

Synetic Designs Company



FDS-2

MANUAL

POB 2627, Pomona, CA 91766 phone 714-629-1974

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SPECIFICATIONS

FEATURES:

IBM 3740 Format and Media Compatible
Contains Full Formatter and Controller
Plug compatible interface available for popular microcomputers
Software Operating Systems available for 8080 and 6800 systems
Up to 4 drives with 1 million bytes online storage
Full Sector Read/Write Buffers allow asynchronous or DMA transfers
Individual Drive Write Protect capability.

FORMAT:

- 256,256 Bytes/Diskette
- 77 Tracks/Diskette
- 26 Sectors/Track
- 128 Bytes/Sector
- Uses IBM 3740 initialized media commonly available
- Fully IBM Format Compatible

HARDWARE STATUS:

- Busy Indicator
- Selected Unit Indicators
- CRC Error Indicator
- Drive Status Indicator
- Individual Protect Switches
- Onboard PROM minimonitor

PERFORMANCE:

- 360 RPM Rotation
- 10 ms Track to Track Access
- 40 ms Head Load

POWER:

- 115 VAC,
- EMI Filter provided.
- Power Supplies Fan Cooled

CABINET:

- 8.75 x 19 x 20 inches
- Black Textured Front Panel
- IBM Standard Blue Textured Cover
- Dual Horizontal Drives
- 40 Pounds shipping weight w/o Drives.
- Rackmount Option Available

CONTACT:

- Your local computer store or
- SYNETIC DESIGNS COMPANY
Post Office Box 2627
Pomona, CA 91766
- Phone 714-629-1974

Due to UPS shipping limitations, the FDS-2 is normally shipped separately from the iCOM FF36 Frugal Floppy. This allows easier handling and provides better protection when shipping. About 10 minutes is required to mount the two drives and plug in the required connectors and interface board. The system diskette provides Ready-to-use software.

INSPECTION and ASSEMBLY

Shipping

The SDC FDS-2 Floppy Disk System is shipped separate from the iCOM FS36 Frugal Floppy (iCOM trademark). This avoids shipping limitations and provides better protection to the equipment.

Inspection

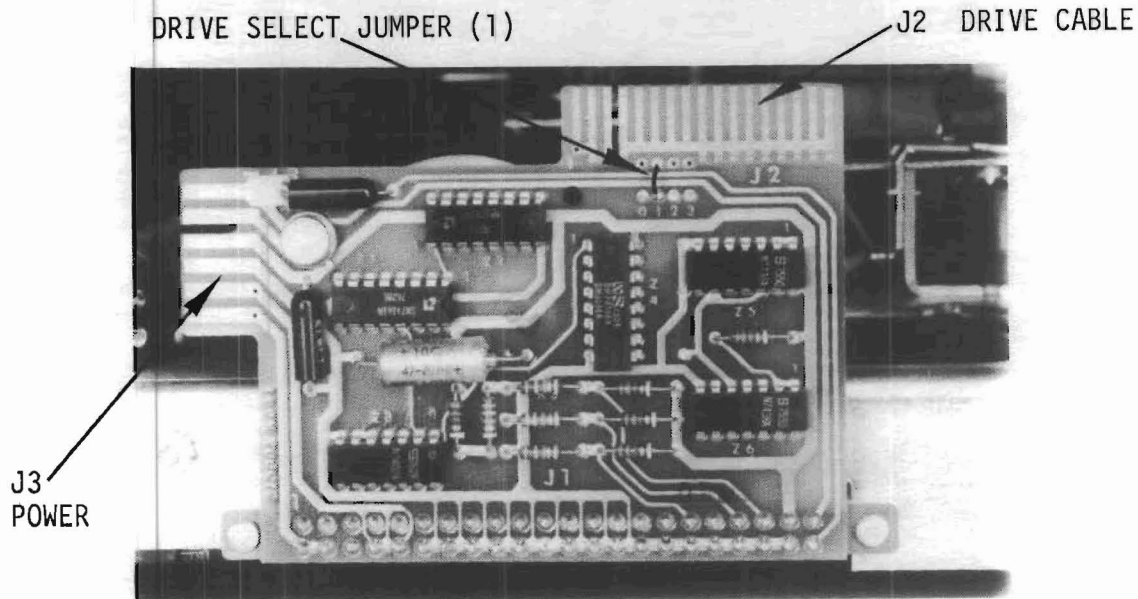
Upon receipt, the user should inspect the product and its shipping container for any signs of damage or abuse. Each unit is thoroughly inspected and tested before it is shipped from the factory. If any signs of damage or abuse are evident the user should notify the carrier immediately to request settlement since the carrier assumes responsibility when the unit leaves the factory.

Tools

The only tool required for assembly is either a stubby or offset straight blade screwdriver.

Assembly

1. Unpack and layout all the components of both the FDS-2 and the FS36 systems.
2. Install the two MUX boards behind the floppy drives as shown in Figure 1 using the two screws provided with each MUX board.
3. Remove the four rubber feet from the bottom of each of the floppy drives. These will not be used.
4. Note the small Drive Select Jumper on the MUX boards as shown on Figure 1. One drive should be selected (jumpered) as unit 0 and the other drive should be selected as unit 1.

