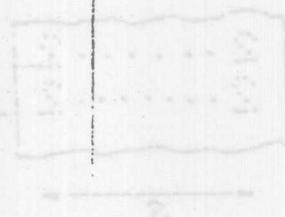


(1)

Specifications

Technical data	Printer type	5.24. 1979
	3 x 3 dot matrix	Basic characteristics
Tentative spec.	Video graphics response	Color of print out
	5 INCH PRINTER	Character size
	( " ) mm121	Number of lines
	( " ) mm2.5 = 9	Resolution
	Model No. EUY - 5 T	Model
	(Thermal)	
	( " ) mm301 = 3	Print width
	EUY - 5 E	
	(Electrosensitive)	

Note

1. Thermal printer

We can offer and supply you the thermal printer under the following condition;

1) Applications

The thermal printers offered and supplied to you shall not be applied for the following devices;

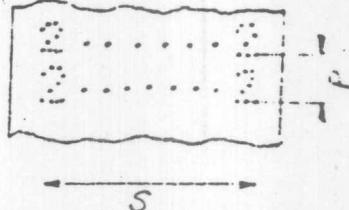
Electronic cash registers, point of service terminals or systems for retailstores and thermal printer equipment which statisfies specific military requirements of any country.

2) Destinations

The thermal printers are not authorized to be directly or indirectly sold to Rhodesia and communist countries.

2. Specifications are subject to change without notice for improvements.

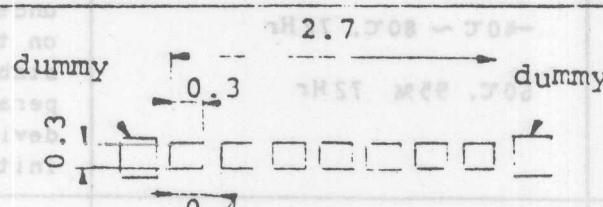
## Specifications

Item	Thermal type	Electrosensitive type
Print characters	7 x 5 dot matrix	
Type of print out	Alpha numerics, symbol and graphs	
Character size	Height 2.7mm ( 0.106" )	
Paper width	127mm ( 5" )	
Line pitch	$P = 4.5\text{mm} ( 0.177" )$	
Line width	$S = 103\text{mm} ( 4.055" )$	
Printing direction	From left to right	
Number of printed characters	cha. 32/L 40   64   80	32. 40. 64. 80 cha./L
Printing speed	0.8 L/S	2 L/S
Motor voltage	$\begin{array}{c} + \\ \ominus \end{array} 24\text{V DC}$	+5%
Timing signal	LED and photo transistor	
Printing head voltage	$\begin{array}{c} + \\ \ominus \end{array} 24\text{V DC}$	
Outside dimensions	Width 195 x Depth 70 x Height 65 mm	
Weight	Approx. 720g	
Paper	Number : TP-50CA (Jujo seishi co., Ltd.)	Number : RMP8146 (Bosch)
Motor current	Ave. 100mA	Peak 600mA

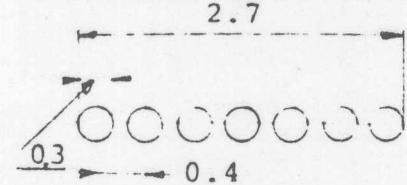
(1)

(2)

## Thermal head

ITEM	Specification	Remark
Type	Semi-conductive head	
Voltage	24V $\pm$ 5 %	
Pulse width	0.5 ~ 0.8 ms	Operating
Current	0.8 ~ 1.0 A/dot	
Applied energy	15mJ/ dot Max.	
Life (M C T F)	$15 \times 10^6$ characters	Recording paper Jujo : TP-50CA
Dot dimensions		

## Electrosensitive head

Item	Specification	Remark
Voltage	24V $\pm$ 10 %	
Pulse width	0.24 ~ 0.48m sec.	Best mode
Current	1.5A/dot (peak)	
Applied energy	0.5mJ/dot	
Life	$30 \times 10^6$ characters	
Dot dimensions		

## Remarks

As far as electrosensitive head, -24 v is preferable to apply compared with +24 v.

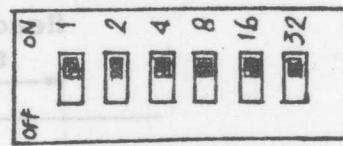
## . Life and Environmental Characteristics

Based on test

Item	Specifications	Remarks
Life expectancy	MCBF 1000,000 lines	Mean cycle between failure *
Operating environment	-5°C ~ 50°C RH 5.0 ~ 2.0 40°C, 90% RH AS\A 0.1 ~ 8.0 Max job \Lm2	The printer shall be subjected to 3 hours operation under the environment mentioned shown at the left. After the operation, the printer shall indicate no change from the initial requirements at a test in the same environment.
Storage environment	-40°C ~ 80°C, 72Hr 60°C, 95% 72Hr	The printer shall be subjected to a 72-hour storage under the conditions shown on the left. After 2 hours stabilization in room temperature, the subjected device must satisfy the initial requirements.
Vibration test	Frequency ..... 10 ~ 55 Hz Vibration width .... 1.5 mm Direction ..... X, Y, Z (2 hours/direction)	Based on test
Shock test	Half sine wave; 50G, 11m sec. each in the X, Y and Z direction	After subjected to the test, the printer shall indicate no change from initial requirements.

\* Replacement parts : Thermal head  
The sliding shaft requires lubricating oil.

