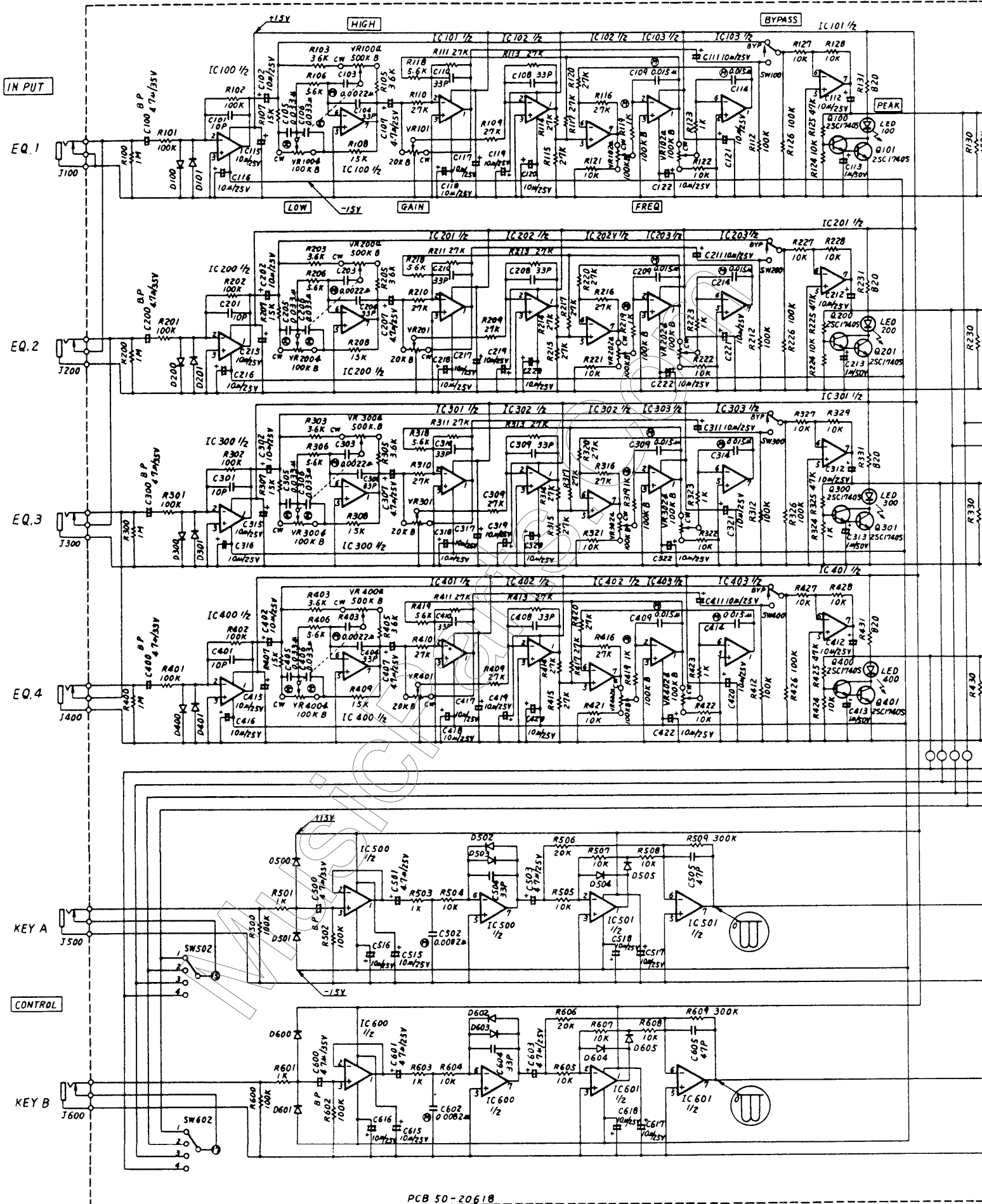
2. STRUCTURAL DIAGRAM



PART NO.	PART NAME	PART CODE	Q'TY
1	FRONT PANEL	60-21992-01	1
2	ESCUTCHEON	60-42953-01	1
3	LED FILTER	60-42952-01	7
4	4X10 ESCUTCHEON	60-43037-01	7
5	9X14 KNOB	60-41887-07	1
6	9 KNOB ASSY (GRAY)	60-43026-01	8
7	9 KNOB ASSY (BEIGE)	60-43026-02	4
8	14 KNOB	60-43027-01	12
9	JOINT	60-43038-01	7
10	BLIKD	60-43048-01	4
11	BOTTOM CASE	60-10739-01	1
12	REAR PANEL	60-21979-01	1
13	TOP COVER	60-10742-01	1
14	4X10 KNOB	60-10742-01	1
15	RUBBER FEET	60-41497-05	7
16	POWER TRANSFORMER	60-42948-01	4
17	AC CORD DP-8J	50-43063-01	1
18	3X8 BIND S-TITE SCREW	50-42850-01	1
19	3X6 BIND B-TITE SCREW	97-40023-11	4
20	3X6 FLAT S-TITE SCREW	97-40014-15	11
21	M3X6 (+) FLAT SCREW	97-40020-06	5
22	12 NUT	88-13006-03	2
23	SERIAL No. SEAL	97-40120-01	14
24	TIE	60-43047-01	1
25	BIND B-TITE EARTH SCREW	12-46250-01	3
26		97-40112-01	4
27	P.C BOARD ASSY (MAIN)	50-539-01	1
28	P.C BOARD ASSY (SUB)	50-558-01	1