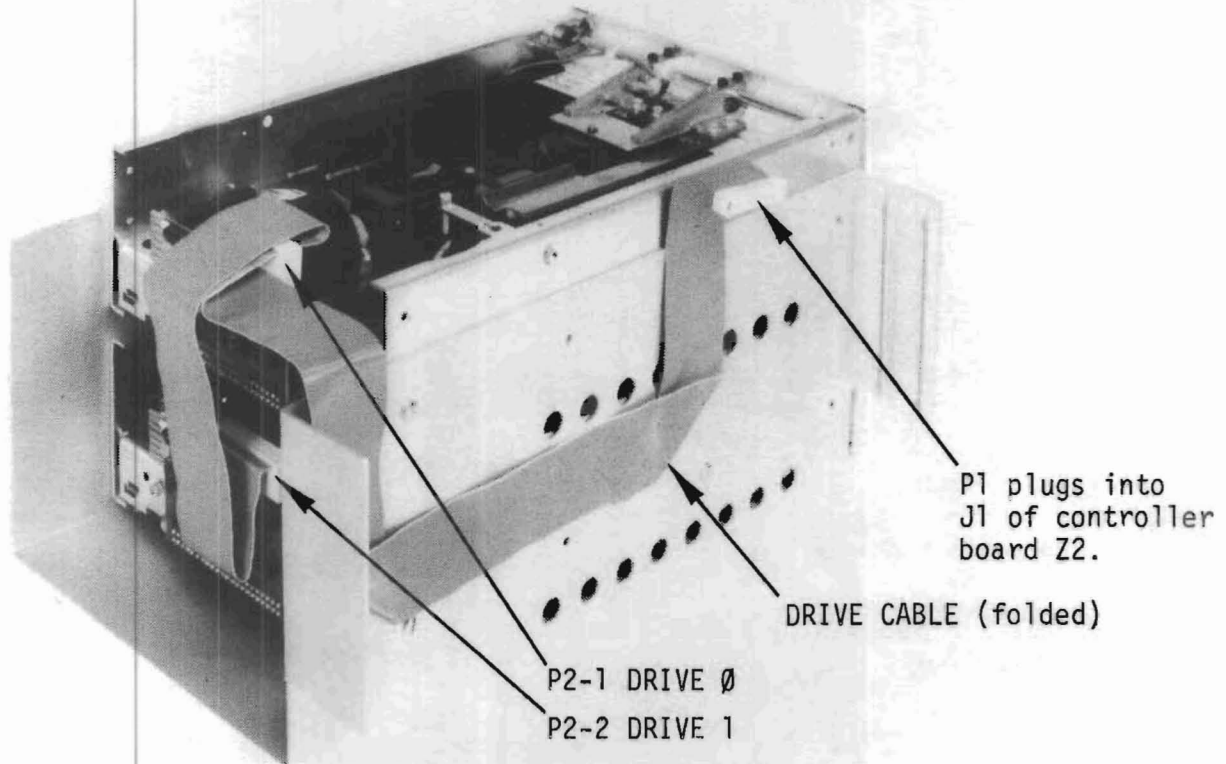


PARTIAL VIEW OF MUX BOARD INSTALLED

FIGURE 1

5. Install drive unit 1 in the lower opening of the front panel carefully sliding it into the cradle. The MUX board connector J2 should be pointing up as illustrated in figure 1.
6. Insert the four 1/4"x8-32 screws through the cradle and into the side of the drive. Adjust the drive position until the bezel is flat against the front panel. Now tighten the four screws,
7. Install drive unit 0 in the upper opening of the front panel repeating steps 5 and 6.

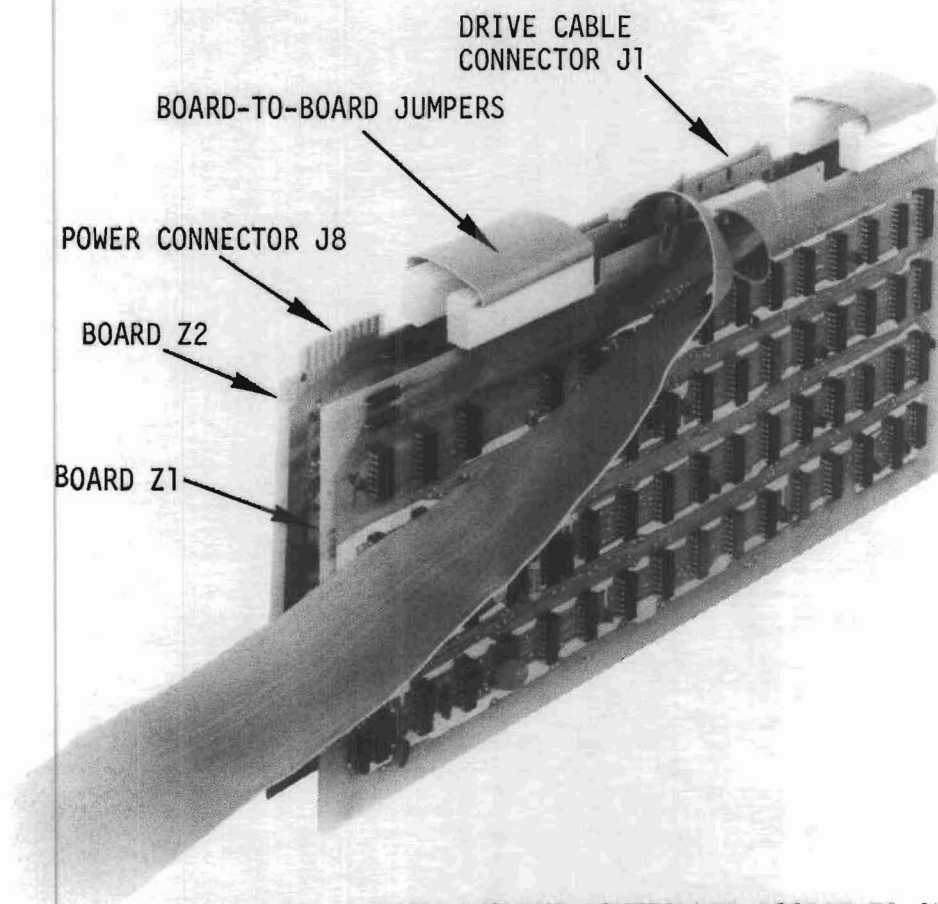
8. Locate the flat drive cable, unroll it and work it until it lays flat. Refer to figure 2 below and install the drive cable using 45° bends to form corners as shown in the photograph. Start by installing connector P2-1 as shown on figure 2.



VIEW OF FLOPPY DRIVES MOUNTED IN CRADLE
FIGURE 2

9. Refer to figure 3 on the next page and install the two board-to-board jumpers on the two controller boards Z1 and Z2. The controller boards may now be lowered into the card guides as illustrated in figure 4. Board Z2 should be nearest the drives.

10. Connect P1 shown in figure 2 to the controller boards as shown in figure 4.
11. Connect the two connectors P3-1 and P3-2 of the cabinet power supply wiring harness to the MUX boards making sure that the polarization keys are in the connector blocks.