## 7. DIP SW SETTING



$1 \frac{1}{2} 8 16 32 64$

FREQ.  
DIV.      CHAR/LINE

### EXAMPLE

(1) 32 CHAR/LINE  
(FREQ DIV =  $\frac{1}{2}$ )



(2) 40 CHAR/LINE  
(FREQ DIV =  $\frac{1}{2}$ )



(3) 64 CHAR/LINE  
(FREQ DIV =  $\frac{1}{1}$ )



(4) 80 CHAR/LINE  
(FREQ DIV =  $\frac{1}{1}$ )



### II CATION II

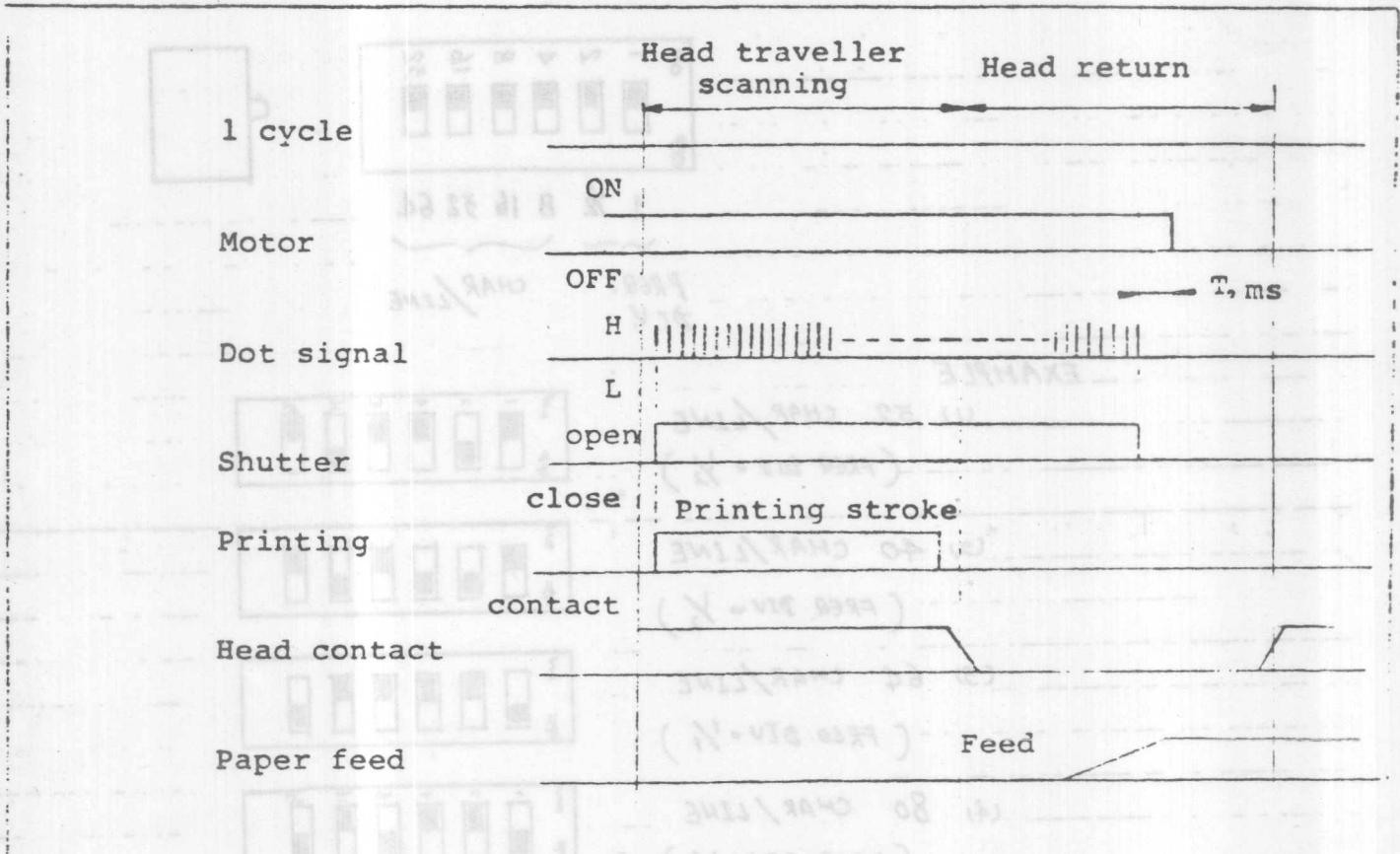
#### CHARACTER CODE CORRESPONDENCE

ASCII OR JIS C6220	INTERFACE CARD
b <sub>1</sub> (LSB)	DATA BIT 1 (LSB)
b <sub>2</sub>	2
b <sub>3</sub>	3
b <sub>4</sub>	4
b <sub>5</sub>	5
b <sub>6</sub>	—
b <sub>7</sub>	6
b <sub>8</sub> (MSB)	7 (MSB)

### EXAMPLE

A	ASCII	b <sub>8</sub> b <sub>7</sub> b <sub>6</sub> b <sub>5</sub> b <sub>4</sub> b <sub>3</sub> b <sub>2</sub> b <sub>1</sub>	HexCode41
		0 1 0 0 0 0 0 1	
		↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	
	DATA BIT (ACTIVE LOW)	1 0 1 1 1 1 0	
		DB 7 6 5 4 3 2 1	

