

COMPUTER PORTRAITS
OPERATORS MANUAL

Pacific Novelty Mfg. Inc.
4094 Glencoe Ave.
Marina del Rey, Ca. 90291
(213) 822-0399

Theory of op 11

Power up 13
& LEDs

DIP SW 8 ADVANCED SEQUENCES 15

GAME off-on → IP 4 16

CODE Functions 18
19

VEND PRICE 2

EDITOR 3
step by step

FIMISHED 7

WHAT IF'S? 8

SPECIAL KEYS 9

Vend CYCLE TIME 10

Theory of OP 11

Setting up your Computer Portrait Machine

Enclosed with your machine is unpacking instructions

READ UNPACKING INSTRUCTIONS FIRST!

Once the machine has been unpacked, you may customize the price and appearance of you pictures.

Setting Vend Price

Looking at the front of the electronics package you will notice that there are two opening in the front of the cage. The top one is used to view the diagnostic LED's. The bottom one allows access to the two dip switches which control option on the game.

The left bottom dipswitch is used to control the pricing of the vended picture in addition to other functions.

Below are the available options:

Free pictures	0XX00000
00 cents per picture	0XX00000
25 cents per picture	0XX00001
50 cents per picture	0XX00010
75 cents per picture	0XX00011

These two switches control quarters per picture

1.00/picture	0XX00100
2.00/picture	0XX01000
3.00/picture	0XX01100
4.00/picture	0XX10000
5.00/picture	0XX10100
6.00/picture	0XX11000
7.00/picture	0XX11100

These three control dollars per picture

If you want to make your pictures mixed amounts, say \$2.50 then you turn on the switches for 2.00 per picture and those for 0.50 per picture.

Example: \$2.50/picture

0XX01010

\$1.00 x x 00100

- X - Switch position does not affect this function
- 0 - Off
- 1 - On

CUSTOMIZATION EDITOR

One of the outstanding features of the COMPUTER PORTRAIT machine is the ability to personalize the machine for the location. To do this we have created a computer program called an EDITOR. This program allows you to:

1. Put in new messages
2. Edit existing messages
3. Completely erase all messages

Putting your message in the machine

Steps to put message in machine:

1. Write your message out on a preprinted form supplied supplied with the machine. This helps you to center and compose your message.
2. Follow the instructions below on how to enter your your message in the machine.
3. It is very important to realize that you need not use or learn the information in the section entitled:

Going further with the editor

in order to put a message on the screen. However, knowledge of this information makes entry and appearance of your messages easier and makes them look better.

4. Don't worry about hurting the machine - the worst thing that can happen would be that your message would come out wrong. In which case you can reenter your message again.

Step By Step Procedure To Edit Message

Looking at the front of the electronics package, you will notice that there are two opening in the front of the cage. The top one is used to view the diagnostic LED's. The bottom opening in the electronics cage, allows access to the two dip switches which control options in the game.

1. Locate the bottom dip switch on the left side of the machine and turn it to the ON position.

Dipswitch (TOP) XXXXXXXX

Dipswitch (bottom) 1XXXXXXX

^ Turn this one on.

Key to symbols used to represent position of switches

X - Switch position does not affect this function
0 - Off
1 - On

2. Turn your machine OFF then ON.

3. Your screen should then look like this:

VER 2.0
OPERATOR
COMMAND:

4. Wait ten (10) seconds for the CMOS board (this board holds the messages) to reset.

5. Type the following message in at the keyboard:

CM4

6. Your screen should look something like this:

MESG. EDIT 1.0

-

NORMAL KEYS

It is OK if you find a message in this area. The message you are reading (if any) was the previous message stored in the machine.

6A. ERASEING THE OLD MESSAGE -

In order to erase the previous message press the following keys:

ZZ

The screen should now appear as shown in section 6 (all blank).

7. If any other message should occur (i.e. Bad memory) try to use the board if the machine gives you the option. This message can occur because the battery in your machine may have discharged during shipment. If you get the message:

CMOS BOARD NOT AVAILABLE

Either your board is

- A. Unplugged
- B. Defective
- C. You did not wait ten seconds after the game was switched on before typing CM4.

8. Now a little explanation of the screen itself.

- A. The first line tells which version of the editor you are using (version 1.0).
- B. The line located in the upper left hand portion of the screen (_) points to where the next letter will be stored.
- C. At the bottom of the screen you will see:

Normal Keys
or
Special Keys

This tells you whether you are typeing letters or punctuations and numbers.

The message area consists of 6 lines of 14 characters each

```
Line1      -----  
Line2      -----  
Line3      -----  
Line4      -----  
Line5      -----  
Line6      -----  
           Normal Keys
```

9. You can now type in your message. Use your layout sheet as a guide to what letters go where. To provide spaces and other features use the keys marked 1 2 3 4 as follows:

- 1 - Act like a space bar on a typewriter
- 2 - Changes from letters to punctuation (SPECIAL KEYS)
- 3 - Backspace, Erases last letter
- 4 - Finished editing message (LAST KEY TO HIT)

Enter your message using the keys 1,2 and 3 to edit in the message. You use the keys A thru Z to spell out the message.

FINISHED PUTTING IN YOUR MESSAGE

10. When your message is complete press the key marked '4'.

11. After pressing '4' your screen should look like:

```
VER 2.0  
OPERATOR  
COMMAND:
```

CM
-

12. If you want to reedit that last message just type '4'

If you are all done, place switch 8 on the bottom dip switch in the OFF position. Press any key to start the game.

12. If you want to reedit that last message just type '4'

If you are all done, place switch 8 on the bottom dip switch in the OFF position. Press any key to start the game.

WHAT IF'S ?

1. What if I make a mistake?

Press the 3 key to backspace over your error.

2. What do I do when I reach the end of the line?

The editor will place you at the beginning of the line below.

3. What happens when I reach the last line and last character on the screen?

The editor will 'wrap around' and put you at the top line and first character position.

4. Suppose I get through the whole message and I notice that after all of that typeing I made a stupid spelling error, do I have to put that whole message in again?

NO. by using the special function keys you can put the cursor (that underline thing) below the letter(s) you want to change and switch back to normal keys to enter the proper message. SEE SECTION ON GOING FURTHER WITH THE EDITOR.

5. OK.... You got all of those but here comes a real tough one--- What if I start entering a message and I realize that I really did not want to change anything about the message. How do I escape without reentering the old message.

Easy, If you haven't hit the 4 key - just

- A. Shut the machine off
- B. Place switch 8 on the bottom Dip switch OFF.
- C. That's it. Your original message is still there.

Going further with the editor

1. By pressing Key '2' you can change to special key mode. When you are in this mode the keys from A to Z are used for other purposes - the first four keys 1,2,3 and 4 still do the functions.

2. When in SPECIAL KEYS mode the keys correspond to the following:

NORMAL KEYS: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

SPECIAL KEYS: 0 1 2 3 4 5 6 7 8 9 , , ! * \$ + - / () & .

 ^ ^ ^ ^ See table below ^

None erasing movement of cursor
(Next typed letter - used to edit existing message)

K	Move cursor to left	M	Move cursor up
L	Move cursor to right	N	Move cursor down

Special clear Key

Z

This key when pressed erases the last message completely and free all space for a new message.

3. To return to normal keys mode press the '2' key and type as normal.

4. To Save your new message from either special or normal keys mode press key '4'.

5. To exit the entire command mode and return to normal game function: shut switch 8 off on the bottom dip switch and press any key.

ADJUSTING VEND CYCLE TIME

Letters per picture:

During normal operation of the COMPUTER PORTRAIT machine the patron is allowed to enter up to 14 letters to customize their picture. In addition they may erase bad entries as well as add in spaces.

Another option exists which allows only eight (8) characters to be entered for the message. In addition none of the special function keys work - that includes erase question mark and backspace.

Time to enter letters:

To control these options locate the top DIP SWITCH accessible from the cut-out in the electronics package. The following switches control as shown:

XXXXXX00	60 seconds for message
XXXXXX01	30 seconds for message
XXXXXX10	20 seconds for message
XXXXXX11	00 seconds for message
	Use for no message from player (FAST PICTURE CYCLE)
XXXX00XX	14 characters per message with Space bar, Question mark, delete and message done.
XXXX01XX	14 full characters per message with space bar only
XXXX10XX	14 full characters per message with no spaces or control
XXXX11XX	8 full characters per message with Done Key

X - don't care
1 - ON
0 - OFF

Example: 14 Characters and 20 seconds to enter message with no control - set the top Dipswitch as follows:

XXXX1010	14 full characters per message with 20 seconds to enter message
----------	--

Computer Portraits
Theory of Operation

The Computer Portrait device consists in it's most fundamental form as the following three elements:

CAMERA -----> COMPUTER -----> PRINTER

The CAMERA takes an electronic snapshot of the subject which is sent to the COMPUTER which processes the image. The COMPUTER then sends the processed image to the PRINTER.

What circuit boards are used in the Computer Portrait machine?

- A. CPU Board
- B. Video Board
- C. Printer Board
- D. Cmos Board

What does each of these boards do in general?

CPU Board

The CPU board (Central Processing Board) contains the following units:

1. Microprocessor
2. Memory Elements (Roms and Rams)
3. Control circuitry to direct the other boards
4. Coin Control circuits
5. Keyboard circuits
6. Diagnostic commands

Video Board

The Video board contains the following elements:

1. Digitizer to convert from analog to digital video
2. Memory for picture storage
3. Display Generator
4. Synchnization circuitry to lock camera to board
5. Circuitry to allow communications to the CPU board

Printer Board

Your printer board performs the following functions:

1. Control of the Printer mechanism
2. Paper roll control
3. Optical and standard sensor input
4. Paper cutter control

Cmos Board

1. Storage of heading message so that machine can be powered down for extended periods of time without losing messages or other information.

Power up test program

When your machine is first powered up it goes through an exhaustive battery of self-tests before the patron is allowed to deposit their money. The tests are broken down into three categories:

1. CPU board test
2. Video board test
3. Printer board test

Located on the CPU board you will see the following pattern of light illuminated during normal operation of the game:

* * * *
* * * *

The light are numbered as follows:

5 6 7 8
1 2 3 4

When you first power up the game you will see these lights blink on and off a few times and then move to the next light. When the test has been completed you will notice that all of the lights are left illuminated without any blinking.

The blinking signals that a special test is in progress. If any of the internal tests fails, the light will blink rapidly in time with light 8 and will not stop blinking nor will advance till the power or problem is removed.

The following chart defines what each of these lights means:

1. Static Ram test - Tests the 6 2114 Static rams located on the CPU board. If any of them are bad light 1 and 8 will blink.
2. Rom test - Checks that the contents of the program memory used to control the game are intact (No wrong or incomplete instructions).
3. Video Ram Test - Checks for the existence of working memory on the Video Board. If the Video board is unplugged or there is a problem with communications to this board this test will cause light 3 and 8 to blink together.

4. Video board generated Interrupt test - Checks that the signals sent to the camera as well as the TV monitor are of the correct length. If it finds that these signals are out of specification, it will try to correct. If not possible lights 4 and 8 blink together.

These test and others that follow are intended to both protect the operator as well as the patron. For the operator, if the program contained within the computer were to be defective, severe damage could result to the Printer board as it contains numerous high voltage/current driver circuits.

HIGH LEVEL TESTING

Once we have verified that the foundation of the machine is O.K. we then begin to test each system in the machine. The first test is the printer motor and positioning circuit. Under normal operation you will notice that the head may move back and forth a number of times when power is first applied. This motion is intended to reference the position of the head as it passes over different sections of the picture.

After the print head is placed in it's 'HOME' position, the paper cutter is tested. The paper cutter test causes the cutting assembly to go from one side of the mechanism to the other to verify the reliability of the cutter and it's driver circuitry.

Once the paper cutter has been completely tested (about 30 seconds) the game will 'sign-on' with the version of the software used in your version of the game. Once this sign-on is completed the game is ready to accept money.

Advanced Test Sequences

Looking at the front of the electronics package you will notice that there are two openings in the front of the cage. The top one is used to view the diagnostic LED's. The bottom one allows access to the two dip switches which control options on the game.

The bottom dip switch allows you to access the diagnostics supplied with your Computer Portrait machine. In addition to diagnostics, you also enter your messages for customization by throwing this switch.

To turn on diagnostic panel:

1. Change bottom dip switch position 8 to the ON position.

1XXXXXXXX

2. Turn your game OFF then ON.

Your screen should look like this:

```
VER 2.0  
OPERATOR  
COMMAND:
```

IMPORTANT POINT COMING UP-----

Talking with the computer

At this point you are in direct communications with the computer located in machine. All communications with the machine are made through the keyboard used normally for the patron to enter their name or whatever. Your commands to the computer are echoed in the center of the screen and are acted upon only after you have pressed the 4 key located on the left side of the keyboard.

Escaping the computer

If at any time you wish to exit this mode you can do so by switching switch 8 from the on to the off position and pressing any key on the keyboard. The computer will then revert to the normal game sequence.

This mode was put into your machine to make servicing a breeze. The computer acts as a servant switching things on and off based on your direct command codes.

As an example, let's say you would like to display the checksums of the roms used in your game. To do this, get into the mode shown on the last page and type in the following sequence:

CS4

On the screen you will see :

CHECKSUMS

```
00 12345
01 23456
```

IMPORTANT! To exit this routine, press and hold down any button while this procedure is working. Upon exiting, you should be back in the command mode. You can always enter a new command when in the command mode no matter what the last command was. The old command will be overwritten on the screen.

EVEN MORE IMPORTANT!

Certain commands require that you must have executed the command 'IP' before they will work. These commands mostly apply to turning things on and off. We strongly suggest that your first command in the command mode is:

IP4

Which initializes things. If you are just editing messages this step is not needed.

Some practical application of the command system

Functions and adjustment of the Video board: -----

The video board takes the images generated from the TV Camera and stores the picture information for retrieval by the CPU board (COMPUTER). In addition it displays the picture information via a TV monitor. Information for display can range from messages to the image of the patron as he~~er~~ (or she) poses for the picture.

Note that there are only two adjustments on the board which are factory set ~~to set~~ the gain and offset for the picture digitizer. The digitizer is a device to convert TV type signals into numbers which can be stored internally on the board as well as be accessed by the CPU board. We suggest that you do not make any adjustments to these controls.

The following test sequences will help you set up the VIDEO board should you decide you might like to adjust focus on the camera.

SET UP:

Make sure switch 8 on the bottom Dip Switch is closed

Type: IP4 (Initialize printer board)

Type: L04 (Lights ON command)

Type: P04 (Pose On)

You can now adjust your camera and monitor. If necessary you may adjust the video board At this point.

How the heck to shut this mode down?