### 3. BLOCK DIAGRAM





PCB 50-20618

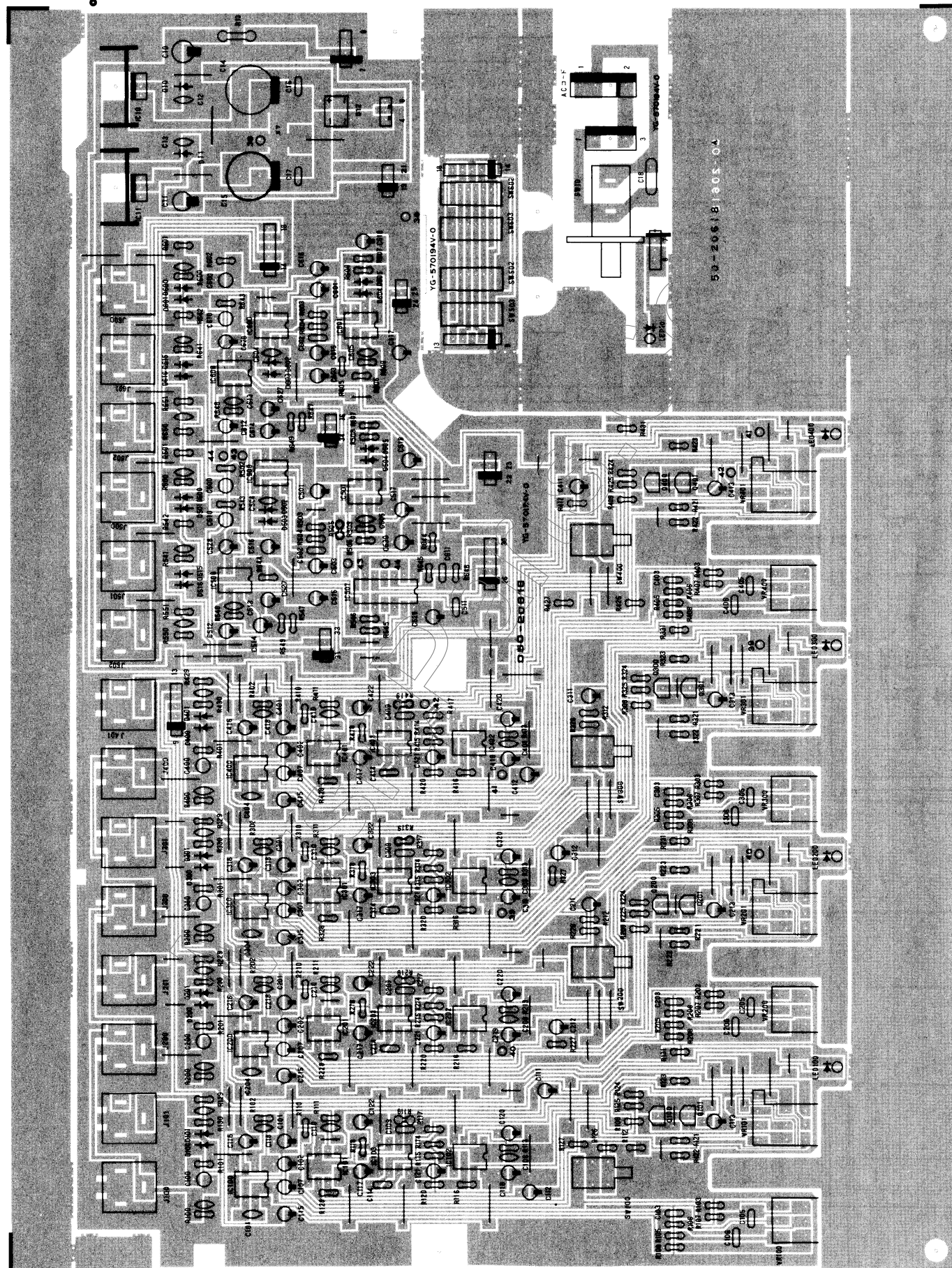