## Timing chart



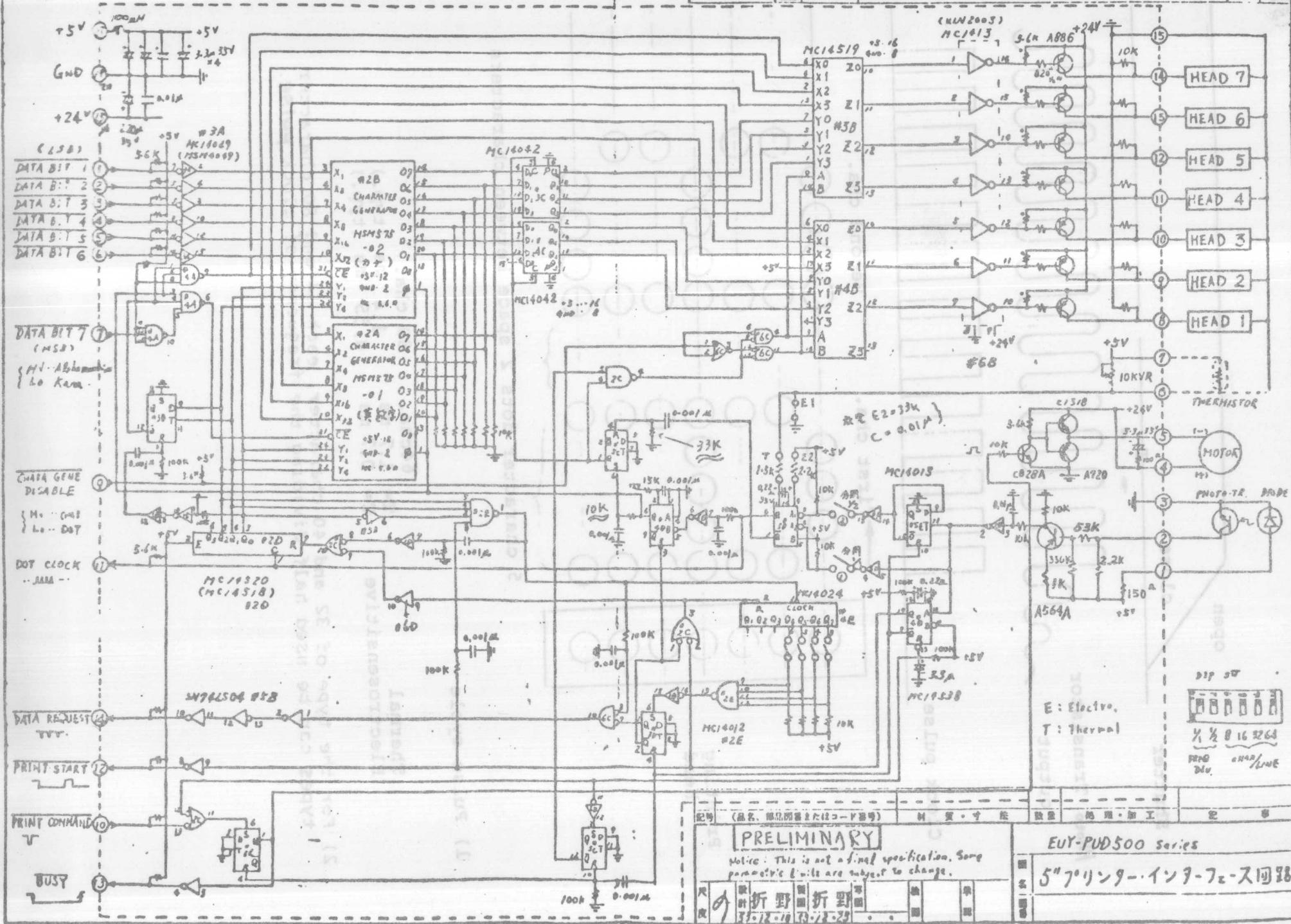
## Explanation

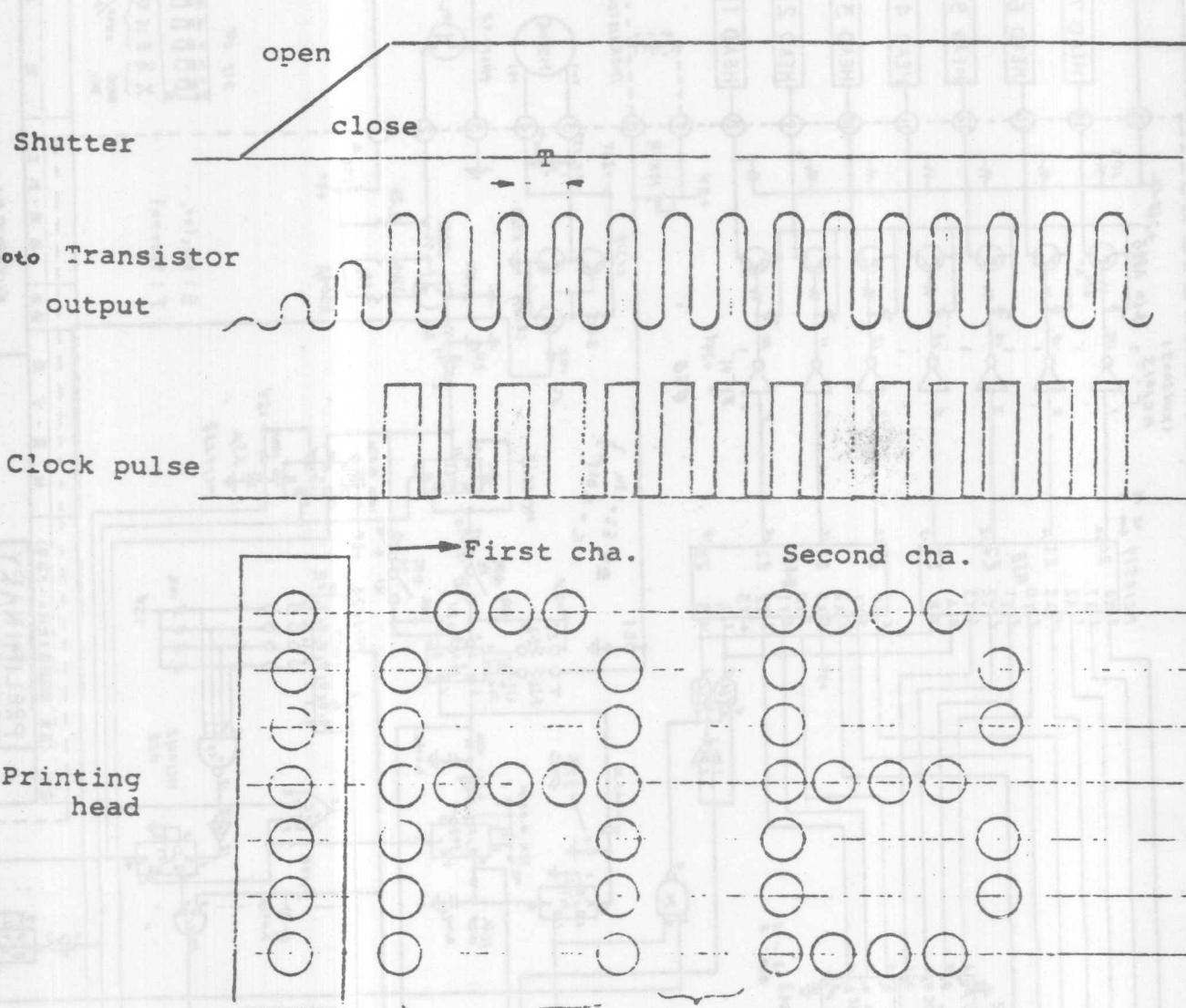
- 1) By command signal of motor "ON", motor starts to rotate and after a while, a shutter, which hinders a light of LED, opens at the motor rotation, (This shutter opening can be made by cam action) and print dot timing signal shall be generated from the photo transistor. This starting of dot timing signal corresponds to a print starting position.
- 2) Corresponding to the dot timing signal dot per dot, printing dot shall be generated and form character. Finished one line printing and after a while, head starts to move in the opposite direction.
- 3) At the return way, the head detaches from the recording paper, and one line paper space shall be fed and the motor stops.
- 4) Motor stop signal shall be generated when the shutter closes and dot timing signal stops and also continues such condition more than  $T, \text{ms}$ . Electrically, brake shall be applied.