1. Pressing any key will cancel the pose mode
2. To shut light off Type: LF4 (Light off command)

Command Table Summary

Command Code -----	Function -----
CM	Cmos (personalized message) board editor Used to change message at top of picture
CS	Display Checksums of Roms used in Game
CB	Color Bar display generator Used to set-up Television monitor
CC	Continuous Color Bar writes to screen Used to test writing ability to video board.
PO	Pose mode Turns camera on and displays data on screen Used to set up camera focus and other adjustments
CL	Move cutter to left till stop encountered
CR	Move cutter to right till stop encountered
PA	Paper advance Causes printer mechanism to feed paper
IP	Initialize printer and control hardware <u>Must be first command executed on power-up if any printer or external devices are activated</u>
P1	Printer pattern generator to display all of the hammers in sequence
X1	Printer burn-in test (factory use) At 15 minute intervals four pictures of a color bar pattern (grey scale) and the serial number of the picture are printed
X2	Printer burn-in test (factory use) At 15 minute intervals four pictures of the contents of the booth (digitized) and the serial number of the picture are printed
CO	Coin acceptors ON - turns on chute lights and lock-out coils on coin acceptors as well as enabling Bill acceptor.

CF Coin acceptors OFF - turns off chute lights and lock-out coils on coin acceptors as well as disabling Bill acceptor.

LO Posing lights ON - turns on high intensity lights used to illuminate patron when camera is on.

LF Posing lights OFF - turns off high intensity lights used to illuminate patron when camera is on.

MO Turn Paper motors enable on (stock, carbon, take-up)

MF Turn Paper motors enable off (stock, carbon, take-up)

IB Initialize Printer Board. Does not Self-test sequence as in IP.

VR Version Number display - Shows what version of photo machine software you are currently using.

TR Test Rom start up - Activates the extensive internal hardware test used when the machine is first powered up. The results of any failures are displayed on the eight RED LED's (LIGHT EMITTING DIODES) visible through the side of the electronics package. If you see two flashing LED's blinking then refer to the section on the TEST ROM.

COMPUTER PORTRAIT
OPERATOR'S MANUAL

PACIFIC NOVELTY MFG. INC.
4094 Glencoe Avenue
Marina del Rey, CA 90291

(213) 822-0399

All information contained herein is proprietary to P.N.M. INC.

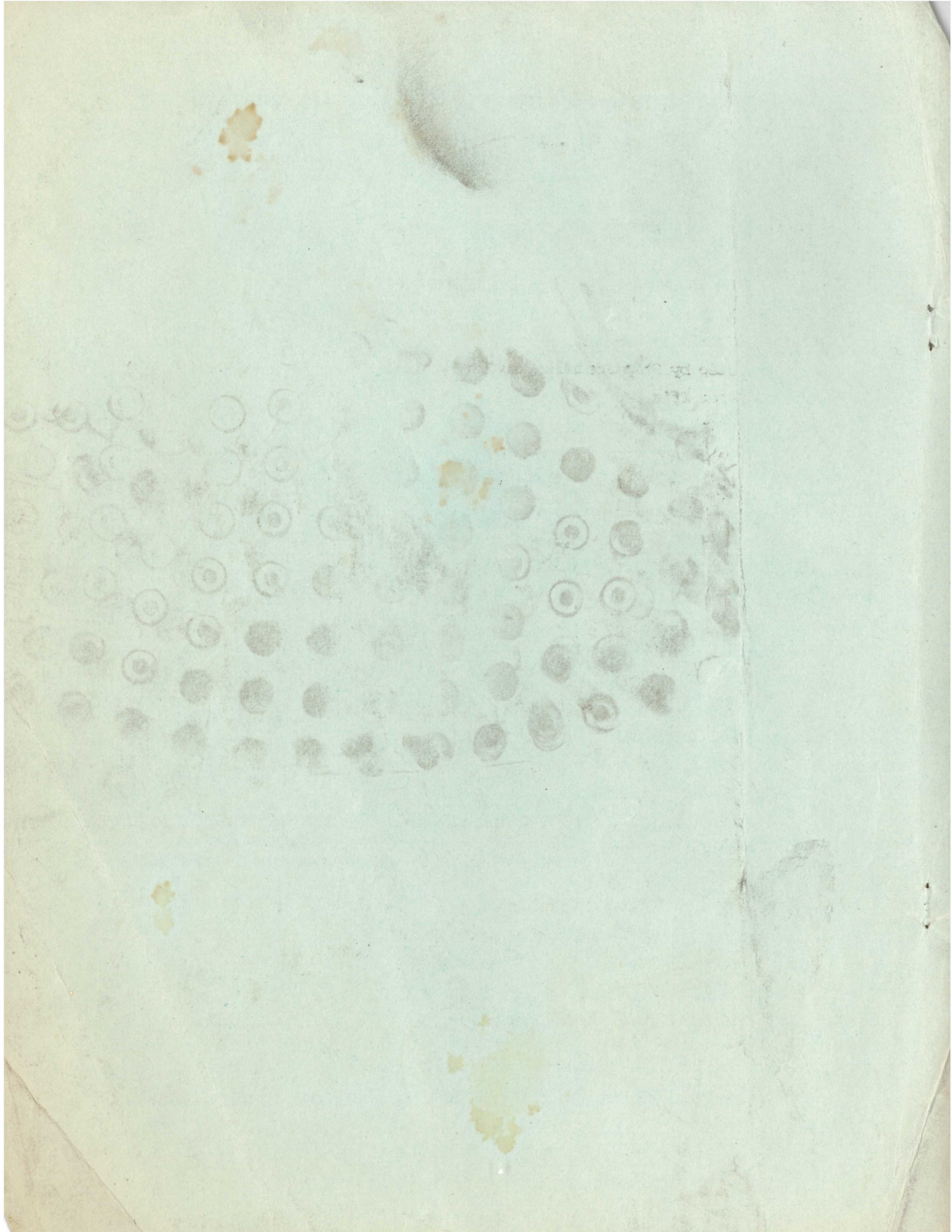


TABLE OF CONTENTS

Section I	<u>OPERATION OF THE COMPUTER PORTRAIT</u>	<u>Page No.</u>
I.	Setting up your Computer Portrait	1
II.	Setting Vend Price	1
III.	Customization Editor	2
IV.	Step by Step Procedure to Edit Message	3
V.	What If's	7
VI.	Going Further with the Editor	8
VII.	Adjusting Vend Cycle Time	9
VIII.	Computer Portrait Theory of Operation	10
IX.	Power up Test Program	12
X.	Advance Test Sequences	14
XI.	Functions and Adjustment of the Video Board	17
XII.	Command Table Summary	18
Section II	<u>TEST PROCEDURES</u>	
I.	Preliminary Instructions	21
II.	CPU Board Check	21
III.	Board Test	22
IV.	Monitor Adjustment	23
V.	Flood Lights Used for Picture Taking	23
VI.	Camera Adjustment	24
VII.	CMOS Board Test	24
VIII.	Test Coin Enable Circuit	25
IX.	Paper Feed/Take-up Drive Motor Drive	26
X.	Align Paper in Printer Mechanism	26
XI.	Testing Paper Advance	27
XII.	Testing Paper Cutter Mechanism	27

TABLE OF CONTENTS
(continued)

	<u>Page No.</u>
Section II (Continued)	
XIII. Proper Homed Positions for Cutter Assembly	28
XIV. Prealignment of the Printer Mechanism	29
XV. Adjusting the Storage Sensors	30
XVI. Adjusting Power to Printer Hammers	31
Section III <u>GENERAL PROCEDURE FOR HANDLING OUT OF ORDER CONDITIONS</u>	
I. Procedures	33
Section IV <u>MESSAGE DESIGN FORM</u>	39
Section V <u>COMPUTER PORTRAIT SCHEMATICS</u>	41

SECTION 1

OPERATION OF THE COMPUTER PORTRAIT MACHINE

2011

REVISION OF THE SUPPLEMENTAL FACTS

I. Setting up your Computer Portrait Machine

Enclosed with your machine is unpacking instructions.

READ UNPACKING INSTRUCTIONS FIRST:

Once the machine has been unpacked, you may customize the price and appearance of your pictures.

II. Setting Vend Price

Looking at the front of the electronics package you will notice that there are two opening in the front of the cage. The top one is used to view the diagnostic LED's. The bottom one allows access to the two dip switches which control option on the game.

The left bottom dipswitch is used to control the pricing of the vended picture in addition to other functions.

Below are the available options:

Free pictures	OXX00000
00 cents per picture	OXX00000
25 cents per picture	OXX00001
50 cents per picture	OXX00010
75 cents per picture	OXX00011

These two switches control quarters per picture:

1.00/picture	OXX00100
2.00/picture	OXX01000

3.00/picture	OXX01100
4.00/picture	OXX10000
5.00/picture	OXX10100
6.00/picture	OXX11000
7.00/picture	OXX11100

These three control dollars per picture:

If you want to make your pictures mixed amounts, say \$2.50 then you turn on the switches for 2.00 per picture and those for 0.50 per picture.

Example: \$2.50/picture OXX010010

X - Switch position does not affect this function

0 - Off

1 - On

III. Customization Editor

One of the outstanding features of the COMPUTER PORTRAIT Machine is the ability to personalize the machine for the location. To do this we have created a computer program called EDITOR. This program allows you to:

1. Put in new messages
2. Edit existing messages
3. Completely erase all messages

Putting your message in the machine

Steps to put message in machine:

1. Write your message out on a preprinted form supplied with the machine. This helps you to center and compose your message.

2. Follow the instructions below on how to enter your message in the machine.
3. It is very important to realize that you need not use or learn the information in the section entitled:

"Going further with the Editor"

in order to put a message on the screen. However, knowledge of this information makes entry and appearance of your messages easier and makes them look better.

4. Don't worry about hurting the machine - the worst thing that can happen would be that your message would come out wrong. In which case you can reenter your message again.

IV. Step by Step Procedure to Edit Message

Looking at the front of the electronics package you will notice that there are two opening in the fron of the cage. The top one is used to view the diagnostic LED's. The botton opening in the electronics cage, allows access to the two dip switches which control options in the game.

1. Locate the botton dip switch on the left side of the machine and turn it to the ON position.

Dipswitch (TOP) XXXXXXXX

Dipswitch (BOTTON) 1XXXXXXXX

Turn this one on.

Key to symbols used to represent position of switches

X- Switch position does not affect this function

O- Off

1- On

2. Turn your machine OFF then ON.
3. Your screen should then look like this:

```
VER 2.0  
OPERATOR  
COMMAND:
```

4. Wait ten (10) seconds for the CMOS board (this board holds the messages) to reset.
5. Type the following message in at the Keyboard:

```
CM4
```

6. Your screen should look something like this:

```
MESG. EDIT 1.0
```

NORMAL KEYS

It is OK if you find a message in this area. The message you are reading (if any) was the previous message stored in the machine.

6A. Erasing the Old Message -

In order to erase the previous message press the following keys:

```
2Z
```

The screen should now appear as shown in section 6 (all blank).

7. If any other message should occur (i.e. Bad memory) try to use the board if the machine gives you the option. This message can occur because the battery in your machine may have discharged during shipment. If you get the message:

```
CMOS BOARD NOT AVAILABLE
```

Either your board is:

- A. Unplugged
- B. Defective
- C. You did not wait ten seconds after the game was switched on before typing CM4.

8. Now a little explanation of the screen itself.

- A. The first line tells which version of the editor you are using (version 1.0).
- B. The line located in the upper left hand portion of the screen (_) points to where the next letter will be stored.
- C. At the bottom of the screen you will see:

NORMAL KEYS
or
SPECIAL KEYS

This tells you whether you are typing letters or punctuations and numbers.

The message area consists of 6 lines of 14 characters each

Line 1	-----
Line 2	-----
Line 3	-----
Line 4	-----
Line 5	-----
Line 6	-----

Normal Keys

9. You can now type in your message. Use your layout sheet as guide to what letters go where. To provide spaces and other features use the keys marked 1 2 3 4 as follows:

1. - Act like a space bar on a typewriter
2. - Changes from letters to punctuation (SPECIAL KEYS)
3. - Backspace, Erases last letter
4. - Finished editing message (LAST KEY TO HIT)

Enter your message using the keys 1, 2 and 3 to edit in the message. You use the keys A thru Z to spell out the message.

FINISH PUTTING IN YOUR MESSAGE

10. When your message is complete press the key marked "4".
11. After pressing "4" your screen should look like:

```
VER 2.0  
OPERATOR  
COMMAND:
```

12. If you want to reedit that last message just type "4"
If you are all done, place switch 8 on the botton dip switch in the OFF position. Press any key to start the game.

V. What If's

1. What if I make a mistake?

Press the 3 key to backspace over your error.

2. What do I do when I reach the end of the line?

The editor will place you at the beginning of the line below.

3. What happens when I reach the last line and last character on the screen?

The editor will "wrap around" and put you at the top line and first character position.

4. Suppose I get through the whole message and I notice that after all of that typing I made a stupid spelling error, do I have to put that whole message in again?

NO. by using the special function keys you can put the cursor (that underline thing) below the letter(s) you want to change and switch back to normal keys to enter the proper message, SEE SECTION ON GOING FURTHER WITH THE EDITOR.

5. OK You got all of those but here comes a real tough one - - - What, if I start entering a message and I realize that I really did not want to change anything about the message. How do I escape without reentering the old message?

Easy, If you have't hit the "4" key - just

- A. Shut the machine off
- B. Place switch 8 on the bottom dip switch OFF
- C. That's it. Your original message is still there.

Going Further with the Editor

1. By pressing key "2" you can change to special key mode. When you are in this mode the keys from A to Z are used for other purposes - the first four keys 1, 2, 3 and 4 still do the functions.

2. When in SPECIAL KEYS mode the keys correspond to the following:

NORMAL KEYS:	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
SPECIAL KEYS:	0 1 2 3 4 5 6 7 8 9 . , ! * \$ + - / () &

^^^^ see table below

None erasing movement of cursor

(Next typed letter - used to edit existing message)

K	Move cursor to left	M	Move cursor up
L	Move cursor to right	N	Move cursor down

SPECIAL CLEAR KEY

Z

This key when pressed erases the last message completely and free all space for a new message.

3. To return to normal keys mode press the "2" key and type as normal.

4. To save your new message from either special or normal keys mode press key "4".

5. To exit the entire command mode and return to normal game function: shut switch 8 OFF on the bottom dip switch and press any key.

VII. Adjusting Vend Cycle Time

Letters per picture:

During normal operation of the COMPUTER PORTRAIT machine the patron is allowed to enter up to 14 letters to customize their picture. In addition they may erase bad entries as well as add in spaces.

Another option exists which allows only eight (8) characters to be entered for the message. In addition none of the special function keys work - that includes erase question mark and backspace.

Time to enter letters:

To control these options locate the top dip switch accessible from the cut-out in the electronics package. The following switches control as shown:

XXXXXX00	60 seconds for message
XXXXXX01	30 seconds for message
XXXXXX10	20 seconds for message
XXXXXX11	00 seconds for message
	Use for no message from player (FAST PICTURE CYCLE)
XXXXOXX	14 characters per message with Space bar, Question mark, delete and message done.
XXXXOLXX	14 full characters per message with space bar only

XXXX10XX	14 full characters per message with no spaces or control
XXXX11XX	8 full characters per message with Done key

X - don't care
1 - ON
0 - OFF

Examples: 14 characters and 20 seconds to enter
message with no control - set the
top dip switch as follows:

XXXX1010	14 full characters per message with 20 seconds enter message
----------	---

VIII. Computer Portrait Theory of Operation

The COMPUTER PORTRAIT device consists in it's most fundamental form as the following three elements:

CAMERA - - - - → COMPUTER - - - - → PRINTER

The CAMERA takes the electronic snapshot of the subject which is sent to the COMPUTER which precesses the image. The COMPUTER then sends the processed image to the PRINTER.

