

# SERVICE MANUAL & PARTS LIST

(without price)

## **MIDI GUITAR**

### **MG-500**

### **MG-510**

AUG.1987



MG-500

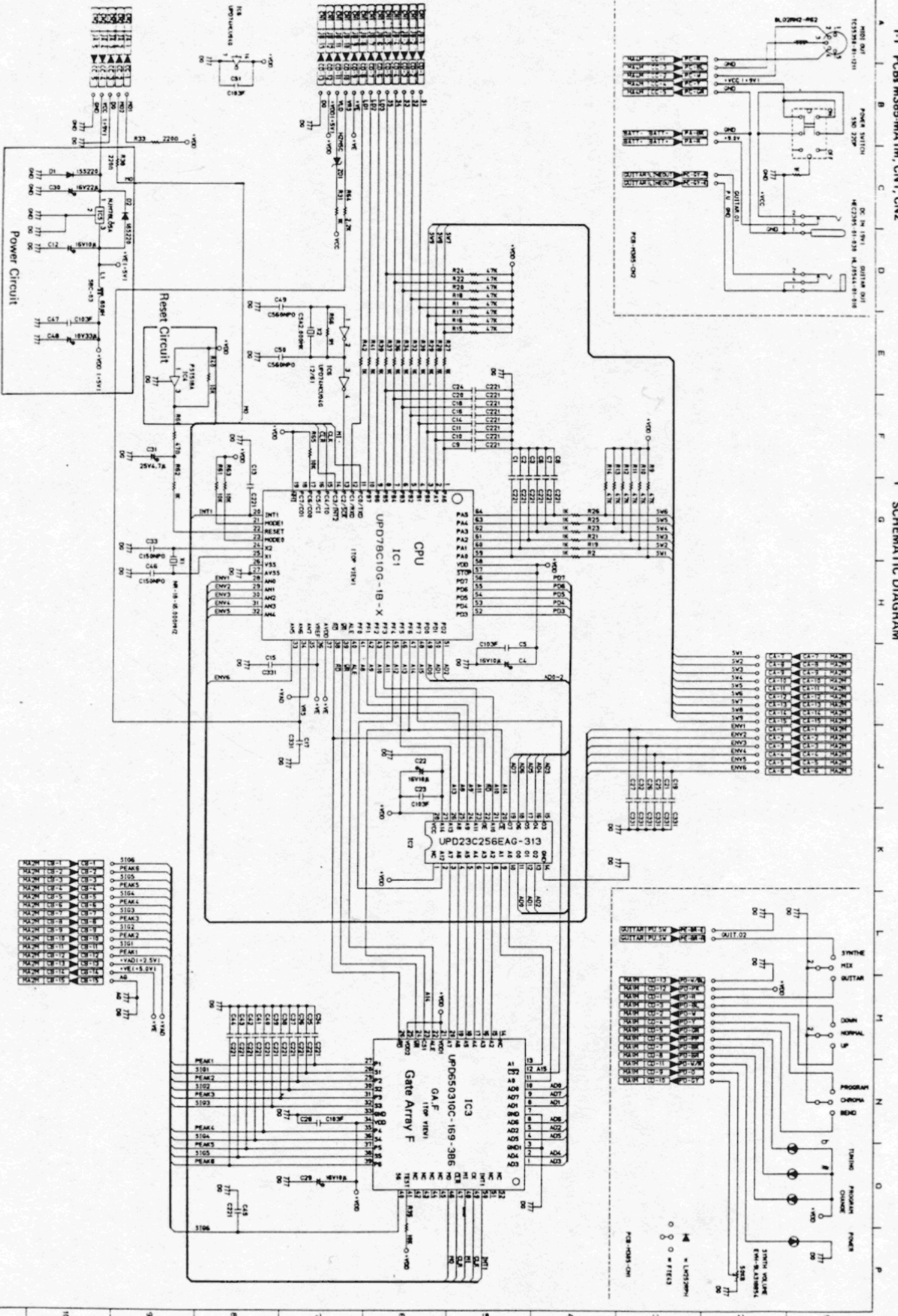


MG-510

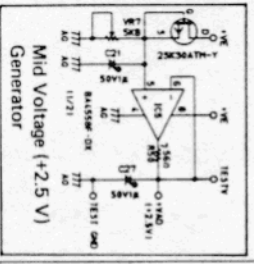
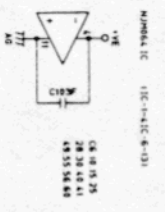
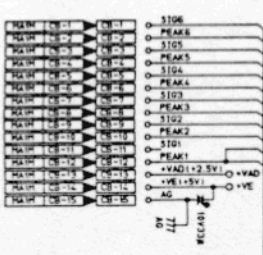
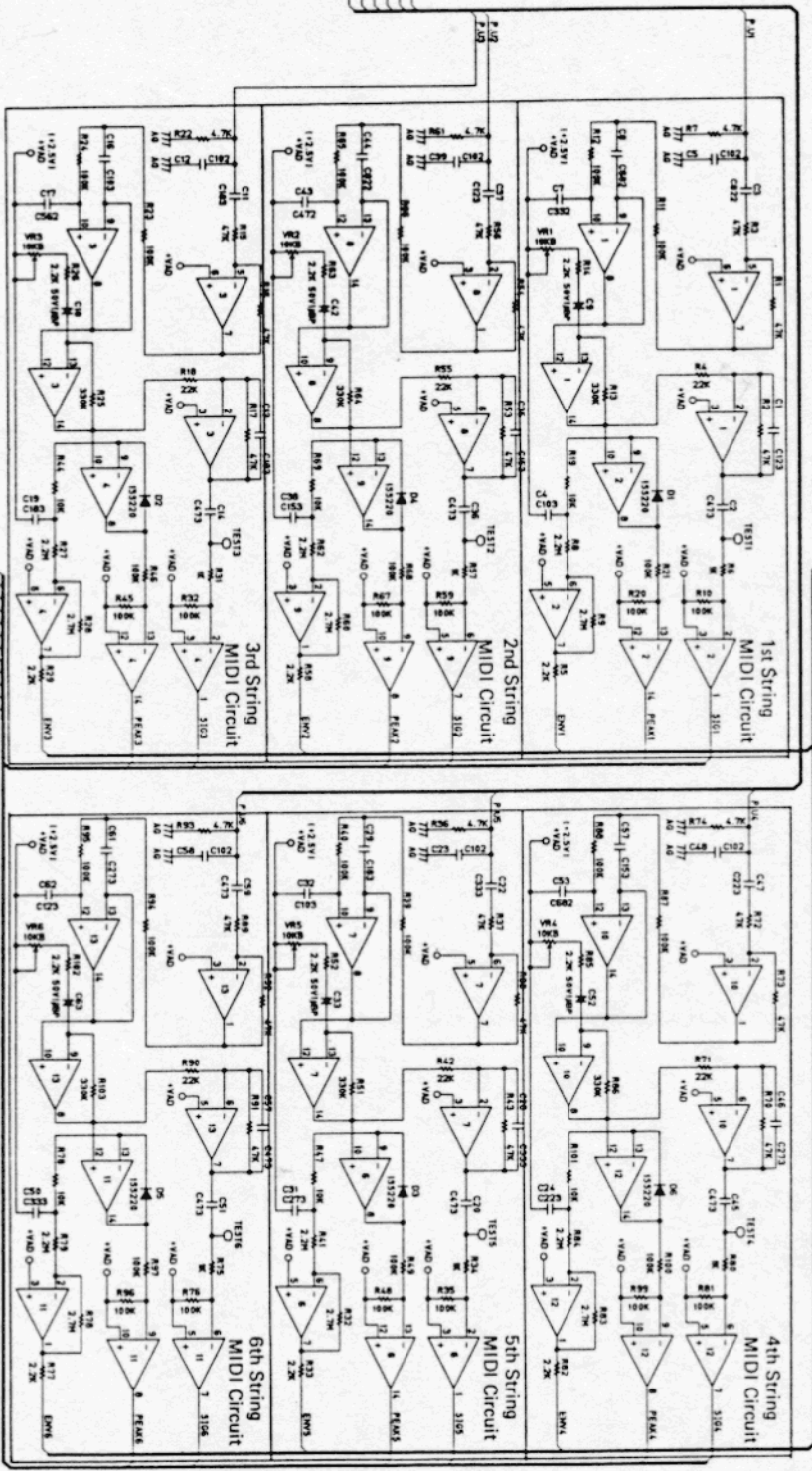
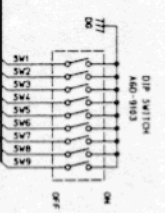
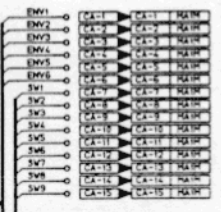
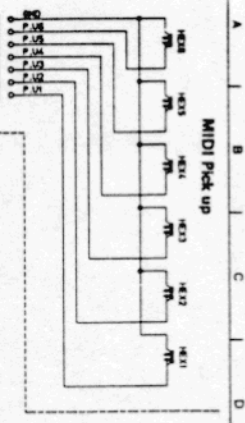
# **CASIO®**

