DX-1 MULTI CONVERSION KIT VIDEO GAME SYSTEM

INSTALLATION INSTRUCTIONS





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F.C.C. COMPLIANCE

THE DATA EAST MULTI CONVERSION SYSTEM DX-1 UTILIZES ELECTRONIC SIGNALS THAT COULD CAUSE INTERFERENCE TO RADIO AND TV RECEPTION IF IT IS NOT PROPERLY INSTALLED.

IF THE INSTALLER OF THIS SYSTEM DEVIATES FROM THE INSTRUCTIONS CONTAINED HEREIN, THERE MAY BE INTERFERENCE CREATED IN VIOLATION OF F.C.C CLASS A STANDARDS.

HIGH VOLTAGE

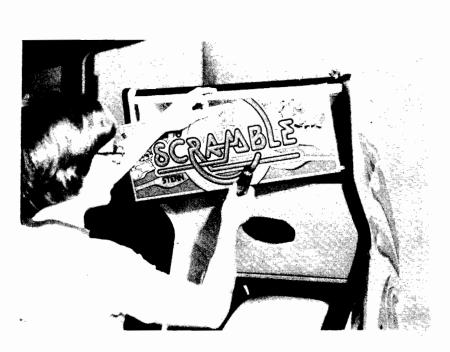
ALL VIDEO GAMES THAT MAY BE CONVERTED TO THE DATA EAST MULTI CONVERSION SYSTEM USE LIFE THREATENING HIGH VOLTAGES. ONLY QUALIFIED ELECTRONIC PERSONNEL SHOULD PERFORM THESE CONVERSIONS.

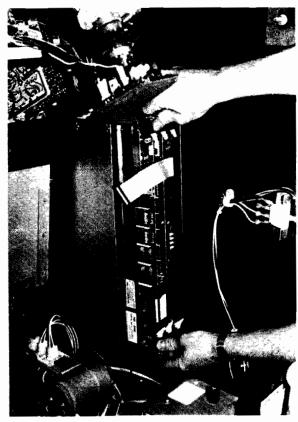
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CHANGING A GAME IS EASY

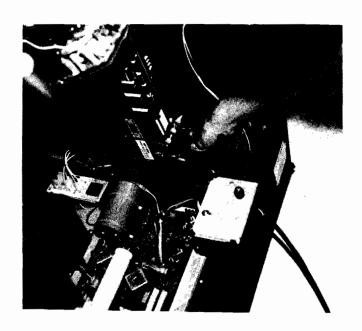
STEP BY STEP SUMMARY



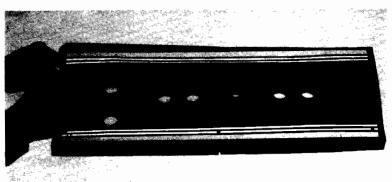


1. REMOVE ALL OLD GRAPHICS.

2. INSTALL CARD CAGE & POWER SUPPLY.



3. INSTALL TAPE DECK AND TEST

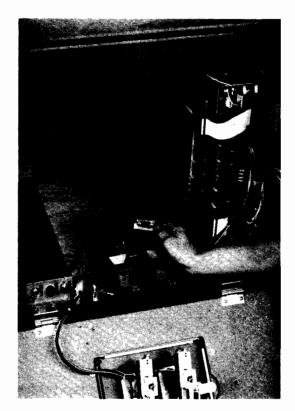


4. APPLY OVERLAY TO CONTROL PANEL

STEP BY STEP SUMMARY



5. REPAINT AND OR APPLY NEW GRAPHICS



6a INSTALL GAME KIT



6 b. INSTALL GAME KIT



7. ADMIRE CONVERTED GAME

INTRODUCTION

GENERAL DESCRIPTION

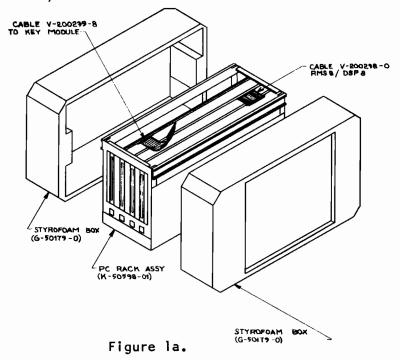
The Data East MULTI CONVERSION DX-1 is a video game reprogrammable conversion system that can extend the usable life of old game cabinets.

The DX-1 System is designed to accept the game kits offered for use in the DECO CASSETTE INTERCHANGEABLE GAME SYSTEMS 1T3, 1T4, 1T32, 1U2, 1U3, 1U4, NDB-4x, & 1US5 which have been offered in the United States since 1980.

As the DECO CASSETTE SYSTEM is so flexible and able to accept games designed for a wide variety of controls which were not included in many of our old game cabinets; our customers must accept the responsibility of control panel and graphics modifications depending upon the game kits ordered.

The DX-1 MULTI CONVERSION SYSTEM consists of a Card Cage, three Circuit Boards, a Tape Deck Assembly, Interconnection Cables, and Cosmetic Graphics. Optional power supplies are available and recommended by Data East for most applications.

The card cage (with the three Printed Circuit Boards, Cable V-200238-0 and Cable V-200239-0 installed) is packaged in a specially molded styrofoam box for maximum protection. (See Figure 1a)



The Cassette Deck Assembly and its associated mounting hardware is also packaged in a special molded styrofoam box. (See Figure 1b)

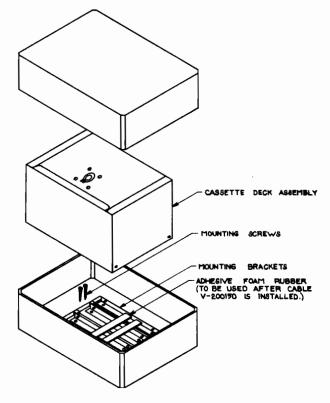
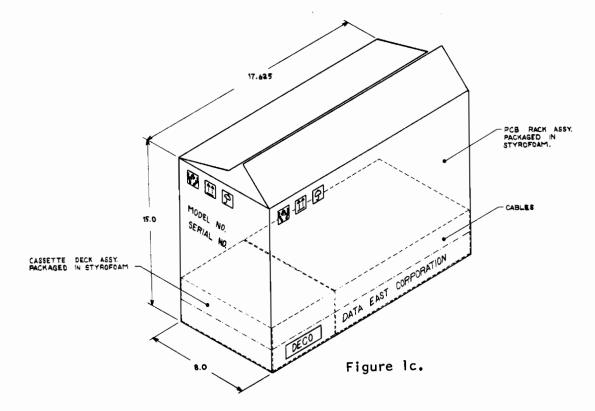


Figure 1b.

Cable assemblies V-200240-1, V-200150-1, V-200236-1, and V-200235-1 are all packaged in a cardboard container placed in the bottom of the master shipping container. (See Figure 1c)



Cosmetic Graphics are packaged in a separate container which will also contain the specific game package ordered with the MULTI CONVERSION SYSTEM.

CHOOSING THE MACHINE TO BE CONVERTED

One of the most important considerations determining the success of your conversion will be the condition of the machine that you are converting. Obviously, if the picture is dull with its present game; it will be no better with the conversion system. If you have a choice, select a machine that has an instruction manual and/or good primary wiring diagrams.

Cosmetic Considerations: Since it is extremely important that all visible graphics, original manufacturers name (other than serial number plate), logos and etc are removed or covered by new graphics, a proper choice of cabinet in this phase of the conversion can save you much time.

Mechanical considerations: Make sure the integrity of the cabinet is such that the converted game will not be the vandals dream. Remember that you may possibly be making more game interchanges in this cabinet. Review the control panel to identify what changes will be required so that you will be properly prepared. Make sure there is enough room to install the Multi Conversion system and still have access for service.

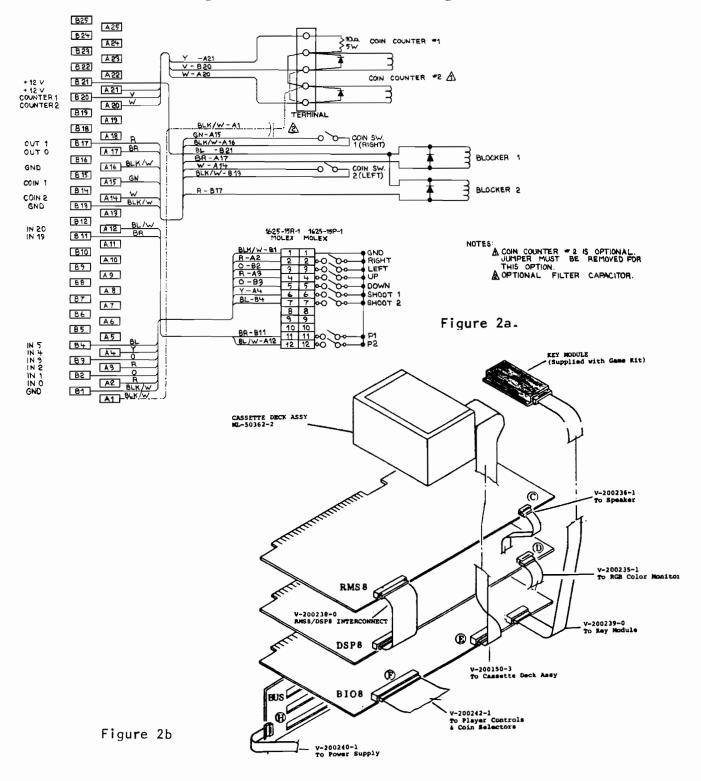
Electronic considerations: The Data East MULTI CONVERSION SYSTEM is designed to operate with color RASTER SCAN monitors, mounted in the vertical direction (your home TV screen is mounted in the horizontal direction). The system also requires four basic power supply voltages. The regulated voltages are + 5 volts, -5 volts, and + 12 volts. Under certain conditions it may be desirable to use an unregulated source of + 12 volts (called +13 volts in technical descriptions).