What circuit boards are used in the COMPUTER PORTRAIT machine?

- A. CPU Board
- B. VIDEO Board
- C. PRINTER Board
- D. CMOS Board

What does each of these boards do in general?

CPU

The CPU Board (Central Processing Board) contains the following units:

1. Microprocessor
2. Memory Elements (Roms and Rams)
3. Control circuitry to direct the other boards
4. Coin Control circuits
5. Keyboard circuits
6. Diagnostic commands

VIDEO BOARD

The Video Board contains the following elements:

1. Digitizer to convert from analog to digital video
2. Memory for picture storage
3. Display Generator
4. Synchnization circuitry to lock camera to board
5. Circuitry to allow communications to the CPU Board

PRINTER BOARD

Your Printer Board performs the following functions:

1. Control of the Printer mechanism
2. Paper roll control
3. Optical and standard sensor input
4. Paper cutter control

CMOS BOARD

1. Storage of heading message so that machine can be powered down for extended periods of time without losing messages or other information.

IX. Power up Test Program

When your machine is first powered up it goes through an exhaustive battery of self-tests before the patron is allowed to deposit their money. The test are broken down into three catagories:

1. CPU board test
2. Video board test
3. Printer board test

Located on the CPU board you will see the collowing pattern of light illuminated during normal operation of the game:

* * * *
* * * *

The lights are numbered as follows:

1 2 3 4
5 6 7 8

When you first power up the game you will see these lights blink on and off a few times and then move to the test light. When the test has been completed you will notice that all of the lights are left illuminated without any blinking.

The blinking signals that a special test is in progress. If any of the internal test fails, the light will blink rapidly in time with light 8 and will not stop blinking nor will advance till the power or problem is removed.

The following chart defines what each of these lights means:

1. Static Ram test - tests the 6 2114 Static rams located on the CPU Board. If any of them are bad light 1 and 8 will blink.
2. Rom test - checks that the contents of the program memory used to control the game are intact (No wrong or incomplete instructions).
3. Video Ram test - checks for the existence of working memory on and the Video Board. If the Video Board is unplugged or there is a problem with communications to this board this test will cause light 3 and 8 to blink together.
4. Video board generated interrupt test - checks that the signals sent to the camera as well as the TV monitor are of the correct length. If it finds that these signals are out of specifications, it will try to correct. If not possible lights 4 and 8 blink together.

These tests and others that follows are intended to both protect the operator as well as the parton. For the operator, if the program contained within the computer were to be defective, severe damage could result to the Printer board as it contains numerous high voltage/current driver circuits.

HIGH LEVEL TESTING

Once we have verified that the foundation of this machine is O.K., we then begin to test each system in the machine. The first test is the printer motor and positioning circuit. Under normal operation you will notice that the head may move back and forth a number of times when power is first applied. This motion is intended to reference the position of the head as it passes over different sections of the picture.

After the print head is placed in it's "HOME" position, the paper cutter is tested. The paper cutter test causes the cutting assembly to go from one side of the mechanism to the other to verify the reliability of the cutter and it's given circuitry.

Once the paper cutter has been completely tested (about 30 seconds) the game will "sign-on" with the version of the software used in your version of the game. Once this sign-on is completed the game is ready to accept money.

X. Advance Test Sequences

Looking at the front of the electronics package you will notice that there are two openings in the front of the cage. The top one is used to view the diagnostic LED's. The bottom one allows access to the two dip switches which control option on the game.

The bottom dip switch allows you to access the diagnostics supplied with your COMPUTER PORTRAIT machine. In addition to diagnostics, you also enter your messages for customization by throwing this switch.

To turn on diagnostic panel:

1. Change bottom dip switch position 8 to the ON position.

LXXXXXXXX

2. Turn your game OFF then ON.

Your screen should look like this:

VER 2.0
OPERATOR
COMMAND:

IMPORTANT POINT COMING UP - - - - -

Talking with the computer

At this point you are in direct communications with the computer located in the machine. All communications with the machine are made through the keyboard used normally for the patron to enter their name or whatever. Your commands to the computer are echoed in the center of the screen and are acted upon only after you have pressed the 4 key located on the left side of the keyboard.

Escaping the computer

If at any time you wish to exit this mode you can do so by switching switch 8 from the ON to the OFF position and pressing any key on the keyboard. The computer will then revert to the normal game sequence.

This mode was put into your machine to make servicing a breeze. The computer acts as a servant switching things ON and OFF based on your direct command codes.

An example, let's say you would like to display the checksums of the roms used in your game. To do this, get into the mode shown on the last page and type in the following sequence:

CS4

On the screen you will see:

CHECKSUMS

00 12345

01 23456

IMPORTANT ! To exit this routine, press and hold down any button while this procedure is working. Upon exiting, you should be back in the command mode. You can always enter a new command when in the command mode no matter what the last command was. The command will be overwritten on the screen.

EVEN MORE IMPORTANT ! Certain commands require that you must have executed the command "IP" before they will work. These commands mostly apply to turning things on and off. We strongly suggest that your first command in the command mode is:

IP4

Which initializes things. If you are just editing messages this step is not needed.

Some practical application of the command system

XI. Functions and Adjustment of the Video Board

The Video board takes the images generated from the TV Camera and stores the picture information for retrieval by the CPU board (COMPUTER). In addition it displays the picture information via a TV monitor. Information for display can range from messages to the image of the patron as her (or she) poses for the picture.

Note: that there are only two adjustments on the board which are factory set to set the gain and offset for the picture digitizer. The digitizer is a device to convert TV type signals into numbers which can be stored internally on the board as well as be accessed by the CPU board. We suggest that you do not make any adjustments to these controls.

The following test sequences will help you set up the Video board should you decide you might like to adjust focus on the camera.

SET UP:

Make sure switch 8 on the bottom dip switch is closed

Type:	LP4	(Initialize printer board)
Type:	L04	(Lights ON command)
Type:	PO4	(Pose ON)

You can now adjust your camera and monitor. If necessary you may adjust the video board at this point.

How the heck to shut this mode down?

1. Pressing any key will cancel the pose mode
2. To shut light off type: LF4 (light off command)

XII. Command Table Summary

Command Code	Function
CM	Cmos (personalized message) board editor used to change message at top of picture
CS	Display Checksums of Roms used in Game
CB	Color Bar display generator used to set-up Television monitor
CC	Continuous Color Bar writes to screen used to test writing ability to video board.
PO	Pose mode Turns camera on and displays data on screen used to set up camera focus and other adjustments
CL	Move cutter to left till stop encountered
CR	Move cutter to right till stop encountered

Command Code	Function
PA	Paper advance causes printer mechanism to feed paper
IP	Initialize printer and control hardware. Must be first command executed on power-up if any printer or external devices are activated
P1	Printer pattern generator to display all of the hammers in sequence
X1	Printer burn-in test (factory use). At 15 minute intervals four pictures of a color bar pattern (grey scale) and the serial number of the picture are printed
X2	Printer burn-in test (factory use). At 15 minute intervals four pictures of the contents of the booth (digitized) and the serial number of the picture are printed
CO	Coin acceptors ON - turns on chute lights and lock-out coils on coin acceptors as well as enabling Bill acceptor
CF	Coin acceptors OFF - turns off chute lights and lock-out coils on coin acceptors as well as disabling Bill acceptor

Command Code	Function
LO	Posing lights ON -turns on high intensity lights used to illuminate patron when camera is on.
LF	Posing lights OFF -turns off high intensity lights used to illuminate patron when camera is on.
MO	Turn Paper motors enable on (stock, carbon, take-up)
MF	Turn Paper motors enable off (stock, carbon, take-up)
LB	Initialize Printer Board. Does not self-test sequence as in LP.
VR	Version Number display - shows what version of photo machine software you are currently using.
TR	Test Rom start up - activates the extensive internal hardware test used when the machine is first powered up. The results of any failures are displayed on the eight RED LED's (LIGHT EMITTING DIODES) visible through the side of the electronics package. If you see two flashing LED's blinking then refer to the section on the TEST ROM.

SECTION 2

TEST PROCEDURES

1911

1912

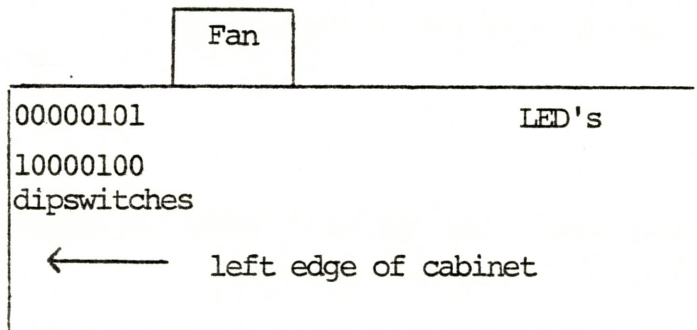
I. Preliminary Instructions:

Before any test are made on the same you must first set the
dipswitches as follows:

00000101
10000100

where 1 = ON position
where 0 = OFF position

Electronics package located in lower left bottom of cabinet



II. CPU BOARD CHECK:

Turn same OFF then ON.

1. All LED checks completed ok?
 - A. Ram Test
 - B. Rom Test
 - C. Video Ram Test
 - D. Interupt Test

Failures:

1. Bad Ram chip (2114)
2. Bad Rom on Board
3. Cannot talk to video board
 - A. Bad flat cable
 - B. Bad CPU external interface
 - C. Bad Video board
 - D. Another board interferring (try runnine test with just video and CPU board connect).
4. Bad Interupt
 - A. Bad crt controller
 - B. Bad Flat cable
 - C. Bad time base on CPU or Video Board

III. Board Test:

After successfully completing the above tests the machine should now display the OPERATOR COMMAND sign-on message.

1. In operator mode do all keys work?

Press the following keys in the sequence shown to test the keyboard. Note: that when you press the last key "4" the system will respond with UNKNOWN COMMAND, this is a normal response.

Key sequence:

ABCDEFGHIJKLMNOPQRSTUVWXYZ

1234

IV. Monitor Adjustment:

1. ENTER CODE: CB4

Check that all 8 levels of video are present
Black thru White

To align the monitor:

1. Adjust brightness control until the bar on the extreme left is completely black.
2. Adjust the contrast control so that the far right bar is white.
3. Adjust both of the above controls till you can get complete black on the left and complete white on the far right, with all shades in between the two extremes.

To verify that both controls are set correctly, press key "A" to return to character mode. Now verify that the background is black and that the characters are not smeared but are sharp.

If the above characters are not right.

ENTER CODE: CB4
to restore color bars.

V. Flood lights used for Picture Taking:

1. Test lights control

ENTER CODE: IB4 L04
both spot lights should come on.

ENTER CODE: LF4

both spot lights should go off.

If the lights do not come on you should check that the relay located on the main panel is closing. If it is not then you may not have 12 vdc to drive the relay. If you have the 12 vdc then you probably have a problem with your printer board.

VI. Camera Adjustment:

1. ENTER CODE(S): IB4 L04 P04

Adjust two pots on the video board for 8 different colored concentric circles of video levels.

Your best source of subject matter would be to put someone in the booth and adjust the two controls for the best picture.

While you have a subject in the booth at normal placement, you can adjust the focus of the camera by rotating the lens on the camera for sharp definition.

Note: that the ambient light sources surrounding the machine may affect the adjustment.

To exit this mode ENTER CODE: A LF4

VII. CMOS BOARD TEST:

1. ENTER CODE(S): CM4

If bad memory then press N4 then shut off machine for 10 seconds.

or

If editor comes up normally then press 2Z4 then shut off machine for 10 seconds

2. After waiting ten (10) seconds, power up machine and wait for 15 seconds.

3. ENTER CODE: CM4

The editor should come up normally and the message area should be blank.

4. Exit this mode by pressing "4"

VIII.

Test Coin Enable Circuit:

1. ENTER CODE(S): IB4 C04

coin lights on both 25 cent acceptros should go on

A. Insert a quarter into both acceptors and verify that they pass thru to the bottom of cabinet and that the coin meter on the left and right side of the panel is incremented each time a coin is inserted.

B. Insert a dollar bill into the dollar acceptor and verify that it is accepted and the center coin meter on the panel has incremented.

ENTER CODE: CF4

- C. Insert a quarter into each of the acceptors and verify that they are not accepted.
- D. Insert a dollar into the dollar acceptor and verify that it is no longer accepted.

IX. Paper Feed/Take-Up Drive Motor Drive:

- 1. ENTER CODE: IB4 M04
 - A. Trip switch on bottom roll of paper to verify that paper feed circuit is operating.
 - B. Trip switch on middle roll of paper to verify that carbon feed circuit is operating.
 - C. Trip switch on top carbon take-up reel to verify that carbon take-up circuit is working.

THREAD PAPER THRU MECHANISM BEFORE PROCEEDING TO NEXT TEST

Please note that the bottom two rolls have

- A. Two different tensioning systems.
- B. Paper is unwound in different directions.

In addition, when running thru the printer mechanism,

- A. Regular paper runs thru a slot in the paper cutter assembly.
- B. Carbon runs under the decolater bar and then up to the carbon take-up mechanism.

X. Align Paper in Printer Mechanism:

- 1. Install the paper (if not already done).

2. Located on each of the tractor units is a plastic lever which when rotated to it's center position releases the tractor unit to move left to right. Release both tractor units.
3. Looking into the printer mechanism you should find a plastic scale. Locate the mark shown as "80". Next locate the marker next to it which looks like a squared "U".
4. Move the paper back and forth till the edge of the carbon area (place where carbon has been printed on carbon roll) is located in the center of the "U".
5. Lock the tractor mechanism closest to the door first. This is the one closest to the "U".
6. Reach into the printer mechanism and push the other tractor units away from the door with some slight pressure to flatten the paper. Lock this far tractor so that there is a very slight pressure put on the horizontal plane of the paper.

XI. Testing Paper Advance:

Once the paper is installed and running free, perform the following sequence to test the entire paper handling system:

1. ENTER CODE: IB4 MO4 PA4
2. Allow entire mechanism to run for about 30 seconds to assure smooth operation.
3. Press "A" to stop paper motion

XII. Testing Paper Cutter Mechanism:

1. ENTER CODE: IB4 CL4

2. and wait for the paper cutter assembly to stop
3. Advance paper manually about six inches
4. ENTER CODE: CR4
5. Paper cutter should now move across to the left.
6. Note: that the cutter only cuts from right to left
7. The paper should fall to the ground after the cut has been completed.
8. If the cut has not been completed probably you may need to align the paper cutter by adjusting the bottom bar on the paper cutter which is held in place by two screws at either end of the bar.
9. ENTER CODE: CL4
10. The paper cutter will now "HOME" to the starting position
11. ENTER CODE: A (stops sequence)

XIII. Proper Homed Positions for Cutter Assembly:

At the end of the cutter path there is a microswitch which signals the microprocessor that we have reached the end as well as kills the power to the motor for that direction. It is important that the cutter assembly stop in the proper positions so that the cut is clean and next paper coming out of the printer doesn't hang up on the cutter.

