

ROLAND ELECTRONIC PIANO MODEL EP-30

TOUCH RESPONSE TYPE

ROLAND PIANO

SERVICE NOTE

THE FIRST EDITION



Roland Corporation

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ROLAND PIANO MODEL EP-30

1. SPECIFICATIONS

Keyboard	61 Keys(5 Octaves : F1 - F6)	
Changeover Switches		6
Tone Selectors	PIANO I	
	PIANO II	
	HARPSICHORD I	
	HARPSICHORD II	
BASS Changeover Switch		
VIBRATO Switch		
Control Knobs		6
Main VOLUME (with SENS.-OFF Switch; Pull the Main		
VOLUME knob, and touch-sensitivity will		
be OFF.)		
TONE Control		
BASS Volume		
VIBRATO RATE		
VIBRATO DEPTH		
PITCH Control		
OUTPUT Jack (high impedance)		1
PEDAL Jack (for DP-1)		1
PHONES Jack (for Headphones of general stereo amplifier).		1
POWER Switch		
Pilot Lamp		
AC Voltage	: 100V, 117V, 220V, 250V, 50/60Hz	
Power Consumption	: 10VA	
Dimensions	: 900(W) x 300(D) x 150(H)mm	
	(35.4(W) x 11.8(D) x 5.9(H)inch)	
Weight	: 14.5Kg(31.9Lbs)	
Accessories	: Music Rack	1
	Pedal Switch(DP-1).....	1
	Connection Cord 2.5m	1
	(with Pin-Plug Adaptor)	

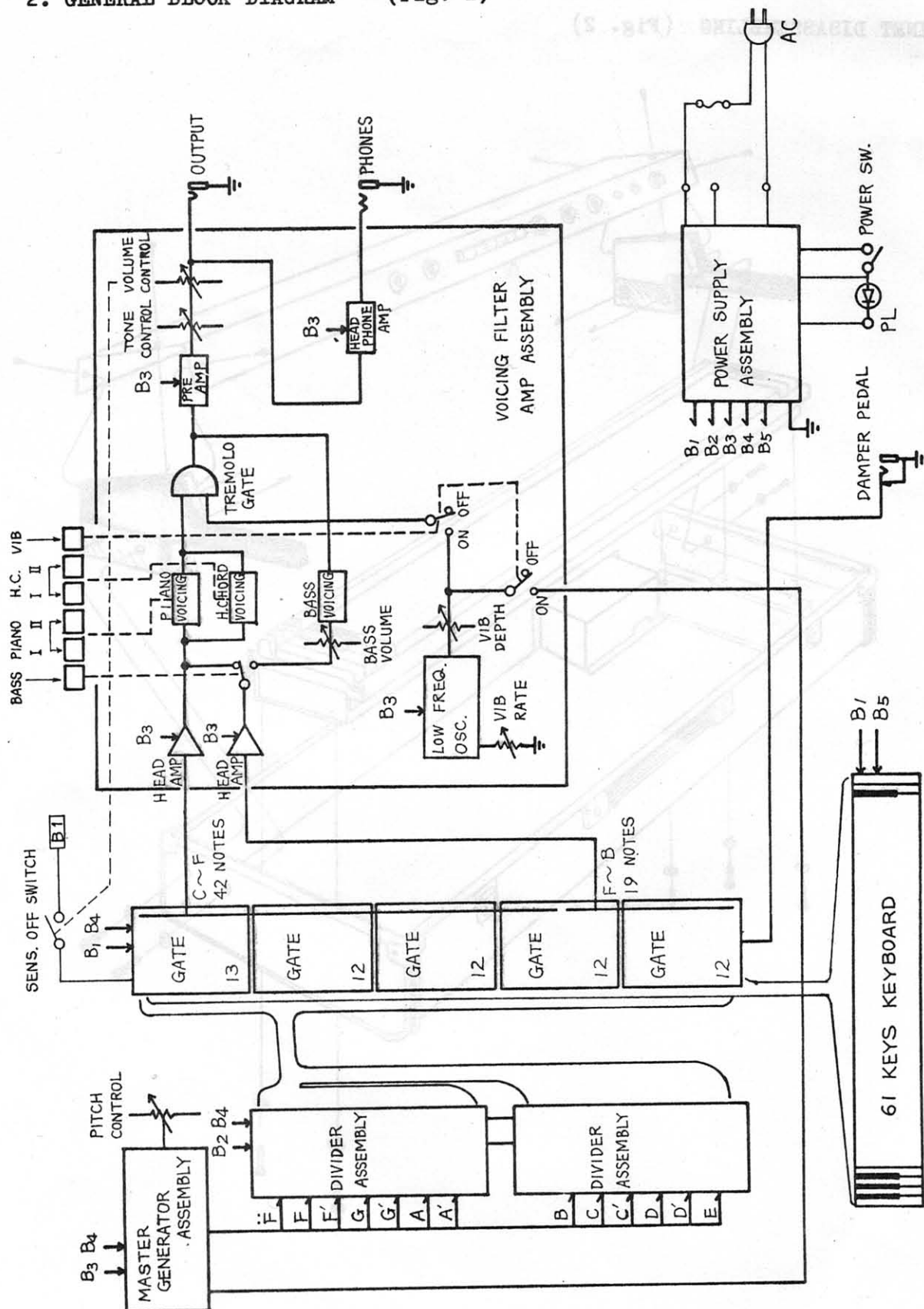
* OUTPUT VOLTAGE

	<u>SENS. ON</u>	<u>SENS. OFF</u>
PIANO	1.8Vp-p max.	0.9Vp-p max.
HARPSICHORD	2.4Vp-p max.	1.2Vp-p max.
BASS(VR max.)	5.0Vp-p max.	2.5Vp-p max.

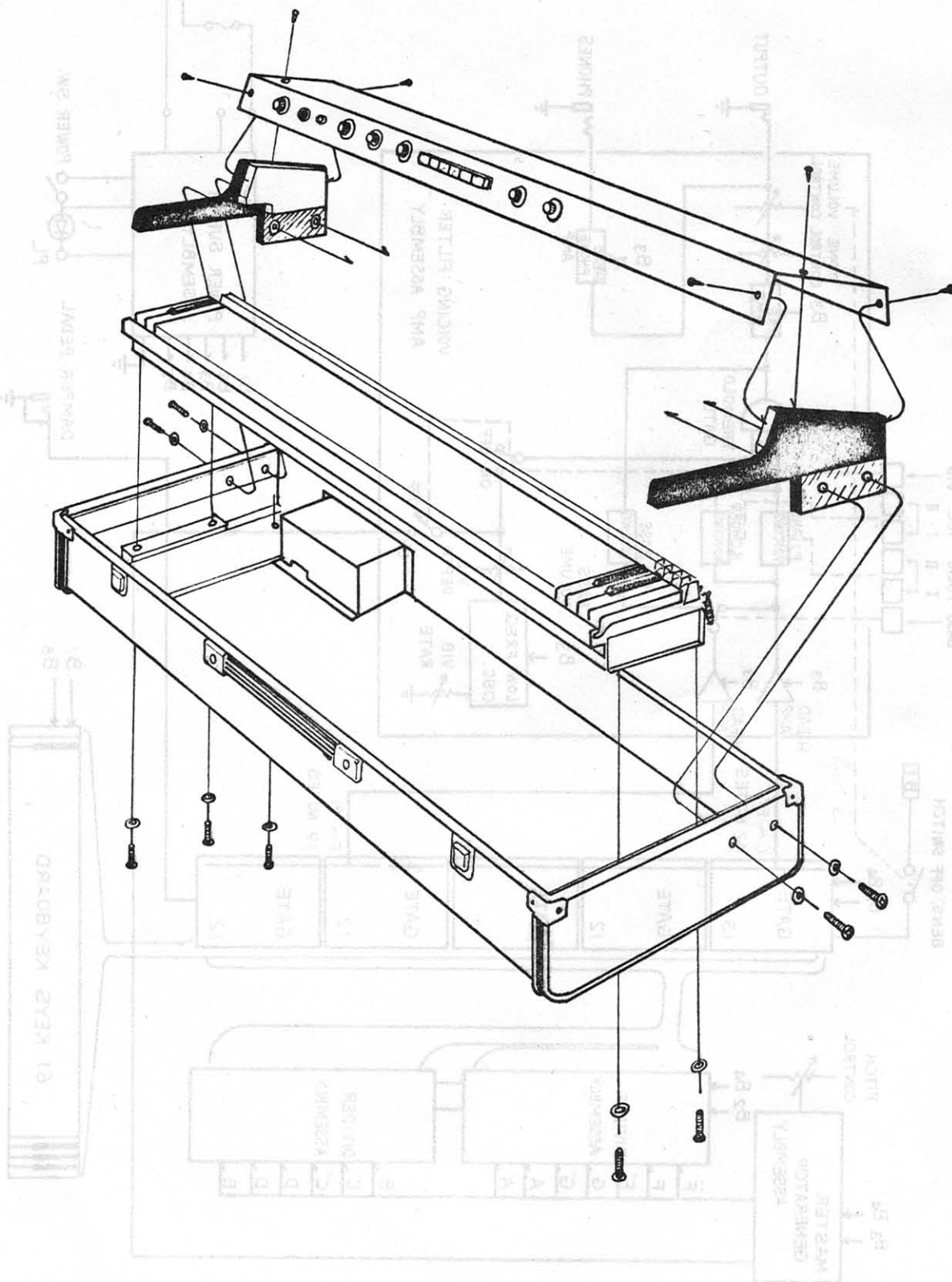
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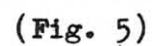
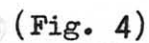
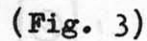
SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