GETTING STARTED

REVIEW

All of the games designed for use with the MULTI CONVERSION SYSTEM require a control lever (joystick) and at least one pushbutton for action and two pushbuttons for 1PLAYER and 2PLAYER selections.

Review the interconnection diagram to determine the controls you will be using and the location of all the components required. (See Figures 2a & 2b)



keview the instruction manual for the game you are converting and determine if you can utilize the power supply currently in the game and also determine how much if any of the present wiring may be used. Refer to the electrical specification section for the MULTI CONVERSION SYSTEM requirements.

The major components that you will have to install will be PCB Card Rack, the Cassette Tape Deck and Power Supply. The card rack and the tape deck assembly should be located for ease of access so that game interchageability and dip switch changes can be easily accomplished.

It is recommended that the card rack be installed vertically as shown, being sure that the component side of the pcb's are facing the inside of the cabinet to provide easy access to the dip switches and the sound volume control. (see Figure 3).

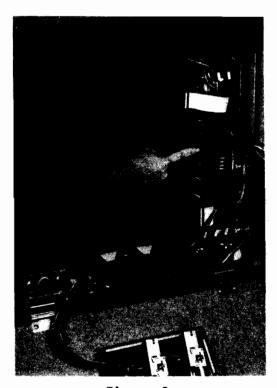


Figure 3

The system will operate with the card rack assembly mounted at any position; however, care should be taken to consider proper ventilation and cooling of the pcbs. Heat is generated by the electronic components mounted on the pcbs and if the boards are not ventilated these temperatures can cause severe damage to the pcbs.

CARD RACK INSTALLATION

There are two metal brackets packaged with screws and placed in the cardboard box with the interconnecting cables. These metal brackets are to be screwed to the sides of the card rack to provide a means of attaching the card rack to the side of a cabinet.

Determine the most desirable location for the card rack and temporarily install it. Try removing one of the pcb's from the rack to determine that enough space was allowed for service at a later date.

Locate the power supply to the card rack cable assembly (cable H) and be certain that you have allowed for adequate slack in this cable when it is connected to the power supply.

NOTE

IT IS IMPERATIVE THAT THE MAIN POWER LINE GROUND BE ATTACHED DIRECTLY TO THE GROUNDING BOLT ON THE CARD RACK (SEE PICTURE) BEFORE IT IS ROUTED TO OTHER PARTS OF THE SYSTEM.

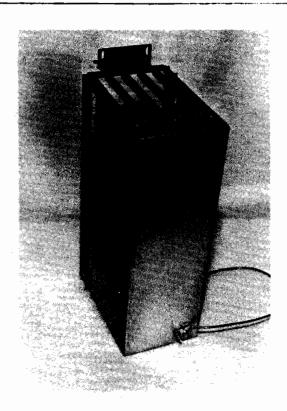
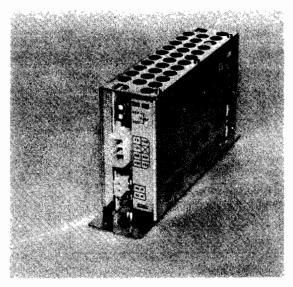


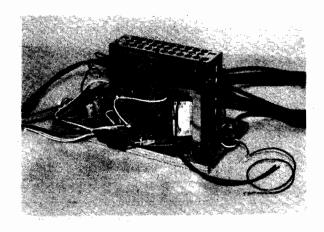
Figure 4.

POWER SUPPLY OPTIONS

Approximately one out of twenty machines that are candidates for conversion have sufficient power supply capacity to operate the MULTI CONVERSION SYSTEM. After reviewing your machine if you need additional power, Data East offers two alternate power supply assemblies for your use. They are pictured below.



SWS-60 Figure 5a



NDB-04PS Figure 5b

The SWS-60 switching power supply has sufficient capacity to handle all but the most difficult situations. (see electrical specification section)

The NDB-04PS Power Supply Assembly includes the SWS-60 as well as an Isolation Transformer (100vac), a Noise Filter, and an Unregulated +12 Volt Supply. (see electrical specification section)

Connect the power supply to the card rack using the cable supplied (Cable H). Make sure that each connector is properly seated and that the cable is not routed in such a way that it could be damaged by future vibration or equipment motion. (ie across a sharp piece of metal or steel staples)

POWER SUPPLY INSTALLATION

The location of the power supply was considered above with respect to the length of the power cable; however, consideration must be given to proper ventilation of the power supply. Proper access of the power supply should also be considered so that voltage measurements may be made and adjusted according to the power supply specifications.

POWER SUPPLY CONNECTION

Be sure that proper fuse protection has been provided for the power supplies and thoroughly review the primary wiring circuit. If necessary, cut the cable ties so that you may trace each wire to assure that it is properly connected.

NOTE

POWER SUPPLIES GENERATE HEAT DURING OPERATION AND MANY NEED TO BE DE-RATED AT HIGHER TEMPERATURES. REVIEW YOUR POWER SUPPLY SPECIFICATIONS AND IF THERE IS ANY DOUBT RUN TEMPERATURE TESTS PRIOR TO PLACING EQUIPMENT ON LOCATION.

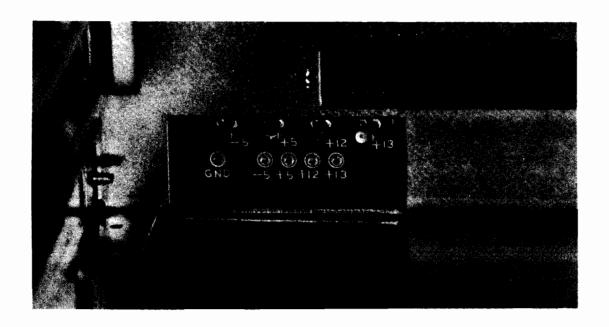
CUSTOMER-PROVIDED POWER SUPPLY SYSTEM.

After determining that the power supply you intend to use has sufficient capacity, use a voltmeter to assure you have properly identified all of the required output voltages.

Refer to the CABLES section—Cable H (V-200240-1) for color code and pin numbers of each of the required connections. Connect the unterminated ends of Cable H (Power Supply-to-Card Rack Cable) to your power supply, taking care that each connection is proper and that each is of the CORRECT VOLTAGE AND POLARITY. Insert the other end of the cable into the Card Rack Motherboard (BUS 10) using the connector provided. Make sure that the connector is properly seated and that the cable is not routed in such a way that it could be damaged by future vibration or equipment motion. (ie across a sharp piece of metal or steel staples)

APPLYING POWER

Without any pcb's inserted into the card rack, turn the Main Power Switch ON. By looking into the card rack, you will see four LEDs adjacent to CN2 on the motherboard (See Figure 6). One for each type of power required by the DX-1. (+5V=RFD, -5V=GREEN, +12V=YELLOW, +13V=AMBER). Note that all four LEDS are lit. Should any fail to light there may be a mis-connection or a fault in the power supply.



CAUTION

DO NOT UNDER ANY CIRCUMSTANCE INSERT PCB'S INTO THE CARD CAGE UNTIL ALL LEDS ARE LIT!
DO NOT INSERT OR REMOVE PCB'S WHILE POWER IS APPLIED TO CARD RACK!

TO DO SO MAY CAUSE IRREPARABLE DAMAGE TO THE PCB'S AND WILL VOID THE WARRANTY.

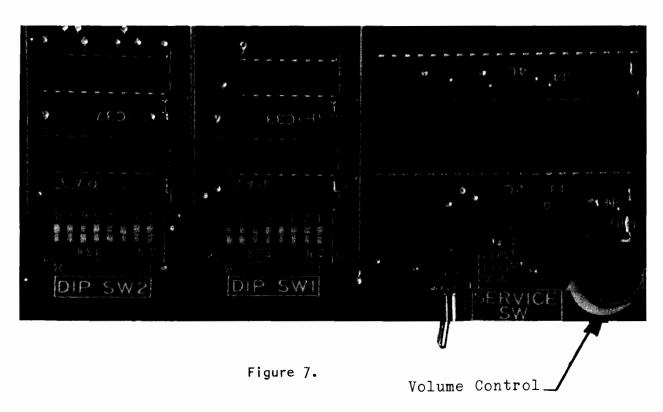
After determining that all four LEDs are lit, turn the Main Power Switch OFF. Insert the pcbs into the card rack. Determine that all four LEDs are still lit, if so turn off the main power switch and proceed with further interconnection.

CONNECTING THE SPEAKER

Cable C (V-200236-1) is provided with unterminated leads for connection to your speaker. Sound is generated in the RMS-8 PCB and is available at CN-1. Cable C is provided with a connector compatible with CN-1.

QUICK SOUND AND SYSTEM TEST

Adjust the Volume Control (located to the left of CN-1) to its mechanical mid-range. Make sure that all the switches on DIP Switch 1 are in the OFF position and that there are no cables connected to the BIO-8 PCB. Turn the Main Power Switch ON. A two-tone alarm signal should be heard in the speaker.