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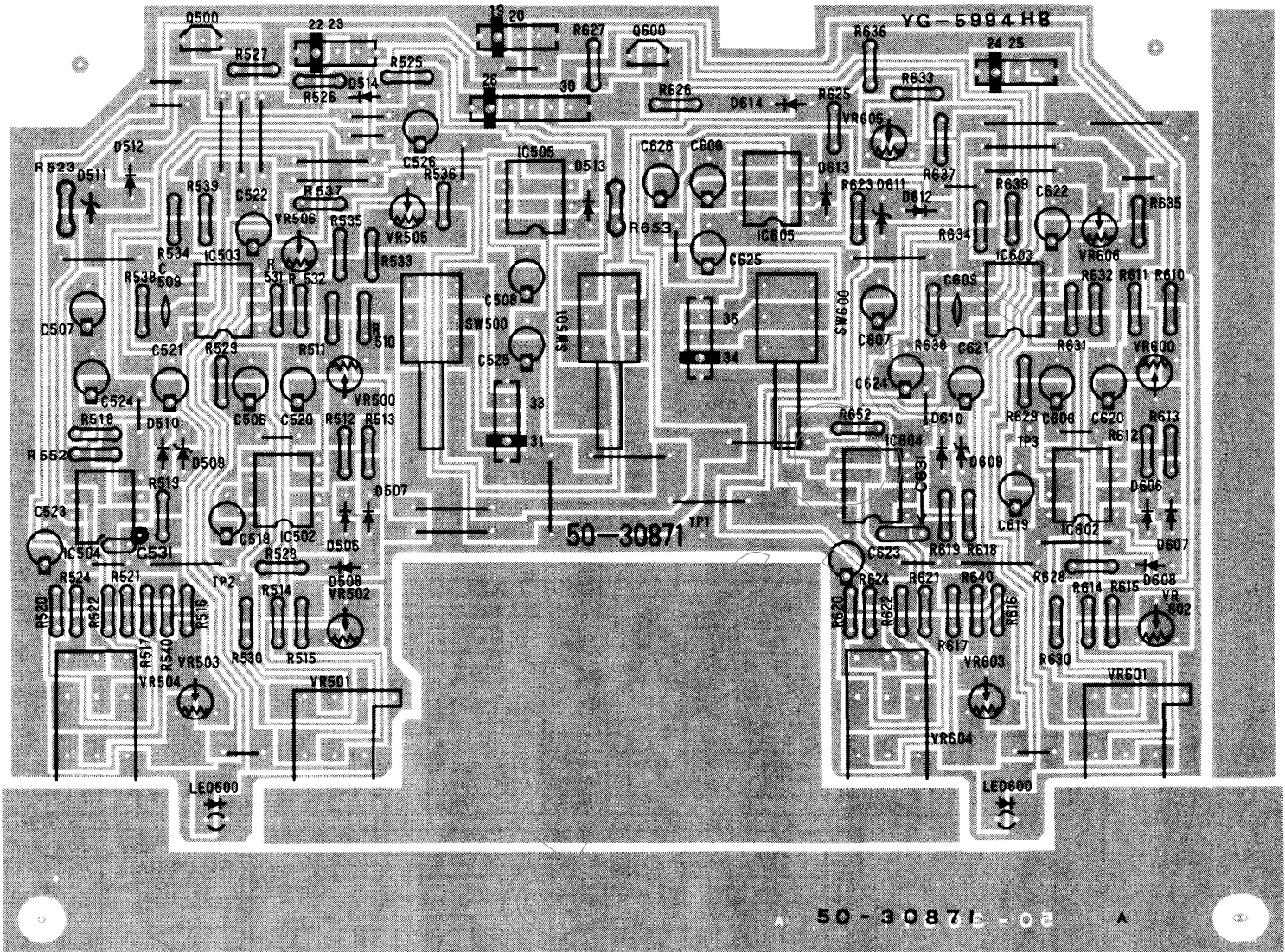