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1.2 PCB MA385-MA2M

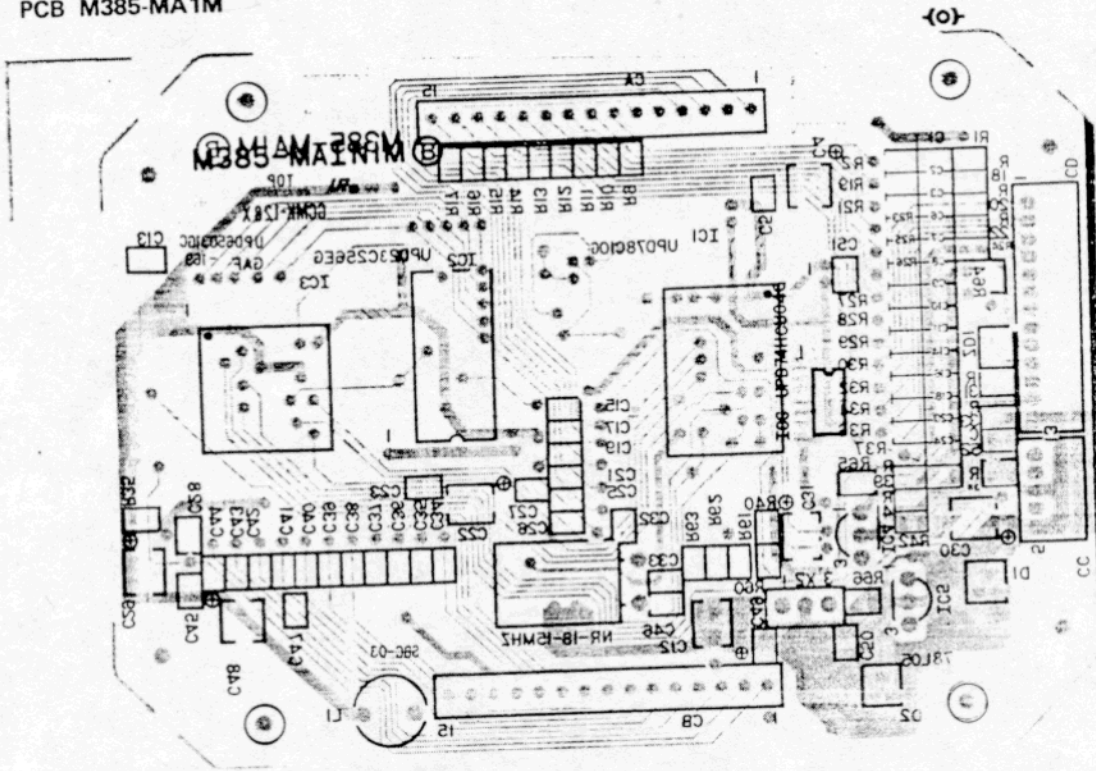


A B C D E F G H I J K L M N O P

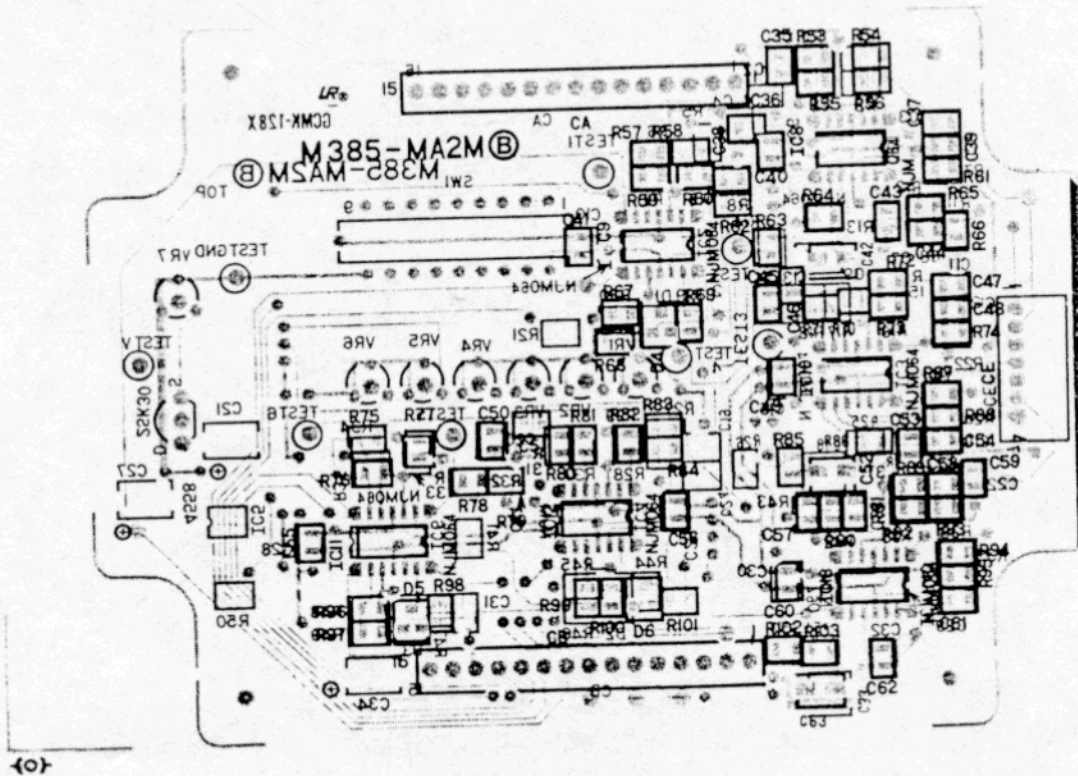
1 2 3 4 5 6 7 8 9 10 11

2 PCB VIEW

2-1 PCB M385-MA1M



2-2 PCB M385-MA2M



## 2-3 PART NUMBER REFERENCE TABLE

### 2-4 PCB M385-MA1M

#### Resistors

R1	47 K $\Omega$	R25~R30	1 K $\Omega$	R41, R42	1 K $\Omega$
R2	1 K $\Omega$	R31	1 K $\Omega$	R43~R46	Not used
R3~R8	Not used	R32	1 K $\Omega$	R47~R59	Not used
R9~R18	47 K $\Omega$	R33	220 $\Omega$	R60	47 $\Omega$
R19	1 K $\Omega$	R34	1 K $\Omega$	R61	10 K $\Omega$
R20	47 K $\Omega$	R35	10 K $\Omega$	R62	1 K $\Omega$
R21	1 K $\Omega$	R36, R37	1 K $\Omega$	R63	10 K $\Omega$
R22	47 K $\Omega$	R38	220 $\Omega$	R64	2.2 K $\Omega$
R23	1 K $\Omega$	R39	1 K $\Omega$	R65	10 K $\Omega$
R24	47 K $\Omega$	R40	10 K $\Omega$	R66	1 M $\Omega$

#### LSIs and ICs

IC1	$\mu$ PD78c10G-1B-X	IC3	$\mu$ PD65031GC169 (GA.F)	IC5	NJM78L05R
IC2	$\mu$ PD23C256EG-	IC4	PST518A-2	IC6	$\mu$ PD74HCU04G

#### Capacitors

C1~C3	220 pF	C19	330 pF	C31	25V4.7 $\mu$
C4	16V10 $\mu$	C20	220 pF	C32	330 pF
C5	0.01 $\mu$ F	C21	330 pF	C33	15 pF (Non polarity)
C6~C11	220 pF	C22	16V10 $\mu$	C34~C45	220 pF
C12	16V10 $\mu$	C23	0.01 $\mu$ F	C46	15pF (Non polarity)
C13, C14	220 pF	C24	220 pF	C47	0.01 $\mu$ F
C15	330 pF	C25~C27	330 pF	C48	10V33 $\mu$
C16	220 pF	C28	0.01 $\mu$ F	C49, C50	56 pF (Non polarity)
C17	330 pF	C29	16V10 $\mu$	C51	0.01 $\mu$ F
C18	220 pF	C30	16V22 $\mu$	C52	100 pF

**Oscillators**

X1	NR-18-15MHz	X2	NR-18-2MHz
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**Coil**

L1	SBC-03
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**Zener Diodes**

ZD1	HZM5C	D1, D2	ISS220-L
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## 2-6 PCB M385-MA2M

## Resistors

R1~R3	47 K $\Omega$	R36	4.7 K $\Omega$	R71	22 K $\Omega$
R4	22 K $\Omega$	R37~R38	47 K $\Omega$	R72~R73	47 K $\Omega$
R5	2.2 K $\Omega$	R39~R40	100 K $\Omega$	R74	4.7 K $\Omega$
R6	1 K $\Omega$	R41	2.2 M $\Omega$	R75	1 K $\Omega$
R7	4.7 K $\Omega$	R42	22 K $\Omega$	R76	100 K $\Omega$
R8	2.2 M $\Omega$	R43	47K $\Omega$	R77	2.2 K $\Omega$
R9	2.7 M $\Omega$	R44	10 K $\Omega$	R78	2.7 M $\Omega$
R10~R12	100 K $\Omega$	R45~R46	100 K $\Omega$	R79	2.2 M $\Omega$
R13	330 K $\Omega$	R47	10 K $\Omega$	R80	1 K $\Omega$
R14	2.2 K $\Omega$	R48~R49	100 K $\Omega$	R81	100 K $\Omega$
R15~R17	47 K $\Omega$	R50	56 $\Omega$	R82	2.2 K $\Omega$
R18	22 K $\Omega$	R51	330 K $\Omega$	R83	2.7 M $\Omega$
R19	10 K $\Omega$	R52	2.2 K $\Omega$	R84	2.2 M $\Omega$
R20~R21	100 K $\Omega$	R53~R54	47 K $\Omega$	R85	2.2 K $\Omega$
R22	4.7 K $\Omega$	R55	22 K $\Omega$	R86	330 K $\Omega$
R23~R24	100 K $\Omega$	R56	47 K $\Omega$	R87~R88	100 K $\Omega$
R 25	330 K $\Omega$	R57	1 K $\Omega$	R89	47 K $\Omega$
R26	2.2 K $\Omega$	R58	2.2 K $\Omega$	R90	22 K $\Omega$
R27	2.2 M $\Omega$	R59	100 K $\Omega$	R91~R92	47 K $\Omega$
R28	2.7 M $\Omega$	R60	2.7 M $\Omega$	R93	4.7 K $\Omega$
R29	2.2 K $\Omega$	R61	4.7 K $\Omega$	R94~R97	100 K $\Omega$
R30	100 K $\Omega$	R62	2.2 M $\Omega$	R98	10 K $\Omega$
R31	1 K $\Omega$	R63	2.2 K $\Omega$	R99~R100	100 K $\Omega$
R32	2.7 M $\Omega$	R64	330 K $\Omega$	R101	10 K $\Omega$
R33	2.2 K $\Omega$	R65~R68	100 K $\Omega$	R102	2.2 K $\Omega$
R34	1 K $\Omega$	R69	10 K $\Omega$	R103	330 K $\Omega$
R35	100 K $\Omega$	R70	47 K $\Omega$		



Capacitors

C1	0.012 $\mu$ F	C22	0.033 $\mu$ F	C43	4700 pF
C2	0.047 $\mu$ F	C23	1000 pF	C44	8200 pF
C3	8200 pF	C24	0.022 $\mu$ F	C45	0.047 $\mu$ F
C4	0.01 $\mu$ F	C25	0.01 $\mu$ F	C46	0.027 $\mu$ F
C5	1000 pF	C26	0.033 $\mu$ F	C47	0.022 $\mu$ F
C6	0.01 $\mu$ F	C27	50V1 $\mu$	C48	1000 pF
C7	3300 pF	C28	0.01 $\mu$ F	C49	0.01 $\mu$ F
C8	6800 pF	C29	0.018 $\mu$ F	C50	0.033 $\mu$ F
C9	50V1 $\mu$ BP	C30	0.01 $\mu$ F	C51	0.047 $\mu$ F
C10	0.01 $\mu$ F	C31	0.027 $\mu$ F	C52	50V1 $\mu$ BP
C11	0.018 $\mu$ F	C32	0.01 $\mu$ F	C53	6800 pF
C12	1000 pF	C33	50V1 $\mu$ BP	C54	0.015 $\mu$ F
C13	0.018 $\mu$ F	C34	10V33 $\mu$	C55	0.01 $\mu$ F
C14	0.047 $\mu$ F	C35	0.015 $\mu$ F	C56	0.01 $\mu$ F
C15	0.01 $\mu$ F	C36	0.047 $\mu$ F	C57	0.047 $\mu$ F
C16	0.01 $\mu$ F	C37	0.012 $\mu$ F	C58	1000 pF
C17	5600 pF	C38	0.015 $\mu$ F	C59	0.047 $\mu$ F
C18	50V1 $\mu$ BP	C39	1000 pF	C60	0.01 $\mu$ F
C19	0.018 $\mu$ F	C40	0.01 $\mu$ F	C61	0.027 $\mu$ F
C20	0.047 $\mu$ F	C41	0.01 $\mu$ F	C62	0.012 $\mu$ F
C21	50V1 $\mu$	C42	50V1 $\mu$ BP	C63	50V1 $\mu$ BP