CONNECTING THE VIDEO MONITOR
Video is generated in the DSP-8 PCB and is
connected to the monitor via connector CN-1. Cable
D(V-200235-1) is supplied with a mating connector
to CN-1 on one end and unterminated wires on the
other end (See the cable section for color coding
and pin numbers). Connect the unterminated wires
to your monitor inputs, being careful to ensure
that all connections are made correctly and are
routed to protect these video cables from the
extremely high voltages that exist in monitors.

CONNECTING THE VIDEO MONITOR

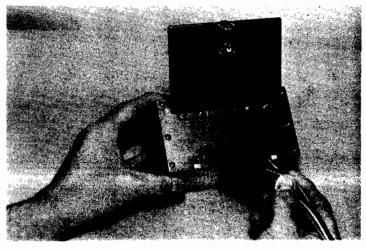
Turn the Main Power Switch ON and wait a sufficient time for the monitor tube to reach operating temperature. You should see a blue background picture with the following large sized words DECO CASSETTE SYSTEM printed in red. Following that, smaller white letters should show WAIT UNTIL COUNTER READS 000 THEN GAME START (See illustrations in Trouble Shooting Section). Any other colors than blue, red and whiter indicates that an error was made in connecting the video wires and should be double checked. If there is un-decipherable video on the screen, the Vertical and/or Horizontal Hold adjustments on your monitor may have to be adjusted to display the picture described above.

Should the picture be stable but turned upside down or backwards, the wires to the Deflection Yoke may have to be reversed. Refer to the instructions for the specific monitor you are using.

If the position of the picture is oriented severely off the screen or an extremely unstable picture results, the Sync Signal Input to the monitor may have to be changed from its original position to the Horizontal and Vertical Negative sync position.

INSTALLING THE TAPE DECK ASSY

Using Cable E(V-200150-3), install the Edge Connector onto the pcb of the Tape Deck Assy. You will be able to see the pcb by looking through the rectangular hole in the back of the Tape Deck Housing. Then remove the adhesive-backed foam rubber strips from the cassette deck styrofoam box and install the strips to each side of the rectangular hole so as to provide an effective dust seal for the tape deck assembly. Insert the other connector into CN-2 of the RMS-8 pcb. (See Figs. 8a & 8b)



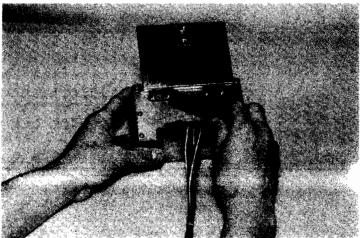


Figure 8a

Figure 8b.

INSTALLING THE GAME KIT

DIP SWITCHES

One of the most important aspects of installing a game kit is making sure the DIP switches are properly programmed. Incorrect settings can prevent the system from operating. Since the main microprocessor samples these switches when the main power is applied, always test the system reloading after changing any switch position. This test is accomplished by turning the Power Switch OFF and after a 10 second wait turn the Power Switch ON again. Normal tape reloading should occur.

The LIP switches are located on the RMS-8 PCB, adjacent to the Volume Control. Typical DIP switch settings are shown in Figure 9.

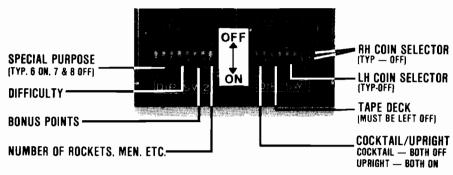


Figure 9.

INSERTING THE TAPE

Install the microcassette tape into the tape deck, "A" side up. Close the the top of the tape deck housing and proceed to the installation of the Key Module. (See Figure 10)

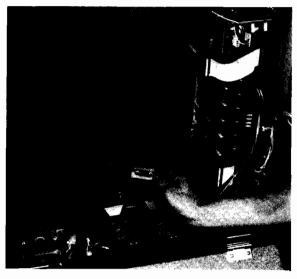


Figure 10.

CONNECTING THE KEY MODULE

The key Module must match the tape installed and must be installed properly or the tape will not load. It is connected to the BIO-3 through cable V-200239-0 (See Figure 11).



Figure 11

COSMETICS

All components that contain any possible original manufacturers name (other than the serial number plate), graphics or game information must be removed or covered by some means. Do not destroy or discard the Header Plex (top flashing), Control Fanel and or Monitor Plex or Glass as these items may have to be used or modified for your conversion.

The Control Panel and Monitor areas are probably the most important components of your conversion since they are the main interface between the player and the game.

The Control Panel: If the control panel has a joystick that is convertible from 4 way to 8 way action (and vice versa), one or more pushbuttons for "SHOOT or ACTION", and two pushbuttons for 1PLAYER and 2PLAYER selections you are ready to proceed to CONTROL PANEL OVERLAY INSTRUCTIONS. Any mechanical modifications, such as adding a joystick, should be accomplished before installing the control panel overlay. A template has been included as an aid in locating and drilling for a WICO joystick (See Figure 12a). A GRFENLEE Radio Chassis Punch (available at electrical supply store and some hardware stores) produces a quick and clean large hole for the joystick shaft to go through (See Figure 12b).





Figure 12a

Figure 12b

CONTROL PANEL OVERLAY INSTRUCTIONS: The generic Data East Control Panel Overlay supplied, has been specifically designed to retain the player controls within the two sets of lines printed on the overlay. It is shipped with a very strong adhesive applied to one side which is protected with an easy-release paper backing. Since the overlay is oversize, carefully position it over the control panel before removing the protective backing to determine exactly how it will be installed. Remove the backing and apply the overlay to the panel as it was positioned above. Smooth the overlay from the center of the panel towards the edges being sure to remove air bubbles as you proceed. The excess overlay material at the top and bottom of the control panel should be wrapped around the edges to prevent players from peeling the material off. All holes may be cut and other excess overlay material may be trimmed using an Exacto Knife or razor blade.

Carefully apply the appropriate pushbutton decals and install new pushbuttons according to the schedule below.

1PLAYER, 2PLAYER Yellow SHOOT 1 (Fire, Action) Red SHOOT 2 (only when reqd) Blue

THE MONITOR PLEX OR GLASS: Many games have been manufactured with graphics screen printed to the back side of the plex. These graphics must be removed or a new clear plex installed. One method of removing the screen printed material is to soak a rag in lacquer thinner and wipe the plex clean. It may take repeated applications of the thinner to completely remove all traces of the graphics. An oversized black Cardboard Underlay has been supplied to be placed under the monitor plex. Using masking tape, temporarily align the viewing hole of the underlay with the monitor screen. Mark and trim the excess cardboard as required.

CABINET SIDES AND FRONT: Many techniques are available to prepare the cabinet for conversion. A few are listed below:

SIDE DECALS- Remove carefully using heat gun or cover with paint.

REPAINT- Paint over all graphics using a conventional roller and latex based paint. Use a sufficient amount of paint to totally cover all previous graphics.

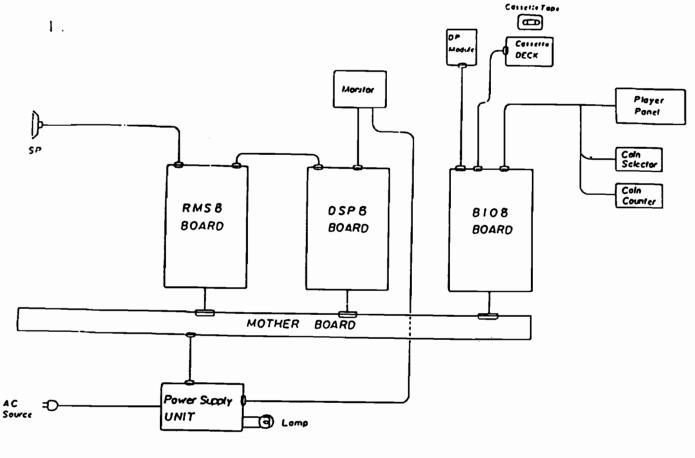
APPLY NEW GRAPHICS- New side graphics have been included in the kit which will provide new color and may also cover up some types of old graphics.

HEADER PLEX (TOP FLASHING): A new marquee with game graphics is supplied with each of DATA EAST'S game kits. Due to the large variety of sizes of header plex's used by the various game manufacturers, you may have to cut the marquee to size using an appropriate saw. In some cases the marquee will be too small to completely fill the opening left after the removal of the original plex. This may be solved by removing the screen printed graphics from the original plex (see montior plex) and mounting the DATA EAST marquee behind it. If the original plex is longer, you may wish to saw spacers from the original plex. Paint them black and put them on one or both sides of the new marquee.

TROUBLE SHOOTING GUIDE

1. FUNCTIONS

THE THREE PCB'S DO NOT FUNCTION AS A GAME UNLESS TAPE PROGRAM IS LOADED TO THE PCB'S.