The proper position for the cutting assembly is measured from the nearest circular cutting edge of the blade to the edge of the paper.

1. ENTER CODE: IB4 CL4
2. Wait for the cutter to stop and then press "A".
3. Adjust the switch on the other end so that the leaf is

- bent to meet the cutter assembly as it just get near (about 45 degrees).
4. Manually advance the paper by about 4 inches.
 5. ENTER CODE: CR4
 6. Now wait till the cutter assembly stops
 7. Visually locate the interface between the cutter blade and the paper.
 8. With a pair of long nose pliers, carefully bend the switch to allow the blade edge to RUN OFF the paper by about $\frac{1}{4}$ inch.
 9. Press key "A" to stop cutter power
 10. Adjust the switch on the other end so that the leaf is bent to meet the cutter assembly as it just gets near (about 45 degrees).
 11. Manually advance the paper by about 4 inches
 12. ENTER CODE: CL4
 13. Now wait till the cutter assembly stops
 14. Visually locate the interface between the cutter blade and the paper
 15. With a pair of long nose pliers, carefully bend the switch to allow the blade edge to RUN OFF the paper by about $\frac{1}{4}$ inch.
 16. Cutter left Code: CR4 Press either code and "A" to stop
Cutter right Code: CL4 and verify $\frac{1}{4}$ " clearance on ends.

XIV.

Prealignment of the Printer Mechanism:

1. Move the head carriage to it's extreme position nearest the door.

2. On the right side of the printer you will see a lever connected to a rod which adjusts the distance of the head to the platten (printing surface). Move this lever all the way down and then move it up 3 click stops.
3. Remove the plastic carriage which covers the print head. (verify that the plastic tab is held in place by hot glue).
4. Loosen the two phillips screws on either side of the print head.
5. Insert a feeler guage 0.020" between the head and platten and press down on the head with a light force while at the same time putting horizontal pressure against the carriage mechanism to keep it flat to the bottom of the printer.
6. With the force applied (this removes the sight slop in the mechanism) tighten the two screws on either side of the head.
7. Replace the plastic cartridge which covers the head.

XV. Adjusting the Storage Sensors:

There are two strobe sensors used to generate registration information for the picture printing. The two sensors provide positional as well as direction information as the position of the print head. The strobe sensors are located on the far end (away from the door) of the printer mechanism.

PRELIMINARY SET-UP OF SENSORS

SENSOR A

1. Connect A Scope probe to pin 10 of integrated circuit V13 located on the printer board.

2. Connect the ground of the Scope to any convenient ground point (minus end of electrolytic caps).
3. Move the head back and forth manually and observe the scope trace. You should observe a sine wave with the bottom phase portion partially flattened.
4. If you don't observe this. Then adjust R26 on the printer board till you do. Rotate clockwise to reduce flattening and clockwise to get the swing to 5 volts.

SENSOR B

1. Connect A Scope probe to Pin 8 of integrated circuit V13 located on the printer board.
2. Connect the ground of the Scope to any convenient ground point (minus end of electrolytic caps).
3. Move the head back and forth manually and observe the Scope trace. You should observe a sine wave with the bottom phase portion partially flattened.
4. If you don't observe this. Then adjust R27 on the printer board till you do. Rotate clockwise to reduce flattening and clockwise to get the swing to 5 volts.

XVI.

Adjusting Power to Printer Hammers:

1. Connect A Scope probe to Pin 1 of integrated circuit G2 located on the printer board.
2. Connect the ground of the Scope to any convenient ground point (negative side of any electrolytic caps).
3. Enter Code: P14 (starts head moving left to right)

PORTRAIT OPERATIONS MANUAL
(c) 1981 P.N.M. INC.
10/07/81

4. Observe the Scope trace and you should see a pulse train.
5. Adjust R3 so that the pulse width is 375 microseconds
Note: that this waveform does have some jitter which is normal.
6. Press Key "A" to stop printer

After completing all of the previous tests, run the burn-in diagnostic X1 by:

ENTER CODE: X14

SECTION 3

GENERAL PROCEDURE
FOR
HANDLING OUT OF ORDER CONDITIONS

1913

THE UNIVERSITY OF CHICAGO

1913

PHYSICS DEPARTMENT

When the machine puts itself out of order you should proceed as follows:

1. Check for paper jams
2. Loose screws
3. Blown fuses on unregulated supply
4. Blown fuses on regulated supply
5. Broken wires
6. Loose flat cable connections all boards together

If there is no visible problem with the machine go into the operator command mode of the machine and examine (exercise the function) the problem. See the owner's manual and test procedure manual for the section you are working on.

TO GET INTO OPERATOR COMMAND MODE TURN ON SWITCH 8 ON THE BOTTOM DIP SWITCH LOCATED ON THE LEFT SIDE OF THE ELECTRONICS PACKAGE.

YOUR FIRST COMMAND IN TESTING ANY FUNCTIONS TIED TO THE PRINTER BOARD MUST BE:

ENTER CODE: IB4

THIS COMMAND RESETS ALL OF THE PROGRAMMABLE DEVICES ON THE PRINTER BOARD SO THEIR FUNCTIONS MAY BE TESTED.

SYS ERROR

An error has occurred within the internal hardware of the CPU board. This can be caused by:

1. bad Rcm

2. RAM
3. Something connected to the 50 Pin bus responding when it should not.

Note: that this test is not as comprehensive as the power-up test and if there is any question as to the reliability of the system, the same should be cycled off then on to start the comprehensive test.

After completing the LED test on power up the processor begins to self test the printer boards ability to control the paper cutter and the printer mechanism. If any error is encountered in this self test mode, the machine will put itself out of order and display a message pointing to the area at which it is having problems. This section will describe some of the causes and solutions to these problems, should they occur.

HD MOTION	unable to detect any head motion
PAP TIME OUT	the completion of the paper advance timer/counter sequence was never detected.
	Ic E6 (AN 8255) DRIVES
	IC L13 AND L17 which count line step pulses
	IC G11 generate the sequence for the stepper motor
	Ic E6 senses the completion of the step operation
<p>If Ic E6 (an 8255) does not see the signal/PAPER GATE return to it's high state after the count sequence has been completed it generates the time out message.</p>	

CAUSE:	power supply problem
	Bad clock on printer board
	Bad IC on printer board
	Broken mod wire on back of board
PRT RGT	unable to print to the right. The strobe wheel is not registering any head movement to the right
PRT LFT	unable to print to the left. The strobe wheel is not registering any head movement to the left.
LFT HD MOTION	After the processor has commanded the printer to move to the left, we cannot detect any motion at all.
CAUSE:	unregulated power supply to printer board
	regulated power supply
	motor drivers on printer board
	Limit switches
RGT HD MOTION	After the processor has commanded the printer to move to the right, we cannot detect any motion at all.
CAUSE:	unregulated power supply to printer board
	regulated power supply
	Motor of drivers on printer board
	Limit switches

FND PHASE TIM	<p>After starting the head moving we wait for the strobe sensors to register some change with relation to EACH OTHER. If after a specified period of time we do not see any change in the phases we generate a FIND PHASE TIME OUT ERROR.</p>
CAUSE:	<p>strobe sensors out of adjustment</p>
	<p>strobe sensors bad</p>
	<p>strobe sensor input circuitry</p>
	<p>no carriage motor movement</p>
FND PHASE MOT	<p>If we get the carriage moving and we notice that the order of transitions in the strobe sensors is incorrect we generate a FIND PHASE FOR MOTOR DIRECTION ERROR. This can be caused by reversing the strobe sensors (plugging them in wrong plus).</p>
CAUSE:	<p>strobe sensors out of adjustment</p>
	<p>strobe sensors bad</p>
	<p>strobe sensor input circuitry</p>
	<p>no carriage motor movement</p>
	<p>windings to head motor reversed</p>
CUT LFT MOVE	<p>cutter left movement error. If after a specified period of time,</p>

	<p>the cutter assembly when commanded to move in the left direction does not reach the far left (right side of cabinet when looking from front) microswitch, a movement error will occur.</p>
CAUSE:	bad cutter motor
	worm gear off cutter motor assembly
	bad cutter microswitch
	broken cutter connection
	bad cutter motor driver circuit
	bad switch sense circuitry
<p>Note: left and right as referred to in the cutter are reversed as viewed from the front of the cabinet. For example, to move the cutter to the left, you would actually see it move from left to right.</p>	
CUT RGT MOVE	<p>Cutter right movement error. If after a specified period of time, the cutter assembly when commanded to move in the right direction does not reach the far right (left side of cabinet when looking from front) microswitch, a movement error will occur.</p>
CAUSE:	bad cutter motor
	worm gear off cutter motor assembly

	<p>bad cutter microswitch</p> <p>broken cutter connection</p> <p>bad cutter motor driver circuit</p> <p>bad switch sense circuitry</p>
<p>Note: left and right as referred to in the cutter are reversed as viewed from the front of the cabinet. For example, to move the cutter to the left, you would actually see it move from left to right.</p>	
<p>PAPER OUT</p>	<p>Paper out detected</p> <p>The paper out switch on the printer mechanism has opened up indicating it does not sense any paper in the mechanism.</p>

SECTION 4

MESSAGE DESIGN FORM

SECTION 4

REVISED 1971

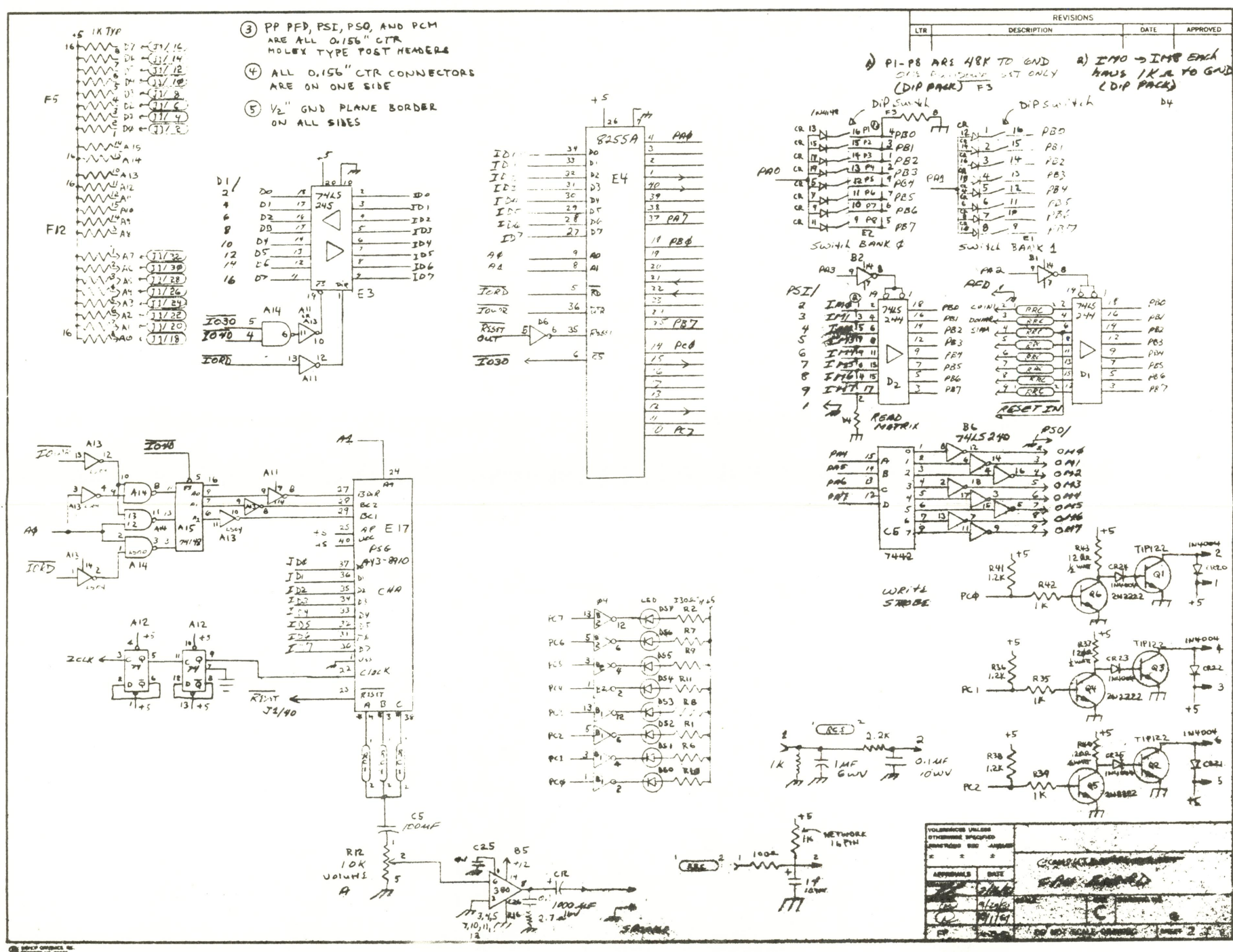
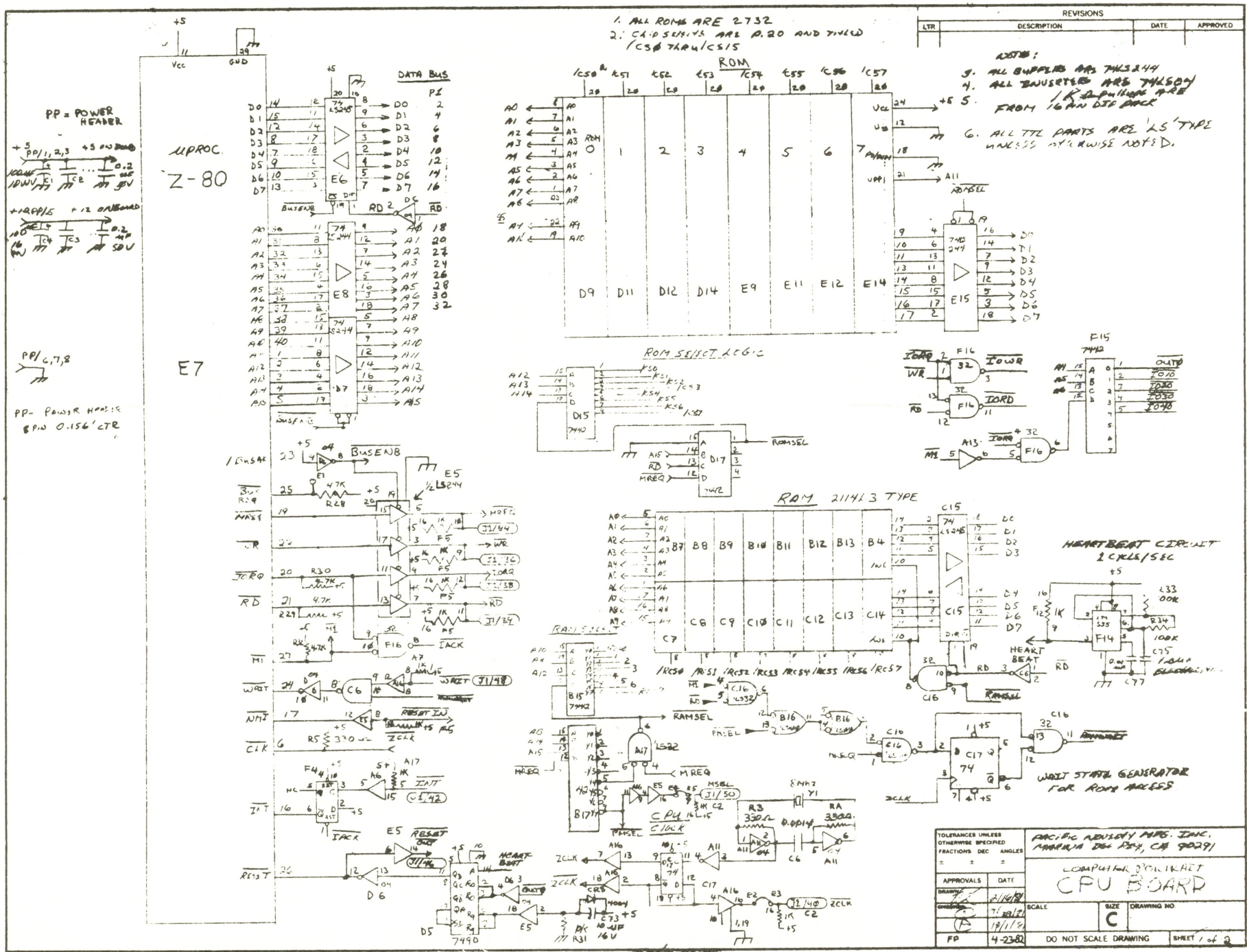
**** To return to normal keys mode, press the "2" key and type as normal.