Diodes

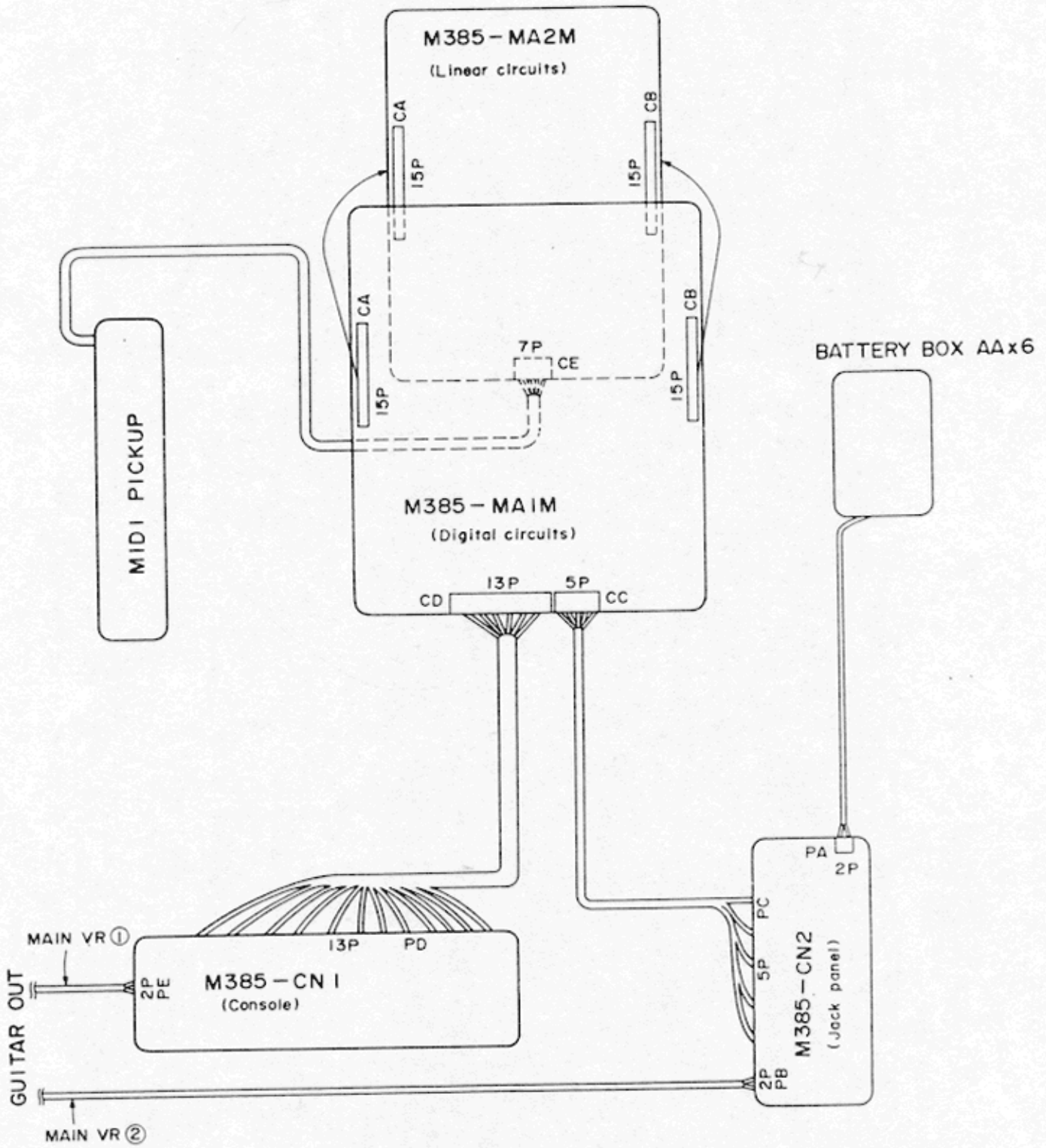
D1~D6	ISS220
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Others

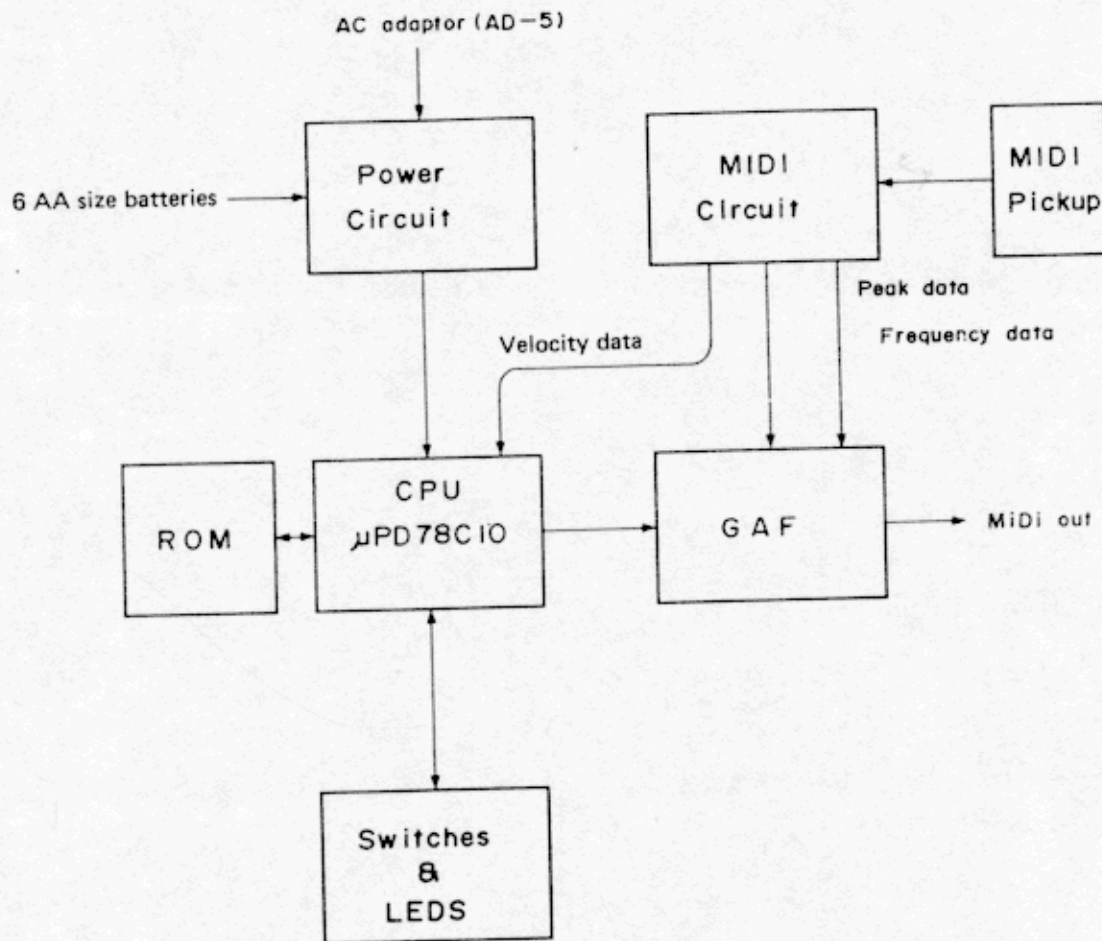
IC1~4, 6~13	NJM064M
IC5	BA4558F-DX
FET	2SK30ATMY
SW	A6D-9103

### 3 CIRCUIT DESCRIPTION

#### 3-1 WIRING DIAGRAM



### 3-2 BLOCK DIAGRAM



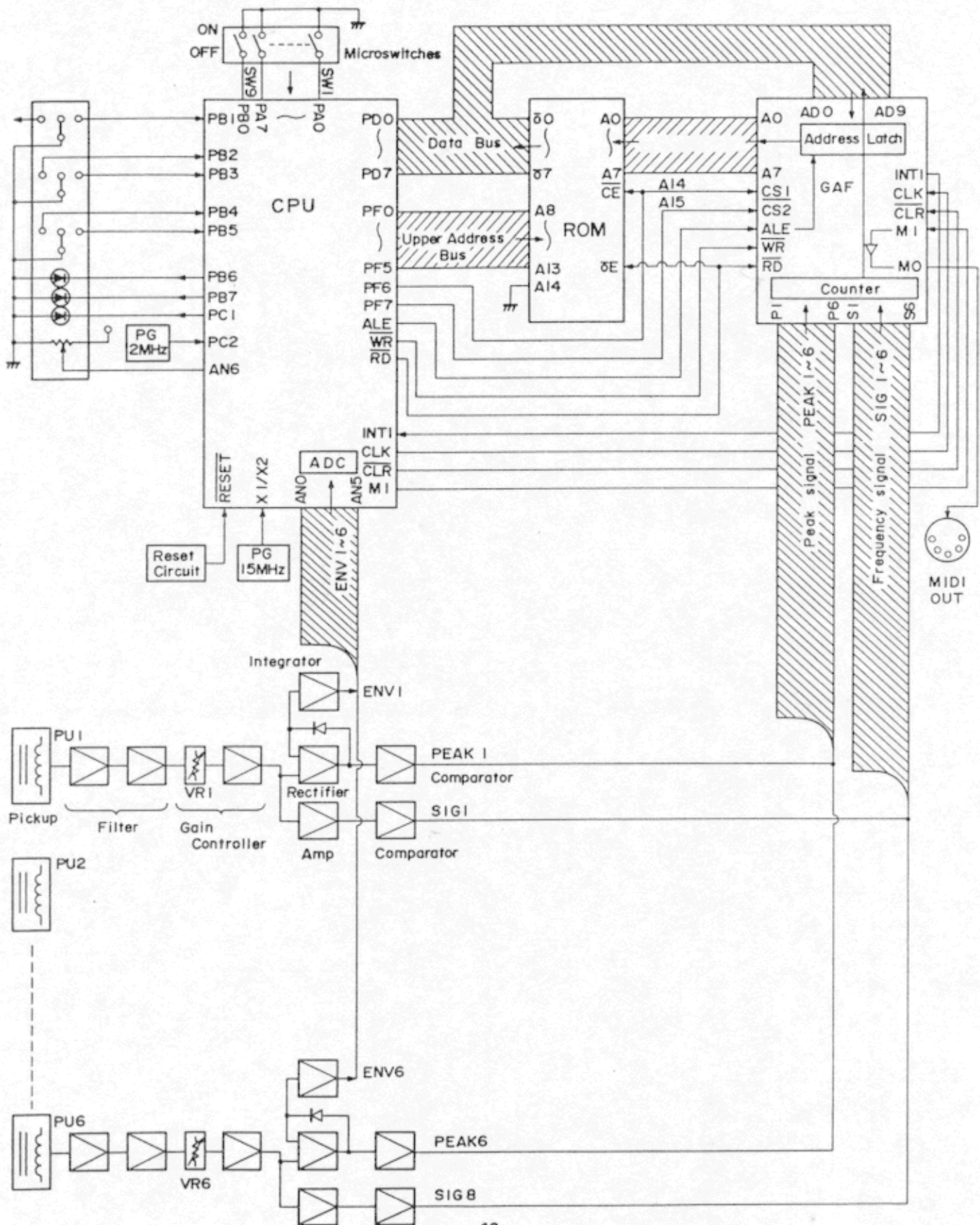
Linear Circuit separates the signal from MIDI pickup into three kinds of data which are velocity, peak, and frequency data.

Gate Array F contains sexadecimal counters which counts up frequency data and send it to CPU as a pitch data. Peak signal is used for the timing signal of the counters.

Velocity data is transformed into digital data in built-in ADCs in CPU.

The pitch and the velocity data are converted into MIDI signal in CPU and sent to MIDI OUT terminal via a buffer in Gate Array F.