STRUCTURE

2. INDIVIDUAL FUNCTION OF EACH BLOCK

DSP 8

- 1) CONTROL CPU AND ITS RELATED CIRCUIT
- 2) COLOR SIGNAL GENERATOR AND CONTROL
- 3) STANDARD PATTERN GENERATOR AND TIMING SIGNAL GENERATOR
 - * CPU CLOCK
 - * STROBE SIGNAL
 - * DYNAMIC RAM TIMING SIGNAL
- 4) CRT TIMING SIGNAL GENERATOR
 - * HORIZONTAL
 - * VERTICAL
 - * SYNCHRONIZE
- 5) DISPLAY CONTROL
 - * MISSILE GENERATOR AND CONTROL
 - * MIXMODE GENERATOR AND CONTROL
 - * MAIN GRAPHIC GENERATOR AND CONTROL

RMS 8

- 1) DYNAMIC MEMORY (48 K BYTE)
 - * PROGRAM
 - * DISPLAY
- 2) SOUND
 - * CPU
 - * ROM/RAM
 - * SOUND CHIP
 - * MIXING
 - * COMMUNICATION WITH MAIN CPU

- 3) RESET SIGNAL GENERATOR
- 4) DIP SWITCH READING
- 5) BOOTSTRAP ROM

віо 8

- 1) CONTROL PANEL SWITCH INPUT READING
- 2) COIN SWITCH ACTIVATION READING AND COIN COUNTER DRIVE
- 3) NMI GENERATION FROM SERVICE/COIN SWITCH ACTIVATION
- 4) VOLUME INPUT AD CONVERSION
- 5) BACK DISPLAY CONTROL
 - * READING/WRITING PUNCTION FROM CPU TO MEMORY
 - * HEAD LIGHT MODE
 - * DISPLAY HORIZONTAL/VERTICAL SHIFT
- 6) CASSETTE DECK INTERFACE

CASSETTE DECK

1) GAME PROGRAM LOADING

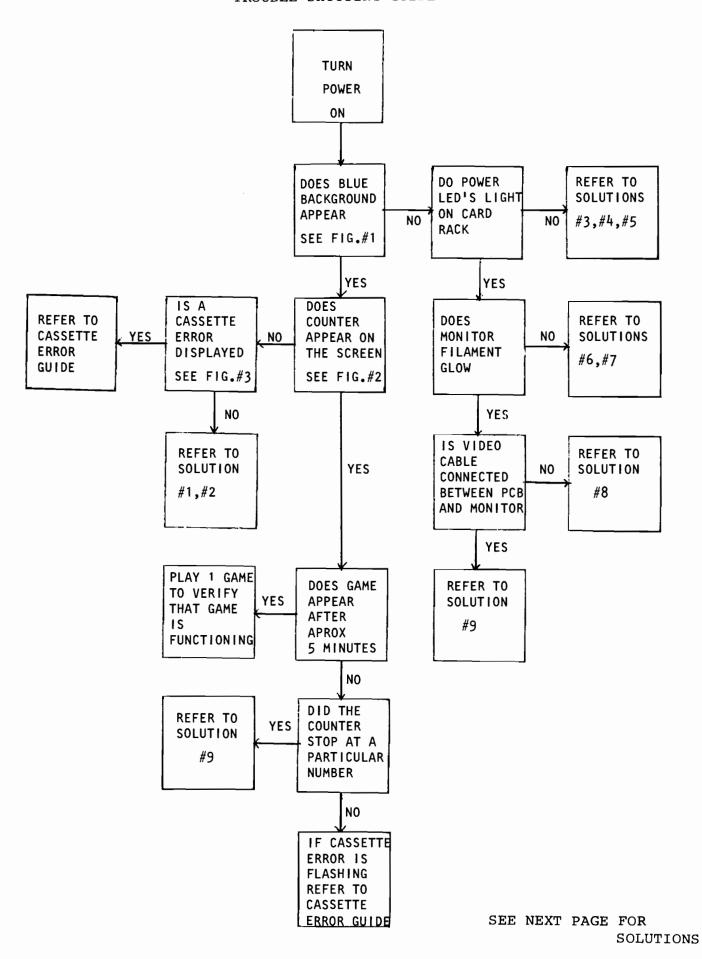
DC POWER SOURCE

1) SWITCHING REGULATOR

+5V (REGULATED)	6A
+12V (")	1A
+13V (UNREGULATED)	2A
-5V (REGULATED)	0.1A

IF REGULATED +12V, 3A COMBINATION IS USED IT ALLOWS +13V UNREGULATED POWER USE.

DECO CASSETTE SYSTEM TROUBLE SHOOTING GUIDE



OPERATING PROCEDURES, SOLUTION GUIDE

SOLUTIONS

#1 CHECK DIP SWITCH SETTINGS

SETTINGS MUST ALWAYS BE

DII	SW	I	5.OFF	6.OFF	
DII	SW	II	6.ON	7.OFF	8.OFF

- #2 CHECK KEY MODULE CONNECTION
- #3 CHECK FUSES
- #4 CHECK AC INPUT TO SWITCHING REGULATOR 100V.AC AND DC OUTPUT +5, -5, +12
- #5 ASSURE POWER IS CONNECTED TO CARD RACK
- #6 CHECK MONITOR POWER CONNECTOR FOR 100V.AC
- #7 CHECK MONITOR FUSES
- #8 CHECK VIDEO CONNECTOR
- #9 EXCHANGE PCB'S

D E C O D E C O CASSETTE CASSETTE SYSTEM SYSTEM -BLUE BACKGROUND WAIT UNTIL COUNTER 1 2 0 BELOW READS 000 THEN GAME START D E C O CASSETTE SYSTEM CASSETTE ERROR! ←REFER TO ERROR GUIDE #59

CASSETTE ERROR GUIDE

ERROR CODE	SOLUTIONS
01	1,8,9,3
02	3,4,5
03	3,4,5
04	3,4,5
32	2,3
33	5
52	8,9,4
58	3,4,5
59	6,7,8

CASSETTE ERROR SOLUTIONS

- #1 CHECK THE TAPE AND MODULE GAME NAME TO INSURE THEY ARE PROPERLY MATCHED
- #2 CLEAN THE TAPE DECK HEAD WITH ALCOHOL AND COTTON SWAB
- #3 CHANGE THE CASSETTE TAPE
- #4 CHANGE THE CASSETTE DECK
- #5 IF THE ERROR PERSISTS CHANGE THE BIO-8 BOARD
- #6 CHECK THE TAPE DECK CONNECTOR
- #7 CHECK THE KEY MODULE CONNECTOR
- #8 CHECK THE TAPE TO INSURE SIDE "A" IS FACING UP
- #9 CHECK THE TAPE TO INSURE THAT THE TAPE IS ON THE SPOOL OPPOSITE THE CAPITOL "A", IF NOT ADVANCE THE TAPE TO THE CORRECT SPOOL WITH A SCREWDRIVER

ELECTRICAL SPECIFICATIONS

Input Power Requirements:

```
Regulated
                 5 amp. Max
     +5volts
                 .2 amp. Max
     -5volts
                 1 amp. Max(logic only)
     +12volts
Unregulated
     +12volts(+13volts)
          Sound
                          .75 amp Max.
          Coin Counter
                         *(customer determined)
          Coin Blockers *(customer determined)
            *see Power Considerations below
Video Requirements
     Color Signal RGB
         Black 0 to +2v
                +2.5 v to +4v
         Image
     Sync
                 0 to +.5v
         0
         1
                +3v to +5v
```

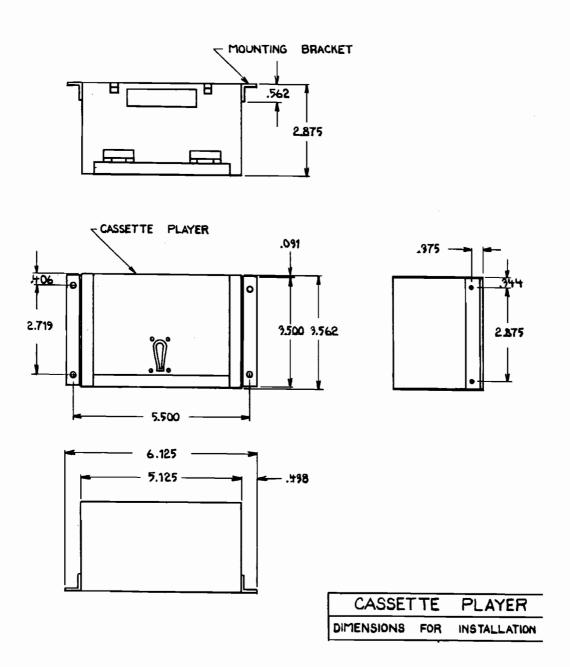
POWER CONSIDERATIONS

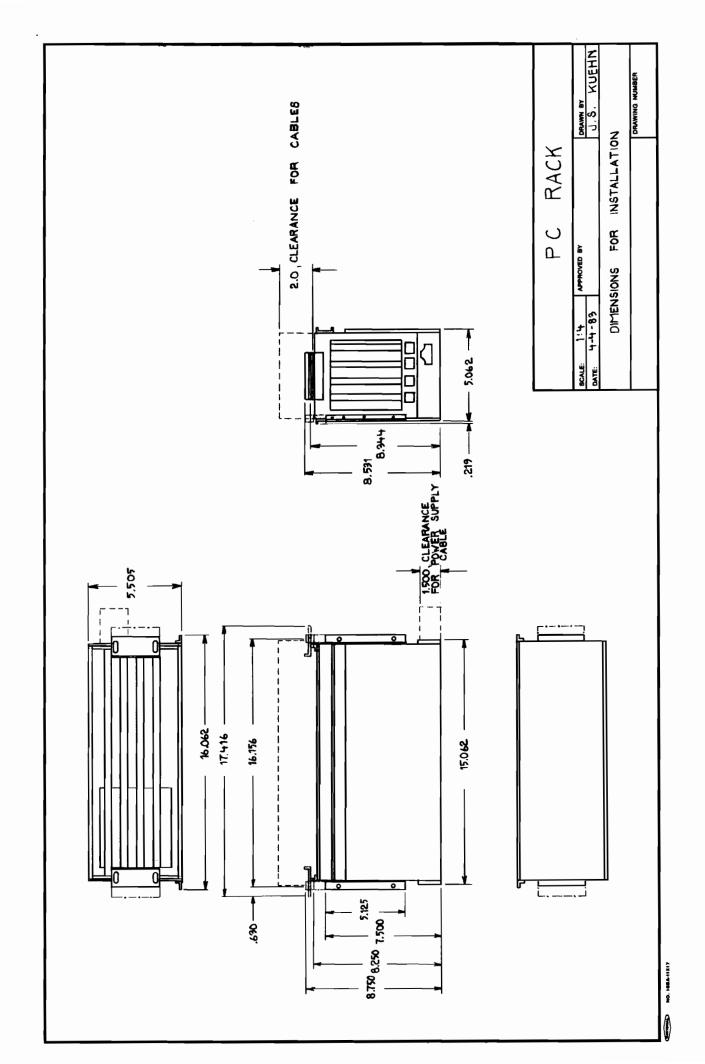
Connection and use of Coin Counters and Blockers are beyond the control of Data East and therefore should be given special consideration by the customer.

