SHARP SERVICE MANUAL

CODE: 00ZMZ700SM//E

PERSONAL COMPUTER

MODEL MZ-700
MZ-1T01
MZ-1P01

(FOR THE MZ-1P01 MECHANICAL SECTION
REFER TO THE DPG2306 SERVICE MANUAL)

INDEX

SHARP CORPORATION

1. SPECIFICATION

1-1. MZ-700

CPU	Sharp LH0080A (Z-80A)
Clock (φ)	3.5MHz
Memory	4KB ROM (monitor) 4KB ROM (character generator) 64KB RAM (program area) 4KB RAM (VIDEO)
Video output	System: PAL Type: RGB composite video (convertible to B/W) RCB + Syncronization (non composite) RF (UHF 36 ± 3ch, convertible to B/W)
Screen structure	40 character x 25 lines (1000 characters) 8 x 8 dot matrix (per character)
Color designation	Character: 8 colours (per character) Background: 8 colours (per character)
Music function	Internally provided (audio output, 550mV max.)
Timepiece function	Internally provided (24 hours clock, without data retention)
Keyboard	ASCII compatible 69 keys Definable keys, cursor control keys, etc.
Editing functions	Screen editor (cursor control, home, clear, insert, delete)
Power requirements	220/240V ± 10V, 50/60Hz
Temperature	Operating temperature: 0 to 35°C Storage temperature: -20 to 70°C
Humidity	Operating humidity: 85%RH or below
Weight	3.6Kg (body only)
Physical dimensions	440 (W) x 305 (D) x 86 (H)

1-2. CPU board specification

CPU	LH0080A (Z80A)	1
PIO	8255	1
CTC	8253	1
Memory controller (CRTC)	M60719	1
ROM	4KB monitor ROM	1
	4KB character generator ROM	1
RAM	64K bits DRAM	8
	2KB SRAM	2
I/O bus	Expansion I/O bus	1
	Printer I/O bus	2
	(Only one can be used, selectable by switching)	
	External cassette read/write terminals	

1-3. Micro-colour graphics printer specification (option)

Printing method	Ball point pen recording, four colours rotary selection type.
Kind of colours	1 = black, 2 = blue, 3 = green, 4= red
Printing speed	10 characters/sec, average (Printing the smallest characters.)
Printing capacity	80 digits, 40 digits, 26 digits, software designated
Character set	115 characters (ASCII characters and others)
Resolution	0.2mm

1-4. Cassette recorder specification (option)

Type	IEC compatible cassette mechanism
Record/playback method	Dual tracks, single channel, monophonic
Rated speed	4.8cm/±3.5%
Operation control method	Piano key method
Control buttons	PLAY, FF, REW, STOP/EJECT, REC, COUNTER RESET
Data transfer system	Sharp, PWM method
Baud rate	1200bps (nominal)
Tape used	Philips standard tape, (not C120)

1-5. Power supply specification

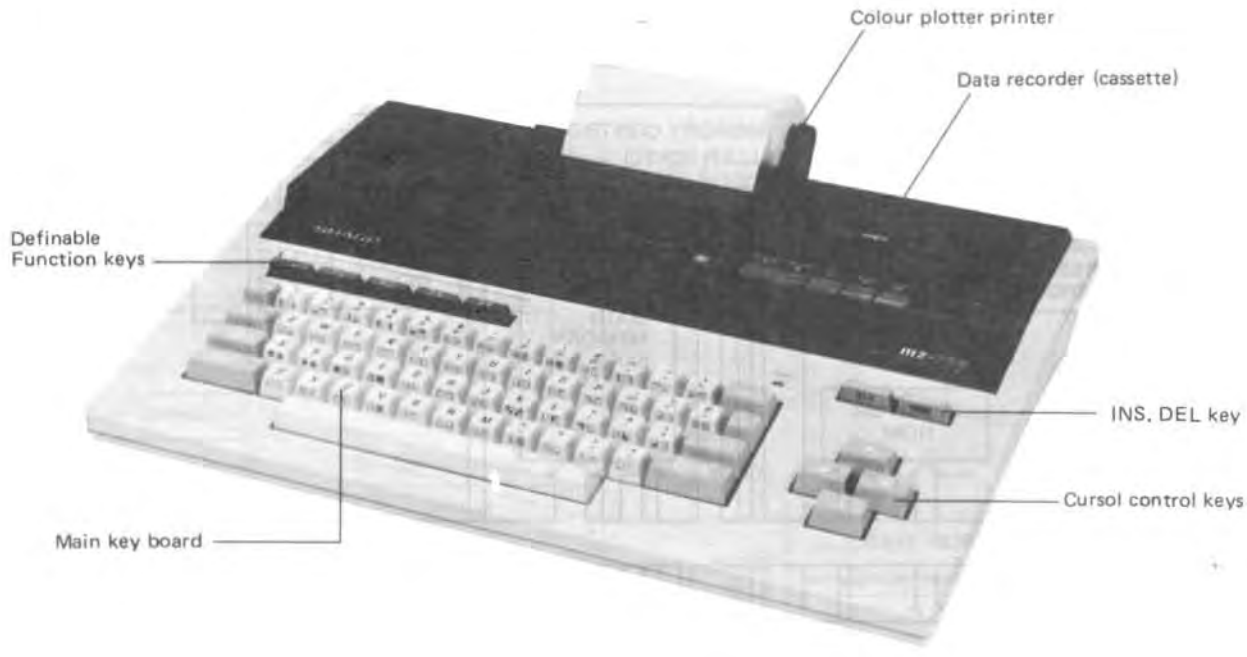
(Including colour graphics printer and cassette tape power source)

Input: 220/240V ± 10V, 60/50Hz, 20W

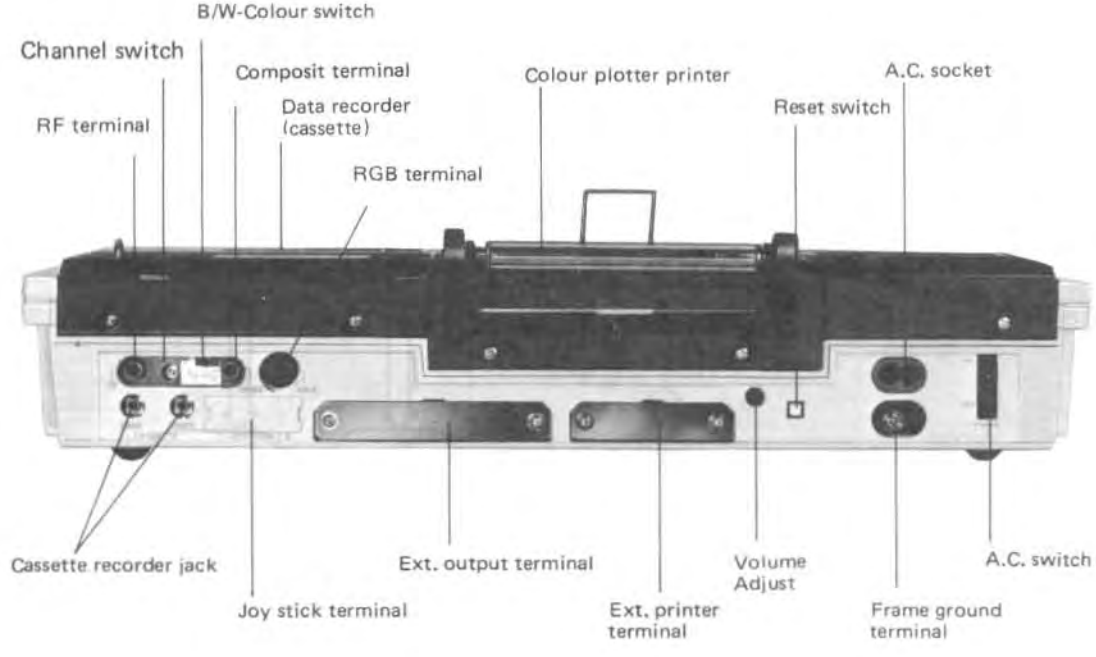
Output: 5V

2. NAME OF FUNCTIONAL COMPONENT

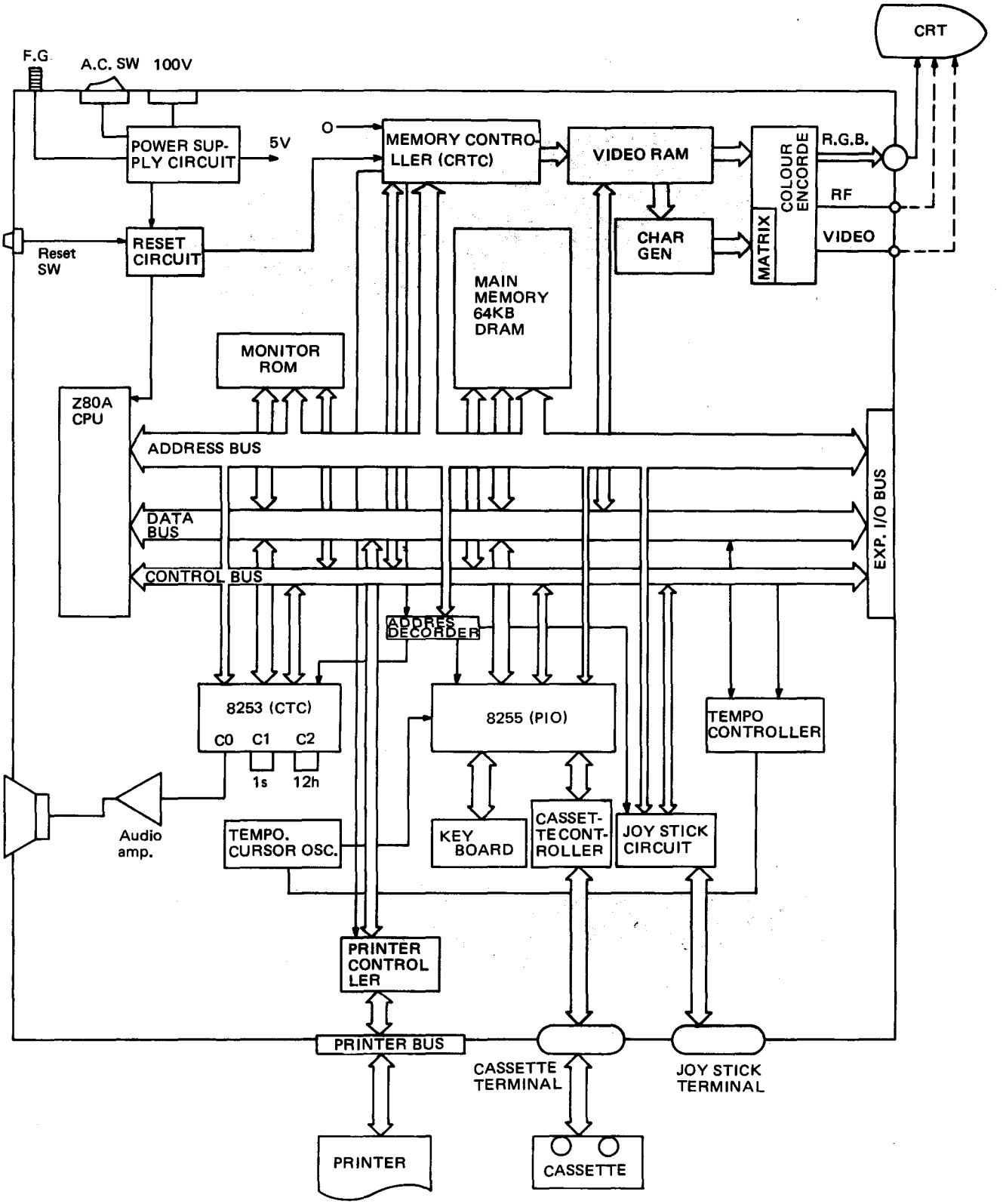
MZ-700 Front view



MZ-700 Rear view



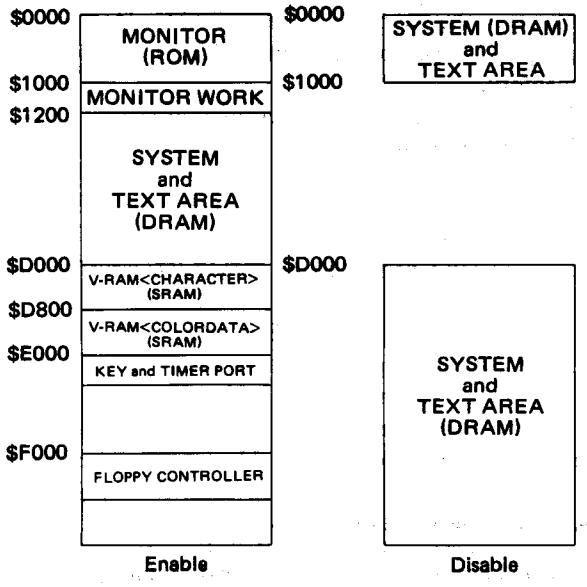
3. SYSTEM BLOCK DIAGRAM



4. SYSTEM DESCRIPTION

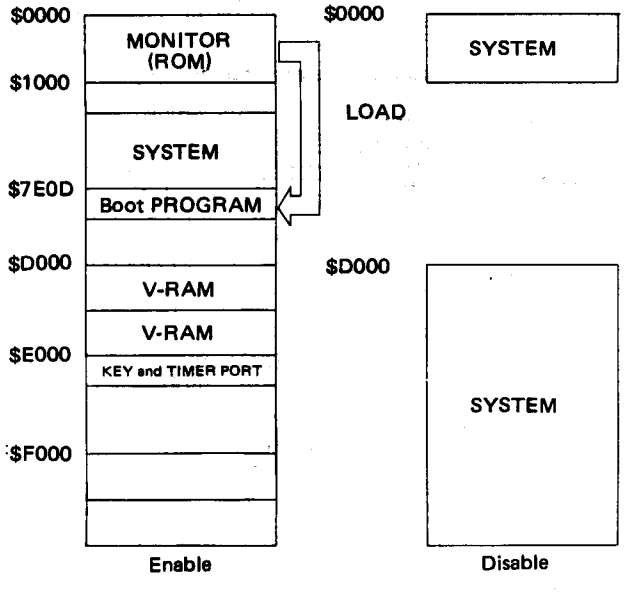
4-1. Memory map

a) At power on



- Shown above is the memory map at the time of power on. VRAM contents from $D000 to $DFFF differ from the MZ-80K.
- The monitor (ROM) has the same entry point as that of the MZ-80K.

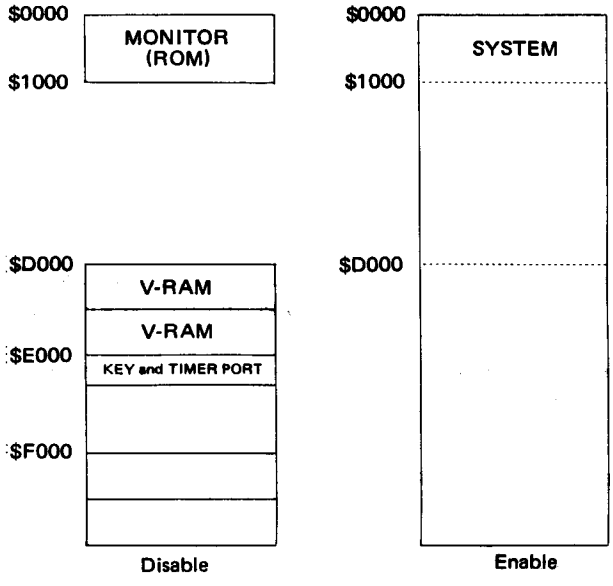
b) Bootstrap (loading of system program)



- With the input of the LOAD command of the monitor, the BASIC loading program is transferred to the system area composed of the RAM and starts to bootstrap. (Only the cassette tape is subject to bootstrapping in this case).
- Boot command: L
- With the entry of the boot command L, only the tape loading program is transferred to the system area and the system program is loaded to the system area designated in the DRAM.

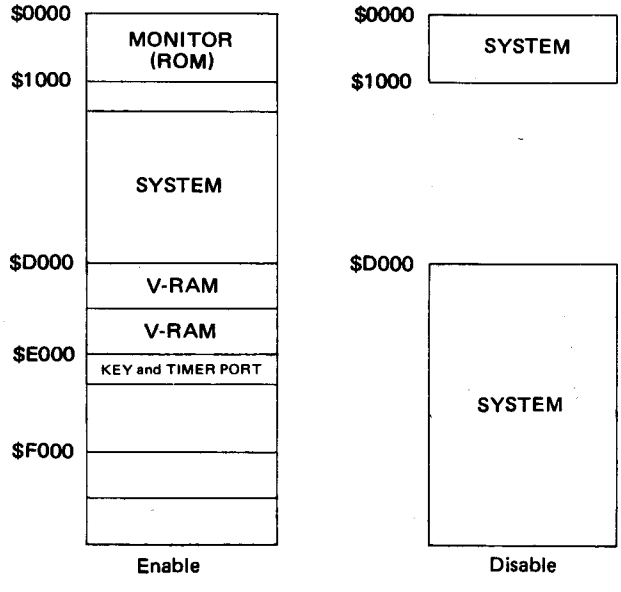
  NOTE: The boot program shown in the figure is the program loaded from the tape and is not the program from the monitor (ROM).

c) System initiation

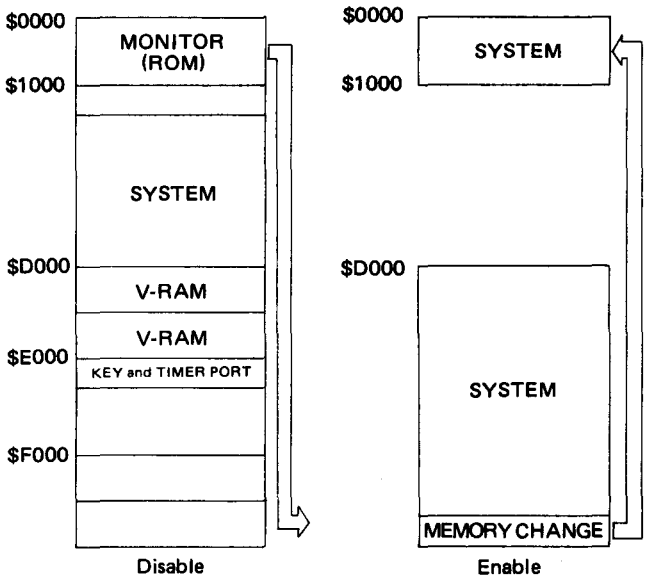


- The above memory map is valid upon completion of system program loading.
- The system program is programmed to switch the memory depending upon what is accessed, VRAM, keyboard, or timer.

d) At the time of manual reset

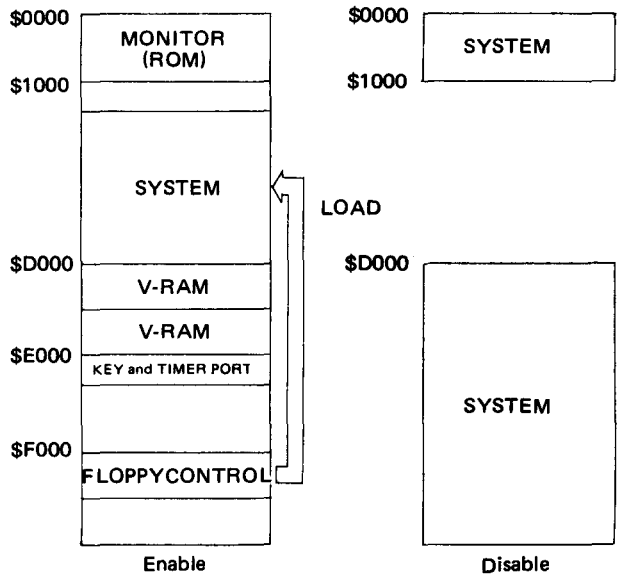


At the time of manual reset (with CTRL in depression)



- When the CTRL key is in depression, address $0000 through $0FFF and $D000 through $FFFF become the RAM area.
- With input of the command "#" when the monitor (ROM) is active, it is switched to the RAM.

e) Floppy bootstrap



- Because the floppy control area is mapped to $F000 for compatibility with the MZ-80K series, boot begins from the adress $F000.
- Map configuration after boot will be considered separately.

4-2. Memory controller (CRT C)

Both the momory controller and the CRT controller are contained in a single chip custom LSI (M60719), it has the following functions:

a. 8 x 8 dot characters are displayed on the CRT screen of 40 characters (horizontal) x 25 lines (vertical). Displayed character font is dependent on the 4KB character generator (ROM).
b. Manages the monitor ROM, DRAM, video RAM, and peripherals (keyboard, timer, ETC.) mapped to the memory.
c. Generates clock to the Z-80A microprocessor.
d. Selects the printer I/O port.

1) CRT controller

There are major variations of colour television systems as described below.

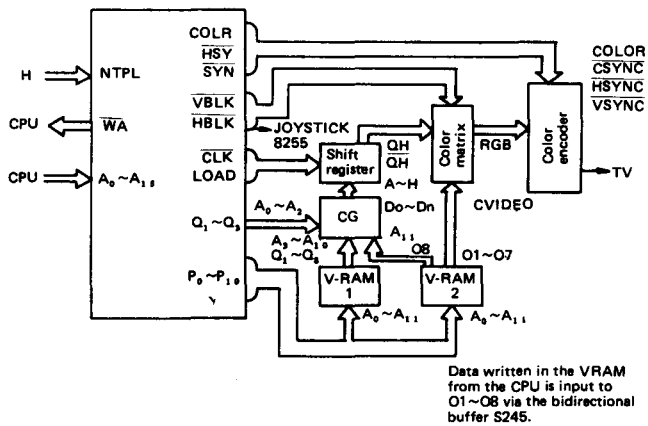
1. NTSC system (Japan, U.S.A., etc.)
2. PAL system (U.K., Germany, etc.)
3. SECAM system (French, etc.)

Because of the different specification requirements above, the MZ-700 may not be suitable for overseas operation.

PAL signal specification

Signal name	Signal frequency
NTPL	"L"
LPHI	17.734475 MHz
CLKN	8.8672375 MHz
COLR	4.43361875 MHz
LOAD	1.108404688 MHz
PHIO	3.546875 MHz
HBLN	15.6113 kHz
VBLN	50.0363 Hz

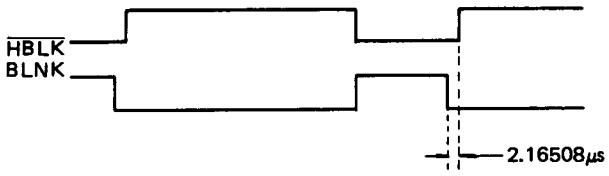
CRT controller system block diagram



Blanking period

To display characters on the CRT screen, the CPU writes the character data (display code) to the 2KB VRAM-1 along with the control signal WR and the color data of that character to the 2KB VRAM-2. In other words, as the address ($D000 ~ $D7FF) is output. The character data is supplied to the VRAM-1 input (01-08) via the bidirectional buffer LS245, and the data will then be written when WE is low. The color data is also sent to 01-08 of the VRAM-2 to be written when WE is low.

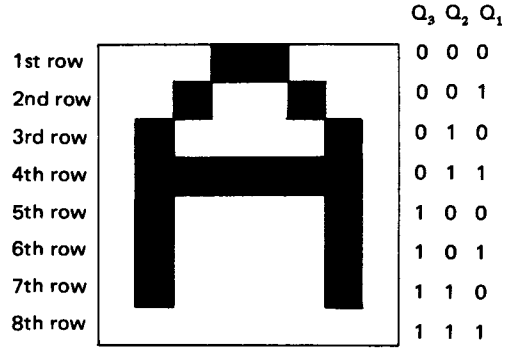
To read the contents of a VRAM character, the CPU sends out the relevant address. When RD is forced low, the data is then read via the bidirectional buffer LS245.
However, the address range $D000 through $DFFF must be addressed in order to access all the VRAM. This address change is carried out inside the custom LSI with the OUT command described later.
Accessing of the VRAM is carried out within the blinking period (BLNK = "H"). If BLNK = "L", then WAIT is applied to the CPU ($\overline{WA}$ = "L").
The blanking period discussed here is the period that BLNK is in high level.
High period of the BLNK signal is so designed that it is shorter than the low period of $\overline{HBLK}$ (horizontal blanking period).
$\overline{HBLK}$ versus BLNK



Display period
The data written in the VRAM is sent to the CG ROM, character by character based on the display address counter located inside the custom LSI, to become the CG address data (VRAM-1 data). Also, the data of VRAM-2 is sent to the LS174, at this point. The CG receives the VRAM-1 data and low order address bits (Q-Q3). It is then sent to the shift register LS165 after being converted into the 8-bit parallel character row data. The shift register converts this signal into serial data and it is added to the color matrix circuit along with the data from the LS174 to become the R.G.B. CVIDEO signal.

$P_0 \sim P_{10}$: These are VRAM addresses that represent the character position on the CRT screen.

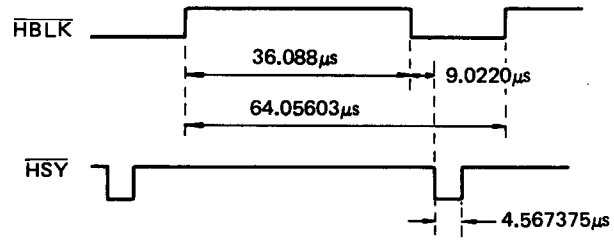
$Q_1 \sim Q_3$: These represent the rows of the 8 x 8 dot character. Row number is increased with HBLK, and it repeats 0 through 7 as shown below. These signals are also generated inside the custom LSI.



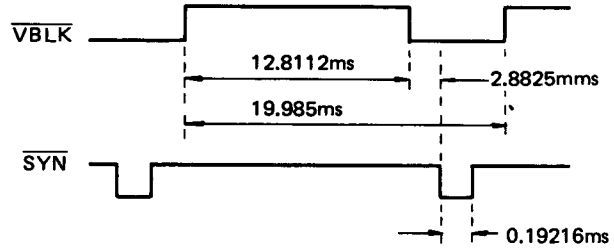
LOAD: The signal that determines the function (shift out or data set) of the shift register LS165. High state of this signal acts as shift and low state of this signal acts as data set.

$\overline{CLK}$: Shift register clock. Data shifts at the rising edge of $\overline{CLK}$ when the LOAD signal is high.

- $\overline{HBLK}$ versus $\overline{HSY}$



- $\overline{VBLK}$ versus $\overline{SYN}$



Custom LSI internal CRT controller block diagram and description

- $Q_1 \sim Q_3$ are created by dividing HBLK by half.
- Internal signal CSDD is used to make the choice of VRAM addressing, which is carried out by address multiplexing through the internal display address, or comes direct from the CPU. A through K are the display addresses.
- The LPHI signal (17.7MHz) is divided and ANDed to derive the horizontal synchronization signal (NTSC or PAL) to make the choise of either NTSC or PAL horizontal synchronization signal, output by means of NTPL.

2) Memory controller

In the MZ-700, it needs to segregate the memory in order to acheive the above mentioned memory mapping. The memory controller is therefore used to perform address management of peripherals assigned to the memory such as DRAM, monitor ROM, video RAM, and keyboard. The bank select method is used to switch memory. Memory selection is acheived using the OUT command.

I/O port	$0000 ≀ $0FFF	$D0000 ≀ $FFFF	INH1	INH2	INH3
$E0	D-RAM	—	L	–	–
$E1	—	D-RAM	–	L	–
$E2	MONITOR ROM	—	H	–	–
$E3	—	V-RAM, 8255 8253	–	H	–
$E4	MONITOR ROM	V-RAM, 8255 8253	H	H	H
$E5	—	Prohibited	–	–	L
$E6	—	Returns to the state before prohibitied.	–	–	H

INH1 ~ INH3 are custom LSI internal signals which cause the memory map to change.

INH1	H	L	H	H
INH2	H	H	L	H
INH3	H	H	H	L
	ROM	D-RAM	ROM	ROM
	D-RAM	D-RAM	D-RAM	D-RAM
	V-RAM	V-RAM	D-RAM	

INH1	L	H	L	L
INH2	L	L	H	L
INH3	H	L	L	L
	D-RAM	ROM	D-RAM	D-RAM
	D-RAM	D-RAM	D-RAM	D-RAM
	D-RAM			

NOTE: The command with which the memory selection is to be done should not be written in the memory block to be selected.

- **Custom LSI internal memory controller block diagram and description**

  When the above mentioned OUT command is executed, address $A_0 \sim A_2$ is stored in "FF" to create INH1 ~ INH3, then ROM, VRAM, and DRAM may be accessed against CPU addressing on the basis of those INH signals.
- $\overline{RAS}$ becomes active when the DRAM is accessed.
- CSO becomes active when the monitor ROM is accessed.
- CSE becomes active when the memory mapped I/O (8255, 8253) is accessed.
- CSDN (internal signal) becomes active when the VRAM is accessed. If in the blnk period, CSDD becomes active. So that, the address from the CPU is sent of $P_0 \sim P_{10}$.
- If the display period is on when accessing the ROM or VRAM, WATN becomes active.
- Line address and row address switching signal (LS157 input) when accessing the RAM is derived from PHI, WRN, MRQN, and RDN. As $\overline{WR}$ rises before the falling edge of $\overline{CAS}$ during the write cycle, it becomes an early cycle.

4-4. Memory controller (CRTC) circuit description

The memory controller and the CRTC are contained in the single chip custom LSI (M60719).