### 3-3 CIRCUIT BLOCK



#### 4 CPU ( $\mu$ PD78C10G) PIN FUNCTIONS

Pin No.	Terminal	Signal	In/Out	Function
59 64 1 2 3	PA0 PA5 PA6 PA7 PB0	SW1    SW9	In	Inputs from the DIP switches
4	PB1	S1	In	Low when mode switch is "GUITAR"
5	PB2	S2	In	Low when octave switch is "UP"
6	PB3	S3	In	Low when octave switch is "DOWN"
7	PB4	S4	In	Low when mode switch is "PROGRAM"
8	PB5	S5	In	Low when mode switch is "BEND"
9	PB6	LD3	Out	b LED drive signal. Low active.
10	PB7	LD2	Out	# LED drive signal. Low active.
11	PC0	M1	Out	MIDI data output
12	PC1	LD1	Out	Pilot lamp drive signal. Low active.
13	PC2	-	In	2M Hz MIDI clock pulse input
14	PC3	CLR	Out	Resets gate array's built-in counters
15	PC4	CLK	Out	Clock signal for gate array's built-in counter
16	PC5	-	-	Not used
17	PC6	-	In	The guitar becomes self diagnostic mode when this terminal is Low and power switch is turned on.
18, 19	PC7, NMI	-	-	Not used
20	INT1	INT1	In	Interrupt from the gate array
21	MODE1	-	-	Not used
22	RESET	-	In	Power ON reset signal input
23	MODE0	-	-	Not used
24, 25	X2, X1	-	In/Out	15M Hz clock pulse input/output
26	VSS	-	-	Ground (0 V) source
27	AVSS	-	-	Ground for the built-in ADCs
28	AN0	ENV1	In	Envelope signal from the 1st string
29	AN1	ENV2	In	Envelope signal from the 2nd string
30	AN2	ENV3	In	Envelope signal from the 3rd string
31	AN3	ENV4	In	Envelope signal from the 4th string
32	AN4	ENV5	In	Envelope signal from the 5th string
33	AN5	ENV6	In	Envelope signal from the 6th string
34, 35	AN6, AN7	-	-	Not used
36	VREF	-	In	Reference voltage (+5 V) for the built-in ADCs
37	AVDD	-	In	+5 V source for built-in ADCs

38	$\overline{RD}$	R	Out	Memory read signal
39	$\overline{WR}$		Out	Memory write signal
40	ALE	-	Out	Address Latch Enable. Data bus PDO - PD7 become lower address (A0-A7) bus.
41 - 48	PF0-PF7	-	Out	Upper address (A8 - A15) bus
49 - 56	PD0-PD7	-	In/out	Data bus
57	$\overline{STOP}$	-	-	Not used
58	VDD	-	-	+5 V source

## F GATE ARRAY F

The gate array contains counters which detects the frequency of string vibration, an address latch, and a MIDI data buffer. The following is the pin function of the gate array.

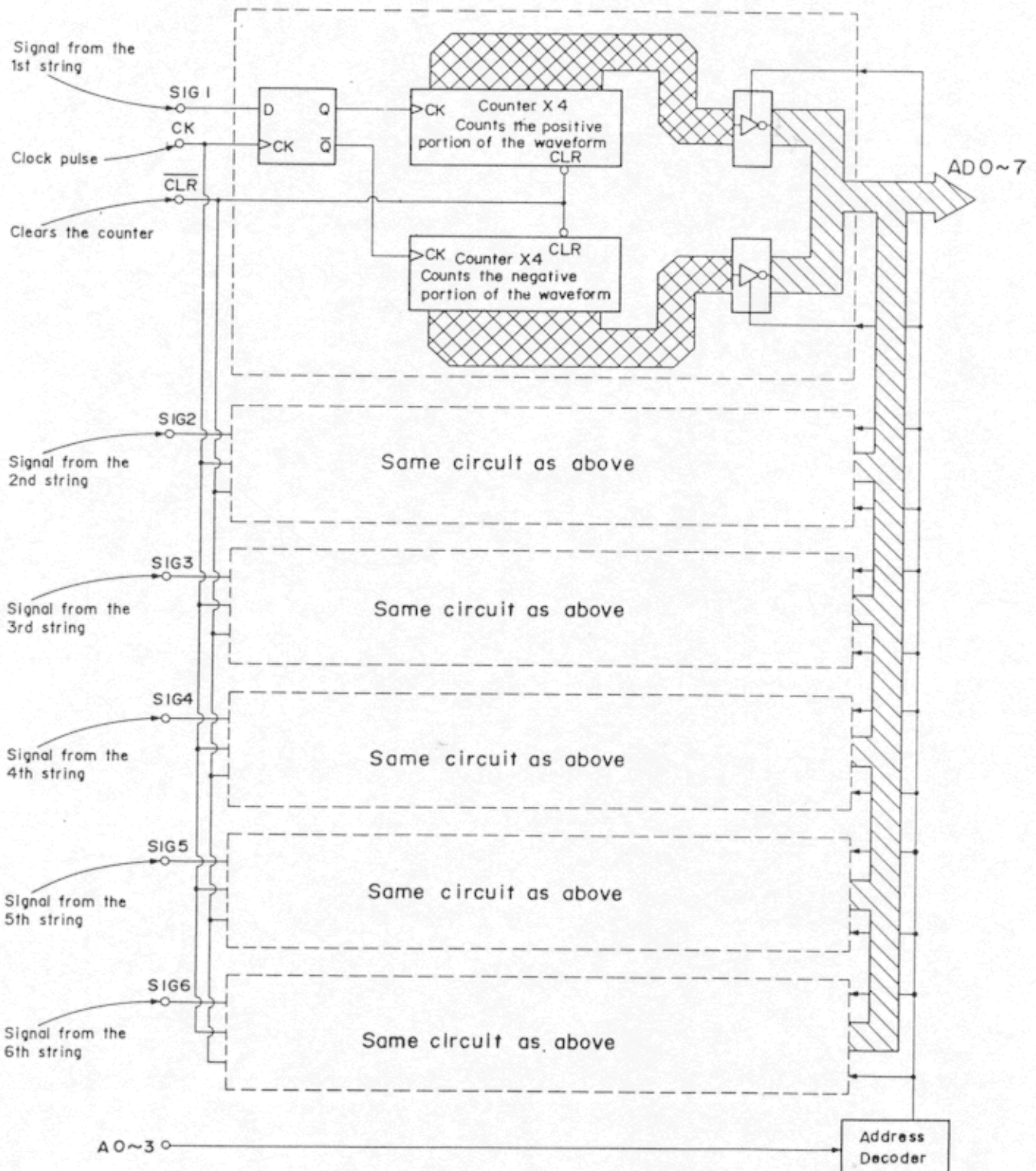
Pin No.	Terminal	Signal	In/Out	Function
1 - 10	AD0-AD7	AD0-AD7	In/Out	Data bus
3, 7	GND	DG	-	Ground (0 V) source
11 - 20	A0-A7	A0-A7	Out	Lower address bus
12, 23	$\overline{CS2}$ , CS1	A15, A14	In	Built-in counter provides frequency data from data bus when this terminal is Low and terminal CS1 is High
21	VDD1	VDD	-	+5 V source
22	ALE	ALE	In	Address Latch Enable signal. When this terminal is High, the contents of data bus are latched and become lower address bus (A0 - A7).
24	$\overline{WR}$	$\overline{WR}$	In	When Low, peak signals from the strings cannot be entered.
25	VDD2	VDD	-	+5 V source
26	$\overline{RD}$	$\overline{RD}$	In	When Low, note number is provided in data bus.
27	P1	PEAK 1	In	1st string's peak signal input
28	S1	SIG 1	In	1st string's frequency signal input
29	P2	PEAK 2	In	2nd string's peak signal input
30	S2	SIG 2	In	2nd string's frequency signal input
31	P3	PEAK 3	In	3rd string's peak signal input
32	S3	SIG 3	In	3rd string's frequency signal input
33	GND	DG	-	Ground (0 V) source
34	VDD	VDD	In	+5 V source
35	P4	PEAK 4	In	4th string's peak signal input
36	S4	SIG 4	In	4th string's frequency signal input

37	P5	PEAK 5	In	5th string's peak signal input
38	S5	SIG 5	In	5th string's frequency signal input
39	P6	PEAK 6	In	6th string's peak signal input
40	S6	SIG 6	In	6th string's frequency signal input
41 - 45	-	-	-	Not used
46	M0	M0	Out	MIDI data output
47	$\overline{\text{CLR}}$	$\overline{\text{CLR}}$	In	Frequency detection counter reset signal
48	MI	MI	In	MIDI data input
49	CK	CLK	In	Clock pulse for frequency detection counter
50	INT1	INT1	Out	Interrupt to CPU
51, 52	-	-	-	Not used

## 6 INTERNAL CIRCUITS OF GATE ARRAY F

### (1) Frequency Detection Counter

In order to detect the frequency of strings' vibrations, sexadecimal counter in Gate Array F counts up the positive and negative portions of the waveform from the strings, and provides digital data to CPU via data bus.



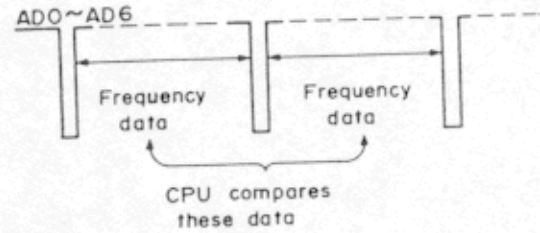


## (2) Peak Detection Circuit

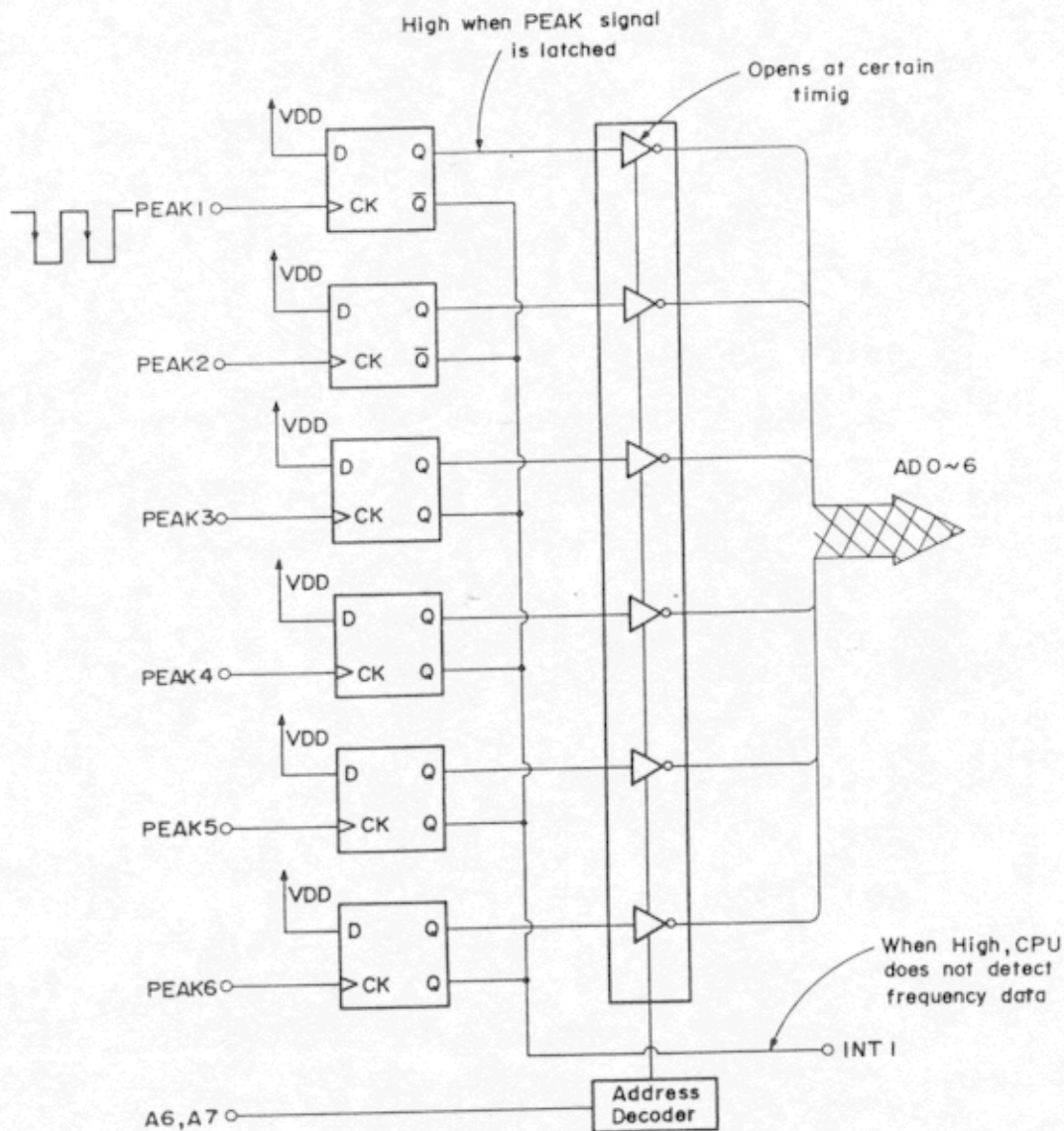
The circuit disregards abnormal string vibration which may occur at the beginning and the end of string vibration and detects the accurate frequency of string vibrations.