## 5. P.C. BOARD

**50-539**



50-558





## 6. ADJUSTMENT OF VCA CONTROL

There are 5 semi-fixed VRs in each VCA control circuit.

Adjustment should be operated in the following process;

1. Set the minimum threshold level of COMP/EXP.
2. Set the maximum threshold level of COMP/EXP.
3. Set the bias voltage to the Vc-Log input of VCA-IC.
4. Set the maximum ratio of COMP/EXP.
5. Set the maximum threshold level of GATE.

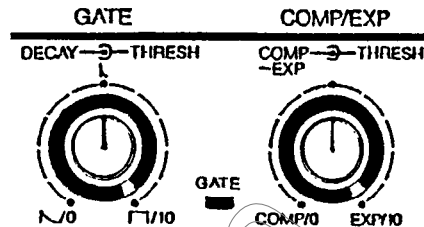
MEASURING INSTRUMENT:

- \*Oscillator
- \*Oscilloscope
- \*Voltmeter

Basic Setting:

1. Put a signal (1KHz) into EQ input 1. And take a monitor of that with an oscilloscope. The equalizer circuit must be set to "BYPASS".
2. Set the input select switches of both SIGNAL and CONTROL to "1". And the compander circuit must be set to "EFFECT"

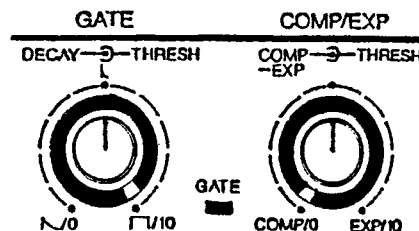
[1] Setting of COMP/EXP minimum threshold level



\*Setting (TP-1 > GND)

1. Monitor TP-2 (TP-3) with the oscilloscope. (DC is being put out.)
2. Set the input level from the oscillator to -32dBm (19.4mV).
3. Turn VR500 (VR600) and fix it at the point where the voltage of TP-2 (TP-3) of the oscilloscope begins to rise from GND (2.5 - 3.5mV) toward "+" side (5 - 6mV).

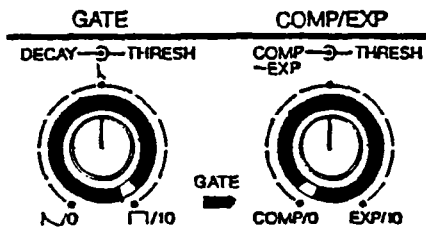
[2] Setting of COMP/EXP maximum threshold level



\*Setting

1. Monitor TP-2 (TP-3) with the oscilloscope. (DC is being put out.)
2. Set the input level to +10dBm (2.45V).
3. Turn VR502 (VR602) and fix it at the point where the voltage of TP-2 (TP-3) of the oscilloscope begins to fall from the "+" side (80mV) to GND (3mV).