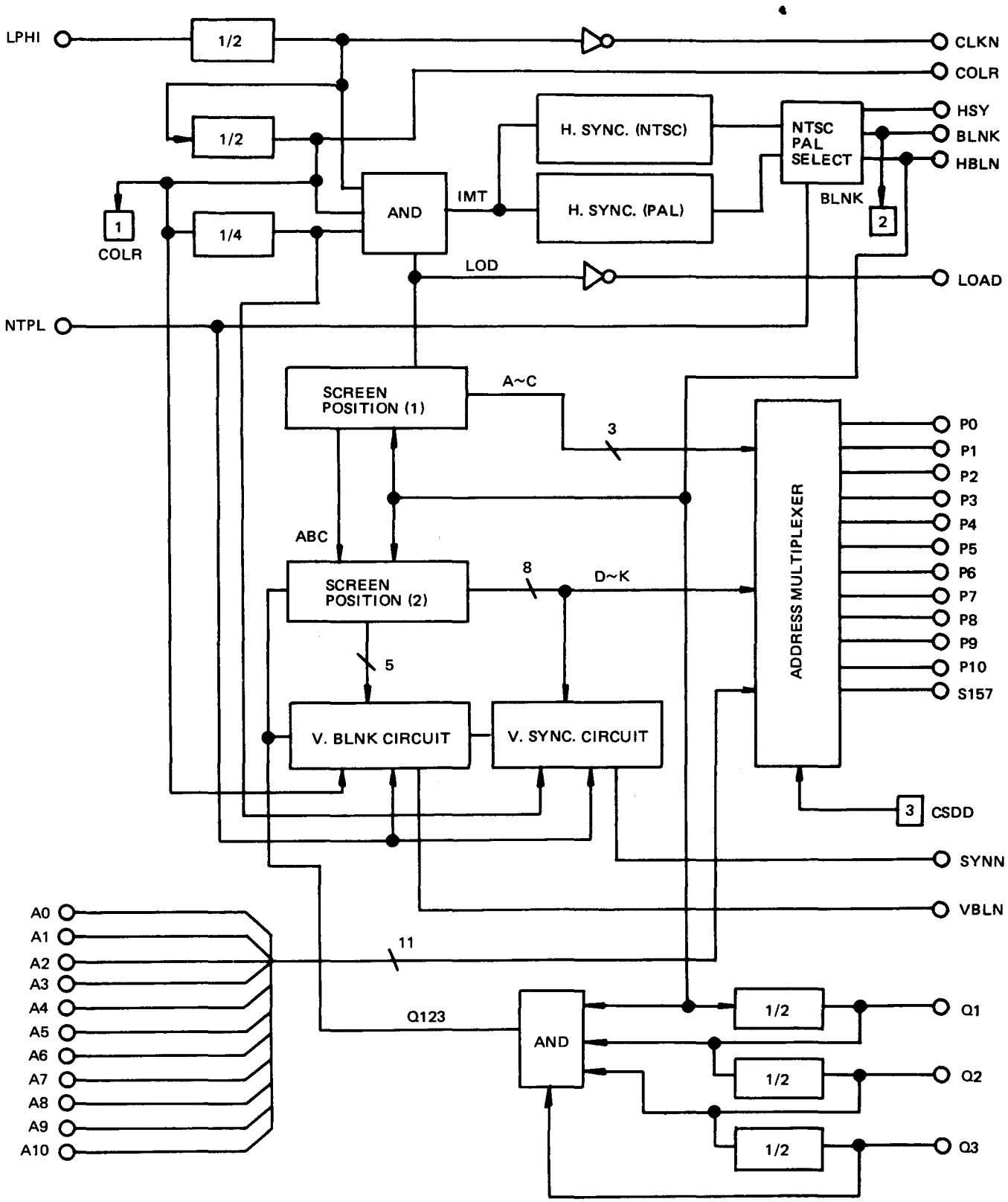
Memory controller signal description

Pin No.	Signal name	IN/OUT	Function	Circuit diagram signal name
1 ~ 16	A0 ~ A15	IN	CPU address Bus	AO ~ A15
17	LPH1	IN	Clock (17.7MHz)	Φ
18	PH1	IN	CPU clock (3.55MHz)	ϕ
19	CSEN	OUT	8255, 8253, joystick enable	$\overline{\text{CSE}}$
10	CL	IN	GND	CL
21	GATE	IN	GND	GATE
22	CSON	OUT	Monitor ROM enable	$\overline{\text{CSO}}$
23	VCC	–	Power supply	5V
24	RASN	OUT	D-RAM row address select	$\overline{\text{RAS}}$
25	RFSN	IN	CPU refresh	$\overline{\text{RFSH}}$
26	PHIO	OUT	CPU clock create signal (3.55MHz)	ϕo
27	MRQN	IN	CPU memory request	$\overline{\text{MREQ}}$
28	IORN	IN	CPU I/O request	$\overline{\text{IORQ}}$
29	RDN	IN	CPU read	$\overline{\text{RD}}$
20	WRN	IN	CPU write	$\overline{\text{WR}}$
31	RSTN	IN	Reset	$\overline{\text{RESET}}$
32	SEL	IN	DRAM row/column address switching signal	SEL
33	VBLN	OUT	Vertical blanking signal (CRT)	$\overline{\text{VBLK}}$
34	HBLN	OUT	Horizontal blanking signal (CRT)	$\overline{\text{HBLK}}$
35	WATN	OUT	CPU wait	$\overline{\text{WA}}$
36	COLR	OUT	Colour sub-carrier wave (4.4361875MHz: PAL)	COLR
37	PRCN	OUT	Printer I/O address select	$\overline{\text{PRC}}$
38 ~ 40	Q1 ~ Q3	OUT	Display: Address data output (Line Count Signals) (Display address is indicated to the CG ROM together with P0 – P10).	Q1 ~ Q3
41	NTPL	IN	NTSC/PAL system switching (PAL=L)	N/P
42	BLNK	OUT	Timer clock	BLNK
43	HSYN	OUT	Horizontal synchronizing signal	$\overline{\text{HSY}}$
44	ABC	OUT		ABC
45	LOAD	OUT	Character, display start signal	LOAD
46 ~ 52	P0 ~ P6	OUT	Display address signal	P0 ~ P6
53	GND	–	GND	
54 ~ 57	P7 ~ P10	OUT	Display address signal	P7 ~ P10
58	S157	OUT	V-RAM display/CPU address switching signal	S157
59	SYNN	OUT	Vertical synchronizing signal	$\overline{\text{SYN}}$
60	CLKN	OUT	Character display shift register clock	$\overline{\text{CLK}}$

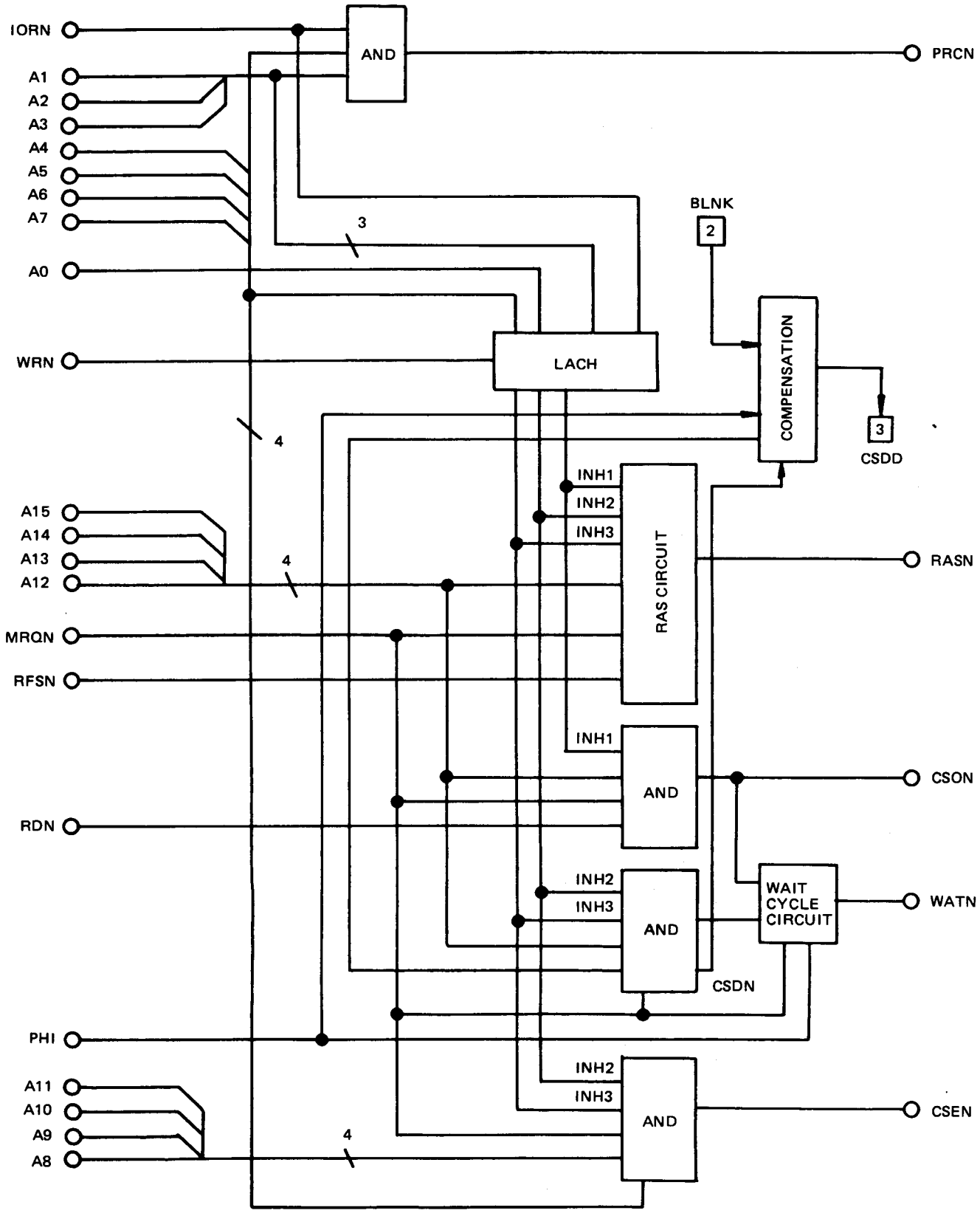
CUSTOM LSI < YT1 >

1. BLOCK DIAGRAM

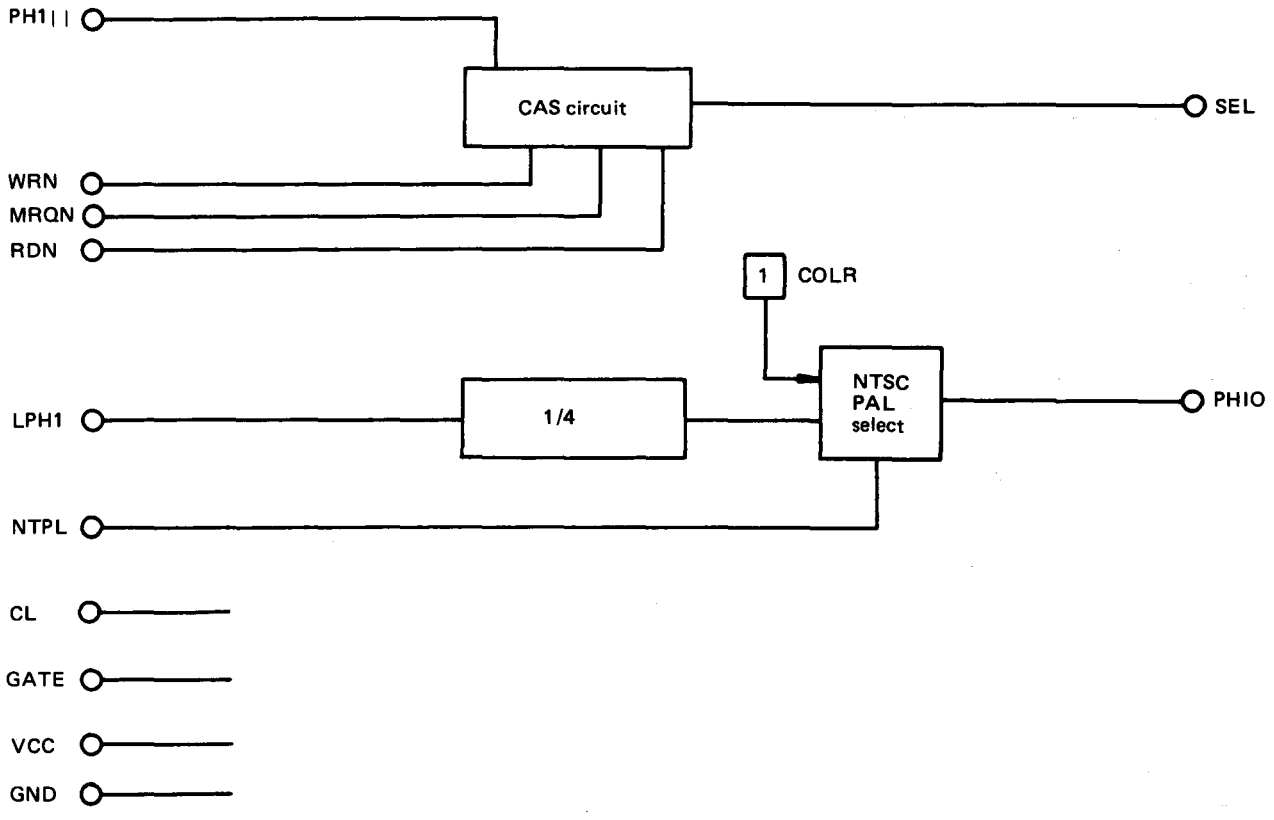
CRT Control



Memory Management (1)



Memory Management (2)

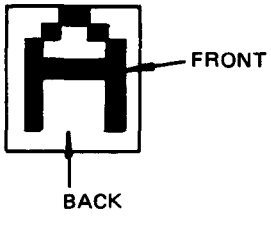


Colour VRAM (VRAM-2)

- MZ-700 colour information is managed character by character. One byte of colour information table is assigned to each characters displayed on the TV screen.

D7	ATB
D6	FRONT G
D5	FRONT R
D4	FRONT B
D3	Not used
D2	BACK G
D1	BACK R
D0	BACK B

ATB: CG ROM address switching bit



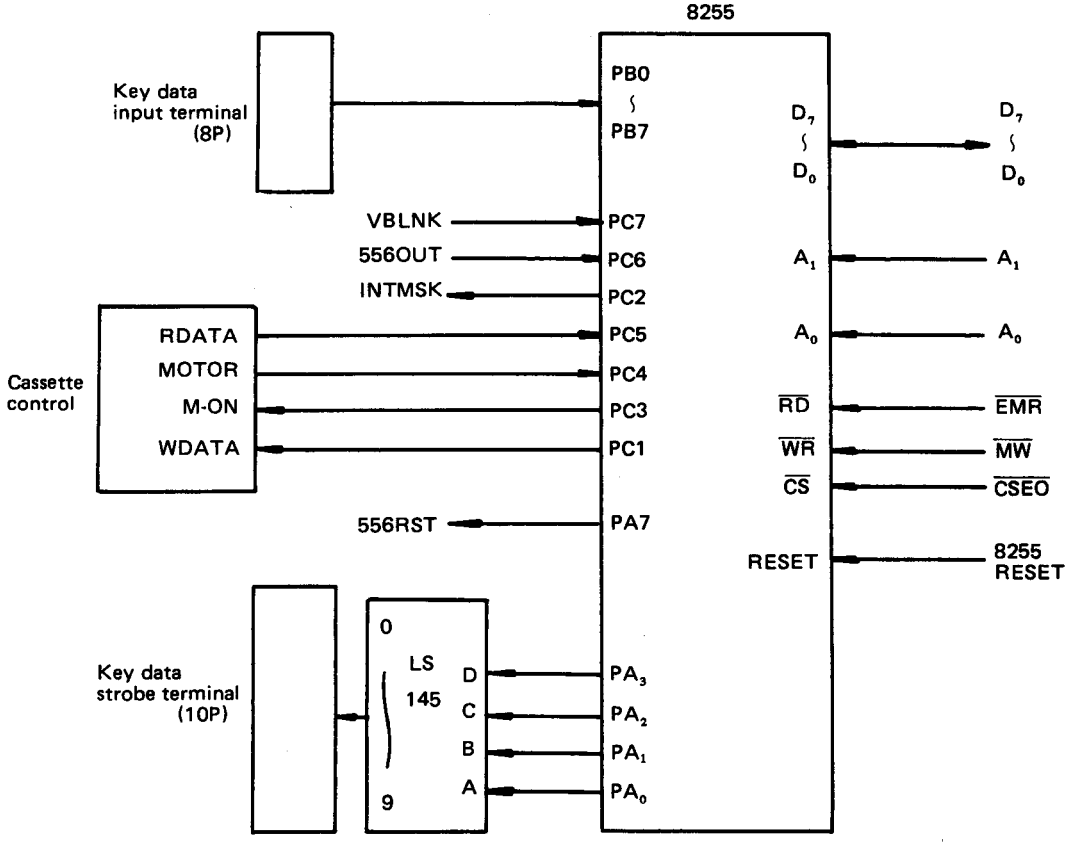
Character information is stored in address $D000-$D7FF and colour information in $D800-$DFFF of the VRAM.

4-3. Memory mapped I/O ($E000 – $E008)

CPU memory address	Controller	Function
$E000	8255	P_A : Output
$E001		P_B : Input
$E002		P_C : Input/output mode controller by bit cell
$E003		Mode controller
$E004	8253	C_0 : Mode 3 (square wave rate generator)
$E005		C_1 : Mode 2 (rate generator)
$E006		C_2 : Mode 0 (terminal counter)
$E007		Mode controller
$E008	LS367 and others	Tempo, joystick, HBLNK input

a) Signals around the 8255

The 8255 Programmable Peripehral I/O Controller assumes the control of the cassette recorder, CRT screen cursor blinking timing, keyboard scan strobe output, and key return data.

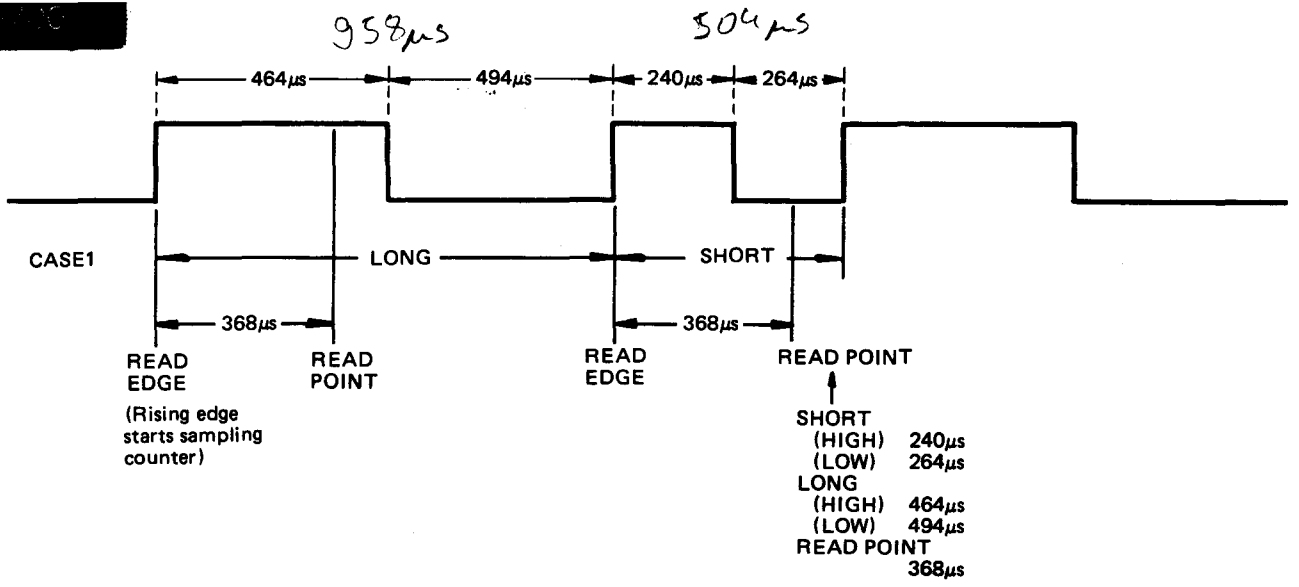


Port	Port terminal	I/O	Active state	Control function	Signal name
PA ($E000)	PA_0	OUT	H	Keyboard scan strobe signal output	
	PA_1				
	PA_2				
	PA_3		H		
	PA_7		L	Cursor blinking timer reset	556RST
PB ($E001)	PB_0	IN	L	Keyboard scan data input	
	PB_1				
	PB_2				
	PB_3				
	PB_4				
	PB_5				
	PB_6				
	PB_7		L		
PC* ($E002)	PC_1	OUT	–	Cassette data write	WDATA
	PC_2	OUT	L	Timer interrupt disable	INTMSK
	PC_3	OUT	⎍	Motor rotate control	M-ON
	PC_4	IN	H	Motor rotation check	MOTOR
	PC_5	IN	–	Cassette data read	RDATA
	PC_6	IN	–	Cursor blinking timer input	556OUT
	PC_7	IN	–	Vertical blanking	VBLNK

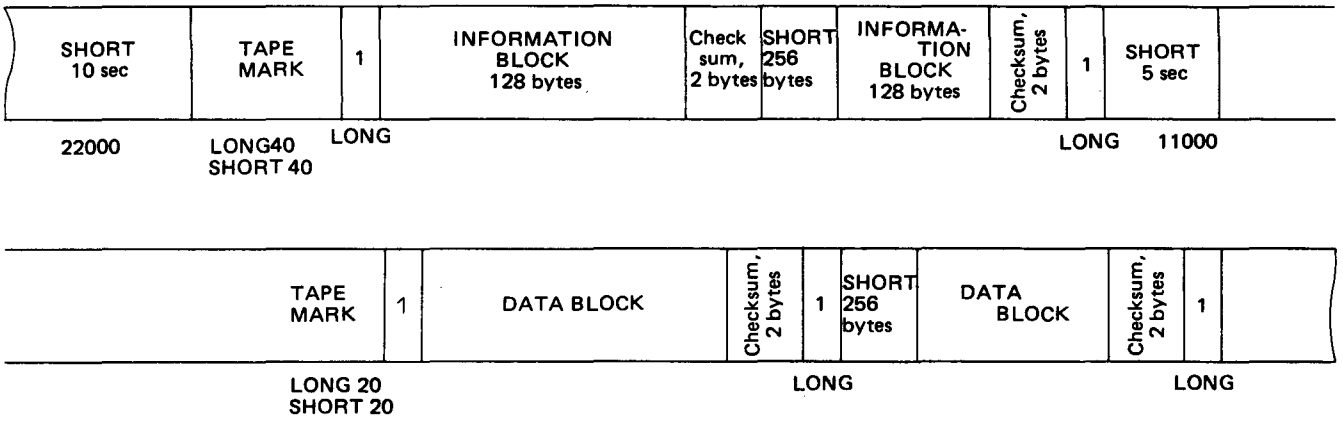
* Output data handled in the bit cell mode. (Port C in control mode)

b) Cassette controller

Data transfer with the cassette recorder is carried out on PC1, PC4, and PC5 of the 8255. Shown next is the data format (Sharp PWM method) of the cassette tape.



"LONG" is the data written for the bit value of "1" and "SHORT" for the bit value of "0". Data is read 368μs after the rising edge of the data. The data is recorded as a repetition of LONG and SHORT, with the same data block written twice.

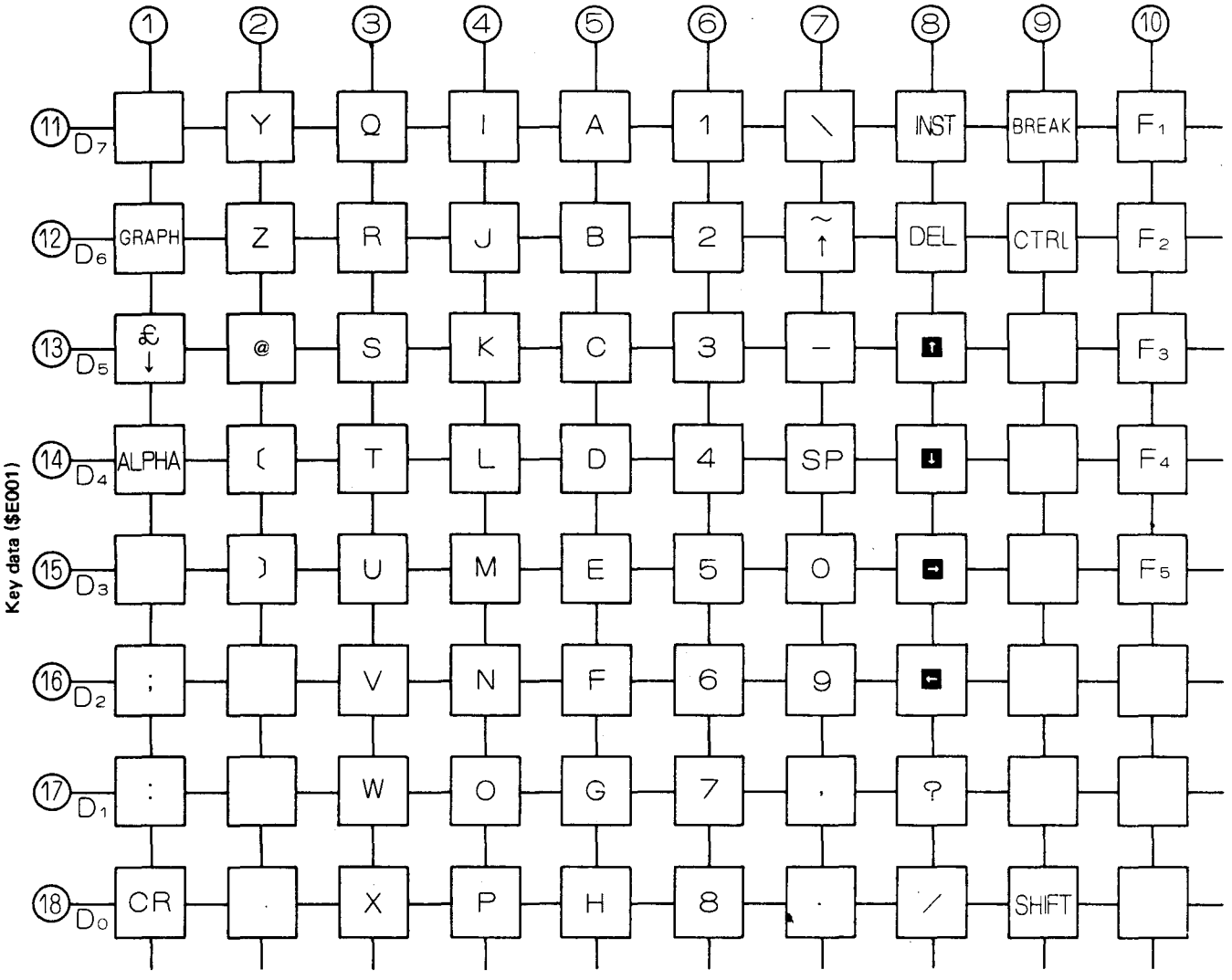


The information block consists of the following:

Name	Byte numbers	End address	Function	Note
ATRB	1	$10F1	Attribute	
NAME	17	$1102	File name (up to 16 characters)	CR (OD) at the end
SIZE	2	$1104	File byte size	In order or low and high order bytes
DTADR	2	$1106	Loading address	
EXADR	2	$1108	Executing address	
COMNT	124	$1170	Comment	Not used

c) Keyboard controller

The 8255 writes strobe (key scan signals) on PA and reads key data from PB. The table shown below is the key map.

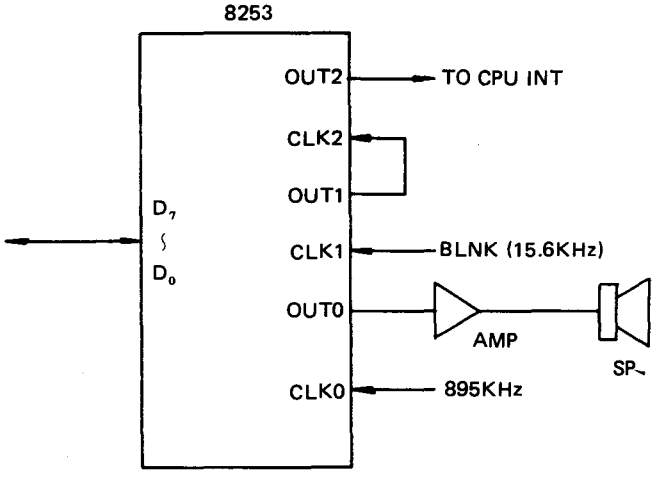


d) Signals around the 8253

The 8253 Programmable Timer generates the buzzer tone through the counter #0 and keeps the internal timer function via the counters #1 and #2.

The counter #0 is used as a square waveform generator (Mode 3). The counter #1 is used as a rate generator (Mode 2) and #2 as an interrupt upon terminal count (Mode 0).

The counter #0 counts the input pulse of 895KHz which is divided by a predetermined factor (musical note), and is then supplied to the amplifier to generate sound. The counter #1 receives an input pulse of 15.6KHz and creates a pulse on OUT1 every second. The counter #2 counts those pulses and OUT2 turns to a high level 12 hours after. As OUT2 is connected to the CPU interrupt pin, it then goes into an interrupt processing routine.