PEAK signals are provided at the peaks of string vibration waveform and latched in the flip flops. While a PEAK signal is latched, output Q of the flip flop rises to High level.

At certain timing, CPU opens the tri-state inverters by signals A6 and A7 so that data bus drop to Low. CPU receives frequency data from the counters between the period of being Low of ADO - AD6. Every time CPU receives data, it compares the frequency with the formerly detected data and if there is a difference between the two data, CPU disregards the former data in order to detect the accurate frequency.

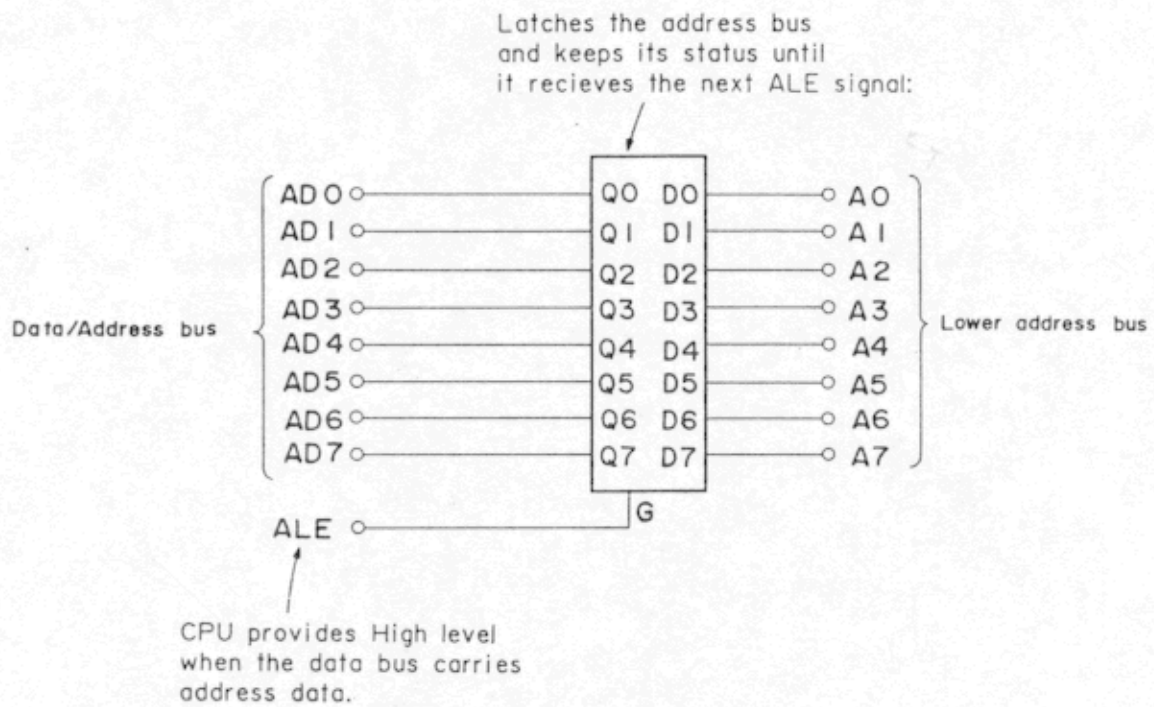


When PEAK signals are not provided, Q outputs of the flip flops interrupt the CPU via INT 1 terminal. Receiving INT 1, CPU stops detecting frequency data.



(3) Address Latch

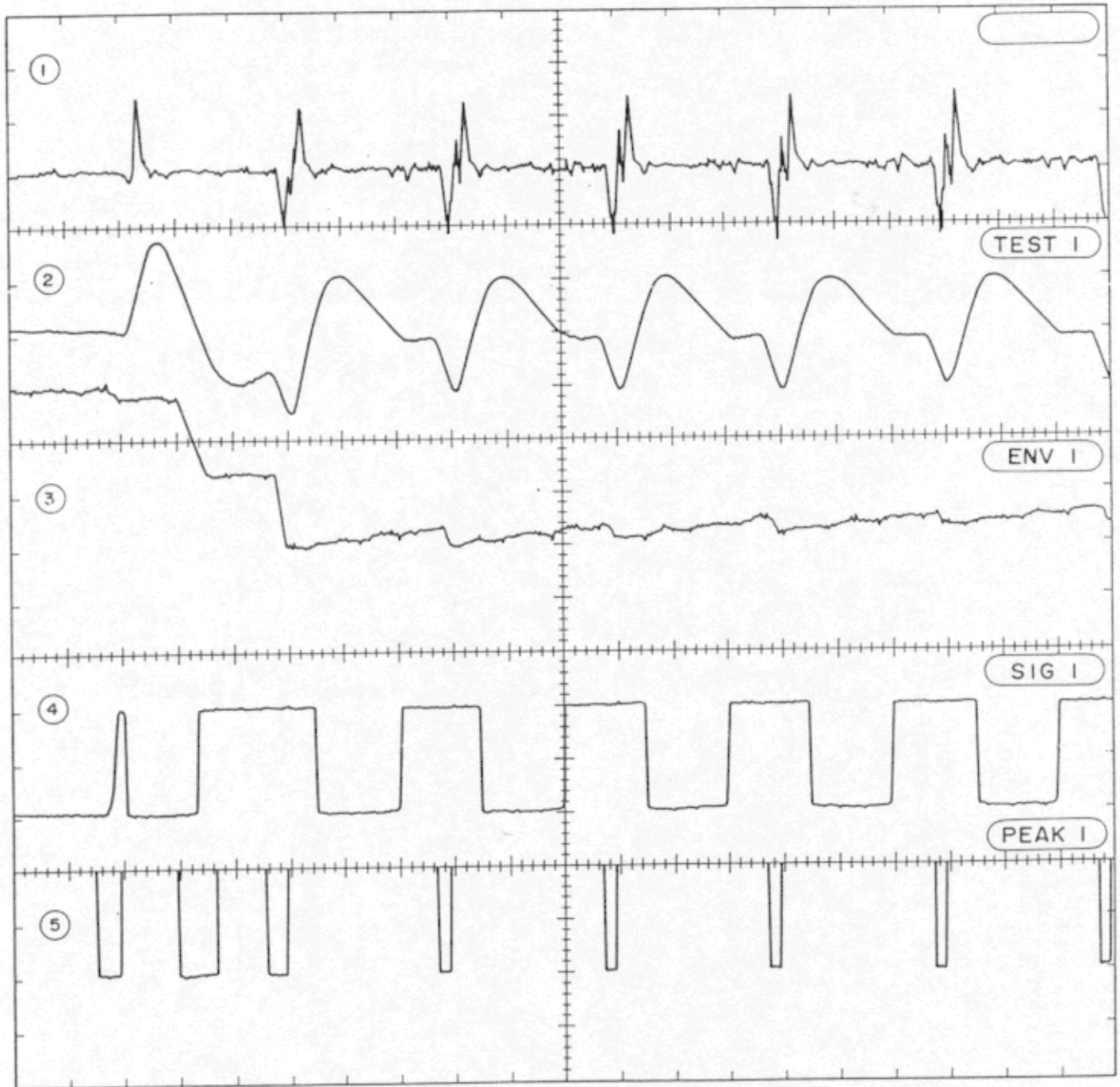
Receiving signal ALE from CPU, signals AD0 - AD7 are latched in and become lower address signals A0 - A7.



(4) MIDI Buffer

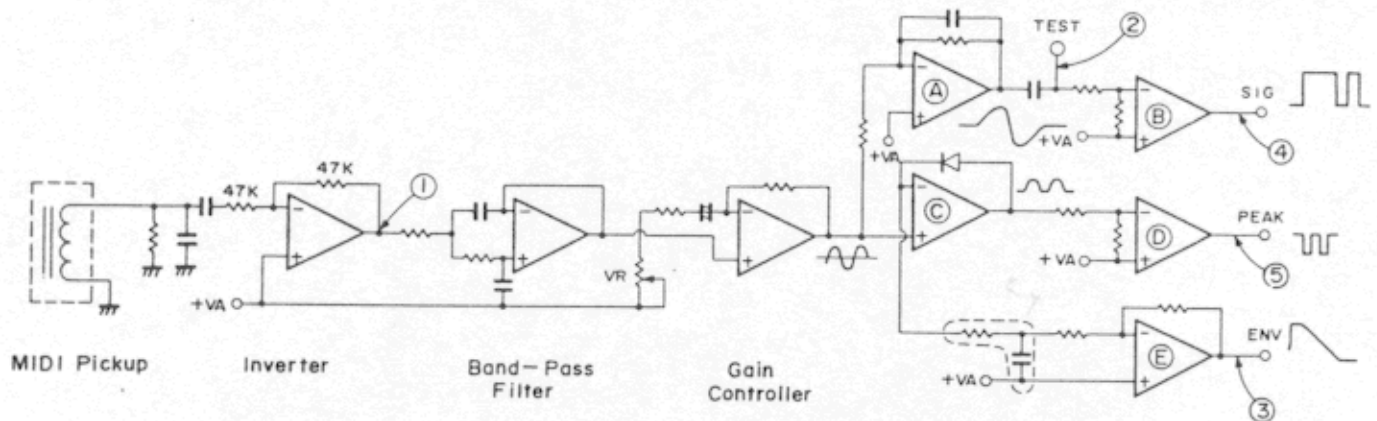
Amplifies the MIDI output signal from CPU.





## 7 MIDI CIRCUITS

MIDI pickup converts the string vibration into current value.