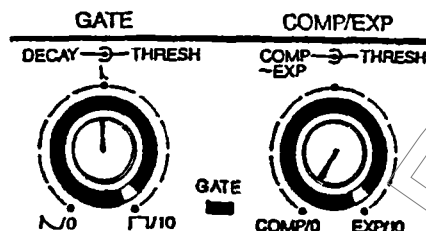
### [3] Adjustment of the bias voltage to VCA-IC



#### \*Setting

1. Monitor the output of GATE and COMP/EXP with the oscilloscope.
2. Set the input level of the oscillator to -10dBm (245mV).
3. Turn VR505 (VR605) and adjust to make both input level and output level the same.

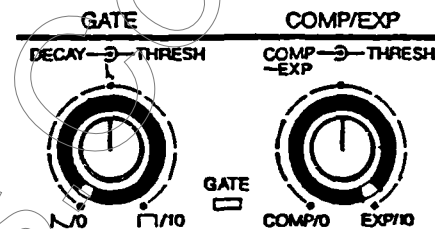
### [4] Setting of COMP/EXT max. ratio



#### \*Setting

1. Take a monitor for the output of GATE and COMP/EXP with the oscilloscope.
2. Vary the input level from the oscillator in a range from -30dBm to 0dBm (24.5mV - 0.775V).
3. Adjust VR506 until the waveform (75mVp-p) stops changing when the input is varied from -30dBm to 0dBm.

### [5] Setting of GATE max. threshold



#### \*Setting

1. Take a monitor for the output of GATE and COMP/EXP with the oscilloscope.
2. Set the input level from the oscillator to +10dBm (2.45V).
3. Turn VR503 (VR603) and fix it at the point where GATE LED comes to light on.

Note: The VR must be turned from the point the LED is not lit.

# 7. PARTS LIST

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
CARBON RESISTORS				
276-31020-12	16S 1 KOHM			13
276-31020-12	16S 1 KOHM			20
276-31030-12	16S 10 KOHM			10
276-31030-12	16S 10 KOHM			30
276-31040-12	16S 100 KOHM			32
276-31530-12	16S 15 KOHM			8
276-31630-12	16S 16 KOHM			2
276-32020-12	16S 2 KOHM			2
276-32030-12	16S 20 KOHM			2
276-32030-12	16S 20 KOHM			2
276-32040-12	16S 200 KOHM			2
276-32220-12	16S 2.2 KOHM			2
276-32230-12	16S 22 KOHM			2
276-32730-12	16S 27 KOHM			36
276-33030-12	16S 30 KOHM			2
276-33040-12	16S 300 KOHM			2
276-33620-12	16S 3.6 KOHM			8
276-34730-12	16S 47 KOHM			10
276-35620-12	16S 5.6 KOHM			8
276-38210-12	16S 820 OHM			2
276-38210-12	16S 820 OHM			4
MYLAR CAPACITORS				
272-10441-68	0 01 $\mu$ F 50V			2
272-10521-54	0 1 $\mu$ F 50V			2
272-15431-54	0.015 $\mu$ F 50V			8
272-22321-54	0 0022 $\mu$ F 50V			4
272-33421-54	0 033 $\mu$ F 50V			8
ELECTROLYTIC CAPACITORS				
274-10637-89	1 $\mu$ F 50V			6
274-10647-71	1 $\mu$ F 50V			4
274-10745-71	10 $\mu$ F 25V			16
274-10745-71	10 $\mu$ F 25V			61
274-10845-71	100 $\mu$ F 25V			2
274-47645-71	4 7 $\mu$ F 25V			8

