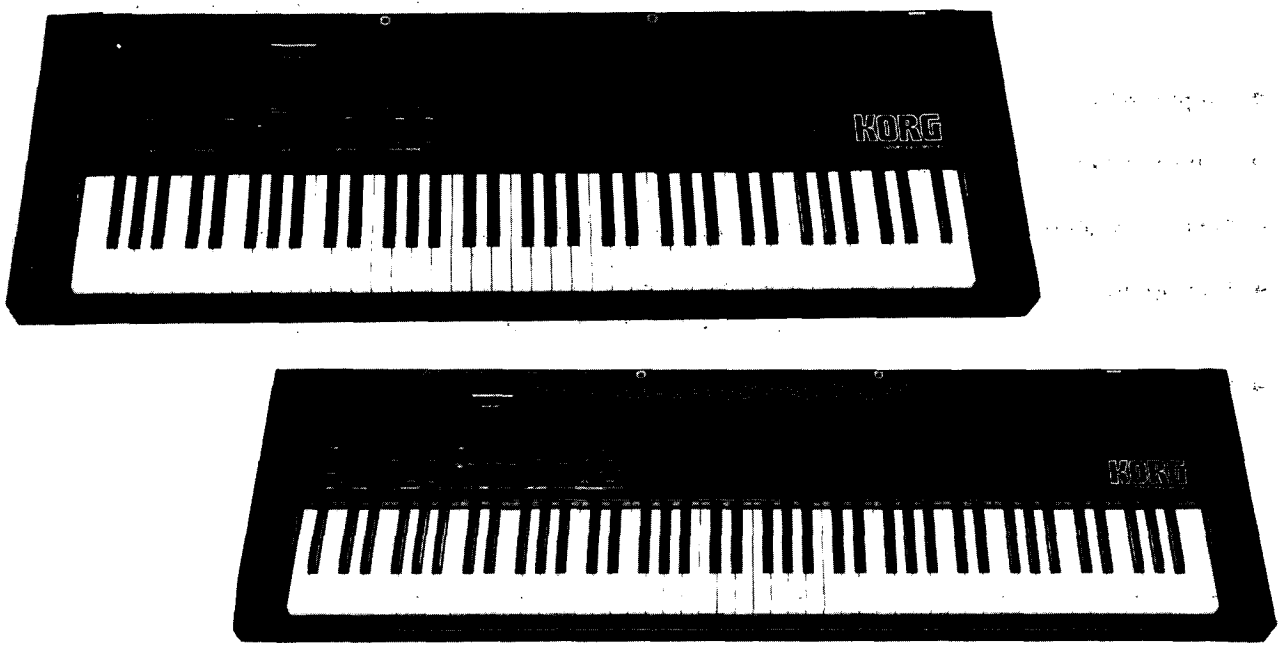
KORG®

SAMPLING GRAND
SG-1/1D



SERVICE MANUAL

CONTENTS

KORG INC.
TOKYO/JAPAN

1. SPECIFICATIONS

• Keyboard	SG-1D 88 keys-full keyboard SG-1 76 keys-E1 to G7
• Sound Source	12 bit Sampling stored in ROM memory
• Number of notes	12
• Controls	MIDI (Pitch Bend, Modulation), Volume, Equalizer (Bass, Mid-Range, Treble), MIDI (SG-1D) or MIDI/TRANSPOSE (SG-1), Preset Sound Select (Piano I, Piano II, E. Piano I, E. Piano II, Card), Brilliance; Chorus (On/Off, Depth, Speed), Tune, Dynamics, MIDI Channel (Receive/Transmit).
• Output jacks	Output (L/Mono, R-Low/High Switch), Headphones
• Control Inputs	Damper, MIDI (In-Out-Thru), ROM Memory Card Slot
• Supplied Accessories	Connection Cord, Damper Switch (DS-1), AC Voltage Cord
• Dimensions	(SG-1D) 1370mm(W) x 400mm(D) x 123mm (SG-1) 1205mm(W) x 400mm(D) x 123mm
• Weight	(SG-1D) 33.7kg. (SG-1) 29kg.

★ Specifications subject to change without notice.

2. MIDI IMPLEMENTATION CHART

SAMPLING GRAND SG-1 MIDI IMPLEMENTATION CHART

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
Basic	Default	1 – 16	1 – 16	Depends on Ch sw setting
Channel	Changed	1 – 16	1 – 16	
	Default	3	1	
Mode	Messages	X	OMNI ON/OFF	
	Altered	* * * * * * * * * * * * *		
Note		22 – 108	0 – 127	
Number:	True voice	* * * * * * * * * * * * *	21 – 108	
Velocity	Note ON	O 9nH v = 1 – 127	O v = 1 – 127	
	Note OFF	X 8nH v = 64	X	
After	Key's	X	X	
Touch	Ch's	X	X	
Pitch Bender		O	X	
Control	1	O	X	MOD1
Change	2	O	X	MOD2
	7	X	O	VOLUME
	64	O	O	DAMPER See Note 1
	66	X	O	SOSTENUTO
	67	X	O	SOFT PEDAL
Prog		O 0 – 63	O 0 – 4	See Note 2
Change	: True #	* * * * * * * * * * * * *	0 – 4	
System Exclusive		X	X	
System	: Song Pos	X	X	
	: Song Sel	X	X	
Common	: Tune	X	X	
System	: Clock	X	X	
Real Time	: Commands	X	X	
Aux	: Local ON/OFF	X	O	
	: All Notes OFF	X	O	
Messages	: Active Sence	O	O	
	: Reset	X	X	
Notes	1	Transmitted when DAMPER is ENABLED.		
	2	Received when program change is ENABLED.		

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO O: Yes
Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO X: No

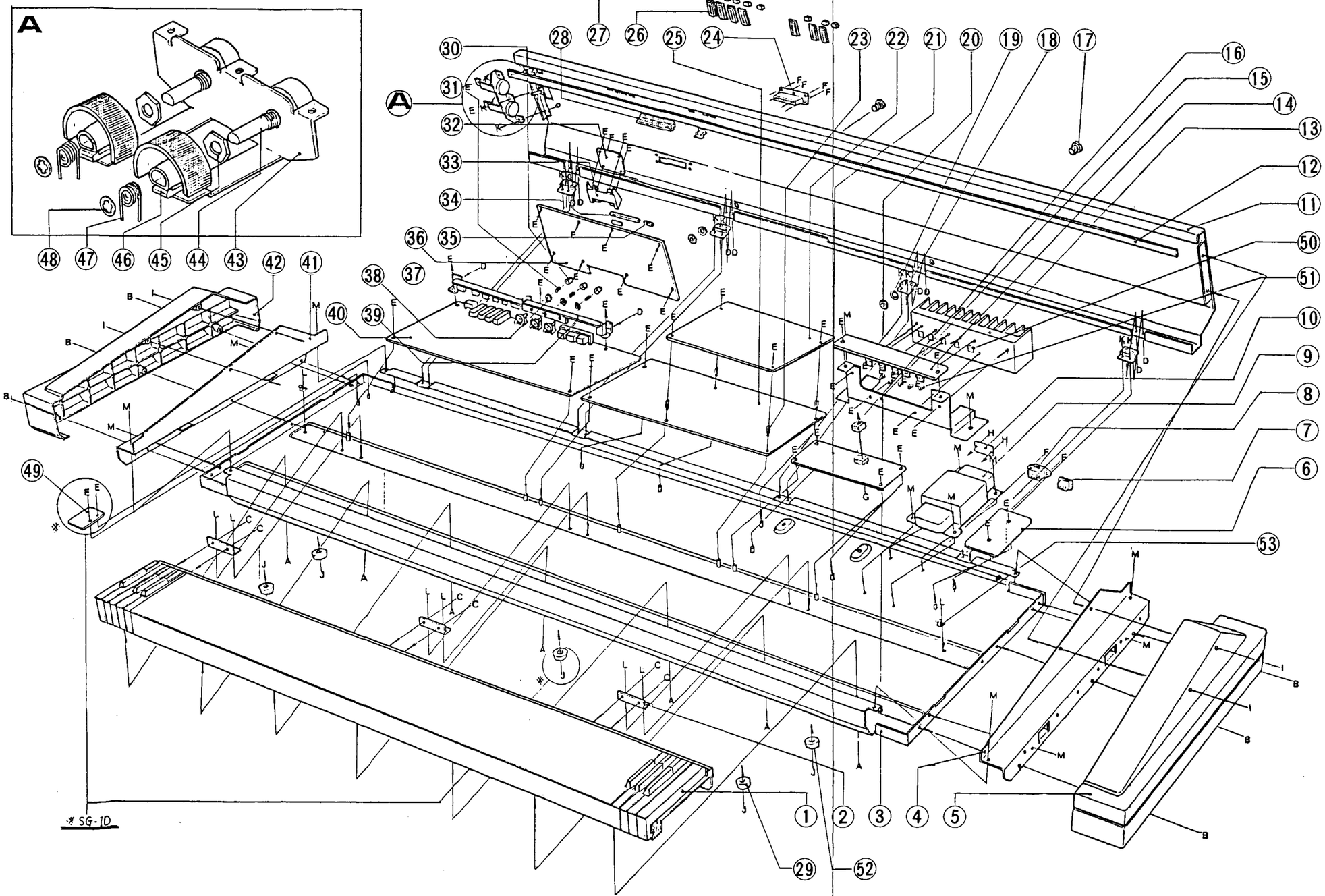
SAMPLING GRAND SG-1D MIDI IMPLEMENTATION CHART

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
Basic	Default	1 – 16	1 – 16	Depends on Ch sw setting
Channel	Changed	1 – 16	1 – 16	
	Default	3	1	
Mode	Messages	X	OMNI ON/OFF	
	Altered	* * * * * * * * * * * * *		
Note		21 – 108	0 – 127	
Number:	True voice	* * * * * * * * * * * * * * *	21 – 108	
Velocity	Note ON	O 9nH v = 1 – 127	O v = 1 – 127	
	Note OFF	X 8nH v = 64	X	
After	Key's	X	X	
Touch	Ch's	O	X	
Pitch Bender		O	X	
Control	1	O	X	MOD1
Change	2	O	X	MOD2
	7	X	O	VOLUME
	64	O	O	DAMPER See Note 1
	66	X	O	SOSTENUTO
	67	X	O	SOFT PEDAL
Prog		O 0 – 63	O 0 – 4	See Note 2
Change	: True #	* * * * * * * * * * * * * * *	0 – 4	
System Exclusive		X	X	
System	: Song Pos	X	X	
	: Song Sel	X	X	
Common	: Tune	X	X	
System	: Clock	X	X	
Real Time	: Commands	X	X	
Aux	: Local ON/OFF	X	O	
	: All Notes OFF	X	O	
Messages	: Active Sence	O	O	
	: Reset	X	X	
Notes	1	Transmitted when DAMPER is ENABLED.		
	2	Received when program change is ENABLED.		

Mode 1: OMNI ON, POLY
Mode 2: OMNI ON, MONO
Mode 3: OMNI OFF, POLY
Mode 4: OMNI OFF, MONO

O: Yes
X: No

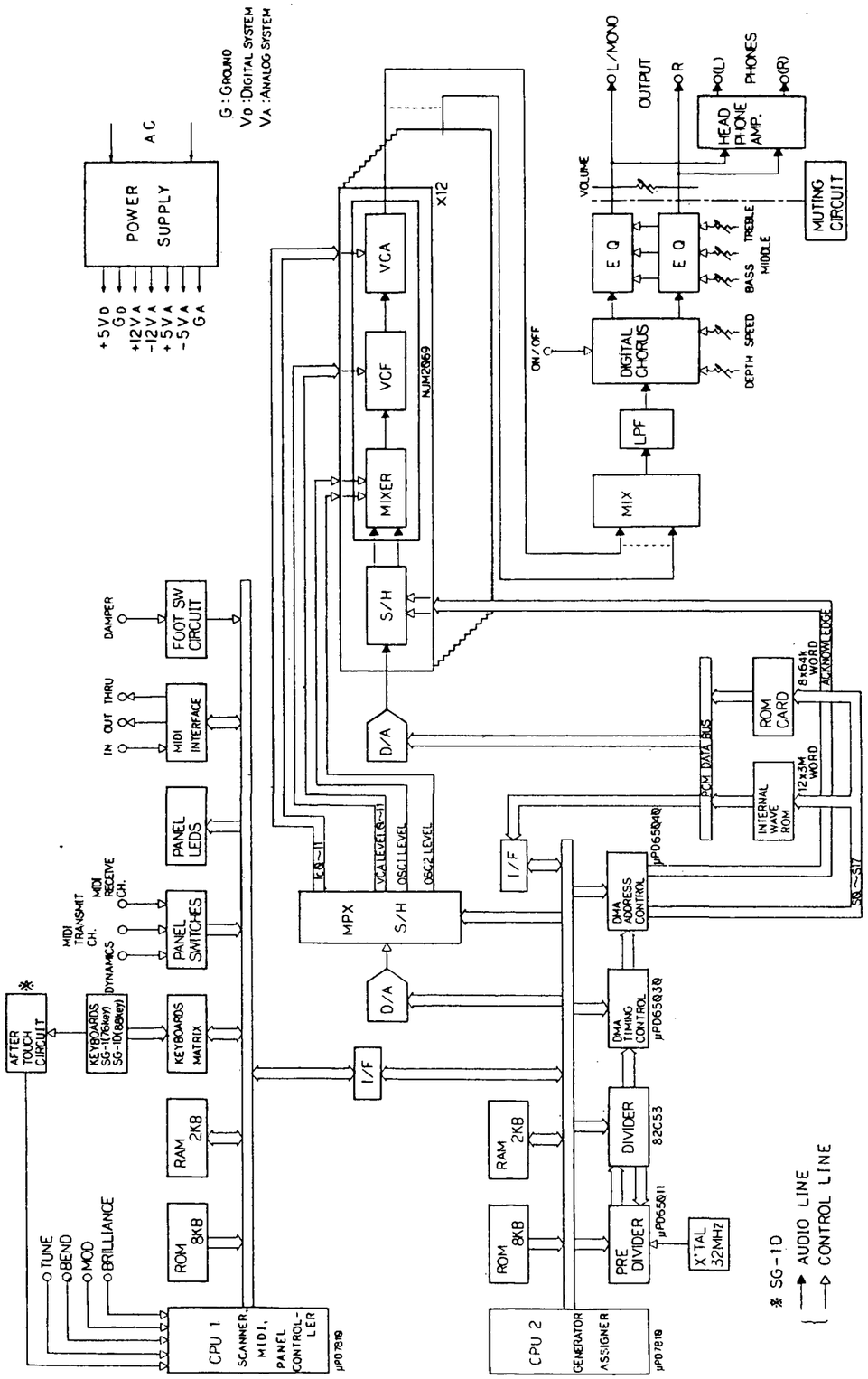
3. STRUCTURAL DIAGRAM



PART NO.	SCREWS		Q'TY SG-1	Q'TY SG-1D
A	FEW SE BZMC	5x10	7	7
B	FE B BZMC	4x8	6	6
C	TP2G B ZMC	4x8	6	6
D	FE B BZMC	3x8	10	10
E	FE B ZMC	3x8	42	44
F	FE O BZMC	3x8	6	6
G	TP2G B ZMC	3x16	1	1
H	TP2G B BZMC	3x8	2	2
I	FE B BZMC	3x25	4	4
J	TP2G B BZMC	4x16	4	5
K	FE B BZMC	3x6	11	11
L	FEW SE BZMC	4x10	8	8
M	TS FEW BZMC	4x8	14	14

