

KORG[®]



ELECTRONIC ORGAN SERVICE MANUAL

BX-3

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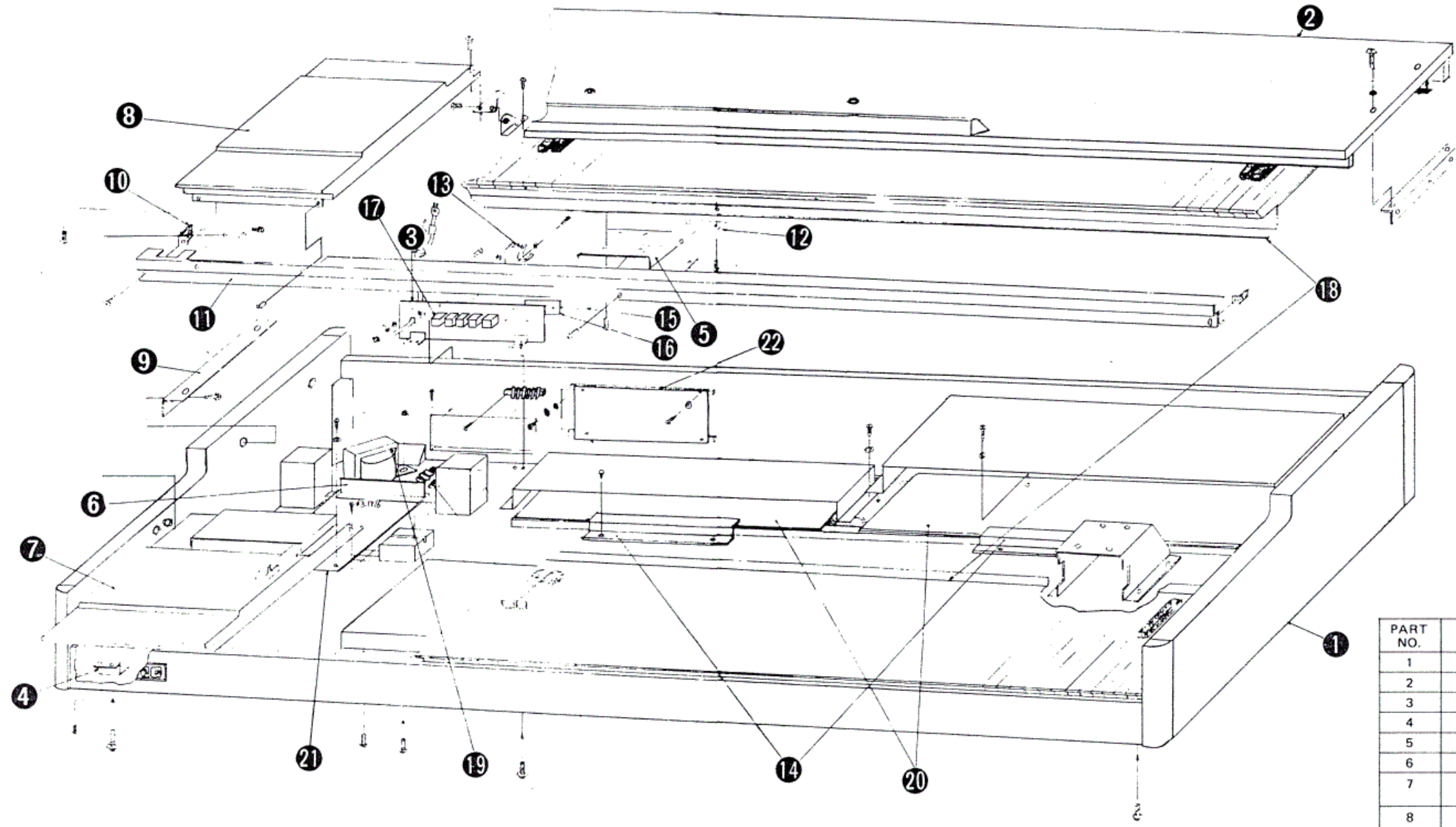
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KEIO ELECTRONIC LABORATORY CORPORATION
TOKYO/JAPAN

1. SPECIFICATIONS

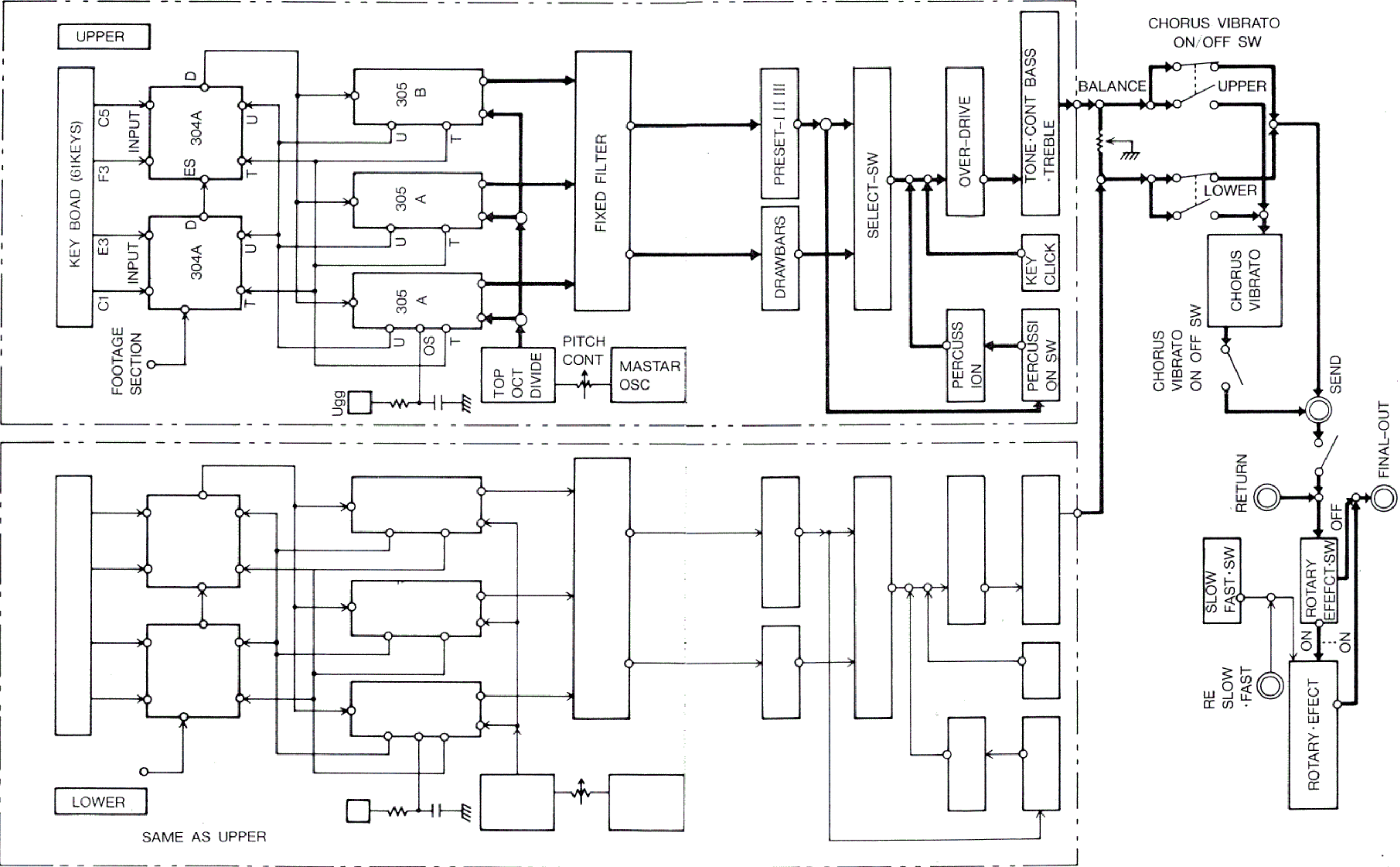
	UPPER	LOWER
KEYBOARD	C~C, 61 Keys	C~C, 61 Keys
DRAWBARS x 9	16', 5-1/3', 8', 4', 2-2/3', 2', 1-3/5', 1-1/3', 1'	16', 5-1/3', 8', 4', 2-2/3', 2', 1-3/5', 1-1/3', 1'
PRESET-DRAWBARS	I, II, III, Drawbars	I, II, III, Drawbars
PERCUSSION	4', 2-2/3', Percussion Volume, Percussion Decay	4' 2-2/3', Percussion Volume, Percussion Decay
TONE CONTROLS	Bass, Treble, Overdrive	Bass, Treble, Overdrive
TUNE	Tune (±50 CENTS)	Tune (±50 CENTS)
ROTARY EFFECT	ON, Fast	
CHORUS/VIBRATO	Mode selectors; chorus x 3, vibrato x 3; upper; lower	
VOLUME	Power & Volume, Key Click Volume	
OUTPUTS	Signal Outs x 2 (High/Low), Accessory Send	
INPUTS	Accessory Return, Rotary Effect (Slow/Fast)	
DIMENSIONS	1149(W) x 193(H) x 530(D) mm	
WEIGHT	22.5kg	
ACCESSORIES	Music Stand, Dust Cover, Connection Cord	
POWER CONSUMPTION	Voltage (Local Voltage, 50/60Hz), Wattage (12W)	