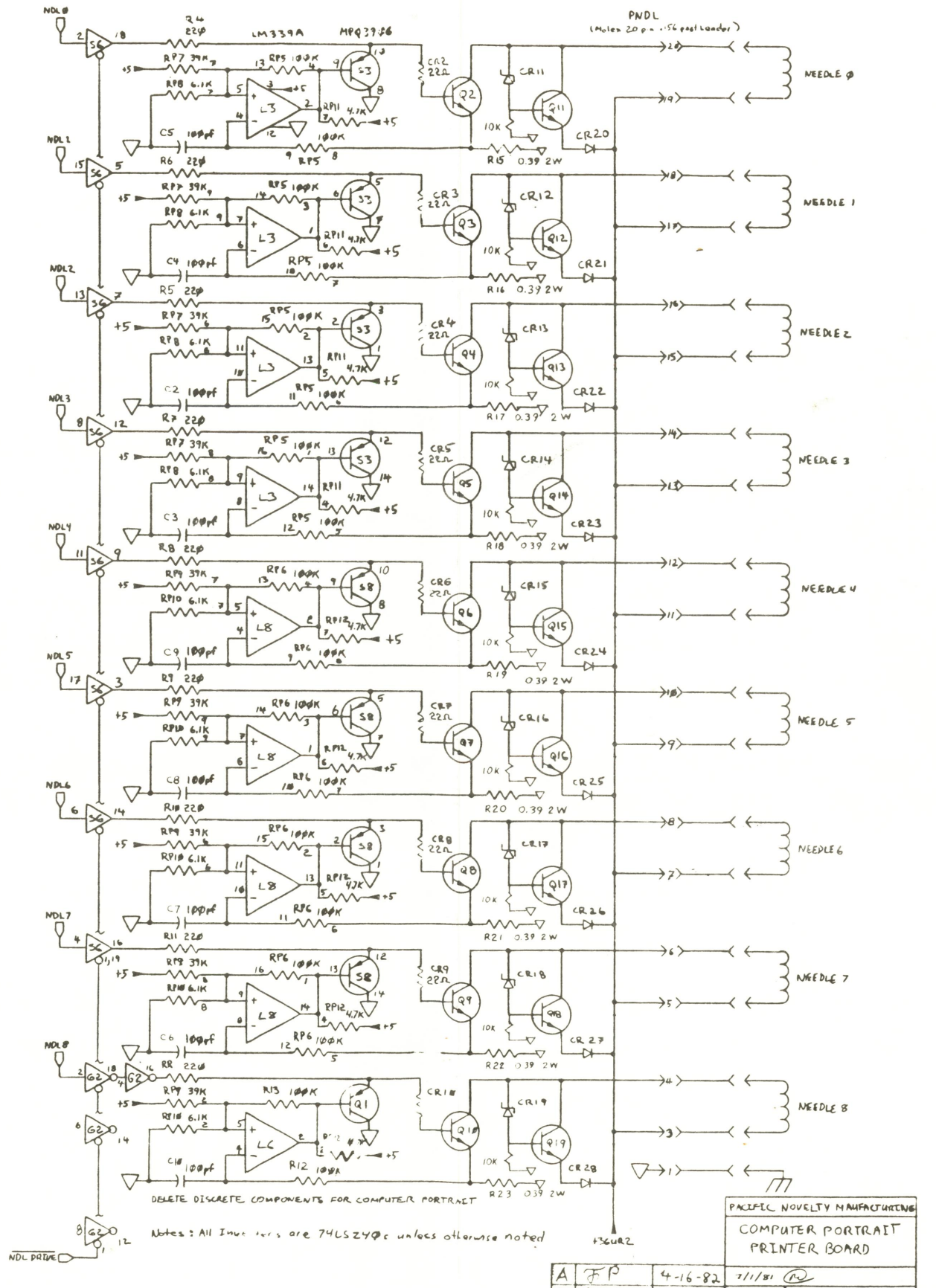
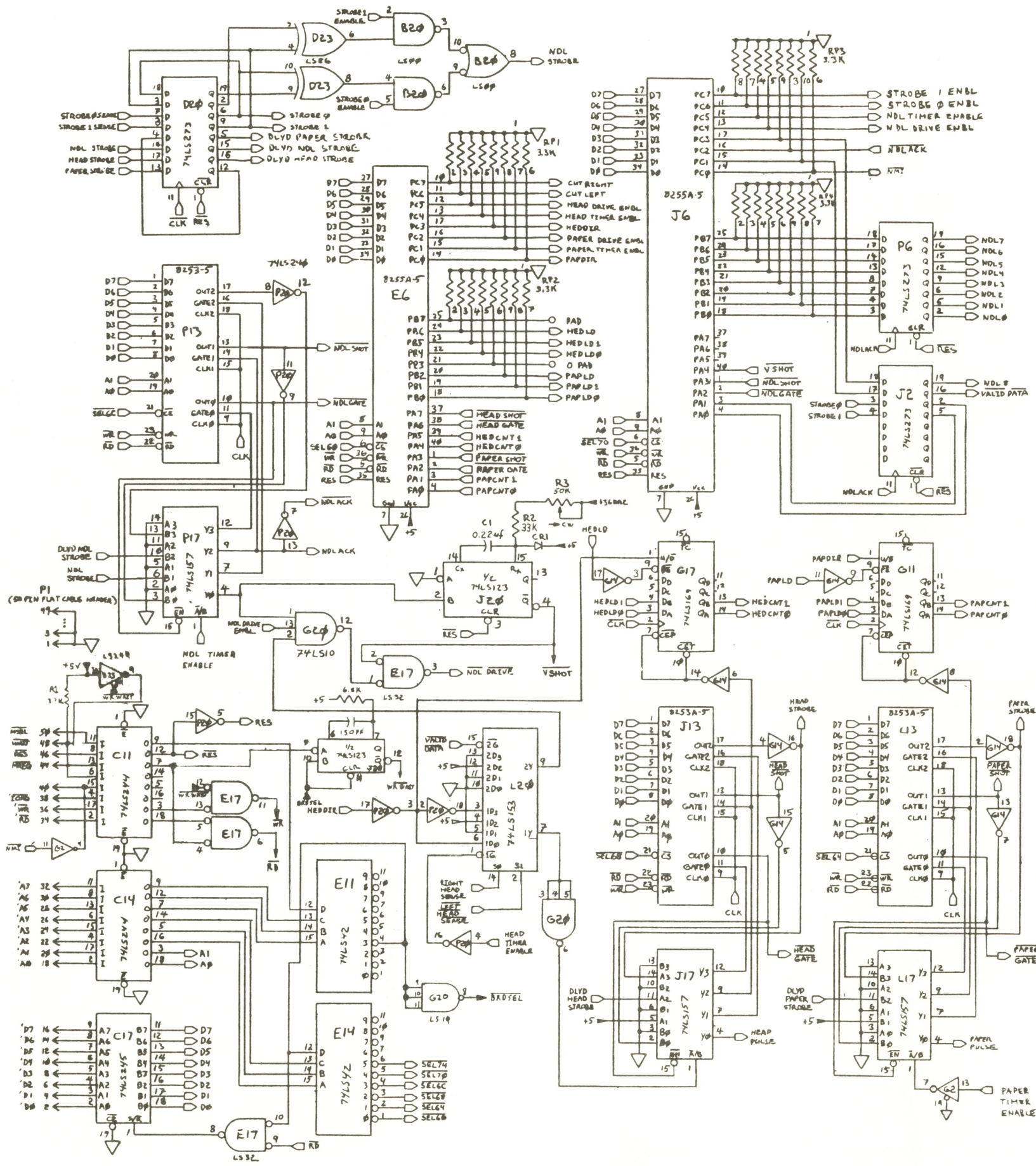
**** To exit from either special or normal keys mode press Key "4" as described in the previous section. To exit the entire command mode shut switch 8 OFF on the top dip switch and press any key.

SECTION 5

COMPUTER PORTRAIT SCHEMATICS

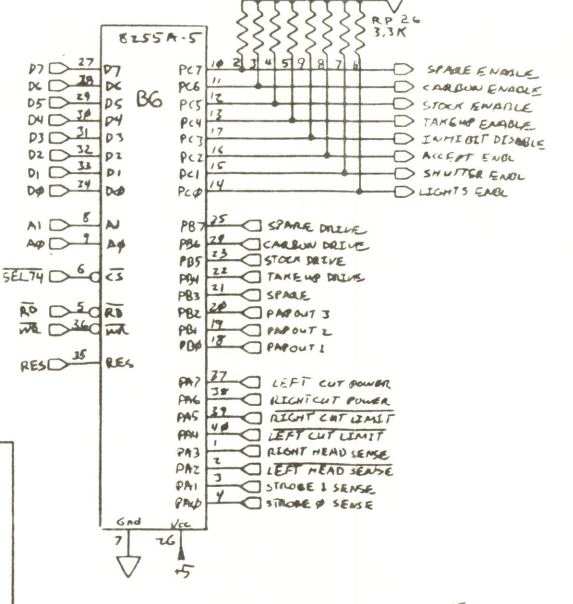
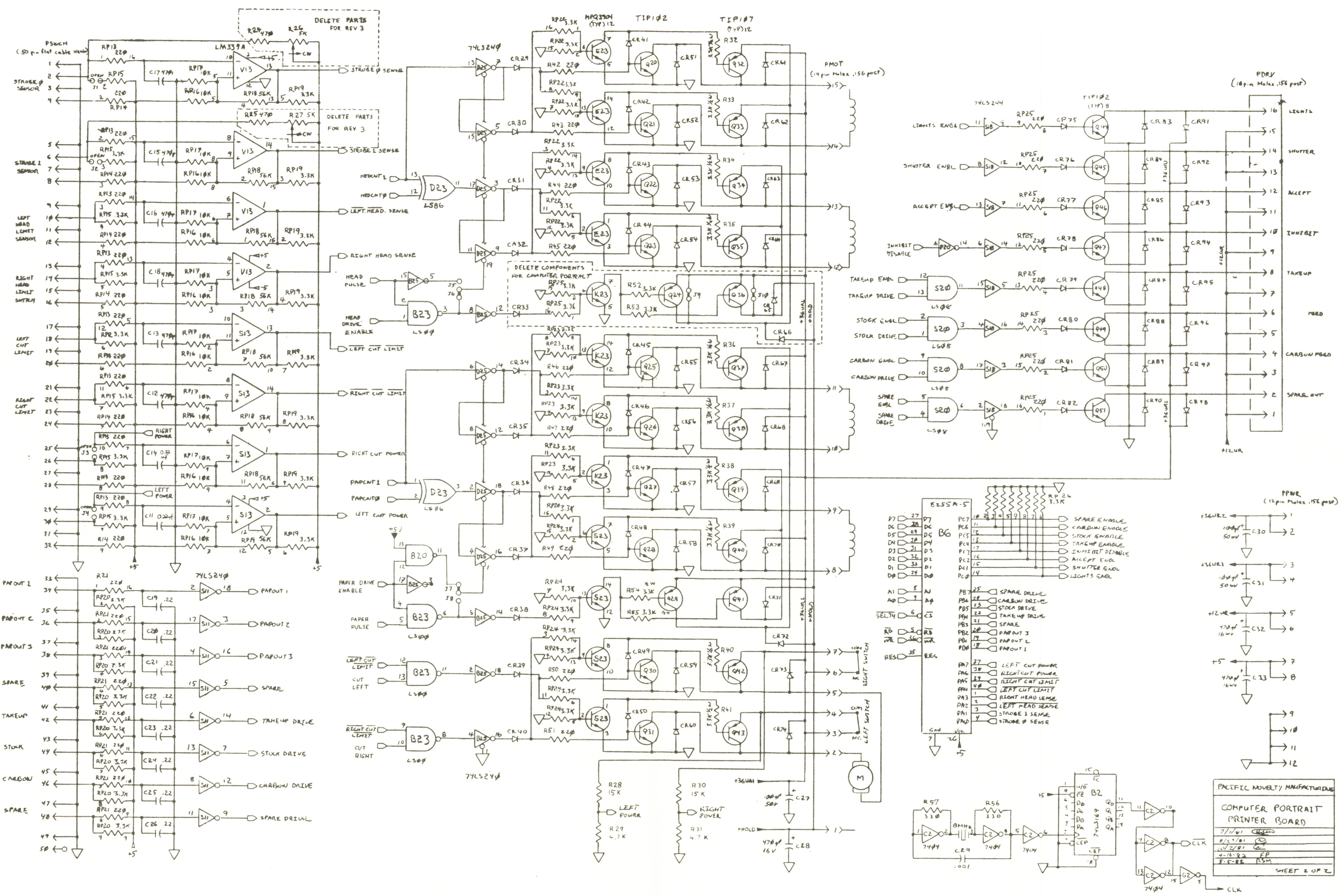
THE UNIVERSITY OF CHICAGO





Notes: All Intec parts are 74LS240c unless otherwise noted

PACIFIC NOVELTY MANUFACTURING			
COMPUTER PORTRAIT PRINTER BOARD			
A	FP	4-16-82	7/1/81
B	R.S.M	5-5-82	7/6/81 All LS123
C	K.T.A	5-7-82	1/2/81
SHEET 1 OF 2			