5. DATA RECORDER

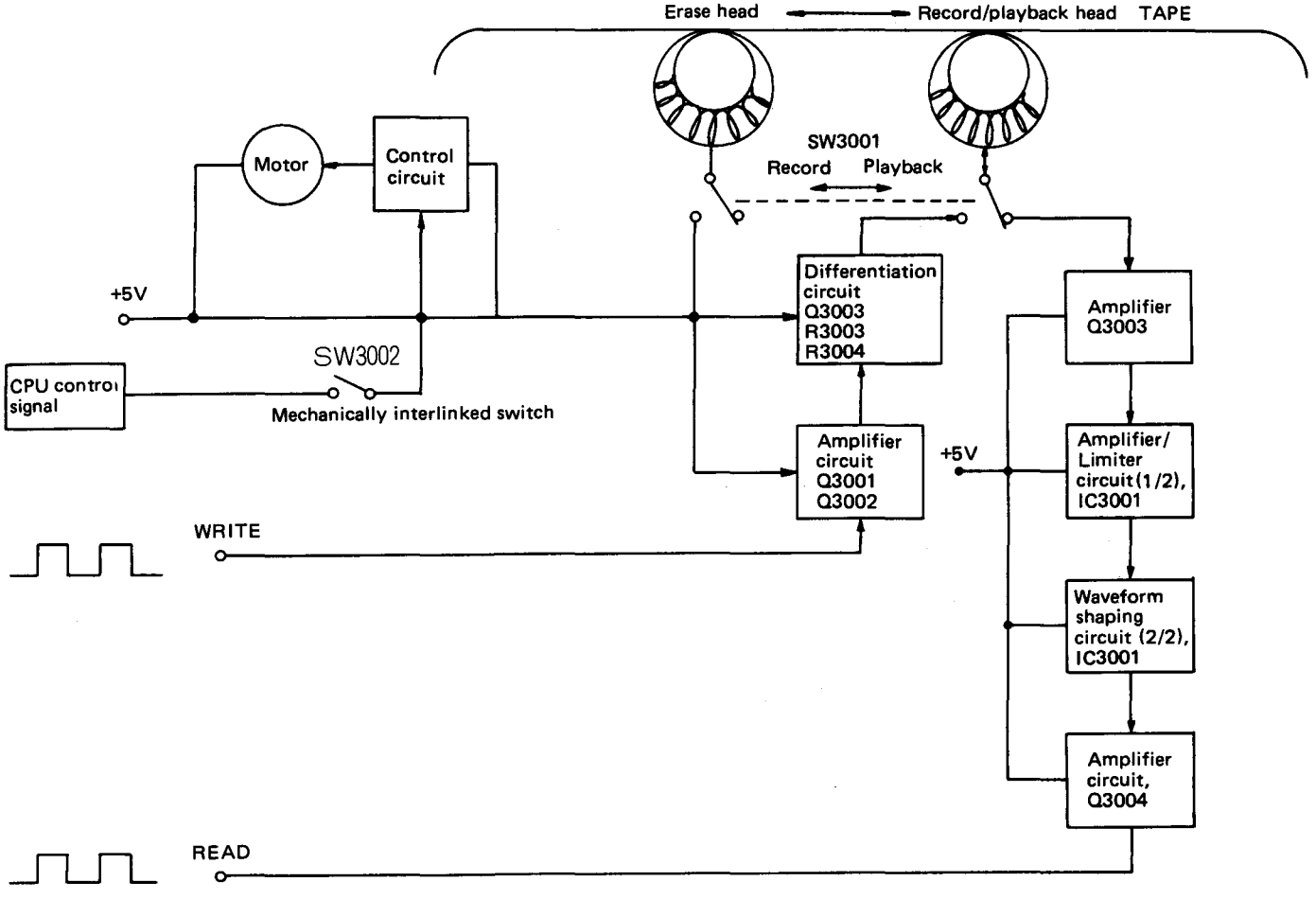
5-1. Data recorder (MZ-IT01)

Data transfer with the recorder is carried out via the 8255. The read data is sent out through the port C1 and the write data is received through the port C5. The motor on/off control is carried out via the port C3 and that activation of the motor is confirmed through the port C4. The signal SENSE goes low when FF, REW, or PLAY pushbutton is pushed on the MZ-1T01.

■ **Cassette specification**

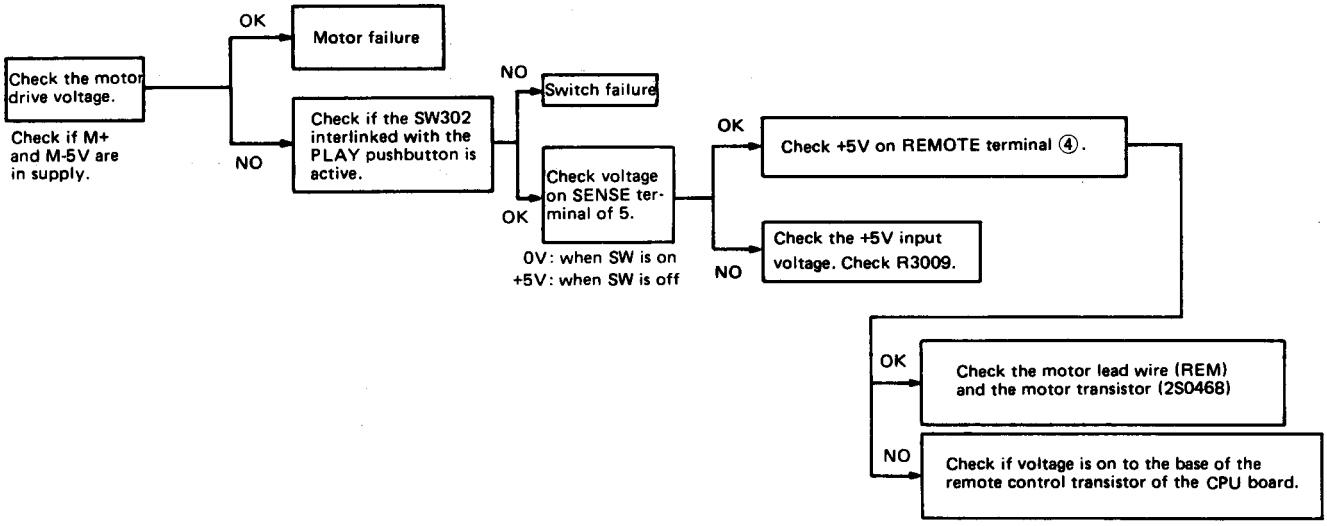
Method	PWM recording method
Rated power	5V ± 0.25V
Rated current	Wait: 2mA Record: 210mA (TEAC TEST TAPE) Playback: 150mA (TEAC TEST TAPE)
Semiconductors used	Transistor x 5 IC x 2 Diode x 4
Tape used	C30 – C90
Rated tape speed	4.75cm/sec
Tracks	2 tracks, monoral
Motor	5V electronic governor motor
Bias	DC
Erasure	DC
Standard playback point	1msec ~ 500 sec
Nominal input level and input impedance	L: 0.4V, max. H: 2.0V, min. Recording terminal 10kΩ min.
Nominal input level	L: 0.4V, max. H: 2.0V, min.

Block diagram

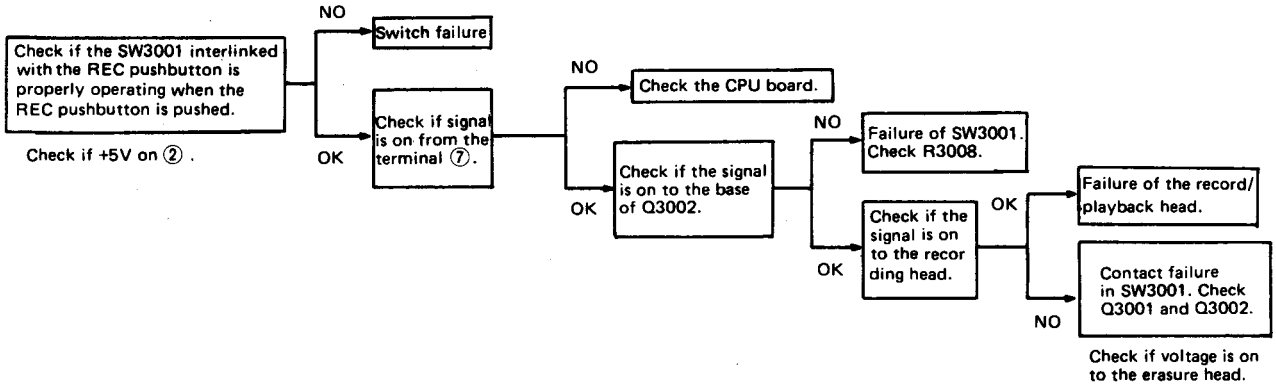


Troubleshooting procedure

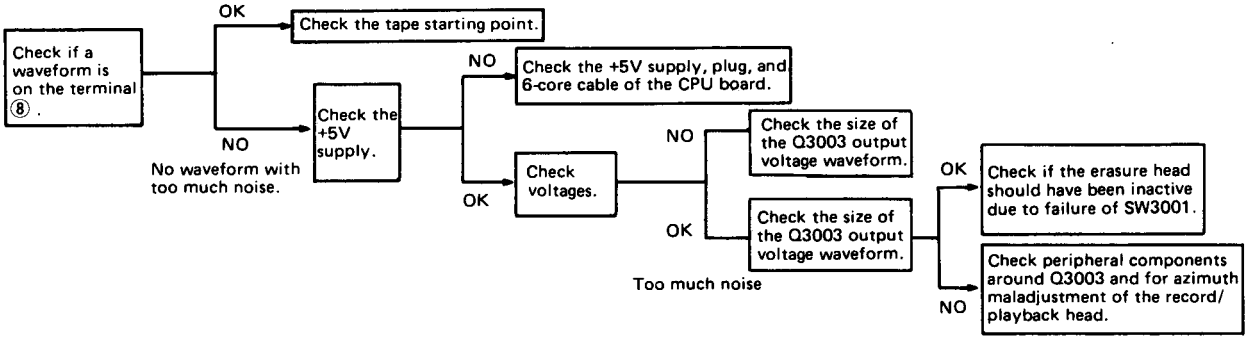
Phenomennon ①: Motor and tape do not rotate, when the PLAY button is pushed.



Phenomenon ②: Program can not be saved



Phenomenon ③: Program can not be loaded or resulted in error



Mechanical adjustments

RECORD/FAST FORWARD/REWIND torque measurements

1. Set the torque measuring instrument on the cassette tape recorder.
2. Torque value under each mode must be as follows:

Position	Torque measuring cassette	Value
PLAYBACK	TW-2111	30 ~ 70gram·cm
FAST FORWARD	TW-2231	60 ~ 160gram·cm
REWIND	TW-2231	60 ~ 160gram·cm

Record/playback head azimuth adjustment

1. Set the instrument as shown in Fig. 4-2.
2. Playback the test tape (Teac's MTT111, recorded with 3KHz signals).
3. Adjust the head azimuth adjusting screw so that the reading on the digital voltmeter is at its maximum value.

Cleaning of head

The head is critical for a proper performance of the tape recorder. Dust on the head, capstan, pinch roller, etc. impedes proper recording and playback. Open the cassette holder, take out the tape, push down the PLAYBACK pushbutton, then clean those components. If you can see any oxide deposit, clean them using a cotton bud damped with alcohol.

RECORD pushbutton can not be pushed in

The RECORD pushbutton can not be pushed in, if the erasure protect tab of the cassette tape is broken. Forcible depression of the button may result in machine failure.

Tape speed adjustment

1. Connect the wow-flutter measuring instrument to #8 pin of the CNW3001 connector.
2. Playback the test tape (UKOG-0119CSZZ, MTT-113 recorded with 8KHz signals). Use the middle part of the tape for the test.
3. Adjust the semi-fixed resistor located on the Motor Board so that the playback frequency should become 8000 ± 250Hz.

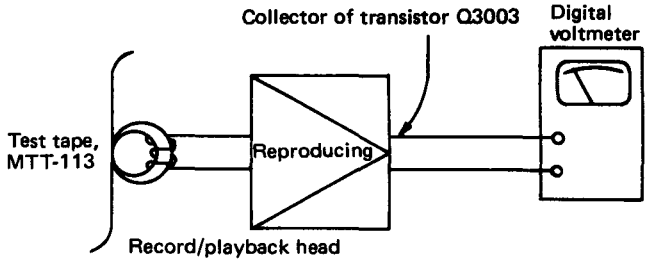
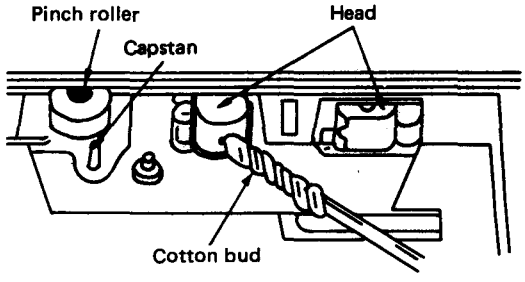
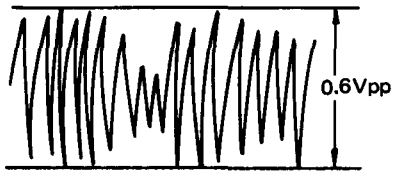
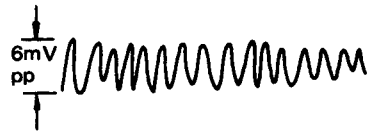
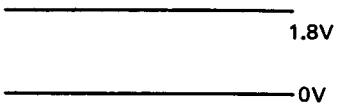
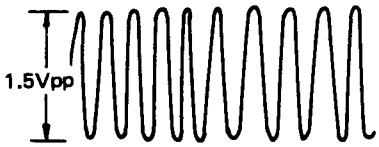
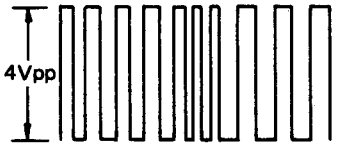
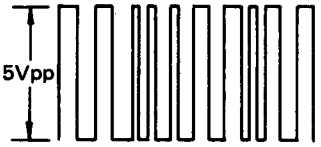
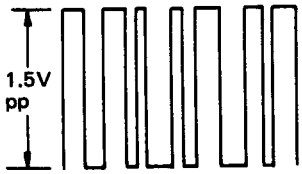
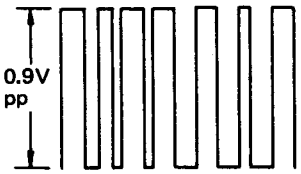
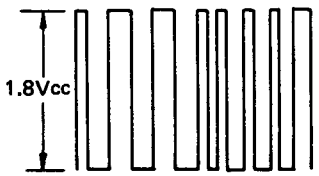
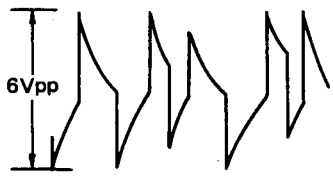


Figure 4-2.



Cassette recorder waveforms

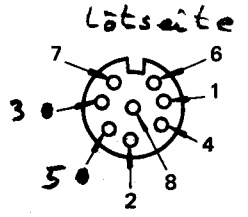
Primary stage amplifier output waveform	Operational amplifier input waveform	Operational amplifier input waveform
① 	② 	③ 
Operational amplifier input waveform	**Operational amplifier output waveform**	**Output waveform**
④ 	⑤ 	⑥ 
Recording input waveform	**Recording signal amplified waveform**	**Recording signal amplified waveform**
⑦ 	⑧ 	⑨ 
Head input waveform		
⑩ 		

◯ Figure in a cicle represents the waveform test point on the circuit diagram.

5-2. External recorder playback circuit

When the external recorder is used, connection is made with the 8255 by shorting P-12. In this condition, the write data (8255 PC output) is differentiated and sent to the recorder. In the case of read, the signal peak is chopped by D1 and D2 (about 0.6V), amplified in the 1.2V limiter (about 1.2V), then amplified to 5V in the next stage amplifier. The phase of the read signal may be inverted with the tape switch after this is to compensate for phase difference owing to the head of the recorder. When proper operation is not attained with an external recorder, adjust the volume control and the tone control knobs to optimum positions. Those which incorporate treble and base for tone control should preferably be set to a flat condition, and those with only a tone control knob, should be set to a high condition.

- 8-Pin DIN connector

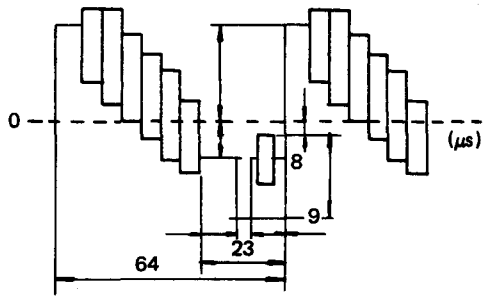


1 VIDEO
2 GND
5 VSYNC
4 HSYNC
3 CSYNC
6 R
7 G
8 B

- Whenever there is any problem with the display check if all signals are supplied to the colour encoder. Check the waveform of VIDEO OUT.

* Problems may arise if the colour TV is improperly adjusted.

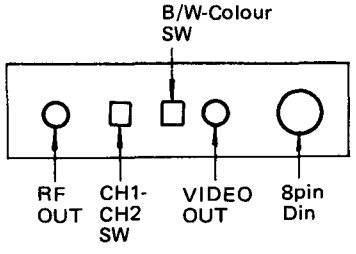
Signal waveform of VIDEO OUT (figures in the drawing represents nominal values)



6. COLOUR ENCODER

6-1. Colour encoder

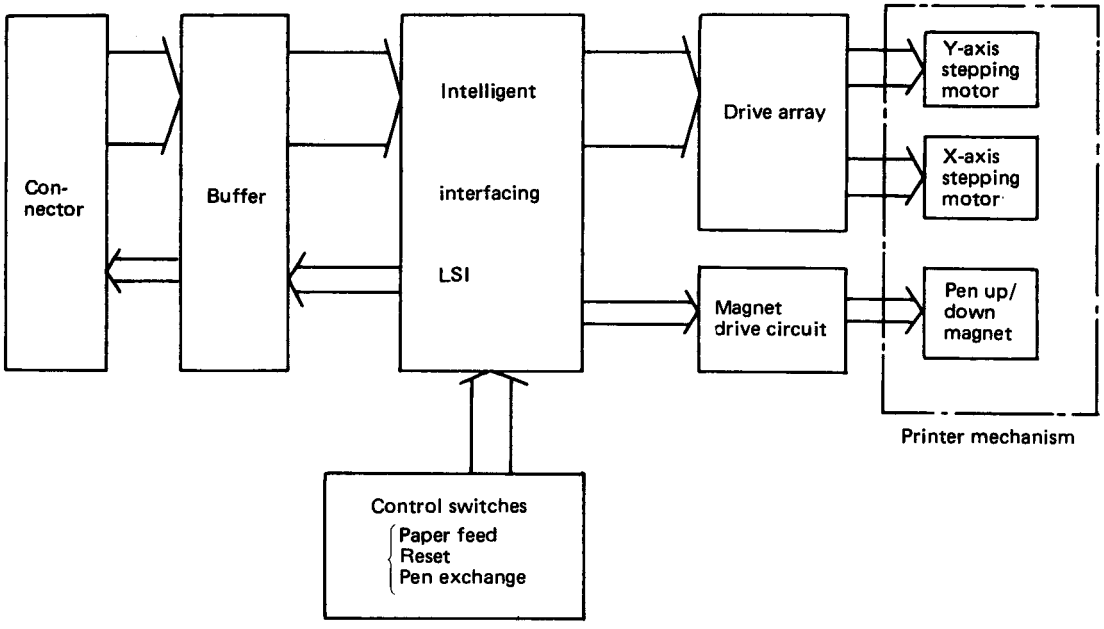
- The encoder unit should be replaced as a unit part.
- Input signals
  - COLOR Colour sub-carrier wave frequency
  - $\overline{\text{CSYNC}}$ Composite synchronizing signal
  - $\overline{\text{HSYNC}}$ Horizontal synchronizing signal
  - $\overline{\text{VSYNC}}$ Vertical synchronizing signal
  - R
  - G
  - B
  - CVIDEO
- Rear view



7. MICRO COLOR GRAPHIC PRINTER

7-1 Micro color graphic printer

1) Block diagram



(1) At power on

At power on, more than 5V of pen up current is applied for a period of 10ms, plus 5 and minus 0ms, to move the carriage 556 steps backward on the X-axis in order to initialize the colour position. As the carriage is held at the left margin after disengagement of the motor, it is then moved 30 steps forward on the X-axis, then stepped back 30 steps again to check if the colour position detector has been made. If not, it continues to move the carriage 30 steps forward on the X-axis, then return 30 steps to ensure the made condition.

(2) Colour change operation

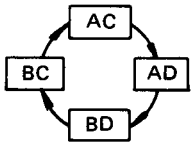
To change colour, the slider makes three reciprocating movements of 6mm (30 steps) at the left end of the X-axis to move the pen position one step. When the desired pen position is attained, it then returns to the home position. Since the pen rotor makes a unidirectional rotation at the left end of the X-axis, and is locked within printable range, care must be exerted not to touch the rotor and the slider.

(3) Pen exchange operation

A pen needs to be exchanged with a fresh one when it runs out of ink. In such an event, the pen is moved 485 steps forward on the X-axis from the home position with the used pen located on the top of the rotor, then take out the used pen, by pressing the pen release lever and exchange it with a fresh one.

(4) Motor phase and rotating direction

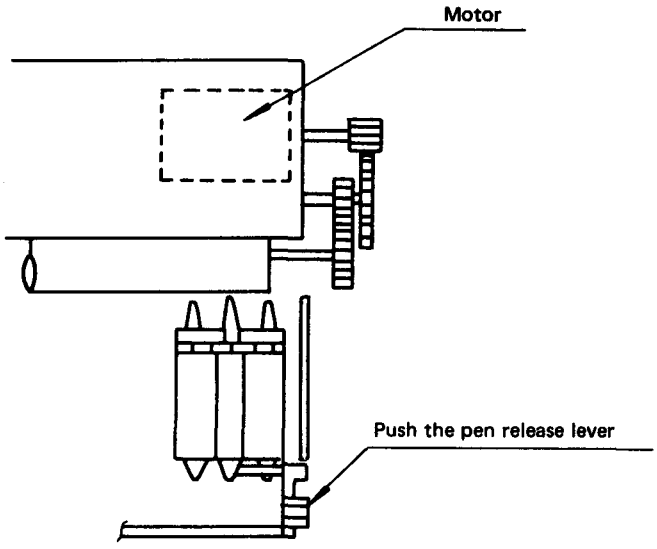
The arrow head indicates the forward direction for both the X-axis and Y-axis.



S. Schaltbild (Anschlüsse der Motoren)

2) Pen exchange method

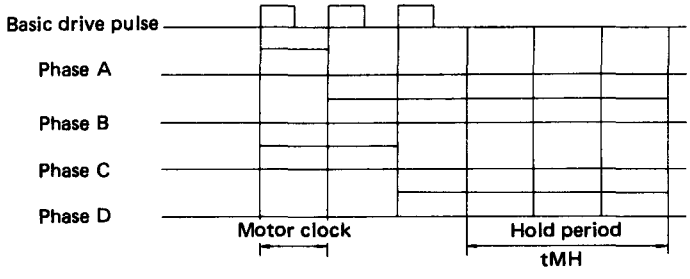
To remove pen, press the pen exchange button, when the slider is at the right handside, push the pen release lever.



To install the pen, push the tip of the pen through the ring of the return spring in the first place, then push into the holder. Upon completion, ensure that the tip of the pen is engaged with the hole of the pen return spring. If colour change is done when the pen is disengaged from the hole, it may cause improper rotation of the rotary holder as the slider makes contact with the pen. Do not try to rotate the rotary holder by hand when installing the pen during replacement of the pens.

- The X-axis stepping motor and the Y-axis stepping motor are driven by the two-phase magnet.

Stepping motor driving signal



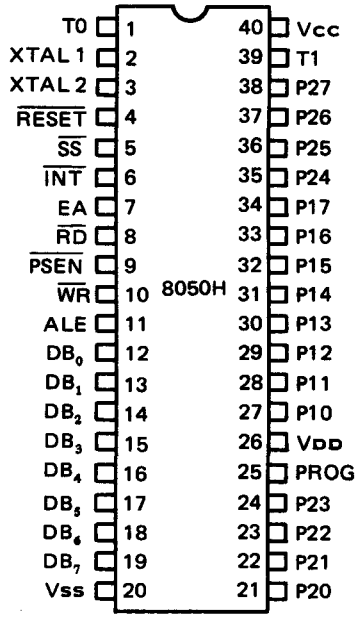
It is more effective to save power to shut off current while the X and Y axis motors are at a halt. But, there may be a possible malfuction because of unsuppressed vibration, if the current is turned off with a normal pulse width. In order to prevent this, current is applied excessively for more than the given hold time (tMH = 1ms or more).

- Colour position detector

  The colour position detector consists of a reed switch and a permanent magnet and it may cause malfunction owing to external vibration, and magnetic influence. Especially, when deposit of alien matter or paper fragments is between the left end of the carriage and the frame this may result in a failure of the colour detect performance.
- Character set

  Input of an undefined code up to $20 is ignored. Other undefined codes are represented in hexadecimal notation using the pen in a next color position.

Pin configuration (top view)



Pin Configuration

[COLOUR PLOTTER PRINTER CONTROL LSI]

Pin assignment

Symbol	Name	In/out	Function
Vss	Ground		Connected to 0V.
Vcc	Main power		Connected to 5V.
VDD	Power		Connected to 5V.
PROG	Program	Out	Not used.
$P1_0 \sim P1_7$	Port 1		Used as printer control signals.
$P2_0 \sim P2_7$	Port 2		Used for data input port from CPU.
$D_0 \sim D_7$	Data bus		Used for stepper motor control signals.
T_0	Test pin 0	In	Input from pen change switch.
T_1	Test pin 1	In	Input from paper feed switch.
$\overline{INT}$	Interrupt input	In	Data transfer strobe MZ-700 → MZ1P01.
$\overline{RD}$	Read signal	In	Not used.
$\overline{WR}$	Write signal	Out	Not used.
$\overline{RESET}$	Reset	In	Used to initialize the processor.
ALE	Address latch enable	Out	Not used.
$\overline{PSEN}$	Program store enable	Out	Not used.
$\overline{SS}$	Single step	In	Not used.
EA	External access	In	Active when EA = 0V.
X_1, X_2	Crystal inputs	In	Pins used to attach the crystal oscillator or RC network to generate internal clock. However, external clock signal may be inputted through these pins.

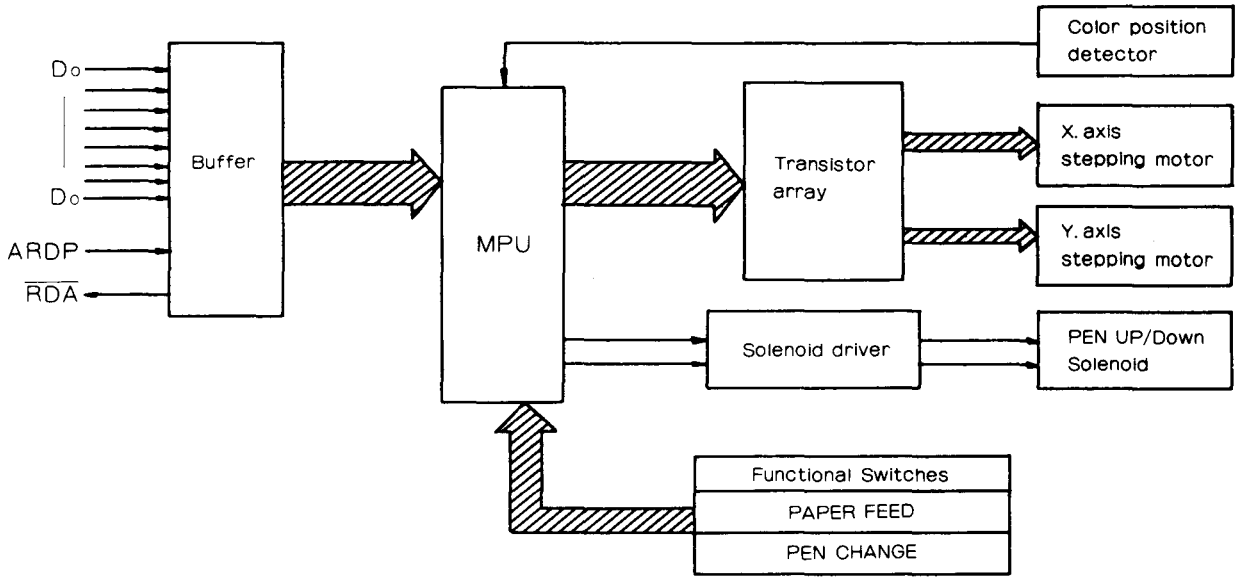
7-2. Interfacing with the MZ-700

Fig. 1 shows the block diagram for connection with the printer. Fig. 2 shows its circuit description. Fig. 3 shows the timing chart.

Table of character set

MSD / LSD	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P			}		q	n				
1		↓	▯	1	A	Q					a					
2		↑	"	2	B	R				e	z	ü				
3		→	#	3	C	S				`	w	m				
4		←	$	4	D	T				~	s					
5		HOME	%	5	E	U					u					
6		CLR	&	6	F	V				t	i		→			
7			'	7	G	W				9		o		▭		
8			(	8	H	X				h	ö	!				
9			)	9	I	Y	•				k	Ä				
A			*	▫	J	Z				b	f	ō				
B			+	▫	K	[		▫	^	x	v	ä				£
C			,	<	L	¥				d						↓
D			−	=	M	]				r	ü	y				
E			.	>	N	↑				p	B	{				
F			/	?	O	←				c	j		▭			π

Figure 1. Block diagram



The CPU sends data to the printer after confirming that $\overline{RDA}$ is in low state. Five micro seconds later, the strobe signal ARDP goes high. The CPU confirms that $\overline{RDA}$ is in high state, ARDP is returned to a low state 14.5 micro seconds later.