2. STRUCTURAL DIAGRAM

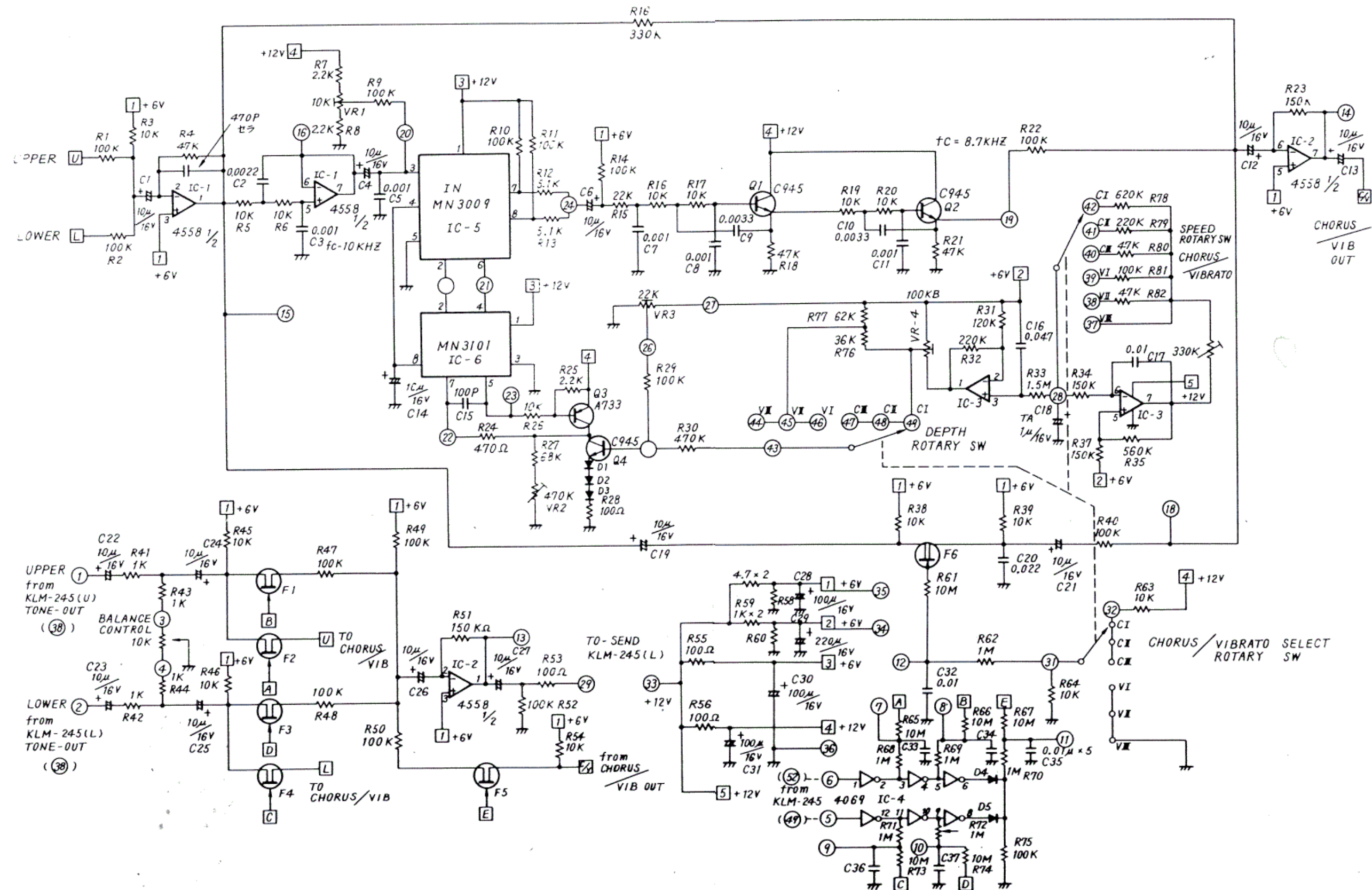


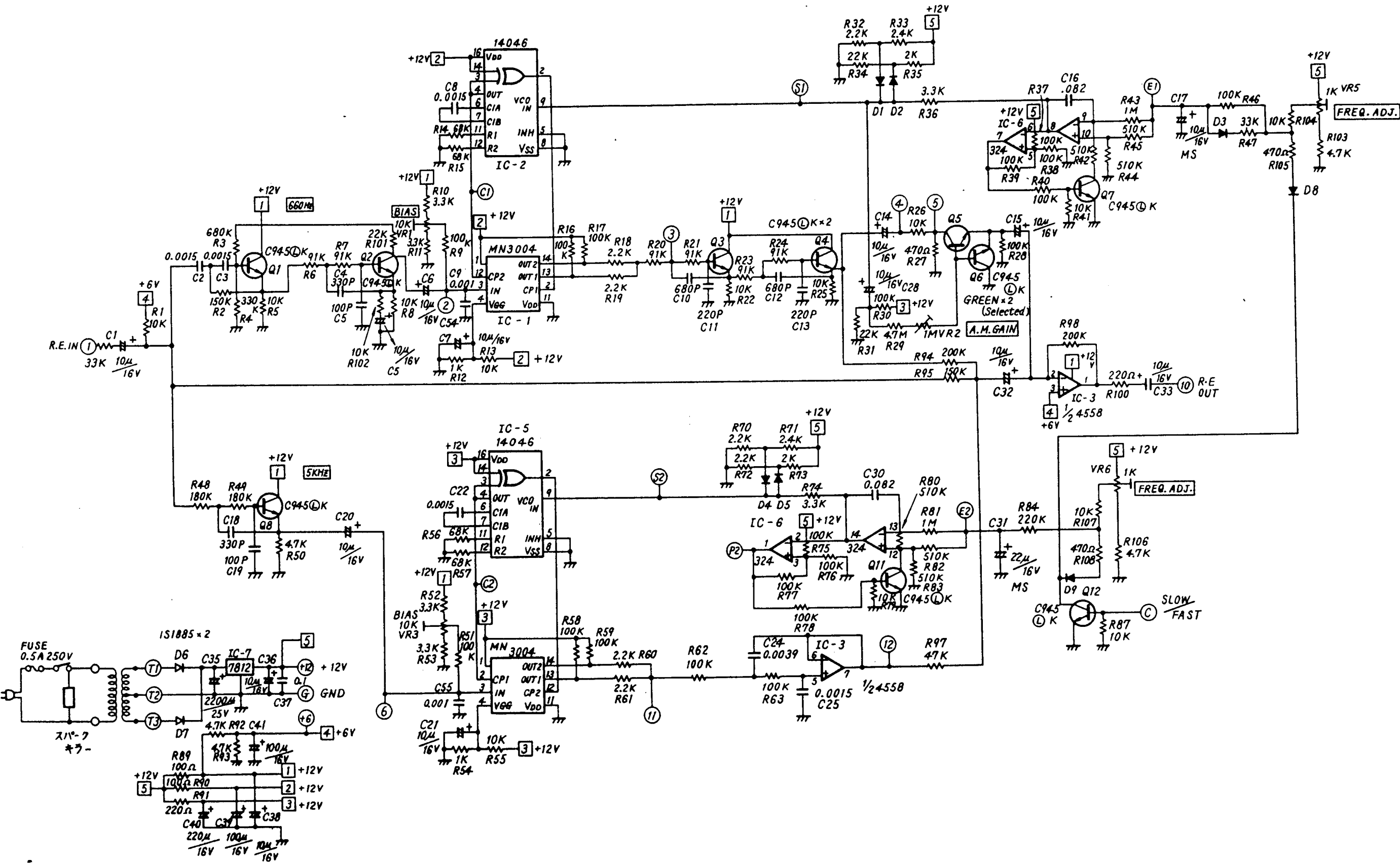
PART NO.	PART NAME	REMAKRS
1	Cabinet	KOC-D10003
2	Cabinet top	KOC-D20019
3	Rear panel	KOC-C30133
4	Metal fitting of control panel	KOC-C40229
5	Keyboard mounting	KOC-C30149
6	Radiation board	KOC-C40281
7	Control panel II	KOC-E30023/ 10002
8	Control panel I	KOC-E30023/ 10002
9	Cabinet top stay	KOC-C40328
10	Metal rail mounting	KOC-C40327
11	Metal rail	KOC-C20098
12	Metal rail support	KOC-C40326
13	Cord stopper	X-0953
14	Metal fitting of P.C.B.	KOC-C40348
15	Serial number seal	KOC-H40001/ F40050
16	Model number plate	KOC-C40144
17	Phone jacks	0983 (2P)
18	Keyboard	ESK 309V (61 Key)
19	Power transformer	JB-471
20	P.C.B.	KLM-244
21	P.C.B.	KLM-246
22	P.C.B.	KLM-308