Thermal To = 40ms  
Electrosensitive = 17ms

TENTATIVE CIRC'IT S.

5





1) Pulse cycle

	64cha.	80 cha.
Thermal	$T = 1.7 \text{ ms}$	$1.4 \text{ ms (typ.)}$
Electrosensitive	$T = 0.7 \text{ ms}$	$0.55 \text{ ms (typ.)}$

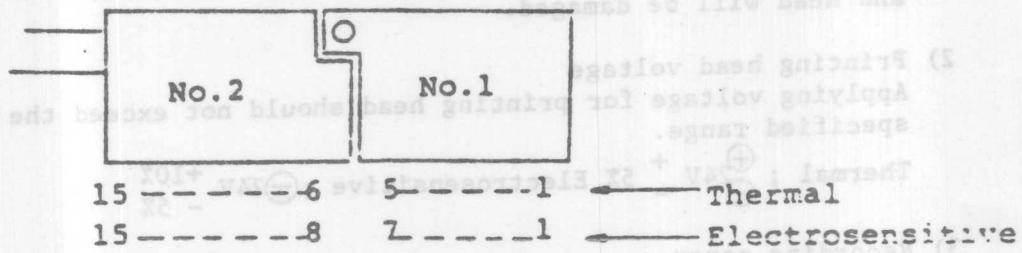
2) For the type of 32 and 40 character, each 64 and 80 character types can be used half dividing the frequency of clock pulse.

Selection of printer model  
Standard models are prepared in the following tables.

EU-Y-5		L	□	02
T	Thermal	64	64, 32 characters	
E	Electrosensitive	80	80, 40	"

#### Connector terminals

Printing circuit board, t=1.6mm



Connector AMPHENOL 225-21521-487

#### Connector terminals

Thermal Printer			Electrosensitive Printer		
No.	color code	circuits	No.	color code	circuits
1	Blue	LED (+)	1	Blue	LED (+)
2	Yellow	Photo Tr (+)	2	Yellow	Photo Tr (+)
No.1	3	White	3	White	LED, Photo Tr (-)
4	Red	Motor (+)	4	Red	Motor (+)
5	Black	" (-)	5	Black	" (-)
6	—	Thermistor (+)	6	Pink	E. Head COMMON (EARTH)
7	—	" (-)	7	—	
8	—	T. Head (1) (+)	8	—	E. Head (1) (+)
9	—	" (2)	9	—	" (2)
No.2	10	" (3)	10	—	" (3)
11	—	" (4)	11	—	" (4)
12	—	" (5)	12	—	" (5)
13	—	" (6)	13	—	" (6)
14	—	" (7)	14	—	" (7)
15	—	" COMMON (EARTH)	15	—	

Technical note of printer head

SO [ ] [ ] 3-YUE

Electrosensitive 5V ±5% 48  
0V 0V 0V

Inverted T  
Electrosensitive 5V ±5%

### Attention for usage

#### 1) Operation

Don't operate the printer without feeding the recording paper. If mistreated, nomal printing cannot be expected and head will be damaged.

#### 2) Printing head voltage

Applying voltage for printing head should not exceed the specified range.

Thermal ;  $\begin{array}{c} + \\ - \end{array}$  24V  $\begin{array}{c} + \\ - \end{array}$  5% Electrosensitive ;  $\begin{array}{c} + \\ - \end{array}$  24V  $\begin{array}{c} +10\% \\ -5\% \end{array}$

#### 3) Recording paper

It is recommended that you use Matsushita specified recording paper. If not, clear printing and long life cannot be guaranteed.

#### 4) Power failure

Printing head stops on the way of scanning simultaneously when the power is failed or turned off. The drive circuit shall be so designed by users as to have a printing head return to home position after power is turned on again.

#### 5) The capacity of power supply

Thermal printer ;  $\pm 24V$ , Min. 1A (with 2200 $\mu$ F)

Electrosensitive printer ;  $\pm 24V$  Min. 300mA (with 220 $\mu$ F)

#### 6) Thermal head

Thermal head composition is made of monolysic semiconductor and therefore circuit design, assembling and adjustment works shall be done so cautiously that a thermal head should not exposed to harmful impulses.

To protect a thermal head from harmful impulses,

- i) Turn "ON" ; +5V first and then +24V
- Turn "OFF" ; +24V first and then +5V

#### ii) Printing pulse width adjustment

Preferable printing pulse width range is indicated on each flat cable.

There are four kinds of printing head. These heads have each different resistance value and preferable pulse width according to its characteristics.