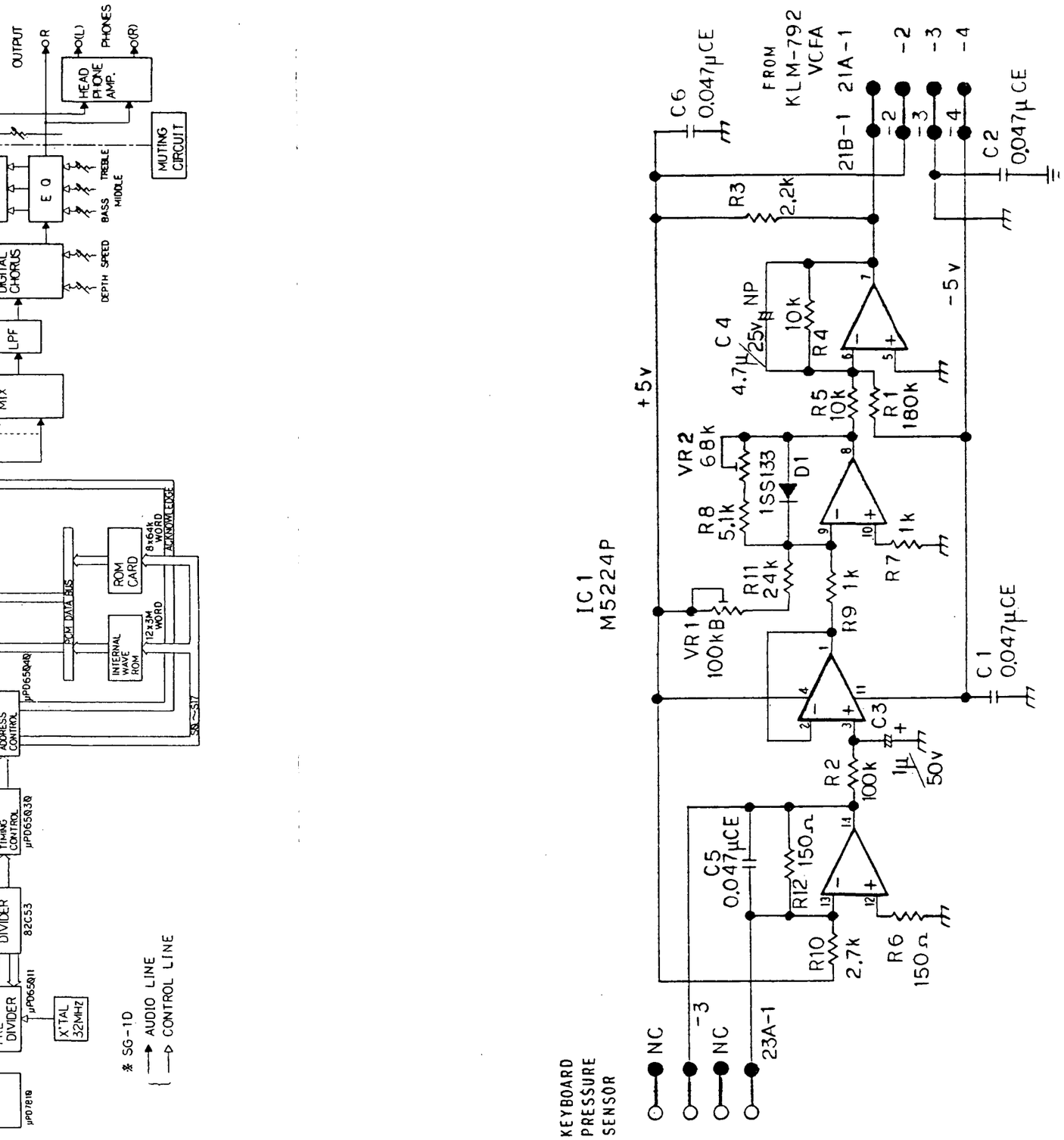
PART NO.	PART NAME	PART CODE
1.	KEYBOARD	
2.	METAL FITTING OF KEYBOARD SUP	64079000
3.	LOWER CASE	
4.	SIDE CHASSIS (R)	64075200
5.	SIDE PANEL (R)	64621800
6.	P.C. BOARD KLM-1055	34310550
7.	POWER SW	37508000
8.	INLET SOCKET	54010900
9.	POWER TRANSFORMER	40010100
10.	NAME PLATE	
11.	FRONT PANEL	
12.	FELT	
13.	RADIATOR	
14.	P.C. BOARD KLM-796	34079510
15.	HEAT SINK PLATE	64075600
16.	RADIATOR	
17.	MUSIC STAND HOLDER	64075800
18	JOINT	64076000
19.	WM ZMC 9	78030900
20.	VN ZMC 9	77330900
21.	P.C. BOARD KLM-795	34079510
22.	P.C. BOARD KLM-790	34079000
23.	STUD FOR P.C. BOARD	64076100
24.	CARD ESCUTCHEON	64622100
25.	P.C. BOARD KLM-791	34079100
26.	SLIDE VR ESCUTCHEON	64622000
27.	SLIDE VR KNOB	62016300
28.	NTS KNOB	62016400
29	RUBBER FEET K-3215	50010000
30.	PS KNOB SMALL (TYPE D)	62016200
31.	SPRING FOR ROTARY SW. KNOB	64903400
32.	P.C. BOARD KLM-797	34079700
33.	SUPPORTING PLATE OF CARD	64075700
34.	RUBBER CUSHION (LARGE)	50010100
35.	RUBBER CUSHION (SMALL)	50010200
36.	P.C. BOARD KLM-793	34079300
37.		
38.	VN ZMC 8	77330800
39.	METAL FITTING OF PHONE JACK	64078900
40.	P.C. BOARD KLM-792	34079200
41.	SIDE CHASSIS (L)	64075300
42.	SIDE PANEL (L)	64621900
43.	METAL FITTING C OF VR	64075900
44.	VR	36018200
45.	VN ZMC 7	77330700
46.	CONTROL WHEEL	64621700
47.	WHEEL SPRING A	64905600
48.	WASHER CSTW-6	79090060
49.	P.C. BOARD KLM-1052	34310520
50.	RADIATION SHEET	56500300
51.	ISOLATING WASHER	54007300
52.	RUBBER FEET K-30	50010300
53.	METAL FITTING FOR KEYBOARD	64080200

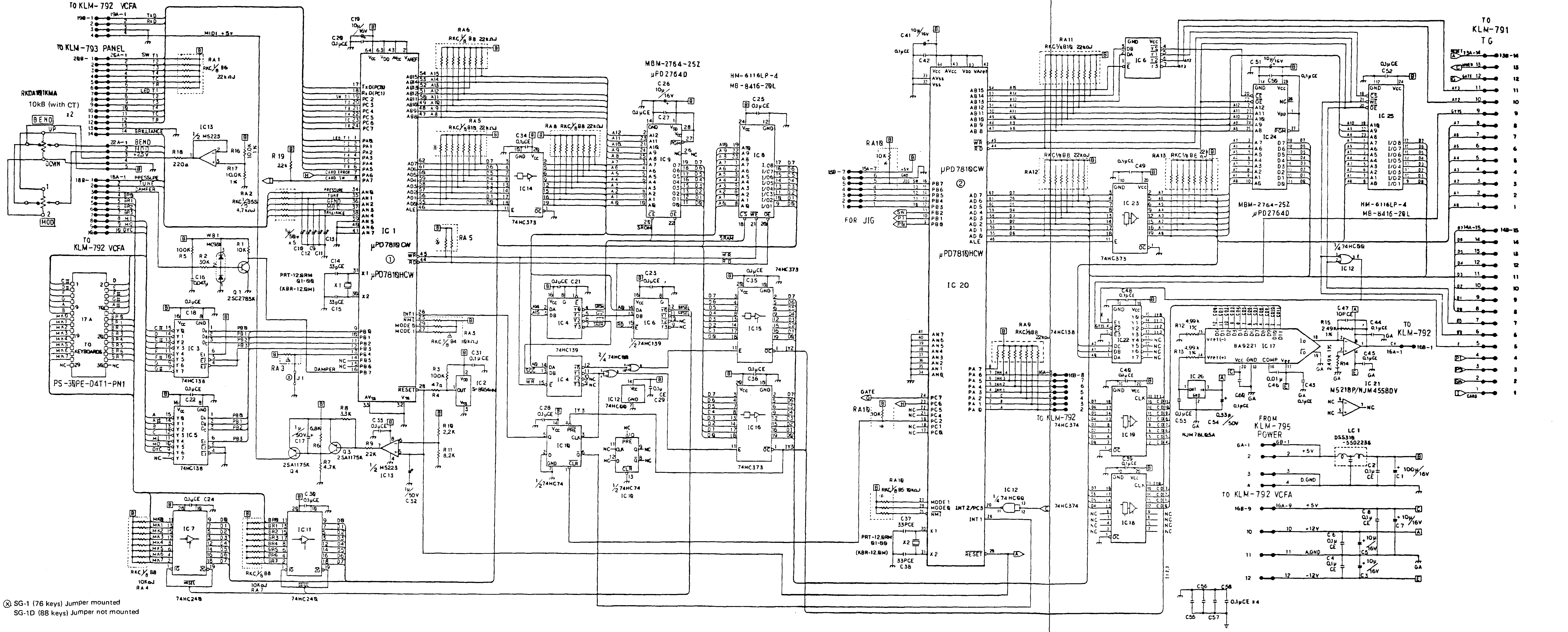
4. BLOCK DIAGRAM

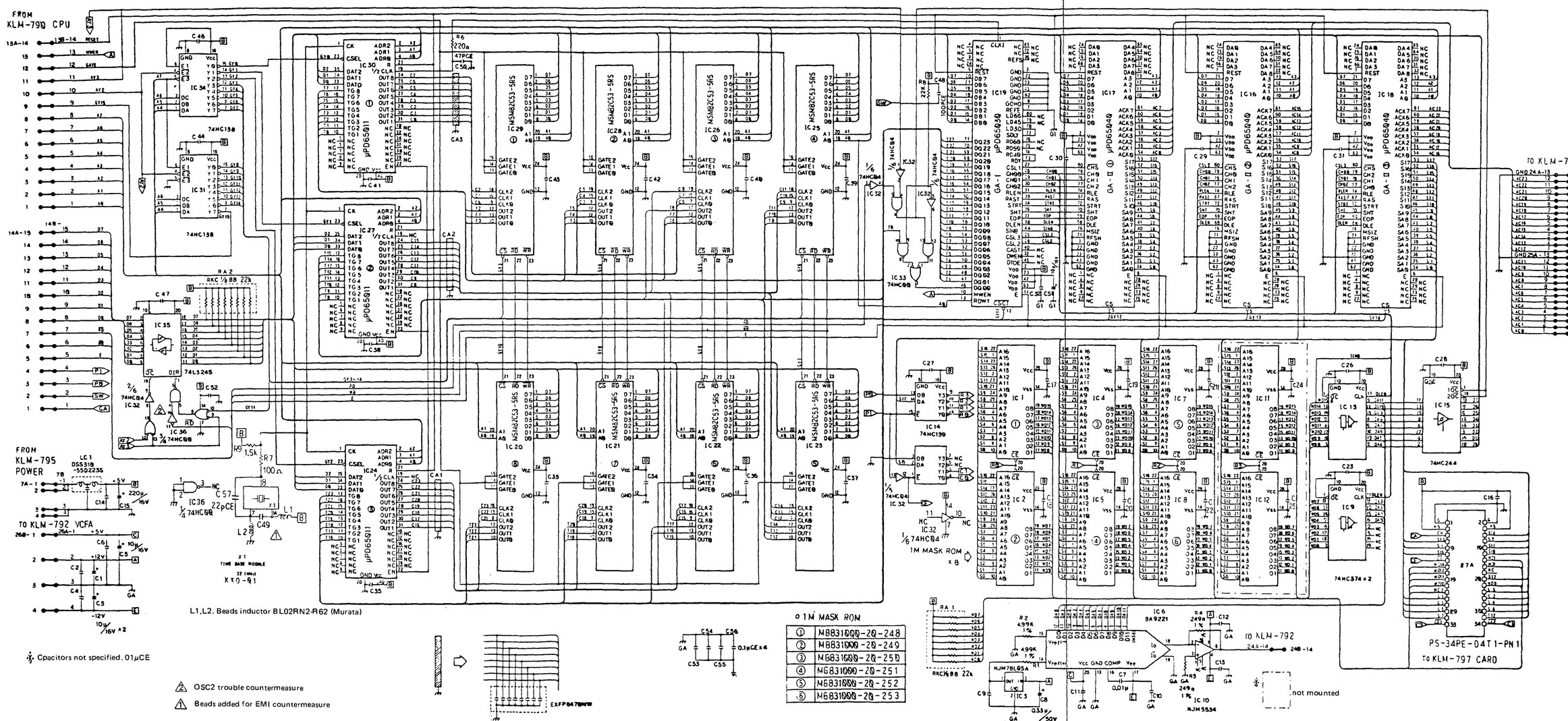


5. CIRCUIT DIAGRAM

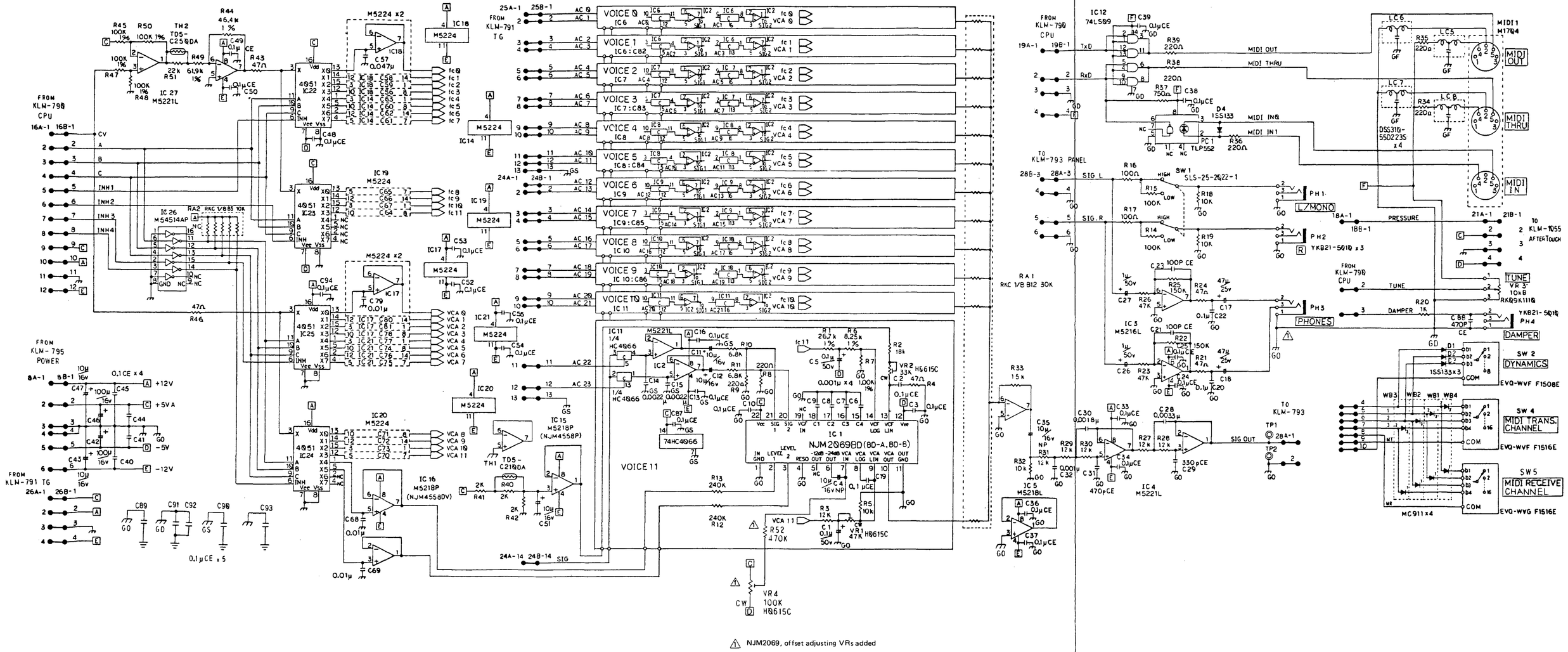
KLM-1055 (ONLY FOR SG-1D)



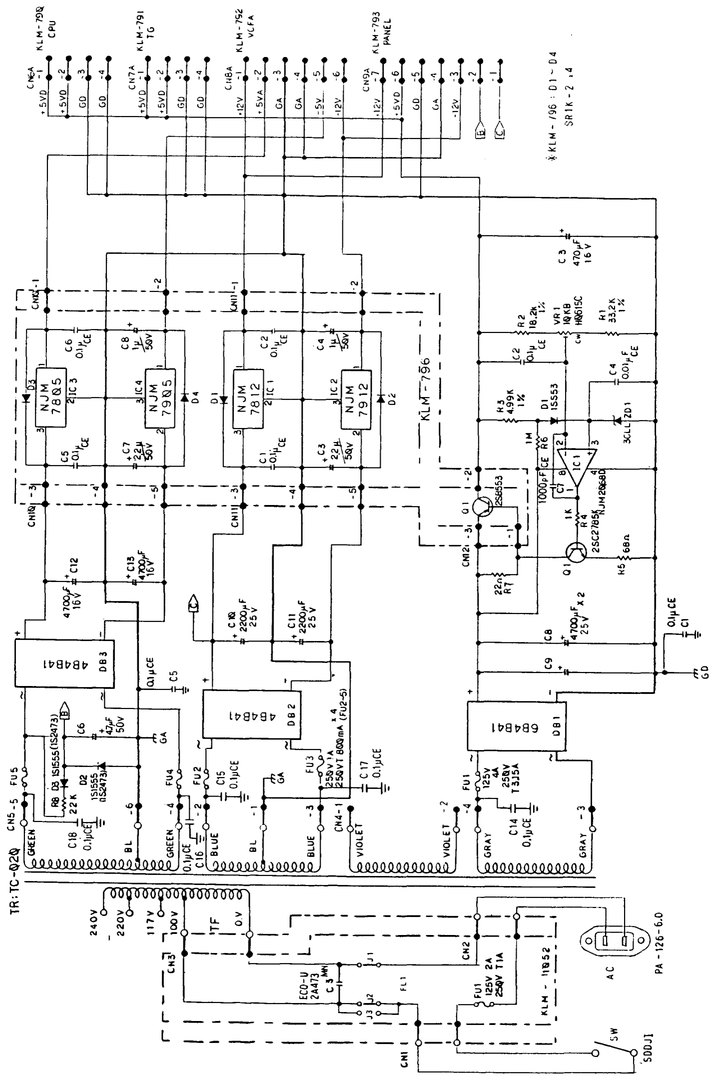

TO KLM-792 VCFA
TO KLM-793 PANEL
RKDA101KMA
10kB (with CT)
BEND
UP
DOWN
MOD
MIDI +5V
IC13
M5223
PS-30PE-04T1-PN1
TO KEYBOARDS
74HC138
74HC240
IC 1
μPD7810CW
μPD7810HCW
PRT-12.0RM
(KBR-12.0M)
MBM-2764-25Z
μPD2764D
HM-6116LP-4
MB-8416-20L
74HC373
74HC139
74HC74
μPD7810CW
②
μPD7810HCW
IC 20
FOR JIG
TO KLM-792
TO KLM-791
TG
BA9221 IC 17
M5218P/NJM4558DV
NJM78L05A
FROM
KLM-795
POWER
TO KLM-792 VCFA
74HC374
⊗ SG-1 (76 keys) Jumper mounted
SG-1D (88 keys) Jumper not mounted