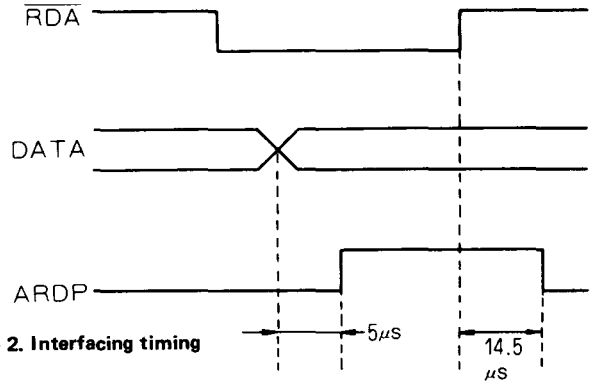


Figure 2. Interfacing timing

8. POWER SUPPLY

Power supply circuit description

(1) AC source power is rectified through the diode bridge (RB-156).

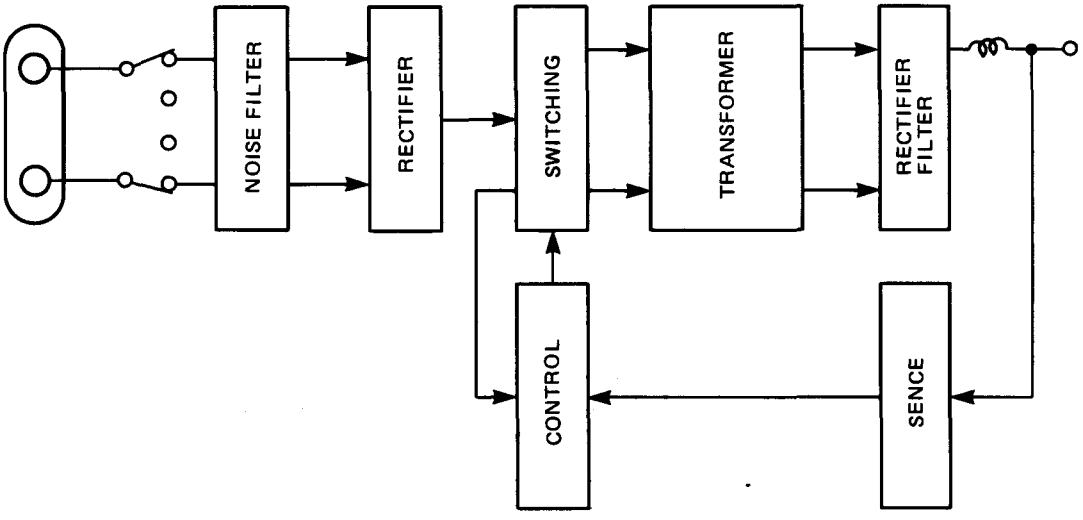
(2) Current flowing through the primary coil of T1 is switched by means of Q1 so as to induce electromotive force in the secondary coil. To protect voltage fluctuation on the primary side, Q2 is implemented, which will become active to deactivate Q1 by dropping the base of Q1 to GND when voltage increase occurs on Q2.

(3) The electromotive force induced in the secondary coil is rectified through D21, and DC5V is derived from the network consisting of C22, C23, and L21.

(4) For circuit stabilization against load fluctuation, we use IC21 (shunt regulator), PC1 (photocoupler), and Q3 (transistor). When the gate of IC21 is above 2.5V after sensing the 5V output by means of R22, VR21, and R23, it makes IC21 active and then PC1 active.

As the base voltage of Q3 increases with activation of PC1 photo-transistor, it makes Q3 active and drops the base of Q1 to GND so as to turn off Q1.

Although it is possible to adjust the DC 5V voltage by means of VR21, it needs to put the CPU PWB into connection.



TROUBLESHOOTING

1. Trouble kind

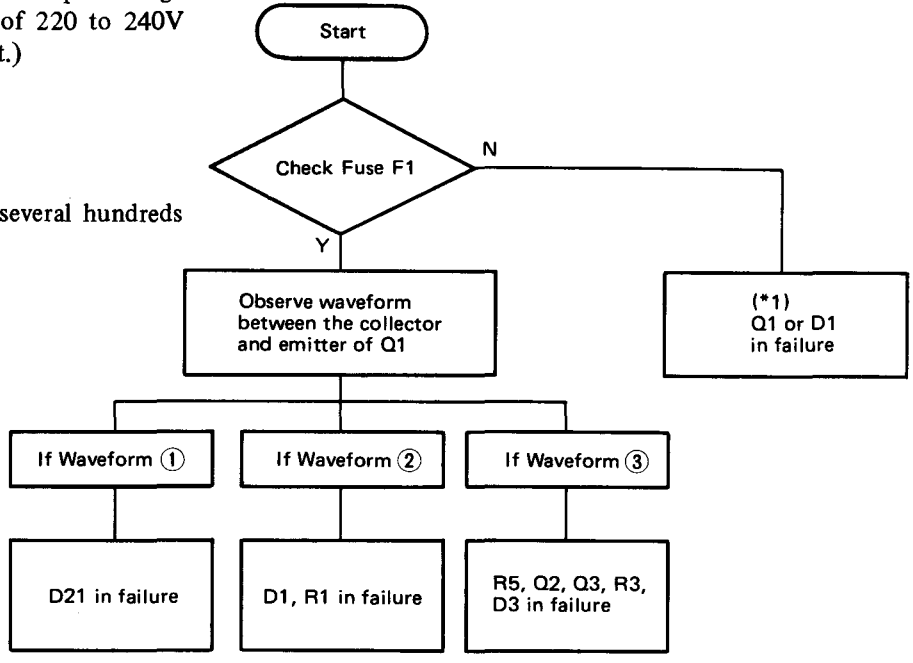
Because different location has to be repaired depending on a kind of trouble, you have to check, the output voltage in the first place. (Apply source voltage of 220 to 240V with a 3.75A load connected on the output.)

There are following four cases:

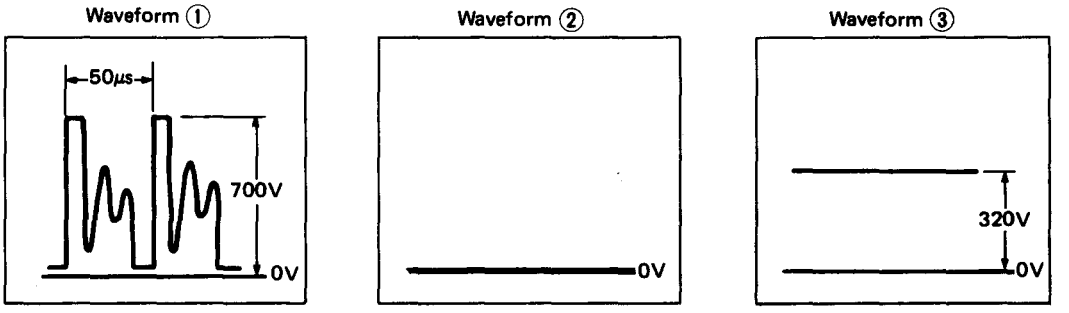
1) No output (0V)
2) Low output (1 to 4V)
3) High output (7 to 10V)
4) Abnormal increase of output ripple (several hundreds millivolts)

2. Finding where is in trouble

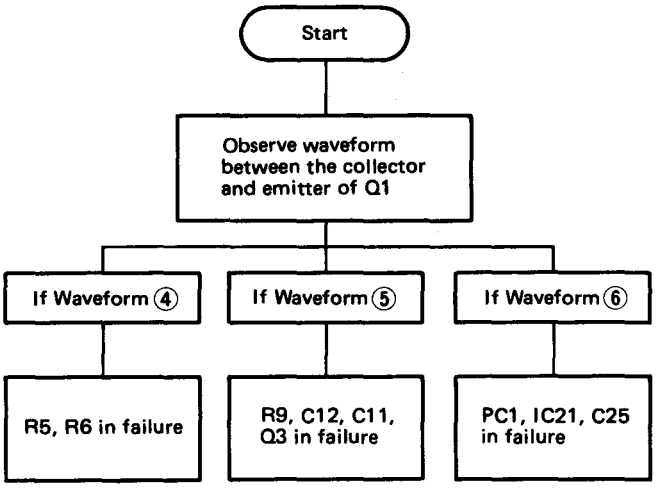
2-1. In the case of "No output (0V)"

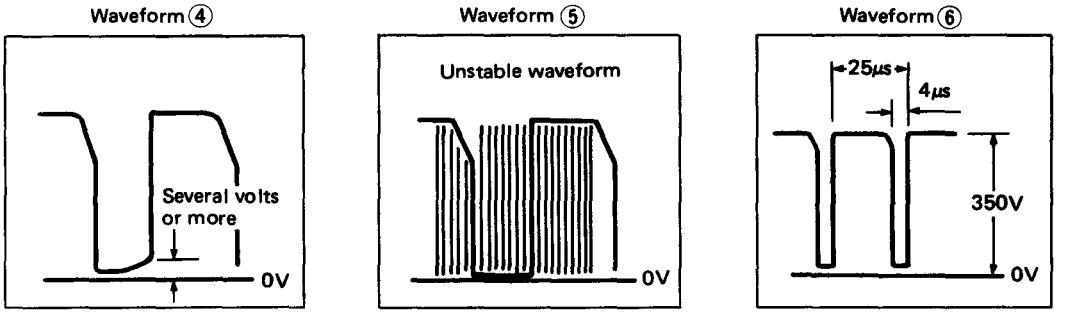


(*1): If the output voltage were to be still 0V without blowing the fuse after replacement of Q1, proceed to steps described to the left of the troubleshooting flowchart.

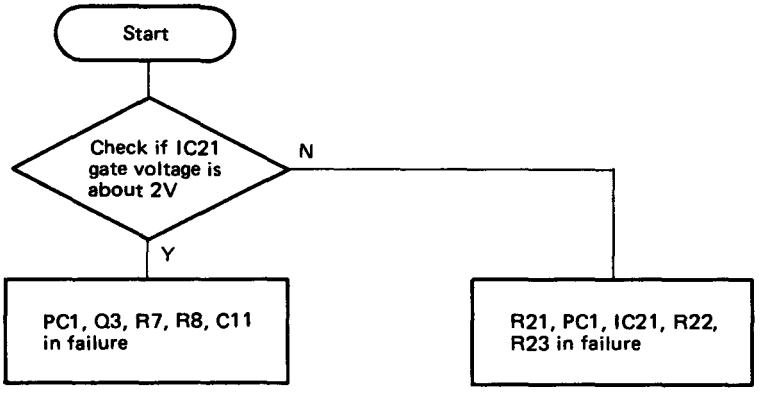


2-2. When extremely low output voltage is encountered





2-3. When extremely high output voltage is encountered (7 ~ 10V)

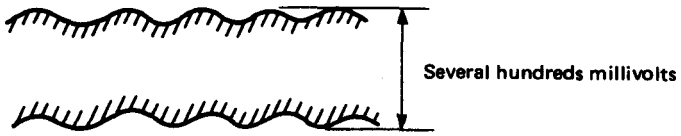


2-4. Abnormal increase of output ripple

In case irregular increase is seen for the output ripple like the one below, it needs to replace C22 and C23 with new ones because they have been fatigued.

(Normal ripple)

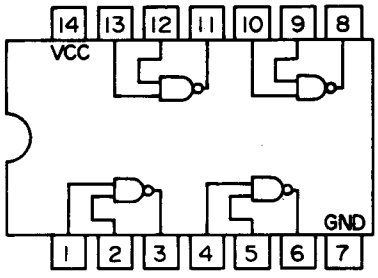
Input: AC220 ~ 240V
Output: 5V, 3.75A
Use oscilloscope



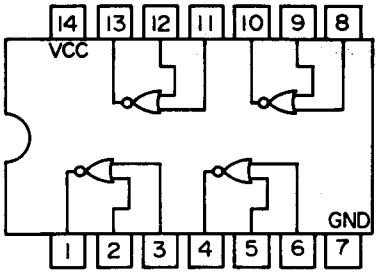
(Abnormal ripple)

9. IC SIGNAL POSITION

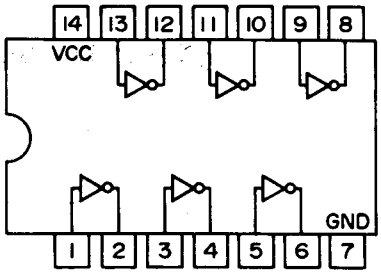
74LS00



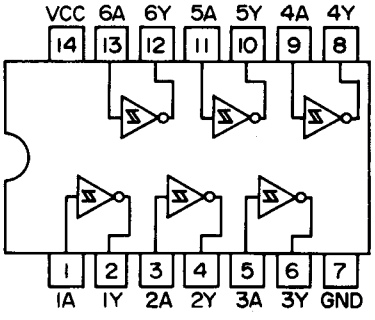
74LS02



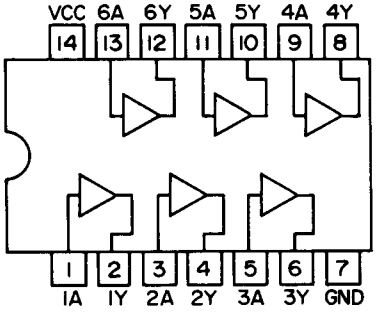
74LS04



74LS14



7417



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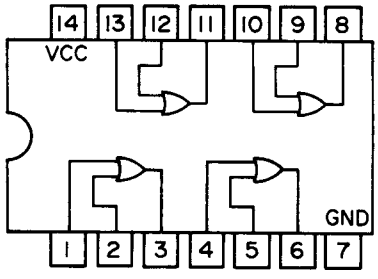
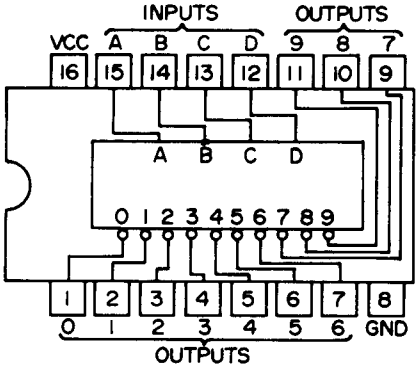
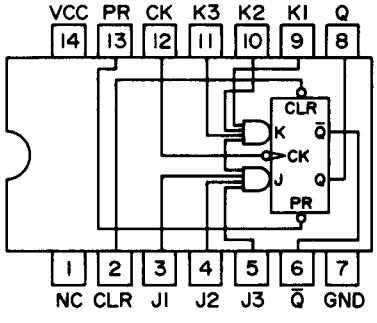