2. GENERAL BLOCK DIAGRAM (Fig. 1)



3. CABINET DISASSEMBLING (Fig. 2)

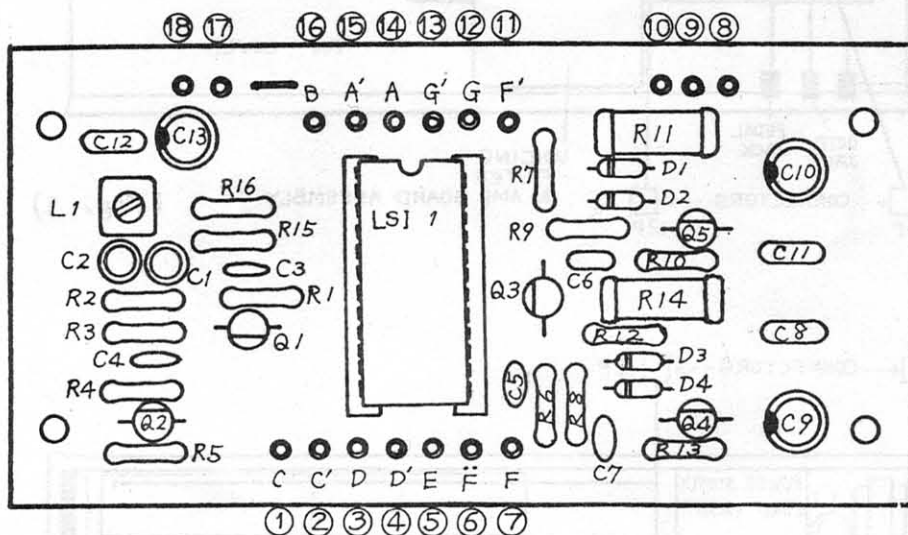




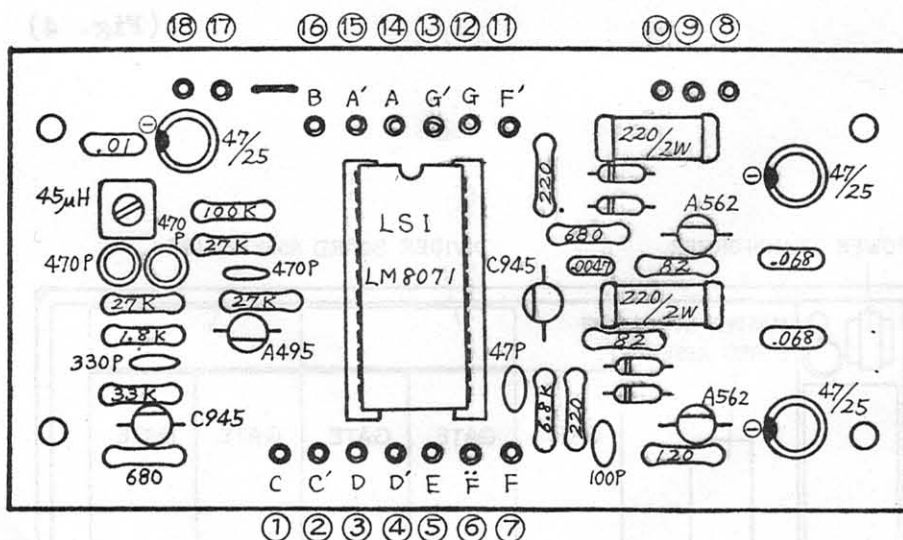
5. PARTS LAYOUT & CIRCUIT DIAGRAM

5-1. MASTER GENERATOR

5-1(a) MASTER GENERATOR BOARD ASSEMBLY (AG-997)



(Fig. 6)

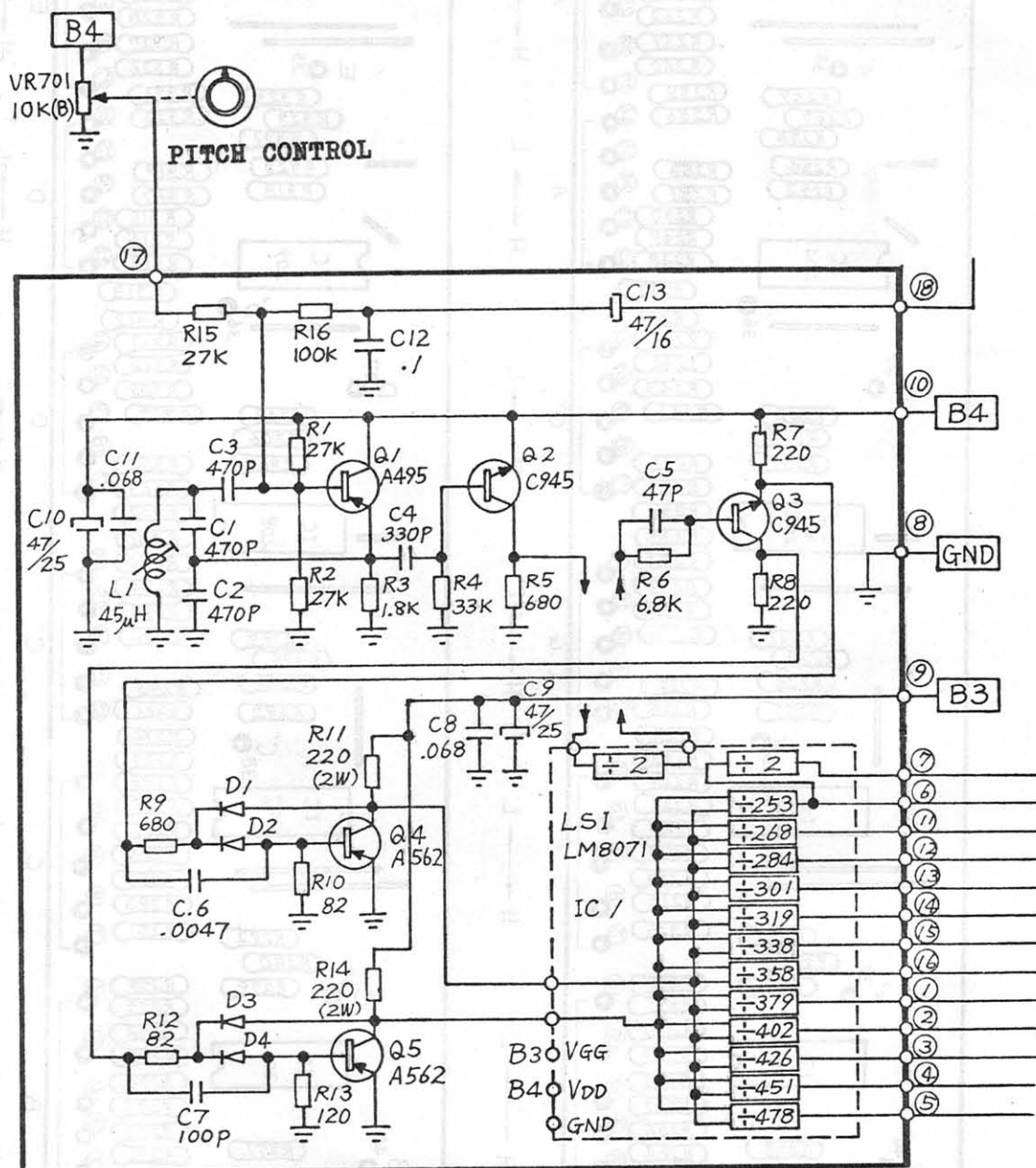


(Fig. 7)