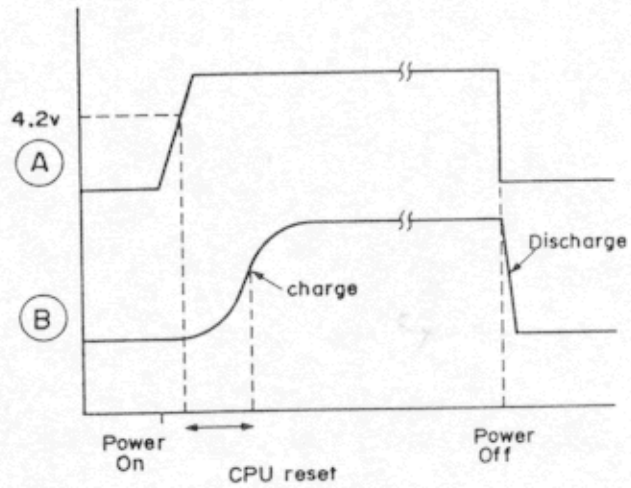
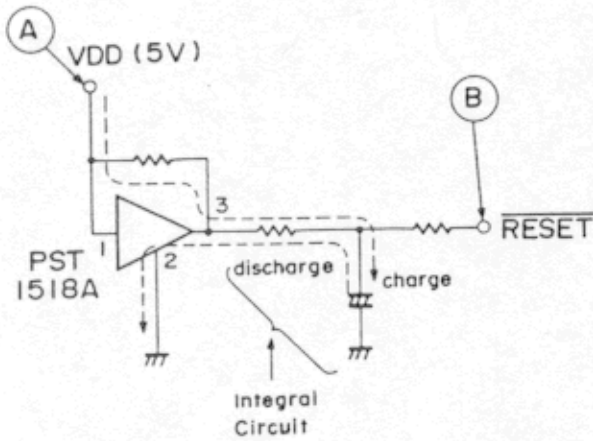


After inverted, filtered, and gain-controlled, the signal from MIDI pickup is separated in three different signals.

- (1) SIG — — — For detecting the string frequency.  
Integral circuit (A) eliminates the harmonics and, Comparator (B) turns the signal into square waveform.
- (2) PEAK — — — Timing signal for frequency detection.  
Rectifier (C) extracts only positive portion of the waveform and, Comparator (D) inverts and turns it into a square waveform.
- (3) ENV — — — For the velocity and note ON/OFF detection.  
From Rectifier output, an integral circuit of a capacitor and a resistor extracts the envelope signal only and, op amp (E) amplifies the envelope signal.

Actual waveforms at checkpoints (1) ~ (5) are shown on the next page.

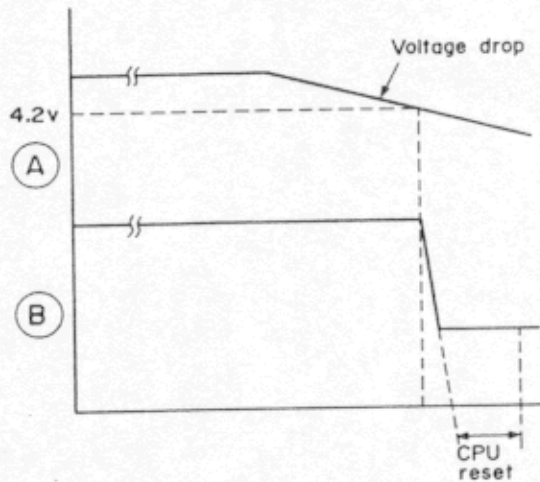
## 8 RESET CIRCUIT



In order to initialize CPU's internal circuits at Power ON, a voltage detector IC PST1518A generates  $\overline{\text{RESET}}$  signal.

PST-1518 receives VDD (+5 V) from pin 1 and outputs Low level signal from pin 3 while the input voltage is less than +4.2 V and, pin 3 provides High level when VDD is more than +4.2 V.

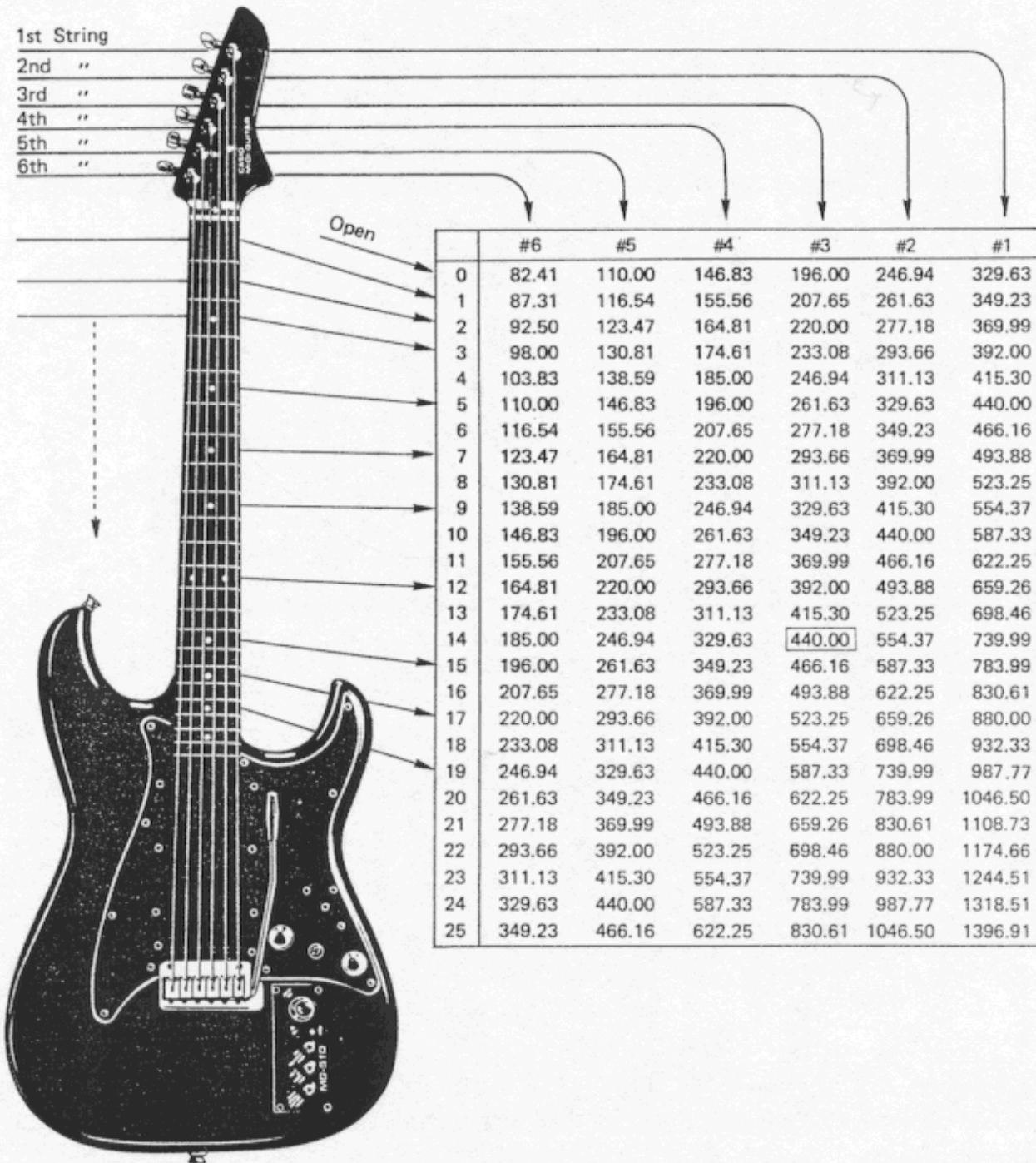
When the power switch is turned on, signal  $\overline{\text{RESET}}$  rises to High level gradually by the integral circuit. CPU then resets its internal circuits while  $\overline{\text{RESET}}$  is Low.



When the power switch is turned off, the capacitor immediately discharges itself through pin 2 of PST1518A so that signal  $\overline{\text{RESET}}$  is provided even the power switch is turned on, off, and on quickly.

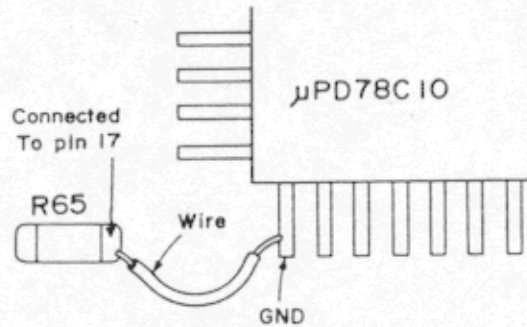
CPU is also reset when the battery is weak and VDD becomes less than +4.2 V.

# 9 RELATION BETWEEN FRET PITCH & FREQUENCY



## 10 TEST MODE

- (1) To start the test program, connect pin 17 of CPU to the ground.



Then turn the power switch on.

- (2) ROM/RAM TEST

If all the LEDs illuminate, ROM (UPD23C256EG) is faulty and, if CPU's built-in RAM is faulty, all the LEDs flashes.

- (3) Switch test

Each switches' contacts are checked by turning on an off of the corresponding LEDs. Set Guitar/MIDI switch on "Guitar/MIDI", Octave switch on "Normal", Chromatic/Program Change switch on "Chromatic", and all the Microswitches on "OFF".

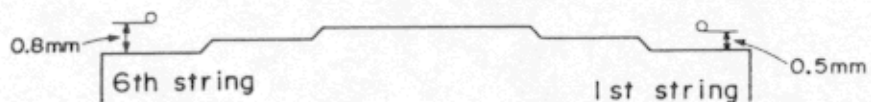
The test should be done by the following order.

Switch	Position	LED		
Guitar/MIDI	Guitar	b		ON
	Guitar/MIDI	b		OFF
Octave	Down	#		ON
	Normal	#		OFF
	Up	#		ON
	Normal	#		OFF
Chromatic/ Program Change	Normal	Prog. Change		ON
	Chromatic	Prog. Change		OFF
	Prog. Change	Prog. Change		ON
	Chromatic	Prog. Change		OFF
Microswitches  * Turn the switch off after each checking.		b	#	Prog. Change
	SW1 ON	ON	OFF	OFF
	SW2 ON	OFF	ON	OFF
	SW3 ON	ON	ON	OFF
	SW4 ON	OFF	OFF	ON
	SW5 ON	ON	OFF	ON
	SW6 ON	OFF	ON	ON
	SW7 ON	ON	ON	ON
	SW8 ON	Flash	OFF	OFF
	SW9 ON	OFF	Flash	OFF

## 11 ADJUSTMENTS

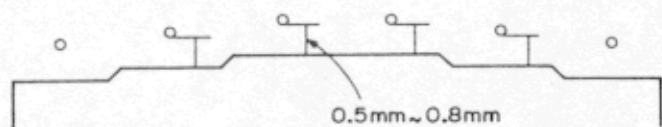
### MIDI Pickup Adjustment

Adjust the MIDI pickup so that the clearance between the 1st and 6th strings and the pickup is as shown below.



When the MIDI pickup height is set as above, the clearances between the 2nd ~ 5th strings and the pickup are automatically set within 0.5 mm to 0.8 mm.

If the clearances are not within the said value, perform the bridge height adjustment as shown on page .





# PARTS LIST

MG - 500/510

- Notes:
1. Prices and specifications are subject to change without prior notice.
  2. As for spare parts order and supply, refer to the "GUIDEBOOK for Spare Parts Supply", published separately.
  3. The numbers in item column correspond to the same numbers in drawing.