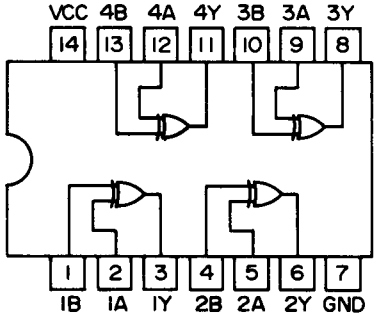
74LS42



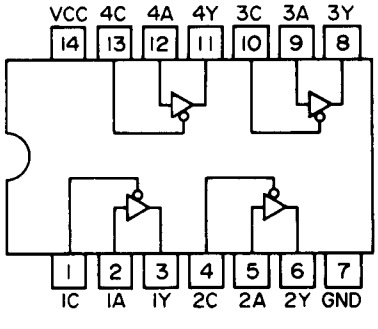
7472



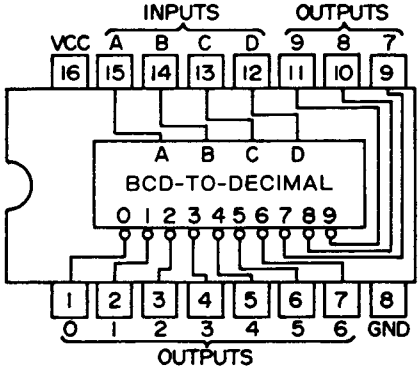
74LS86



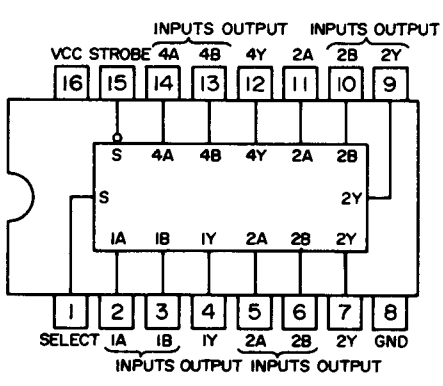
74LS125A



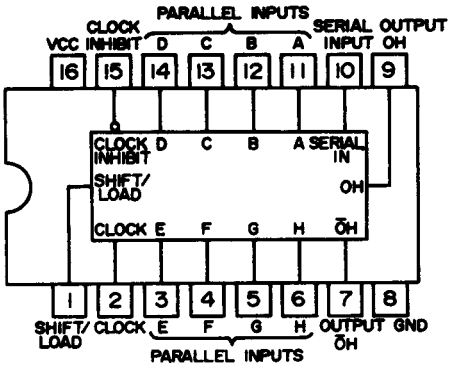
74LS145



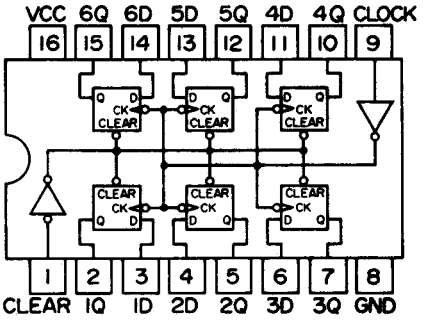
74S157



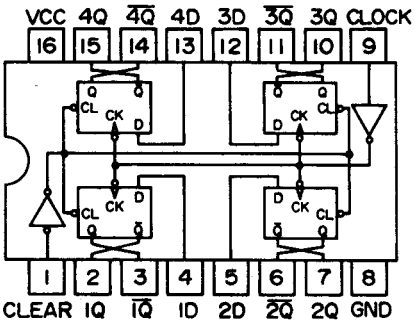
74LS165



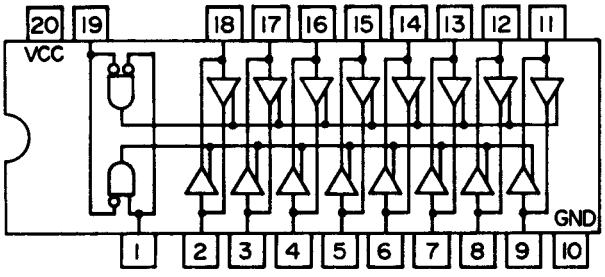
74LS174



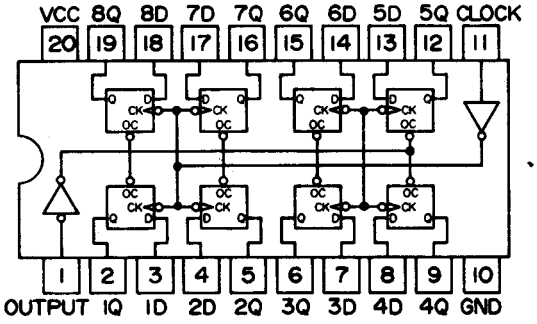
74LS175



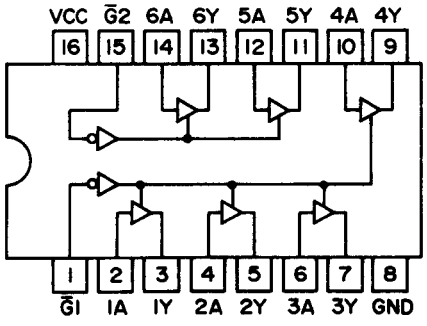
74LS245



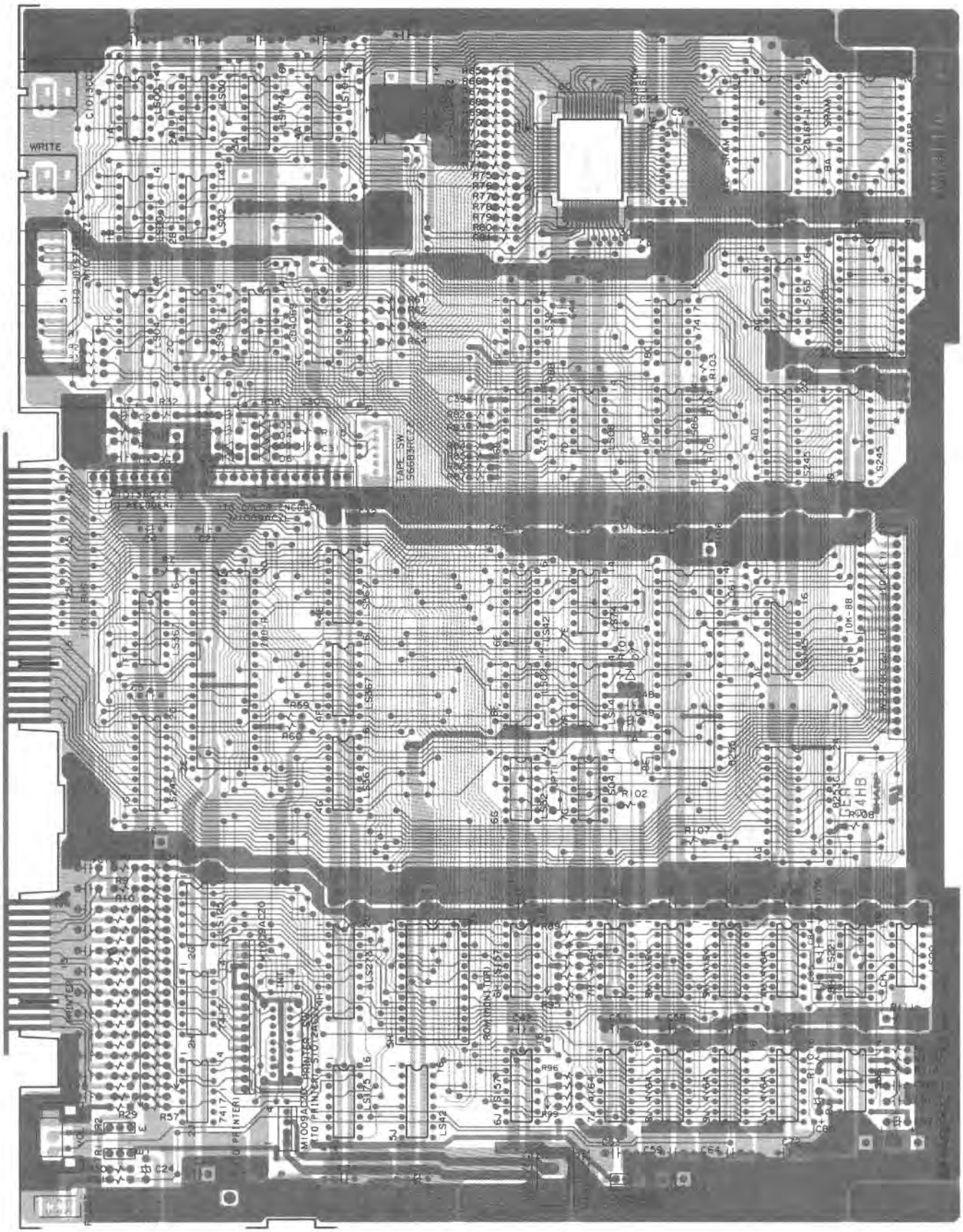
74LS273



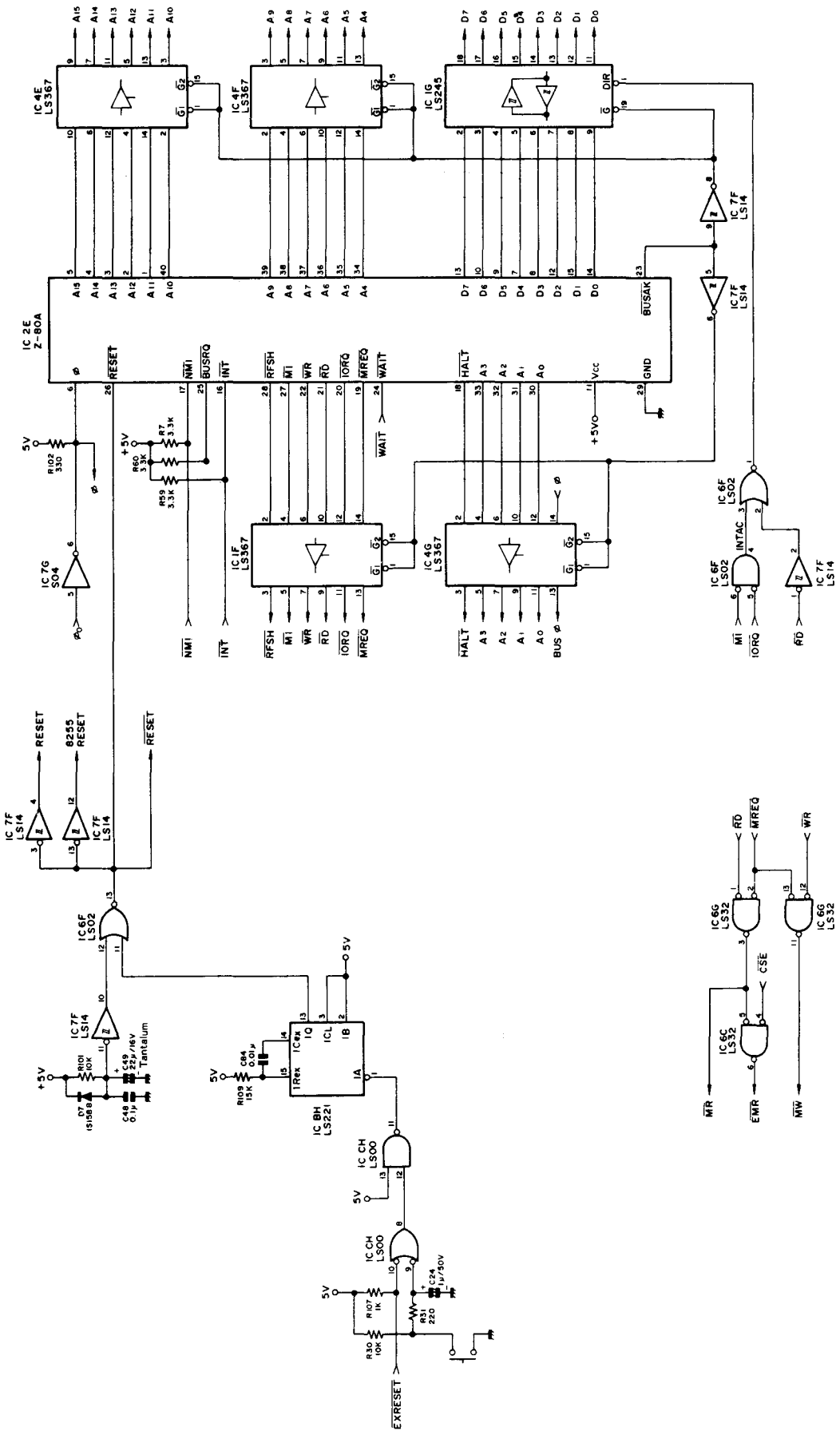
74LS367A



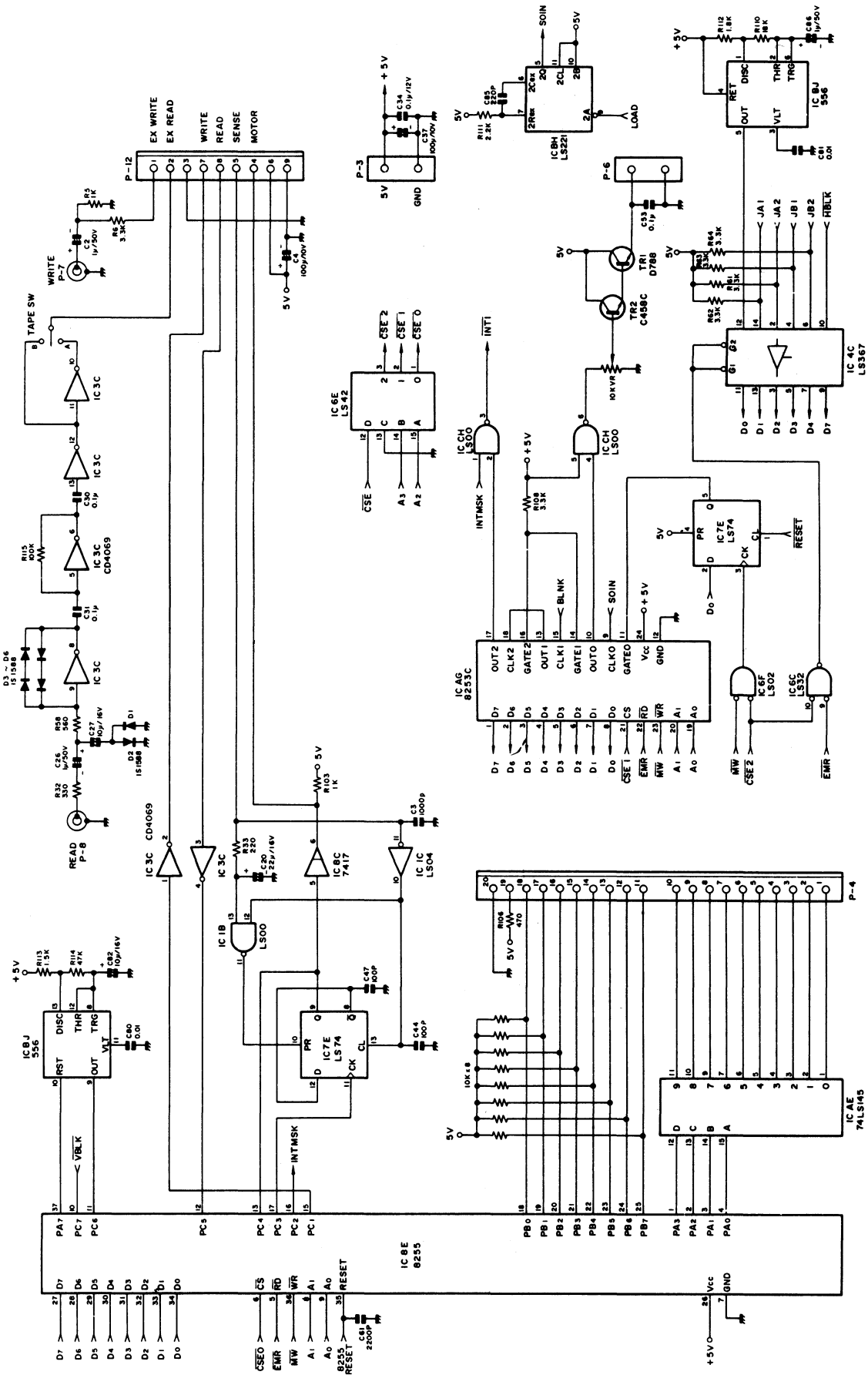
10. CIRCUIT DIAGRAM & PARTS LAYOUT



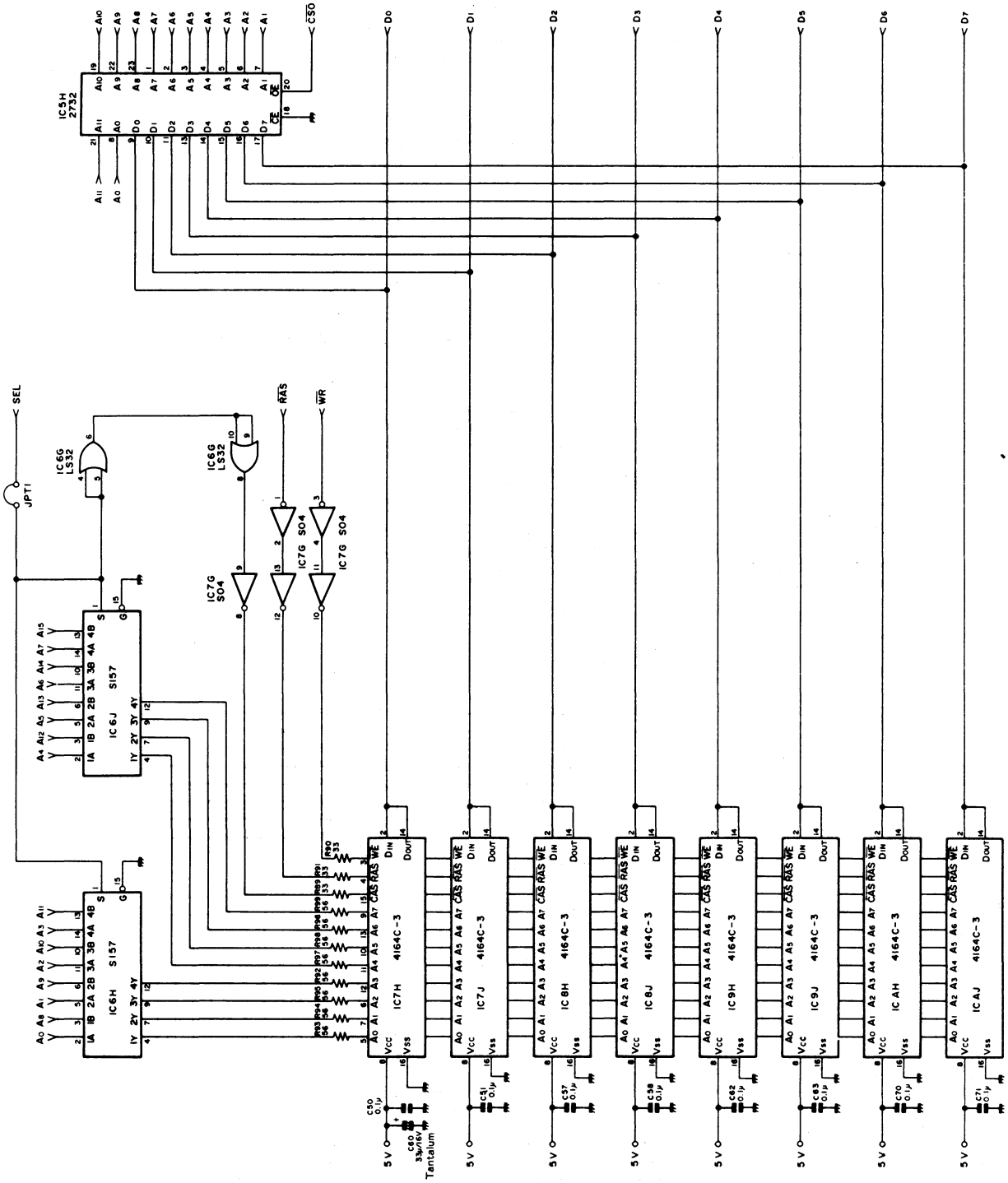
[CPU board circuit (1)]



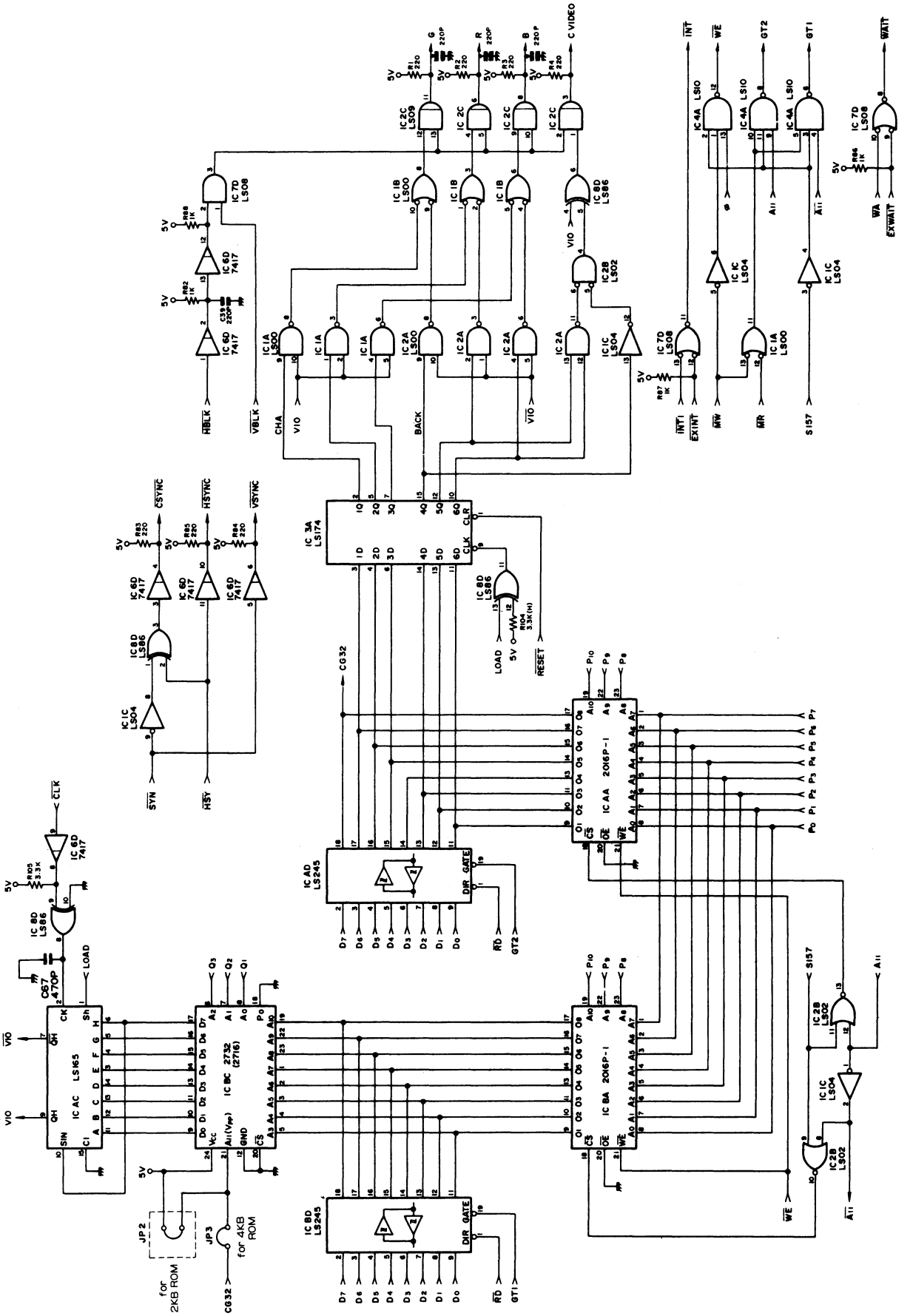
[CPU board circuit (2)]



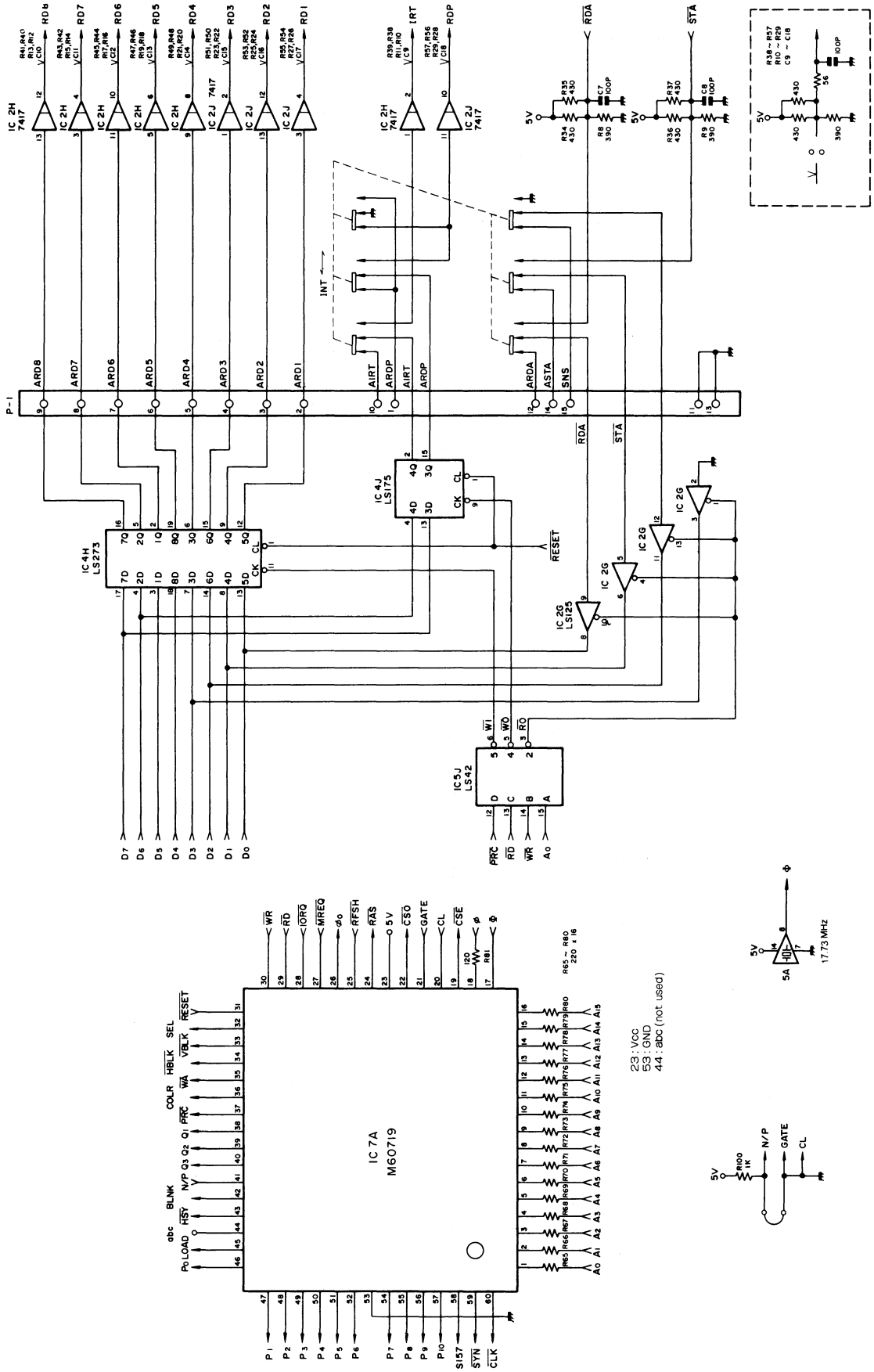
[CPU board circuit (3)]



[CPU board circuit (4)]



[CPU board circuit (5)]



[CPU board terminal configuration]

P-1

Pin	Signal
1	ARDP
2	ARD_1
3	ARD_2
4	ARD_3
5	ARD_4
6	ARD_5
7	ARD_6
8	ARD_7
9	ARD_8
10	AIRT
11	GND
12	ARDA
13	GND
14	ASTA
15	ALPS

△ mark

P-5

Pin	Signal
1	+5V
2	+5V
3	GND
4	GND

△ mark

P-10

Pin	Signal	Pin	Signal
1	RDP	2	GND
3	RD_1	4	GND
5	RD_2	6	GND
7	RD_3	8	GND
9	RD_4	10	GND
11	RD_5	12	GND
13	RD_6	14	GND
15	RD_7	16	GND
17	RD_8	18	GND
19	IRT	20	GND
21	$\overline{RDA}$	22	GND
23	$\overline{STA}$	24	GND
25	FG	26	FG

△ mark

P-11

Pin	Signal	Signal	Pin
49	A_{15}	$\overline{NMI}$	50
47	A_{14}	$\overline{EXINT}$	48
45	A_{13}	GND	46
43	A_{12}	$\overline{MREQ}$	44
41	A_{11}	GND	42
39	A_{10}	$\overline{IORQ}$	40
37	A_9	GND	38
35	A_8	$\overline{RD}$	36
33	A_7	GND	34
31	A_6	$\overline{WR}$	32
29	A_5	$\overline{EXWAIT}$	30
27	A_4	$\overline{M1}$	28
25	A_3	GND	26
23	A_2	$\overline{HALT}$	24
21	A_1	$\overline{EXRESET}$	22
19	A_0	RESET	20
17	BUS ø	GND	18
15	D_7	GND	16
13	D_6	GND	14
11	D_5	GND	12
9	D_4	GND	10
7	D_3	GND	8
5	D_2	GND	6
3	D_1	GND	4
1	D_0	GND	2

△ mark

P-13

Pin	Signal
1	5V
2	$\overline{VBLK}$
3	JA1
4	JA2
5	GND

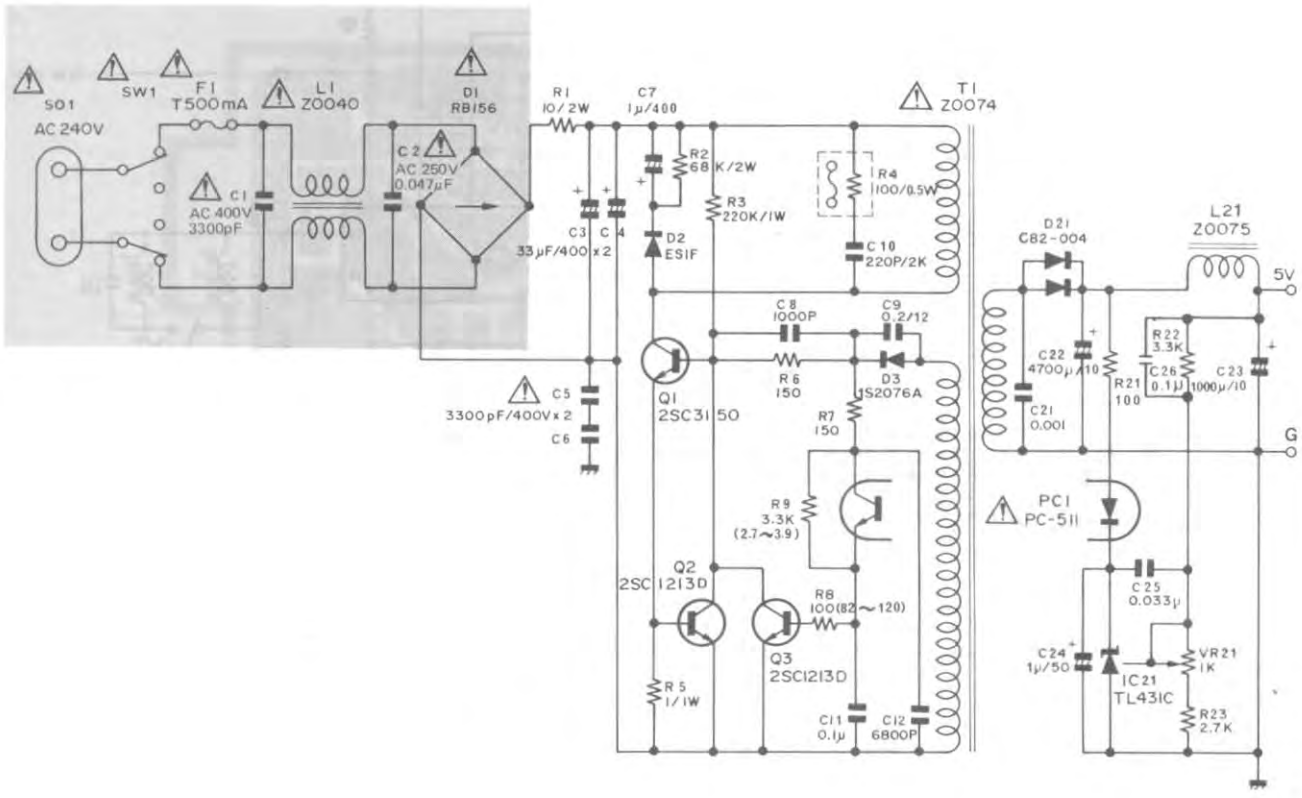
P-14

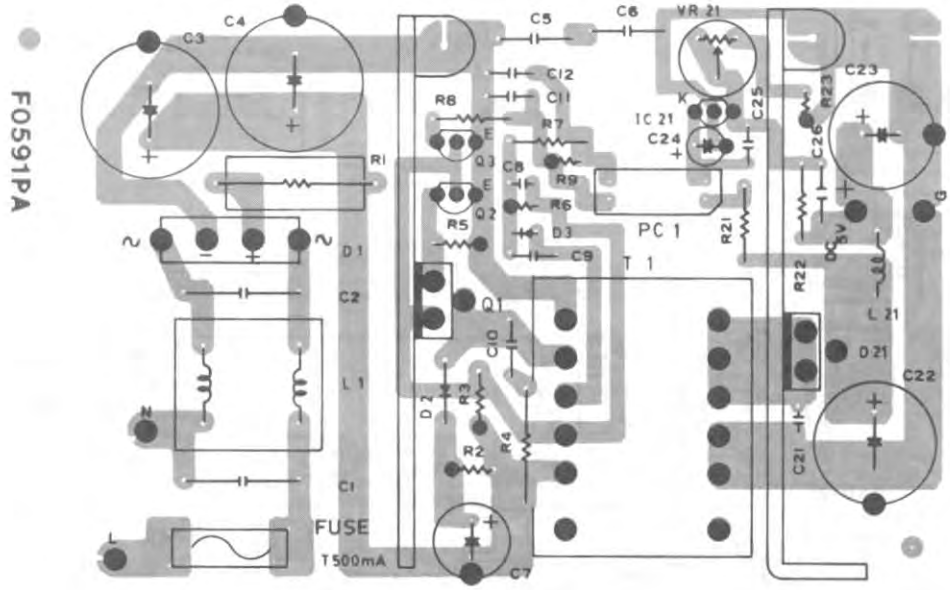
Pin	Signal
1	5V
2	$\overline{VBLK}$
3	JB1
4	JB2
5	GND

P-9

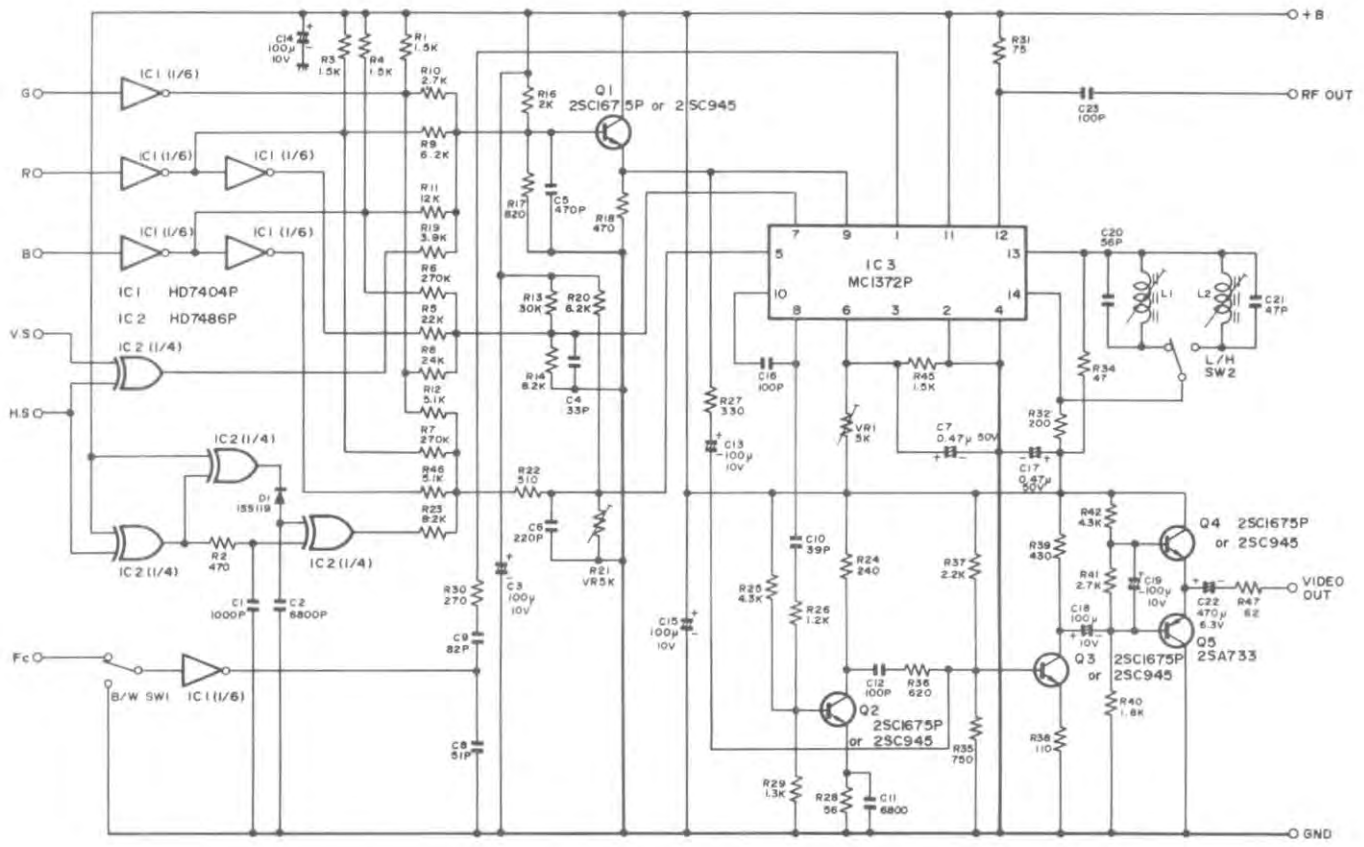
Pin	Signal
1	GND
2	$\overline{C\ SYNC}$
3	C VIDEO
4	$\overline{H\ SYNC}$
5	$\overline{V\ SYNC}$
6	GND
7	+5V
8	G
9	B
10	R
11	COLR
12	GND

[Power unit]

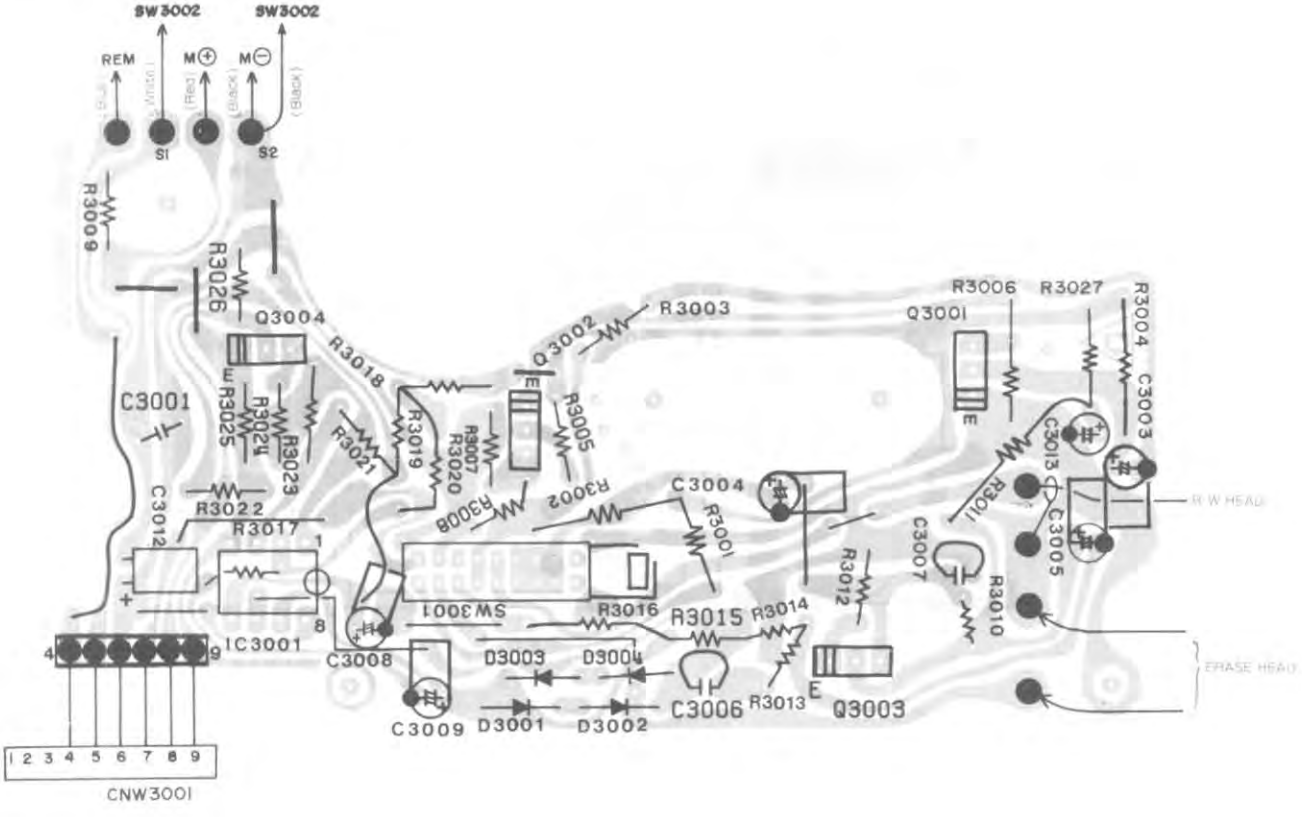

SW1
F1
T500mA
L1
Z0040
D1
RB156
AC 240V
C1
AC 400V
3300pF
C2
AC 250V
0.047μF
R1
10/2W
C7
1μ/400
T1
Z0074
R2
68K/2W
R3
220K/1W
R4
100/0.5W
C10
220P/2K
C3
C4
33μF/400x2
D2
ES1F
C8
1000P
C9
0.2/12
D21
G82-004
L21
Z0075
5V
C22
4700μ/10
R22
3.3K
C26
0.1μ
C23
1000μ/10
R21
100
C21
0.001
G
C5
3300pF/400Vx2
C6
Q1
2SC3150
R6
150
D3
1S2076A
R7
150
PC1
PC-511
R9
3.3K
(2.7~3.9)
Q2
2SC1213D
R8
100(82~120)
C25
0.033μ
C24
1μ/50
VR21
1K
IC21
TL431C
Q3
2SC1213D
R5
1/1W
R23
2.7K
C11
0.1μ
C12
6800P


F0591PA
C3
C4
C5
C6
VR 21
C12
C11
R8
R7
IC 21
C24
C25
C23
R23
C26
C8
R9
R6
PC 1
R21
R1
Q3
Q2
D3
C9
T 1
5V
G
D1
C2
Q1
C10
L 1
R3
D2
R4
R2
C1
R22
L 21
D21
C22
C21
FUSE
T500mA
C7