— LS1555 or LS2473

5-1(b) MASTER GENERATOR CIRCUIT DIAGRAM

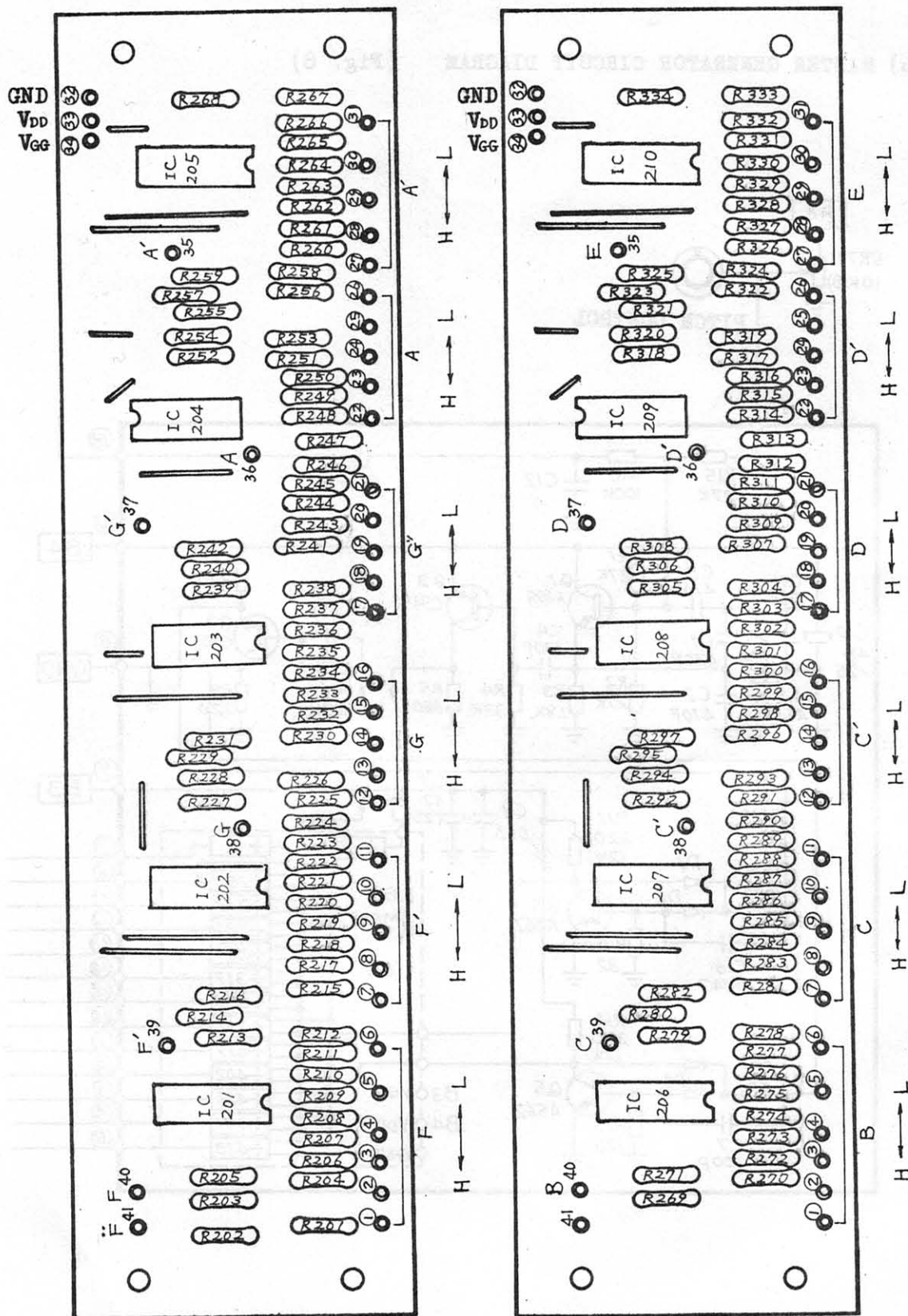
(Fig. 8)



5-2. DIVIDER

5-2(a) DIVIDER BOARD ASSEMBLIES (DV-998, 999)

(Fig. 9)



DV - 999

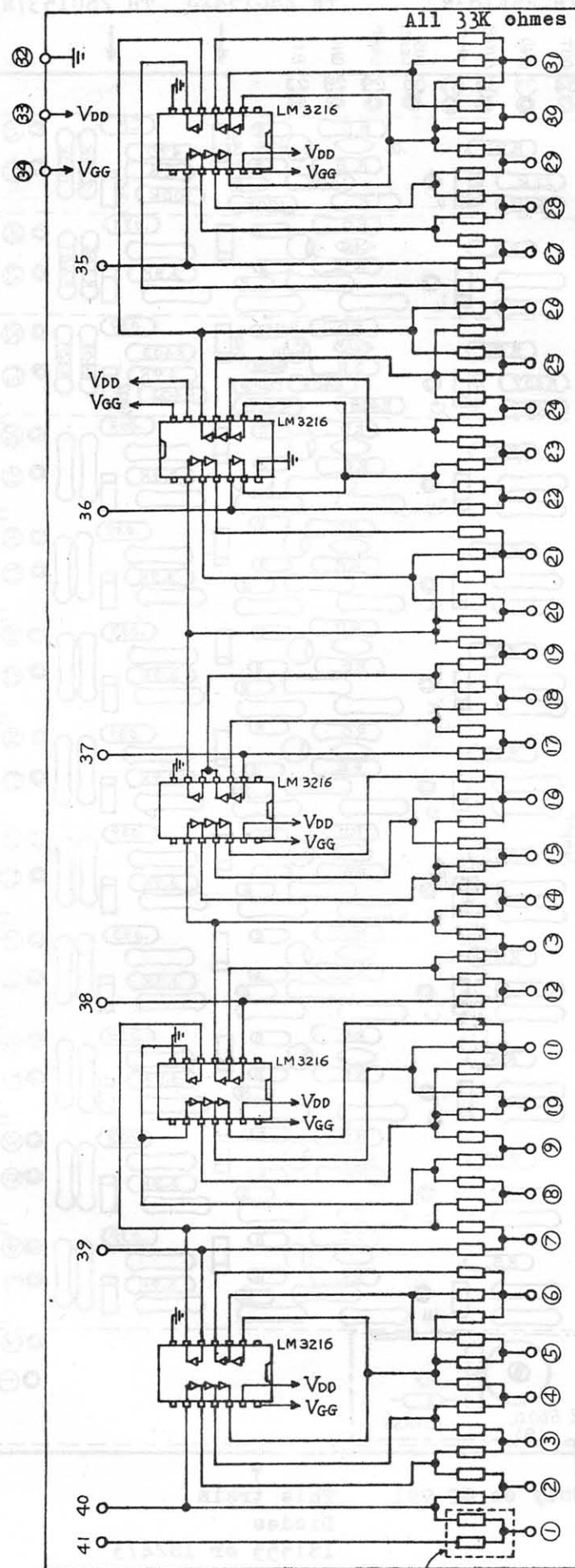
DV - 998

All ICs are LM3216.

All resistors' values are 33K ohms (1/4 W R type).