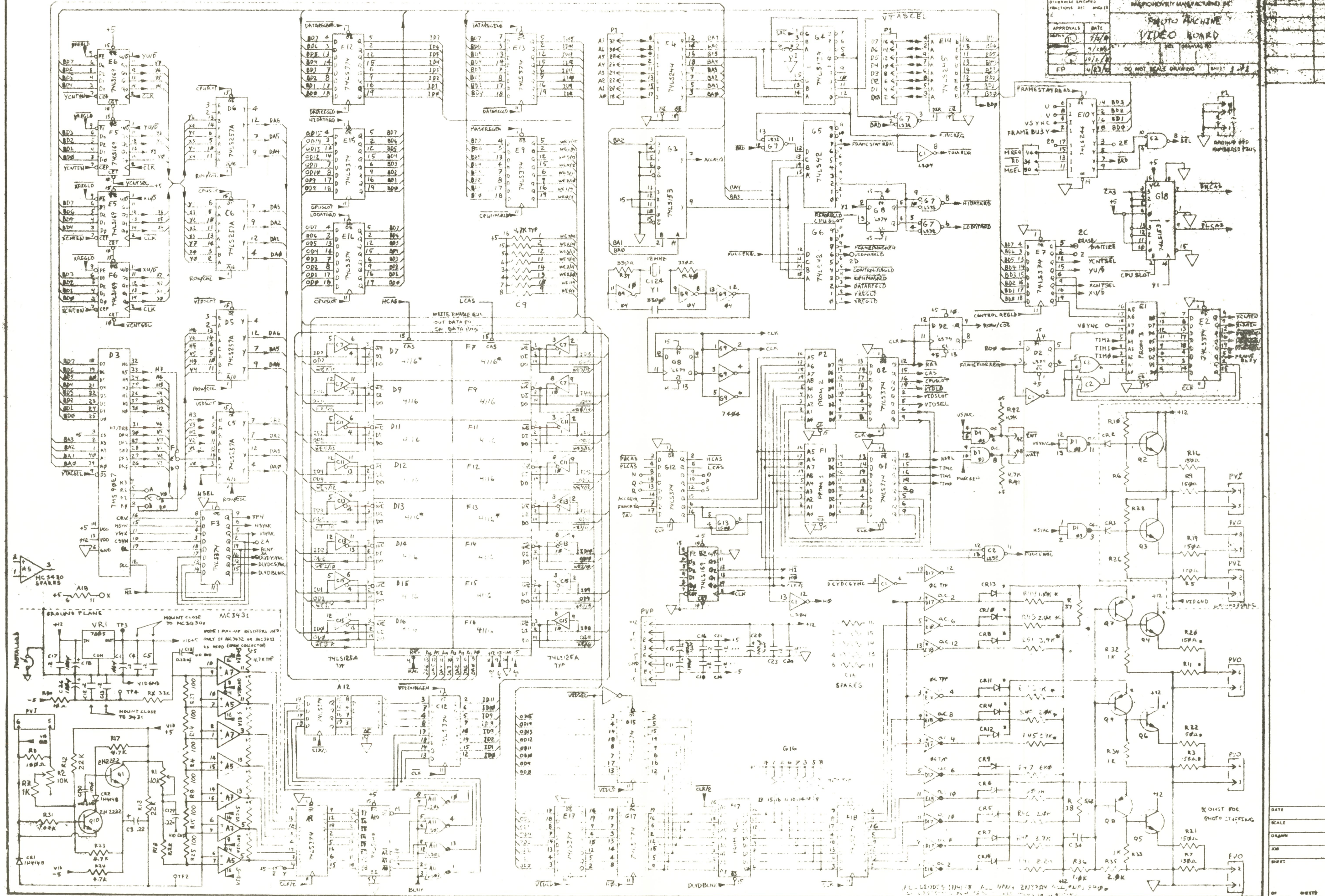
PACIFIC NOVELTY MANUFACTURING

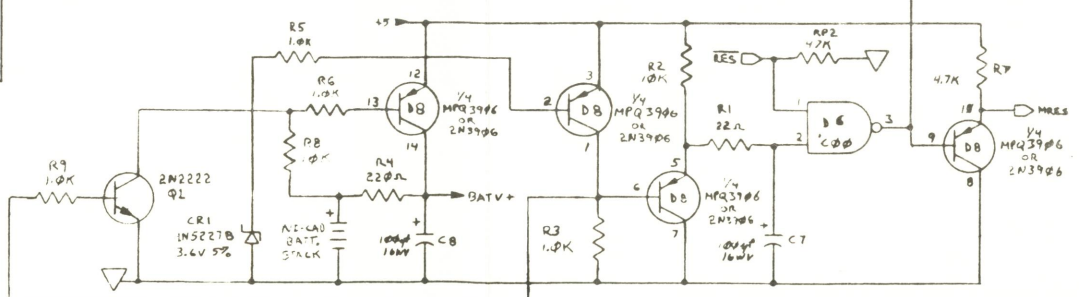
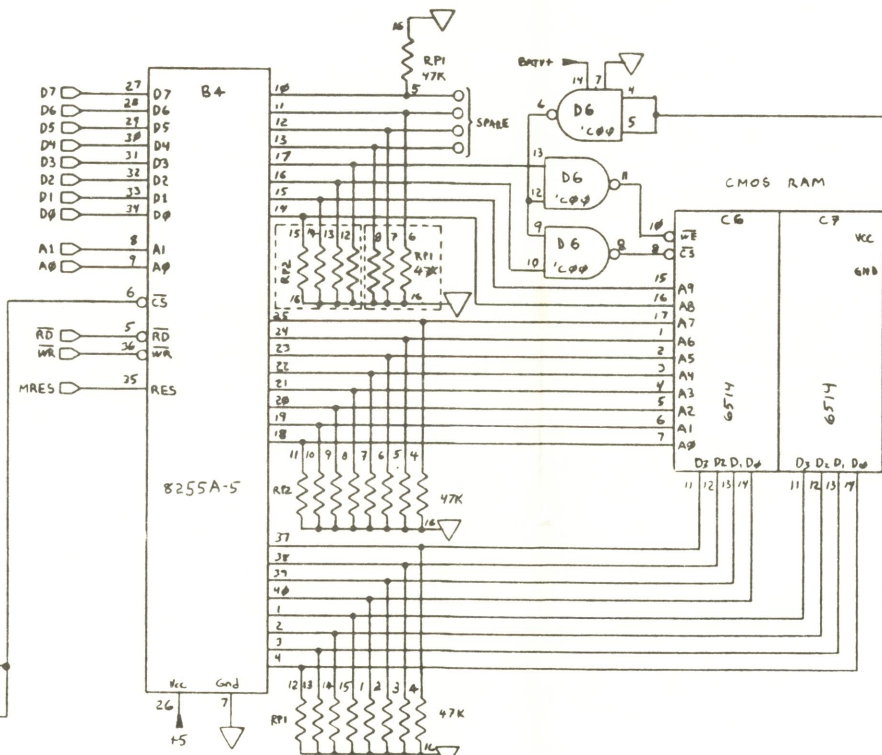
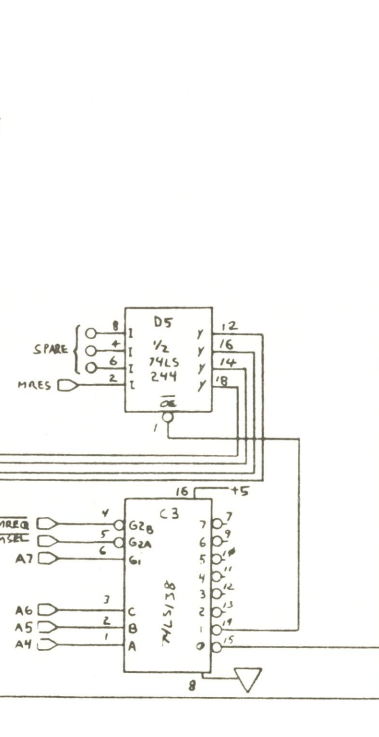
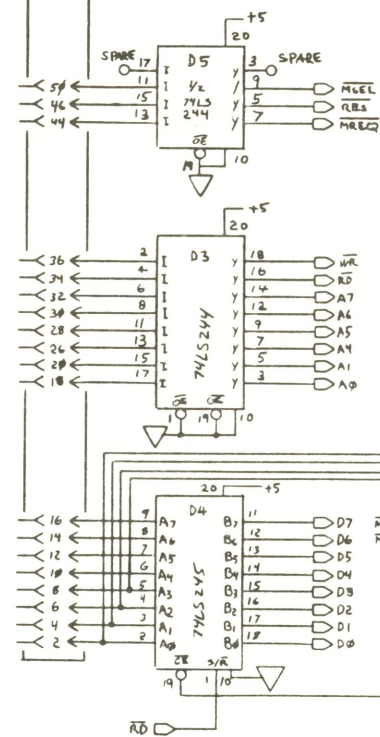
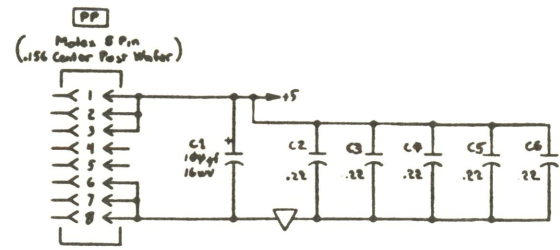
COMPUTER PORTRAIT PRINTER BOARD

7/1/81
 6/5/81
 10/2/81
 4-16-82 EP
 F.C.B. RSM

SHEET 2 OF 2

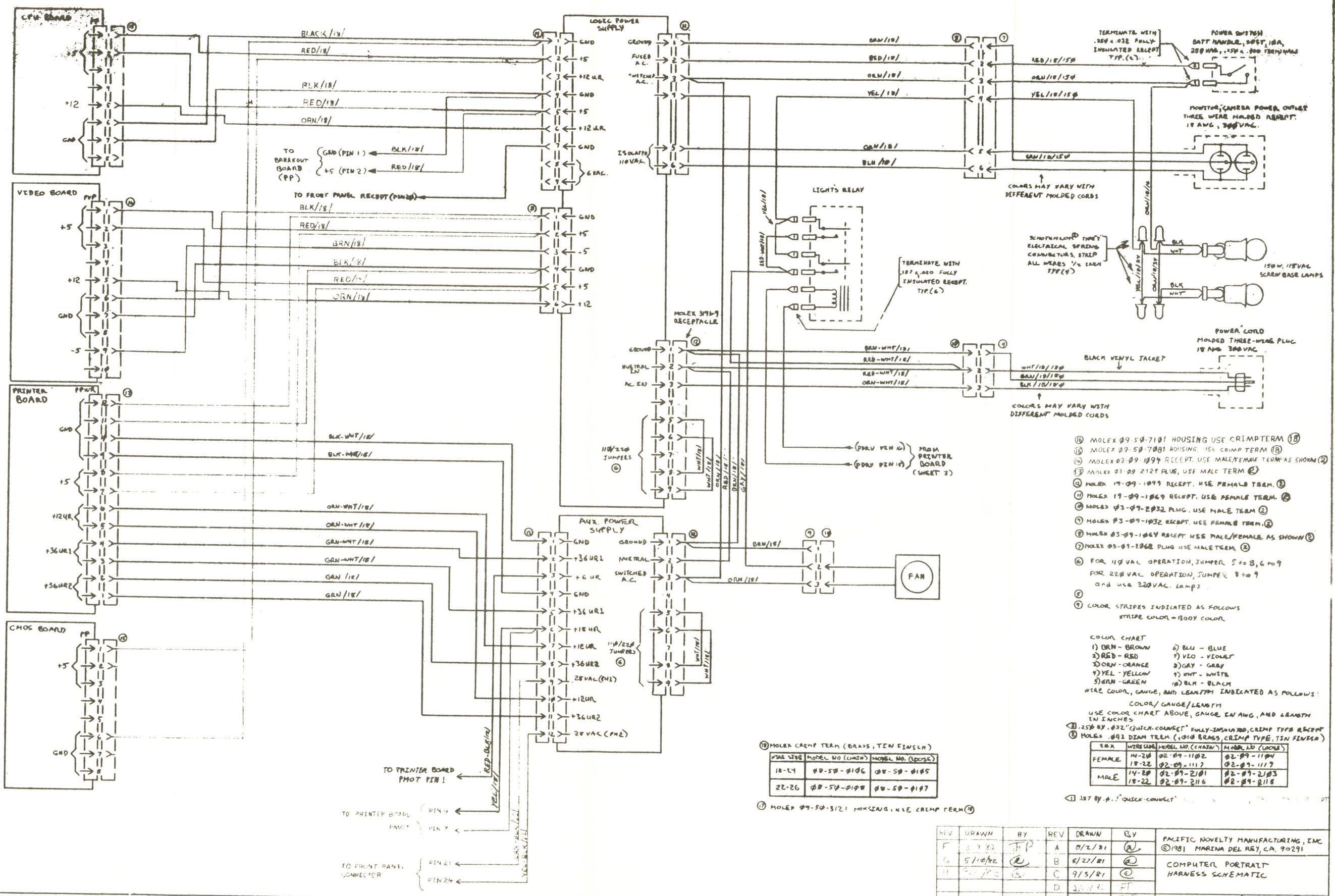
MICROPROCESSOR MANUFACTURING CO.
PHOTO MACHINE
VIDEO BOARD





NOTE: ALL RESISTORS 1/4 W, 5% EXCEPT AS NOTED

DRAWN	BY	PACIFIC NOVELTY MANUFACTURING
7/12/81	R. W. ...	MARINA DEL REY, CA ©1981
9/20/81	(Signature)	COMPUTER PORTRAIT
10/2/81	(Signature)	CMOS MEMORY BOARD
11/27/82	(Signature)	SHEET 1 of 1



- ① MOLEX 09-50-7101 HOUSING USE CRIMP TERM ⑩
- ② MOLEX 09-50-7081 HOUSING USE CRIMP TERM ⑩
- ③ MOLEX 03-09-1094 RECEPT. USE MALE/FEMALE TERM. AS SHOWN ②
- ④ MOLEX 03-09-2127 PLUG, USE MALE TERM ②
- ⑤ MOLEX 17-09-1099 RECEPT. USE FEMALE TERM ②
- ⑥ MOLEX 17-09-1069 RECEPT. USE FEMALE TERM ②
- ⑦ MOLEX 03-09-1064 RECEPT. USE MALE/FEMALE AS SHOWN ②
- ⑧ MOLEX 05-09-2068 PLUG USE MALE TERM ②
- ⑨ FOR 110 VAC OPERATION, JUMPER 5 TO 8, 6 TO 9 FOR 220 VAC OPERATION, JUMPER 8 TO 9 and use 220 VAC. Lamps
- ⑩ COLOR STRIPES INDICATED AS FOLLOWS STRIPE COLOR = BODY COLOR

COLOR CHART

1) BRN - BROWN	6) BLU - BLUE
2) RED - RED	7) YEL - YELLOW
3) ORN - ORANGE	8) GRAY - GRAY
4) YEL - YELLOW	9) WHT - WHITE
5) GRN - GREEN	10) BLK - BLACK

WIRE COLOR, GAUGE, AND LENGTH INDICATED AS FOLLOWS:

COLOR / GAUGE / LENGTH

USE COLOR CHART ABOVE, GAUGE IN AWG, AND LENGTH IN INCHES

⑪ .250 BY .032 "QUICK-CONNECT" FULLY-INSULATED, CRIMP TYPE RECEPT

⑫ MOLEX .093 DIAM TERM. (1010 BRASS CRIMP TYPE, TIN FEMPSH)