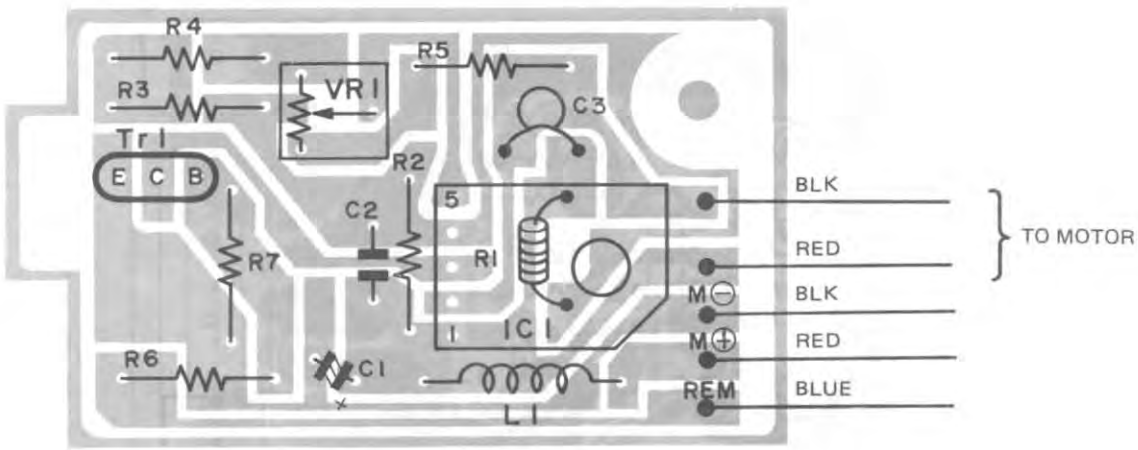
[Colour encoder circuit]



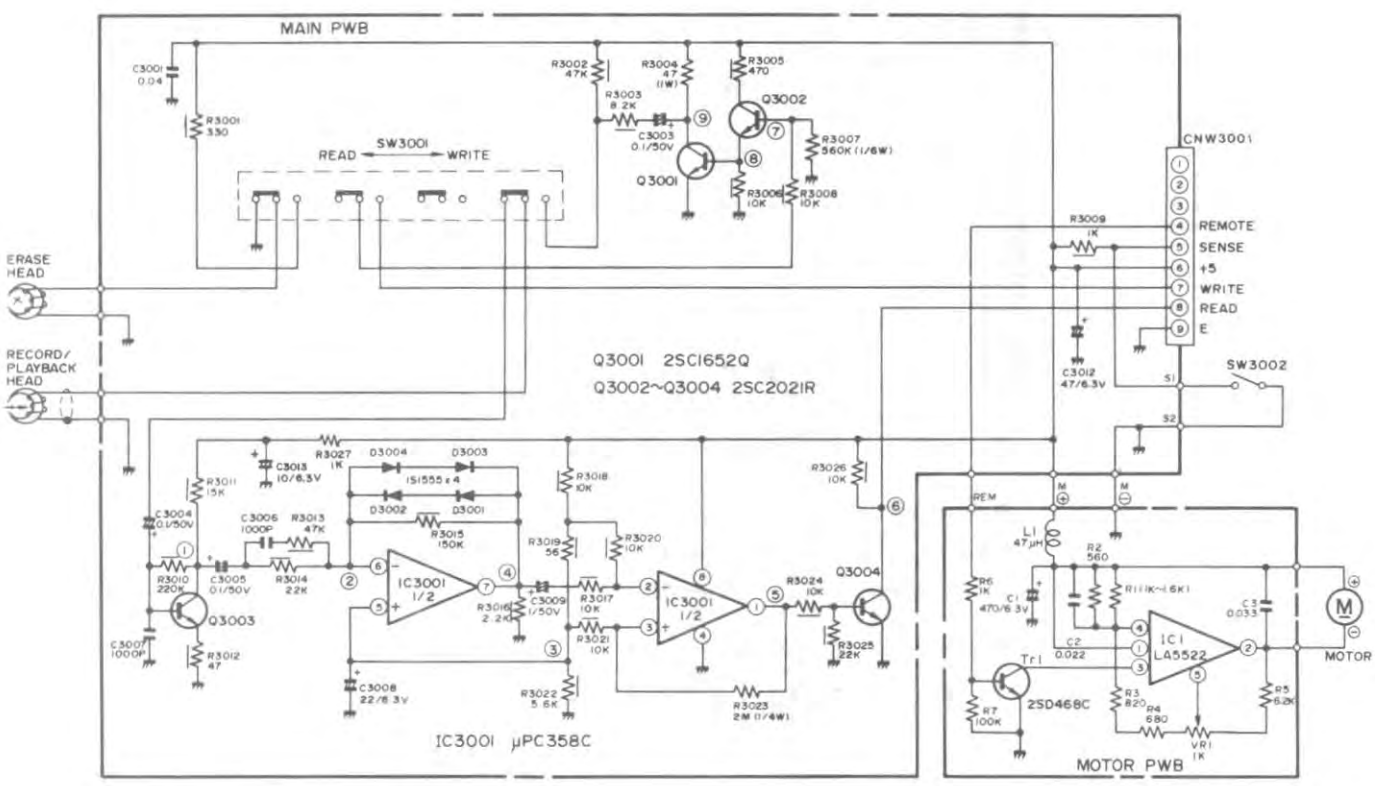
[Main P.W.B. for AD-1002]



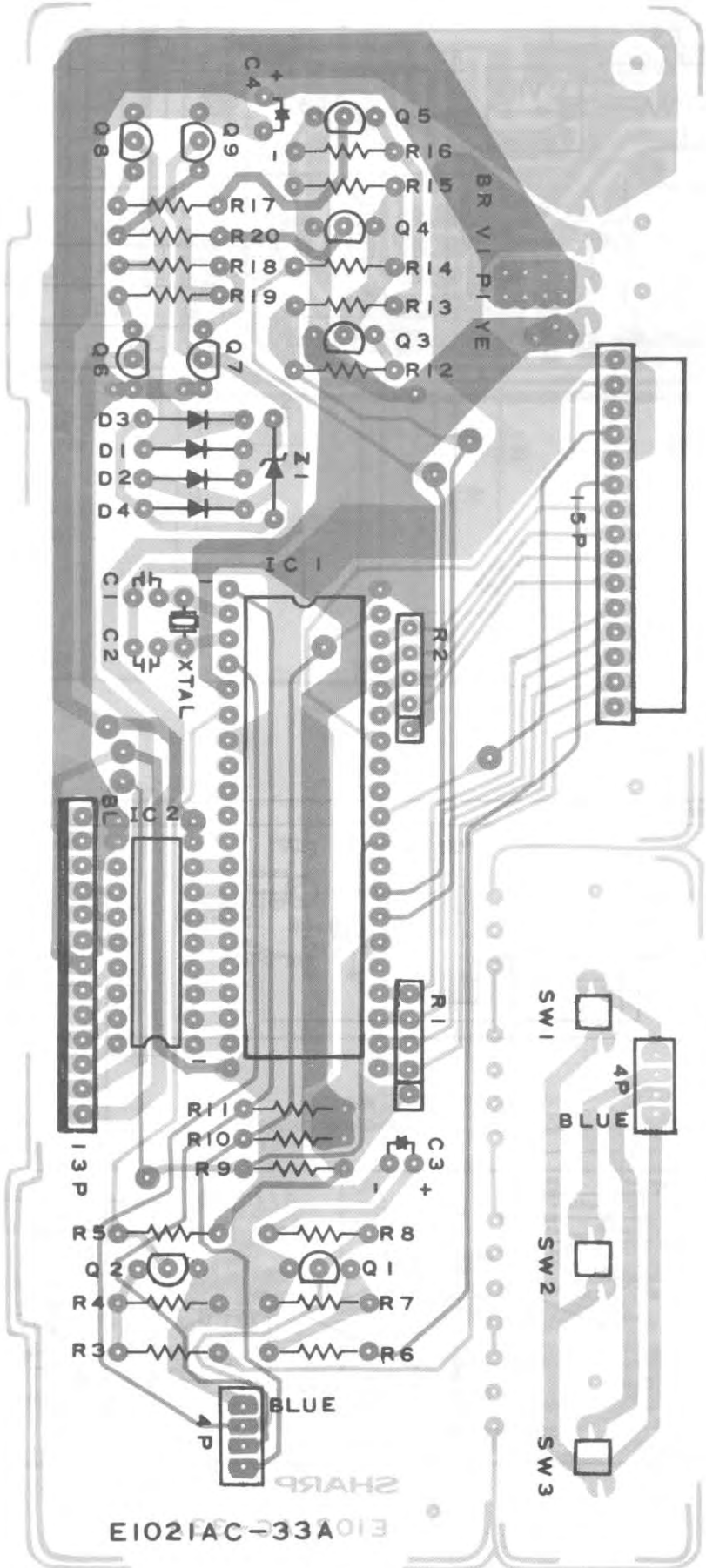
[Motor P.W.B. unit]



[AD-1002]

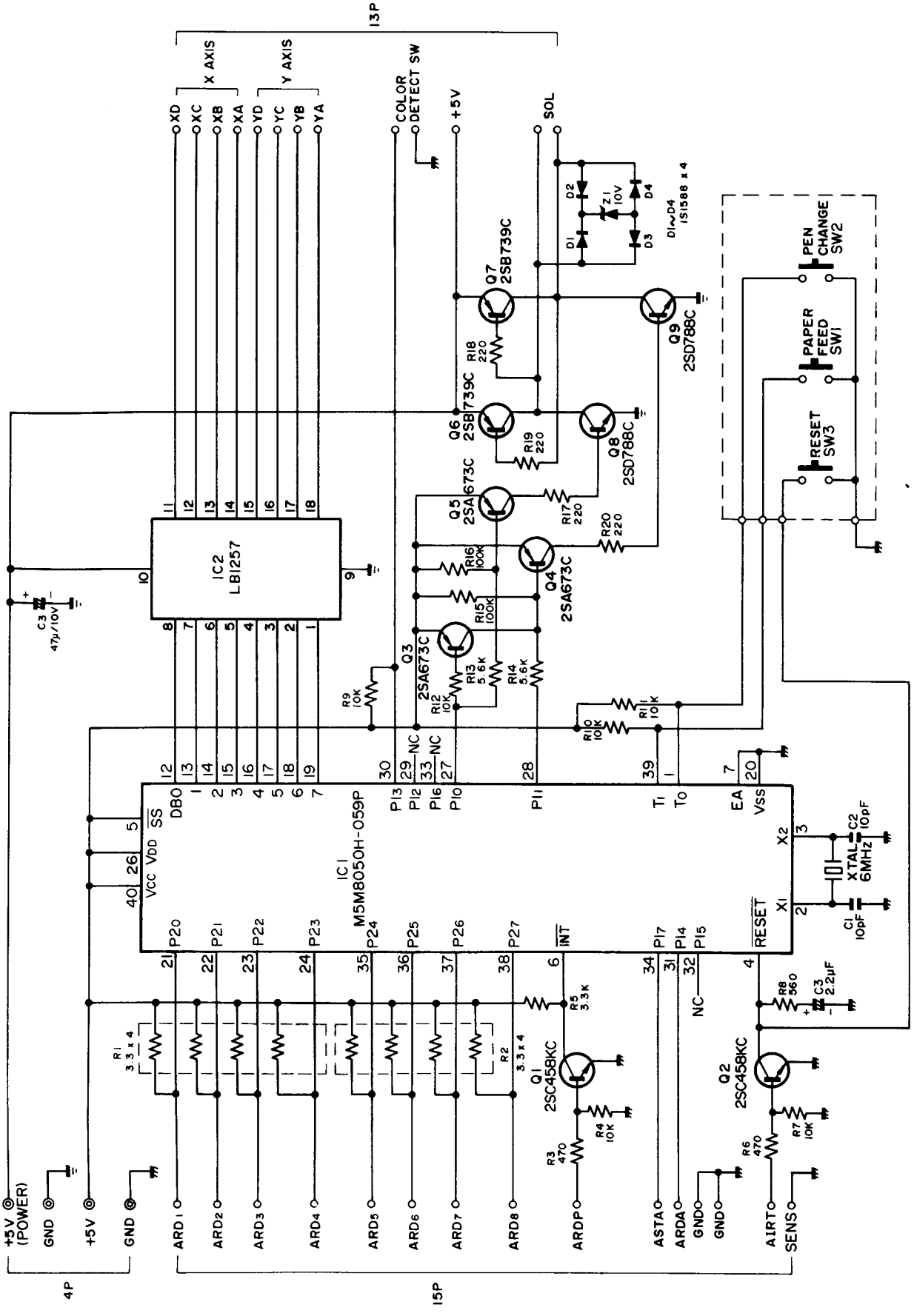


[Data recorder circuit]



E1021AC-33A

[Colour plotter-printer circuit]



MZ-700

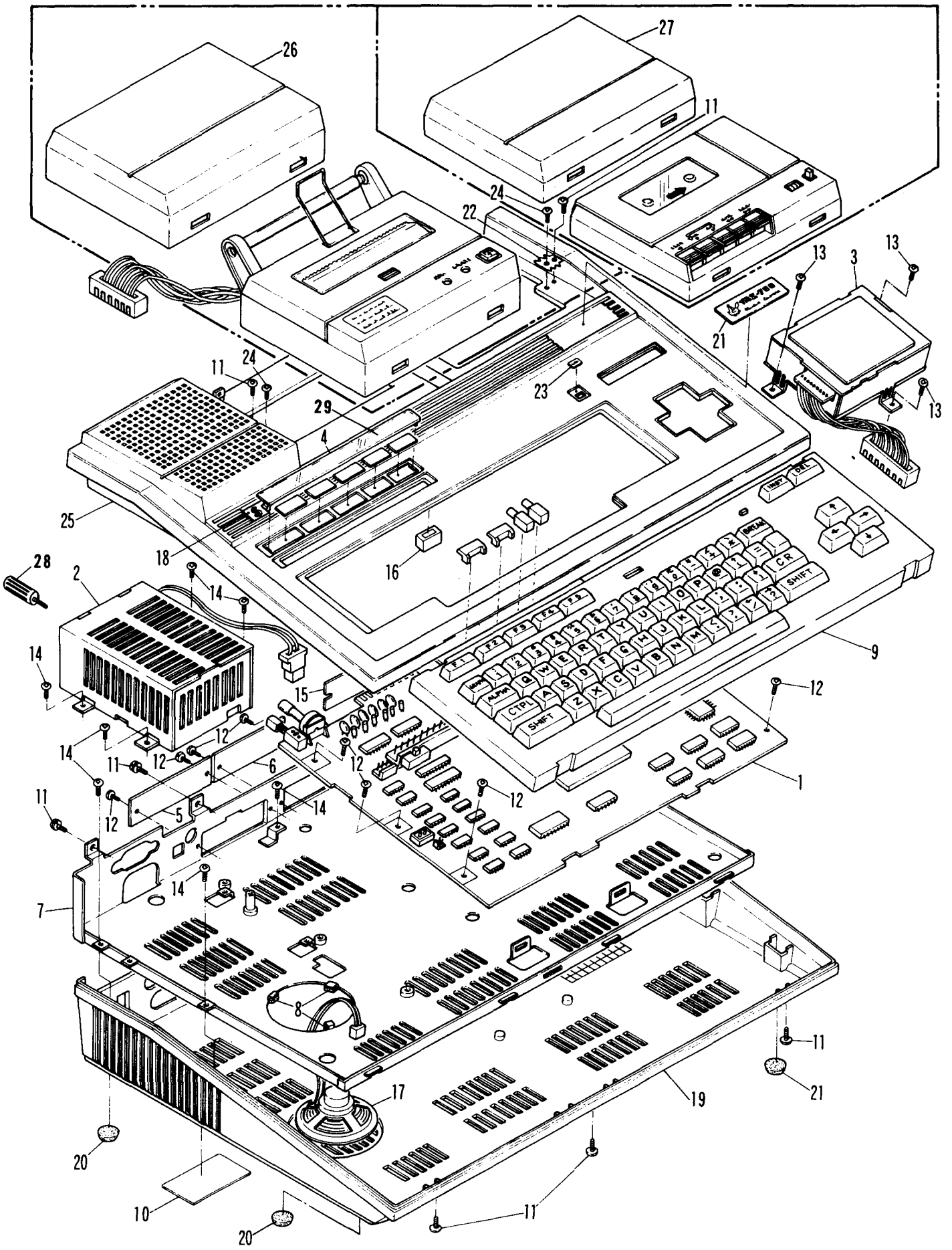
PARTS LIST & GUIDE

Parts marked with " ⚠ " is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

1 CPU Unit Exteriors

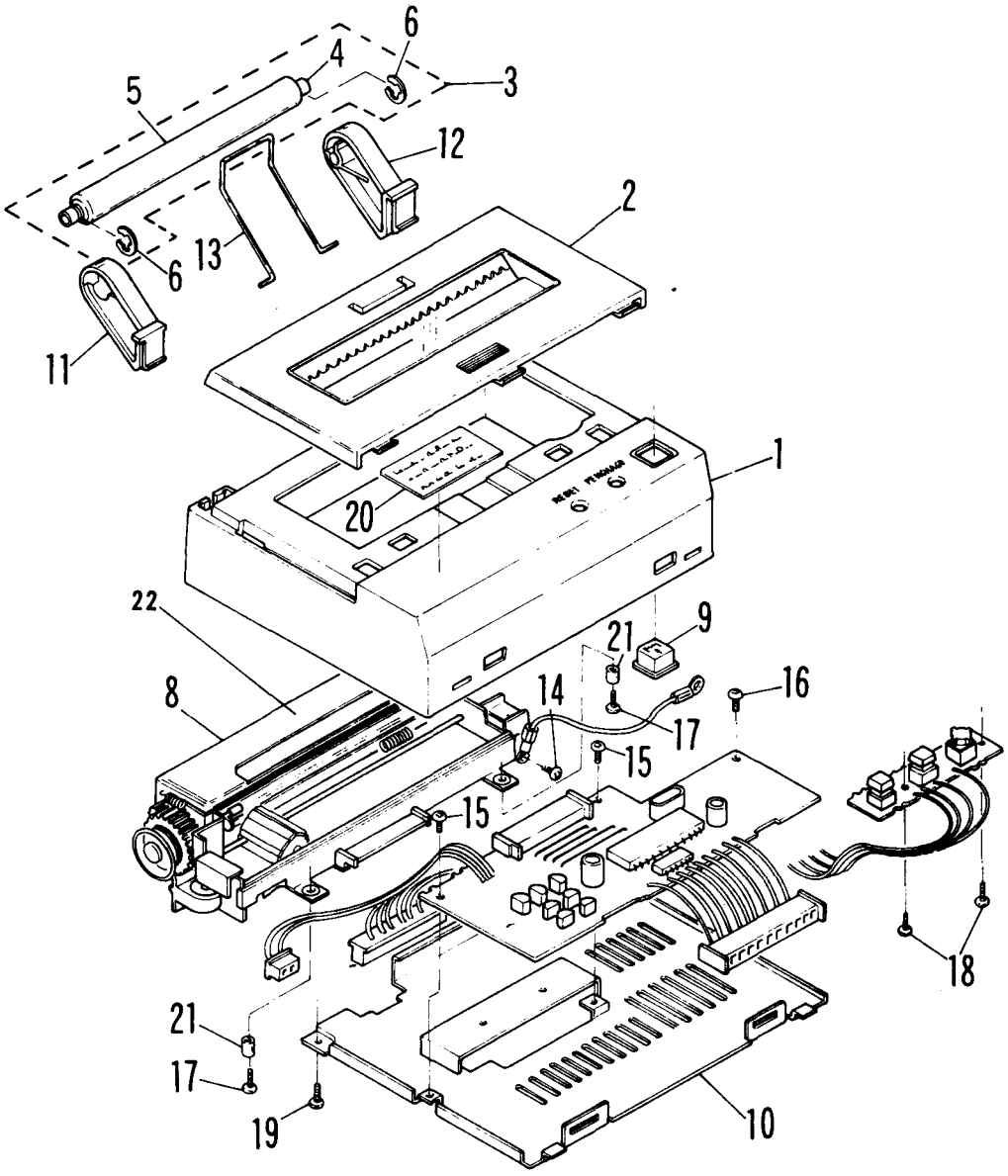
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	DUNTK1152ACZZ	**	N	E	CPU PWB
⚠ 2	DUNT-1150ACZZ	BM	N	E	Power supply unit
3	DUNT-1151ACZZ	BN	N	E	RF modulator
4	GCOVH1002ACZZ	AB	N	D	Aclyric cover
5	GFTAR1019ACZZ	AB	N	D	Lid for 26P connector
6	GFTAR1020ACZZ	AB	N	D	Lid for 50P connector
7	LCHSM1018ACZZ	AY	N	C	Main chassis
8	PCUSS1002ACZZ	AA		C	Speaker cushion
9	QSW-K1013ACZZ	BH	N	E	Key board unit
10	TSPC-1055ACZZ	AC	N	D	Specification label (MZ-731)
	TSPC-1056ACZZ	AC	N	D	Specification label (MZ-721)
	TSPC-1059ACZZ	AC	N	D	Specification label (MZ-711)
11	XBBSC30P10000	AA		C	Screw
12	XBPSM30P06KS0	AA		C	Screw
13	XBPSM30P08K00	AA		C	Screw
14	XUPSD30P08000	AA		C	Screw
15	GFTAR1012ACZZ	AB	N	D	Lid for connector
16	PGUMS1266CCZZ	AA	N	C	Cushion for PWB fixing angle
17	VSP0080P-608N	AN		C	Speaker
18	HBDGB1002ACZZ	AD		C	Sharp badge
19	GCABA1006ACZZ	AV	N	D	Bottom cabinet
20	GLEGG1020CCZZ	AD		D	Rubber foot
21	HBDGD1001ACZZ	AB	N	D	Model badge
22	QTANS1002ACZZ	AD	N	C	Ground terminal
23	TLABZ1009ACZZ	AA	N	D	Model label
24	XUPSD26P06000	AA		C	Screw
25	CCABB1005ACZZ	AY	N	D	Top cabinet
26	GFTAT1007ACZZ	AP	N	D	Printer dummy cover (MZ-711,721)
27	GFTAT1008ACZZ	AP	N	D	Cassette dummy cover (MZ-711)
28	QTANS1001ACZZ	AB		C	Frame ground terminal
29	TLABZ1010ACZZ	AD	N	D	Function label

1 CPU Unit Exteriors



2 Printer Unit Exteriors

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	CCABB1006ACZZ	AR	N	D	Top cabinet
2	CFTAT1001ACZZ	AM	N	D	Printer cover
3	CSFTZ1001ACZZ	AH	N	E	Paper shaft unit
4	NSFTZ1001ACZA	AC	N	C	Paper holder
5	NSFTZ1001ACZB	AG	N	C	Paper shaft
6	XRESJ40—06000	AA		C	E type ring
8	DUNTM1051ACZZ	BW	N	E	Printer mechanism unit
9	JKNBZ1005AC01	AG	N	C	Paper feed key top
10	LCHSM1004ACZZ	AL	N	C	Bottom cover
11	LHLDZ1002ACL1	AC	N	C	Paper holder—L
12	LHLDZ1002ACR1	AC	N	C	Paper holder—R
13	PGiDW1001ACZZ	AB	N	D	Paper guide
14	XBPSD30P04K00	AA		C	Screw
15	XBPSM30P06KS0	AA		C	Screw
16	XBPSM30P08K00	AA		C	Screw
17	XUBSD26P10000	AA		C	Screw
18	XUPSD26P08000	AA		C	Screw
19	XUPSD30P08000	AA		C	Screw
20	TLABZ1027ACZZ	AB	N	D	Caution label
21	PSPAB1003ACZZ	AA	N	C	Collar for printer
22	PZETE1005ACZZ	AA	N	C	Insulator sheet
23	SPAKA1064ACZZ	AH	N	D	Packing cushion
24	SPAKA1065ACZZ	AC	N	D	Packing cushion
25	SPAKC1224ACZZ	AK	N	D	Packing case



3 CPU Unit Electronic Components

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	QCNCM1009ACZB	AA		C	Connector to Speaker (2pin)
2	QCNCM1009ACZD	AB		C	Connector to Printer (4pin)
3	QCNCM1009ACZL	AC		C	Connector to Colour encoder
4	QCNCM1009ACZO	AC		C	Connector to Printer
5	QCNCM1010ACZZ	AF		C	Connector to Power supply
6	QCNCM1011ACZZ	AE		C	Connector Joy stick
7	QCNCW1013ACZZ	AC		C	Connector to Recorder
8	QCNCW1059AC20	AF		C	Connector to Key
9	QJAKC1013CCZZ	AC		C	Input jack Ext. Record/Play back
10	QSOCZ6424ACZZ	AE		C	IC socket (24pin)
11	QSW-P1009ACZZ	AF	N	B	Push switch
12	QSW-S1012ACZZ	AF	N	B	Slide switch
13	QSW-S6683RCZZ	AF	N	B	Slide switch
14	RCRS-1007ACZZ	AV	N	B	X-TAL (17.7344MHz)
15	RMPTC8103QCKB	AD		C	Block resistor (10KΩ×8 1/8W ±10%)
16	RVR-B1450QCZZ	AE		B	Variable resistor
17	VCCSPU1HL391J	AA		C	Capacitor (50WV 390pF)
18	VCCSPU1HL471J	AA		C	Capacitor (50WV 470pF)
19	VCEAAU1AW107Q	AB		C	Capacitor (10WV 100μF)
20	VCEAAU1HW105Q	AB		C	Capacitor (50WV 1.0μF)
21	VHiLH0080A/-1	AX		B	LSI (Z80A CPU)
22	VHiMZ60719GSO	BF		B	IC
23	VHiM2732/AC11	BF		B	IC (M5L2732K) Monitor
24	VHiTMM2016P-1	AX		B	IC
25	VHiUPD8255/-1	AV		B	IC
26	VHi4164-150-H	AZ		B	LSI DRAM
27	VHi8253////-1	BA		B	IC
28	VS2SC458KC/-1	AD		B	Transistor (2SC458KC)
29	VS2SD788-C/EC	AC	N	B	Transistor
30	VCCCPA1HH101J	AA	N	C	Capacitor (50WV 100pF)
31	VCCCPA1HH221J	AB	N	C	Capacitor (50WV 220pF)
32	VCEAAA1CW106Q	AB	N	C	Capacitor (16WV 10μF)
33	VCEAAA1CW226Q	AB		C	Capacitor (16WV 22μF)
34	VCEAAA1HW105Q	AB	N	C	Capacitor (50WV 1.0μF)
35	VCKYPU1HB102K	AA		C	Capacitor (50WV 1000pF)
36	VCKYPU1HB222K	AA		C	Capacitor (50WV 2200pF)
37	VCSATA1CE226M	AB	N	C	Capacitor (16WV 22μF)
38	VCSATA1CE336M	AB	N	C	Capacitor (16WV 33μF)
39	VCTYPU1EX103M	AB		C	Capacitor (25WV 0.010μF)
40	VCTYPA1NX104M	AB		C	Capacitor (12V 0.1μF)
41	VHDDS1588L1-1	AB	N	B	Diode (1S1588)
42	VHiCD4069B/-1	AE		B	IC
43	VHiM74LS00/-1	AE		B	IC
44	VHiM74LS02/-1	AE		B	IC
45	VHiM74LS04/-1	AE		B	IC
46	VHiM74LS08/-1	AE		B	IC
47	VHiM74LS09/-1	AE	N	B	IC
48	VHiM74LS10/-1	AE		B	IC
49	VHiM74LS125-1	AH		B	IC
50	VHiM74LS14/-1	AM		B	IC
51	VHiM74LS145-1	AH	N	B	IC
52	VHiM74LS174-1	AK		B	IC
53	VHiM74LS175-1	AG		B	IC
54	VHiM74LS245-1	AM		B	IC
55	VHiM74LS273-1	AP		B	IC
56	VHiM74LS32/-1	AF		B	IC
57	VHiM74LS367-1	AH		B	IC
58	VHiM74LS42/-1	AF		B	IC
59	VHiM74LS74/-1	AG		B	IC
60	VHiM74LS86/-1	AF		B	IC
61	VHiNE556N//-1	AH		B	IC
62	VHiSN74LS165N	AM		B	IC
63	VHiSN74LS221N	AM		B	IC
64	VHiSN74S04N-1	AG		B	IC (74S04)
65	VHiSN74S157-1	AQ		B	IC (SN74S157N)
66	VHiSN7417N/-1	AG		B	IC (SN7417N)
67	VRD-RV2EY000J	AA		B	Resistor (1/4W ±5%)
68	VRD-ST2EY102J	AA		C	Resistor (1/4W 1KΩ)
69	VRD-ST2EY103J	AA		C	Resistor (1/4W 1KΩ)
70	VRD-ST2EY104J	AA		C	Resistor (1/4W 100KΩ ±5%)
71	VRD-ST2EY121J	AA		C	Resistor (1/4W 120Ω ±5%)
72	VRD-ST2EY152J	AA		C	Resistor (1/4W 1.5KΩ ±5%)
73	VRD-ST2EY153J	AA		C	Resistor (1/4W 15KΩ ±5%)
74	VRD-ST2EY182J	AA		C	Resistor (1/4W 1.8KΩ ±5%)
75	VRD-ST2EY183J	AA		C	Resistor (1/4W 18KΩ ±5%)
76	VRD-ST2EY221J	AA		C	Resistor (1/4W 220Ω ±5%)
77	VRD-ST2EY222J	AA		C	Resistor (1/4W 2.2KΩ ±5%)
78	VRD-ST2EY330J	AA		C	Resistor (1/4W 33Ω ±5%)
79	VRD-ST2EY331J	AA		C	Resistor (1/4W 330Ω J)
80	VRD-ST2EY332J	AA		C	Resistor (1/4W 3.3KΩ ±5%)