Type of heads	I	II	III	IV
Preferable pulse width (m. sec)	0.6-0.65	0.65-0.7	0.7-0.75	0.75-0.8

The preferable pulse width shall be adjusted by the following method.

The head terminal pc board (No.2) is disconnected from the connector and instead, a pc board with a 30K ohm resistor inserted into the connector.

Under the above mentioned condition, pulse width adjustment shall be done, followed by an exchange of a pc board with a resistor with the head terminal pc board (No.2) after completion of adjustment.

#### (Precaution)

If the pulse width shall be adjusted with the head terminal pc board connected, pulse width fluctuates sharply due to functional operation of a thermistor which is built in a printing head, eventually jeopardizing reading and proper adjustment.

#### 7) Paper roll installation

When paper roll is installed, its setting position shall be arranged so correctly that the paper shall be feeded in the paper feeding gate within a tolerance of  $\pm 1\text{mm}$ .

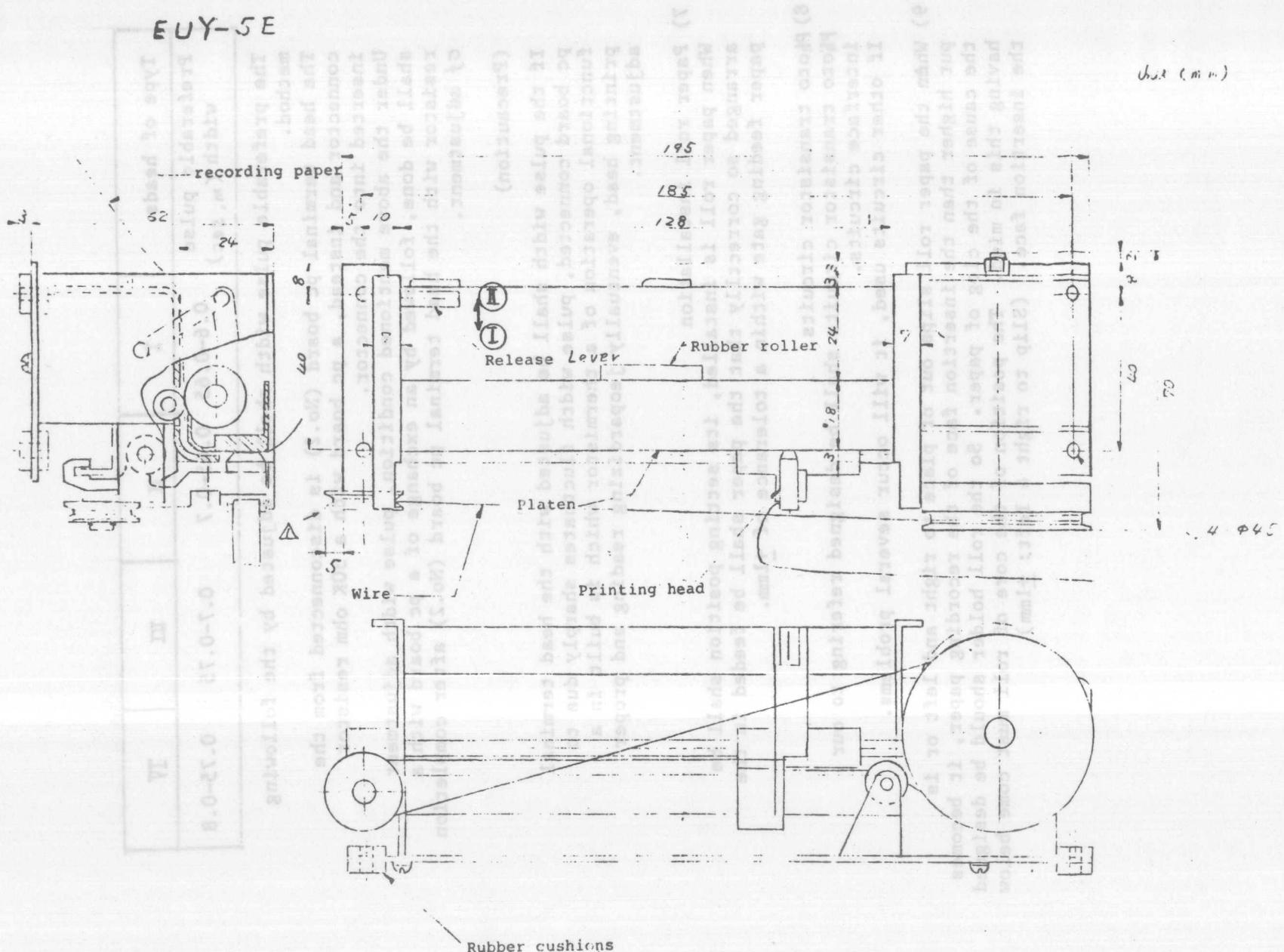
#### 8) Photo transistor circuits

Photo transistor circuits shall be designed referring to our interface circuits.

If other circuits used, it will occur several problems.

#### 9) When the paper roll slips out of place to right and left or is put higher than the insertion face of the recording paper, it becomes the cause of the clog of paper. So the roll holder should be designed having this in mind. The position of the core of roll must come below the insertion face. (Slip to right & left: $\pm 1\text{mm}$ )