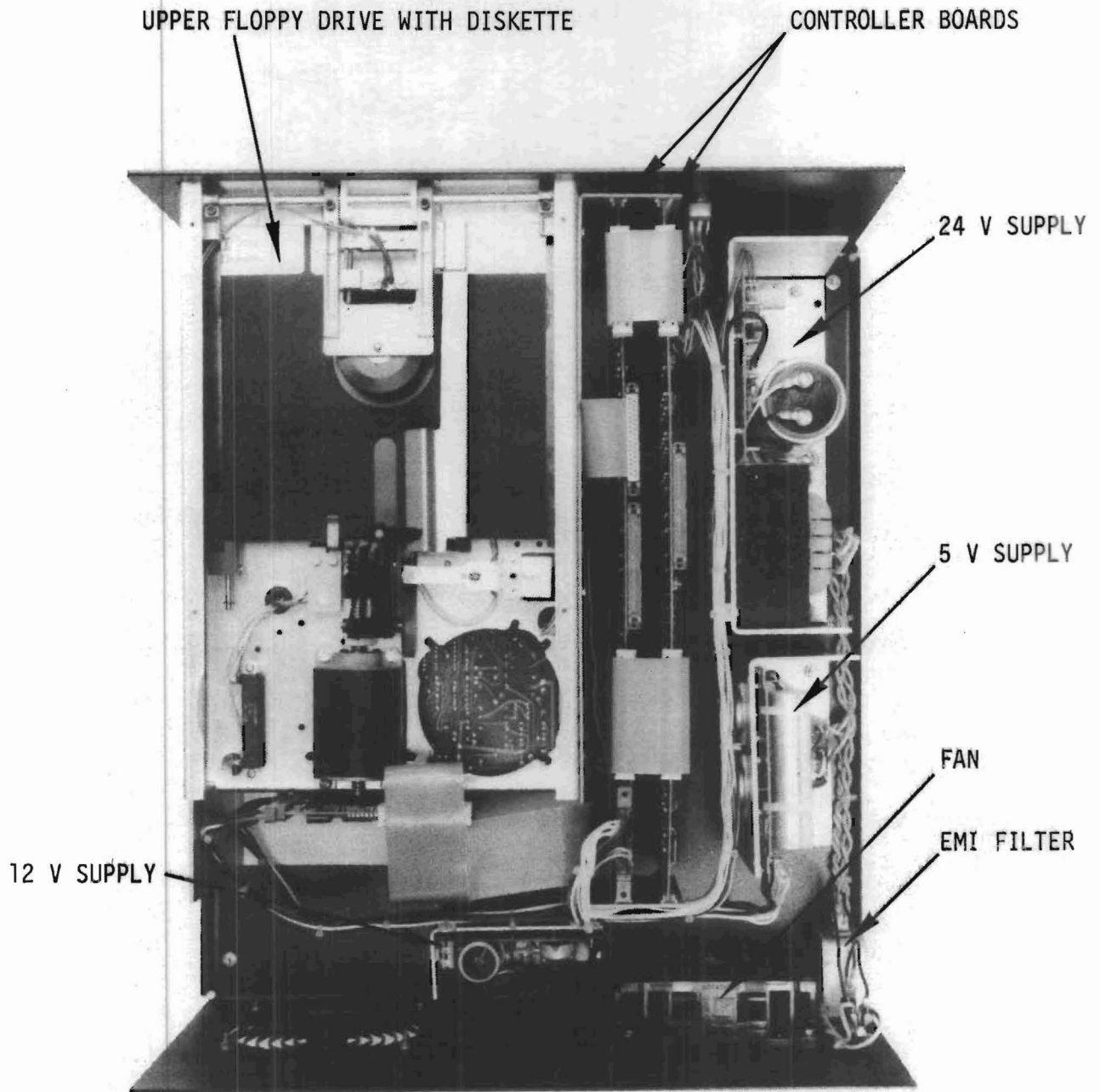
VIEW SHOWING CONTROLLER BOARDS Z1 AND Z2
WITH INTERFACE CABLE

FIGURE 3

12. Connect the wiring harness connector P8 to the controller board Z2 making sure that the polarization key is properly installed.
13. Visually inspect the connections to the front panel led displays and switches and replace any connections that may have become dislodged.
14. Check the cabinet for any foreign matter and clean as required.
15. Connect the interface cable to the controller cards as shown in figure 3. The cable connector blocks are smaller than the board connector housings. Polarizing pins are located in the cable connector blocks to help in orientation. When finished with the connections drape the interface cable over the rear panel.
16. The cabinet may now be covered with the aluminum shell using the remaining six 3/8"x8-32 screws provided.

***** CAUTION *****

NEVER ATTEMPT REPAIRS WITH THE POWER
CORD PLUGGED IN. Lethal high voltage
is exposed within the cabinet.
ALWAYS DISCONNECT THE POWER CORD.



INTERIOR VIEW OF FDS-2 FLOPPY DRIVE CABINET
FIGURE 4

OPERATION - IMSAI

The FDS-2 Disk System comes ready-to-use and no software patches are required. All necessary I/O vectors, I/O routines, Initialization, and relocation routines necessary for operation on an IMSAI Microcomputer are on the supplied SDC IMSAI MASTER Diskette. As soon as the system is up the user should copy the MASTER Diskette producing a WORKING Diskette. Use the WORKING Diskette normally and should a mistake be made the user can simply copy the MASTER again.

Configuration

1. Standard IMSAI Mainframe and MPU board.
2. IMSAI SIO Serial I/O board using ports 2 and 3 (this is the standard console port).
3. 12K (minimum suggested) RAM memory, 16K or more preferred.
4. No options located in address locations C000H thru C47FH. This space is reserved since the interface board ROM and RAM memory is located there.

Preparation

1. Check that the console I/O port is at 2 and 3 and working.
2. Check that minimum RAM memory (starting at location 0000H) is properly working. The iCOM mini-monitor has a memory test routine.
3. Check that all disk system board and connectors are properly connected.