5-2(b) DIVIDER CIRCUIT DIAGRAM

(Fig. 10)

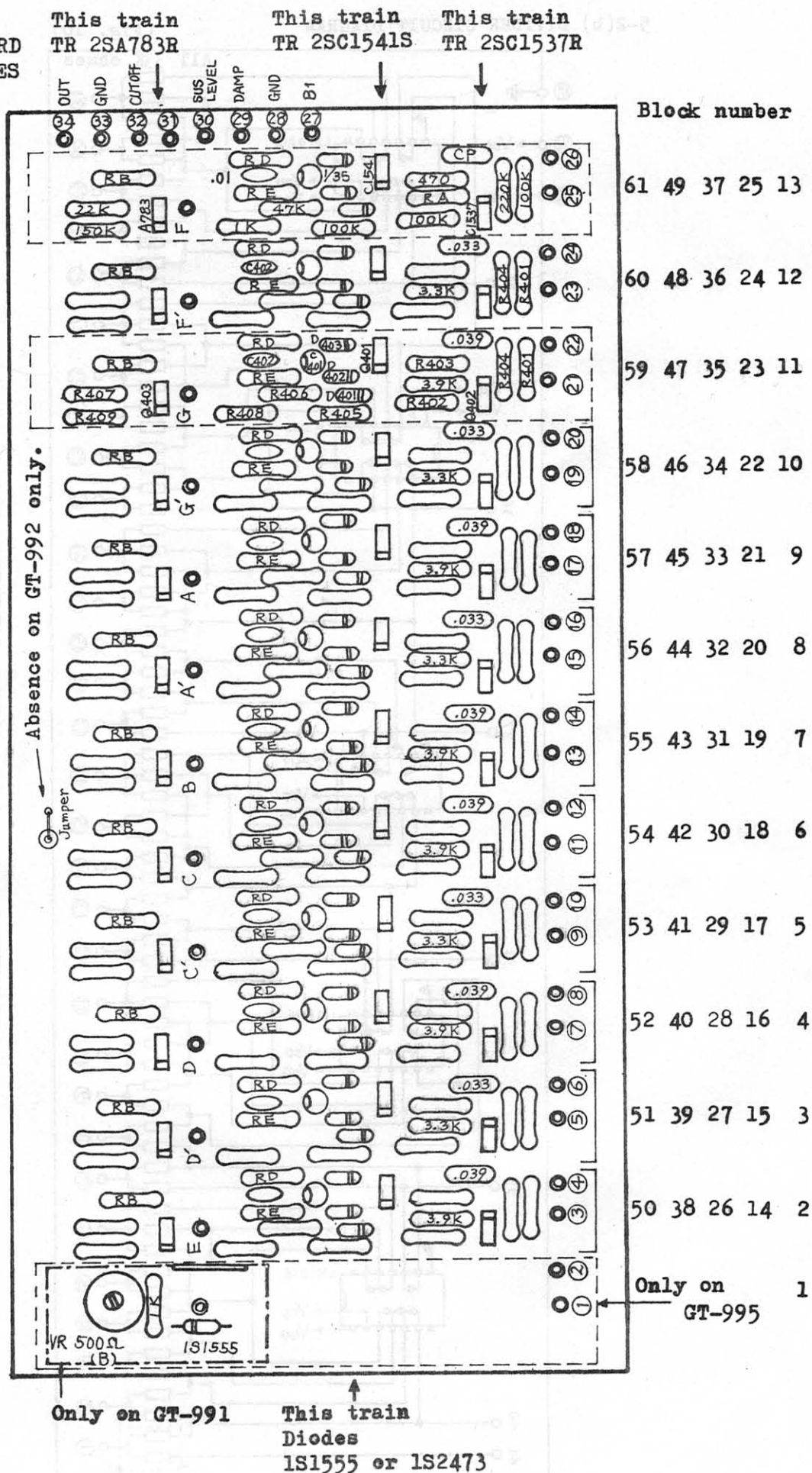


Only on DV-999.

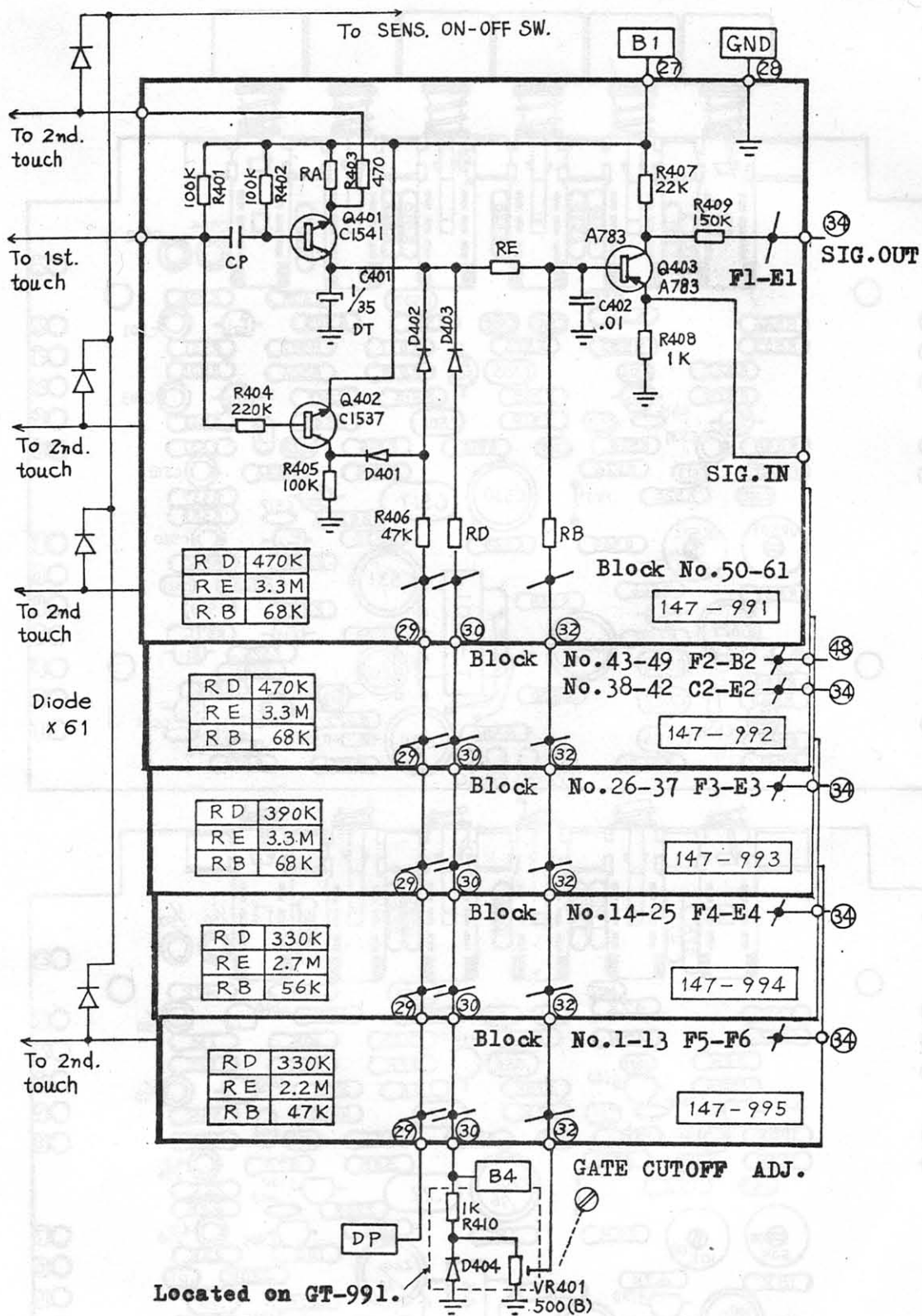
(GT-991, 992,
993, 994, 995)

(Fig. 11)