3. BLOCK DIAGRAM

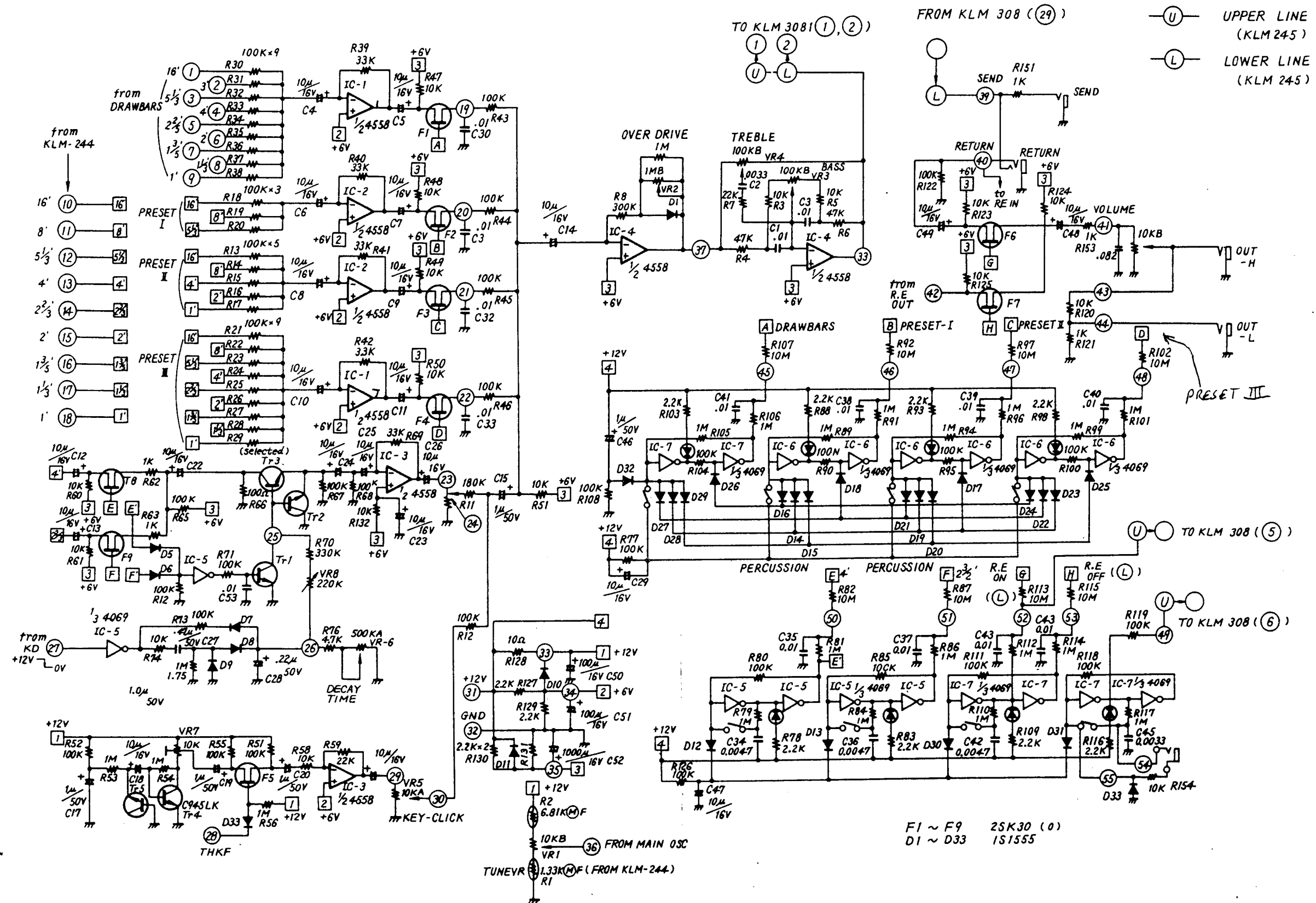


4. CIRCUIT DIAGRAM KLM-308