Operation

1. Turn the computer and disk power on.
2. STOP the computer
3. Insert the MASTER diskette into the upper drive with the label up and still showing when fully inserted.
4. Close the drive door and the motor should start.
5. RESET the computer.
6. EXAMINE location C000H. A C3 instruction should be indicated.
7. RUN The drive READY light should come on indicating that the system is loading into RAM working memory. After several seconds the console should print:

SDC AVAILABLE MEMORY IS 0 THRU XXXXH
ICOM FDOSII/8080-0 1.0

Where XXXX indicates the
size of contiguous RAM
memory starting at 0000H.

!

SDC IMSAI EXECUTIVE HANDLER

The following brief description and source copy of the SDC EXECUTIVE HANDLER (copyright 1977) is provided to aid the more advanced user in developing a more sophisticated executive handler. Refer to the Memory Map while reading the description.

1.0 LOADING

When the FDOS-II (iCOM DISK OPERATING SYSTEM) and SDCEX (Synetic Designs Company Executive Handler) are loaded into RAM memory part of the SDCEX program overlays the FDOS-II program jump vectors. This overlay causes the vectors to be initialized. SDCEX gains control by overlaying two instructions (6 bytes); the start vector for FDOS-II (at 40H) and the update vector (at 43H).

1.1 UPDATE VECTOR

When control is gained through the update vector the following sequence occurs;

- a) The stack pointer is set to 1EFFH.
- b) All the registers are saved.
- c) Routine "REL" is called (refer to 1.3)
- d) All the registers are restored.
- e) Control is given to the update vector.

1.2 START VECTOR

The following sequence is effected when control is gained through the start vector.

- a) The stack pointer is set to 1EFFH.
- b) The routine "REL" is called.
- c) The routine "REST" is called.
- d) Control is given to the FDOS-II start vector.

1.3 ROUTINE "REL"

- a) The FDOS-II start vector and the update vector are set to values FDOS-II gives them.
- b) Memory is measured in 256 byte increments starting from location 0000H.

1.3 CONTINUED

- c) The I/O routines are moved close to the top of measured memory. Enough room is left at the top of memory for the FDOS-II binary loader.
- d) The I/O routines are relocated by modifying the jump instruction.
- e) Control is returned to the calling routine.

1.4 ROUTINE "REST"

The IMSAI SIO board is initialized including the removal of the first character from the USART which is a garbage character. The USART is programmed for the following characteristics.

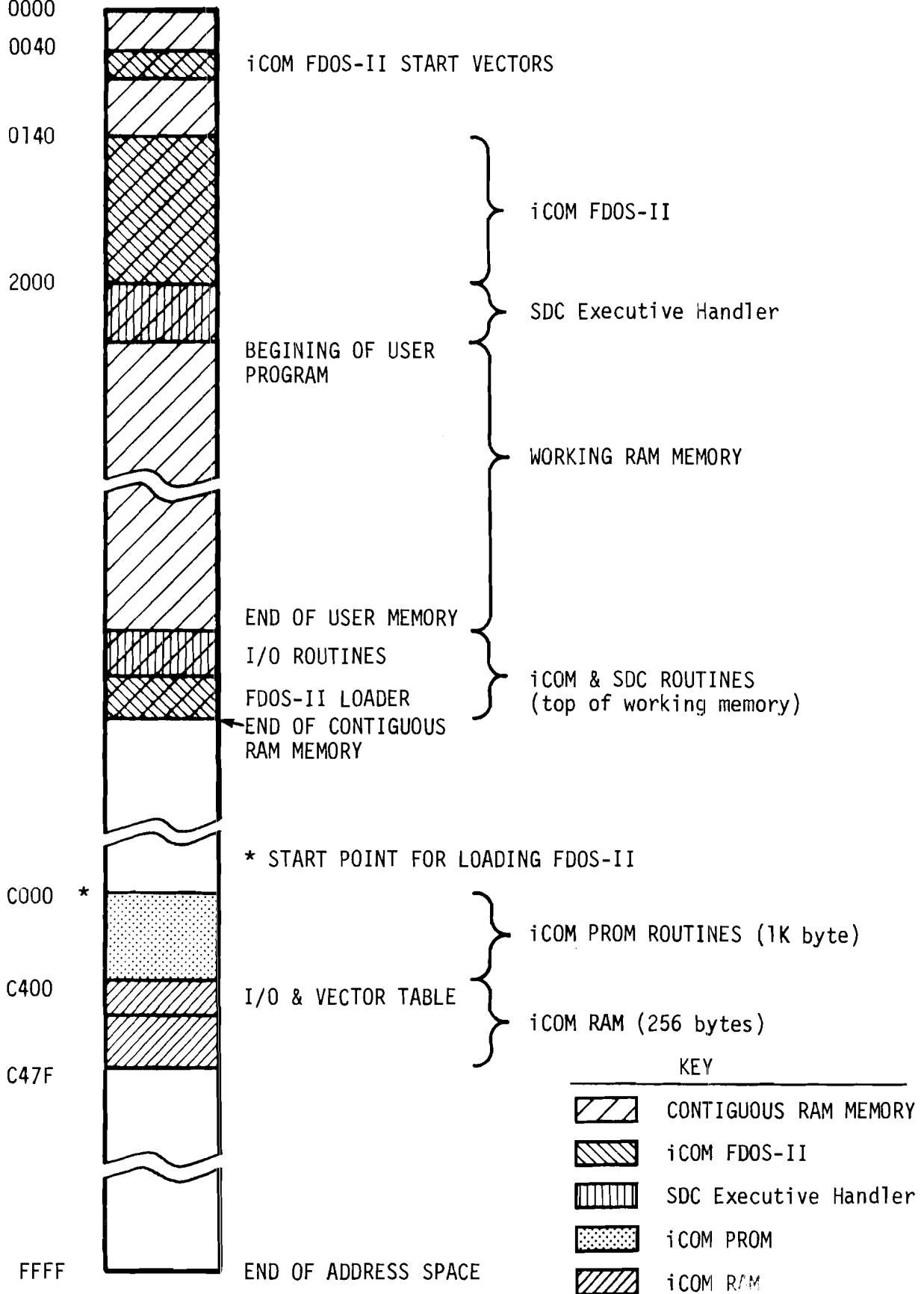
- a) Baud Rate Factor is 16X.
- b) Eight (8) bit data word.
- c) Received Parity Check is disabled.
- d) Transmitted Parity is set to ODD.
- e) Two (2) Stop bits are generated.
- f) All Error Flags are Reset.
- g) Receive is Enabled.
- h) Data Terminal is set READY.
- i) Transmit is Enabled.