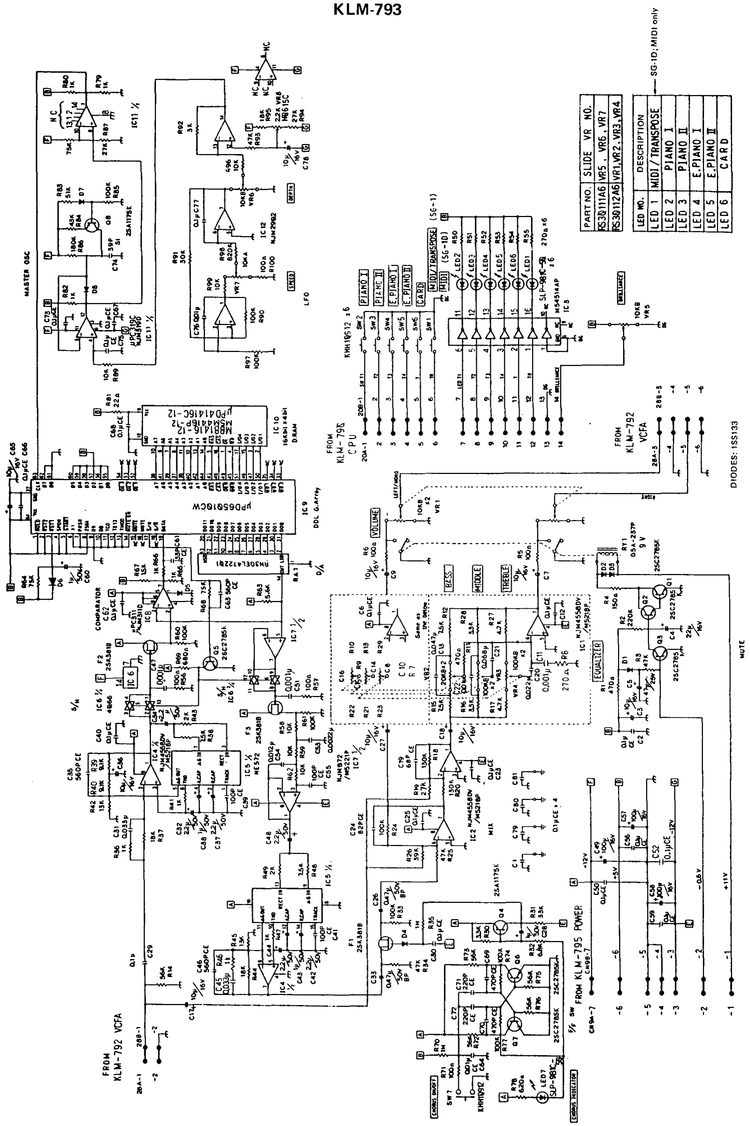
01M MASK ROM	
①	M6831000-20-248
②	M6831000-20-249
③	M6831000-20-250
④	M6831000-20-251
⑤	M6831000-20-252
⑥	M6831000-20-253


FROM KLM-790 CPU
FROM KLM-791 TG
FROM KLM-795 POWER
FROM KLM-791 TG
IC 27 M5221L
IC 26 M54514AP
IC 25 4051
IC 24 4051
IC 23 4051
IC 22 4051
IC 19 M5224
IC 20 M5224
IC 21 M5224
IC 17 M5224
IC 18 M5224
IC 14 M5224
IC 15 M5218P (NJM4558P)
IC 16 M5218P (NJM4558DV)
VOICE 0
VOICE 1
VOICE 2
VOICE 3
VOICE 4
VOICE 5
VOICE 6
VOICE 7
VOICE 8
VOICE 9
VOICE 10
VOICE 11
IC 1 NJM2069BD(BD-A,BD-6)
IC 2 74HC4066
IC 3 M52216L
IC 4 M5221L
IC 5 M5218L
IC 12 74LS69
TO KLM-793 PANEL
TO KLM-793
TO KLM-1055 AFTERTOUCH
L/MONO
PHONES
DAMPER
DYNAMICS
MIDI TRANS. CHANNEL
MIDI RECEIVE CHANNEL
MIDI OUT
MIDI THRU
MIDI IN
PRESSURE
TUNE
SIG OUT
MC911 x4
△ NJM2069, offset adjusting VRs added