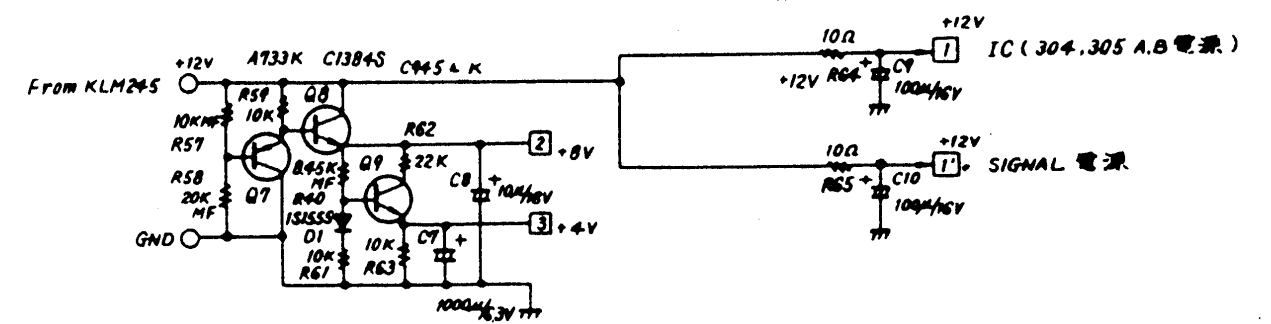
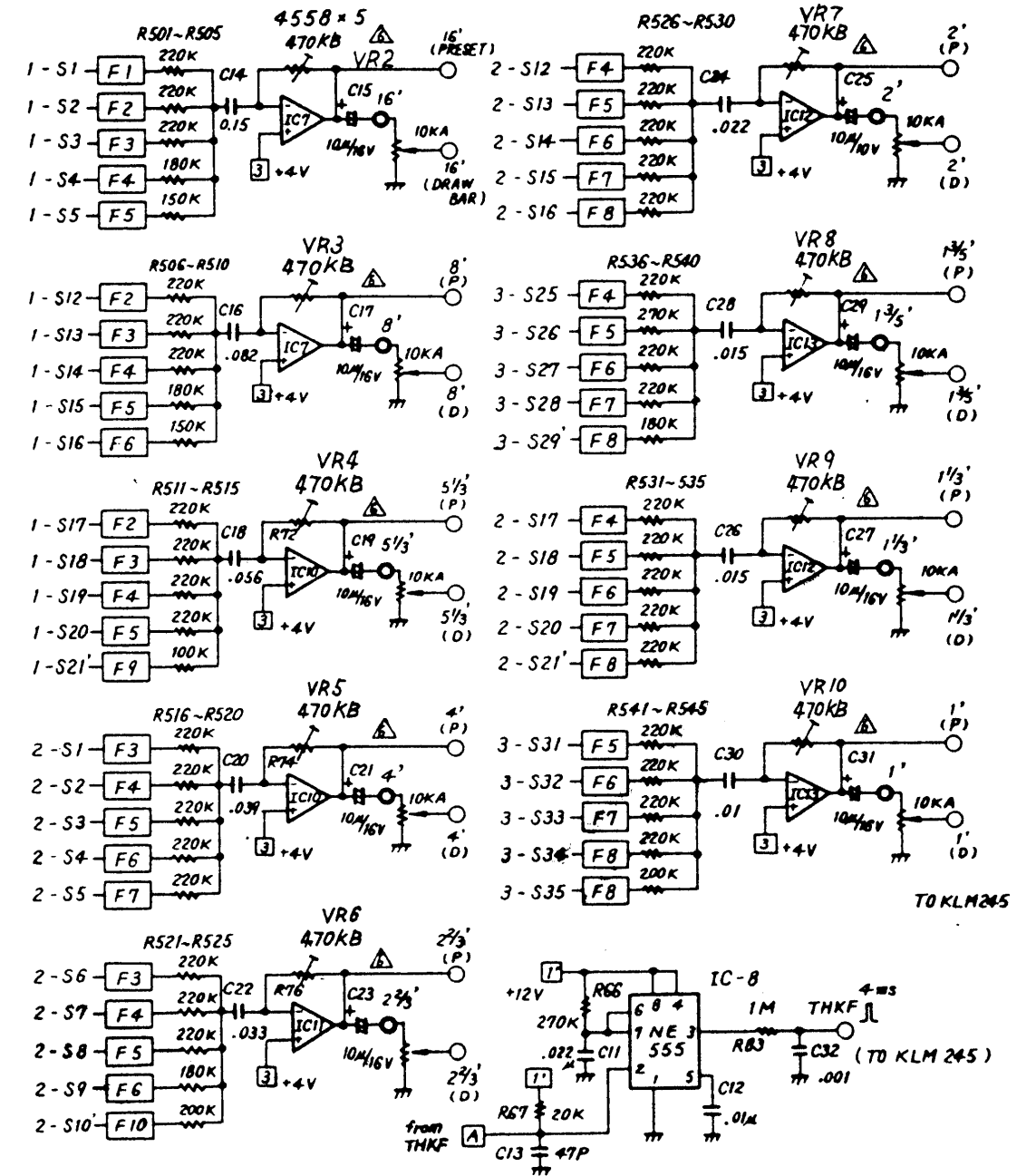
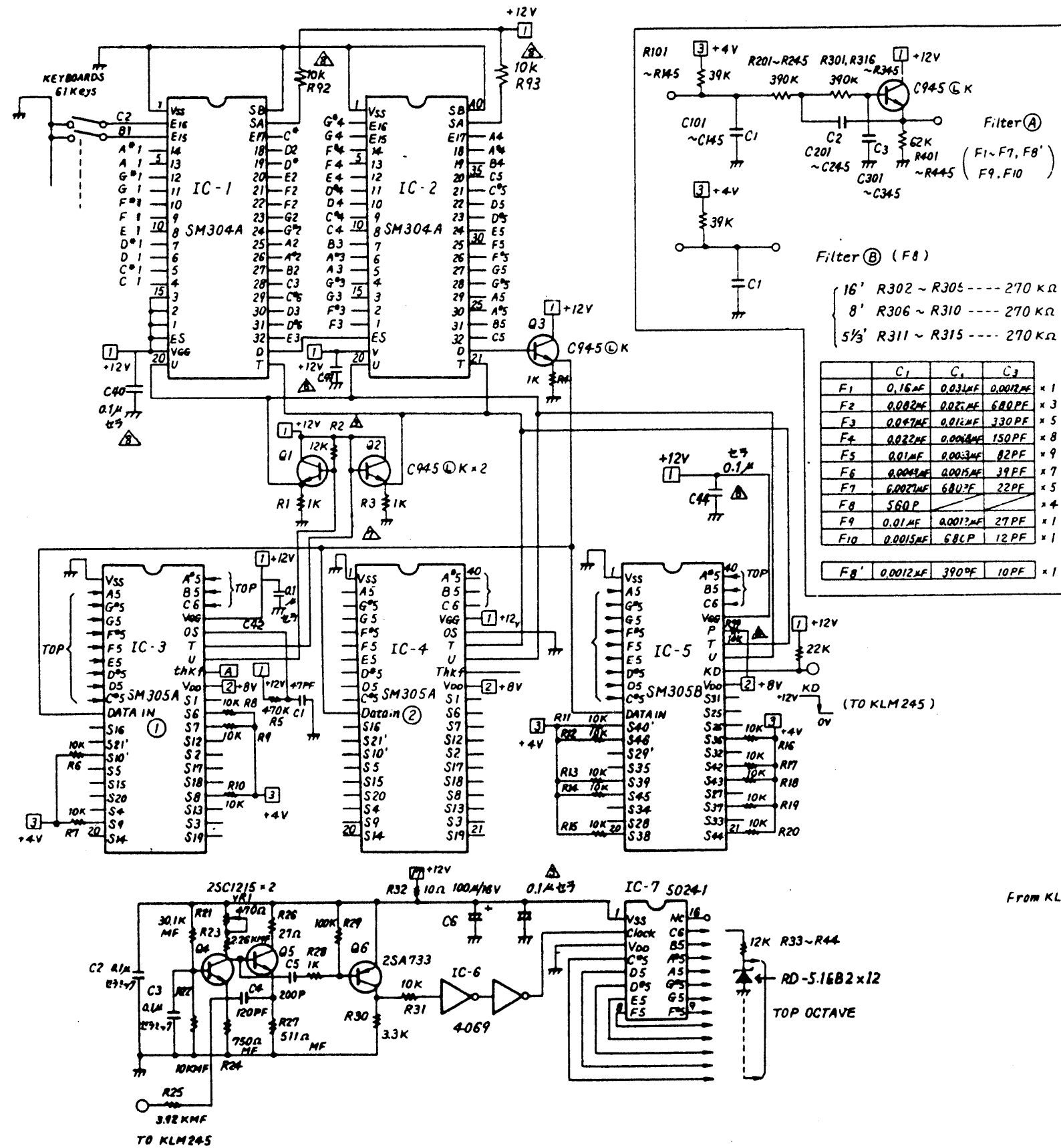