The first part of the SDC memory message is sent utilizing the FDOS-II output routine.

The routine "MOUT" is called which prints the actual memory size. Control is then returned to the calling routine.

HEX
MEMORY
ADDRESS

TYPICAL MEMORY MAP
NOT TO SCALE



The source copy of the SDC Executive Handler is provided to act as a guide in developing more sophisticated software.

0000

```
; SDC EXEC
; COPYRIGHT 1977 SYNETIC DESIGNS COMPANY
;
; SOFTWARE PROVIDED HEREUNDER INCLUDING ANY
; SUBSEQUENT IMPROVEMENTS OR UPDATES, IS
; FURNISHED TO CUSTOMER UNDER A LICENSE
; FOR USE ON A SINGLE DISK SYSTEM AND
; MAY ONLY BE COPIED, IN WHOLE OR IN PART,
; (WITH THE INCLUSION OF SYNETIC DESIGNS
; COMPANY COPYRIGHT NOTICE) FOR USE ON
; SUCH SYSTEM.
; CUSTOMER SHALL NOT PROVIDE OR MAKE
; AVAILABLE THE SOFTWARE OR ANY PART
; THEREOF IN ANY FORM TO ANY THIRD PARTY
; EXCEPT THAT THE CUSTOMER MAY PROVIDE
; SOFTWARE TO A THIRD PARTY TO WHOM
; CUSTOMER TRANSFERS A SYSTEM.
; TITLE TO AND OWNERSHIP OF THE SOFTWARE
; AND ANY MODIFIED PARTS THEREOF SHALL
; AT ALL TIMES REMAIN WITH SYNETIC DESIGNS
; COMPANY.
```

```
;  
; THIS PROGRAM INITIALIZES AN IMSAI SIO,  
; CHECKS MEMORY SIZE, SETS UP THE I/O  
; VECTORS AND I/O ROUTINES AND RELOCATES  
; THE I/O ROUTINES TO THE END OF WORKING  
; MEMORY AS PER THE MEMORY MEASURE ROUTINE.  
;  
0003      TTS      EQU      3      ; CONSOLE STATUS PORT  
0002      TTYDA    EQU      2      ; DATA AVAILABLE MASK  
0002      TTI      EQU      2      ; CONSOLE INPUT PORT  
0001      TTYTR    EQU      1      ; DATA TRANSMIT MASK  
0002      TTD      EQU      2      ; CONSOLE OUTPUT PORT  
;  
038F      FDOUT    EQU      38FH    ; FDOS-II OUTPUT ROUTINE  
;  
0040                      ORG      40H      ; START ADDRESS OF FDOS-II  
0040 C31120                JMP      SDCEX    ; TRAP EXEC VECTOR  
0043 C30020                JMP      SDCRS    ; TRAP UPDATE TOO!  
;  
2000                      ORG      2000H    ; END OF FDOS-II  
2000 31FF1E  SDCRS: LXI SP, 1EFFH ; SET STACK POINTER  
2003 F5                      PUSH     PSW      ; SAVE REGISTERS  
2004 E5                      PUSH     H  
2005 D5                      PUSH     D
```

```
2006 C5          PUSH    B
2007 CD1D20      CALL    REL    ; DO RELOCATION
200A C1          POP     B      ; RESTORE REGISTERS
200B D1          POP     D
200C E1          POP     H
200D F1          POP     PSW
200E C34300      JMP     43H    ; JUMP TO UPDATE VECTOR
;
2011 31FF1E      SDCEX: LXI    SP, 1EFFH ; SET STACK POINTER
2014 CD1D20      CALL    REL    ; DO RELOCATION
2017 CD5B20      CALL    REST   ; INIT SIO AND TYPE MESS
201A C34000      JMP     40H    ; JUMP TO EXEC VECTOR
;
;
201D 214001      REL:   LXI    H, 140H  ; FDOS-II ORIG JUMP ADDR.
2020 224100      SHLD   41H    ; RESTORE TRAPPED MEMORY
2023 21DC06      LXI    H, 6DCH  ; FDOS-II ORIG RESTART JUMP
2026 224400      SHLD   44H    ; RESTORE UPDATE VECTOR
;
; MEASURE MEMORY
;
2029 21E920      LXI    H, 20E9H ; START HERE
202C 3EAA        MVI    A, 0AAH  ; CHECK PATTERN
;
202E 46          M1:   MOV    B, M    ; SAVE MEMORY
202F 77          MOV    M, A
```



```

2030 BE          CMP      M
2031 C23920      JNZ      MTOP
2034 70          MOV      M, B      ; RESTORE MEMORY
2035 24          INR      H
2036 C22E20      JNZ      M1       ; LOOP TILL END OF MEMORY
;
; TOP OF MEMORY FOUND
;
2039 25          MTOP:    DCR      H          ; SET H, L TO LAST AVAILABLE
; NOTE: LEAVE ROOM FOR THE FDOS LOADER
203A 22AF20      SHLD     SIZE     ; SAVE FOR MEMORY MESSAGE
203D 018D20      LXI      D, IOEND
2040 1617        MVI      B, 23      ; NO. OF I/O INSTRUCTIONS
;
2042 0A          IO1:    LDAX   B          ; MOVE I/O ROUTINES
2043 77          MOV      M, A      ; ONE BYTE AT A TIME
2044 2B          DCX      H          ; DECREMENT SOURCE ADDR.
2045 0B          DCX      B          ; DECREMENT DESTINATION ADDR.
2046 15          DCR      D          ; DECREMENT BYTE COUNTER
2047 C24220      JNZ      IO1
;
204A 2ED9        MVI      L, 0D9H    ; RELOCATE TWO JUMPS
204C 74          MOV      M, H
204D 2EE5        MVI      L, 0E5H
204F 74          MOV      M, H