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
ELECTROLYTIC CAPACITORS				
274-47646-87	4.7 $\mu$ F 35V			8
CAPACITORS				
050-42951-01	0.01 $\mu$ F 250V			1
075-47231-95	470 PF 50V			1
275-10131-41	10 PF 50V			4
275-10451-01	0.01 $\mu$ F 50V			2
275-10551-01	0.1 $\mu$ F 50V			2
275-22131-41	22 PF 50V			2
275-33131-41	33 PF 50V			10
275-47131-41	47 PF 50V			2
TRANSISTORS				
278-31740-84	2SC1740S-R			2
278-31740-84	2SC1740S-R			8
DIODES				
078-50214-01	DF02M			1
278-50344-01	1SS131-T77			14
278-50344-01	1SS131-T77			24
LEDs				
078-50395-01	MVR4361F			2
078-50395-01	MVR4361F			5
LED FILTER				
060-42952-01				7
ICs				
078-00039-01	NJM4558D			22
078-00039-01	NJM 4558D			8
078-00510-15	NJM78M15 FA			1
078-00511-15	NJM79M15 FA			1
078-00545-01	VCA M5206P			1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO FUNCTION	Q'TY
P.C BOARD ASS'YS				
050-539-01	(MAIN)		100JP-D0	1
050-539-02			117US-00	1
			117EX-00	1
			220GE-00	1
			220WG-0V	1
			220SE-00	1
			220SC-00	1
			220FR-00	1
			240AU-00	1
			240UK-00	1
050-539-03	(SUB)		240AF-00	1
050-558-01			117CN-00	1
			100JP-D0	1
			117US-00	1
			117CN-00	1
			117EX-00	1
			220GE-00	1
			220WG-0V	1
			220SE-00	1
			220SC-F0	1
			220FR-00	1
			240AU-00	1
			240UK-00	1
			240AF-00	1
VRs				
050-42970-01				4
050-42972-01				2
050-42973-01				2
050-43037-01				4
RESISTORS				
050-42388-04	85K OHM			2
050-42388-05	810K OHM			8

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
SLIDE SW				
050-42974-01				4
POWER SW				
050-42708-01				1
PUSH SWs				
050-42975-01				3
050-42975-01				4
POWER TRANSFORMERS				
050-43063-01			100JP-D0	1
050-43064-01			117US-00	1
			117CN-00	1
			117EX-00	1
			220GE-00	1
050-43065-01			220GW-0V	1
			220SE-00	1
			220SC-00	1
			220FR-00	1
			240AU-00	1
			240UK-00	1
			240AF-00	1
JACK				
050-41544-02				14
TEST POINT PIN				
050-41114-01				3
AC CORDS				
050-42473-01	DP-8J		117CN-00	1
050-42850-01			100JP-D0	1
050-42851-01			117US-00	1
050-42852-01			220GE-00	1
			220GW-0V	1
			220SE-00	1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
050-42852-01			220SC-00	1
			220FR-00	1
050-42905-01			24DAF-00	1
050-42965-01			240UK-00	1
050-43080-01			240AU-00	1
			117EX-00	1
KNOBS				
060-41497-05	4 x 10			7
060-41887-07	9 x 14			1
060-43026-01	ASS'Y			8
060-43026-01	ASS'Y			4
060-43027-01				12
FRONT PANEL				
060-21992-01				1
REAR PANEL				
060-21979-01				1
BOTTOM CASE				
060-10739-01				1
RUBBER FEET				
060-42948-01				4
MOUNT ADAPTOR				
060-43050-01				2
TOP COVER				
060-10742-01				1
L READ WIRE SET				
050-43039-01				1
SERIAL No.				
060-43047-01				1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
SCREWS				
088-13006-03	M3 x 6(+) FLAT			2
097-40014-15	3 x 6 BIND B-TITE			11
097-40020-06	3 x 6(+) FLAT S-TITE			5
097-40023-11	3 x 8(+) BIND S-TITE			4
097-40112-01	BIND B TITE EARTH			4
NUT				
097-40120-01	12			14
BLIND				
060-43048-01				4
JOINT				
060-43038-01				7
ESCUTCHEONS				
060-42953-01	4 x 10			1
060-43037-01				7