SEX	WIRE SIZE	MODEL NO. (CHAMP)	MODEL NO. (MOLEX)
FEMALE	14-20	02-09-1102	02-09-1104
	18-22	02-09-1117	02-09-1119
MALE	14-20	02-09-2101	02-09-2103
	18-22	02-09-2116	02-09-2118

⑩ MOLEX CRIMP TERM (BRASS, TIN FEMPSH)

WIRE SIZE	MODEL NO. (CHAMP)	MODEL NO. (MOLEX)
18-24	08-50-0106	08-50-0105
22-26	08-50-0108	08-50-0107

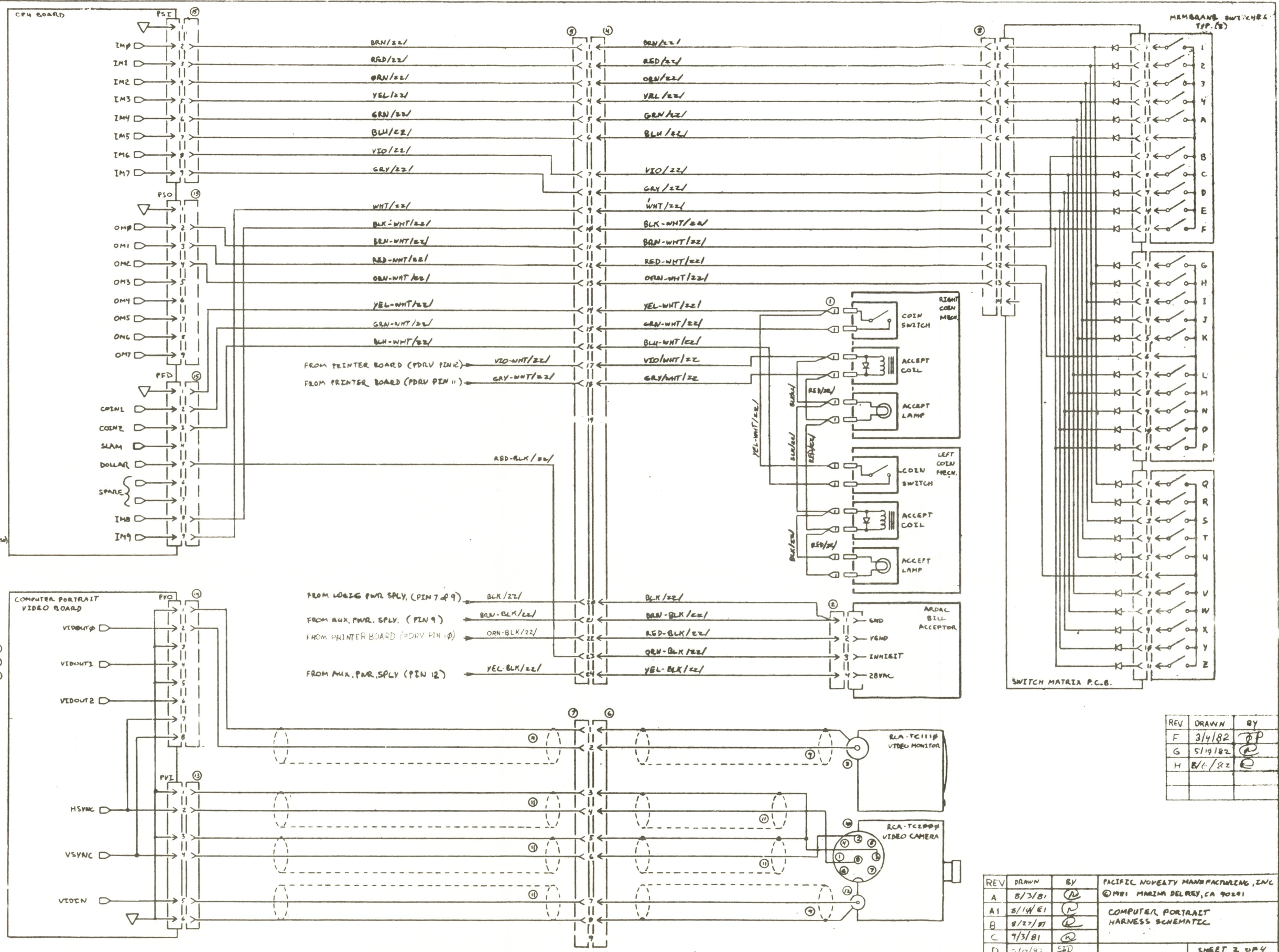
⑪ .250 BY .032 "QUICK-CONNECT" FULLY-INSULATED, CRIMP TYPE RECEPT

REV	DRAWN	BY	REV	DRAWN	BY
F	3/4/82	J.P.	A	8/2/81	J.P.
G	5/10/82	J.P.	B	8/27/81	J.P.
H	7/1/82	J.P.	C	9/3/81	J.P.
			D	2/1/82	J.P.
			E	2/9/82	J.P.

PACIFIC NOVELTY MANUFACTURING, INC.
©1981 MARINA DEL REY, CA. 90291

COMPUTER PORTRAIT HARNESS SCHEMATIC

SHEET 1 of 4



- ① MOLEX CRIMP TERM. (BRASS, TIN FINISH)

WIRE SIZE	MODEL NO. (CHAMP)	MODEL NO. (LOOSE)
18-24	08-50-0106	08-08-0106
22-26	08-50-0108	08-08-0107

- ② MOLEX .093" DIA. TERM. (AMP BANS, CRIMP TYPE, TIN FINISH)

SEX	WIRE SIZE	MODEL NO. (CHAMP)	MODEL NO. (LOOSE)
MALE	14-20	02-09-2101	02-09-2103
MALE	18-22	02-09-2116	02-09-2118
FEMALE	14-20	02-09-1102	02-09-1104
FEMALE	18-22	02-09-1117	02-09-1119

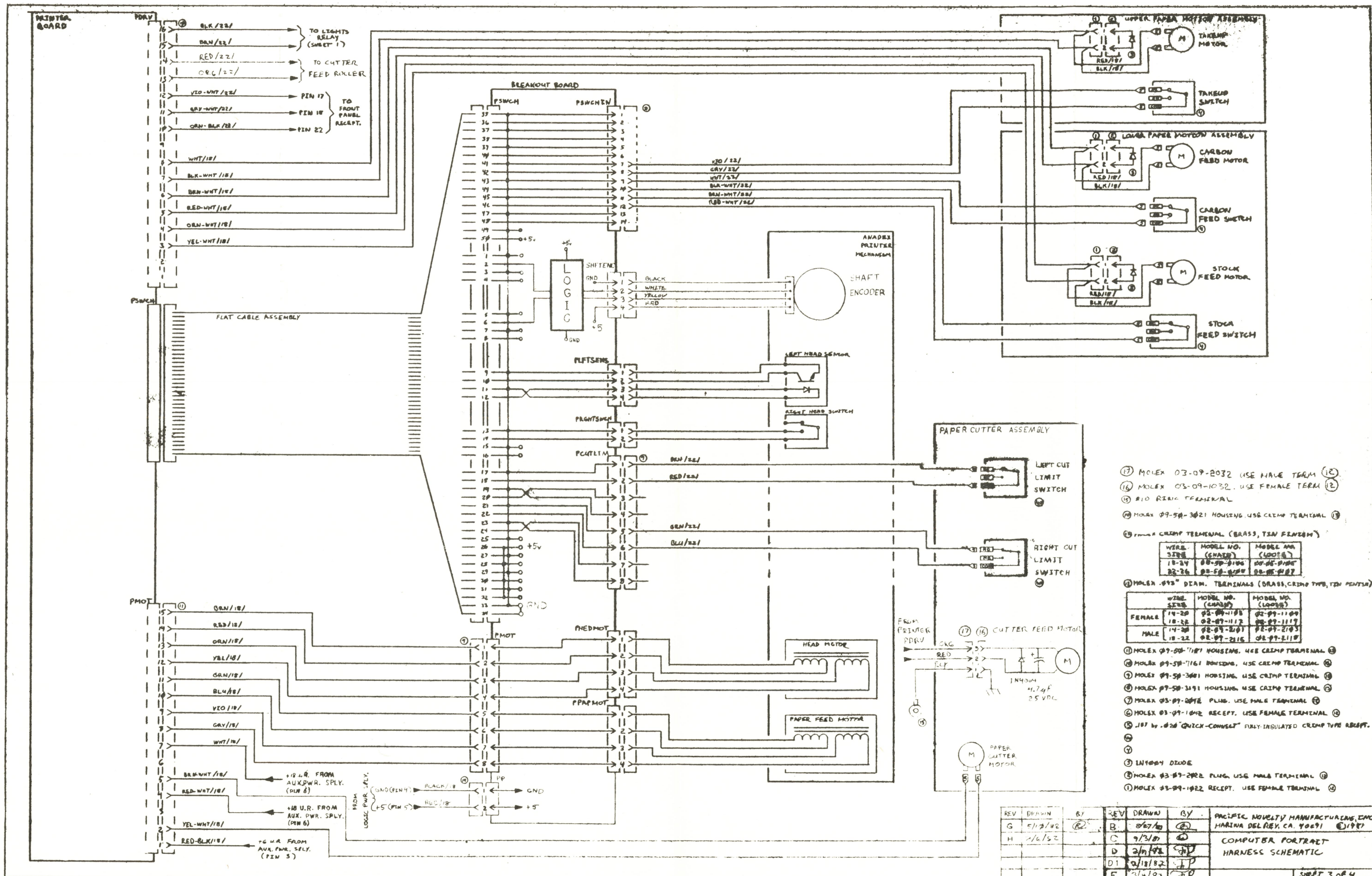
- ③ MOLEX .042" DIA. TERM. (.000" GAUGE, CRIMP TYPE)

SEX	WIRE SIZE	MODEL NO. (CHAMP)	MODEL NO. (LOOSE)
MALE	18-24	02-06-2101	02-06-2103
FEMALE	18-24	02-06-1101	02-06-1103

- ④ MOLEX #9-50-7091 HOUSING, USE CRIMP TERM. ①
- ⑤ MOLEX #9-50-7081 HOUSING, USE CRIMP TERM. ①
- ⑥ MOLEX #9-50-7061 HOUSING, USE CRIMP TERM. ①
- ⑦ BNC PLUG
- ⑧ SHIELDED (SPIRAL-WRAP) VIDEO CABLE
- ⑨ DIN 8 PIN PLUG
- ⑩ RG-58/U
- ⑪ PL-259 PLUG
- ⑫ MOLEX #3-09-1092 RECEPT, USE FEMALE TERM. ①
- ⑬ MOLEX #5-09-2092 PLUG, USE MALE TERM. ①
- ⑭ MOLEX #3-06-1242 RECEPT, USE FEMALE TERM. ①
- ⑮ MOLEX #3-06-2242 PLUG, USE MALE TERM. ①
- ⑯ MOLEX #9-50-3141 HOUSING, USE CRIMP TERM. ①
- ⑰ MOLEX #3-09-2042 PLUG, USE MALE TERM. ①
- ⑱ .087" by .022" GIGACONNECT FULLY INSULATED RECEPT

REV	DRAWN	BY
F	3/4/82	JP
G	5/19/82	JP
H	8/6/82	JP

REV	DRAWN	BY	PACIFIC NOVELTY MANUFACTURING, INC.
A	8/3/81	JP	© 1981 MARINA DEL REY, CA 90291
A1	8/14/81	JP	
B	8/27/81	JP	COMPUTER PORTRAIT HARNESS SCHEMATIC
C	7/3/81	JP	
D	2/1/82	JP	



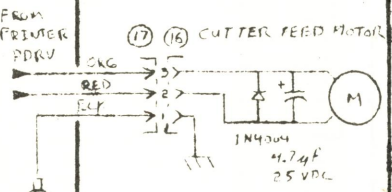
- ① MOLEX 03-09-2032 USE MALE TERM. (15)
- ② MOLEX 03-09-1032 USE FEMALE TERM. (12)
- ③ 810 RING TERMINAL
- ④ MOLEX 09-50-3021 HOUSING USE CRIMP TERMINAL (13)
- ⑤ FEMALE CRIMP TERMINAL (BRASS, TAN FINISH)

WIRE SIZE	MODEL NO. (CRIMP)	MODEL NO. (LOOSE)
18-24	02-50-0100	02-50-0100
22-26	02-50-0100	02-50-0100

⑥ MOLEX .093" DIAM. TERMINALS (BRASS, CRIMP TYPE, TAN FINISH)

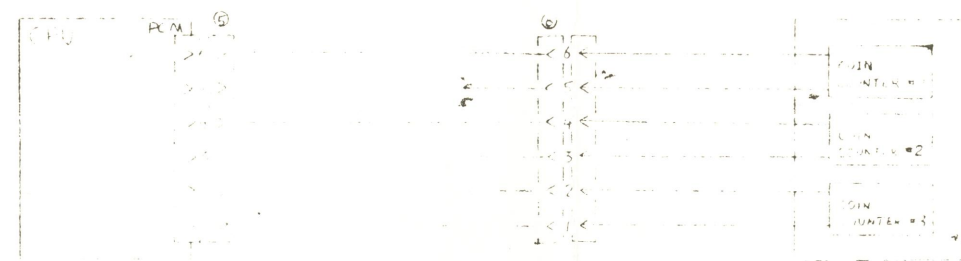
WIRE SIZE	MODEL NO. (CRIMP)	MODEL NO. (LOOSE)
FEMALE 14-20	02-09-1100	02-09-1100
18-22	02-09-1112	02-09-1112
MALE 14-20	02-09-2101	02-09-2101
18-22	02-09-2116	02-09-2116

- ⑦ MOLEX 09-50-7101 HOUSING, USE CRIMP TERMINAL (14)
- ⑧ MOLEX 09-50-7161 HOUSING, USE CRIMP TERMINAL (14)
- ⑨ MOLEX 09-50-3001 HOUSING, USE CRIMP TERMINAL (14)
- ⑩ MOLEX 09-50-3191 HOUSING, USE CRIMP TERMINAL (14)
- ⑪ MOLEX 03-09-2032 PLUG, USE MALE TERMINAL (15)
- ⑫ MOLEX 03-09-1032 RECEPT, USE FEMALE TERMINAL (12)
- ⑬ .101 IN. Ø 20 "QUICK-CONNECT" FULLY-INSULATED CRIMP TYPE RECEPT.
- ⑭
- ⑮
- ⑯ IN7004 DIODE
- ⑰ MOLEX 03-09-2022 PLUG, USE MALE TERMINAL (15)
- ⑱ MOLEX 03-09-1022 RECEPT, USE FEMALE TERMINAL (12)