```

; INITAIALIZE CI AND CO VECTORS

```
2050 2ED3          MVI    L, 0D3H ; START ADDRESS OF CI ROUTINE
2052 2201C4        SHLD   OC401H ; STORE IN CI VECTOR
2055 2EDF          MVI    L, 0DFH ; START ADDRESS OF CO ROUTINE
2057 2204C4        SHLD   OC404H ; STORE IN CO VECTOR
205A C9           RET     ; END OF RELOCATION
```

; INITIALIZE SIO PORT

```
205B 3EAA        REST:  MVI    A, 0AAH ; *****
205D D303         OUT    TTS      ; *
205F 3E40         MVI    A, 40H     ; *
2061 D303         OUT    TTS      ; *      SIO      *
2063 3ECE         MVI    A, 0CEH ; *  INITIALIZATION *
2065 D303         OUT    TTS      ; *
2067 3E17         MVI    A, 17H     ; *
2069 D303         OUT    TTS      ; *****
206B 218E20       LXI    H, MESS
206E 1E21         MVI    E, MESLN
2070 CD8F03       CALL   FDOUT    ; TYPE MESSAGE
2073 CDB120       CALL   MOUT     ; TYPE UPPER MEM ADDR.
2076 C9           RET     ; DONE WITH SIO INIT AND MESS
```

```

;
; I/O ROUTINES
;
2077 DB03   IN8:   IN     TTS     ; THIS IS THE INPUT ROUTINE
2079 E602           ANI     TTYDA   ; TO BE RELOCATED
207B CAD300           JZ     OD3H
207E DB02           IN     TTI
2080 E67F           ANI     127
2082 C9                RET
;
2083 DB03   OUT8:  IN     TTS     ; THIS IS THE OUTPUT ROUTINE
2085 E601           ANI     TTYTR   ; TO BE RELOCATED
2087 CADF00          JZ     ODFH
208A 79            MOV     A, C
208B D302           OUT     TTO
208D C9            IOEND:  RET
;
0021           MESLN   EQU     33     ; MESSAGE LENGTH
;
208E 0A0D           MESS:   DW     ODOAH   ; CR LF
2090 53444320       DB     'SDC AVAILABLE MEMORY IS 0 THRU '
2094 41564149
2098 4C41424C
209C 45204D45
20A0 4D4F5259
20A4 20495320
20A8 30205448
20AC 525520
```

```
20AF 0000    SIZE:  DW      0000H    ; SPACE FOR MEMORY SIZE
;
; MEMORY OUTPUT ROUTINE
; THIS ROUTINE PRINTS THE MEMORY ADDRESS
; STORED IN MEMORY LOCATION SIZE
;

20B1 21B020  MOUT:  LXI      H, SIZE+1
20B4 7E      MOV      A, M      ; PICK UP THE DIGITS
20B5 0F      RRC              ; *
20B6 0F      RRC              ; * SHIFT RIGHT 4 BITS
20B7 0F      RRC              ; *
20B8 0F      RRC              ; *
20B9 E60F    ANI      0FH      ; ISOLATE ONE HEX DIGIT
20BB FE0A    CPI      0AH
20BD DA0520  JC       HEX      ; GO THIS WAY FOR HEX
20C0 C637    ADI      37H      ; GO THIS WAY FOR DECIMAL
20C2 C3C720  JMP      HEX+2
20C5 C630    HEX:    ADI      30H      ; CONVERT TO ASCII
20C7 4F      MOV      C, A
20C8 CD03C4  CALL     CO        ; OUTPUT UPPER HEX DIGIT
20CB 7E      MOV      A, M      ; *
20CC E60F    ANI      0FH      ; *
20CE FE0A    CPI      0AH      ; *
20D0 DA0820  JC       HEX1     ; * DO SAME FOR NEXT DIGIT
20D3 C637    ADI      37H      ; *
20D5 C3DA20  JMP      HEX1+2   ; *
```

```

20D8 C630      HEX1:  ADI      30H      ; *
20DA 4F                MOV      C, A      ; *
20DB CD03C4     CALL     CO      ; *
20DE 0E46      MVI      C, 46H    ; OUTPUT ASCII F
20E0 CD03C4     CALL     CO
20E3 0E46      MVI      C, 46H    ; OUTPUT ASCII F
20E5 CD03C4     CALL     CO
20E8 0E48      MVI      C, 48H    ; OUTPUT ASCII H
20EA CD03C4     CALL     CO
20ED 0E0D      MVI      C, 0DH    ; OUTPUT ASCII CR
20EF CD03C4     CALL     CO
20F2 0E0A      MVI      C, 0AH    ; OUTPUT ASCII LF
20F4 CD03C4     CALL     CO
20F7 C9                RET                ; END OF ADDRESS OUTPUT
;
; LXI SP, XXXXX
; ...
; INITIAL VECTORS
;
;
; PURPOSE:  TO SET IMPORTANT PROCEDURE VECTORS FOR FDOs
;           TO INTERFACE WITH USER SYSTEM.
;
;
C400                ORG      0C400H  ; JUMP TABLE STARTING ADDRESS
;

```

```
D000      CI      EQU      0D000H ; ADDR OF CONSOLE INPUT ROUTINE
C292      CO1     EQU      0C292H ; ADDR OF CONSOLE OUTPUT ROUTINE
C3CC      RI      EQU      0C3CCH ; ADDR OF READER DEVICE ROUTINE
C3CF      LO      EQU      0C3CFH ; ADDR OF LIST DEVICE ROUTINE
C3D2      PO      EQU      0C3D2H ; ADDR OF PUNCH DEVICE ROUTINE
C3E4      EXIT    EQU      0C3E4H ; RE-ENTRY ADDR OF USER MONITOR
C109      DKI     EQU      0C109H ; ADDR OF DISK INPUT ROUTINE
C194      DKO     EQU      0C194H ; ADDR OF DISK OUTPUT ROUTINE
0040      ASMED   EQU      40H    ; ADDR OF ASSEMBLER OR EDITOR
0040      EXEC    EQU      40H    ; ADDR OF EXECUTIVE
0043      UPDAT   EQU      43H    ; ADDR OF UPDATE ROUTINE

;

C400 C300D0      JMP      CI      ; VECTORS ARE STORED AT C400H,
C403 C392C2      CO:     JMP      CO1     ; SO FDS KNOWS WHERE IT IS...
C406 C3CCC3      JMP      RI      ; THESE ARE THE EQUATES ABOVE
C409 C3CFC3      JMP      LO
C40C C3D2C3      JMP      PO
C40F C3E4C3      JMP      EXIT
C412 C309C1      JMP      DKI
C415 C394C1      JMP      DKO
C418 C34000      JMP      ASMED
C41B C34000      JMP      EXEC
C41E C34300      JMP      UPDAT

;

      END      ; END OF SDC EXEC
```