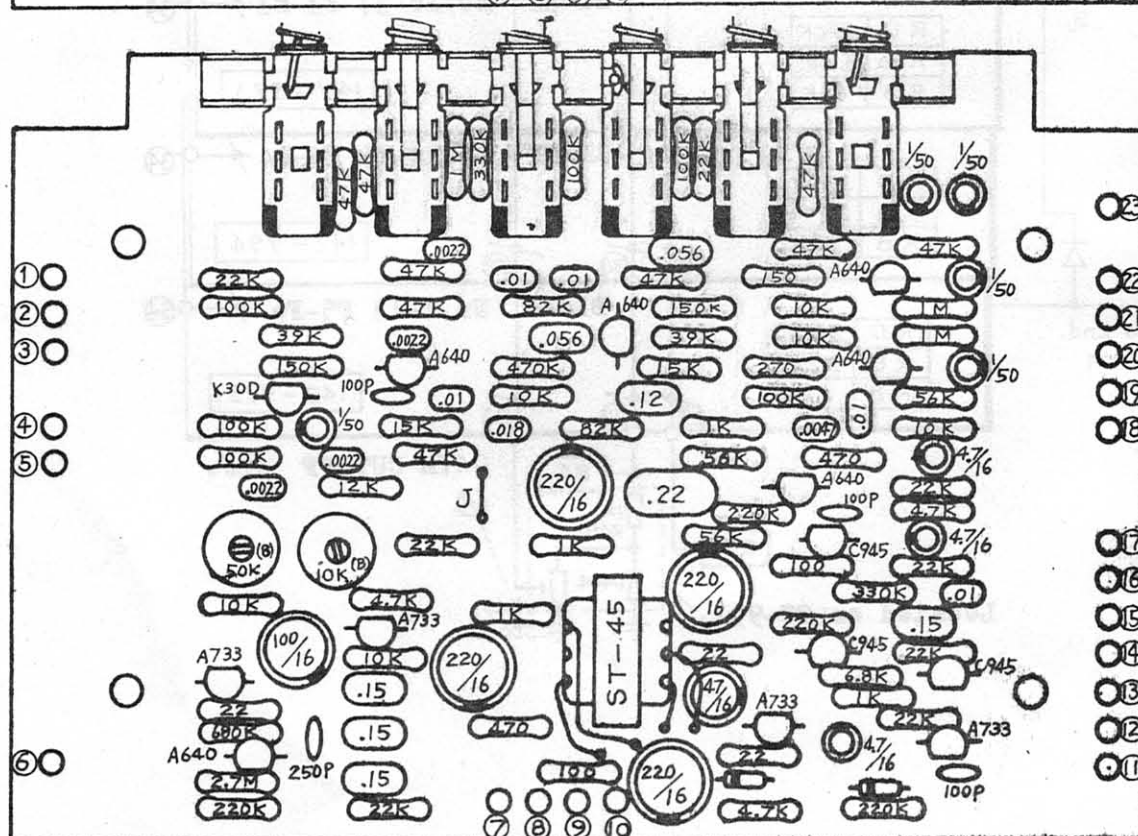
RA	F,G,A,B,C,D,E	3.9K	F',G',A',C',D'	3.3K
CP	"	.039	"	.033
PCB ASSEM. No.	GT-995	GT-994	GT-993	GT-992
RE	2.2M	2.7M	3.3M	3.3M
RD	330K	330K	390K	470K
RB	47K	56K	68K	68K



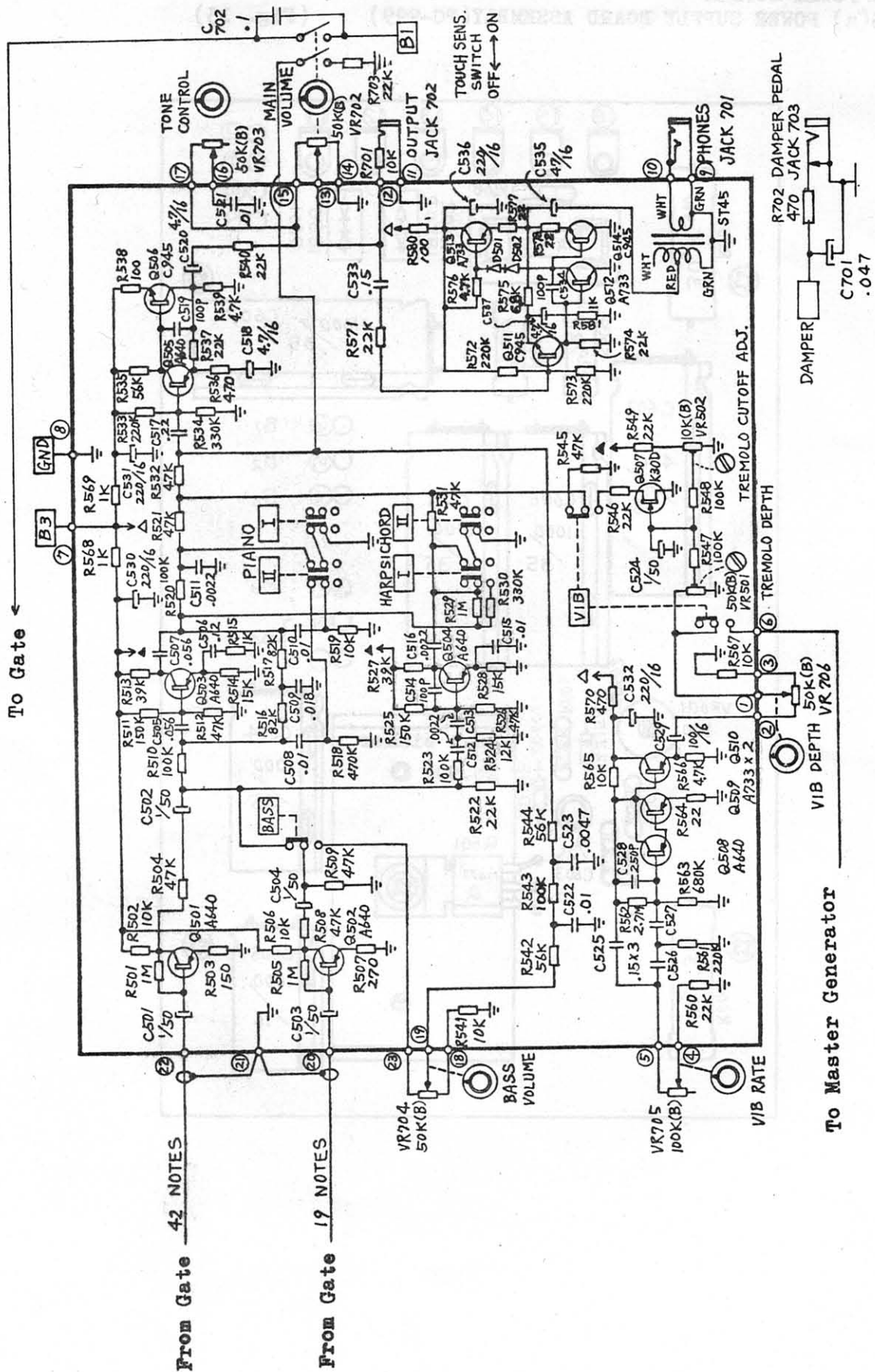
5-3(b) GATE CIRCUIT DIAGRAM (Fig. 12)



(Fig. 13)