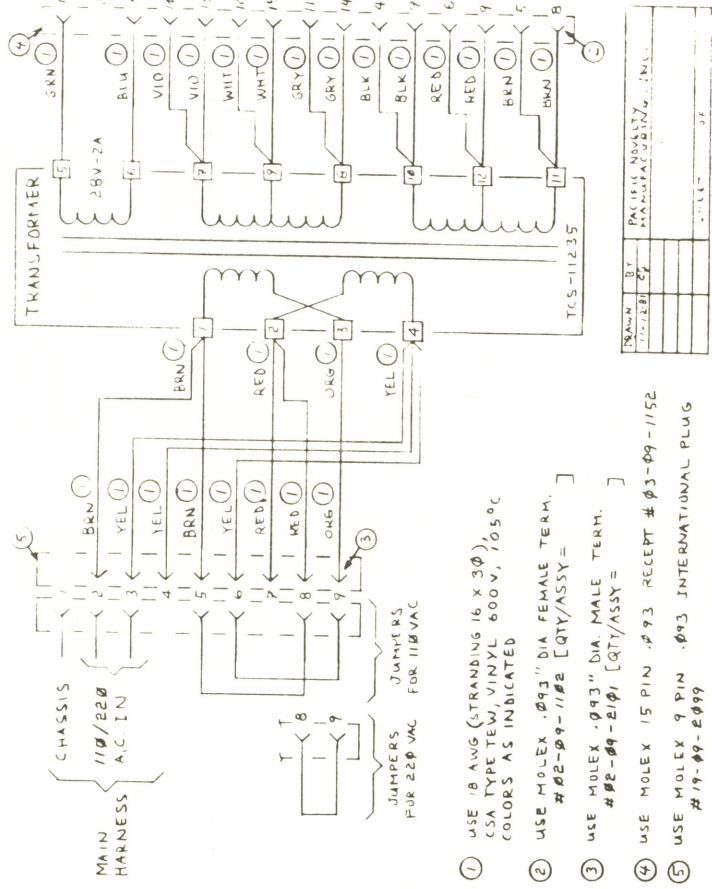
REV	DATE	BY	REV	DATE	BY	PACIFIC NOVELTY MANUFACTURING, INC. HARRIS DEL REY, CA. 90291
G	5/12/82	R	B	8/27/82	R	COMPUTER PORTRAIT HARNESSES SCHEMATIC
H	1/6/82		C	7/3/81	R	
			D	2/17/82	R	
			D1	2/18/82	R	
			F	3/4/82	R	

SHEET 3 OF 4



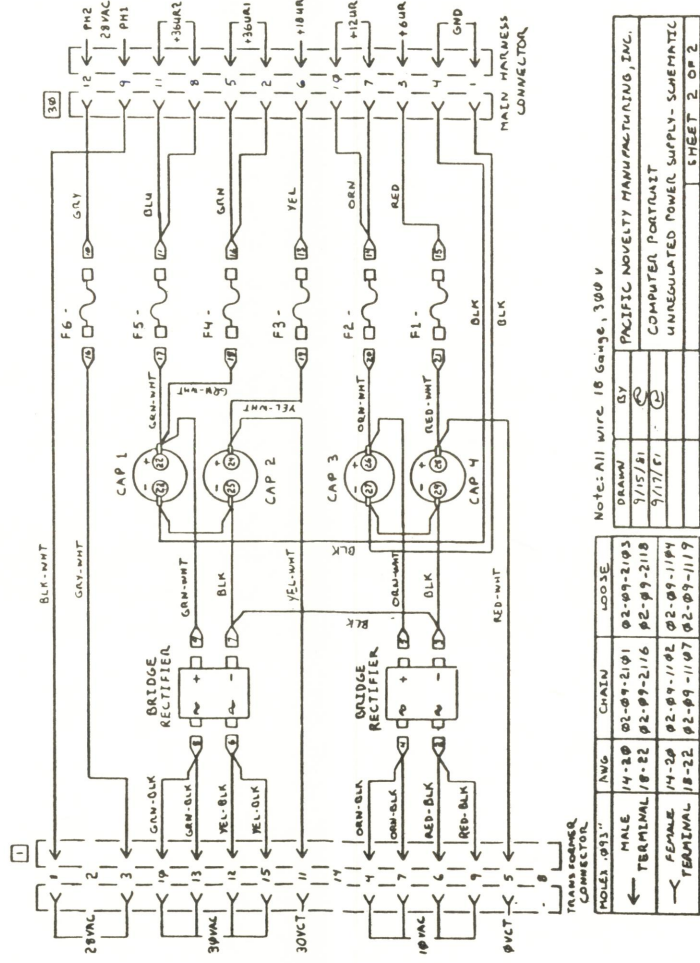
- ① MOLEX 09-50-7201 HOUSING, USE CRIMP TERM.
- ② MOLEX 03-06-1242 RECEPTACLE, USE FEMALE TERM.
- ③ MOLEX 09-50-7201 HOUSING, USE CRIMP TERM.
- ④ MOLEX 03-06-1242 RECEPTACLE, USE FEMALE TERM. (1000" BRASS, TEN FINISH)
- | MODEL NO (DATA) | MODEL NO (CODE) |
|-----------------|-----------------|
| 02-06-1101 | 02-06-1103 |
- ⑤ MOLEX CRIMP TERM (BRASS, TEN FINISH)
- | WIRE SIZE | MODEL NO (DATA) | MODEL NO (CODE) |
|-----------|-----------------|-----------------|
| 18-24 | 08-50-0106 | 08-50-0105 |
| 22-26 | 08-50-0108 | 08-50-0107 |
- ⑥ MOLEX 03-06-1242 RECEPTACLE, USE FEMALE TERM.
- ⑦ MOLEX 09-50-7201 HOUSING, USE CRIMP TERM.

REV	DRAWN	BY	PACIFIC NOVELTY MANUFACTURING, INC.
C	9/3/81	CP	MARINA DEL REY, CA 90291 © 1981
E1		JP	COMPUTER PORTRAIT
F	3-4-82	JP	HARNESS SCHEMATIC
G	1-8-82	CP	
H		CP	



- 1 USE 18 AWG (STRANDING 16 X 30) CSA TYPE TW, VINYL 600V, 105°C COLORS AS INDICATED
- 2 USE MOLEX .093" DIA FEMALE TERM. #02-09-1102 [QTY/ASSY =]
- 3 USE MOLEX .093" DIA MALE TERM. #02-09-2101 [QTY/ASSY =]
- 4 USE MOLEX 15 PIN .093 RECEPT #03-09-1152
- 5 USE MOLEX 9 PIN .093 INTERNATIONAL PLUG #19-09-2099

DRAWN BY	PACIFIC NOVELTY MANUFACTURING, INC.
DATE	7/17/71
SCALE	1:1
REV	1



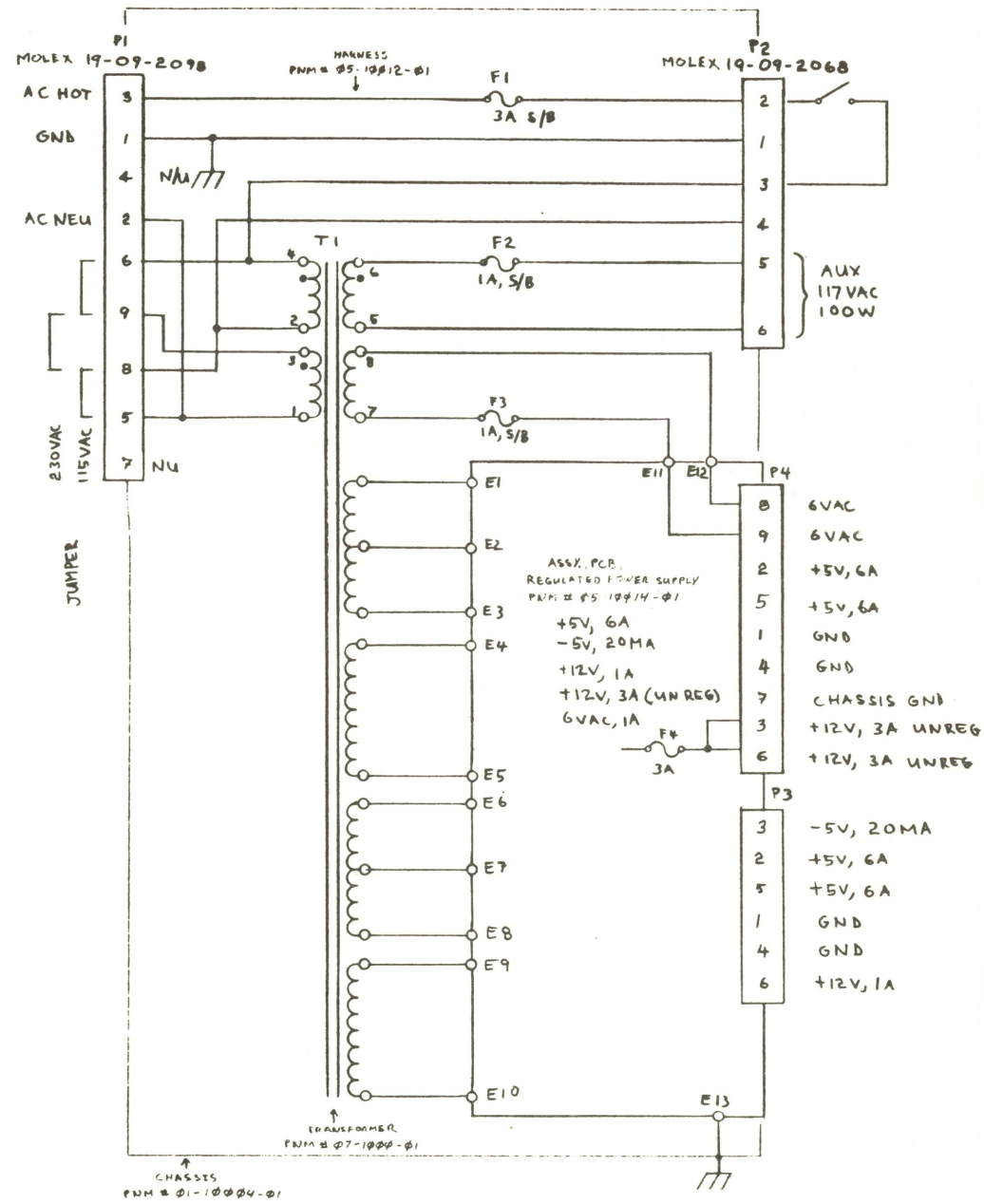
NOTE: All wire 18 Gauge, 300 V

TERMINAL	AWG	CHAIN	WOOSE
← MALE	14-20	02-09-2101	02-09-2103
← FEMALE	14-20	02-09-2116	02-09-2118
← TERMINAL	18-22	02-09-1102	02-09-1104
← TERMINAL	18-22	02-09-1107	02-09-1119

DRAWN BY	PACIFIC NOVELTY MANUFACTURING, INC.
DATE	7/17/71
SCALE	1:1
REV	1

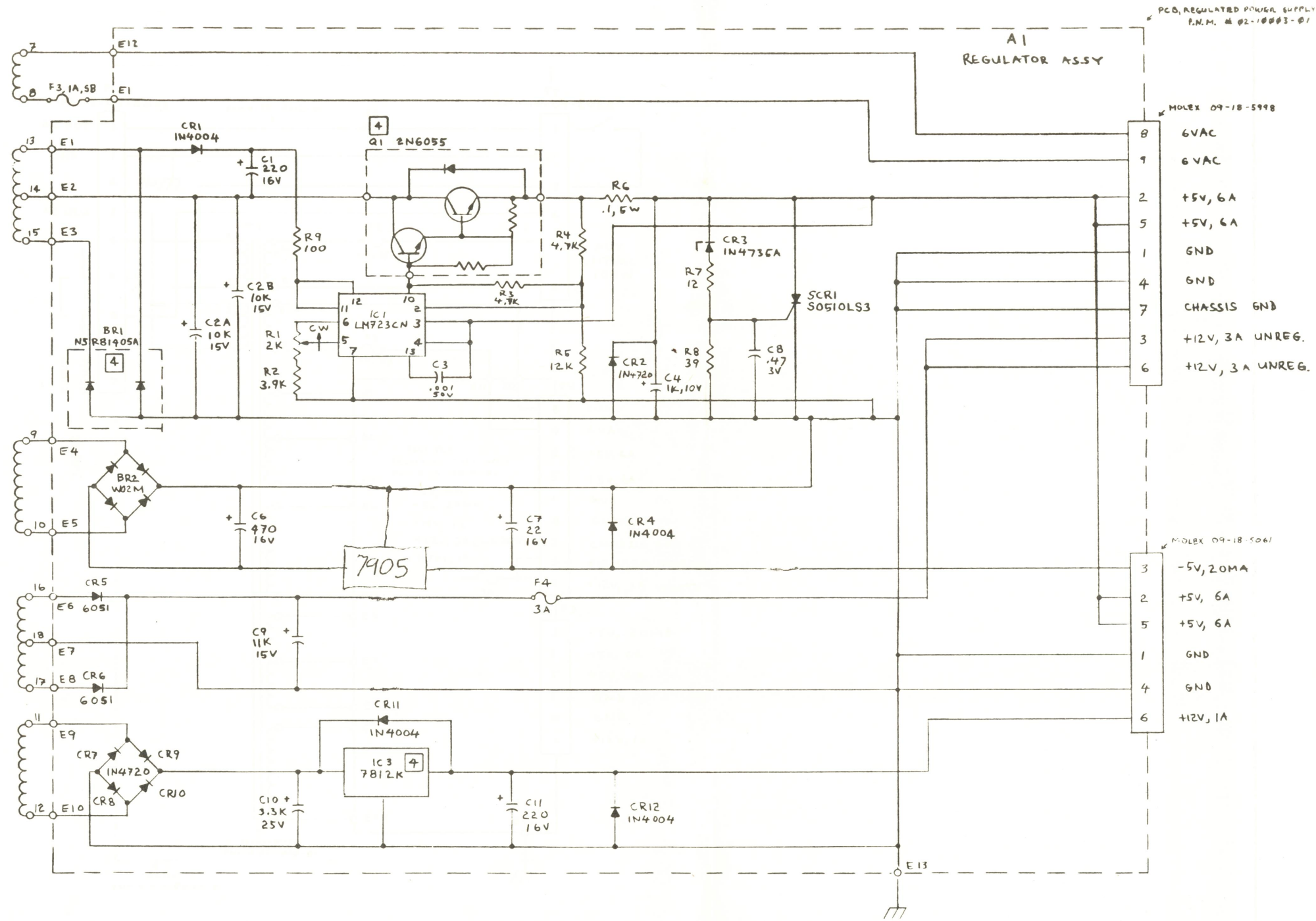
UNREGULATED POWER SUPPLY - SCHEMATIC

SHEET 2 OF 2



NOTES: UNLESS OTHERWISE SPECIFIED

REV.	DESIGN BY	DATE	PACIFIC NOVELTY MANUFACTURING
A	A.J.	10-2-81	MARINA DEL REY CA. 90291
B	R.S.M.	5-12-82	TITLE
			ASSY., REGULATED POWER SUPPLY
			SIZE D P/N # 05-10016-01
			SHEET 1 OF 1



- 4 COMPONENT MOUNTED ON CHASSIS.
- 3. ALL RESISTANCE VALUES IN OHMS $\pm 5\%$, $\frac{1}{2}W$.
- 2. ALL CAPACITANCE VALUES IN MICROFARADS.

NOTES: UNLESS OTHERWISE SPECIFIED

REV.	DATE	BY	APPROVED	DESCRIPTION
A	10-28			PACIFIC NOVELTY MANUFACTURING MARINA DEL REY CA 90291
B	11-22			ASSY. PCB, REGULATED POWER SUPPLY
C	11-22			
D	05-1003-01			
				SHEET 1 OF 1