FDS-2 Executive Handler Modification

The following steps describe how to assemble, edit, and "XGEN" your own executive handler or a modified version of the SDC Executive Handler. A good understanding of assembly language, the iCOM Text Editor, and the "XGEN" statement is desirable and descriptions of each may be found in the iCOM documentation. Several points should be remembered:

1. ALWAYS SAVE AN UNMODIFIED COPY OF THE "MASTER" SDC EXECUTIVE HANDLER.
2. ALWAYS SAVE A COPY OF YOUR PROGRAMS OR DATA TO PREVENT LOSS.
3. COPY YOUR MODIFIED VERSION IMMEDIATELY TO PREVENT LOSS.

The listing below shows all commands and responses just as they would appear on a CRT or hardcopy terminal. All statements following an exclamation mark (iCOM FDOS-II Executive prompter) are commands, and all statements following a @ symbol (iCOM FDOS-II Text Editor prompter) are editing commands. Typewritten comments have been added to describe the procedures involved.

```
!LIST
```

NAME	ATTR	TRAK	SCTR	SIZE
ASMB	00	05	01	00A1
EDIT	00	08	06	0044
EXEC	00	0D	16	005A
DIAGS	00	11	08	0046
DIAGO	00	13	1A	001C
SDCS	00	15	02	0028

This is a listing of the directory contents.

!ASMB, SDCS, SDCO, 3

Assemble the modified executive handler under the new name "SDCO".

1

3

No assembly errors.

!MERGE, SCR1, EXEC, SDCO

Merge the iCOM executive system with the new handler under the new file name "SCR1".

!EDIT, SCR1, SDCX1

ICOM TEXT EDITOR VER 1.

Enter the editor mode.

@AAAAAAAAAAAAAAAAAAAAA\$\$

Append the SCR1 file into working memory.

@A\$\$

@250L10T\$\$

Advance to line 250 and display

: 1010E5003A36010600CD0B042A34013E2A772377CE

10 lines.

: 1010F5002377237723772336FF233A3BC477233A95

: 101105003CC4E63F7721A6003A36010600CD6B04C4

: 05111500A7C23B04C964

: 00000001FF

Old EOF (end-of-file) which must be removed.

: 1001000031FF003E81CD1205FB3E08D301CD3E05F7

: 100110000E40CD03C4CD3105D641FA0001FE0FF2E9

Beginning of new handler.

: 100120004F018721310106004F097E23666F0: 06004000C31120C30020E3

: 1020000031FF1EF5E5D5C5CD1D20C1D1E1F1C3439A

: 102010000031FF1ECD1D20CD5B20C34000214001BB

@4L3K-5L10T##

Advance 4 lines, kill 3 lines, go back 5 lines, and display 10 lines.

: 1010D50001C178323901E1223701C3DF0F21A600B2

: 1010E5003A36010600CD0D042A34013E2A772377CE

: 1010F5002377237723772336FF233A3BC477233A95

: 101105003CC4E63F7721A6003A36010600CD6B04C4

: 05111500A7C23B04C964

: 100120004F018721310106004F097E23666F0: 06004000C31120C30020E3

: 1020000031FF1EF5E5D5C5CD1D20C1D1E1F1C3439A

: 102010000031FF1ECD1D20CD5B20C34000214001BB

: 1020200022410021DC0622440021E9203EAA467715

: 10203000BEC239207024C22E202522AF20018D205F

@5L38U-5L10T##

Go forward 5 lines, delete 38 characters, go back 5 lines, and display 10 lines.

: 1010D50001C178323901E1223701C3DF0F21A600B2

: 1010E5003A36010600CD0D042A34013E2A772377CE

: 1010F5002377237723772336FF233A3BC477233A95

: 101105003CC4E63F7721A6003A36010600CD6B04C4

: 05111500A7C23B04C964

End of iCOM executive.

: 06004000C31120C30020E3

Start of new handler.

: 1020000031FF1EF5E5D5C5CD1D20C1D1E1F1C3439A

: 102010000031FF1ECD1D20CD5B20C34000214001BB

: 1020200022410021DC0622440021E9203EAA467715

: 10203000BEC239207024C22E202522AF20018D205F

@E##

Save file (SDCX1) and exit editor mode.

!COPY

Copy the files onto a new diskette.

➡ *** PLACE THE NEW DISKETTE IN DRIVE 0 *** ⬅

```
!LIST
```

List the contents of the new diskette directory.

NAME	ATTR	TRAK	SCTR	SIZE
ASMB	00	05	01	00A1
EDIT	00	0B	06	0044
EXEC	00	0D	16	005A
DIAGS	00	11	08	0046
DIAGO	00	13	1A	001C
SDCS	00	15	02	0028
SDCO	00	16	10	0007
SCR1	00	16	17	0061
SDCX1	00	1A	10	0060

Copy the directory as it will be used to create the new directory.

```
!XGEN,SDCX1:1
```

XGEN. Place the new executive system in operation.

```
!LIST
```

List the directory, it will be empty.

NAME	ATTR	TRAK	SCTR	SIZE
------	------	------	------	------

!CREAT, ASMB, A1

CREAT each file in the old directory as described in the iCOM documentation.

!CREAT, EDIT, 44

!CREAT, EXEC, 5A

!CREAT, DIAGS, 46

!CREAT, DIAGO, 1C

!CREAT, SDCS, 28

!CREAT, SDCO, 7

!CREAT, SCR1, 61

!CREAT, SDCX1, 60

!LIST

Check the contents of the
new directory and your
done.