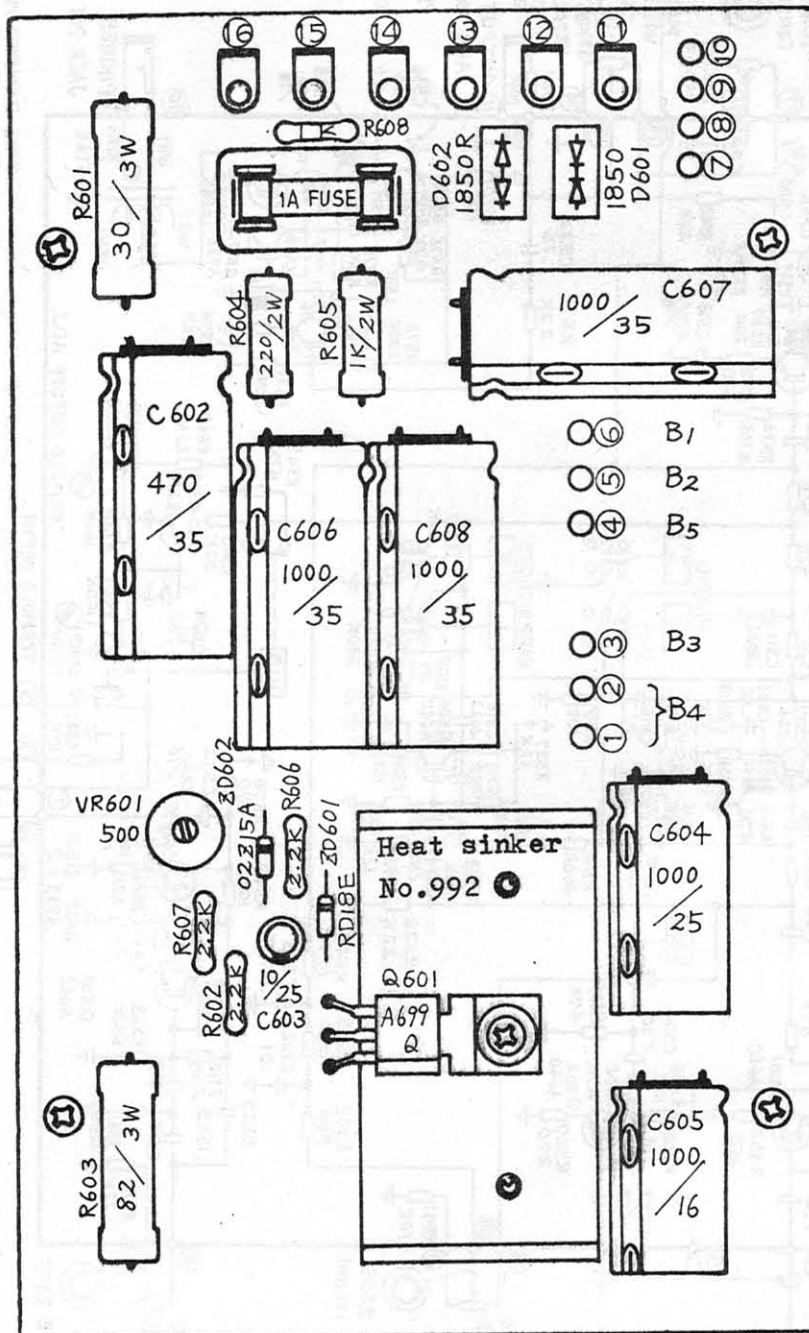
5-4(b) VOICING FILTER & AMPLIFIER CIRCUIT DIAGRAM (Fig. 14)



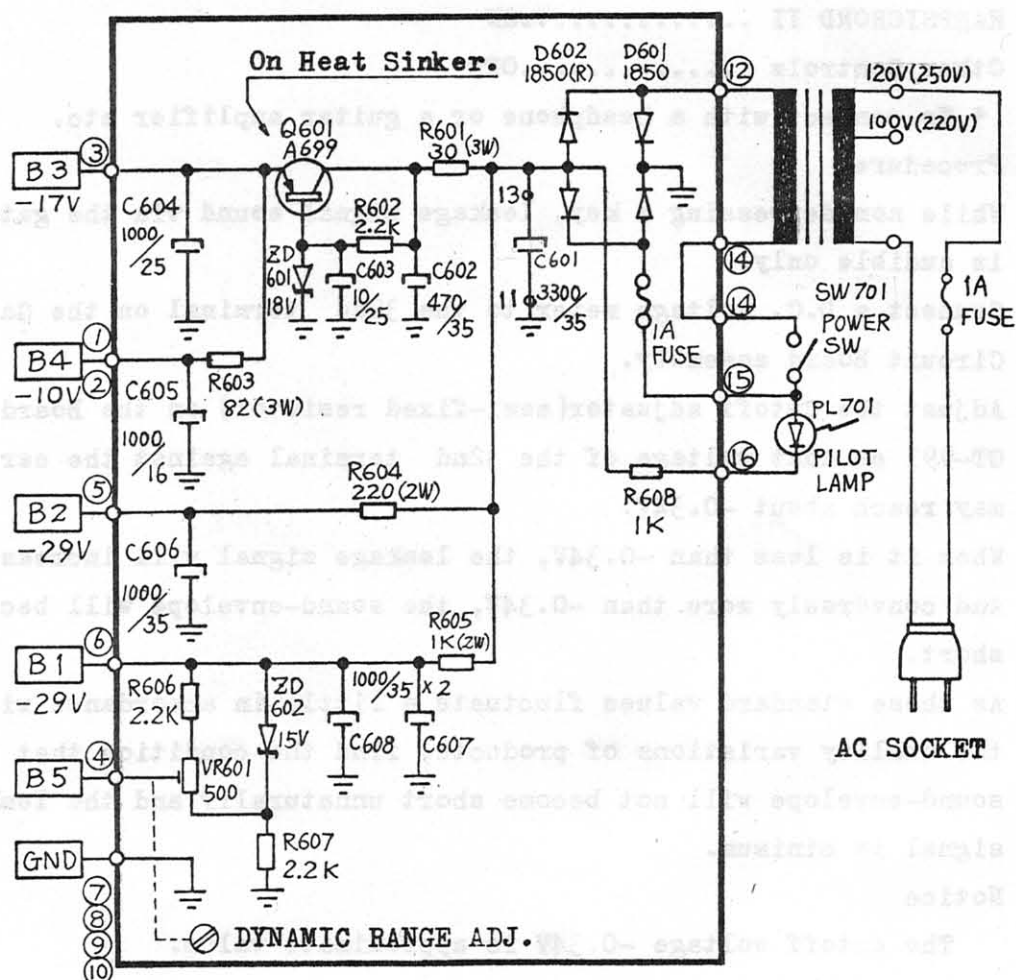
5-5. POWER SUPPLY

5-5(a) POWER SUPPLY BOARD ASSEMBLY(PC-999)

(Fig. 15)



5-5(b) POWER SUPPLY CIRCUIT DIAGRAM (Fig. 16)



6. ALIGNMENT PROCEDURE

6-1. ADJUSTMENT FOR GATE CUTOFF

1) Setting

Main VOLUMEMax.

TONE Control.....Max.

HARPSICHORD IION

Other ControlsOFF

* To connect with a headphone or a guitar amplifier etc.

2) Procedure

While non-depressing a key, leakage signal sound via the gate is audible only.

Connect a D.C. voltage meter to the 32nd terminal on the Gate Circuit Board assembly.

Adjust the Cutoff adjustor(semi-fixed resistor) on the Board GT-991 so that voltage of the 32nd terminal against the earth may reach about $-0.34V$.

When it is less than $-0.34V$, the leakage signal will increase.

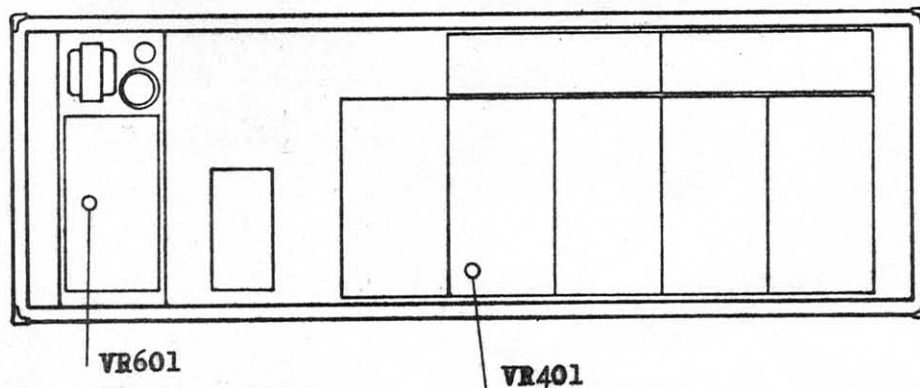
And conversely more than $-0.34V$, the sound-envelope will become short.

As these standard values fluctuate a little in accordance with the quality variations of products, find the condition that the sound-envelope will not become short unnaturally and the leakage signal is minimum.

Notice

The cutoff voltage $-0.34V$ is approximate value.

6-2. ADJUSTMENT FOR DYNAMIC RANGE OF TOUCH SENSITIVITY



For adjusting dynamic range of touch sensitivity.