3 CPU Unit Electronic Components

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
81	VRD-ST2EY391J	AA		C	Resistor (1/4W 390Ω ±5%)
82	VRD-ST2EY431J	AA		C	Resistor (1/4W 430Ω ±5%)
83	VRD-ST2EY471J	AA		B	Resistor (1/4W 470Ω ±5%)
84	VRD-ST2EY473J	AA		C	Resistor (1/4W 47KΩ ±5%)
85	VRD-ST2EY560J	AA		C	Resistor (1/4W 56Ω ±5%)
86	VRD-ST2EY561J	AA		C	Resistor (1/4W 560Ω ±5%)
⚠ 87	QACCZ3321QCN1	AL	N	C	AC cord for Europe
⚠	QACCB3620QCZZ	AL	N	C	AC cord for U.K.
88	QCNCW1012ACZZ	AE	N	C	Connector
89	QCNCW1008AC03	AC		C	Connector
90	QCNW-1049ACZZ	AN	N	C	Cable for TV
91	RTPEK1004AC13	BF	N	C	Basic tape
92	VHiM2732/AC12	BF	N	B	CG-ROM
93	QCNCW1012ACZZ	AE	N	C	Dummy connector for cassette (MZ711 only)

4 Printer Control PWB Elecronic Components

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	LBNDJ2003SCZZ	AA		C	Cable clamp
2	QCNCW1008AC04	AD		C	Connector
3	QCNCM1014ACZZ	AD		C	Connector
4	QCNW-1012ACZZ	AL		C	Connector wire
5	QCNW-1013ACZZ	AD	N	C	Ground wire
6	QCNW-1048ACZZ	AN	N	C	Connector wire 15pin
7	QCNW-1051ACZZ	AF	N	C	Connector wire 4pin
9	QSOCZ6440ACZZ	AG		C	IC socket (40pin)
10	QSW-P1010ACZZ	AC	N	C	Push switch (Paper feed)
11	QSW-P1011ACZZ	AD	N	C	Push switch (Pen Change,Reset)
12	RCRSZ1006ACZZ	AD	N	C	X-TAL 6MHZ
13	RMPTC4332QCKB	AC		C	Block resistor (3.3KΩ×4 1/8W ±10%)
14	TPAPR1001ACZZ	AH	N	S	Roll paper
15	UPENP1002CCZZ	AR	N	S	Pen set of 4
16	VCCCPU1HH100D	AA		C	Capacitor (50WV 10pF)
17	VCEAAU1AW476Q	AC		C	Capacitor (10WV 47μF)
18	VCEAAU1HW225Q	AB		C	Capacitor (50WV 2.2μF)
19	VHDDS1588L2-1	AB		B	Diode (DS1588L2)
20	VHEWZ100///-1	AG		B	Diode
21	VHiLB1257//-1	AM		B	IC
22	VHiM5M8050H01	AZ	N	B	LSI
23	VRD-ST2EY103J	AA		C	Resistor (1/4W 1KΩ)
24	VRD-ST2EY104J	AA		C	Resistor (1/4W 100KΩ ±5%)
25	VRD-ST2EY221J	AA		C	Resistor (1/4W 220Ω ±5%)
26	VRD-ST2EY332J	AA		C	Resistor (1/4W 3.3KΩ ±5%)
27	VRD-ST2EY471J	AA		B	Resistor (1/4W 470Ω ±5%)
28	VRD-ST2EY561J	AA		C	Resistor (1/4W 560Ω ±5%)
29	VRD-ST2EY562J	AA		C	Resistor (1/4W 5.6KΩ ±5%)
30	VS2SA673-C/-1	AE		B	Transistor (2SA673-C)
31	VS2SB739-C/-1	AD		B	Transistor
32	VS2SC458KC/-1	AD		B	Transistor (2SC458KC)
33	VS2SD788-C/EC	AC	N	B	Transistor

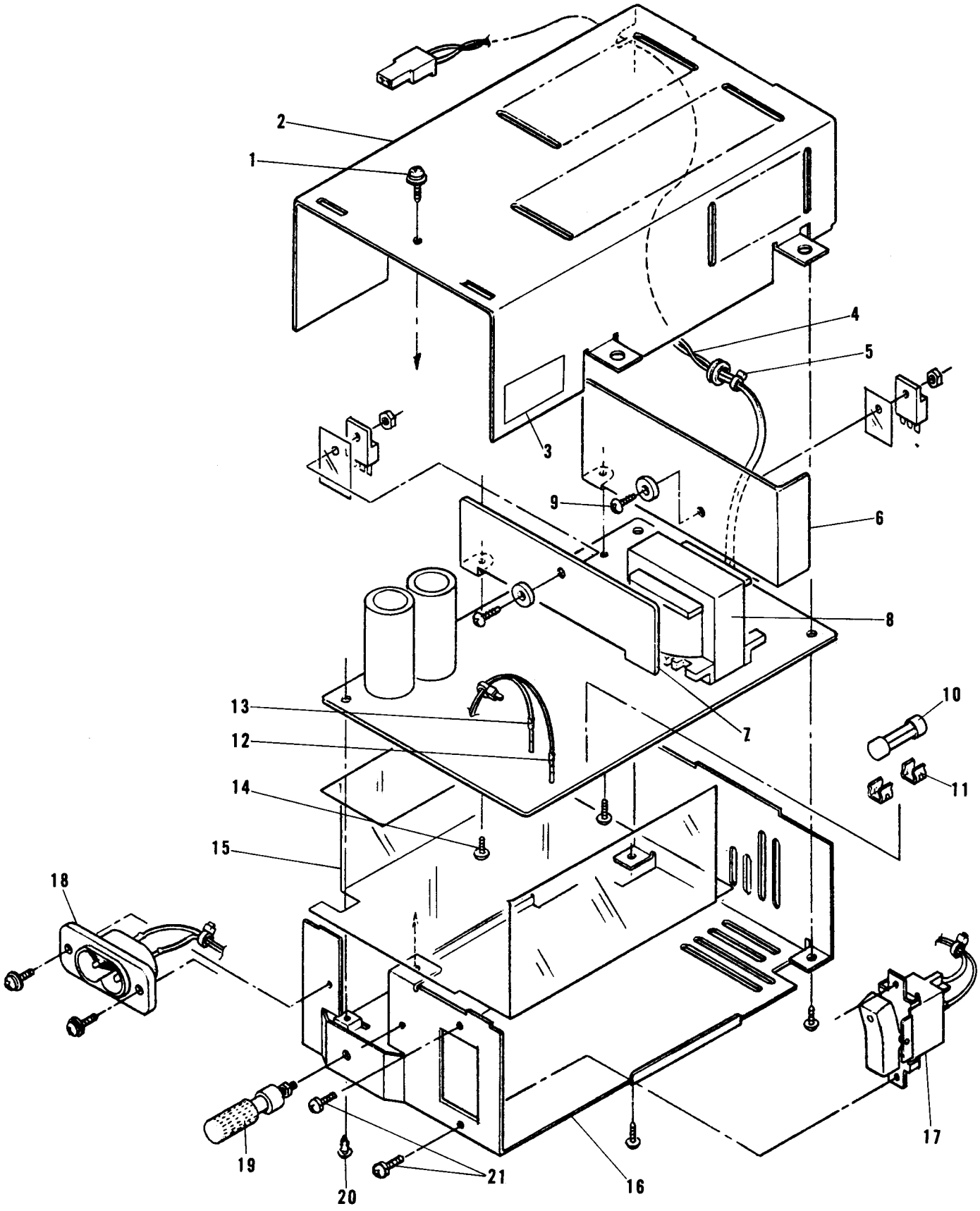
5 Other

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	SSAKA0231QCZZ	AA		D	Poly bag (80×220 30U)
2	SPAKA1229ACZZ	AK	N	D	Packing cushion-R
3	SPAKA1230ACZZ	AK	N	D	Packing cushion-L
4	SPAKA1232ACZZ	AD	N	D	Packing sleeve
5	SSAKA5004CCZZ	AA		D	Poly bag (100×300)
6	SPAKC1218ACZZ	AQ	N	D	Packing case (MZ-731)
7	SPAKC1222ACZZ	AQ	N	D	Packing case (MZ-721)
8	SPAKC1237ACZZ	AQ	N	D	Packing case (MZ-711)
9	SSAKH0014HCZZ	AB		D	Poly bag
10	TCAUS1002ACZZ	AB	N	D	Caution label (U.K. only)
11	TCAUS1003ACZZ	AB	N	D	Caution label (U.K. only)
12	TiNSE1066ACZZ	BD	N	D	Instruction book
13	TLABJ1083CCZZ	AA		D	Label (U.K. only)

6 Power Supply Unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	XBPSE30P08KS0	AB	N	C	Screw	
2	PCOVS0181VAZZ	AG	N	C	Case (B)	
3	TLABN0066PAZZ	AA	N	C	Label	
4	DSOCN0344PAZZ	AF	N	C	Connector (out put) W.Wire	
5	LBNDK0018JBE0	AA		C	Tie wrap	
6	PRDAR0106PAZZ	AE	N	C	Radiator (B)	
7	PRDAR0105PAZZ	AE	N	C	Radiator (A)	
⚠ 8	RTRNZ0074PAZZ	AS	N	B	Transformer	[T1]
9	XBBSC30P08000	AA		C	Screw	
⚠ 10	QFS−C0002PAZZ	AD		A	Fuse	[F1]
⚠ 11	QFSHA0001PAZZ	AA		C	Fuse holder	
12	DTiP−0098PAZZ	AB	N	C	Tip for AC wire(Brawn)	
13	DTiP−0099PAZZ	AB	N	C	Tip for AC wire(Blue)	
14	XBBSC30P06000	AA		C	Screw (plastic)	
15	PZETi0015PAZZ	AG	N	C	Insulator	
16	PCOVS0180VAZZ	AG	N	C	Case (A)	
⚠ 17	QSW−C0003PAZZ	AK		B	Seesaw switch	
⚠ 18	QSOCA0003PAZZ	AF		C	AC inlet	
19	QTANN0004PAZZ	AD	N	C	Ground terminal	
20	LBSHC0018PAZZ	AA	N	C	Nylon rivet	
21	XBPSE30P06K00	AA	N	C	Screw	
22	VRD−ST3AF224J	AA	N	C	Resistor (1W 220KΩ ±5%)	[R3]
23	RR−XZ0008PAZZ	AB	N	C	Resistor	[R4]
24	VRS−PT3AB1R0J	AA	N	C	Resistor (1W 1.0Ω ±5%)	[R5]
25	VRD−ST2EY151J	AA	N	C	Resistor (1/4W 150Ω ±5%)	[R6]
26	VRD−ST2EY151J	AA		C	Resistor (1/4W 150Ω ±5%)	[R7]
27	VRD−ST2EY101J	AA		C	Resistor (1/4W 100Ω ±5%)	[R8,R21]
28	VRD−RU2EE332J	AA		C	Resistor (1/4W 3.3KΩ ±5%)	[R9]
29	VRW−KT3DC100K	AC	N	C	Resistor (2W 10Ω ±10%)	[R1]
30	VRD−SC2EF332J	AA		C	Resistor (1/4W 3.3KΩ ±5%)	[R22]
31	VRD−RU2EE272J	AA		C	Resistor (1/4W 2.7KΩ ±5%)	[R23]
32	RVR−M0010PAZZ	AC		C	Variable resistor	[VR21]
33	VRS−PT3DB683J	AA	N	C	Resistor (2W 68KΩ ±5%)	[R2]
34	RTRNZ0081PAZZ	AH	N	C	Filter	[L1]
35	RTRNZ0075PAZZ	AG	N	C	Filter	[L21]
36	VS2SC3150//−1	AK	N	B	Transistor	[Q1]
37	VS2SC1213−D1A	AC	N	B	Transistor	[Q2,Q3]
⚠ 38	VHDRB156///−1	AG		B	Diode	[D1]
39	VHDES1F////−1	AC	N	B	Diode	[D2]
40	VHD1S2076A/−1	AB		B	Diode (1S2076A−FEC)	[D3]
41	VHDESAC8204−2	AN	N	B	Diode	[D21]
42	RH−iX0368PAZZ	AH	N	B	IC	[IC1]
43	RH−PX0075PAZZ	AK	N	B	Photo transistor	[PC1]
⚠ 44	RC−CZ0180PAZZ	AH		C	Capacitor (AC250V 0.047μF)	[C2]
45	VCQYKU1HM333K	AB		C	Capacitor (500V 333pF)	[C25]
46	VCEAAU2GM336M	AH	N	C	Capacitor (400WV 33μF)	[C3,C4]
⚠ 47	RC−QZ0023PAZZ	AD	N	C	Capacitor (AC400V 3300pF)	[C1,C5,C6]
48	VCEAAU2GM105M	AD	N	C	Capacitor (400WV 1.0μF)	[C7]
49	VCEAAU1AM108M	AD		C	Capacitor (10WV 1000μF)	[C23]
50	VCQYKU1HM102K	AA	N	C	Capacitor (50WV 1000pF)	[C8,C21]
51	VCKYPU1NB204Z	AB	N	C	Capacitor (12WV 0.20μF)	[C9]
52	VCKYPU3DR221K	AB	N	C	Capacitor (2000WV 220pF)	[C10]
53	VCKYPU1NB104Z	AB		C	Capacitor (12WV 0.10μF)	[C11,C26]
54	VCKYPU1HB682K	AA		C	Capacitor (50WV 6800pF)	[C12]
55	VCEAAU1AM478M	AB	N	C	Capacitor (10WV 4700μF)	[C22]

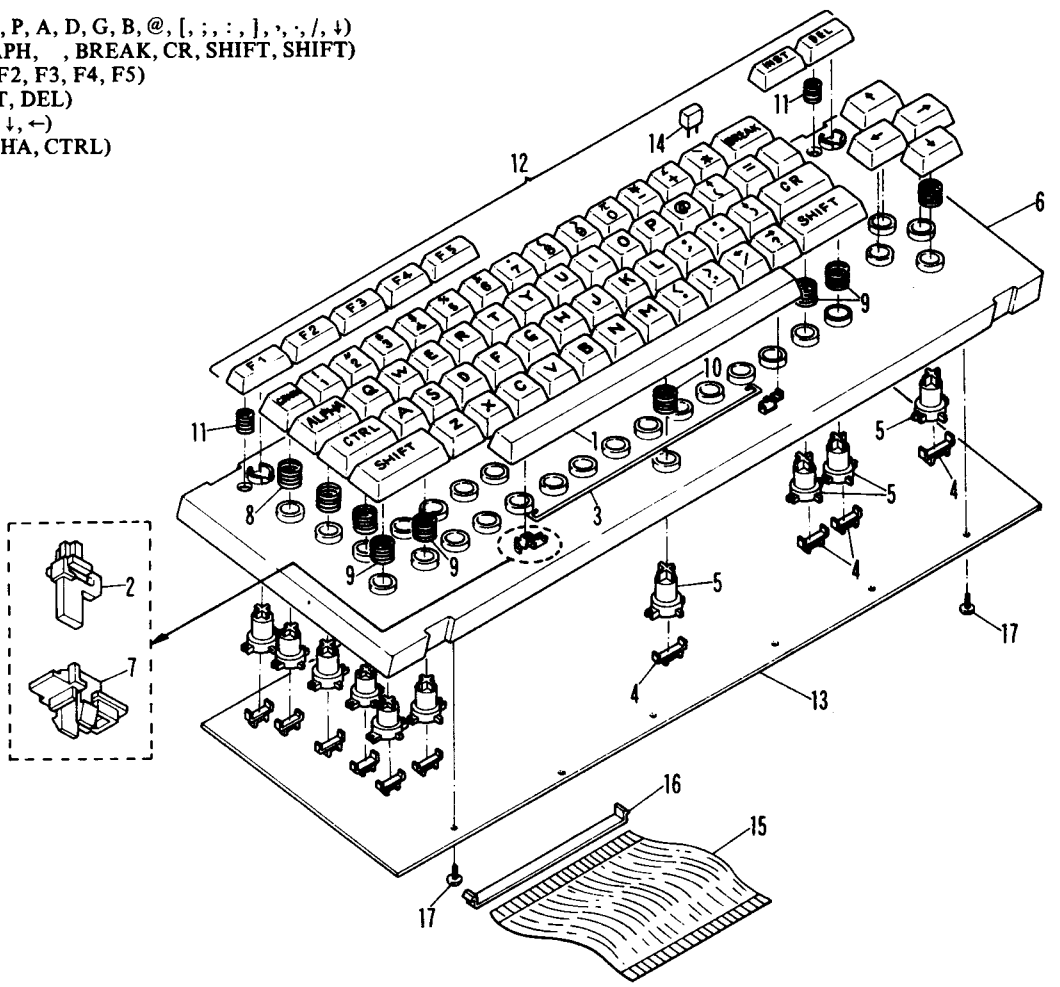
6 Power Supply Unit



7 Key Board Unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	0CFD5799D////	AF	N	C	Space key
2	0CF33623A//////	AB	N	C	Crank guide F
3	0CF33633A//////	AD	N	C	Crank shaft A
4	0CF63033A//////	AC	N	C	Key contact
5	0CF33357A//////	AA	N	C	Guide tip
6	0CF49063A//////	AX	N	C	Frame (NSH−1)
7	0CF33613A//////	AB	N	C	Crank holder F
8	0CF33643A//////	AA	N	C	Return spring (for 60 key)
9	0CF33643B//////	AA	N	C	Return spring (for shift key)
10	0CF33643C//////	AA	N	C	Return spring (for space key)
11	0CF07113C//////	AA	N	C	Return spring (for harf key)
12	0CF38763A//////	BE	N	C	Key top set A
13	0CF387B//////	BB	N	E	PWB W. Parts
14	0CF17313A//////	AF	N	B	LED
15	0CF49883A//////	AN	N	C	Flat cable
16	0CF49763A//////	AC	N	C	Protector
17	XBTSD20P06000	AA		C	Screw
18	0CF38763B//////	AT	N	C	Key top set B
19	0CF38763C//////	AT	N	C	Key top set C
20	0CF38763D//////	AD	N	C	Key top set D
21	0CF38763E//////	AT	N	C	Key top set E
22	0CF38763F//////	AP	N	C	Key top set F
23	0CF38763G//////	AH	N	C	Key top set G
24	0CF38763H//////	AG	N	C	Key top set H
25	0CF38763J//////	AH	N	C	Key top set J
26	0CF38763K//////	AF	N	C	Key top set K
27	0CFD5000D////	AG	N	C	Blank key top

* Key top unit
  B UNIT (1~9,0, *, ↑, −, ↑, \, Q, W, E)
  C UNIT (M, N, V, C, X, Z, L, K, J, H, F, S, I, U, Y, T)
  D UNIT (?)
  E UNIT (R, O, P, A, D, G, B, @, [, ;, :,], ,, ., /, ↓)
  F UNIT (GRAPH, , BREAK, CR, SHIFT, SHIFT)
  G UNIT (F1, F2, F3, F4, F5)
  H UNIT (INST, DEL)
  J UNIT (↑, →, ↓, ←)
  K UNIT (ALPHA, CTRL)



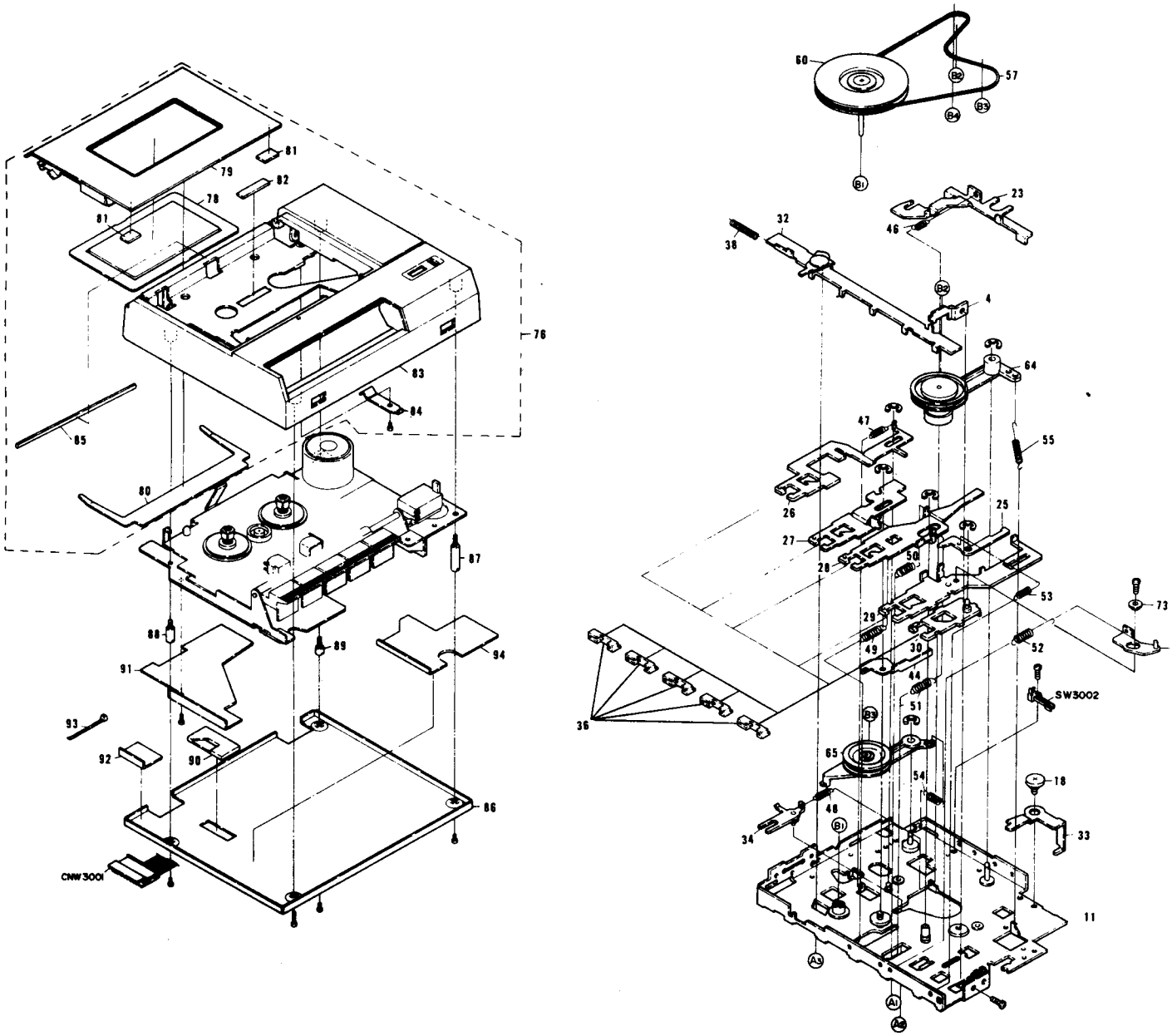
8 Cassette Unit

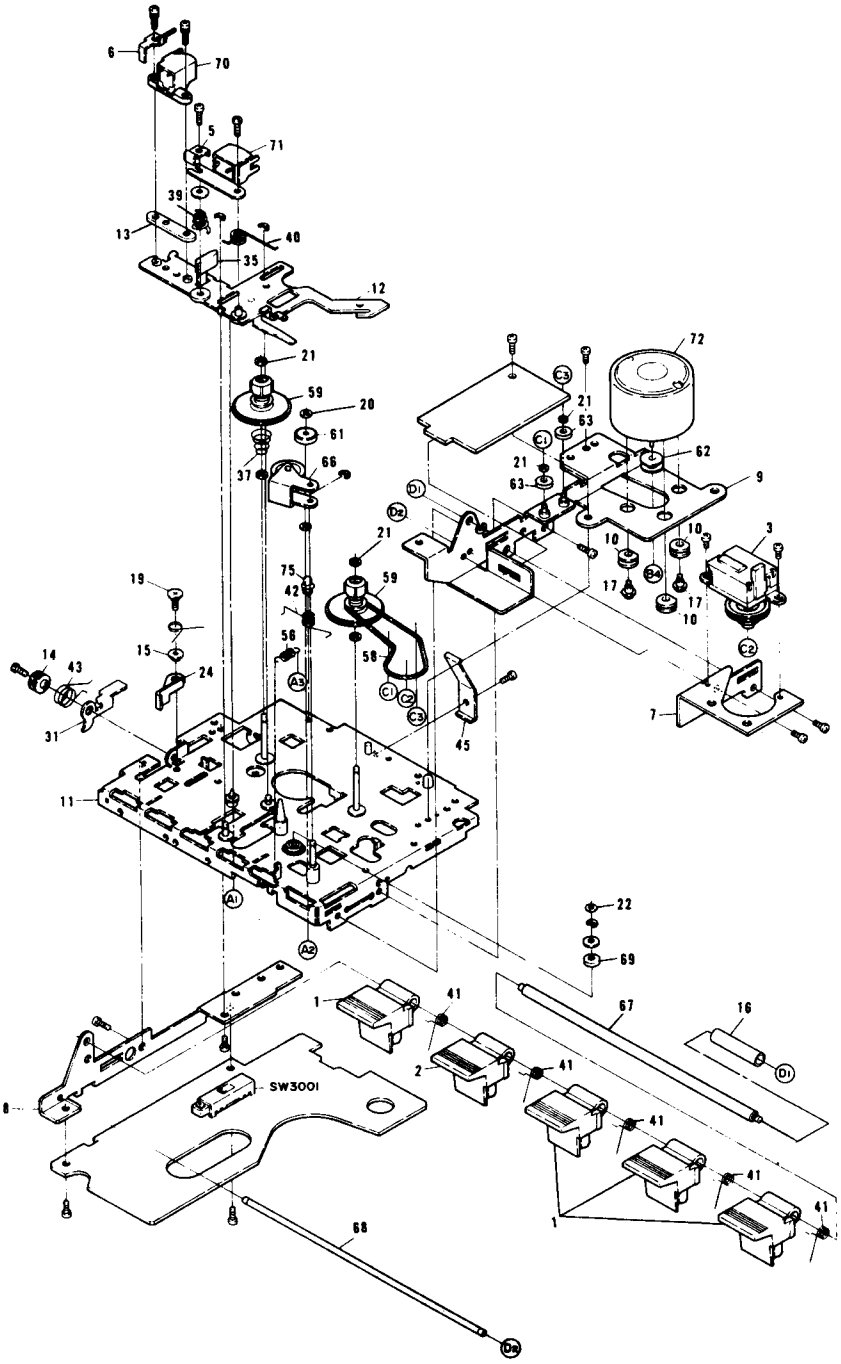
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	JKNBR0204AFSA	AB	N	C	Stop/Eject/Play/Rewind/F.Foward botton
2	JKNBR0204AFSB	AB	N	C	Record botton
3	KCÕUB0138AFZZ	AM	N	B	Tape counter
4	LANGF0744AFZZ	AC	N	C	Lock lever holding metal
5	LANGG0099AFFW	AA	N	C	Wire holding metal (A)
6	LANGG0100AFFW	AB	N	C	Wire holding metal (B)
7	LANGT1169AFFW	AB	N	C	Tape counter angle
8	LANGT1170AFFW	AC	N	C	Angle for botton—L
9	LANGT1171AFZZ	AE	N	C	Angle for botton—R
10	LBSHZ0082AFZZ	AC	N	C	Cushion for motor
11	LCHSM0424AFZZ	AN	N	C	Main chassis assembly
12	LCHSS0183AFZZ	AF	N	C	Sub chassis assembly
13	PSPAZ0117AFZZ	AA	N	C	Base for erase head
14	LSLVM0144AFFW	AC	N	C	Stopper sleeve for cassette eject lever
15	LSLVM0150AFFW	AA	N	C	Stopper sleeve for write protect
16	PSPAZ0127AFZZ	AA	N	C	Sleeve for botton
17	LX—BZ0436AFFD	AA	N	C	Screw
18	LX—BZ0447AFFD	AB	N	C	Screw
19	LX—BZ0449AFFD	AB	N	C	Screw
20	LX—WZ1064AFZZ	AB	N	C	Washer (φ1.2×3.2×0.25mm)
21	LX—WZ1065AFZZ	AB	N	C	Washer (φ1.6×3.2×0.25mm)
22	LX—WZ1066AFZZ	AB	N	C	Washer
23	MLEVF1408AFFW	AD	N	C	Lever for switch
24	MLEVF1414AFFW	AC	N	C	Lever for write protect
25	MLEVF1419AFFW	AC	N	C	Combination lever for cassette eject
26	MLEVF1434AFFW	AC	N	C	Lever for F.Foward botton
27	MLEVF1435AFFW	AC	N	C	Lever for rewind botton
28	MLEVF1436AFFW	AB	N	C	Lever for play back botton
29	MLEVF1437AFFW	AC	N	C	Lever for record botton
30	MLEVF1438AFZZ	AC	N	C	Cassette eject lever assy
31	MLEVF1439AFFW	AB	N	C	Cassette eject lever
32	MLEVF1440AFZZ	AE	N	C	Lock lever assembly
33	MLEVF1441AFFW	AB	N	C	Erase protect lever
34	MLEVF1442AFZZ	AD	N	C	Roller lever for F.Foward
35	MLEVP0417AFFW	AA	N	C	Sensor lever tip
36	MLEVP0418AFFW	AB	N	C	Botton guide
37	MSPRC0350AFFJ	AA	N	C	Back tencion spring
38	MSPRC0351AFFJ	AA	N	C	Lock lever spring
39	MSPRC0355AFFJ	AA	N	C	Head azimus adjust spring
40	MSPRD0453AFFJ	AB	N	C	Pinch roller spring
41	MSPRD0457AFFJ	AB	N	C	Write protect lever spring
42	MSPRD0466AFFJ	AB	N	C	Erase protect lever spring
43	MSPRD0467AFFJ	AA	N	C	Cassette eject lever spring
44	MSPRP0331AFFJ	AD	N	C	Rewind lever spring
45	MSPRP0342AFFJ	AA	N	C	Cassette holding spring
46	MSPRT0935AFFJ	AB	N	C	Switch lever spring
47	MSPRT0936AFFJ	AC	N	C	F.Foward lever spring
48	MSPRT0937AFFJ	AB	N	C	F.Foward idler spring
49	MSPRT0938AFFJ	AB	N	C	Rewind botton lever spring
50	MSPRT0939AFFJ	AC	N	C	Play back botton lever spring
51	MSPRT0940AFFJ	AB	N	C	Over stroke spring
52	MSPRT0941AFFJ	AB	N	C	Record botton lever spring
53	MSPRT0944AFFJ	AB	N	C	Cassette eject combination lever spring
54	MSPRT0947AFFJ	AB	N	C	Play back idler spring
55	MSPRT0948AFFJ	AB	N	C	F.Foward/rewind idler spring
56	MSPRT0949AFFJ	AB	N	C	Lock lever release spring
57	NBLTK0245AFZZ	AC	N	B	Belt
58	NBLTK0246AFZZ	AD	N	B	Belt for counter
59	NDAiR0171AFSA	AE	N	C	Reel holder assembly
60	NFLYC0106AFZZ	AH	N	C	Fly wheel
61	NiDR—0082AFZZ	AC	N	B	F.Foward Idler
62	NPLYM0072AFZZ	AB	N	C	Motor pully
63	NPLYR0099AFZZ	AB	N	C	Intermidate pully
64	NRÕLV0101AFZZ	AG	N	C	F.Foward/rewind idler assembly
65	NRÕLW0022AFZZ	AG	N	C	Play back Idler
66	NRÕLY0051AFZZ	AD	N	C	Pinch roller assembly
67	NSFTT0202AFFD	AB	N	C	Shaft for botton
68	NSFTT0203AFZZ	AB	N	C	Stopper shaft for botton
69	PSPAZ0116AFZZ	AA	N	C	Metal spacer for capstan
70	RHEDA0105AFZZ	AF	N	B	Erase head
71	RHEDG0063AFZZ	AK	N	B	Read/write head
72	RMÕTV0127AFZZ	AX	N	B	Motor
73	LSLVM0158AFFW	AA	N	C	Sleeve
74	MLEVF1494AFFW	AB	N	C	Lever
75	NSFTT0215AFFW	AB	N	C	Shaft
76	CPNLC1410AF01	AW	N	D	Cabinet complete
77	CFTAC1248AF01	AP	N	D	Cassette cover assembly
78	GCÕVA1364AFSA	AK	N	D	Cassette cover (clear cover)
79	GFTAC1248AFSA	AM	N	D	Cassette cover
80	MSPRP0345AFFJ	AG	N	C	Cassette holding spring