When Data East offers the SWS-60 Power Supply Option, it does so on the basis that the +12volt and the +13volt lines are jumpered together and the regulated +12volt power from the SWS-60 powers all 12volt components. In the event a coin counter that draws excessive current is connected to the system, actuation of this circuit could cause a temporary memory failure and a malfunction may occur. An optional capacitor as shown in Figure 2a may alleviate this problem.

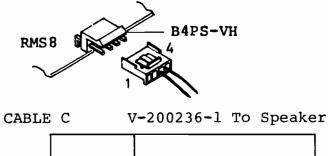
MECHANICAL SPECIFICATIONS

The following drawings provide all the necessary dimensions for the mounting of the Multi Conversion Kit.





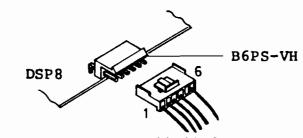
1. PC1 RMS8 CN1



1	
2	
3	SPEAKER- (GND)
4	SPEAKER+

BLACK WHITE

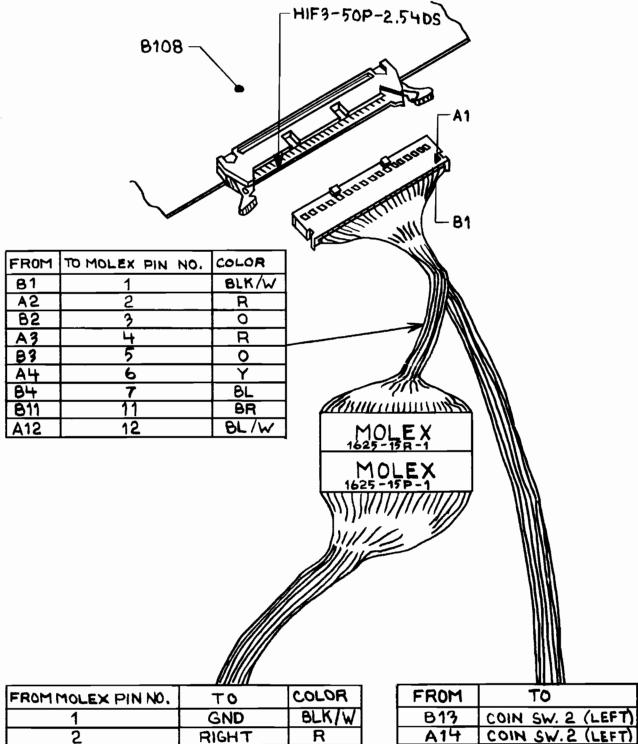
2. PC2 DSP8 CN1



CABLE D

V-200235-1 To RGB Monitor

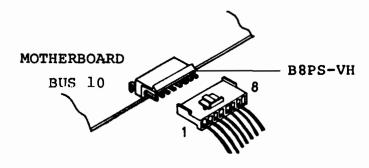
1	TV.B	BLUE
2	TV.G	GREEN
3	TV.R	RED
4	TV. GND	BLACK
5		
6	SYNC	WHITE



FROM MOLEX PIN NO.	TO	COLOR
1	GND	BLK/W
2	RIGHT	R
3	LEFT	0
4	OP UP	R
5	DOWN	0
6	SHOOT 1	Y
7	SHOOT 2	BL
11	P1	BŔ
12	P2	BL/W

FROM	TO	COLOR
B13	COIN SW. 2 (LEFT)	
A14	COIN SW. 2 (LEFT)	3
A 15	COIN SW.1 (RIGHT)	S
	COIN SW. 1 (RIGHT)	BLK/W
All	BLOCKER 1	₽R
B 17	BLOCKER 2	R
A 20	TERM. BD. / T5	₩
B 20	TERM. BD. / T3	>
A 21	TERM. BD. /T1	
B21	BLOCKER 1	

4. BUS 10 CN2



CABLE H V-200240-1 To Power Supply

1	+12V	ORANGE
* 2	+5V	RED
3	+13V	PINK
14	GND	BLACK
1 5	GND	BLACK
6	-5V	BLUE
* 7	+5V	RED
8		

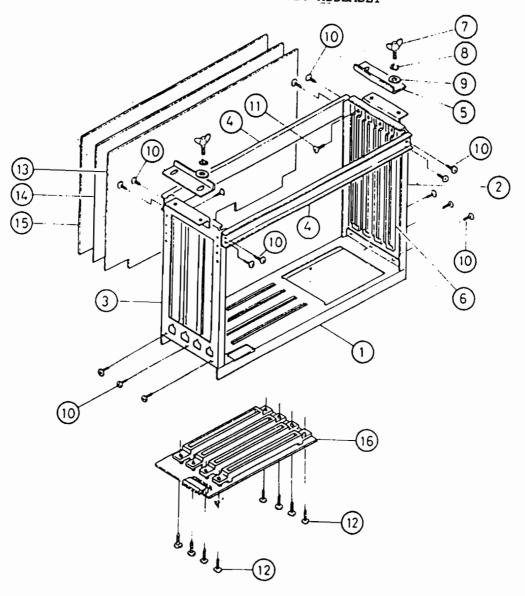
^{*2 &}amp; 7 connected internally on BUS 10

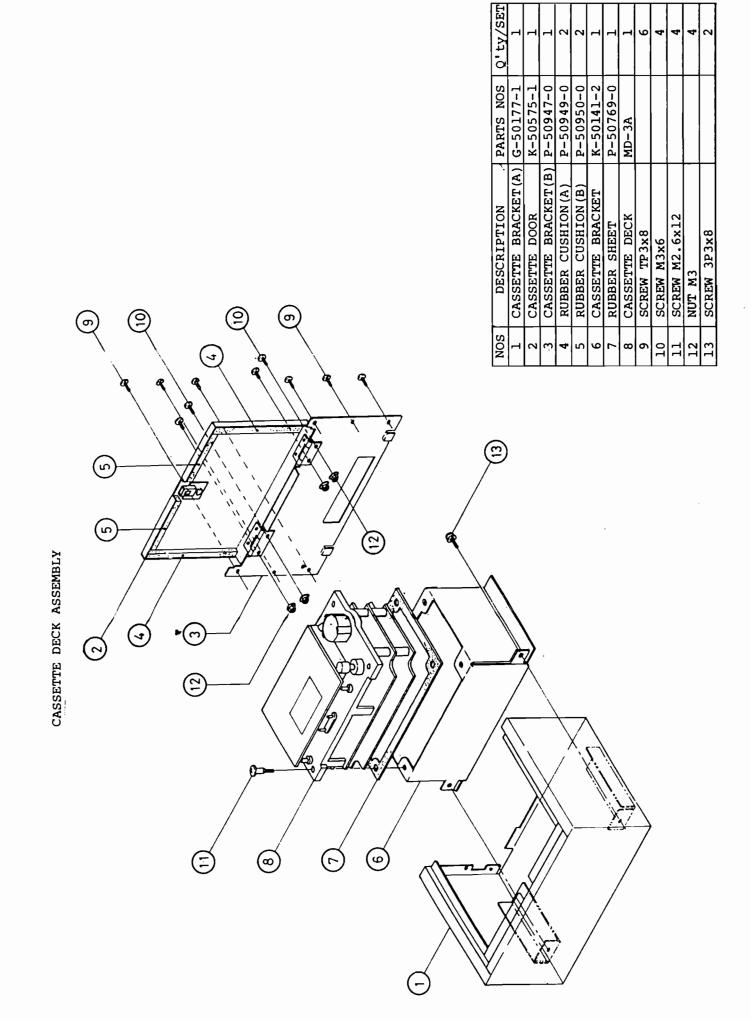
^{&#}x27;4 & 5 connected internally on BUS 10

K-50598-0

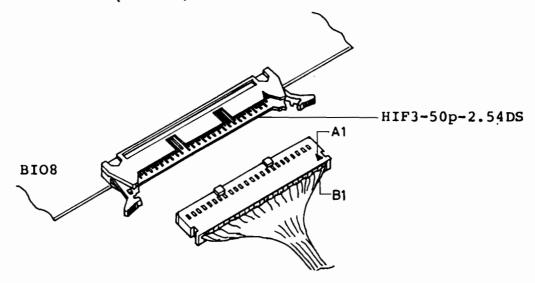
NOS	DESCRIPTION	PARTS NOS.	Q'TY/SET
1_	CN SUPPORT	k-50216-3	1
_ 2	SIDE PLATE (R)	k-50603-0	1
3	SIDE PLATE(L)	k-50604-0	1
4	SIDE PLATE		
	SUPPORT	P-50935-1	2
5	PCB STOPPER	P-59514-0	2
6	GUIDE RAIL	50-1030	8
7	WING BOLT		4
8	SW4		4
9	PW4		4
10	TP3x8		14
11	TP3x8		8
12	TP3x12		8
13	BIO8	DE-0098	1
14	DSP8	DE-0096	1
15	RMS8	DE-0097	1
16	BUS10	DE-0109	1