Item	Code No.	Parts Name	Specification	Q'ty	*	Unit Price N.R.Yen (¥) (FOB:JAPAN)	R A N K
		<b>1) M385-MAIN PCB ASS'Y</b>					
☆	20103409	LSI	UPD78C10G-1B-X	1			A
☆	20103675	LSI	UPD65031GC-169-3B6	1			A
☆	20103682	LSI (ROM)	UPD27C256AG-20M384	1			A
☆	21050644	C-MOS IC	UPD74HCU04G	1			A
☆	21140413	Monolithic IC	NJM78L05A	1			A
☆	21140441	Monolithic IC	PST518A	1			A
	25201469	Ceramic oscillator	CSA2.000MK	1			A
	25900042	Crystal oscillator	NR-18-15.000MHZ	1			A
☆	23600609	Zener diode	HZM5C-TR	1	20		B
☆	23900357	Zener diode	ISS193TE85L	2	20		B
☆	27920462	Chip resistor	MCR10EZHZJ473	14	20		C
	27920470	Chip resistor	MCR10EZHZJ102	19	20		C
☆	27920807	Chip resistor	MCR10EZHZJ470	1	20		C
	27920815	Chip resistor	MCR10EZHZJ221	2	20		C
☆	27920831	Chip resistor	MCR10EZHZJ103	5	20		C
☆	27921051	Chip resistor	MCR10EZHZJ222	1	20		C
☆	27950532	Chip resistor	MCR10EZHZJ105	1	20		C
☆	28076056	Chip electrolytic capacitor	ECE-V1EV4R7R	1	20		C
☆	28076063	Chip electrolytic capacitor	ECE-V1CV100R	4	20		C
☆	28076105	Chip electrolytic capacitor	ECE-V1CV220UR	1	20		C
☆	28076119	Chip electrolytic capacitor	ECE-V1AV330UR	1	20		C
☆	28450294	Chip electrolytic capacitor	T1-21N1HR331K-T	8	20		C
☆	28450301	Chip electrolytic capacitor	T1-21N1HR221K-T	27	20		C
☆	28450308	Chip electrolytic capacitor	T1-21N1EF103Z-T	5	20		C
☆	28450469	Chip electrolytic capacitor	T1-21N1HCG560J-T	2	20		C
☆	28450476	Chip electrolytic capacitor	T1-21N1HCG150J-T	2	20		C
☆	35011344	PCB connector	IL-S-13P-S2L2-EF	1	10		C
☆	35011351	PCB connector	IL-S-5P-S2L2-EF	1	20		C
☆	35011365	PCB connector	PS-15SD-S4TS1-1	2			C
☆	38410406	Coil	SBC-03	1	5		C
☆	43077910	Blank PCB M385-MA1M	M210019-1	1			X
☆	69133970	Spacer 5.5	M4948-12	4	20		X
		<b>2) M385-MA2M PCB ASS'Y</b>					
☆	21140399	Monolithic IC	BA4558F-DX	1			A
☆	21140406	Monolithic IC	NJM064M	12			A
	22405136	FET	2SK30ATM-Y	1			A
☆	23900357	Chip diode	1SS193TE85L	6	20		C
☆	27300549	Chip resistor	MCR10EZHZJ225	6	20		C
☆	27650441	Semi-fixed resistor	EVN-1ACA00B14	6	10		B
☆	27650455	Semi-fixed resistor	EVN-1ACA00B53	1	10		B

Note: ☆ - Newly employed parts  
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\* - Minimum order/supply quantity

Rank A: Essential  
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Item	Code No.	Parts Name	Specification	Q'ty	*	Unit Price N.R. Yen (¥) (FOB: JAPAN)	R A N K
☆	27920209	Chip resistor	MCR10EZHJ104	30	20		C
☆	27920462	Chip resistor	MCR10EZHJ473	18	20		C
	27920470	Chip resistor	MCR10EZHJ102	6	20		C
☆	27920799	Chip resistor	MCR10EZHJ472	6	20		C
☆	27920831	Chip resistor	MCR10EZHJ103	6	20		C
☆	27920888	Chip resistor	MCR10EZHJ334	6	20		C
☆	27921043	Chip resistor	MCR10EZHJ223	6	20		C
☆	27921051	Chip resistor	MCR10EZHJ222	12	20		C
☆	27950728	Chip resistor	MCR10EZHJ560	1	20		C
☆	27950777	Chip resistor	MCR10EZHJ275	6	20		C
☆	28076084	Chip electrolytic capacitor	ECE-V1HV010R	2	20		C
☆	28076091	Chip electrolytic capacitor	ECE-V1HN010R	6	10		C
☆	28076119	Chip electrolytic capacitor	ECE-V1AV330UR	1	20		C
☆	28450308	Chip capacitor	T1-21N1EF103Z-T	12	20		C
☆	28450322	Chip capacitor	T1-21N1HR103K-T	3	20		C
☆	28450329	Chip capacitor	T1-21N1HR102K-T	6	20		C
☆	28450336	Chip capacitor	T1-21N1HR123K-T	3	20		C
☆	28450343	Chip capacitor	T1-21N1HR682K-T	2	20		C
☆	28450350	Chip capacitor	T1-21N1HR332K-T	1	20		C
☆	28450357	Chip capacitor	T1-21N1HR472K-T	1	20		C
☆	28450364	Chip capacitor	T1-21N1HR822K-T	2	20		C
☆	28450371	Chip capacitor	T1-21N1HR153K-T	3	20		C
☆	28450378	Chip capacitor	T1-21N1HR183K-T	4	20		C
☆	28450385	Chip capacitor	T1-21N1HR562K-T	1	20		C
☆	28450392	Chip capacitor	T1-21N1HR223K-T	2	20		C
☆	28450399	Chip capacitor	T1-21NER273K-T	3	20		C
☆	28450406	Chip capacitor	T1-21N1ER333K-T	3	20		C
☆	28450413	Chip capacitor	T1-21N1ER473K-T	8	20		C
☆	34120252	DIP switch	A6D-9103	1			B
☆	35011358	PCB connector	IL-S-7P-S2L2-EF	1	20		C
☆	35011372	PCB connector	PS-15PA-S4T1-PKL1	2			C
☆	43078000	Blank PCB M385-MA2M	M210019-2	1			X
		<b>3) M385-CN1 PCB ASS'Y</b>					
☆	23700154	LED	LN252RPH	4	20		B
☆	27650434	VR	EVH-9LA318B54	1			B
☆	34120259	Switch	FTE43	3			B

Note: ☆ - Newly employed parts  
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Item	Code No.	Parts Name	Specification	Q'ty	*	Unit Price N.R. Yen (¥) (FOB: JAPAN)	R A N K
☆	35011379	13P connector M384A	IL-13P-11-M384	1			C
☆	43077900	Blank PCB M385-CN1	M310087-1	1			X
		4) M385-CN2 PCB ASS'Y					
☆	26170613	Carbon film resistor	R-20-1K-J (1/5W, 1Kohm, ±5%)	1	20		C
☆	30202147	Ferrite beads	BLO2RN2-R62	1	20		C
☆	34120238	Slide switch	SSD-22DP	1			B
☆	35010070	DC jack	HEC2305-01-030	1			B
☆	35010196	DIN jack	TCS5350-01-1211	1			B
☆	35011386	5P connector M384B	IL-5P-9-M384	1			C
☆	35011470	PCB connector	IL-S-2P-S2T2-EF	1	20		C
☆	35011477	Battery snap	PLGW-8533-01A	1			C
☆	36130245	Jack	HLJ0544-01-110	2			B
☆	43077950	Blank PCB M385-CN2	M310087-2	1			X
		5) OTHERS					
☆	37190147	MIDI cable	HD-D5P-0001-A	1			C
☆ 48	39010712	Battery BOX	36-3	1			C
☆ 49	69060791	Decorating screw	M41152A-3	2	20		C
☆ 50	69133350	Battery cover sub ass'y	M410077*1	1			C
☆	69133990	Collar	M410090-2	1	20		X
☆	69134000	Collar	M410090-3	3	20		X
☆	69011560	DIN jack rating plate	M4598-1	1	10		X
☆ 51	69133360	Terminal cover	M310009-1	1			C
☆	69133980	Collar	M410090-1	1	10		X
☆ 1	00077030	Front panel for MG-500 White and Red body		1			C
☆ 1	00077031	Front panel for MG-500 Black body		1			C
☆ 1	00077032	Front panel for MG-510 White and Red body		1			C
☆ 1	00077033	Front panel for MG-510 Black body		1			C
☆ 2	00077034	Pickup (Front)	MX-S F	1			B
☆ 3	00077035	Pickup (Middle)	MX-S M	1			B
☆ 4	00077036	Pickup (Rear)	MX-H	1			B
☆ 5	00077037	Pickup (MIDI)	Hex PU	1			B
☆ 6	00077038	Control panel	MG-500	1			C
☆ 6	00077039	Control panel	MG-510	1			C

Note: ☆ - Newly employed parts  
Q'ty - Quantity used per unit  
\* - Minimum order/supply quantity

Rank A: Essential  
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Item	Code No.	Parts Name	Specification	Q'ty	*	Unit Price N.R. Yen (¥) (FOB: JAPAN)	R A N K
☆ 7	00077040	Variable resistor (for Volume)	500K G short shaft	1			B
☆ 8	00077041	Variable resistor (for Tone)	500K D short shaft	1			B
☆ 9	00077042	Control knob	MX-384	2			C
☆ 10	00077043	Select switch	YM-50	1			B
☆ 11	00077044	Mini switch	MTN-301	1			B
	00077045	Capacitor	Milar 0.002 μF	1	20		C
	00077046	Capacitor	Ceramic, 47 pF	1	20		C
☆ 12	00077047	Tuning knob set	SG38-07/L SET	1			C
		Consists of the followings.					
☆ 12-1	00077049	Tuning knob	SG38-07/L	6			C
☆ 12-2	00077050	Nut		6	5		X
☆ 12-3	00077051	Washer		6	10		X
☆ 13	00077052	Neck joint plate	NPF/No mark, Black	1			X
☆ 14	00077053	Joint plate cushion	6st, Black	1	10		C
☆ 15	00077054	PCB Cover	MX-384, Metal Black	1			C
☆ 16	00077055	Tremolo cover for White body	STC (P:11)	1	5		C
☆ 16	00077056	Tremolo cover for Black and Red body	STC (P:11)	1			C
☆ 17	00077057	Strap button	Type F, Black	2	10		C
☆ 18	00077058	Felt washer	Black	2	20		C
☆ 19	00077059	String holder	Type F, Black	2	10		C
☆ 20	00077060	String holder collar	2.5 mm, Black	1	20		C
☆ 21	00077061	String holder collar	4.0 mm, Black	1	20		C
	00077062	Wrench (Large)	4 x 30	1	10		C
	00077063	Wrench (Small)	1.5 mm	1	20		C
☆ 22	00077065	Rubber plate	MX384, Black	2			C
	00077066	String set	XL 009	1			X
☆ 23	00077067	Jack cord	Mold, 2M	1			C
☆ 24	00077068	Tremolo unit	S-87	1			C
		Consists of the followings:					
☆ 24-1	00077070	Tremolo plate	Black	1			C
☆ 24-2	00077071	Tremolo block	Black	1			C
☆ 24-3	00077072	Tremolo saddle	Black	6			C
☆ 25	00077073	Tremolo arm	S-87, Black	1			C
☆ 26	00077074	Stud bolt	S-87, Black	2	5		C
☆ 27	00077075	Tremolo spring	Nickel	3	5		C