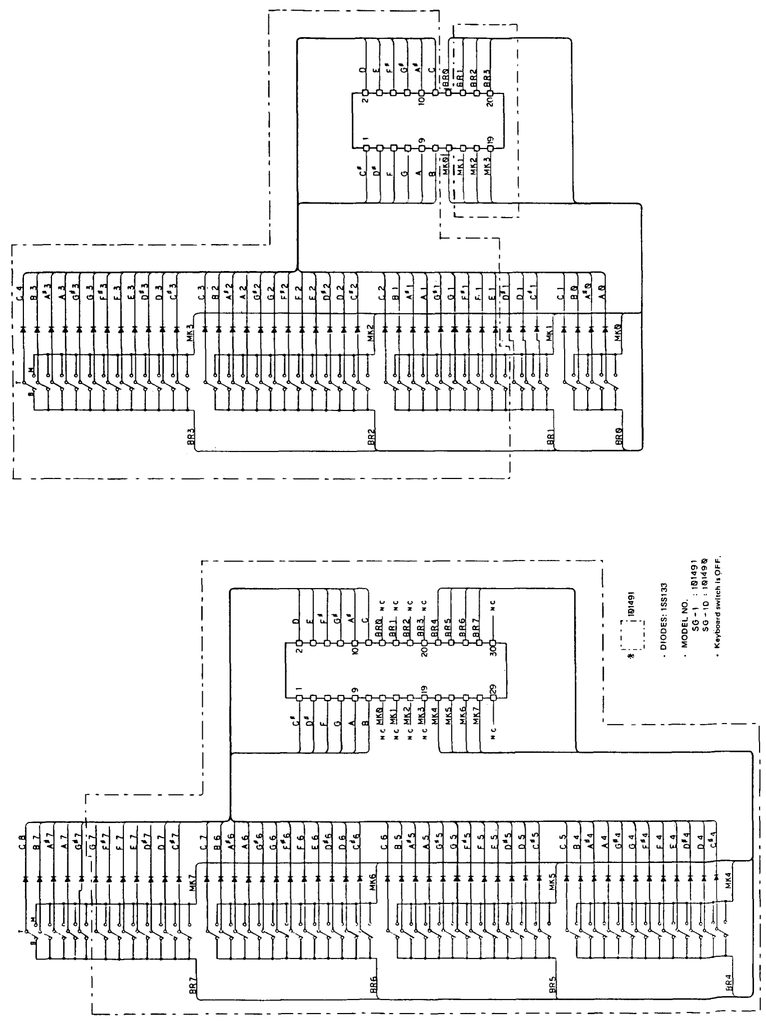
KLM-795, 796, 1052

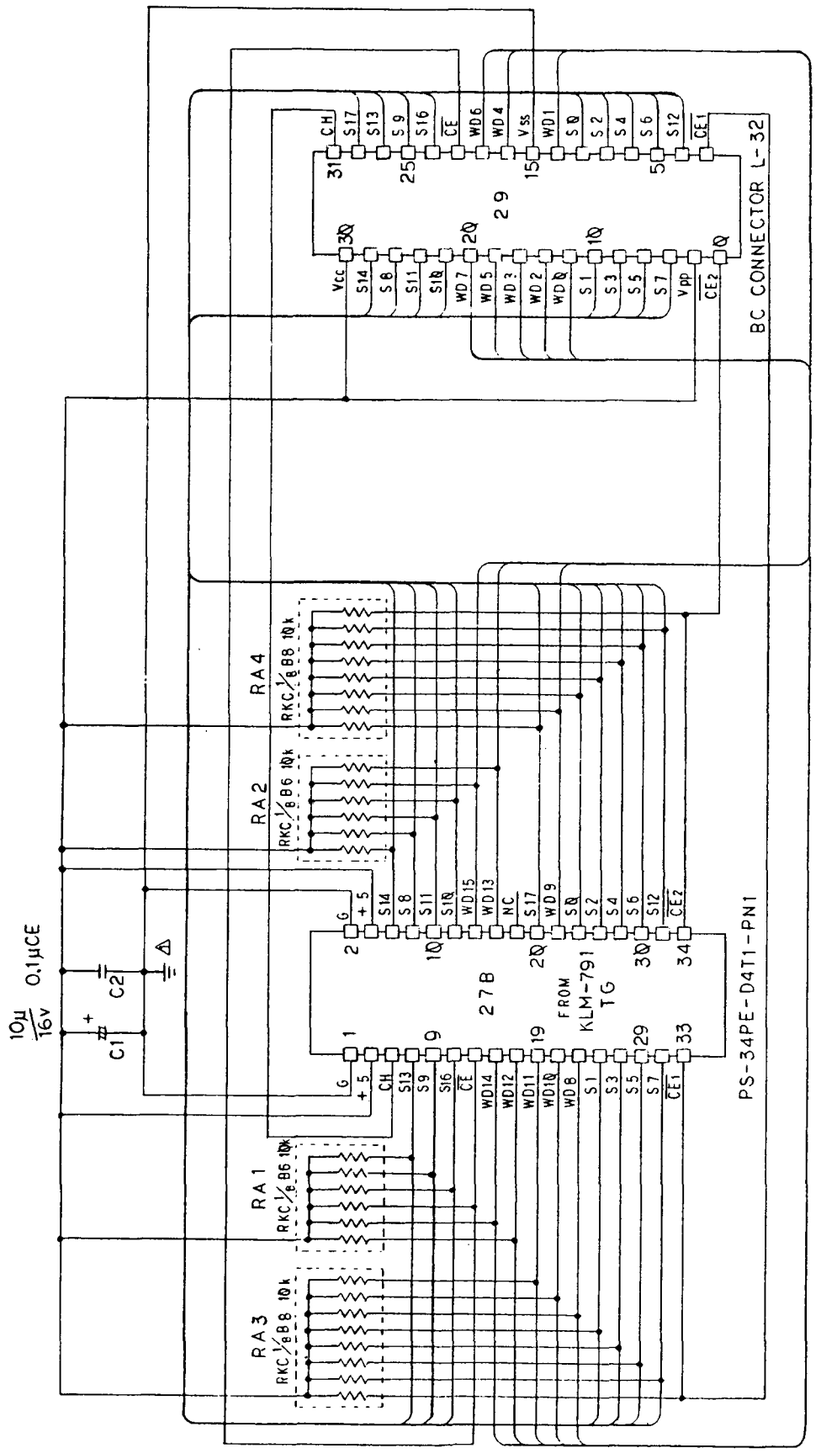


KLM-793



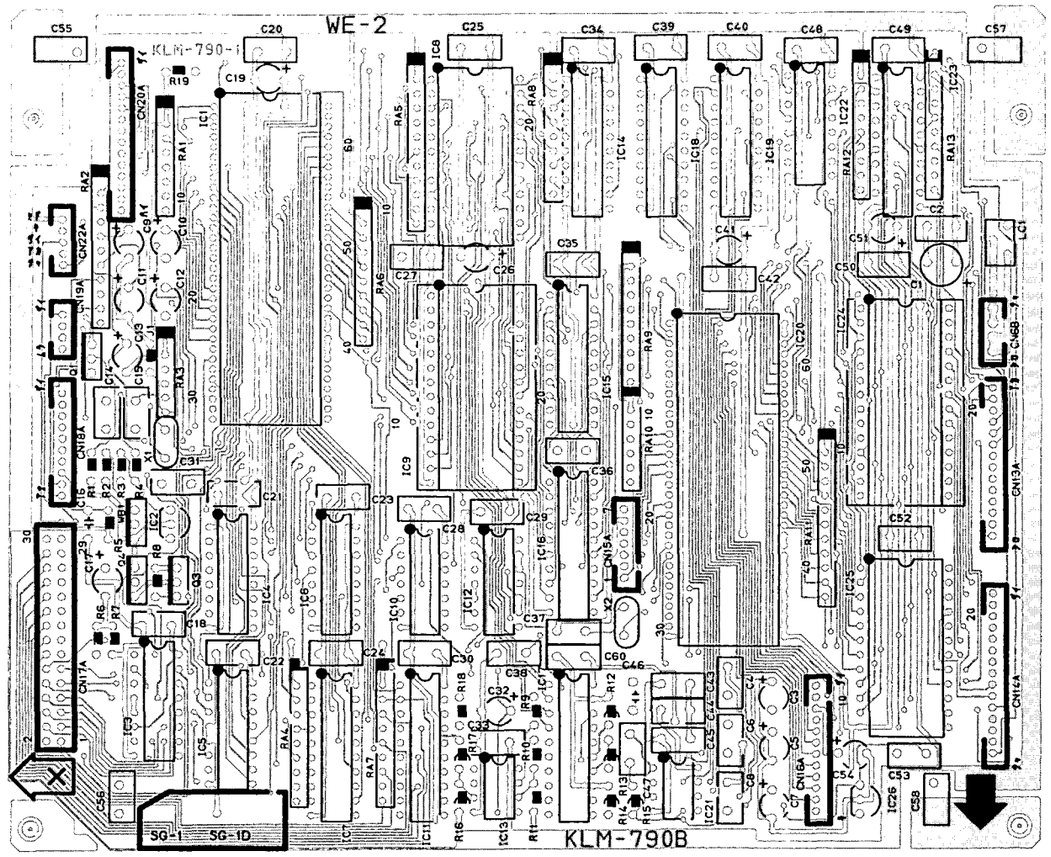
KEYBOARD MATRIX



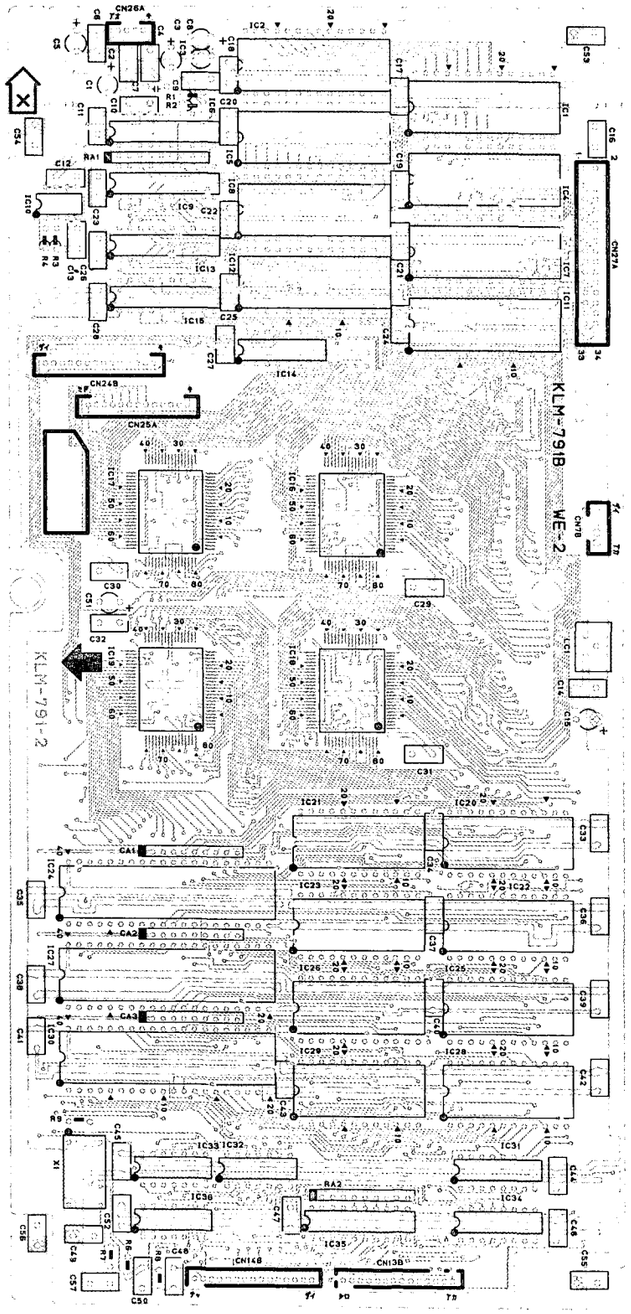


6. P.C. BOARD

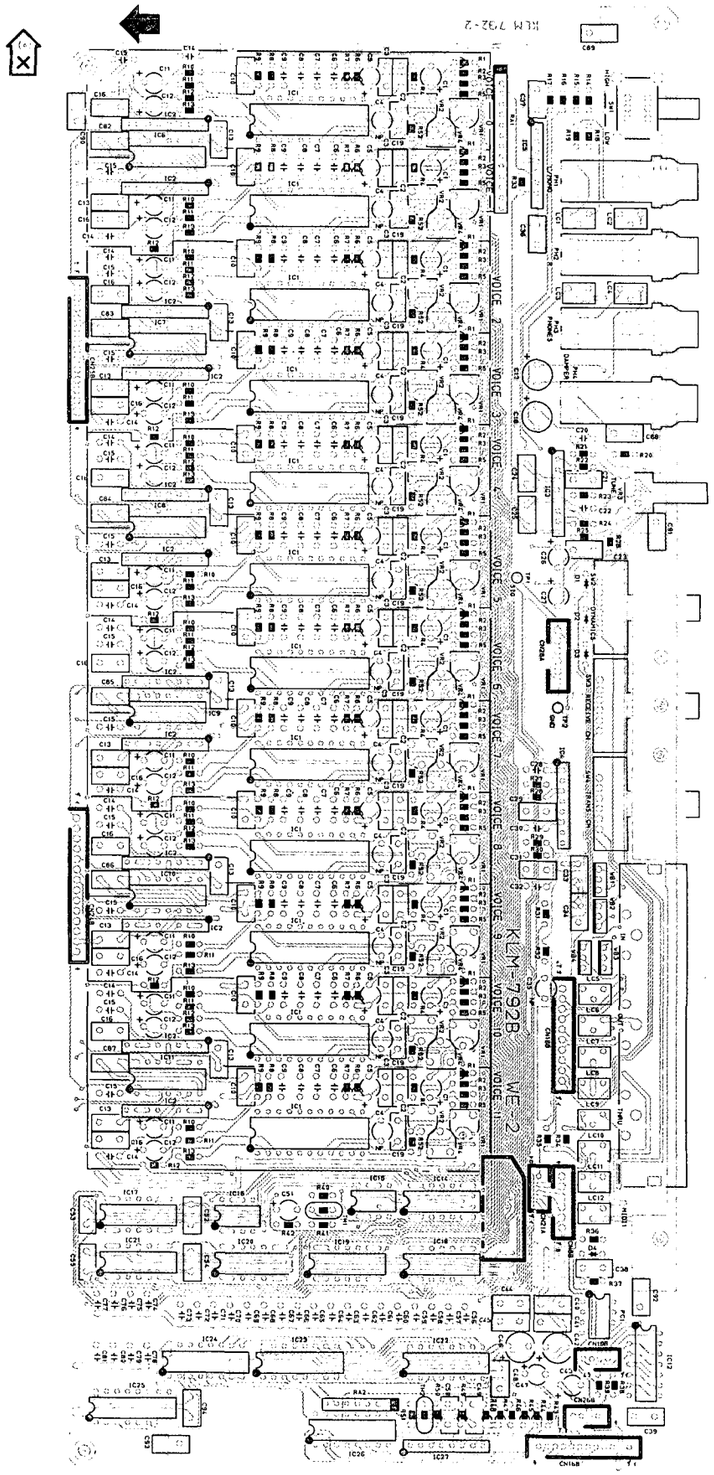
KLM-790B

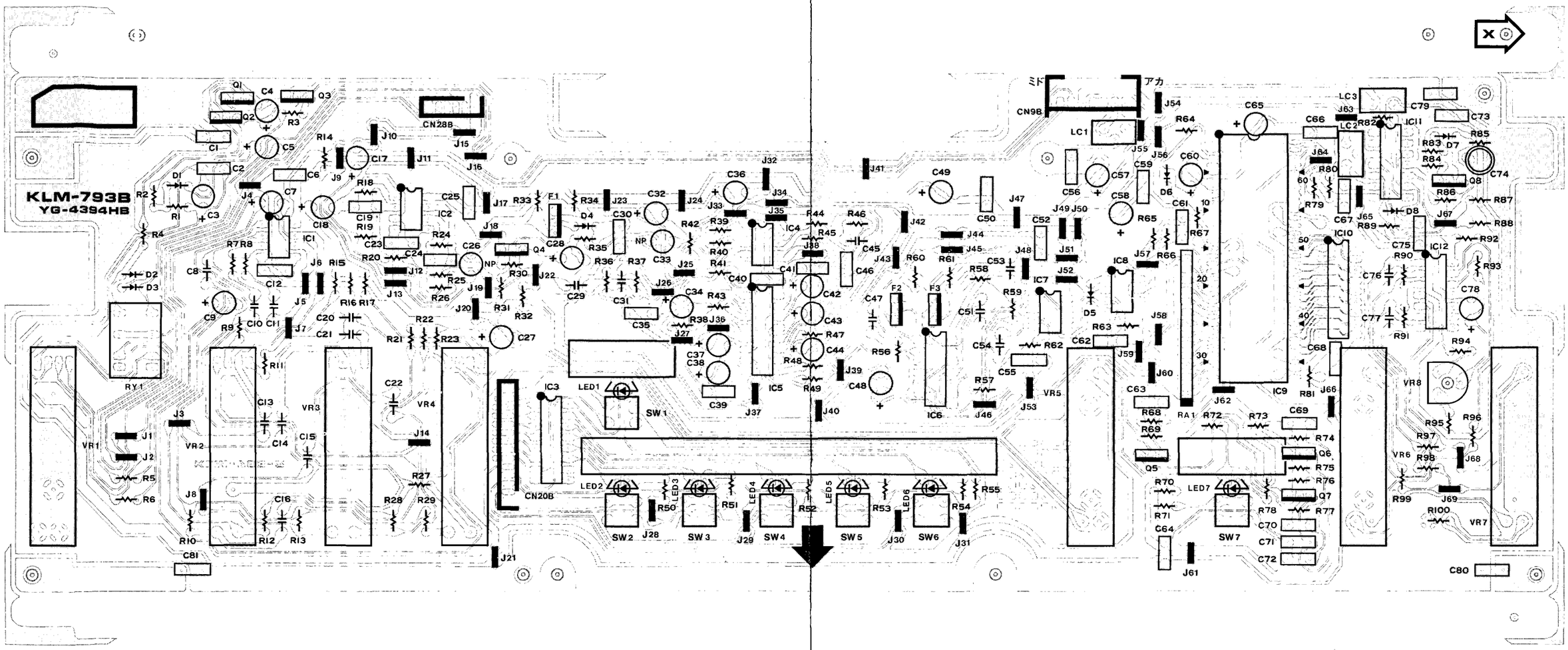


KLM-791B

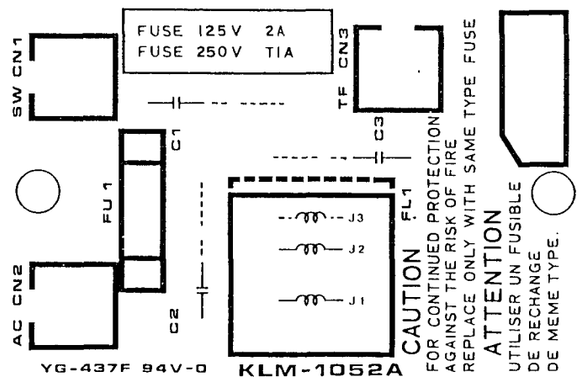


KLM-792B

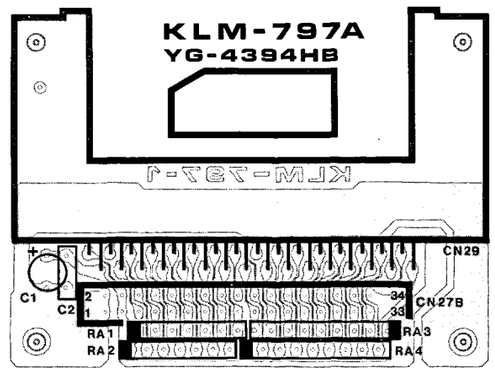




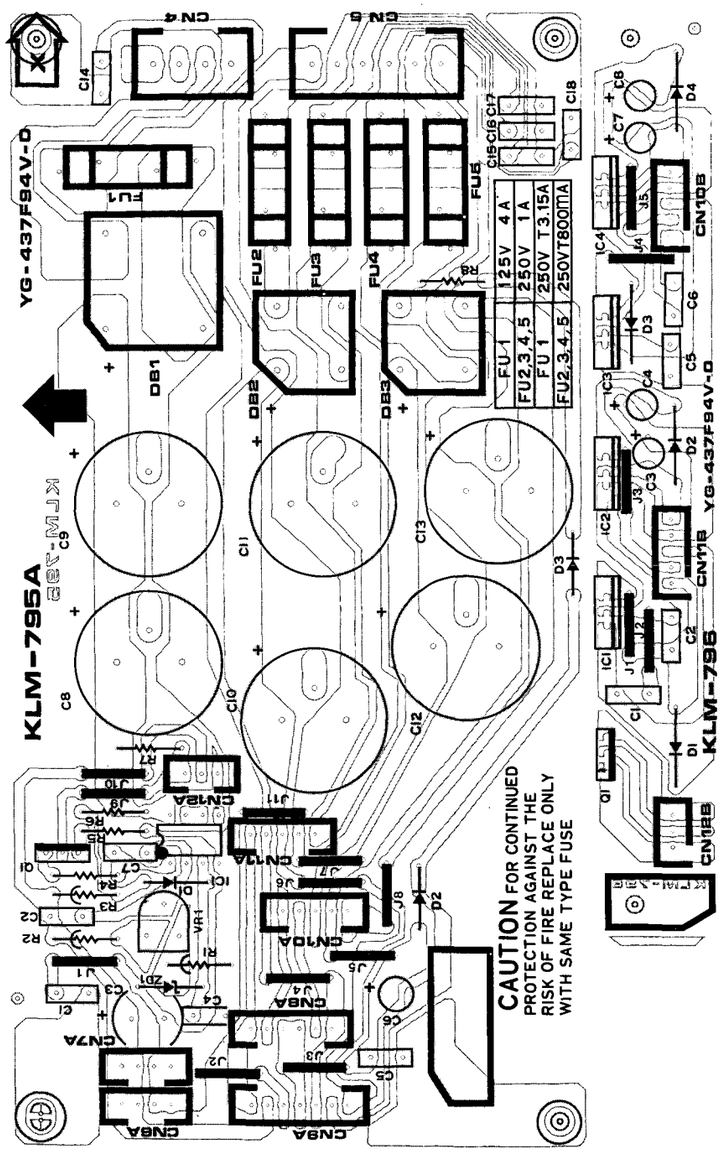
KLM-1052A



KLM-797A



KLM-795A



7. MAIN CIRCUIT EXPLANATIONS

1. SYSTEM EXPLANATION

Outline

Sampling Grand SG-1/1D is a sampling piano which has 12 voices (24 oscillators), all functions are controlled by CPU System Program. (Software)

1-1. CPU System

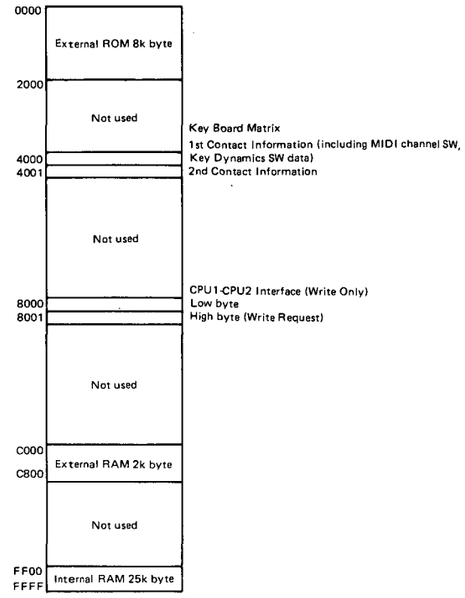
This is a Dual CPU System using two 8 bit microcomputers μPD7810, and the function of each CPU is as follows. (Refer to a circuit diagram KLM-790)

CPU (IC1)
1) Keyboard scan
2) Panel Switch Data Input
3) Panel LED Data Output
4) MIDI Channel Sw, Key Dynamic Sw Data Input
5) A/D Input (Analog Data of Brilliance, Tune, Bend, MOD, Pressure)
6) Damper Switch Input
7) ROM Card Check
8) MIDI (IN/OUT)
9) CPU2 Interface

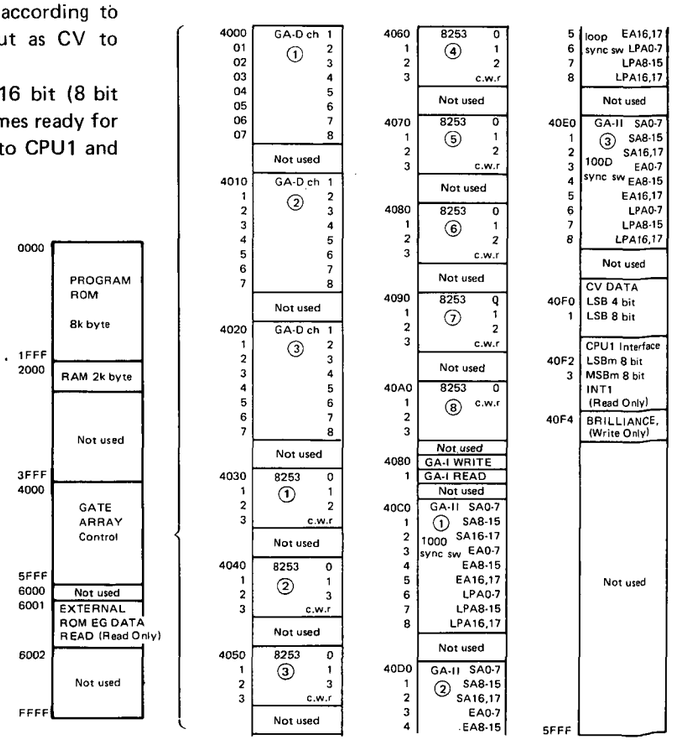
CPU2 (IC20)
1) Keyboard assigner (distributes key data from CPU1 to 12 voices)
2) TG Control on KLM-791 (Pitch Calculation, Divider Control, Gate ON, ROM Card Tone, Reading Parameters)
3) VCFA Control on KLM-792 (Calculate fc, VCA level by VCF EG and VCA EG which are produced according to each tone parameter and the result is output as CV to control 2069 by outputting.)
4) CPU1 Interface (Receiving one datum at 16 bit (8 bit x 2) from CPU1 and proceed it. When it becomes ready for receiving, it begins to perform interruption into CPU1 and receive the data again.)

1-2. CPU Memory Map

● CPU1



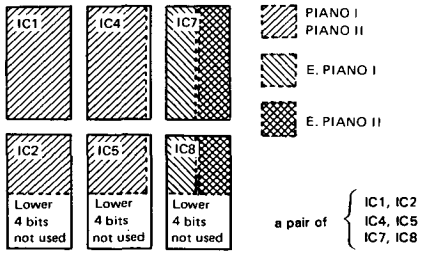
● CPU2



1-3. Sound Source System

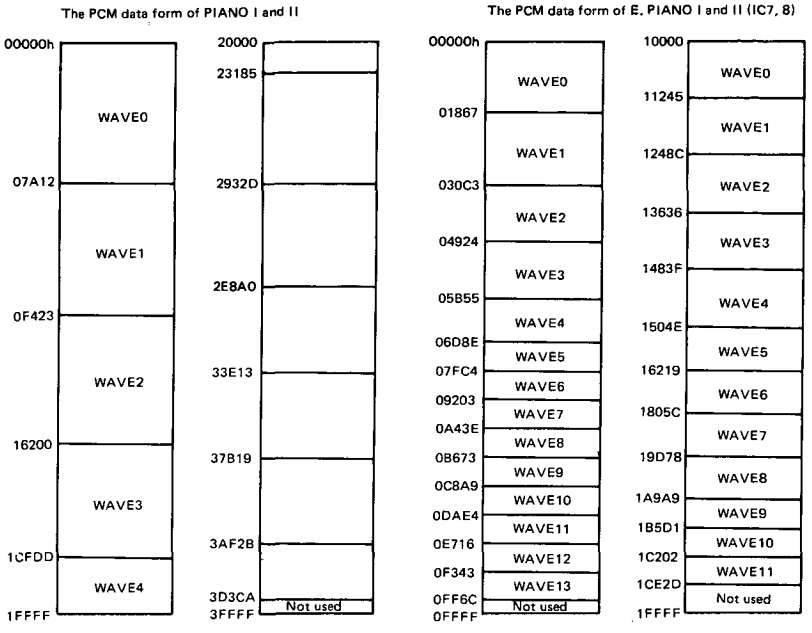
The real piano sounds are recorded in the sound source actually, and they are coded into PCM. These coded data are stored into 1M bit mask ROM and accessed by DMA. (Refer to a circuit diagram KLM-791)

Note: The data inside the Mask ROM are all PCM data at 12 bit per word. Therefore, they will be addressed with two ROMs as one group. The outline of data is shown as below.