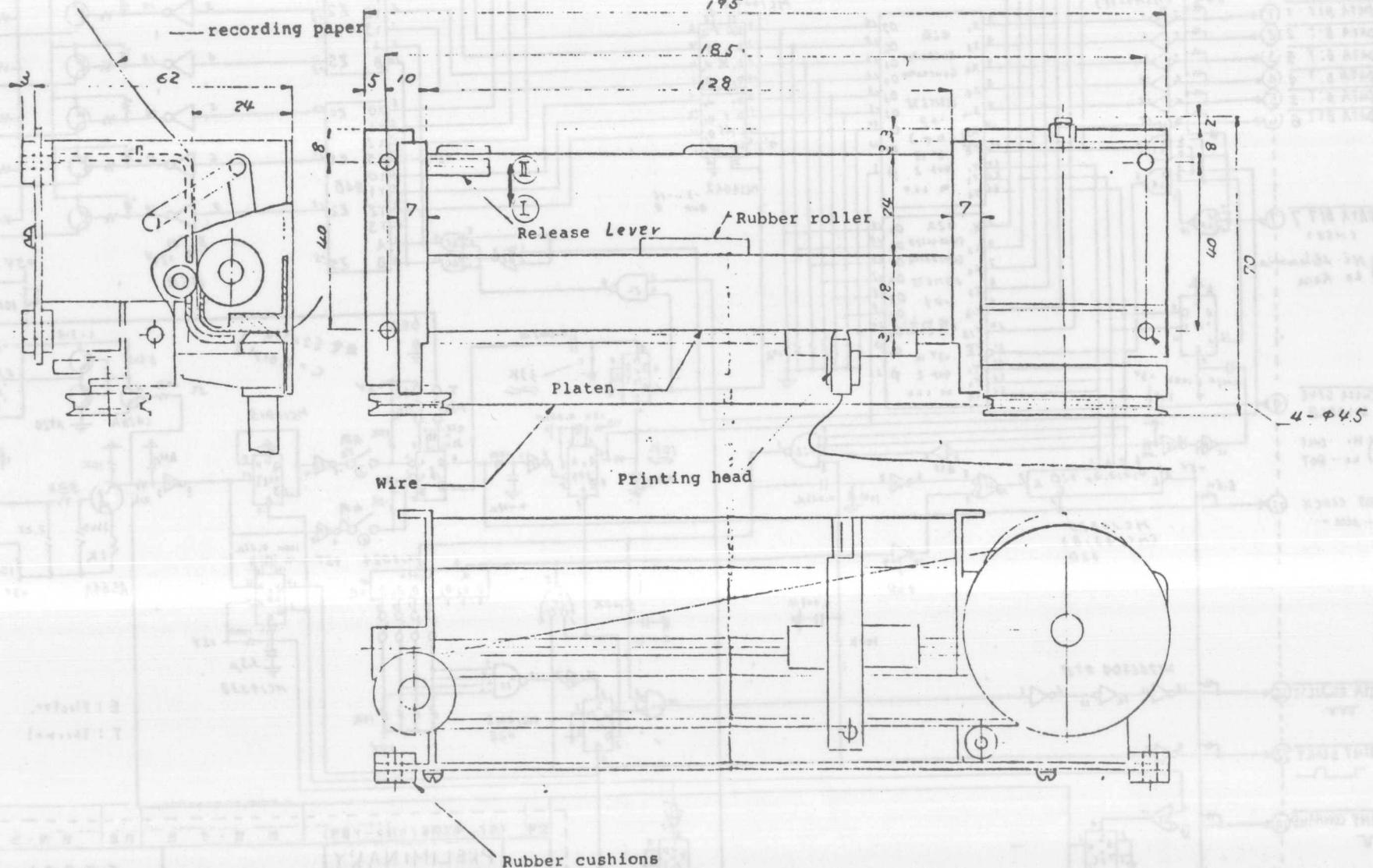
EUY-5E



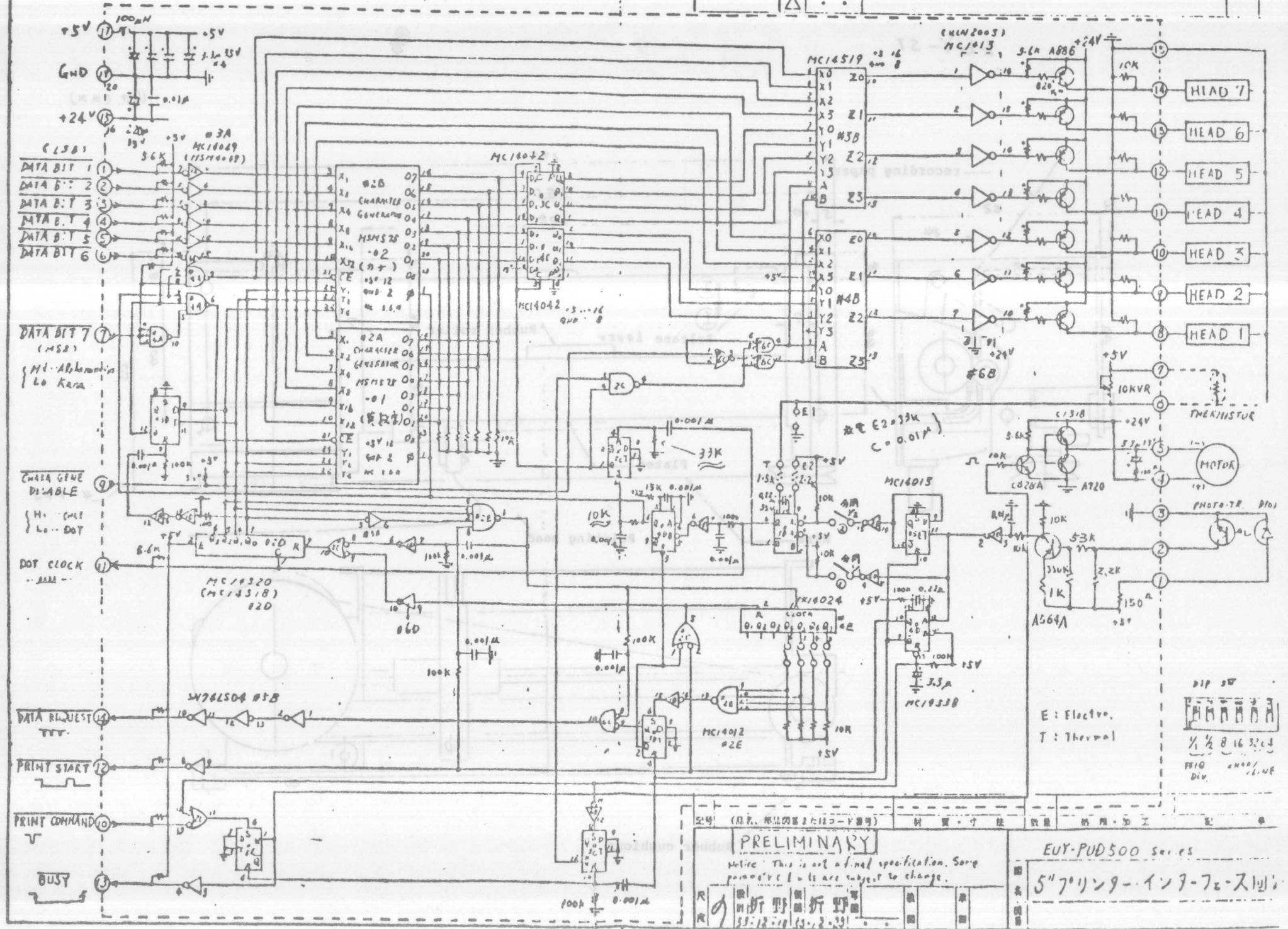
(10)