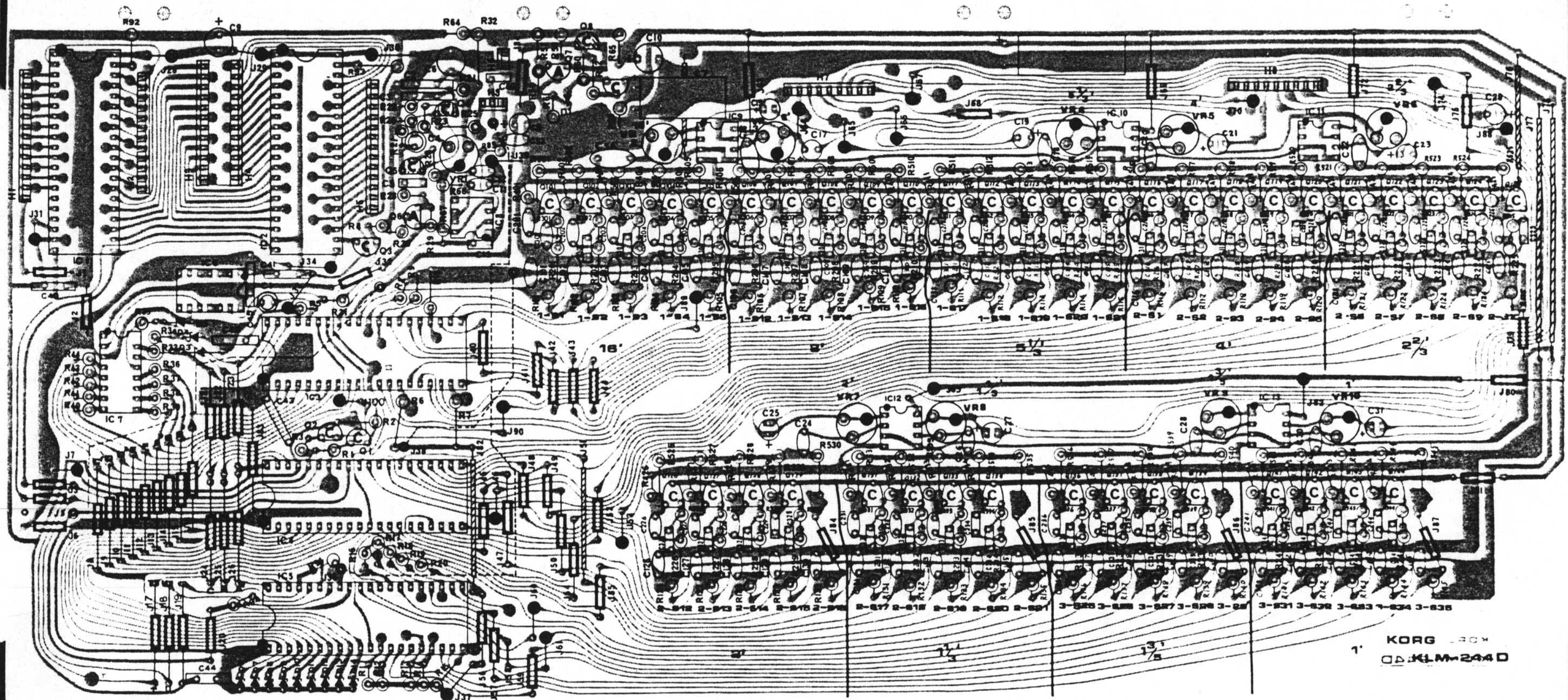
KLM-245(UPPER, LOWER)