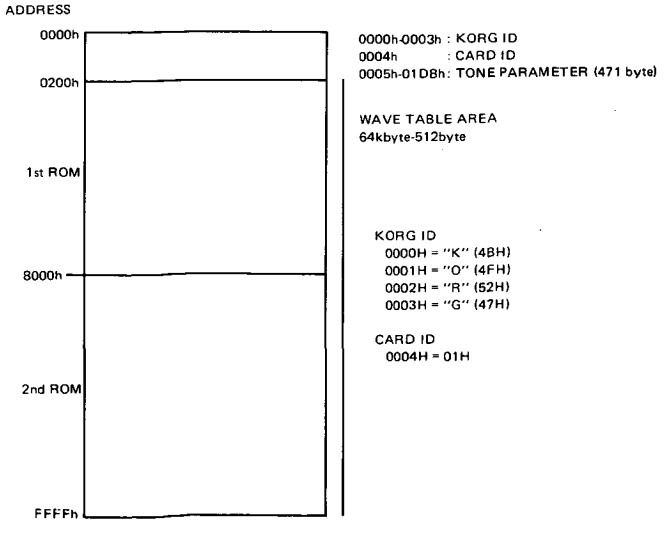
● MEMORY MAP

* PIANO I and PIANO II are using the same PCM data.



64K byte ROM Card can be used in sound source as option and its specifications are as below.

- Memory Capacity: (256k-bit x 2)
- MAPPING



1-4. The difference between SG-1 and SG-1D

The difference between the two is as follows.
The other basic circuit structures are the same.

	KEYBOARD	KEY TRANSPOSE	MIDI AFTER TOUCH
SG-1	76 keys	○	X
SG-1D	88 keys	X	○

1-5. Explanation of self-check functions

SG-1/1D is supported by self-check functions which can diagnose itself and indicate the result on LED. Please check each item according to the following procedure.

1) Preparing
Insert the ROM Card (SIN-1) for inspection which is provided separately into the main frame. Connect each of MIDI IN, OUT with MIDI Cable.
Connect foot switch directly to Damper Switch Jack. Turn foot Sw on if you proceed to the next step of inspection items. (This procedure is referred as ↵)

2) Start the self-check system
Turn power switch on while pressing MIDI SW and CARD SW simultaneously.

1. LED CHECK
Check that all LEDs of MIDI and PIANO 1 – CARD are on when self-check system starts. Press ↵ (FOOT SW ON) after checking and proceed to next step.

2. RAM CHECK
Check that all the LEDs are off after all of them are on one after another in order PIANO 1 – CARD – MIDI.

3. PANEL SW CHECK
Check that all LEDs corresponding to the switches are on by turning each switch of PIANO 1 – CARD, MIDI on. Press ↵ after checking and proceed to next step.

4. MIDI IN/OUT CHECK
Check that all LEDs of PIANO 1 – CARD are on (MIDI OFF). Press ↵ after checking and proceed to next step.

5. MIDI TRANSMIT CHANNEL CHECK
After checking that MIDI LED is on, check that LEDs of PIANO 1 – E. PIANO II indicate 0000 – 1111 in binary code corresponding to ch1 – ch16 by rotating the rotary switch on transmit channel of rear panel. Press ↵ after checking and proceed to next step.

6. MIDI RECEIVE CHANNEL CHECK
After checking MIDI, CARD LED is on, rotate the RECEIVE CHANNEL SW, and perform the same inspection as 5). Press ↵ after checking and proceed to next step.

7. KEY DYNAMICS CHECK
Rotate the DYNAMICS SW on the rear panel and check that the binary code 0000 – 0111 is indicated by LED of PIANO 1 – E. PIANO 2.

Press ↵ after checking and proceed to next step.

8. TUNE VR CHECK
Check that all LEDs of PIANO 1 – CARD are off on the condition that the TUNE VR on the rear panel is rotated to (b). The LEDs of PIANO 1 – E. PIANO 2 shall be turned on in binary number while rotating TUNE VR gradually to (#). Check that the LED on CARD is turned on when it is fully rotated to (#) from 0000 to 1111.
Check that all LEDs are turned off when rotating it fully to (b) and indication shall gradually reduces from 1111 to 0000 while LED of CARD is on.
Check that in the center of TUNE VR, the indication shall be 1000 and MIDI LED shall be turned on.
Press ↵ after checking and proceed to the next step.

9. BRILLIANCE SLIDE VR CHECK (each value is not so strict)

at –5 position	All LEDs of PIANO 1 – E. PIANO 2 are off "0000"
at 0 position	LEDs on PIANO 1 and MIDI LED are on "1000"
at +5 position	LEDs of PIANO 1 – E. PIANO 2 and CARD LEDs are on "1111"

Press ↵ after checking and proceed to the next step.

10. BEND WHEEL CHECK
Check that MIDI LED is on when the binary code, "1000" or "0111" is indicated by LED of PIANO 1 – E. PIANO 2 or it is in transition condition of the two.
Please check that the indication is reducing the number from 1000 to 0000 by making the BEND WHEEL down. Next, check that the indication is increasing the number from 1000 to 1111 by making the BEND WHEEL up, and that the CARD LED shall be turned on at UP MAX. (The CARD LED will be turned off at DOWN MAX of BEND WHEEL)
Press ↵ after checking and proceed to the next step.

11. MODULATION WHEEL CHECK
Same as BEND WHEEL CHECK. Please refer to 10). However, UP direction is indicated as 1 and DOWN as 2. Press ↵ after checking and proceed to the next step.

Note: This is the final self-check for SG-1.

12. AFTER TOUCH FUNCTION CHECK
This check item shall be applied only to SG-1D. (This shall be skipped automatically in SG-1). After pressing the keys, check that the binary code indication from 0000 to 1111 by LED of PIANO 1 – E. PIANO 2 will be changed gradually according to the strength of pressing.
Press ↵ after checking.

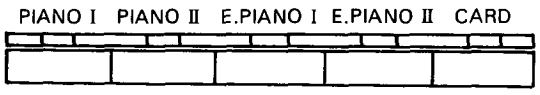
Note: Self-check functions will end at this step.

13. LED of PIANO 1 will be turned on and goes into normal mode.

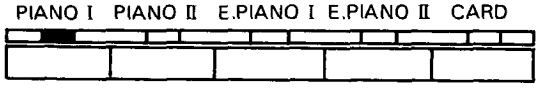
Note: When making sound, please pull out the MIDI cable which connects MIDI IN, MIDI OUT.

LED INDICATION OF BINARY CODE IS AS FOLLOWS.

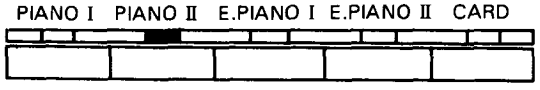
CH1



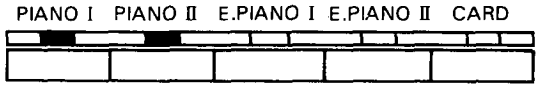
CH2



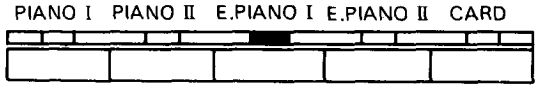
CH3



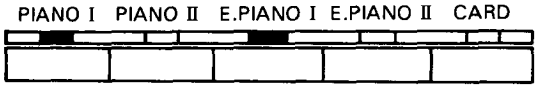
CH4



CH5

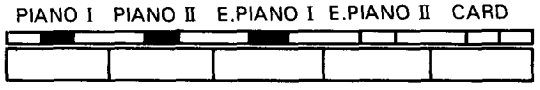


CH6

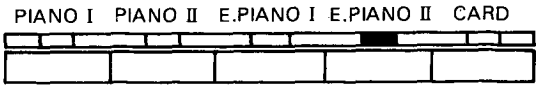


CH7

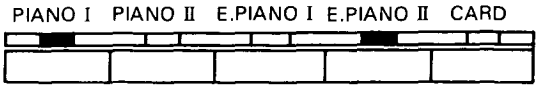
CH8



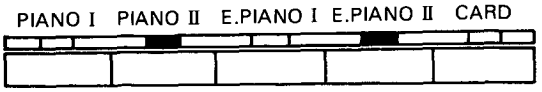
CH9



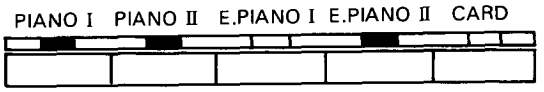
CH10



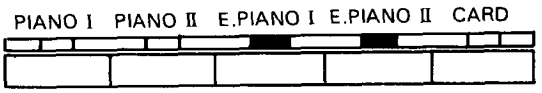
CH11



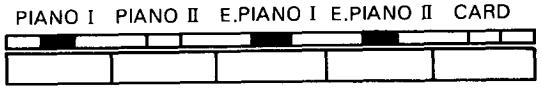
CH12



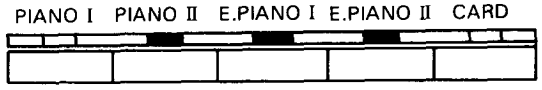
CH13



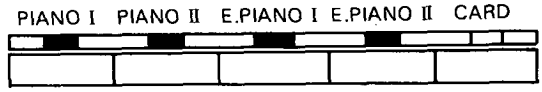
CH14



CH15



CH16



2. MAIN CIRCUIT EXPLANATION

2-1. KLM-790

The functions of ports of each CPU on a CPU system board are mentioned below:

Ports of CPU1 (IC1, μPD7810)

PORT A LED output port and check port for ROM card.

	I/O	
PA0	O	Piano 1 LED (statically on)
PA1	O	Piano 2 LED (statically on)
PA2	O	E.Piano 1 LED (statically on)
PA3	O	E.Piano 2 LED (statically on)
PA4	O	CARD LED (statically on)
PA5	O	MIDI LED (MIDI/TRANSPOSE LED in case of SG-1) (statically LED on)
PA6	I	Input for Card error judgment (in case of trouble or insertion of a BENT ROM CARD, CPU2 detects it and passes the information to CPU1 then makes CARD LED blinking)
PA7	I	Port to check if ROM card is inserted. ("L" when card is in and "H" when card is out)

PORT B Input port for keyboard scan and damper

	I/O	
PB0	O	Key scan data output
PB1	O	Key scan data output
PB2	O	Key scan data output
PB3	O	Key scan data output
PB4	I	Input port for distinction of Model: SG-1 "L" SG-1D "H"
PB5		NC
PB6		NC
PB7	I	Damper switch input port (Damper ON → "H")

PORT C MIDI IN/OUT and Panel Switch input port

	I/O	
PC0	O	MIDI DATA OUT
PC1	I	MIDI DATA IN
PC2	I	PIANO 1 Switch Input: Input of "L" pulse when switch is ON
PC3	I	PIANO 2 Switch Input: Input of "L" pulse when switch is ON
PC4	I	E.PIANO 1 Switch Input: Input of "L" pulse when switch ON
PC5	I	E.PIANO 2 Switch Input: Input of "L" pulse when switch is ON
PC6	I	CARD Switch Input: Input of "L" pulse when switch is ON
PC7	I	MIDI Switch Input (MIDI/TRANSPOSE Switch Input in case of SG-1)

AN Input port of analogue voltage to A/D converter in CPU

AN0	Key pressure voltage input (0 – 5V)
AN1	Tune VR voltage input (0 – 5V)
AN2	Brilliance Slide voltage input (0 – 5V)
AN3	MOD VR voltage input (0 – 5V)
AN4	Brillianse Slide voltage input (0 – 5V)
AN5	NC (Ground)
AN6	NC (Ground)
AN7	NC (Ground)

CPU2 port explanation (IC20, μPD7810)

Port A Output Port KLM-792 VCFA control signal output

	I/O	
PA0	O	A
PA1	O	B
PA2	O	C
PA3	O	INH1
PA4	O	INH2
PA5	O	INH3
PA6	O	INH4
PA7		NC (+5V)

Port B Output Port Chip selection signal for TG mask ROM and output of display data to voice display device (valid on Test Mode)

	I/O	
PB0	O	TG MASK ROM Chip Selection Signal
PB1	O	TG MASK ROM Chip Selection Signal
PB2	O	Signal to read tone parameters from ROM Card
PB3	O	
PB4	O	Voice display data output for Test
PB5	O	Voice display data output for Test
PB6	O	Voice display data output for Test
PB7	O	Voice display data output for Test

Port C Input/output Port

	I/O	
PC0		NC
PC1		NC
PC2	O	CPU1 Interface reset signal output
PC3	I	Interruption input from TG (KLM-791)
PC4		NC
PC5		NC
PC6	O	CARD error signal output
PC7	O	Gate control signal of 82C53

- MEMORY

There are system ROM (8K byte) and RAM (2K byte) in each CPU.

CPU1 ROM (IC9), RAM (IC8)
CPU2 ROM (IC24), RAM (IC25)

- DAC

BA9221 (IC17) is a 12 bit DAC and outputs CV (controled voltage) to control VCFA. This output is in current mode so that is converted to voltage value with an OP AMP (IC21).

- BUFFER

HC240 x 2	IC7, IC11	This is an Octal Buffer and interfaces keyboard data, MIDI channel, key dynamics switch data to DATA BUS.

- DECODER

HC138 x 2	IC3, IC5	This decodes 3 bit of PB0 – PB12 and outputs to key-board matrix and rotary switch matrix.
HC139 x 2	IC4, IC6	This is an address decoder and output chip selection signal.
HC138 x 1	IC22	

- LATCH

HC373 x 4	IC14, IC23	Address latch
	IC15, IC16	Data latch

- Flip-Flop

HC74 x 1	IC10	Interruption control
HC374 x 2	IC18, IC19	Data latch for DAC (12 bit)

- RESET

S-8054HN x 1	IC2	System reset

2-2. KLM-791

This board is composed of TG (Tone Generator), of which major function is to access Custom gate array in accordance with instructions from CPU2 and to read waveform data from Tone source Mask ROM and output to DAC. The output waveform can be observed at CN24-14 terminal, but the waveform includes clock ingredient due to no filtering yet.

Structure of hardware

The system consists of Custom gate array GA-I (IC19), GA-II (IC16, 17, 18), GA-III (IC24, 27, 30), Programmable divider 83C53 (IC20, 21, 22, 23, 25, 26, 28, 29), 1M bit Mask ROM for wavetable (IC1, 2, 4, 5, 7, 8) and 12 bit DAC (IC6).
The functions of each devices are as follows:

<GA-1 (μPD65030)>
Upon receipt of DMA request, it determines priority sequence within 24 channels and outputs timing to GA-II.

<GA-II (μPD65040)>
It enables to set the address for each stand, end, loop from CPU2, increment the address at the timing from GA-I, read the waveform from ROM and output the pulse of sample & hold of that waveform.

<Divider (MSM82C53-5RS)
GA-III (μPD65011)>
To reduce the cent error of each keyboard, the division of frequency is required at high frequency. However, if it is not possible, divide the frequency of 32 (MHz) Block by GA-III, input into the divider, and transmit the request of DMA from divider to GA-1 since the general purpose timer can accept up to 5 (MHz).

<Waveform ROM (MB831000-20)>
It uses 6 pieces of 1M bit Mask ROM. 1 word length is 12 bit.

<D/A Converter (BA9221)>
Convert waveform of the built-in waveform ROM and Card ROM into current value and then into voltage by OP Amplifier (NJM5534). By the way, the waveform of 24 osc is included in this output.

2-3. KLM-792

This board forms VCFA. Its main function is to input the signal from TG. It works by receiving CV and multiprocessor control signal from CPU.
12 voice means that it contains 12 circuits of Custom IC 2069 for VCFA and Sample & Hold circuits separately.

2-4. KLM-793

This board forms digital chorus, 3 band equalizer and their functions are as follows.

- Digital chorus

To decrease the noise, the signal from VCF to LPF is preemphasized, logarithmic, held by S/H, and successive compared at A/D by Converter, DDL IC (μPD65010) and outside D/A converter. The final data shall be written on DRAM. Reading of delayed data from DRAM shall be performed at time division. And D/A waveform selects the delayed waveform by S/H. This waveform is interpolated by next Chebyshev's filter and reproduces the original waveform by de-emphasis expander.
This waveform is phase inverted after goes through FET SW for on/off and mixed with normal waveform and original sounds and then output as stereo sounds.

- 3 BAND EQUALIZER

This is the circuit which converts the f specialty of returning roop, and has the shelving specialty for BASS and TREBLE and peaking specialty for MID. Please refer to the separate graphics for total frequency characteristics of this equalizer.

3. THE SG-1D, SG-1 MIDI FUNCTIONS

3-1. *Setting the MIDI Transmit/Receive Channels*

• TRANSMIT CHANNEL

This switch determines which MIDI channel (1-16) the SG-1D/SG-1 will transmit MIDI data on. Only the designated channel will be used.

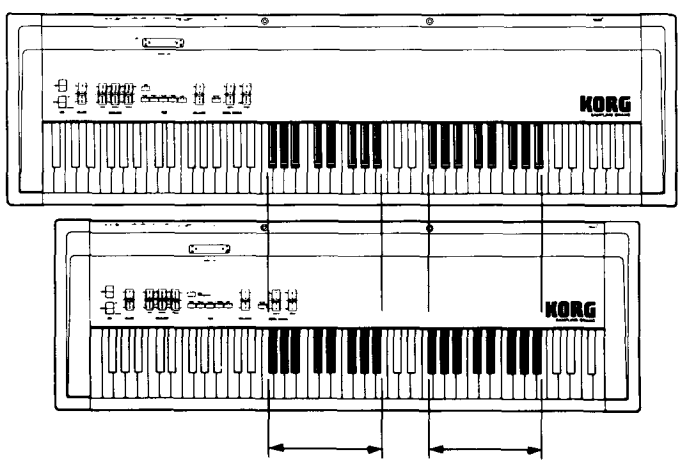
• RECEIVE CHANNEL

This switch determines which MIDI channel the SG-1D/SG-1 will receive MIDI data on when in the OMNI OFF mode. Only the designated channel will be recognized (in OMNI Off). In OMNI On mode, the SG-1D/SG-1 will receive MIDI data on all channels, regardless of the setting of the RECEIVE CHANNEL switch.