EUY-5T

Unit (mm)



TENTATIVE CIRCUITS.



ELIMINAR:

## PRINTER INTERFACE UNIT

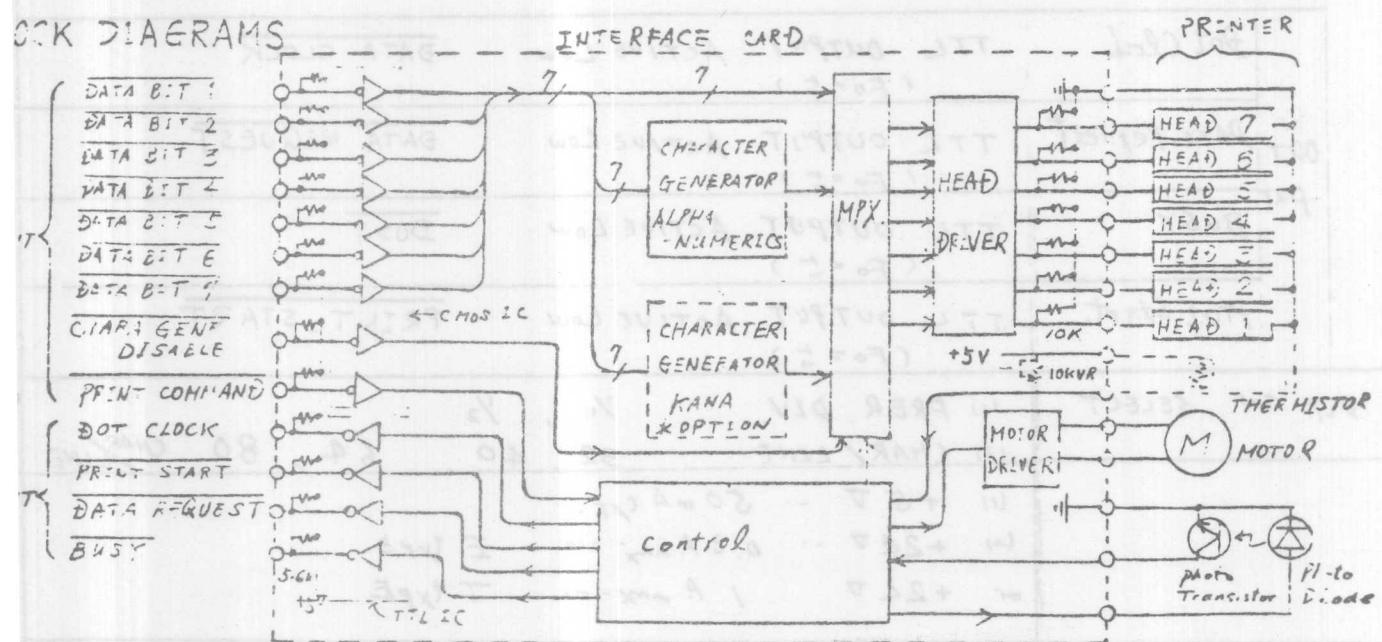
EUY-PUD 500 series for 5" PRINTER

### FEATURES

- Built in character generator (Alphanumeric, symbols and Kana)
- 7 bit parallel/byte serial data input
- Column/line selected by Dip SW
- TTL compatible
- Low power consumption

TYPE	INTERFACE CARD	PRINTER
ELECTROSENSITIVE	EUY-PUD 501 L EUY-PUD 502 L	EUY-5EL series Alphanumeric Kana
THERMAL	EUY-PUD 551 L EUY-PUD 552 L	EUY-5TL series Alphanumeric Kana

### BLOCK DIAGRAMS



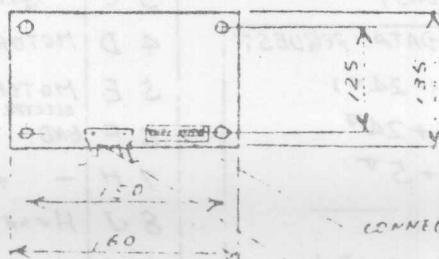
### DESCRIPTION

Pin No	Designation	Pin No	Designation	Pin No	Designation	Pin No	Designation
1	DATA BIT 1 (LSB)	11	DOT CLOCK	1 A	Photo-Diode (A)	11 M	Head 4
2	DATA BIT 2	12		2 B	PhotoTr (C)	12 N	Head 5
3	DATA BIT 3	13	BUSY	3 C	GND	13 P	Head 6
4	DATA BIT 4	14	DATA REQUEST	4 D	MOTOR (+)	14 R	Head 7
5	DATA BIT 5	15	(+24V)	5 E	MOTOR (-), ELECTRO. THERMAL	15 S	GND
6	DATA BIT 6	16	+24V	6 F	GND		
7	DATA BIT 7 (MSB)	17	+5V	7 H	-		
8		18		8 J	Head 1		
9	Character Disable	19	GND	9 K	Head 2		