P.C.B. ASSEMBLY



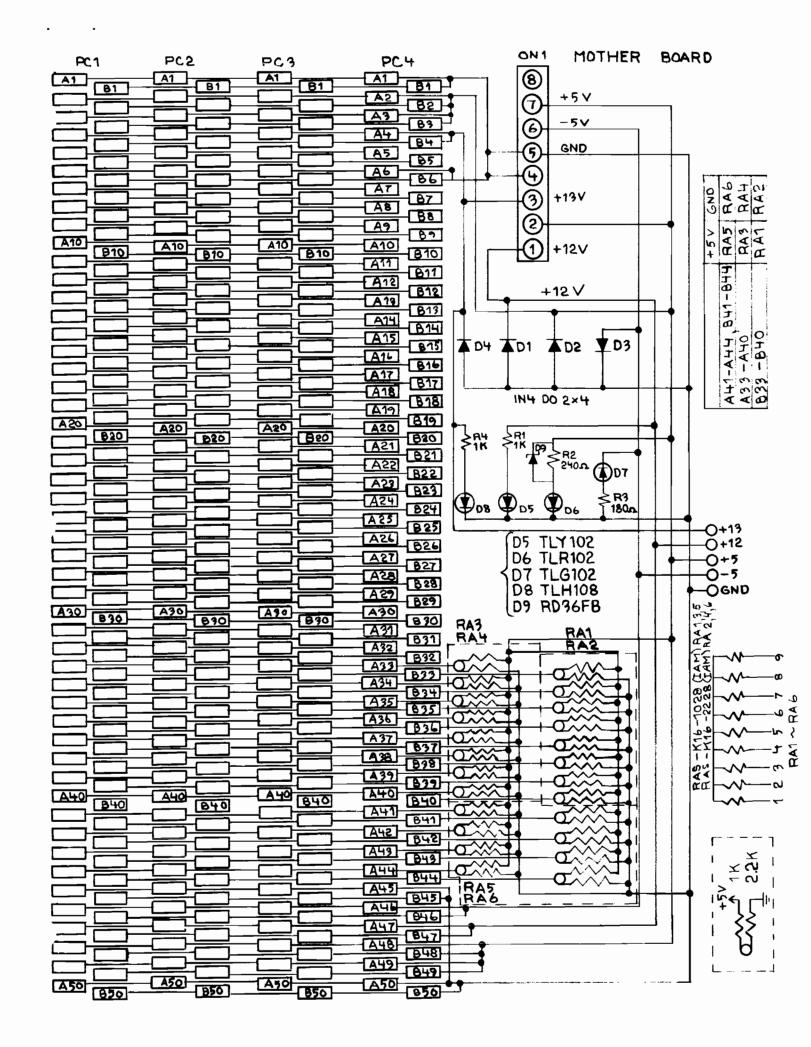


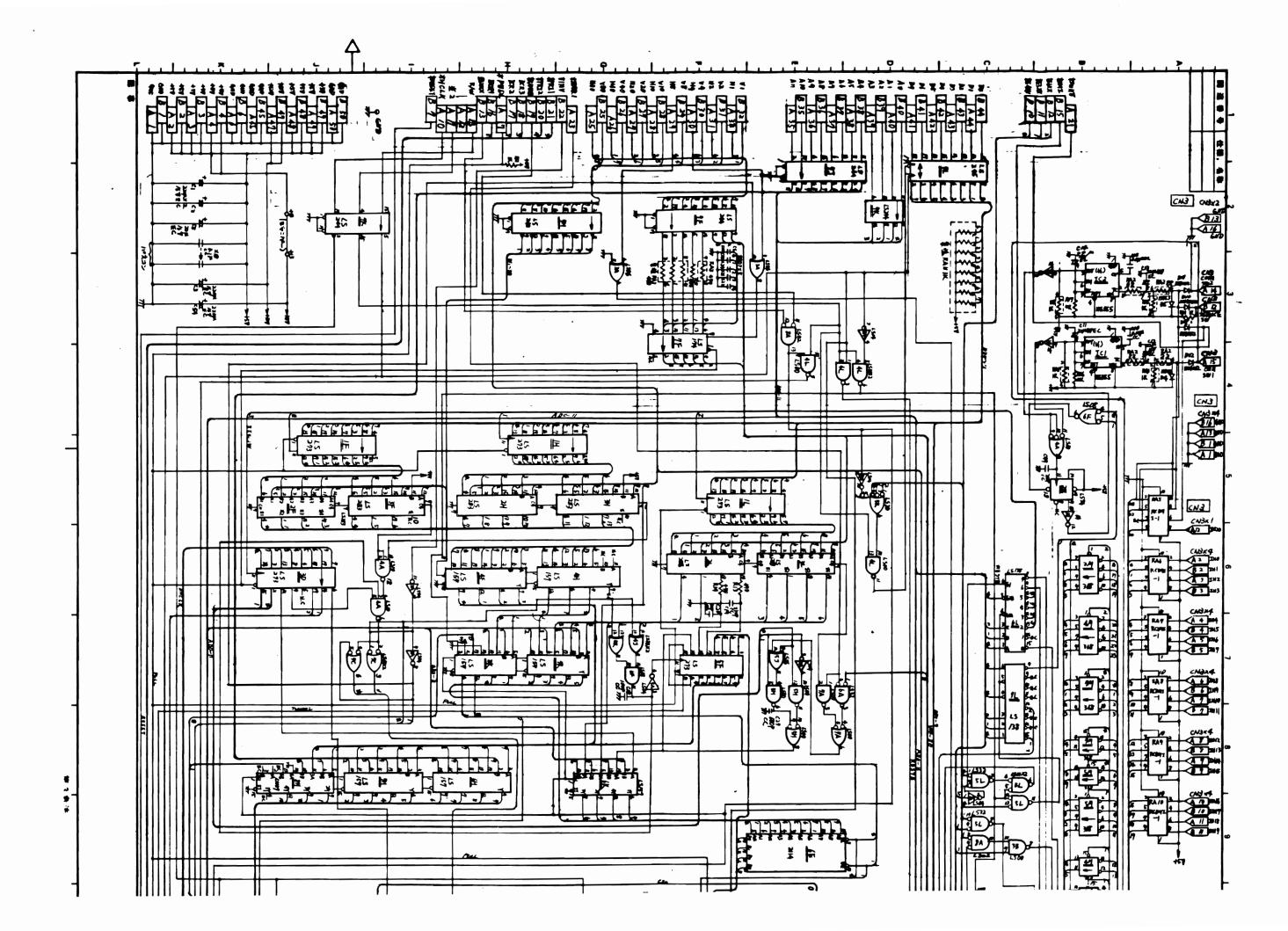
3. PC3 BIO8 CN3 (入出力用)