Note: ☆ - Newly employed parts  
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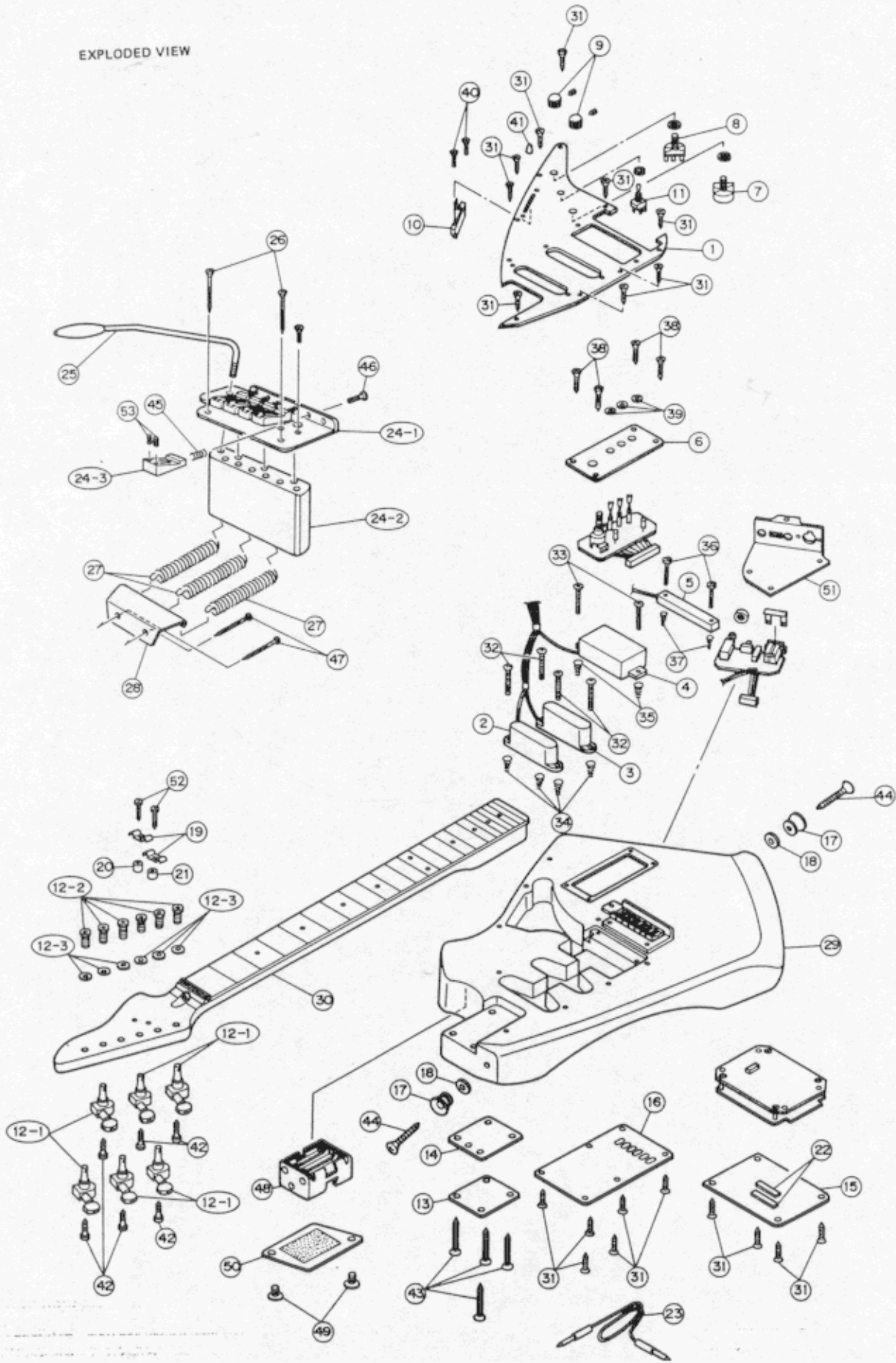
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Item	Code No.	Parts Name	Specification	Q'ty	*	Unit Price N.R. Yen (¥) (FOB: JAPAN)	R A N K
☆ 28	00077076	Spring holder	Nickel	1	5		C
☆ 29	00077099	Body	MG-500 Black	1			C
☆ 29	00077100	Body	MG-500 Red	1			C
☆ 29	00077101	Body	MG-500 White	1			C
☆ 29	00077102	Body	MG-510 Black	1			C
☆ 29	00077103	Body	MG-510 Red	1			C
☆ 29	00077104	Body	MG-510 White	1			C
☆ 30	00077105	Neck	MG-500 Black	1			C
☆ 30	00077106	Neck	MG-500 Red	1			C
☆ 30	00077107	Neck	MG-500 White	1			C
☆ 30	00077108	Neck	MG-510	1			C
☆ 31	00077077	Round flush tapping screw	3 x 12 mm, Black	24	20		X
☆ 32	00077078	Round flush tapping screw (B-1)	3 x 20, Black	2	20		X
☆ 33	00077079	Pan-head tapping screw (B-1)	3 x 25, Black	2	20		X
☆ 34	00077080	MX-S fixing spring	BL-300, Nickel	4	20		X
☆ 35	00077081	MX-H fixing spring	NP, Nickel	2	20		X
☆ 36	00077082	Pan-head screw	3 x 20, Black	2	20		X
☆ 37	00077083	Spring	Semi-conical 8 mm, Nickel	2	20		C
☆ 38	00077084	Flush-head tapping screw	2.6 x 12 Black	8	20		X
☆ 39	00077085	Snap washer	Black	4	20		X
☆ 40	00077086	Round flush screw	3 x 8, Black	2	20		X
☆ 41	00077087	Select switch knob	Black	1	10		X
☆ 42	00077088	Round-head wood screw	2.4 x 10, Black	6	20		X
☆ 43	00077089	Round flush tapping screw	4.5 x 45, Black	4	20		X
	00077090	Round flush tapping screw	3 x 10, Black	1	20		X
☆ 44	00077091	Round flush tapping screw	3.5 x 25, Black	2	20		X
☆ 52	00077092	Round-head wood screw	2.1 x 13	2	20		X
☆ 53	00077093	Saddle height adjusting screw	3 x 8, Black (for 1st and 6th Strings)	4	20		X
☆ 53	00077094	Saddle height adjusting screw	3 x 10, Black (for 2nd~5th Strings)	8	20		X
☆ 45	00077095	Saddle tension spring (for 6th and 3rd strings)	0.6 x 7, Black	2	20		C
☆ 45	00077096	Saddle tension spring (for 1st,2nd,4th, and 5th strings)	0.6 x 11, Black	4	20		C
☆ 46	00077097	Round-head screw	3 x 15, Black	6	20		X
☆ 47	00077098	Round flush wood screw	4.1 x 45, Nickel	2	20		X

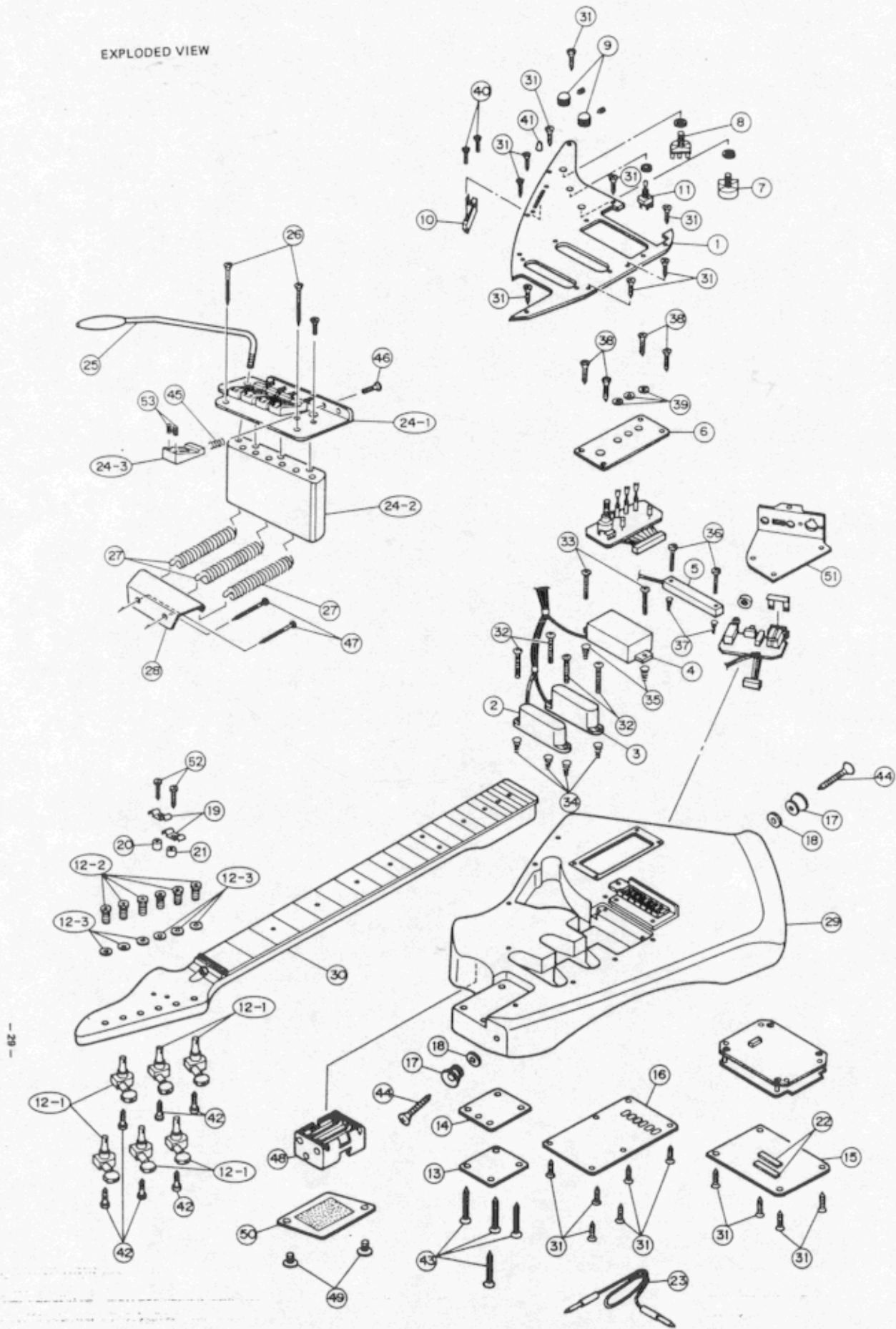
Note: ☆ — Newly employed parts  
Q'ty — Quantity used per unit  
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Rank A: Essential  
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EXPLODED VIEW



EXPLODED VIEW





# CASIO DIGITAL GUITAR

Model MG-500/510

MIDI Implementation Chart

Version : 1

Function ...	Transmitted	Recognized	Remarks
Basic Channel Default Changed	1 through 16 CH 1 through 16 CH	× ×	Set using microswitches.
Mode Default Messages Altered	Mode 3, 4 POLY, MONO (M=6) *****	× × ×	Set using microswitches.
Note Number: True voice	16~79(DOWN), 28~91 (NORMAL), 40~103(UP) *****	×	Octaved can be raised or lowered.
Velocity Note ON Note OFF	○ 9n v = 1-127 × 9n v = 0	× ×	
After Touch Key's Ch's	× ×	×	
Pitch Bender	○	×	8 bits effective
Control Change 7	○	×	MAIN VOLUME
Prog Change: True #	○ 0-95 *****	×	
System Exclusive	○	×	Bend range
System Common : Song Pos : Song Sel : Tune	× × ×	× × ×	
System Real Time : Clock : Commands	× ×	× ×	
Aux Messages : Local ON/OFF : All Notes OFF : Active Sense : Reset	× × ○ ×	× × × ×	
Remarks	MIDI messages output at power ON. OMNI OFF, POLY ON/OFF (according to microswitch setting), PROGRAM CHANGE (PROGRAM No. 0), PITCH WHEEL CHANGE (center value), MAIN VOLUME (according to MIDI volume control position), BEND RANGE (exclusive).		

Mode 1 : OMNI ON, POLY  
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO  
Mode 4 : OMNI OFF, MONO

○ : Yes  
× : No