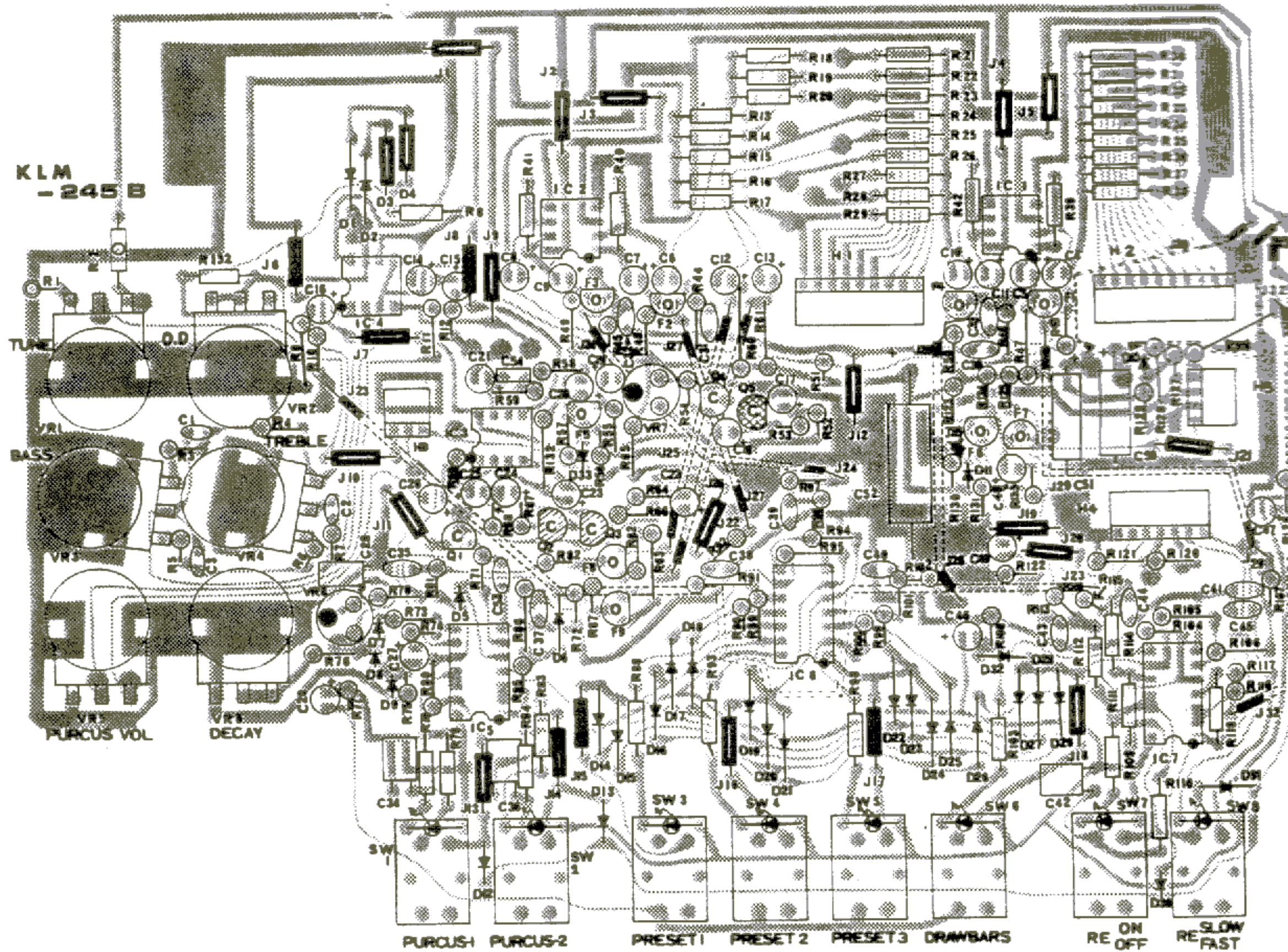


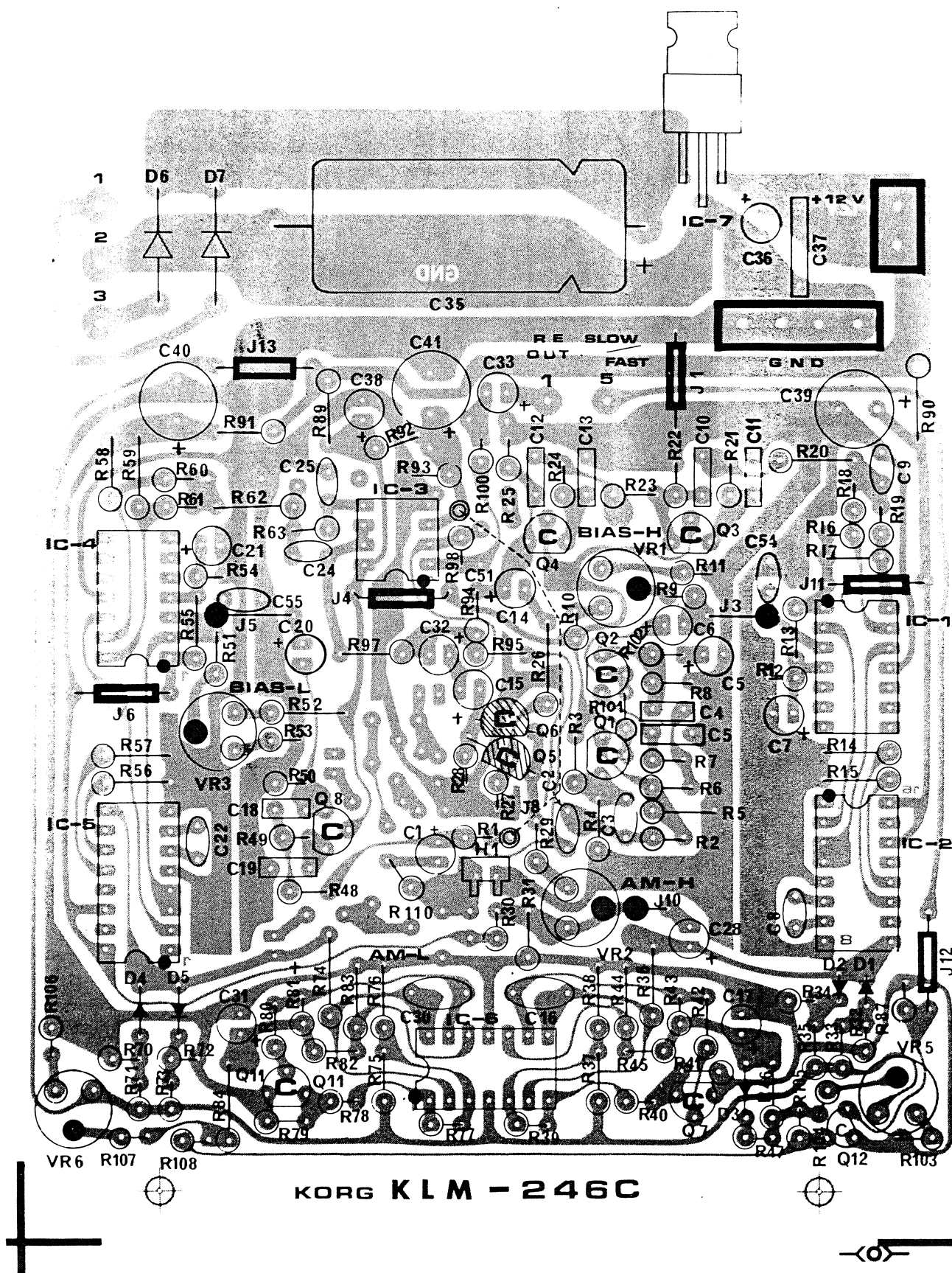
KLM-244(UPPER, LOWER)