Note: Immediately after turning power source On, the Omni Mode goes ON.

3-2. Transmitting Program Change Information

The SG-1D/SG-1 can select programs of external devices over MIDI. Selection is accomplished by depressing keys on the keyboard, as described below (see also diagram...).



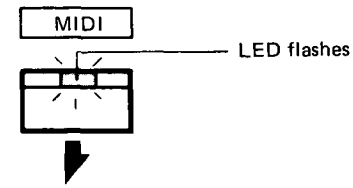
Note: The Korg SG-1D/SG-1 supports program numbering systems based on "8," which is compatible with many different synthesizer manufacturers. Other types of synthesizers may use different program numbering systems, such as decimal numbering systems. Program numbers 11 – 88 on Korg equipment translate to program number 1 – 64 on decimal systems.

MIDI CHANNEL
TRANSMIT

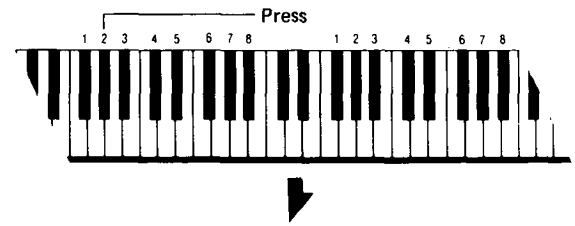
MIDI CHANNEL
RECEIVE

HOW TO SELECT PROGRAMS OVER MIDI
(Example: to select Program #27 on an EX-8000)

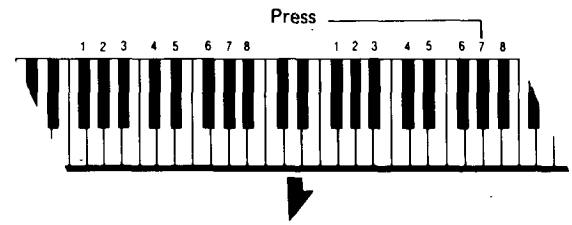
1. Press and hold the MIDI (MIDI/TRANSPOSE) Button (LED flashes).



2. Select the Bank Number (left hand digit) corresponding to "2" by pressing the designated key (see diagram).



3. Select the Program Number (right hand digit) corresponding to "7" by pressing the designated key (see diagram).



Program "27" on any attached MIDI devices is selected.

KEY REPLACEMENT GUIDE FOR SG-1/1D

THIS KEYBOARD IS DESIGNED VERY STURDY. ACCORDING TO THE KEY SUPPLIER, REPORTS ON BROKEN KEY WILL BE ONLY A FEW PER 100,000 UNITS. WE, THEREFORE, WOULD REQUEST YOU NOT TO TAKE APART FOR OTHER PURPOSE EXCEPT FOR THE REPAIRS.

1. Take off all the screws in side panel. (5 screws in each side.)
2. Open the front panel.
3. Remove side chassis after taking off the screw. (4 screws in each side.)
4. Take off the eight screws between PCB and keyboard.
5. Take off the screws from keyboard in lower case.
6. Remove connector CN-23 from KLM-1055 and CN-17 from KLM-790.
7. Take off the keyboard while taking care of the PCBs and harnesses.
8. Remove the lockplate in the back of the keyboard.
9. Take off the broken key by pushing up form back. (N.B. Take care of the plate spring not to loose.)
10. Hook the new key to the felt at front chassis.
11. While lifting up the key at the rear, insert the plate spring from the slit.
12. Make sure that the plate spring has been set properly in a desired position.
13. Set the key onto the keyboard chassis by pushing forward. (N.B. The plate spring will be easily broken if you use too much force or it is not set properly.)
14. Adjust the key so that its touch is even with others'.

CHECK AND ADJUSTMENT PROCEDURE

Caution:
This product has been thoroughly adjusted at the factory before shipment. Therefore, do not adjust any VRs other than those required.
When it is necessary to adjust VRs, refer to Semi Fixed VR location diagram.

Tools required:

1. Oscilloscope
2. Digital Volt Meter (D.V.M.)
3. Frequency Counter
4. Noise Meter
5. Tuner (DTM-12, etc.)
6. Voice Display Unit (will be supplied by KORG INC. separately.)

1. POWER SUPPLY VOLTAGE CHECK AND ADJUSTMENT

1) Connect a DVM to KLM-795 +5VD terminal. [GND to GD (Ground on Digital Circuit)]
2) Confirm if it shows +5V ±0.01V.
3) Adjust VR1 if necessary.

Remarks: 5% deviation is in allowance since ±5V, ±12V of Analog Circuit are generated by three terminals regulator.

VOICE DISPLAY UNIT

Pressing reset switch of this unit, turn on the power, after connecting its harness to KLM-790 CPU board connector CN15. With the procedure above, SG-1/D Key Assign Mode is changed and that displayed voice number changes as follows.

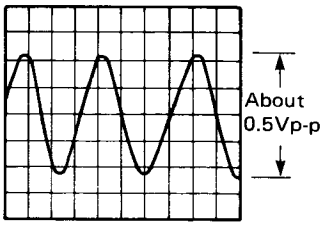
0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – A – b

2. VCFA CHECK AND ADJUSTMENT (KLM-792)

OSC-1 Level

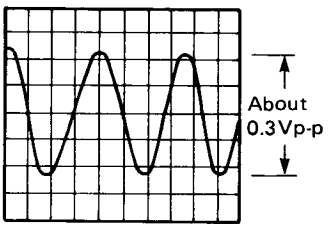
Insert a Test ROM Card (SIN-1) to Memory Card Slot and press 'Card' of Tone Select Switch.

1) Connect an oscilloscope (DC 0.2V/div, 1msec/div) to TP-1 (GND to TP2).
2) Fix Brilliance Slide VR at +5 and confirm if output waveform of all 12 voices is as shown in Fig. 1 when C5 key (C5 on DTM-12) is played.
3) Adjust VR1 of the voice displayed on the unit if necessary.
4) Fix this Slide VR at –5 and confirm if output waveform is as shown in Fig. 2 when C5 key is played.
5) Adjust VR2 of the voice displayed on the unit if necessary.



DC 0.2V/div, 1ms/div

Fig. 1



DC 0.1V/div, 1ms/div

Fig. 2

DC Off Set (from serial number)

1) Connect a DVE or an oscilloscope (DC 50mV/div, 1ms/div) to IC5 7 pin (or right lead of C35).
2) Confirm if DC level of output waveform of all 12 voices is on the Ground Level ±10mV when G6 key is played, (in case of SG-1D, any single key upper than G6 key is OK).
3) Adjust VR4 of the voice displayed on the unit if necessary.

OSC-2 Level

Insert a Test ROM Card (SIN-2) to Memory Card Slot and press 'Card' switch.

1) Connect an oscilloscope (DC 0.2V/div, 1ms/div) to TP1 (GND to TP2).
2) Fix Brilliance Slide VR to +5V and confirm if the output waveform of all 12 voices is as shown in Fig. 1 when C5 key (C5 on DTM-1) is played. Amplitude of 0.5Vp-p is allowable.

3. DIGITAL CHORUS CHECK AND ADJUSTMENT (KLM-793)

1) Fix Depth Speed Slide VR at 0.
2) Connect a Frequency Counter to KLM-793 IC9 (μPD65010CN) 18 pin in order to check clock.
3) Confirm if it shows 48KHz ±2KHz.
4) Adjust VR1 if necessary.

4. AFTER TOUCH CHECK AND ADJUSTMENT (KLM-1055)

Remarks: After Touch is available only with SG-1D.

1) Connect a DVM to IC1 7 pin.
2) Place a 500grs weight on C4 key and confirm the value crosses 0V from minus to plus within 2 – 8 seconds.
3) Adjust VR1 if after touch effecting time is out of 2 – 8 seconds.
4) Place a 1.5KGS weight on C4 key and confirm the value crosses 3.5V within 2 – 8 seconds.
5) Adjust VR1 if after touch effecting time is out of 2 – 8 seconds.
6) Confirm output value is under –110mV when no weight is placed. In case it overs –100mV, try following procedure 7) – 9).
7) Adjust VR1 so that the value becomes less than –110mV.
8) Place a 1.5 KGS weight on C4 key and adjust VR2 so that the value crosses 3.5V within 2 – 8 seconds.
9) Place a 500grs weight on C4 key and confirm if the value crosses 0V within 1 – 8 seconds.

5. EQUALIZER CHECK

Connect an oscilloscope to output and check following. Use ROM Card (SIN-1) as an oscillator.

1) BASS

Change Bass Slide VR of EQ at random while playing C2 key. The value of +MAX (about 3.2Vp-p) is about 8 times as much as the value at –MAX (about 0.4Vp-p).

2) MID

Change MID Slide VR at random while playing E4 key. The value at +MAX is about 8 times as much as the value at –MAX (amplitude is same as BASS).

3) TREBLE

Change TREBLE Slide VR at random while playing A6 key. The value at +MAX is about 8 times as much as the value at –MAX. (Amplitude is same as BASS.)

6. S/N CHECK

1) Press 'Card' switch and fix Brilliance VR, all EQ VRs at 0.
2) With a noise meter, check following noise level.

Line L: Less than –80dBm
Line R: "

PHONE L: Less than –70dBm
PHONE R: "

8. PARTS LIST (For SG-1)

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	CARBON RESISTORS			
10016000	1/6JY 0Ω	KLM-1052		2
10413222	S1/4JYTP 22Ω	KLM-795		1
10413268	S1/4JYTP 68Ω			1
10413410	S1/4JYTP 1K			1
10413522	S1/4JYTP 22K			1
10413710	S1/4JYTP 1M			1
10416000	1/6JTP 0Ω	KLM-790		1
		KLM-792		8
		KLM-793		72
10416222	1/6JTP 22Ω			1
10416247	1/6JTP 47Ω	KLM-790		1
		KLM-792		16
10416310	1/6JTP 100Ω	KLM-791		1
		KLM-792		2
		KLM-793		6
10416315	1/6JTP 150Ω			1
10416322	1/6JTP 220Ω	KLM-790		1
		KLM-791		1
		KLM-792		29
10416327	1/6JTP 270Ω	KLM-793		8
10416347	1/6JTP 470Ω			3
10416362	1/6JTP 620Ω			1
10416368	1/6JTP 680Ω			1
10416375	1/6JTP 750Ω	KLM-792		1
10416410	1/6JTP 1.0K			1
		KLM-793		9
10416415	1/6JTP 1.5K	KLM-791		1
		KLM-793		1
10416420	1/6JTP 2.0K	KLM-792		3
		KLM-793		2
10416422	1/6JTP 2.2K	KLM-790		1
10416430	1/6JTP 3.0K	KLM-793		1
10416433	1/6JTP 3.3K	KLM-790		1
		KLM-793		5
10416447	1/6JTP 4.7K	KLM-790		1
		KLM-793		4
10416456	1/6JTP 5.6K			1
10416468	1/6JTP 6.8K	KLM-790		1
		KLM-792		24
		KLM-793		1
10416475	1/6JTP 7.5K			6
10416482	1/6JTP 8.2K	KLM-790		1
10416491	1/6JTP 9.1K	KLM-793		2
10416510	1/6JTP 10K	KLM-790		1
		KLM-792		15
10416510	1/6JTP 10K	KLM-793		6
10416512	1/6JTP 12K	KLM-792		17
10416513	1/6JTP 13K	KLM-793		2
10416515	1/6JTP 15K	KLM-792		1
10416518	1/6JTP 18K			12
		KLM-793		3
10416522	1/6JTP 22K	KLM-790		2
		KLM-791		1
		KLM-792		1
10416527	1/6JTP 27K	KLM-793		3
10416530	1/6JTP 30K	KLM-790		1
		KLM-793		1
10416533	1/6JTP 33K			1
10416539	1/6JTP 39K	KLM-793		1
10416543	1/6JY 43K			1
10416547	1/6JTP 47K	KLM-792		2
		KLM-793		4
10416551	1/6JTP 51K			1
10416556	1/6JTP 56K			5
10416575	1/6JTP 75K			3
10416610	1/6JTP 100K	KLM-790		2
		KLM-792		2
		KLM-793		9
10416613	1/6JY 130K			2
10416615	1/6JTP 150K	KLM-792		2
10416618	1/6JTP 180K	KLM-793		1
10416622	1/6JTP 220K			1
10416624	1/6JTP 240K	KLM-792		24
10416647	1/6JTP 470K			12
10416682	1/6JTP 820K	KLM-793		1
10416710	1/6JTP 1.0M			2
	METAL FILM RESISTORS			
12414499	1/4TP 4.99K	KLM-795		1
12415182	1/4TP 18.2K			1
12415332	1/4 33.2K			1
12513249	1/6 249Ω	KLM-791		2
12514100	1/6TP 1.00K	KLM-792		12
12514249	1/6TP 2.49K	KLM-790		2
12514499	1/6TP 4.99K			2
		KLM-791		2
12514825	1/6 8.25K	KLM-792		12
12515100	1/6TP 10.0K	KLM-790		2
12515267	1/6TP 26.7K	KLM-792		12
12515464	1/6 46.4K			1
12515619	1/6 61.9K			1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
12516100	1/6TP 100K	KLM-792		4
	BLOCK RESISTORS			
13504510	RKC1/8B4J 10K	KLM-790		1
13505510	RKC1/8B5J 10K			1
		KLM-792		1
13506510	RKC1/8B6J 10K	KLM-797		2
13506522	RKC1/8B6J 22K	KLM-790		1
13508510	RKC1/8B8J 10K			2
		KLM-797		2
13508522	RKC1/8B8J 22K	KLM-790		5
		KLM-791		2
13510522	RKC1/8B10J 22K	KLM-790		2
13512530	RKC1/8B12J 30K	KLM-792		1
13705447	RKC1/8B5SJ 4.7K	KLM-790		1
13807002	RNBQEL001A	KLM-793		1
	THERMISTORS			
18032410	TD5-C210DA	KLM-792		1
18032450	TD5-C250DA			1
	MYLAR CAPACITORS			
20402410	50V 0.001μF			49
		KLM-793		4
20402418	50V 0.0018μF	KLM-792		1
20402422	50V 0.0022μF			24
		KLM-793		1
20402433	50V 0.0033μF	KLM-792		1
20402510	50V 0.01μF	KLM-790		1
		KLM-791		1
		KLM-792		14
		KLM-793		3
20402512	50V 0.012μF			1
20402522	50V 0.022μF			2
20402533	50V 0.033μF			2
20402547	50V 0.047μF	KLM-790		1
		KLM-792		12
		KLM-793		2
20402568	50V 0.068μF			2
20402610	50V 0.1μF	KLM-792		2
		KLM-793		2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	STYROL CAPACITOR			
20503239	50V JT 39pF			1
	CERAMIC CAPACITORS			
21356101	0.1μF	KLM-797		1
21452100	50V 10pF TP	KLM-790		1
21452220	50V 22pF TP	KLM-791		1
21452330	50V 33pF TP	KLM-790		4
		KLM-793		1
21452470	50V 47pF TP	KLM-791		1
21452680	50V 68pF TP	KLM-793		1
21452820	50V 82pF			1
21453100	50V 100pF TP	KLM-791		1
		KLM-792		2
		KLM-793		3
21453220	50V 220pF TP			2
21453330	50V 330pF TP	KLM-792		1
21453470	50V 470pF TP			2
		KLM-793		2
21453560	50V 560pF TP			3
21454100	50V 1000pF TP	KLM-795		1
21455100	50V 0.01μF TP	KLM-793		1
		KLM-795		1
21456100	25V 0.1μF TP	KLM-790		36
		KLM-791		45
		KLM-792		103
		KLM-793		21
		KLM-795		8
		KLM-796		4
	SPARK KILLER			
21900600	ECQ-U2A473MN	KLM-1052		1
	EMI FILTERS			
21950100	DSS310-55D223S	KLM-790		1
		KLM-791		1
		KLM-792		4
	ELECTROLYTIC CAPACITORS			
23507210	16V 10μF	KLM-797		1
23907447	16V 4700μF	KLM-795		2
23911422	25V 2200μF			2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
23911447	25V 4700μF	KLM-795		2
25403210	16V 10μF	KLM-790		7
		KLM-791		4
		KLM-792		27
		KLM-793		9
25403222	16V 22μF			1
25403310	16V 100μF	KLM-790		1
		KLM-792		2
		KLM-793		3
25403322	16V 220μF	KLM-791		1
25403347	16V 470μF	KLM-795		1
25404247	25V 47μF	KLM-792		2
		KLM-793		1
25406010	50V 0.1μF	KLM-792		24
25406033	50V 0.33μF	KLM-790		1
		KLM-791		1
25406110	50V 1μF	KLM-790		7
		KLM-792		2
		KLM-793		4
		KLM-796		2
25406122	50V 2.2μF	KLM-793		6
		KLM-796		2
25406147	50V 4.7μF	KLM-795		1
25463210	16V 10μF	KLM-792		13
25466047	50V 0.47μF	KLM-793		2
BLOCK CAPACITORS				
24815247	40V 47pFX8	KLM-791		3
TRANSISTORS				
30100425	2SB553 Y	KLM-796		1
30400020	2SA1175 K TN	KLM-790		2
		KLM-793		2
30420020	2SC2785 K TN	KLM-790		1
		KLM-793		6
		KLM-795		1
FETs				
30460020	2SK381-34-B	KLM-793		3
DIODES				
31001500	SR1K-2	KLM-796		4
31400300	1S 2473	KLM-795		2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
31401100	1SS-53	KLM-795		1
31401300	1SS-133	KLM-792		4
		KLM-793		8
BRIDGE DIODES				
31010200	4B4B41	KLM-795		2
31010400	6B4B41			1
LEDs				
31206700	SLP-981C-50	KLM-793		7
ZENER DIODE				
31423400	HZ-3CLL-TD	KLM-795		1
DOUBLE DIODES				
31500100	MC931	KLM-790		1
31500300	MC-911TP	KLM-792		4
ICs				
32001023	μPD-4066 BC	KLM-793		1
32001067	74HC00C	KLM-790		1
		KLM-791		2
32001068	μPD74HCU04C			1
32001070	74HC74C	KLM-790		1
32001073	74HC(40H) 373C			4
32001076	μPD-7810CW			2
32001082	μPD 74HC240C			2
32001083	74HC374C			2
		KLM-791		2
32001085	μPD65010CW-113	KLM-793		1
32001086	μPD41416C-12			1
32001087	μPC319C			1
32001094	74HC139C	KLM-790		2
		KLM-791		1
32001098	μPD65011C-023		Gate array	3
32001099	μPD65030G-043-12		Gate array	1
32001100	μPD65040G-099-12		Gate array	3
32003072	TC-74HC4066P	KLM-792		6
32004017	HD-14051 BP			4
32004028	HM-6116LP-4	KLM-790		2
32004096	74HC244	KLM-791		1
32004108	HD74HC138	KLM-790		3