For adjusting gate cutoff.

(Fig. 17)

- 1) Set the Main VOLUME and the TONE Control at the proper position in accordance with an amplifier or a headphone used.
- 2) Push the Tone Selector PIANO II.
- 3) Connect the \oplus terminal of D.C. voltage meter to the 4th terminal of Power Supply Board, and connect the \ominus terminal of D.C. voltage meter to the 6th terminal of the board.
- 4) Adjust the Dynamic Range Adjuster(semi-fixed resistor) on the Power Supply Board so that the voltage difference between the 4th and the 6th terminal may reach about 13V.
- 5) For EP-30, signal level difference(Dynamic Range) is set at about 20dB.

Here, signal levels are max. signal by Fortissimo depressing key and min. signal by Pianissimo depressing key. And this measure is satisfied when the voltage difference between abovementioned terminal the 4th and the 6th is at about 13V.

In case of the voltage difference is under 13V.

Fortissimo playing is difficult to be done.

In case of the voltage difference is over 13V.

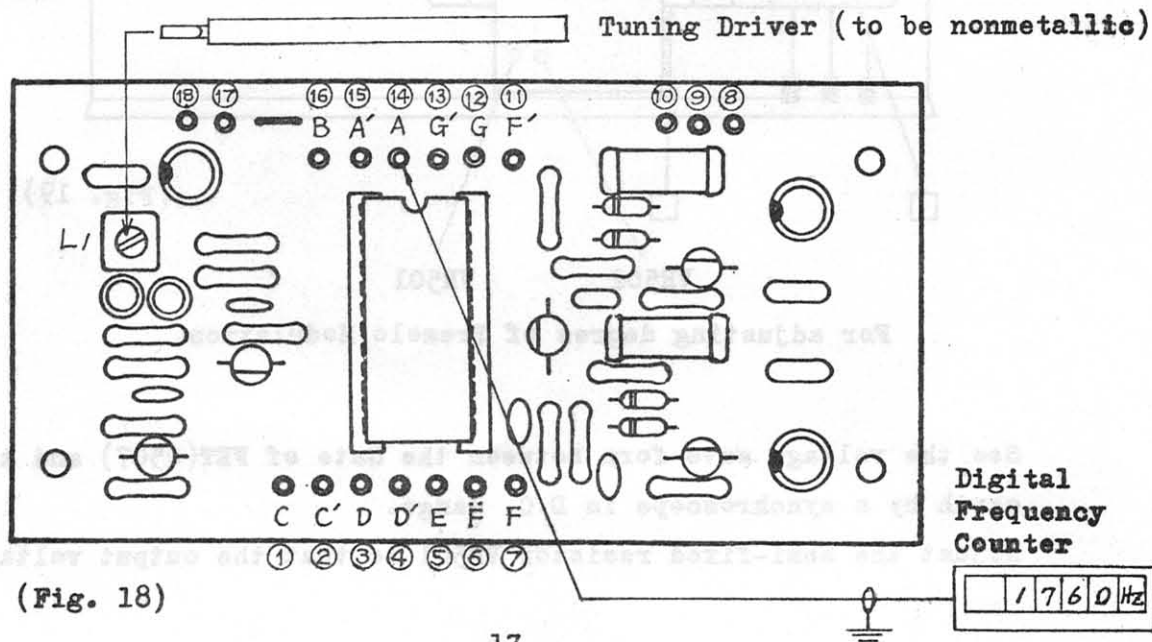
Pianissimo playing is difficult to be done.

The Dynamic Range fluctuates a little in accordance with the quality variations of products.

So, set the Dynamic Range Adjuster(semi-fixed resistor VR601) at the position where Fortissimo playing and Pianissimo playing can be done easily.

The voltage difference 13V is approximate value.

6-3. ADJUSTMENT FOR MASTER GENERATOR



Setting

- 1) Set the PITCH Control knob at the center position.
- 2) Make the VIBRATO Switch OFF.

Count the frequency which appears in the 14th terminal on the Master Generator Board, using a digital frequency counter.

Adjust L1 by the nonmetallic driver so that the frequency may come to 1760Hz. And check the operation of PITCH Control.

In case of max. counterclockwise turning of the PITCH Control knob.

The frequency is about 1744Hz.

In case of max. clockwise turning of the PITCH Control knob.

The frequency is about 1776Hz.

6-4. ADJUSTMENT FOR DEGREE OF TREMOLO MODULATION

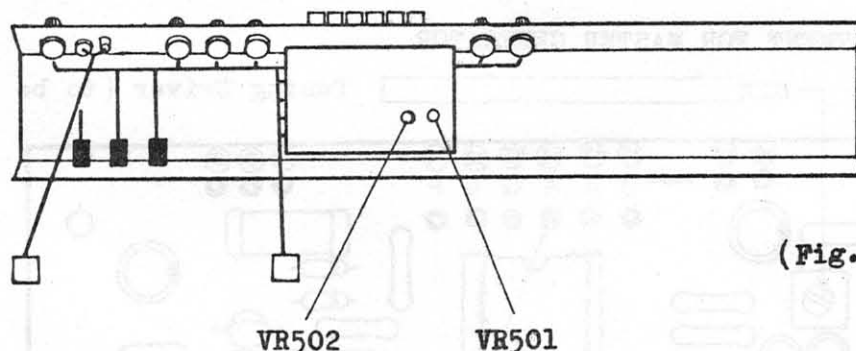
EP-30 can produce both vibrato and tremolo effects simultaneously. The Modulation Oscillator is mounted on the Voicing Filter and Amplifier Board Assembly, and the oscillation wave-form is sine wave having about 10Vp-p wave-form height.

The oscillation frequency is varied in the region of about 3Hz - 8Hz.

The Vibrato effect is obtained, giving the Master Generator the frequency modulation via the Vibrato Switch.

The Tremolo effect is the amplitude modulation via FET(Q507).

For EP-30, the Vibrato Circuit will not be adjusted, and the Tremolo Circuit will be adjusted only.



(Fig. 19)

For adjusting degree of Tremolo Modulation.

See the voltage wave-form between the Gate of FET(Q507) and the earth by a synchroscope in D.C. range.

Adjust the semi-fixed resistor VR501 so that the output voltage

of Modulation Oscillator may reach about 2Vp-p.

Adjust the semi-fixed resistor VR502 so as to get the bias voltage as about -2V.

There are quality variations of FETs. So, the bias voltage -2V is approximate value.

Set the Main VOLUME and the TONE Control at a proper position for the performance.