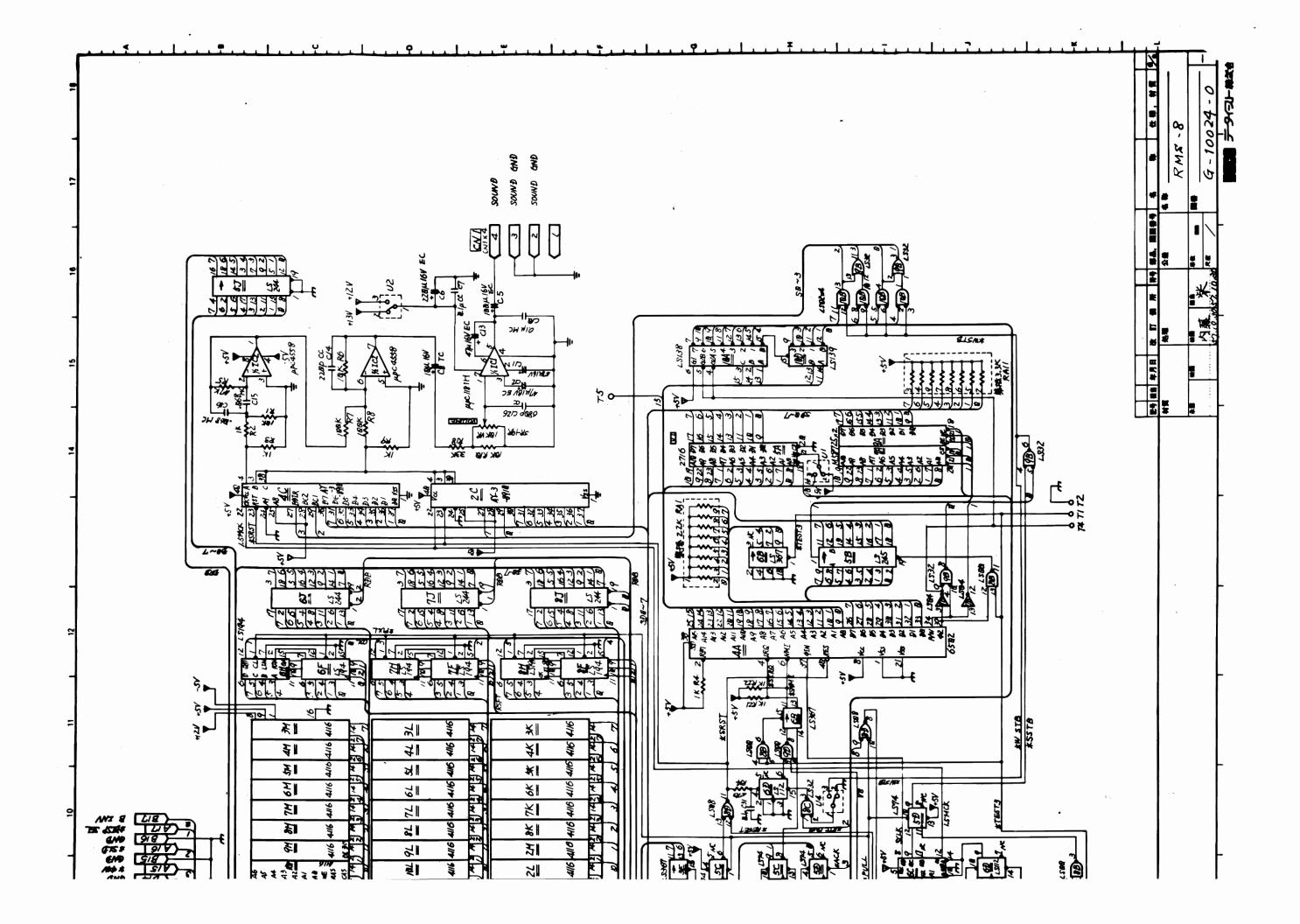


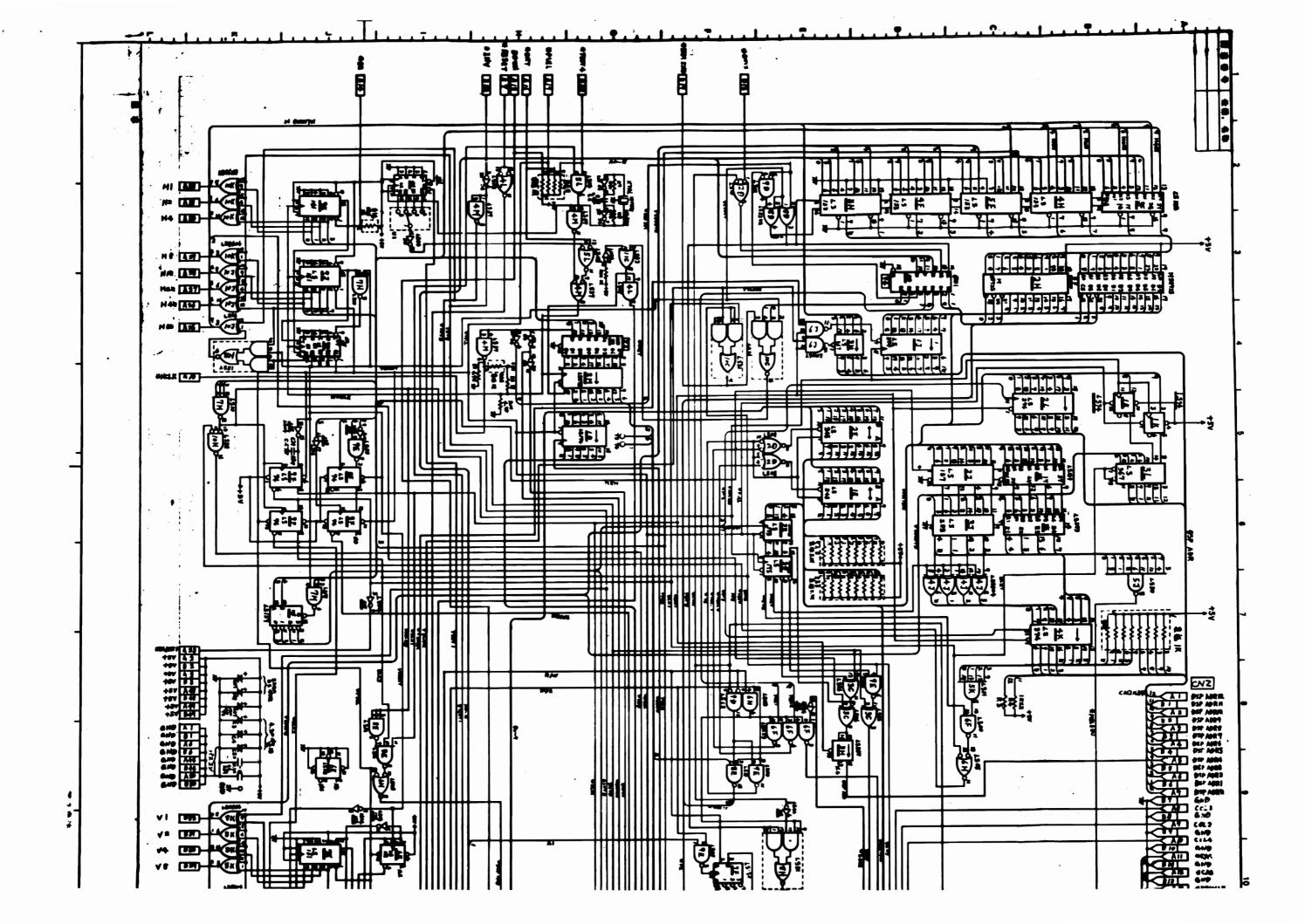
ピンNa	信号名	ピンNa	信号名
Al	GND	Bl	GND
A2	lp(R)	B2	lp(L)
A3	lp(U)	B3	lp(D)
A4	lp SHOOT 1	B4	lp SHOOT 2
A5	1p 511001 1	B5	<u> </u>
A6	2p(R)	B6	2p(L)
A7		B7	2p(D)
	2p (U)		
A8	2p SHOOT 1	B8	2p SHOOT 2
A9		В9	
A10		B10	
All		B11	lp
A12	2p	B12	SERVICE SW
A13	GND	B13	GND
Al4	COIN SW 2	B14	
A15	COIN SW 1	B15	
Al6	GND	B16	GND
A17	BLOCKER 1	B17	BLOCKER 2
A18		B18	
A19		B19	
A20	COUNTER 2	B20	COUNTER 1
A21	+13V	B21	+13V
A22	GND	B22	GND
A23		B23	
A24		B24	
A25		B25	

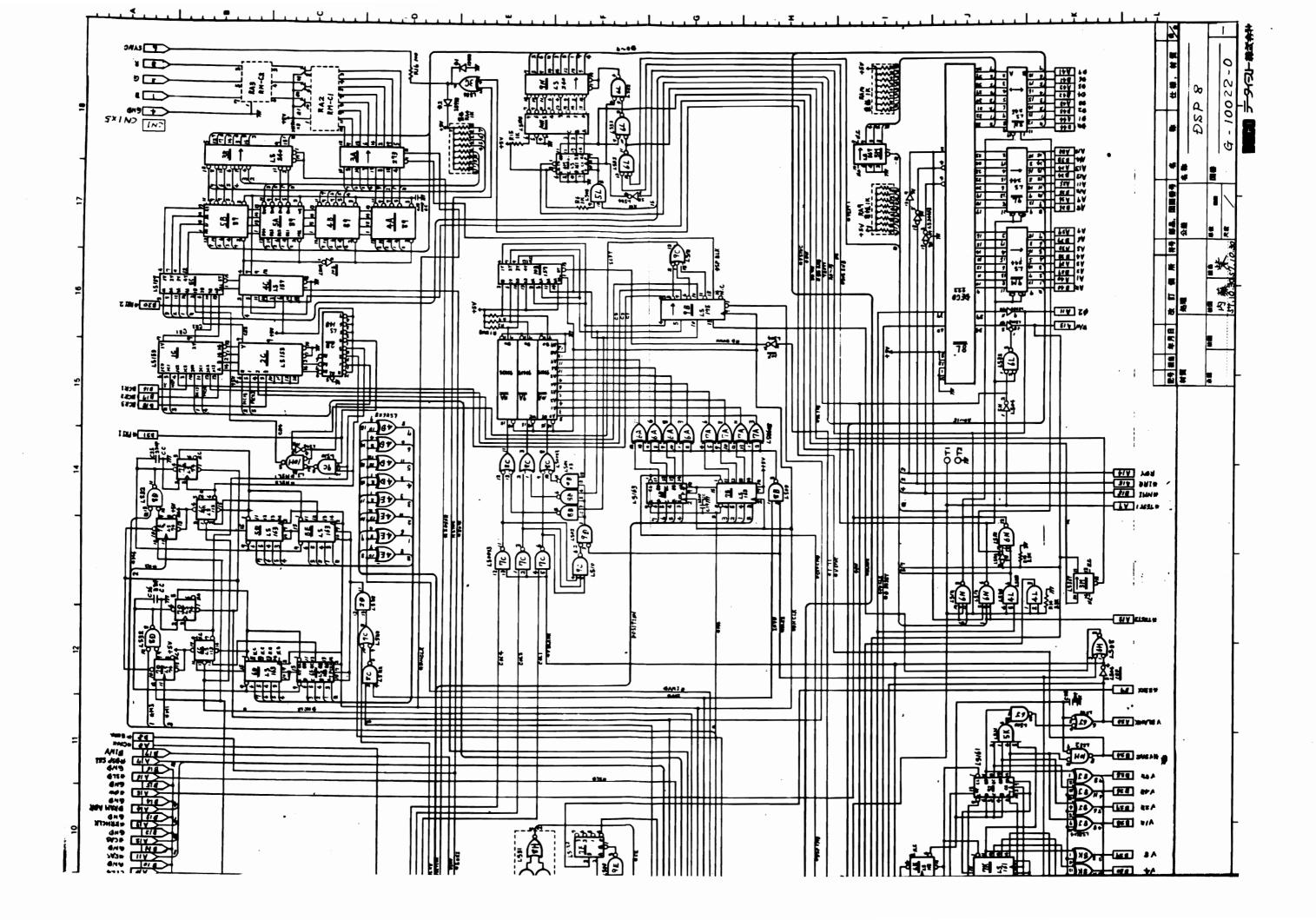
注) ゲームによって SHOOT SW1 (赤ポタン) 、SHOOT SW2 (青ポタン) を使用致しますが、スイッチ1ケ使用の場合は SHOOT SW1 (赤ポタン) に接続して下さい。