#### 4. SPECIFICATION

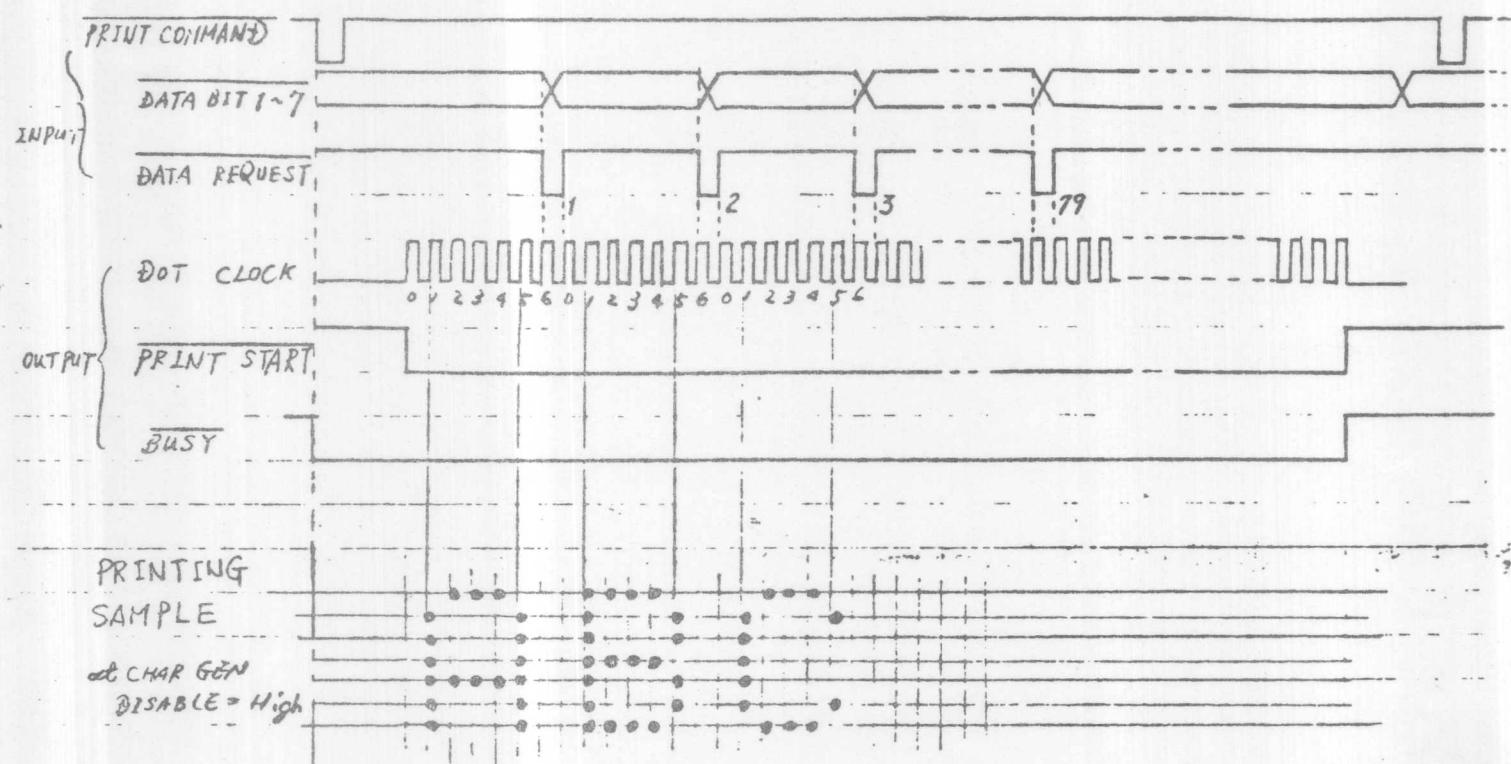
PRINTER	EUY-5EL or EUY-5TL series		
FREQ. DIVISION	1/2	1/1	
CHAR./LINE	32 CHAR/line	40 CHAR/line	64 CHAR/line
PRINTING PULSE	E type -- 0.2 ms typ., T type -- 0.3 ~ 0.8 ms controlled		
CHARACTER SET	Alphanumerics and symbols -- 64 CHAR. Kana and symbols --- 64 CHAR. (option)		
CHARACTER CODE	ASCII, JIS-C6220		
DATA INPUT	7 Bit-parallel / Byte serial		
DATA	(1) Direct dots pattern (7 dots) input for graphic print (2) CHARACTER Code input		
	7 Bit Data Input	CMOS INPUT	ACTIVE LOW
IN	CHARA. GEN.	CMOS INPUT	ACTIVE LOW
	Disable		CHAR GEN DISABLE
-put			
	Print Command	CMOS INPUT	ACTIVE LOW
			PRINT COMMAND
	Dot Clock	TTL OUTPUT	ACTIVE LOW
		( $F_0 = 5$ )	DATA CLOCK
OUT	DATA Request	TTL OUTPUT	ACTIVE LOW
		( $F_0 = 5$ )	DATA REQUEST
-put	BUSY	TTL OUTPUT	ACTIVE LOW
		( $F_0 = 5$ )	BUSY
	Print Start	TTL OUTPUT	ACTIVE LOW
		( $F_0 = 5$ )	PRINT-START
DIP. SW SELECT	(1) FREQ. DIV.	$y_1, y_2$	
	(2) CHAR/LINE	32, 40, 64, 80	CHAR/LINE
	(1) +5V -- 50mA typ.		
	(2) +24V -- 0.3 A max --	E type	
	or +24V 1 A max --	T type	

PC Board



CONNECTOR 2256-21521-487 for PRINTER

## 5. TIMING ( 80 CHAR./LINE )



## 6. PRINTING PROCEDURE