8 Cassette Unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
81	PCUSF0018AF00	AB	N	C	Cushion	
82	HDECZ0063AFSA	AA	N	D	Miller plate	
83	HPNLC1410AFSA	AV	N	D	Front cabinet	
84	MSPRP0327AFFJ	AC	N	C	Cassette take out spring	
85	PCUSG0204AF00	AA	N	C	Cushion	
86	GiTAU0020AFZZ	AG	N	C	Bottom plate	
87	LX−BZ0443AFZZ	AE	N	C	Screw (L)	
88	LX−BZ0444AFZZ	AE	N	C	Screw (M)	
89	LX−BZ0445AFZZ	AE	N	C	Screw (S)	
90	PGUMM0157AF00	AB	N	C	Rubber cushion	
91	PSHEZ0120AFZZ	AE	N	C	Insulator	
92	PSHEZ0121AFZZ	AB	N	C	Insulator	
93	LHLDW1075AFZZ	AA	N	C	Tie wrap	
94	PSHEZ0123AFZZ	AD	N	C	Insulator	
100	VHiUPC358C/−1	AF	N	B	IC	[IC3001]
101	VS2SC1652−Q−1	AC	N	B	Transistor	[Q3001]
102	VS2SC2021−R−1	AE	N	B	Transistor	[Q3002]
103	VS2SC2021−R−1	AE	N	B	Transistor	[Q3003]
104	VS2SC2021−R−1	AE	N	B	Transistor	[Q3004]
105	VHD1S1555V/1G	AD	N	B	Diode	[D3001]
106	VHD1S1555V/1G	AD	N	B	Diode	[D3002]
107	VHD1S1555V/1G	AD	N	B	Diode	[D3003]
108	VHD1S1555V/1G	AD	N	B	Diode	[D3004]
109	RC−EZB104AF1H	AE	N	C	Capacitor (0.1μF 50V ±20%)	[C3003]
110	RC−EZB104AF1H	AE	N	C	Capacitor (0.1μF 50V ±20%)	[C3004]
111	RC−EZB104AF1H	AE	N	C	Capacitor (0.1μF 50V ±20%)	[C3005]
112	RC−EZB226AF0J	AC	N	C	Capacitor (22μF 6.3V ±20%)	[C3008]
113	RC−EZB105AF1H	AC	N	C	Capacitor (1μF 50V ±20%)	[C3009]
114	RC−EZT476AF0J	AC	N	C	Capacitor (47μF 6.3V ±20%)	[C3012]
115	RC−EZB106AF0J	AD	N	C	Capacitor (10μF 6.3V ±20%)	[C3013]
116	VCKZPU1HF403Z	AA	N	C	Capacitor (0.04μF 50V +80−20%)	[C3001]
117	VCTYPU1EX102J	AC	N	C	Capacitor (1000pF 25V ±5%)	[C3006]
118	VCTYPU1EX102J	AC	N	C	Capacitor (1000pF 25V ±5%)	[C3007]
119	VRD−PT3AB470J	AA	N	C	Resistor (47Ω 1W ±5%)	[R3004]
120	VRD−ST2CD564J	AA	N	C	Resistor (560KΩ 1/6W ±5%)	[R3007]
121	VRD−ST2EE205J	AA	N	C	Resistor (2MΩ 1/4W ±5%)	[R3023]
122	QCNW−1733AFZZ	AK	N	C	Connector 9pin	[CNW3001]
123	QSW−S0303AFZZ	AG	N	B	Switch	[SW3001]
124	QSW−F0176AF01	AE	N	B	Switch	[SW3002]
	(Unit)					
901	KMECA0045AFZZ	BP	N	B	Mechanism unit	

[8] CASSETTE UNIT




SW3001

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PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK
【C】				
CCABB1005ACZZ	1- 25	AY	N	D
CCABB1006ACZZ	2- 1	AR	N	D
CFTAC1248AF01	8- 77	AP	N	D
CFTAT1001ACZZ	2- 2	AM	N	D
CPNLC1410AF01	8- 76	AW	N	D
CSFTZ1001ACZZ	2- 3	AH	N	E
【D】				
DSŌCN0344PAZZ	6- 4	AF	N	C
DTiP−0098PAZZ	6- 12	AB	N	C
DTiP−0099PAZZ	6- 13	AB	N	C
DUNT−1150ACZZ	1- 2	BM	N	E
DUNT−1151ACZZ	1- 3	BN	N	E
DUNTK1152ACZZ	1- 1	**	N	E
DUNTM1051ACZZ	2- 8	BW	N	E
【G】				
GCABA1006ACZZ	1- 19	AV	N	D
GCŌVA1364AFSA	8- 78	AK	N	D
GCŌVH1002ACZZ	1- 4	AB	N	D
GFTAC1248AFSA	8- 79	AM	N	D
GFTAR1012ACZZ	1- 15	AB	N	D
GFTAR1019ACZZ	1- 5	AB	N	D
GFTAR1020ACZZ	1- 6	AB	N	D
GFTAT1007ACZZ	1- 26	AP	N	D
GFTAT1008ACZZ	1- 27	AP	N	D
GiTAU0020AFZZ	8- 86	AG	N	C
GLEGG1020CCZZ	1- 20	AD		D
【H】				
HBDGB1002ACZZ	1- 18	AD		C
HBDGD1001ACZZ	1- 21	AB	N	D
HDECZ0063AFSA	8- 82	AA	N	D
HPNLC1410AFSA	8- 83	AV	N	D
【J】				
JKNBR0204AFSA	8- 1	AB	N	C
JKNBR0204AFSB	8- 2	AB	N	C
JKNBZ1005AC01	2- 9	AG	N	C
【K】				
KCŌUB0138AFZZ	8- 3	AM	N	B
KMECA0045AFZZ	8- 901	BP	N	B
【L】				
LANGF0744AFZZ	8- 4	AC	N	C
LANGG0099AFFW	8- 5	AA	N	C
LANGG0100AFFW	8- 6	AB	N	C
LANGT1169AFFW	8- 7	AB	N	C
LANGT1170AFFW	8- 8	AC	N	C
LANGT1171AFZZ	8- 9	AE	N	C
LBNDJ2003SCZZ	4- 1	AA		C
LBNDK0018JBE0	6- 5	AA		C
LBSHC0018PAZZ	6- 20	AA	N	C
LBSHZ0082AFZZ	8- 10	AC	N	C
LCHSM0424AFZZ	8- 11	AN	N	C
LCHSM1018ACZZ	1- 7	AY	N	C
LCHSM1004ACZZ	2- 10	AL	N	C
LCHSS0183AFZZ	8- 12	AF	N	C
LHLDW1075AFZZ	8- 93	AA	N	C
LHLDZ1002ACL1	2- 11	AC	N	C
LHLDZ1002ACR1	2- 12	AC	N	C
LSLVM0144AFFW	8- 14	AC	N	C
LSLVM0150AFFW	8- 15	AA	N	C
LSLVM0158AFFW	8- 73	AA	N	C
LX−BZ0436AFFD	8- 17	AA	N	C
LX−BZ0443AFZZ	8- 87	AE	N	C
LX−BZ0444AFZZ	8- 88	AE	N	C
LX−BZ0445AFZZ	8- 89	AE	N	C
LX−BZ0447AFFD	8- 18	AB	N	C
LX−BZ0449AFFD	8- 19	AB	N	C
LX−WZ1064AFZZ	8- 20	AB	N	C
LX−WZ1065AFZZ	8- 21	AB	N	C
LX−WZ1066AFZZ	8- 22	AB	N	C
【M】				
MLEVF1408AFFW	8- 23	AD	N	C
MLEVF1414AFFW	8- 24	AC	N	C
MLEVF1419AFFW	8- 25	AC	N	C
MLEVF1434AFFW	8- 26	AC	N	C
MLEVF1435AFFW	8- 27	AC	N	C
MLEVF1436AFFW	8- 28	AB	N	C
MLEVF1437AFFW	8- 29	AC	N	C
MLEVF1438AFZZ	8- 30	AC	N	C
MLEVF1439AFFW	8- 31	AB	N	C
MLEVF1440AFZZ	8- 32	AE	N	C

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK
MLEVF1441AFFW	8- 33	AB	N	C
MLEVF1442AFZZ	8- 34	AD	N	C
MLEVF1494AFFW	8- 74	AB	N	C
MLEVP0417AFFW	8- 35	AA	N	C
MLEVP0418AFFW	8- 36	AB	N	C
MSPRC0350AFFJ	8- 37	AA	N	C
MSPRC0351AFFJ	8- 38	AA	N	C
MSPRC0355AFFJ	8- 39	AA	N	C
MSPRD0453AFFJ	8- 40	AB	N	C
MSPRD0457AFFJ	8- 41	AB	N	C
MSPRD0466AFFJ	8- 42	AB	N	C
MSPRD0467AFFJ	8- 43	AA	N	C
MSPRP0327AFFJ	8- 84	AC	N	C
MSPRP0331AFFJ	8- 44	AD	N	C
MSPRP0342AFFJ	8- 45	AA	N	C
MSPRP0345AFFJ	8- 80	AG	N	C
MSPRT0935AFFJ	8- 46	AB	N	C
MSPRT0936AFFJ	8- 47	AC	N	C
MSPRT0937AFFJ	8- 48	AB	N	C
MSPRT0938AFFJ	8- 49	AB	N	C
MSPRT0939AFFJ	8- 50	AC	N	C
MSPRT0940AFFJ	8- 51	AB	N	C
MSPRT0941AFFJ	8- 52	AB	N	C
MSPRT0944AFFJ	8- 53	AB	N	C
MSPRT0947AFFJ	8- 54	AB	N	C
MSPRT0948AFFJ	8- 55	AB	N	C
MSPRT0949AFFJ	8- 56	AB	N	C
【N】				
NBLTK0245AFZZ	8- 57	AC	N	B
NBLTK0246AFZZ	8- 58	AD	N	B
NDAiR0171AFSA	8- 59	AE	N	C
NFLYC0106AFZZ	8- 60	AH	N	C
NiDR−0082AFZZ	8- 61	AC	N	B
NPLYM0072AFZZ	8- 62	AB	N	C
NPLYR0099AFZZ	8- 63	AB	N	C
NRŌLV0101AFZZ	8- 64	AG	N	C
NRŌLW0022AFZZ	8- 65	AG	N	C
NRŌLY0051AFZZ	8- 66	AD	N	C
NSFTT0202AFFD	8- 67	AB	N	C
NSFTT0203AFZZ	8- 68	AB	N	C
NSFTT0215AFFW	8- 75	AB	N	C
NSFTZ1001ACZA	2- 4	AC	N	C
NSFTZ1001ACZB	2- 5	AG	N	C
【P】				
PCŌVS0180VAZZ	6- 16	AG	N	C
PCŌVS0181VAZZ	6- 2	AG	N	C
PCUSF0018AF00	8- 81	AB	N	C
PCUSG0204AF00	8- 85	AA	N	C
PCUSS1002ACZZ	1- 8	AA		C
PGiDW1001ACZZ	2- 13	AB	N	D
PGUMM0157AF00	8- 90	AB	N	C
PGUMS1266CCZZ	1- 16	AA	N	C
PRDAR0105PAZZ	6- 7	AE	N	C
PRDAR0106PAZZ	6- 6	AE	N	C
PSHEZ0120AFZZ	8- 91	AE	N	C
PSHEZ0121AFZZ	8- 92	AB	N	C
PSHEZ0123AFZZ	8- 94	AD	N	C
PSPAB1003ACZZ	2- 21	AA	N	C
PSPAZ0116AFZZ	8- 69	AA	N	C
PSPAZ0117AFZZ	8- 13	AA	N	C
PSPAZ0127AFZZ	8- 16	AA	N	C
PZETE1005ACZZ	2- 22	AA	N	C
PZETi0015PAZZ	6- 15	AG	N	C
【Q】				
QACCB3620QCZZ	3- 87	AL	N	C
QACCZ3321QCN1	3- 87	AL	N	C
QCNCM1009ACZB	3- 1	AA		C
QCNCM1009ACZD	3- 2	AB		C
QCNCM1009ACZL	3- 3	AC		C
QCNCM1009ACZŌ	3- 4	AC		C
QCNCM1010ACZZ	3- 5	AF		C
QCNCM1011ACZZ	3- 6	AE		C
QCNCM1014ACZZ	4- 3	AD		C
QCNCW1008AC03	3- 89	AC		C
QCNCW1008AC04	4- 2	AD		C
QCNCW1012ACZZ	3- 88	AE	N	C
QCNCW1013ACZZ	3- 7	AC		C
QCNCW1059AC20	3- 8	AF		C
QCNW−1012ACZZ	4- 4	AL		C
QCNW−1013ACZZ	4- 5	AD	N	C

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
QCNW-1048ACZZ	4- 6	AN	N	C	
QCNW-1049ACZZ	3- 90	AN	N	C	
QCNW-1051ACZZ	4- 7	AF	N	C	
QCNW-1733AFZZ	8-122	AK	N	C	
QFS-C0002PAZZ	6- 10	AD		A	
QFSHA0001PAZZ	6- 11	AA		C	
QJAKC1013CCZZ	3- 9	AC		C	
QSOCA0003PAZZ	6- 18	AF		C	
QSOCZ6424ACZZ	3- 10	AE		C	
QSOCZ6440ACZZ	4- 9	AG		C	
QSW-C0003PAZZ	6- 17	AK		B	
QSW-F0176AF01	8-124	AE	N	B	
QSW-K1013ACZZ	1- 9	BH	N	E	
QSW-P1009ACZZ	3- 11	AF	N	B	
QSW-P1010ACZZ	4- 10	AC	N	C	
QSW-P1011ACZZ	4- 11	AD	N	C	
QSW-S0303AFZZ	8-123	AG	N	B	
QSW-S1012ACZZ	3- 12	AF	N	B	
QSW-S6683RCZZ	3- 13	AF	N	B	
QTANN0004PAZZ	6- 19	AD	N	C	
QTANS1001ACZZ	1- 28	AB		C	
QTANS1002ACZZ	1- 22	AD	N	C	
〔R〕					
RC-CZ0180PAZZ	6- 44	AH		C	
RC-EZB104AF1H	8-109	AE	N	C	
〃	8-110	AE	N	C	
〃	8-111	AE	N	C	
RC-EZB105AF1H	8-113	AC	N	C	
RC-EZB106AF0J	8-115	AD	N	C	
RC-EZB226AF0J	8-112	AC	N	C	
RC-EZT476AFOJ	8-114	AC	N	C	
RC-QZ0023PAZZ	6- 47	AD	N	C	
RCRS-1007ACZZ	3- 14	AV	N	B	
RCRSZ1006ACZZ	4- 12	AD	N	C	
RH-iX0368PAZZ	6- 42	AH	N	B	
RH-PX0075PAZZ	6- 43	AK	N	B	
RHEDA0105AFZZ	8- 70	AF	N	B	
RHEDG0063AFZZ	8- 71	AK	N	B	
RMOTV0127AFZZ	8- 72	AX	N	B	
RMPTC4332QCKB	4- 13	AC		C	
RMPTC8103QCKB	3- 15	AD		C	
RR-XZ0008PAZZ	6- 23	AB	N	C	
RTPEK1004AC13	3- 91	BF	N	C	
RTRNZ0074PAZZ	6- 8	AS	N	B	
RTRNZ0075PAZZ	6- 35	AG	N	C	
RTRNZ0081PAZZ	6- 34	AH	N	C	
RVR-B1450QCZZ	3- 16	AE		B	
RVR-M0010PAZZ	6- 32	AC		C	
〔S〕					
SPAKA1064ACZZ	2- 23	AH	N	D	
SPAKA1065ACZZ	2- 24	AC	N	D	
SPAKA1229ACZZ	5- 2	AK	N	D	
SPAKA1230ACZZ	5- 3	AK	N	D	
SPAKA1232ACZZ	5- 4	AD	N	D	
SPAKC1218ACZZ	5- 6	AQ	N	D	
SPAKC1222ACZZ	5- 7	AQ	N	D	
SPAKC1224ACZZ	2- 25	AK	N	D	
SPAKC1237ACZZ	5- 8	AQ	N	D	
SSAKA0231QCZZ	5- 1	AA		D	
SSAKA5004CCZZ	5- 5	AA		D	
SSAKH0014HCZZ	5- 9	AB		D	
〔T〕					
TCAUS1002ACZZ	5- 10	AB	N	D	
TCAUS1003ACZZ	5- 11	AB	N	D	
TiNSE1066ACZZ	5- 12	BD	N	D	
TLABJ1083CCZZ	5- 13	AA		D	
TLABN0066PAZZ	6- 3	AA	N	C	
TLABZ1009ACZZ	1- 23	AA	N	D	
TLABZ1010ACZZ	1- 29	AD	N	D	
TLABZ1027ACZZ	2- 20	AB	N	D	
TPAPR1001ACZZ	4- 14	AH	N	S	
TSPC-1055ACZZ	1- 10	AC	N	D	
TSPC-1056ACZZ	1- 10	AC	N	D	
TSPC-1059ACZZ	1- 10	AC	N	D	
〔U〕					
UPENP1002CCZZ	4- 15	AR	N	S	
〔V〕					
VCCCPA1HH101J	3- 30	AA	N	C	
VCCCPA1HH221J	3- 31	AB	N	C	
VCCCPU1HH100D	4- 16	AA		C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VCCSPU1HL391J	3- 17	AA		C	
VCCSPU1HL471J	3- 18	AA		C	
VCEAAA1CW106Q	3- 32	AB	N	C	
VCEAAA1CW226Q	3- 33	AB		C	
VCEAAA1HW105Q	3- 34	AB	N	C	
VCEAAU1AM108M	6- 49	AD		C	
VCEAAU1AM478M	6- 55	AB	N	C	
VCEAAU1AW107Q	3- 19	AB		C	
VCEAAU1AW476Q	4- 17	AC		C	
VCEAAU1HW105Q	3- 20	AB		C	
VCEAAU1HW225Q	4- 18	AB		C	
VCEAAU2GM105M	6- 48	AD	N	C	
VCEAAU2GM336M	6- 46	AH	N	C	
VCKYPU1HB102K	3- 35	AA		C	
VCKYPU1HB222K	3- 36	AA		C	
VCKYPU1HB682K	6- 54	AA		C	
VCKYPU1NB104Z	6- 53	AB		C	
VCKYPU1NB204Z	6- 51	AB	N	C	
VCKYPU3DR221K	6- 52	AB	N	C	
VCKZPU1HF403Z	8-116	AA	N	C	
VCQYKU1HM102K	6- 50	AA	N	C	
VCQYKU1HM333K	6- 45	AB		C	
VCSATA1CE226M	3- 37	AB	N	C	
VCSATA1CE336M	3- 38	AB	N	C	
VCTYPA1NX104M	3- 40	AB		C	
VCTYPU1EX102J	8-117	AC	N	C	
〃	8-118	AC	N	C	
VCTYPU1EX103M	3- 39	AB		C	
VHDDS1588L1-1	3- 41	AB	N	B	
VHDDS1588L2-1	4- 19	AB		B	
VHDESAC8204-2	6- 41	AN	N	B	
VHDES1F////-1	6- 39	AC	N	B	
VHDRB156///-1	6- 38	AG		B	
VHD1S1555V/1G	8-105	AD	N	B	
〃	8-106	AD	N	B	
〃	8-107	AD	N	B	
〃	8-108	AD	N	B	
VHD1S2076A/-1	6- 40	AB		B	
VHEWZ100///-1	4- 20	AG		B	
VHiCD4069B/-1	3- 42	AE		B	
VHiLB1257//-1	4- 21	AM		B	
VHiLH0080A/-1	3- 21	AX		B	
VHiMZ60719GSO	3- 22	BF		B	
VHiM2732/AC11	3- 23	BF		B	
VHiM5M8050H01	4- 22	AZ	N	B	
VHiM74LS00/-1	3- 43	AE		B	
VHiM74LS02/-1	3- 44	AE		B	
VHiM74LS04/-1	3- 45	AE		B	
VHiM74LS08/-1	3- 46	AE		B	
VHiM74LS09/-1	3- 47	AE	N	B	
VHiM74LS10/-1	3- 48	AE		B	
VHiM74LS125-1	3- 49	AH		B	
VHiM74LS14/-1	3- 50	AM		B	
VHiM74LS145-1	3- 51	AH	N	B	
VHiM74LS174-1	3- 52	AK		B	
VHiM74LS175-1	3- 53	AG		B	
VHiM74LS245-1	3- 54	AM		B	
VHiM74LS273-1	3- 55	AP		B	
VHiM74LS32/-1	3- 56	AF		B	
VHiM74LS367-1	3- 57	AH		B	
VHiM74LS42/-1	3- 58	AF		B	
VHiM74LS74/-1	3- 59	AG		B	
VHiM74LS86/-1	3- 60	AF		B	
VHiNE556N//-1	3- 61	AH		B	
VHiSN74LS165N	3- 62	AM		B	
VHiSN74LS221N	3- 63	AM		B	
VHiSN74S04N-1	3- 64	AG		B	
VHiSN74S157-1	3- 65	AQ		B	
VHiSN7417N/-1	3- 66	AG		B	
VHiTMM2016P-1	3- 24	AX		B	
VHiUPC358C/-1	8-100	AF	N	B	
VHiUPD8255/-1	3- 25	AV		B	
VHi4164-150-H	3- 26	AZ		B	
VHi8253////-1	3- 27	BA		B	
VRD-PT3AB470J	8-119	AA	N	C	
VRD-RU2EE272J	6- 31	AA		C	
VRD-RU2EE332J	6- 28	AA		C	
VRD-RV2EY000J	3- 67	AA		B	
VRD-SC2EF332J	6- 30	AA		C	
VRD-ST2CD564J	8-120	AA	N	C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
VRD-ST2EE205J	8- 121	AA	N	C	
VRD-ST2EY101J	6- 27	AA		C	
VRD-ST2EY102J	3- 68	AA		C	
VRD-ST2EY103J	3- 69	AA		C	
〃	4- 23	AA		C	
VRD-ST2EY104J	3- 70	AA		C	
〃	4- 24	AA		C	
VRD-ST2EY121J	3- 71	AA		C	
VRD-ST2EY151J	6- 25	AA	N	C	
〃	6- 26	AA		C	
VRD-ST2EY152J	3- 72	AA		C	
VRD-ST2EY153J	3- 73	AA		C	
VRD-ST2EY182J	3- 74	AA		C	
VRD-ST2EY183J	3- 75	AA		C	
VRD-ST2EY221J	3- 76	AA		C	
〃	4- 25	AA		C	
VRD-ST2EY222J	3- 77	AA		C	
VRD-ST2EY330J	3- 78	AA		C	
VRD-ST2EY331J	3- 79	AA		C	
VRD-ST2EY332J	3- 80	AA		C	
〃	4- 26	AA		C	
VRD-ST2EY391J	3- 81	AA		C	
VRD-ST2EY431J	3- 82	AA		C	
VRD-ST2EY471J	3- 83	AA		B	
〃	4- 27	AA		B	
VRD-ST2EY473J	3- 84	AA		C	
VRD-ST2EY560J	3- 85	AA		C	
VRD-ST2EY561J	3- 86	AA		C	
〃	4- 28	AA		C	
VRD-ST2EY562J	4- 29	AA		C	
VRD-ST3AF224J	6- 22	AA	N	C	
VRS-PT3AB1R0J	6- 24	AA	N	C	
VRS-PT3DB683J	6- 33	AA	N	C	
VRW-KT3DC100K	6- 29	AC	N	C	
VSP0080P-608N	1- 17	AN		C	
VS2SA673-C/-1	4- 30	AE		B	
VS2SB739-C/-1	4- 31	AD		B	
VS2SC1213-D1A	6- 37	AC	N	B	
VS2SC1652-Q-1	8- 101	AC	N	B	
VS2SC2021-R-1	8- 102	AE	N	B	
〃	8- 103	AE	N	B	
〃	8- 104	AE	N	B	
VS2SC3150//-1	6- 36	AK	N	B	
VS2SC458KC/-1	3- 28	AD		B	
〃	4- 32	AD		B	
VS2SD788-C/EC	3- 29	AC	N	B	
〃	4- 33	AC	N	B	
〔X〕					
XBBSC30P06000	6- 14	AA		C	
XBBSC30P08000	6- 9	AA		C	
XBBSC30P10000	1- 11	AA		C	
XBPSD30P04K00	2- 14	AA		C	
XBPSE30P06K00	6- 21	AA	N	C	
XBPSE30P08KS0	6- 1	AB	N	C	
XBPSM30P06KS0	1- 12	AA		C	
〃	2- 15	AA		C	
XBPSM30P08K00	1- 13	AA		C	
〃	2- 16	AA		C	
XBTSD20P06000	7- 17	AA		C	
XRESJ40-06000	2- 6	AA		C	
XUBSD26P10000	2- 17	AA		C	
XUPSD26P06000	1- 24	AA		C	
XUPSD26P08000	2- 18	AA		C	
XUPSD30P08000	1- 14	AA		C	
〃	2- 19	AA		C	
〔0〕					
0CFD5000D////	7- 27	AG	N	C	
0CFD5799D////	7- 1	AF	N	C	
0CF0711C/////	7- 11	AA	N	C	
0CF1731A/////	7- 14	AF	N	B	
0CF3357A/////	7- 5	AA	N	C	
0CF3361A/////	7- 7	AB	N	C	
0CF3362A/////	7- 2	AB	N	C	
0CF3363A/////	7- 3	AD	N	C	
0CF3364A/////	7- 8	AA	N	C	
0CF3364B/////	7- 9	AA	N	C	
0CF3364C/////	7- 10	AA	N	C	
0CF387B//////	7- 13	BB	N	E	
0CF3876A/////	7- 12	BE	N	C	
0CF3876B/////	7- 18	AT	N	C	

PARTS CODE	NO.	PRICE RANK	NEW MARK	PART RANK	
0CF3876C/////	7- 19	AT	N	C	
0CF3876D/////	7- 20	AD	N	C	
0CF3876E/////	7- 21	AT	N	C	
0CF3876F/////	7- 22	AP	N	C	
0CF3876G/////	7- 23	AH	N	C	
0CF3876H/////	7- 24	AG	N	C	
0CF3876J/////	7- 25	AH	N	C	
0CF3876K/////	7- 26	AF	N	C	
0CF4906A/////	7- 6	AX	N	C	
0CF4976A/////	7- 16	AC	N	C	
0CF4988A/////	7- 15	AN	N	C	
0CF6303A/////	7- 4	AC	N	C	
VHiM2732/AC12	3- 92	BF	N	C	
QCNCW1012ACZZ	3- 93	AE	N	C	

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