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
32004108	HD74HC138	KLM-791		2
32006021	MSM-82C53-5RS			8
32007017	BA9221	KLM-790		1
		KLM-791		1
32009001	NJM-4558D-V	KLM-790		1
32009004	NJM-78L05A			1
		KLM-791		1
32009007	NJM-2902 N	KLM-793		1
32009011	NJM-7805 A	KLM-796		1
32009012	NJM-311D	KLM-793		1
32009021	NJM-7905A	KLM-796		1
32009035	NJM5534-D	KLM-791		1
32009048	NJM-7812	KLM-796		1
32009049	NJM-7912			1
32009052	NJM-2068 D	KLM-795		1
32009053	NJM-2069B-D	KLM-792		12
32011020	M5224P			6
32011024	M-5223	KLM-790		1
32011026	M-5216 L	KLM-792		1
32011047	M5218P			2
		KLM-793		3
32011048	M5221P			1
32011062	M74LS245P	KLM-791		1
32011063	M5218L	KLM-792		1
32011071	M74LS09P			1
32011072	M54514AP			1
		KLM-793		1
32011081	M5221L	KLM-792		14
32012003	MBM-2764-25Z	KLM-790		2
32012024	MB831000-20-248	KLM-791		1
32012025	MB831000-20-249			1
32012026	MB831000-20-250			1
32012027	MB831000-20-251			1
32012028	MB831000-20-252			1
32012029	MB831000-20-253			1
32023005	S-8054HN	KLM-790		1
32025003	NE572N	KLM-793		1
PHOTO COUPLER				
33001000	TLP-552	KLM-792		1
CERAMIC OSCILLATORS				
33502500	PRT-12.0RM	KLM-790		2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
TIME BASE MODULE				
33503000	KXO-01-32MHz	KLM-791		1
P.C. BOARDS				
34079000	KLM-790	KLM-790		1
34079100	KLM-791	KLM-791		1
34079200	KLM-792	KLM-792		1
34079300	KLM-793	KLM-793		1
34079510	KLM-795/796	KLM-795		1
34079700	KLM-797	KLM-797		1
34310520	KLM-1052	KLM-1052		1
SEMI FIXED VRs				
35002222	RH0615C J3 2.2K	KLM-793		1
35002310	RH0615C 10K	KLM-795		1
35002333	RH0615C 33K	KLM-792		12
35002347	RH0615C 47K			12
35002410	RH0615C 100K			12
VRs				
36018200	K161100VR-10KB			2
36019200	K091B0Z01 10KB	KLM-792		1
SLIDE VRs				
36506500	RS30111A6 10KB	KLM-793		2
36506600	RS30111A6 10KA			1
36506700	RS30112A6 10KB			1
36506800	RS30112A6 20KB			1
36506900	RS30112A6 100KB			2
ENCODERS				
37003200	EVQ-WVG F1516E	KLM-792		2
37003300	EVQ-WVF F1508E			1
SLIDE SWs				
37305300	SLS-25-2022-1			1
TACT SWs				
37507500	KHH10912	KLM-793		7

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	POWER SW			
37508000	SDDJI			1
	POWER TRANSFORMER			
40010100	TC-020 (HT-			1
	COILS			
40202300	BLO2RN2-R62	KLM-791		2
	RELAY			
40300700	G5A237P 9V	KLM-793		1
	KEYBOARD			
42003400	101491 E-76			1
	PHONE JACKS			
45404400	YKB21-5010	KLM-792		4
	FUSES			
46402301	125V 2A UL		117 US	1
			100JP	1
			117EX	1
			117CN	1
46402601	125V 4.0A UL		117 US	1
			100JP	1
			117EX	1
			117CN	1
46412003	250V 1.0A UL		117 US	4
			100JP	4
			117EX	4
			117CN	4
46461901	250V T800MA		220 GE	4
			220 SE	4
			240 AF	4
			240 AU	4
			240 GE	4
			220 WG	4
			220FR	4
			240UK	4
			220 SC	4

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
46462001	250V T1.0A		220 GE	1
			220 SE	1
			240 AF	1
			240 AU	1
			240 GE	1
			220 WG	1
			220FR	1
			240UK	1
			220 SC	1
46462501	250V T3.15A		220 GE	1
			220 SE	1
			240 AF	1
			240 AU	1
			240 GE	1
			220 WG	1
			220FR	1
			240UK	1
			220 SC	1
	HARNESSES			
47066700	HNS-567 2P			1
47066800	HNS-568 2P			1
47066900	HNS-569 2P			1
47067000	HNS-570 4P			1
47067100	HNS-571 4P			1
47067200	HNS-572 6P			1
47067300	HNS-573 7P			1
47067400	HNS-574 5P	KLM-796		1
47067500	HNS-575 5P			1
47067600	HNS-576 3P			1
47067700	HNS-577 14P	KLM-791		1
47067800	HNS-578 15P			1
47067900	HNS-579 12P	KLM-792		1
47068000	HNS-580 30P			1
47068100	HNS-581 10P	KLM-792		1
47068200	HNS-582 4P			1
47068300	HNS-583 14P	KLM-793		1
47068500	HNS-585 5P			1
47068600	HNS-586 14P	KLM-792		1
47068700	HNS-587 13P			1
47068800	HNS-588 4P			1
47068900	HNS-589 34P			1
47069000	HNS-590 6P	KLM-793		1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
CONNECTORS				
47150400	B4P-VH	KLM-795		1
47150600	B6P-VH			1
47160300	B3B-EH			1
47160400	B4B-EH	KLM-790		1
		KLM-791		1
		KLM-795		2
47160500	B5B-EH			2
47160600	B6B-EH	KLM-792		2
		KLM-795		1
47160700	B7B-EH			1
47170400	B4B-PH	KLM-790		1
		KLM-791		1
		KLM-792		1
47170500	B5B-PH	KLM-790		1
47170700	B7B-PH			1
47171000	B10B-PH			1
47171200	B12B-PH			1
47171300	B13B-PH	KLM-791		1
47260700	S7B-EH	KLM-793		1
47171500	B15B-PH	KLM-790		1
CONNECTOR TOPS				
47171400	B14B-PH	KLM-790		2
		KLM-791		1
47190200	5096-02C	KLM-1052		3
HEADERS				
47409410	PS-34PE-D4T1-PN1	KLM-791		1
		KLM-797		1
47409800	PS-30PE-D4T1-PN1	KLM-790		1
BC CONNECTOR				
47409900	L-32	KLM-797		1
IC SOCKETS				
48001282	28P DICA-28CTI	KLM-790		2
DIN JACK SOCKET				
48010180	X3 M-1704	KLM-792		1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
RUBBER FEET				
50010000	K-3215			2
50010300	K-30			2
RUBBER CUSHIONS				
50010100	Large 95 X 7 X 5			1
50010200	Small 23 X 7 X 5			2
FUSE HOLDERS				
51502300	S-N5057 #01	KLM-795		10
		KLM-1052		2
TEST PINS				
54007100	LC-2-G-Yellow	KLM-792		2
WIRE BANDS				
54007200	PLT-1M			10
ISOLATING WASHERS				
54007300	B-1725K	KLM-796		5
SPIRAL CLIPS				
54008600	CS-8			4
INLET SOCKET				
54010900	PA-126			1
FLAT CABLE CLIPS				
54013100	A-1T			2
FELT				
55007900	NO.2 1065 X 13 X 1			1
RADIATORS				
56003500	MT-C004 L = 25MM	KLM-795		1
56003800	FFC-50	KLM-796		1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	RADIATION SHEETS			
56500300	BFG-30			5
	LED SPACERS			
57513500	Type X L=9.8	KLM-793		7
	WIRING CAUTION			
58023400	For 2 pins		240UK	1
	SHIELDING SHEETS			
58024700	EMI		117 US	4
			220 WG	4
	AC CORDS			
60002100	SPT-2 UC-695-S01		117 US	1
			117EX	1
60002200	CEE EC-215-S01		220 GE	1
			240 AF	1
			240 GE	1
			220 WG	1
			220FR	1
			220 SC	1
60002300	SAA SC-455-S01		240 AU	1
60002400	DC-325-S01		100JP	1
60002500	BS BH-115-S01		240UK	1
60002600	CSA UC-707-S01		117CN	1
60002900	SE EX-221-S01		220 SE	1
	CONNECTION CORD			
60201302	6.3PHYPLUG2.5			1
	PS KNOBS			
62016200	Small (Type D)			3
	SLIDE VR KNOBS			
62016300				7

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	X-501 NTS KNOBS			
62016400	A			7
	FRONT PANEL			
64074900	NO.1			1
	SIDE CHASSIS			
64075200	R			1
64075300	L			1
	HEAT SINK PLATE			
64075600		KLM-796		1
	SUPPORTING PLATES OF CARD			
64075700				1
	MUSIC STAND HOLDERS			
64075800				2
	METAL FITTINGS			
64075900	C of VR	KLM-792		1
64078900	For phone jack			1
64079000	Of keyboard sup			3
64080200	For keyboard			2
	JOINTS			
64076000				4
	STUDS			
64076100	For P.C. Board			4
	LOWER CASE			
64078800	NO.1			1
	MUSIC STAND SWRM			
64079100				1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
CONTROL WHEELS				
64621700				2
SIDE PANELS				
64621800	R			1
64621900	L			1
SLIDE VR ESCUTCHEONS				
64622000				7
CARD ESCUTCHEON				
64622100				1
SPRINGS				
64903400	For rotary SW knob			3
WHEEL SPRINGS				
64905600	A			2
SERIAL NO. SEAL				
68599999				1
GUARANTEE SEAL				
68602500			100JP	1
NAME PLATES				
68600700			117EX	1
68603100			117 US	1
			220 GE	1
			220 SE	1
			240 AF	1
			240 AU	1
			240 GE	1
			220 WG	1
			220FR	1
			240UK	1
			117CN	1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
SCREWS				
70260308	FE O BZMC 3 X 8			6
70530308	FE B ZMC 3 X 8			28
		KLM-792		3
		KLM-796		11
70530408	FE B ZMC 4 X 8			6
70560306	FE B BZMC 3 X 6			11
70560308	FE B BZMC 3 X 8			10
70560325	FE BZMC 3 X 25			4
70560408	FE B BZMC 4 X 8			6
72530316	TP2G B ZMC 3 X 16	KLM-795		1
72530408	TP2G B ZMC 4 X 8			6
72560308	TP 2G B BZMC 3 X 8		117 US	2
			220 GE	2
			220 SE	2
			240 AF	2
			240 AU	2
			240 GE	2
			220 WG	2
			117EX	2
			220FR	2
			240UK	2
			117CN	2
			220 SC	2
72560416	TP2G B BZMC 4 X 16			4
79061510	FE WSE BZMC 5 X 10			7
79062408	TS FEW BZMC 4 X 8			14
79063410	FE WSE 2 BZMC 4 X 10			8
NUTS				
77330700	VN ZMC 7			2
77330800	VN ZMC 8	KLM-792		3
77330900	VN ZMC 9			2
WASHERS				
78030900	WM ZMC 9			2
79090060	CSTW-6			2

(For SG-1D)