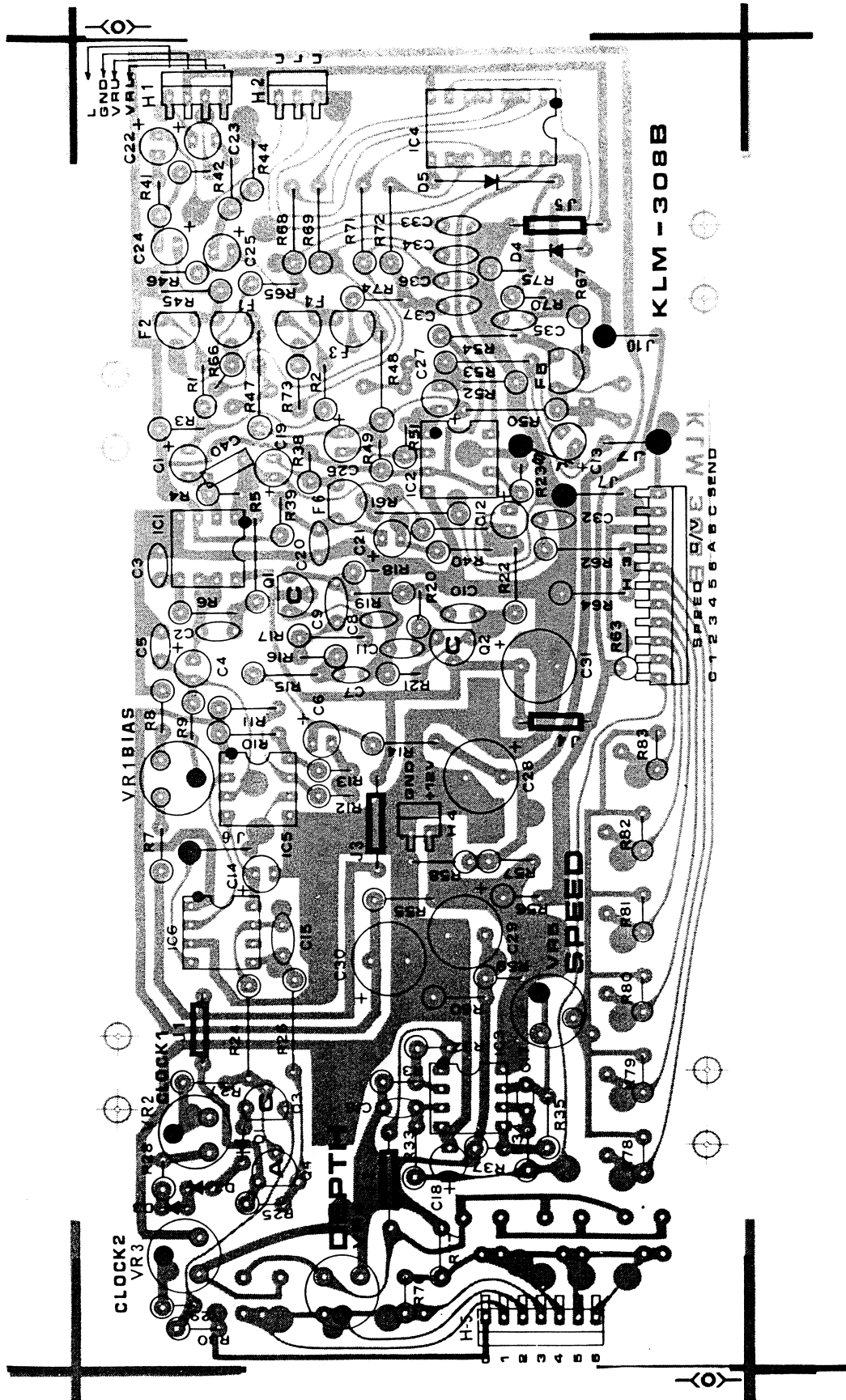
5. P.C. BOARD KLM-244







KLM-308

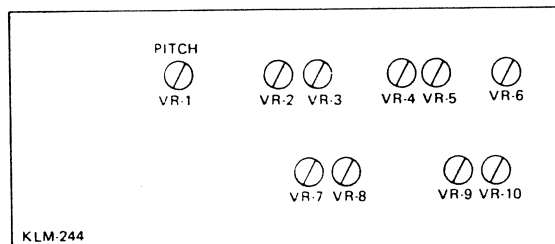


6. ADJUSTMENT PROCEDURE

Note: This instrument has been precisely adjusted at the factory. Therefore, do not change the position of any variable resistors other than those necessary for servicing.

KLM 244

(Same for upper and lower.)



1. Pitch adjustment

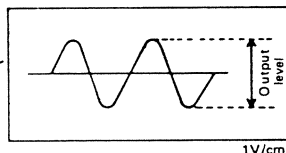
- Settings A) Tune knob center
 B) Drawbars 8'
 C) Signal out Tuner (WT-12)

With controls at the above settings, play "A" on the keyboard and adjust VR-1 so the tuner meter indicates 440Hz. (O cent)

2. Volume balance adjustment

Following the chart below, adjust output level for each foot stop at specified key.

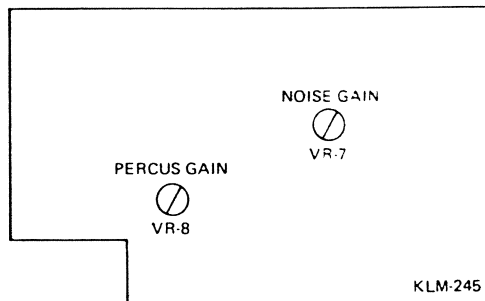
feet stop at specified key.



Feet	Specified key	Output level (cm)	VR
16'	C ₃	4.4	VR2
8'	C ₃	3.4	VR3
5 1/3'	F ₃	4.4	VR4
4'	C ₃	3.8	VR5
2 2/3'	F ₃	3.8	VR6
2'	C ₃	3.8	VR7
1 1/3'	F ₃	3.4	VR8
1 3/5'	A ₃	3.4	VR9
1'	C# ₃	3.8	VR10

KLM-245

(Same for upper and lower)



1. Noise gain adjustment

- Settings A) Signal out (High) oscilloscope
 B) Drawbars 0
 C) Key click volume MAX
 D) Volume MAX

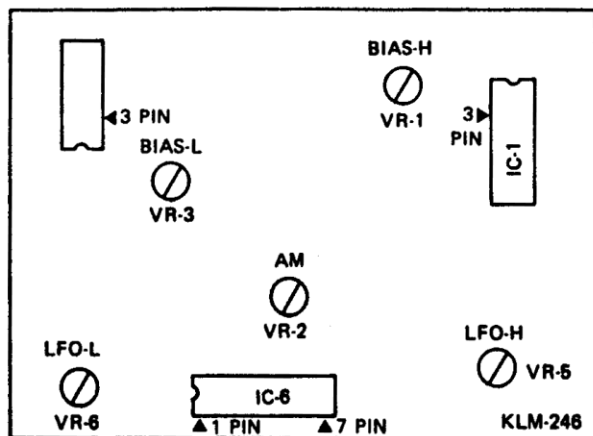
With the above settings, adjust VR-7 so that noise is 0.5V ~ 0.7Vp-p when you play a key.

2. Percussion gain

- Settings A) SIG OUT (High) oscilloscope
 B) Drawbars 4'
 C) Percussion volume MAX
 D) Volume MAX
 E) PERCUSSION 4'

Play a key and adjust VR-8 so that the ratio between 4' percussion and 4' drawbar is 5:1 ~ 7:1.

KLM-246



1. LFO (LOW) adjustment

Set the rotary effect to "fast", connect a frequency counter to the number 1 pin on IC-6, and adjust VR-6 to obtain 145m sec.

2. LFO (HIGH) adjustment

Connect frequency counter to number 7 pin on IC-6 and adjust VR-5 to obtain 130msec.

3. BIAS (LOW) adjustment

Connect digital multi-meter to number 3 pin on IC-4 and adjust VR-3 to obtain 6.00V.

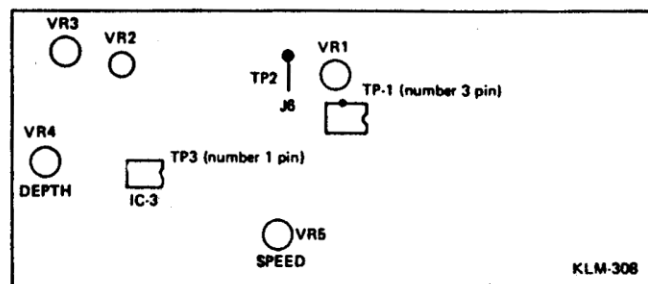
4. BIAS (HIGH) adjustment

Connect digital multi-meter to number 3 pin on IC-1 and adjust VR-1 to obtain 6.00V.

5. AM-H adjustment

AM-H controls high-range amplitude variation of the Lesley effect. Check by ear and adjust VR-2 as necessary.

KLM-308



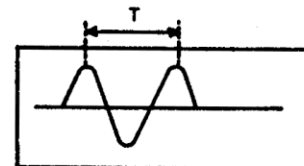
1. BIAS adjustment — Test point (TP-1)

Turn on chorus and play 10 keys using preset III. If there is distortion, adjust VR-1 until distortion is eliminated.

2. Speed adjustment — Test point (TP-3) IC-3 number 3 pin.

Adjust VR-5 to obtain 3.0cm (50msec./cm) LFO cycle. (Rotary switch at VIII)

After adjustment, check to confirm correct speed at each position as listed on the chart below.