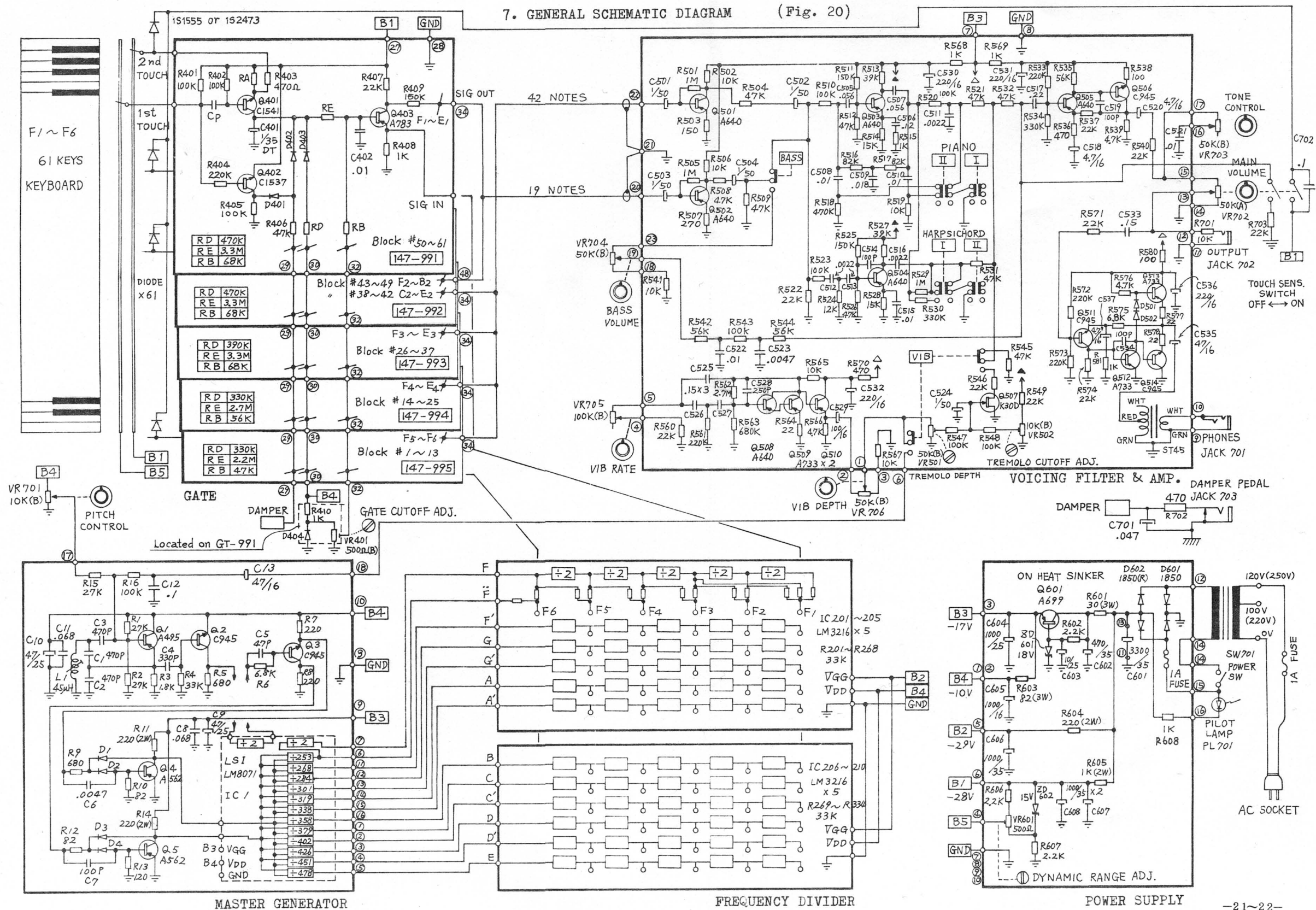
Make the Tone Selector PIANO I and the VIBRATO switch ON.

And set the VIBRATO DEPTH Control knob at the center position.

Fix VR502 at the position where the best tremolo effect can be obtained.

7. GENERAL SCHEMATIC DIAGRAM

(Fig. 20)



9. PARTS LIST

GENERAL ASSEMBLY

Cabinet Assembly (Complete)	No.990	081-990
"	No.991	081-991
Keyboard (61 Keys)	AK-162B	
Side Block	No.995	091-995
"	No.996	091-996
Top Cover Control Chassis Assembly	CO-999	164-999
Power Supply Board Assembly	PC-999	162-999
Master Oscillator Board Assembly	AG-997	144-997
Divider Board Assembly	DV-998	157-998
"	DV-999	157-999
Gate Board Assembly	GT-991	147-991
"	GT-992	147-992
"	GT-993	147-993
"	GT-994	147-994
"	GT-995	147-995
Holder	No.992	064-992
Case	No.999	066-999

TOP COVER CONTROL CHASSIS ASSEMBLY CO-999

Top Cover	No.995	065-995
Holder	No.994	064-994
Voicing Filter & Amplifier Board Assembly	FL-999	145-999
Cover	No.993	065-993
Power Switch	MS066 4K Black	001-053
Light Emitting Diode	TLR-103	019-002
Knob	TK-1114	016-021
Bush	No.1	068-001
"	No.11	068-011
Bracket	No.2	062-002
Holder	No.995	064-995
Jack	No.5 SG7615	009-001
"	LJ-039-1-6	009-002

POWER SUPPLY BOARD ASSEMBLY PC-999

Chassis	No.987	061-987
Power Transformer	PT-1	022-001
Voltage Changer	XW-103-1-10	001-002
Heat Sink	No.992	048-992
Lead Fuse	1A	008-014
Cord Bush	R-5	047-019
AC Cord	SVT-18 (3m)	053-021

VOICING FILTER & AMPLIFIER BOARD ASSEMBLY FL-999

Push Switch	6F-0006DC2011	145-999
Button	No.4 Ivory	016-004
"	No.7 Yellow	016-007
Transformer (for output)	ST-45	022-071

OTHERS

* Silicon Transistor	2SA699Q	017-015
"	2SA495GR	
"	2SA562Y	
"	2SA783R	
"	2SA640	
"	2SA733P	017-012

* Silicon Transistor	2SC945P	
"	2SC1541S	
"	2SC1537R	
"	2SK30D	017-017
* Silicon Diode	1850	018-003
"	1850R	018-004
"	1S2473	018-014
* Zener Diode	02Z13A	018-011
"	RD-18E	18V Type
* LSI	LM-8071	
* IC	LM3216	020-007
* Coil	No.992	45mH 24M-067-333
* Potentiometer	10 Kohm(B)	EVCBOAS15B14
"	50 Kohm(A)	EVCBOAS15A54
"	50 Kohm(A)	EVCMONF15A54
"	50 Kohm(B)	EVCBOAS15B54
"	100Kohm(B)	EVCBOAS15B15
* Semi-fixed Resistor	10 Kohm(B)	EVL4XA00B14
"	50 Kohm(B)	EVL4XA00B54
"	500 ohm(B)	EVL4XA00B52
* Metallic Oxide Film Resistor	33 ohm	ROG-3
"	82 ohm	"
"	220 ohm	ROG-2
"	1 Kohm	"
* Carbon Film Resistor	22 ohm	1/4 R
"	82 ohm	"
"	100 ohm	"
"	120 ohm	"
"	150 ohm	"
"	220 ohm	"
"	270 ohm	"
"	470 ohm	"
"	680 ohm	"
"	820 ohm	"
"	1 Kohm	"
"	1.8Kohm	"
"	3.3Kohm	"
"	3.9Kohm	"
"	4.7Kohm	"
"	6.8Kohm	"
"	10 Kohm	"
"	12 Kohm	"
"	15 Kohm	"
"	22 Kohm	"
"	27 Kohm	"
"	33 Kohm	"
"	39 Kohm	"
"	47 Kohm	"
"	56 Kohm	"
"	68 Kohm	"
"	82 Kohm	"
"	100Kohm	"
"	150Kohm	"
"	220Kohm	"
"	330Kohm	"
"	390Kohm	"
"	470Kohm	"
"	680Kohm	"
"	1 Mohm	"

* Carbon Film Resistor	2.2Mohm 1/4 R	044-040
"	2.7Mohm "	044-095
* Carbon Solid Resistor	2.2Mohm ERC12GJ225	044-166
"	2.7Mohm ERC12GJ275	044-167
"	3.3Mohm ERC12GJ335	044-168
* Plastic Film Capacitor	.0022mfd 50V V Type	035-009
"	.01 mfd 50V V Type	035-016
"	.018mfd "	035-019
"	.033mfd "	035-022
"	.039mfd "	035-023
"	.056mfd "	035-025
"	.068mfd "	035-026
"	.1 mfd "	035-028
"	.12 mfd "	035-029
"	.15 mfd "	035-030
"	.22 mfd "	035-032
* Polystyrol Film Capacitor	470 pfd 50V V Type	
* Ceramic Capacitor	47 pfd 50V V Type	037-005
"	100 pfd "	037-006
"	250 pfd "	037-007
"	330 pfd "	037-029
"	470 pfd "	037-008
"	1000pfd "	037-009
"	4700pfd "	037-027
* Diped Tantalum Capacitor	1 mfd 35V V Type	032-099
* Electrolytic Capacitor	1 mfd 50V	032-071
"	4.7 mfd 25V	032-046
"	10 mfd ECEA25V10	032-047
"	47 mfd 16V	032-036
"	47 mfd ECEA25V47	032-050
"	100 mfd 16V	032-037
"	220 mfd 16V	032-038
"	470 mfd ECEA35V470	032-068
"	1000mfd ECEA25V1000	032-055
"	1000mfd ECEA35V1000	032-069
"	3300mfd ECEM35V3300 Block Type	032-148