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	CARBON RESISTORS			
10016000	1/6JY 0Ω	KLM-1052		2
10413222	S1/4JYTP 22Ω	KLM-795		1
10413268	S1/4JYTP 68Ω			1
10413410	S1/4JYTP 1K			1
10413522	S1/4JYTP 22K			1
10413710	S1/4JYTP 1M			1
10416000	1/6JTP 0Ω	KLM-790		1
		KLM-792		8
		KLM-793		72
		KLM-1055		1
10416222	1/6JTP 22Ω	KLM-793		1
10416247	1/6JTP 47Ω	KLM-790		1
		KLM-792		16
10416310	1/6JTP 100Ω	KLM-791		1
		KLM-792		2
		KLM-793		6
10416315	1/6JTP 150Ω			1
		KLM-1055		2
10416322	1/6JTP 220Ω	KLM-790		1
		KLM-791		1
		KLM-792		29
10416327	1/6JTP 270Ω	KLM-793		8
10416347	1/6JTP 470Ω			3
10416362	1/6JTP 620Ω			1
10416368	1/6JTP 680Ω			1
10416375	1/6JTP 750Ω	KLM-792		1
10416410	1/6JTP 1.0K	KLM-791		2
		KLM-792		1
		KLM-793		9
		KLM-1055		2
10416415	1/6JTP 1.5K	KLM-791		1
		KLM-793		1
10416420	1/6JTP 2.0K	KLM-792		3
		KLM-793		2
10416422	1/6JTP 2.2K	KLM-790		1
		KLM-1055		1
10416427	1/6JTP 2.7K			1
10416430	1/6JTP 3.0K	KLM-793		1
10416433	1/6JTP 3.3K	KLM-790		1
		KLM-793		5
10416447	1/6JTP 4.7K	KLM-790		1
		KLM-793		4
10416451	1/6JTP 5.1K	KLM-1055		1
10416456	1/6JTP 5.6K	KLM-793		1
10416468	1/6JTP 6.8K	KLM-790		1
10416468	1/6JTP 6.8K	KLM-792		24
		KLM-793		1
10416475	1/6JTP 7.5K			6
10416482	1/6JTP 8.2K	KLM-790		1
10416491	1/6JTP 9.1K	KLM-793		2
10416510	1/6JTP 10K	KLM-790		1
		KLM-792		15
		KLM-793		6
		KLM-1055		2
10416512	1/6JTP 12K	KLM-792		17
10416513	1/6JTP 13K	KLM-793		2
10416515	1/6JTP 15K	KLM-792		1
10416518	1/6JTP 18K			12
		KLM-793		3
10416522	1/6JTP 22K	KLM-790		2
		KLM-791		1
		KLM-792		1
10416524	1/6JTP 24K	KLM-1055		1
10416527	1/6JTP 27K	KLM-793		3
10416530	1/7JTP 30K	KLM-790		1
		KLM-793		1
10416533	1/6JTP 33K			1
10416539	1/6JTP 39K			1
10416543	1/6JY 43K			1
10416547	1/6JTP 47K	KLM-792		2
		KLM-793		4
10416551	1/6JTP 51K			1
10416556	1/6JTP 56K			5
10416575	1/6JTP 75K			3
10416610	1/6JTP 100K	KLM-790		2
		KLM-792		2
		KLM-793		9
		KLM-1055		1
10416613	1/6JY 130K	KLM-793		2
10416615	1/6JTP 150K	KLM-792		2
10416618	1/6JTP 180K	KLM-793		1
		KLM-1055		1
10416622	1/6JTP 220K	KLM-793		1
10416624	1/6JTP 240K	KLM-792		24
10416647	1/6JTP 470K			12
10416682	1/6JTP 820K	KLM-793		1
10416710	1/6JTP 1.0M			2
	METAL FILM RESISTORS			
12414499	1/4TP 4.99K	KLM-795		1
12415182	1/4TP 18.2K			1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
12415332	1/4 33.2K	KLM-795		1
12513249	1/6 249Ω	KLM-791		2
12514100	1/6TP 1.00K	KLM-792		12
12514249	1/6TP 2.49K	KLM-790		2
12514499	1/6TP 4.99K			2
		KLM-791		2
12514825	1/6 8.25K	KLM-792		12
12515100	1/6TP 10.0K	KLM-790		2
12515267	1/6TP 26.7K	KLM-792		12
12515464	1/6 46.4K			1
12515619	1/6 61.9K			1
12516100	1/6TP 100K			4
BLOCK RESISTORS				
13504510	RKC1/8B4J 10K	KLM-790		1
13505510	RKC1/8B5J 10K			1
		KLM-792		1
13506510	RKC1/8B6J 10K	KLM-797		2
13506522	RKC1/8B6J 22K	KLM-790		1
13508510	RKC1/8B8J 10K			2
		KLM-797		2
13508522	RKC1/8B8J 22K	KLM-790		5
		KLM-791		2
13510522	RKC1/8B10J 22K	KLM-790		2
13512530	RKC1/8B12J 30K	KLM-792		1
13705447	RKC1/8B5SJ 4.7K	KLM-790		1
13807002	RNBQEL001A	KLM-793		1
THERMISTORS				
18032410	TD5-C210DA	KLM-792		1
18032450	TD5-C250DA			1
MYLAR CAPACITORS				
20402410	50V 0.001μF	KLM-792		49
		KLM-793		4
20402418	50V 0.0018μF	KLM-792		1
20402422	50V 0.0022μF			24
		KLM-793		1
20402433	50V 0.0033μF	KLM-792		1
20402510	50V 0.01μF	KLM-790		1
		KLM-791		1
		KLM-792		14
		KLM-793		3
20402512	50V 0.012μF			1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
20402522	50V 0.022μF	KLM-793		2
20402533	50V 0.033μF			2
20402547	50V 0.047μF	KLM-790		1
		KLM-792		12
		KLM-793		2
20402568	50V 0.068μF			2
20402610	50V 0.1μF	KLM-792		2
		KLM-793		2
STYROL CAPACITOR				
20503239	50V JT 39pF			1
CERAMIC CAPACITORS				
21356101	0.1μF	KLM-797		1
21452100	50V 10pF TP	KLM-790		1
21452220	50V 22pF TP	KLM-791		1
21452330	50V 33pF TP	KLM-790		4
		KLM-793		1
21452470	50V 47pF TP	KLM-791		1
21452680	50V 68pF TP	KLM-793		1
21452820	50V 82pF			1
21453100	50V 100pF TP	KLM-791		1
		KLM-792		2
		KLM-793		3
21453220	50V 220pF TP			2
21453330	50V 330pF TP	KLM-792		1
21453470	50V 470pF TP			2
		KLM-793		2
21453560	50V 560pF TP			3
21454100	50V 1000pF TP	KLM-795		1
21455100	50V 0.01μF TP	KLM-793		1
		KLM-795		1
21455470	50V 0.047μF TP	KLM-1055		4
21456100	25V 0.1μF TP	KLM-790		36
		KLM-791		47
		KLM-792		103
		KLM-793		21
		KLM-795		8
		KLM-796		4
SPARK KILLER				
21900600	ECQ-U2A473MN	KLM-1052		1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
		EMI FILTERS		
21950100	DSS310-55D223S	KLM-790		1
		KLM-791		1
		KLM-792		4
		ELECTROLYTIC CAPACITORS		
23507210	16V 10μF	KLM-797		1
23907447	16V 4700μF	KLM-795		2
23911422	25V 2200μF			2
23911447	25V 4700μF			2
25403210	16V 10μF	KLM-790		7
		KLM-791		4
		KLM-792		27
		KLM-793		9
25403222	16V 22μF			1
25403310	16V 100μF	KLM-790		1
		KLM-792		2
		KLM-793		3
25403322	16V 220μF	KLM-791		1
25403347	16V 470μF	KLM-795		1
25404247	25V 47μF	KLM-792		2
		KLM-793		1
25406010	50V 0.1μF	KLM-792		24
25406033	50V 0.33μF	KLM-790		1
		KLM-791		1
25406110	50V 1μF	KLM-790		7
		KLM-792		2
		KLM-793		4
		KLM-796		2
		KLM-1055		1
25406122	50V 2.2μF	KLM-793		6
		KLM-796		2
25406147	50V 4.7μF	KLM-795		1
25463210	16V 10μF	KLM-792		13
25464147	25V 4.7μF	KLM-1055		1
25466047	50V 0.47μF	KLM-793		2
		BLOCK CAPACITORS		
24815247	40V 47PFX8	KLM-791		3
		TRANSISTORS		
30100425	2SB553 Y	KLM-796		1
30400020	2SA1175 K TN	KLM-790		2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
30400020	2SA1175 K TN	KLM-793		2
30420020	2SC2785 K TN	KLM-790		1
		KLM-793		6
		KLM-795		1
		FETs		
30460020	2SK381-34-B	KLM-793		3
		DIODES		
31001500	SR1K-2	KLM-796		4
31400300	1S-2473	KLM-795		2
31401100	1SS-53			1
31401300	1SS-133	KLM-792		4
		KLM-793		8
		KLM-1055		1
		BRIDGE DIODES		
31010200	4B4B41	KLM-795		2
31010400	6B4B41			1
		LEDs		
31206700	SLP-981C-50	KLM-793		7
		ZENER DIODE		
31423400	HZ-3CLL-TD	KLM-795		1
		DOUBLE DIODES		
31500100	MC931	KLM-790		1
31500300	MC-911TP	KLM-792		4
		ICs		
32001023	μPD-4066 BC	KLM-793		1
32001067	74HC00C	KLM-790		1
		KLM-791		2
32001068	μPD74HCU04C			1
32001070	74HC74C	KLM-790		1
32001073	74HC(40H)373C			4
32001076	μPD-7810CW			2
32001082	μPD 74HC240C			2
32001083	74HC374C			2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
32001083	74HC374C	KLM-791		2
32001085	μPD65010CW-113	KLM-793		1
32001086	μPD41416C-12			1
32001087	μPC319C			1
32001094	74HC139C	KLM-790		2
		KLM-791		1
32001098	μPD65011C-023		Gate array	3
32001099	μPD65030G-043-12		Gate array	1
32001100	μPD65040G-099-12		Gate array	3
32003072	TC-74HC4066P	KLM-792		6
32004017	HD-14051 BP			4
32004028	HM-6116LP-4	KLM-790		2
32004096	74HC244	KLM-791		1
32004108	HD74HC138	KLM-790		3
		KLM-791		2
32006021	MSM-82C53-5RS			8
32007017	BA9221	KLM-790		1
		KLM-791		1
32009001	NJM-4558D-V	KLM-790		1
32009004	NJM-78L05A			1
		KLM-791		1
32009007	NJM-2902 N	KLM-793		1
32009011	NJM-7805 A	KLM-796		1
32009012	NJM-311D	KLM-793		1
32009021	NJM-7905A	KLM-796		1
32009035	NJM5534-D	KLM-791		1
32009048	NJM-7812	KLM-796		1
32009049	NJM-7912			1
32009052	NJM-2068 D	KLM-795		1
32009053	NJM-2069B-D	KLM-792		12
32011020	M5224P			6
		KLM-1055		1
32011024	M-5223	KLM-790		1
32011026	M-5216 L	KLM-792		1
32011047	M5218P			2
		KLM-793		3
32011048	M5221P			1
32011062	M74LS245P	KLM-791		1
32011063	M5218L	KLM-792		1
32011071	M74LS09P			1
32011072	M54514AP			1
		KLM-793		1
32011081	M5221L	KLM-792		14
32012003	MBM-2764-25Z	KLM-790		2
32012024	MB831000-20-248	KLM-791		1
32012025	MB831000-20-249			1
32012026	MB831000-20-250			1
32012027	MB831000-20-251			1
32012028	MB831000-20-252			1
32012029	MB831000-20-253			1
32023005	S-8054HN	KLM-790		1
32025003	NE572N	KLM-793		1
PHOTO COUPLER				
33001000	TLP-552	KLM-792		1
CERAMIC OSCILLATORS				
33502500	PRT-12.0RM	KLM-790		2
TIME BASE MODULE				
33503000	KXO-01-32MHz	KLM-791		1
P.C. BOARDS				
34079000	KLM-790	KLM-790		1
34079100	KLM-791	KLM-791		1
34079200	KLM-792	KLM-792		1
34079300	KLM-793	KLM-793		1
34079510	KLM-795/796	KLM-795		1
34079700	KLM-797	KLM-797		1
34310520	KLM-1052	KLM-1052		1
34310550	KLM-1055	KLM-1055		1
SEMI FIXED VRs				
35002222	RH0615C J3 2.2K	KLM-793		1
35002310	RH0615C 10K	KLM-795		1
35002333	RH0615C 33K	KLM-792		12
35002347	RH0615C 47K			12
35002368	RH0615C W4 68K	KLM-1055		1
35002410	RH0615C 100K	KLM-792		12
		KLM-1055		1
VRs				
36018200	K161100VR-10KB			2
36019200	K091B0Z01 10KB	KLM-792		1
SLIDE VRs				
36506500	RS30111A6 10KB	KLM-793		2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
36506600	RS30111A6 10KA			1
36506700	RS30112A6 10KB			1
36506800	RS30112A6 20KB			1
36506900	RS30112A6 100KB			2
	ENCODERS			
37003200	EVQ-WVG F1516E	KLM-792		2
37003300	EVQ-WVF F1508E			1
	SLIDE SW			
37305300	SLS-25-2022-1			1
	TACT SWs			
37507500	KHH10912	KLM-793		7
	POWER SW			
37508000	SDDJI			1
	POWER TRANSFORMER			
40010100	TC-020 (HT-			1
	COILS			
40202300	BL02RN2-R62	KLM-791		2
	RELAY			
40300700	G5A237P 9V	KLM-793		1
	KEYBOARD			
42003300	101490 A-88			1
	PHONE JACKS			
45404400	YKB21-5010	KLM-792		4
	FUSES			
46402301	125V 2A UL		117 US	1
			100JP	1
			117EX	1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
46402301	125V 2A UL		117CN	1
46402601	125V 4.0A UL		117 US	1
			100JP	1
			117EX	1
			117CN	1
46412003	250V 1.0A UL		117 US	4
			100JP	4
			117EX	4
			117CN	4
46461901	250V T800MA		220 GE	4
			220 SE	4
			240 AF	4
			240 AU	4
			240 GE	4
			220 WG	4
			220FR	4
			240UK	4
			220 SC	4
46462001	250V T1.0A		220 GE	1
			220 SE	1
			240 AF	1
			240 AU	1
			240 GE	1
			220 WG	1
			220FR	1
			240UK	1
			220 SC	1
46462501	250V T3.15A		220 GE	1
			220 SE	1
			240 AF	1
			240 AU	1
			240 GE	1
			220 WG	1
			220FR	1
			240UK	1
			220 SC	1
	HARNESSES			
47066700	HNS-567 2P			1
47066800	HNS-568 2P			1
47066900	HNS-569 2P			1
47067000	HNS-570 4P			1
47067100	HNS-571 4P			1
47067200	HNS-572 6P			1
47067300	HNS-573 7P			1
47067400	HNS-574 5P	KLM-796		1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
47067500	HNS-575 5P			1
47067600	HNS-576 3P			1
47067700	HNS-577 14P	KLM-791		1
47067800	HNS-578 15P			1
47067900	HNS-579 12P	KLM-792		1
47068000	HNS-580 30P			1
47068100	HNS-581 10P	KLM-792		1
47068200	HNS-582 4P			1
47068300	HNS-583 14P	KLM-793		1
47068400	HNS-584 4P			1
47068500	HNS-585 5P			1
47068600	HNS-586 14P	KLM-792		1
47068700	HNS-587 13P			1
47068800	HNS-588 4P			1
47068900	HNS-589 34P			1
47069000	HNS-590 6P	KLM-793		1
47069900	HNS-599 2P			1
	CONNECTORS			
47150400	B4P-VH	KLM-795		1
47150600	B6P-VH			1
47160300	B3B-EH			1
47160400	B4B-EH	KLM-790		1
		KLM-791		1
		KLM-795		2
47160500	B5B-EH			2
47160600	B6B-EH	KLM-792		2
		KLM-795		1
47160700	B7B-EH			1
47170400	B4B-PH	KLM-790		1
		KLM-791		1
		KLM-792		1
		KLM-1055		2
47170500	B5B-PH	KLM-790		1
47170700	B7B-PH			1
47171000	B10B-PH			1
47171200	B12B-PH			1
47171300	B13B-PH	KLM-791		1
47171500	B15B-PH	KLM-790		1
47260700	S7B-EH	KLM-793		1
	CONNECTOR TOPS			
47171400	B14B-PH	KLM-790		2
		KLM-791		1
47190200	5096-02C	KLM-1052		3

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	HEADERS			
47409410	PS-34PE-D4T1-PN1	KLM-791		1
		KLM-797		1
47409800	PS-30PE-D4T1-PN1	KLM-790		1
	BC CONNECTOR			
47409900	L-32	KLM-797		1
	IC SOCKETS			
48001282	28P DICA-28CTI	KLM-790		2
	DIN JACK SOCKET			
48010180	X3 M-1704	KLM-792		1
	RUBBER FEET			
50010000	K-3215			2
50010300	K-30			3
	RUBBER CUSHIONS			
50010100	Large 95 X 7 X 5			1
50010200	Small 23 X 7 X 5			2
	FUSE HOLDERS			
51502300	S-N5057 #01	KLM-795		10
		KLM-1052		2
	TEST PINS			
54007100	LC-2-G-Yellow	KLM-792		2
	WIRE BANDS			
54007200	PLT-1M			10
	ISOLATING WASHERS			
54007300	B-1725K	KLM-796		5

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	SPIRAL CLIPS			
54008600	CS-8			4
	INLET SOCKET			
54010900	PA-126			1
	FLAT CABLE CLIPS			
54013100	A-1T			2
	FELT			
55008000	NO.2 1230 X 13 X 1			1
	RADIATORS			
56003500 56003800	MT-C004 L=25MM FFC-50	KLM-795 KLM-796		1 1
	RADIATION SHEETS			
56500300	BFG-30			5
	LED SPACERS			
57513500	Type X L=9.8	KLM-793		7
	WIRING CAUTION			
58023400	FOR 2 PINS		240UK	1
	SHIELDING SHEETS			
58024700	EMI		117 US 220 WG	4 4
	AC CORDS			
60002100 60002200	SPT-2 UC-695-S01 CEE EC-215-S01		117 US 117EX 220 GE 240 AF 240 GE 220 WG 220FR	1 1 1 1 1 1 1

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
60002200 60002300 60002400 60002500 60002600 60002900	CEE EC-215-S01 SAA SC-455-S01 DC-325-S01 BS BH-115-S01 CSA UC-707-S01 SE EX-221-S01		220 SC 240 AU 100JP 240UK 117CN 220 SE	1 1 1 1 1 1
	CONNECTION CORD			
60201302	6.3PHYPLUG2.5			1
	PS KNOBS			
62016200	Small (Type D)			3
	SLIDE VR KNOBS			
62016300				7
	X-501 NTS KNOBS			
62016400	A			7
	SIDE CHASSIS			
64075200 64075300	R L			1 1
	HEAT SINK PLATE			
64075600		KLM-796		1
	SUPPORTING PLATES OF CARD			
64075700				1
	MUSIC STAND HOLDERS			
64075800				2
	METAL FITTINGS			
64075900 64078900 64079000 64080200	C of VR For phone jack Of keyboard sup. For keyboard	KLM-792		1 1 3 2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	JOINTS			
64076000				4
	STUDS			
64076100	For P.C. Board			4
	MUSIC STAND SWRM			
64079100				1
	LOWER CASE			
64079200	NO.2			1
	FRONT PANEL			
64079300	NO.2			1
	CONTROL WHEELS			
64621700				2
	SIDE PANELS			
64621800	R			1
64621900	L			1
	SLIDE VR ESCUTCHEONS			
64622000				7
	CARD ESCUTCHEON			
64622100				1
	SPRINGS			
64903400	For rotary SW knob			3
	WHEEL SPRINGS			
64905600	A			2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	SERIAL NO. SEAL			
68599999				1
	GURANTEE SEAL			
68602500			100JP	1
	NAME PLATES			
68600700			117EX	1
68603100			117 US	1
			220 GE	1
			220 SE	1
			240 AF	1
			240 AU	1
			240 GE	1
			220 WG	1
			220FR	1
			240UK	1
			117CN	1
	SCREWS			
70260308	FE O BZMC 3 X 8			6
70530308	FE B ZMC 3 X 8			30
		KLM-792		3
		KLM-796		11
70530408	FE B ZMC 4 X 8			6
70560306	FE B BZMC 3 X 6			11
70560308	FE B BZMC 3 X 8			10
70560325	FE BZMC 3 X 25			4
70560408	FE B BZMC 4 X 8			6
72530316	TP2G B ZMC 3 X 16	KLM-795		1
72530408	TP2G B ZMC 4 X 8			6
72560416	TP2G B BZMC 4 X 16			5
79061510	FE WSE BZMC 5 X 10			7
79062408	TS FEW BZMC 4 X 8			14
79063410	FE WSE2 BZMC 4 X 10			8
	NUTS			
77330700	VN ZMC 7			2
77330800	VN ZMC 8	KLM-792		3
77330900	VN ZMC 9			2

PARTS CODE	PARTS NAME SPECIFICATIONS	P.C. BOARD	IDENTIFICATION NO. FUNCTION	Q'TY
	WASHERS			
78030900	WM ZMC 9			2
79090060	CSTW-6			2

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