	Cycle (T)	
CI	3.5cm	(0.2sec./cm)
CII	3.5cm	(0.1sec./cm)
CIII	4.0cm	(50msec./cm)
VI	5.0cm	(50msec./cm)
VII	4.0cm	(50msec./cm)

3. Depth adjustment (TP-2)

Adjust VR-4 so that the lowest clock frequency is 9.2 ~ 9.4cm (5μsec./cm)

Clock frequency		
	Lowest frequency	Highest frequency
CI	8.8cm ±0.5cm	5.5cm ±0.5cm

(5μsec./cm)

Check amplitude of CII ~ VIII

CII . . . 2.5 ± 0.5cm CIII . . . 2.0 ± 0.3cm
 VI . . . 1.2cm VII . . . 1.0cm
 VIII . . . 0.8cm (5μsec./cm)

4. Clock adjustment (TP-2)

R.SW CI

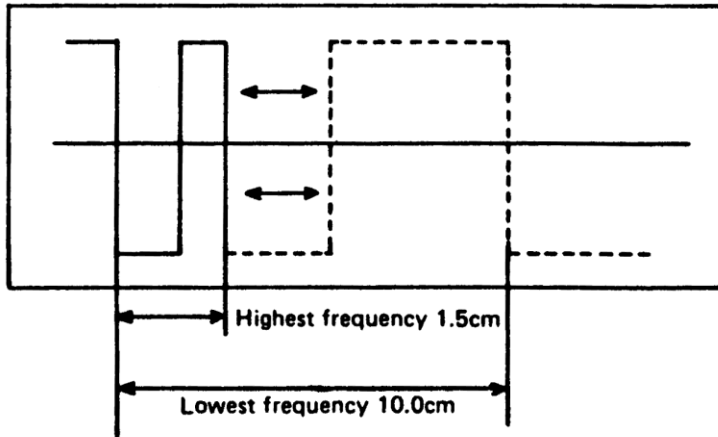
VR-4 MAX

Turn VR-3 to MAX and use VR-2 to adjust lowest frequency.

Then use VR-3 to adjust highest frequency.

Lowest frequency = 10.0 cm

Highest frequency = 1.5cm



7. PARTS LIST

PARTS NAME	PARTS CORD	Q'TY	PARTS NAME	PARTS CORD	Q'TY
SPECIFICATIONS			SPECIFICATIONS		
CARBON RESISTORS (Not listed)			2200 μ /25V	23111447	2
SOLID RESISTORS			22 μ /16V T	23007222	1
1/4W 10M Ω JT	11113810	22	1 μ /50V K	23215110	14
METAL FILM RESISTORS			10 μ /16V	23207210	44
1/4W 1.33KMF T	12114133	2	TANTALUM CAPACITORS		
6.81 Y	12114681	2	1 μ /16V	22007110	1
511 Ω MF T	12613511	2	TRANSISTORS		
750	12613750	2	2SC 945 L K	30200334	105
3.92KMF	12614392	2	L	30200399	6
8.45	12614845	2	1215 T	30200420	4
10	12615100	4	644 R	30200199	2
20	12615200	2	1384 S	30200719	2
30.1	12615301	2	2SA 733AK	30000727	5
2.26	12614226		FET		
MYLAR CAPACITORS			2SK 30 (0)	30600115	24
50V 0.001 μ F K	20003410	9	DIODES		
0.0012	20003412	6	IS 1555	31000100	77
0.0015	20003415	21	1885	31000200	2
0.0027	20003427	10	ZENER DIODES		
0.0033	20003433	24	RD-5.1EB ₂	31101300	24
0.0039	20003439	1	IC		
0.0047	20003447	20	SM-304A	32031001	4
0.0068	20003468	16	305A	32031002	4
0.01	20003510	61	305B	32031003	2
0.012	20003512	10	NE-555	32021012	2
0.022	20003522	27	S- 50241	32030002	2
0.033	20003533	4	Mc-14069	32020003	9
0.047	20003547	11	4558	32001013	22
0.082	20003582	11	Mc-14046	32020026	2
0.16	20002616	2	MN-3004	32002006	2
0.056	20101556	2	μ PC-324	32001006	1
0.15	20003615	2	14312	32001004	1
0.015	20003515	4	MN-3009	32002013	1
0.0022	20003422	1	3101	32002014	1
0.039	20003539	2	SEMI-FIXED RESISTORS		
STYROL CAPACITORS			470 Ω B H1051A	35201447	2
47PF J (5%)	20503247	2	1KB	35203210	2
120 (1%)	20503247	2	10KB	35201310	5
CERAMIC CAPACITORS			220	35201422	2
ECC-DIH 100DC (10PF)	21009210	2	1MB	35201510	1
120K ₂ (12 ...)	21012212	2	22KB	35201322	1
220K ₂ (22PF)	21012222	10	470	35201447	1
270 (27)	21012227	2	100	35201410	6
390 (39)	21012239	14	680	35201468	6
820 (82)	21012282	18	ROTARY VARIABLE RESISTORS		
101 (100)	21012310	5	EVH-LOAS 20 B14	36010900	2
151 (150)	21012315	16	B15	36010000	4
221 (220)	21012322	4	B16	36011200	2
331 (330)	21012333	12	A14	36011000	2
391 (390)	21012339	2	A55	36010700	2
681 (68)	21012268	20	EVC-BQ5P 18B 14	36200700	1
470 (47)	21012247	2	EWK-DOA 308 A14	36202100	1
561 (560)	21116356	8	SLIDE VR		
ECK-FIE104ZFZ (0.1 μ F)	21104610	5	S401 x DAO1 10KC	36502600	18
ELECTROLYTIC CAPACITORS			EVH 8HA S03B14		1
0.22 μ /50VMS	23315022	2	ROTARY SW		
10 μ /16V T	23007210	48	SRF-3036	37002200	1
100 μ /16V	23007310	11			
220 μ /16V	23007322	2			
1000 μ /16.3V Y	23103410	2			
100 μ /16V	23107310	4			

PARTS NAME SPECIFICATIONS	PARTS CORD	Q'TY	PARTS NAME SPECIFICATIONS	PARTS CORD	Q'TY
TACT SW			18φ KNOB		
KHC-11901	37503400	16	φ18 KOC-E40019	62007600	4
KEY BOARD			DRAWBAR KNOB		
ESK 309V (61 Key)	42001700	2	5 1/3'	62002000	2
PHONE JACKS			2 2/3'	62002100	2
0983 (2P)	45300200	4	1 3/5'	62002200	2
0929 (3P)	54300300	1	1 1/3'	62002300	2
FUSE			16'	62003400	2
250V 1.0A	46300800	1	8'	62003500	2
P. C. B.			4'	62003600	2
KLM 244	34012804	2	2'	62003700	2
245	34012903	2	1'	62003800	2
246	34013003	1	LEVER SW MASK		
308	34012602	1	X-0600	55000100	12
CABINET			CORD STOPPER		
KOC-D10003	64507400	1	X-0953	54003500	1
CABINET TOP			RUBBER FEET		
KOC-D20019	64507500	1	No. 5	50002100	4
METAL FITTING OF PCB			TACT SW MASK		
KOC-D40348	64035100	2	KOC-F40152	55002800	2
METAL RAIL			SERIAL NUMBER SEAL		
KOC-C20098	64035000	1	KOC-H40001/F40050	58006400	1
KEYBOARD MOUNTING			MODEL NUMBER PLATE		
KOC -C30149	64034200	2	KOC-C40144	64050500	
METAL RAIL SUPPORT			POWER TRANSFORMER		
KOC-C40326	64034800	1	JA-471	40004900	1
METAL RAIL MOUNTING			JB-471	40005000	1
KOC-C40327	64034700	2			
CABINET TOP STAY					
KOC-C40328	64034900	2			
REAR PANEL					
KOC-C30133	64047100	1			
METAL FITTING OF CONTROL PANEL					
KOC-C40229	64026600	2			
DRAWBAR HOLDER					
KOC-C30134	64028600	2			
RADIATION BOARD					
KOC-C40281	56001300	1			
CONTROL PANEL I					
KOC-E30022/10002	64605100	1			
CONTROL PANEL II					
KOC-E30023/10002	64605200	1			
TACT SW KNOB					
(DIC 504) DARK BROWN	62001900	8			
(547) IVORY	62002900	8			
PS KNOB					
φ10 X 1070	62007400	12			