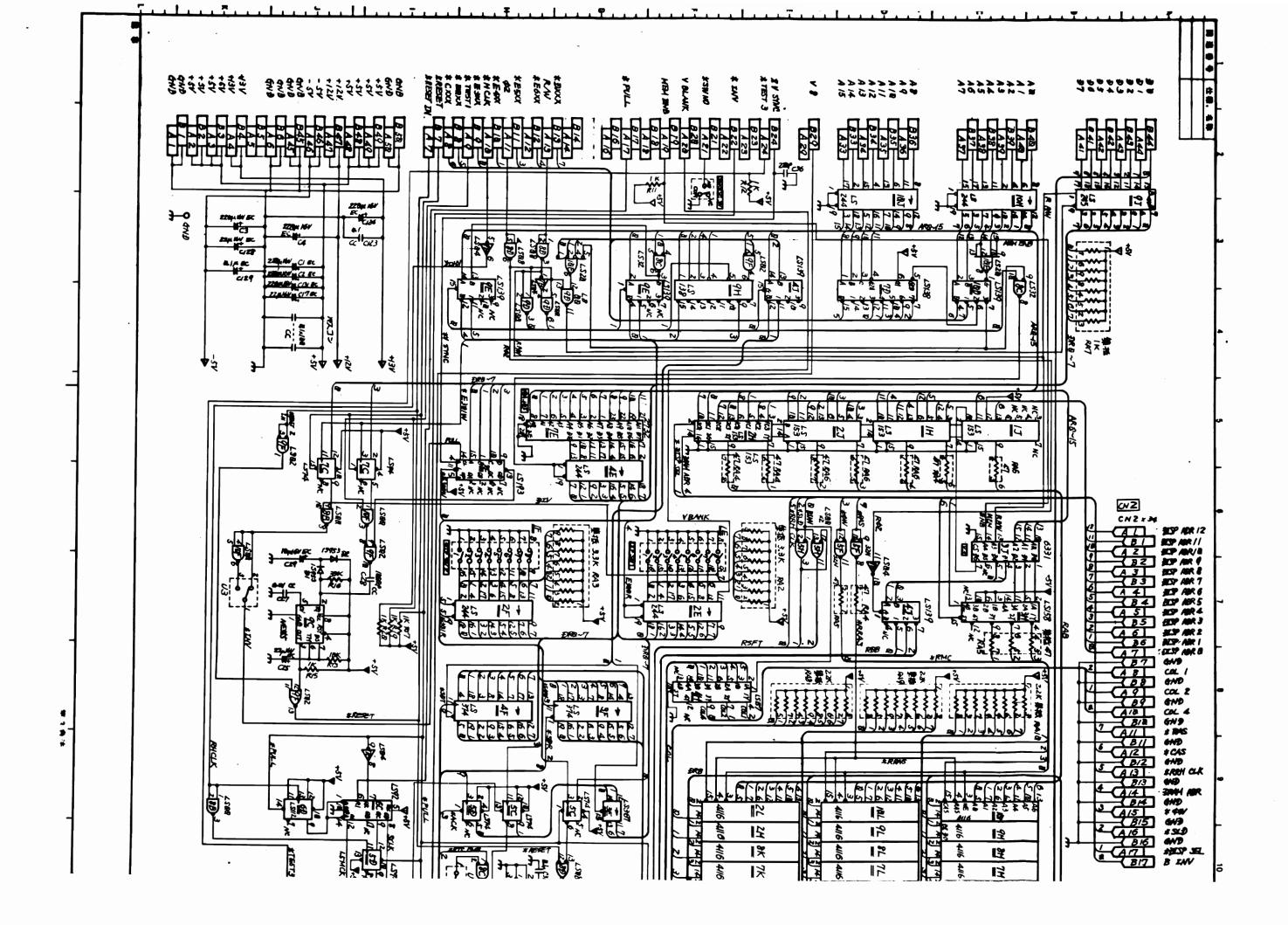


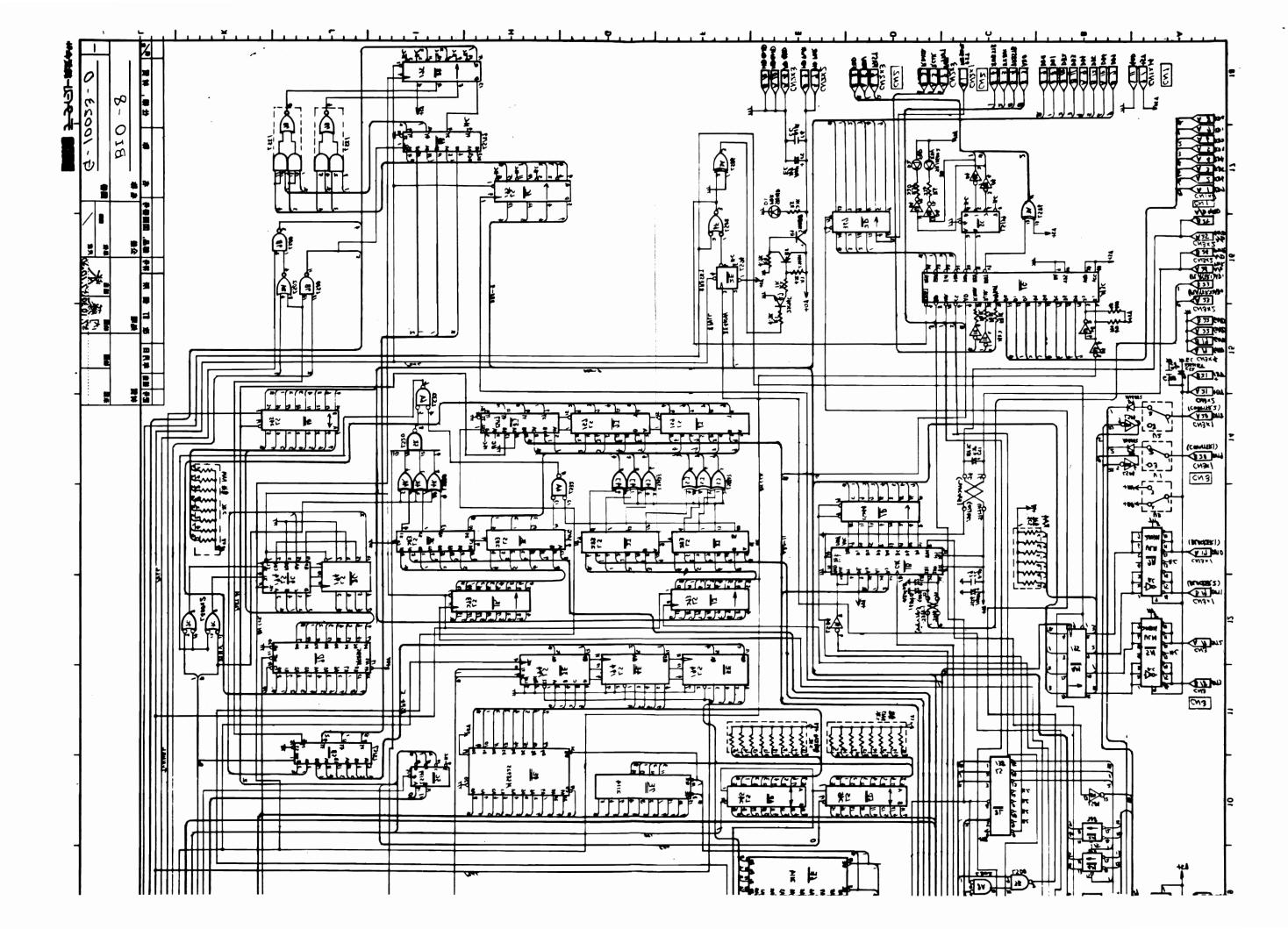










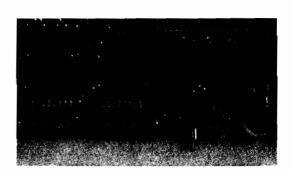


AS

- 1. CHANGING THE TAPE
- 2. CHANGE JOYSTICK TO PROPER SETTING-(2 WAY, 4 WAY OR 8 WAY). ON DATA EAST SANWA JOYSTICK THIS IS ACCOM-PLISHED BY USING PROPER RESTRICTOR.



3. CHANGING THE KEY MODULE



4. SETTING THE DIP SWITCHES



5. CHANGING THE TOP FLASHING (HEADER PLEX)