NAME	ATTR	TRAK	SCTR	SIZE
ASME	00	05	01	00A1
EDIT	00	0B	06	0044
EXEC	00	0D	16	005A
DIAGS	00	11	08	0046
DIAGO	00	13	1A	001C
SDCS	00	15	02	0028
SDCO	00	16	10	0007
SCR1	00	16	17	0061
SDCX1	00	1A	10	0060

!EXIT

Go to the mini-monitor

>GC000

Execute the new system
starting at C000 Hex.

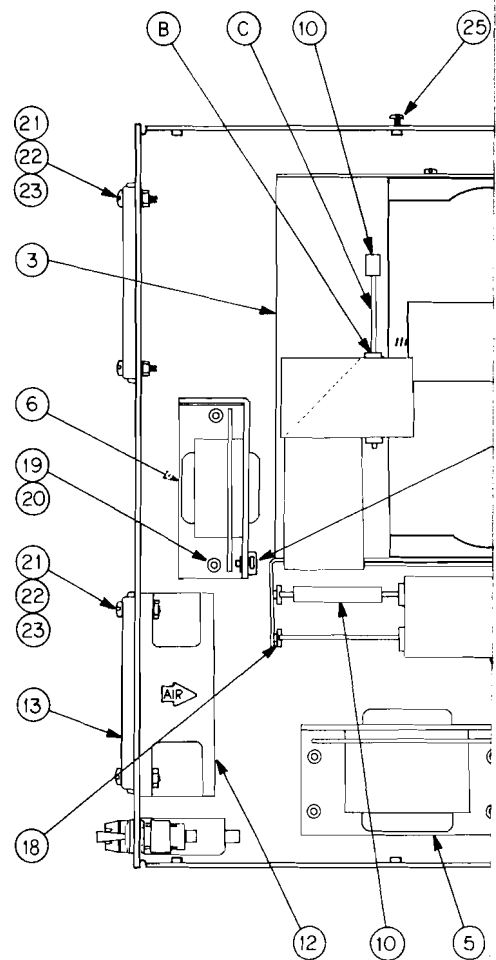
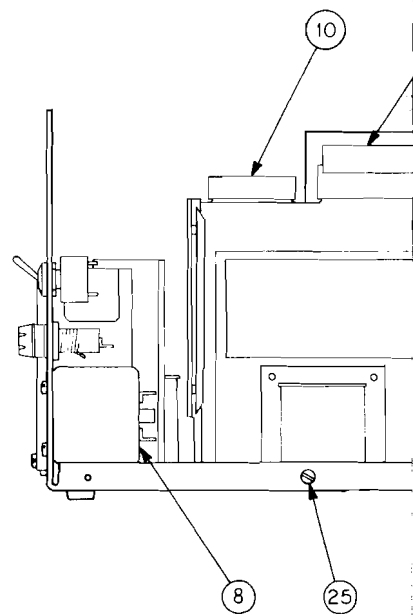
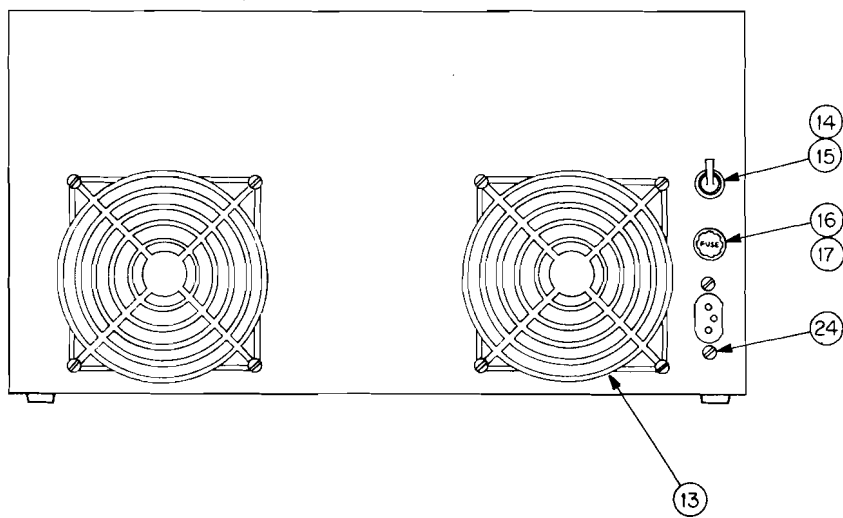
Due to the sophisticated electronics and precision electro-mechanical hardware only a trained service technician should attempt detailed repair.

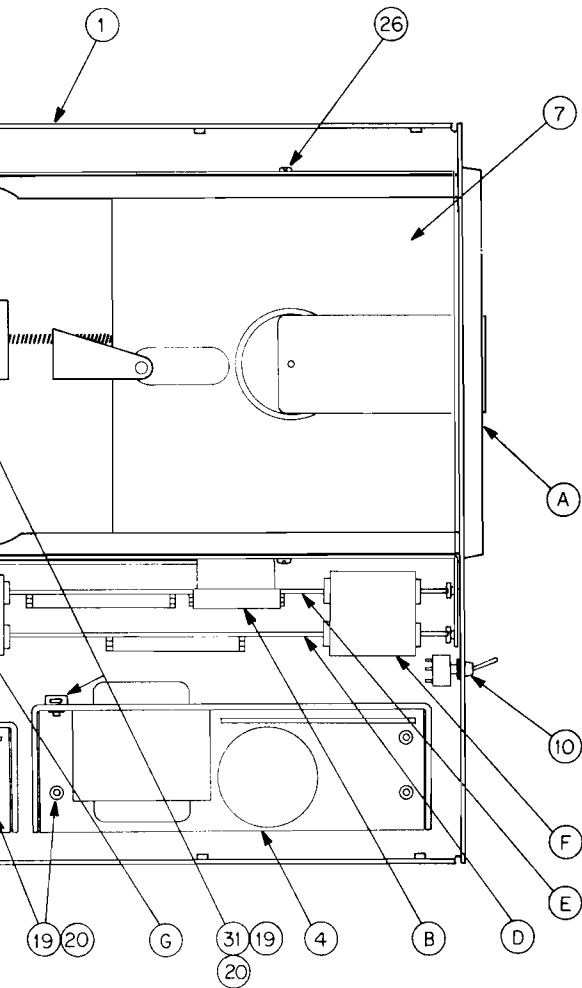
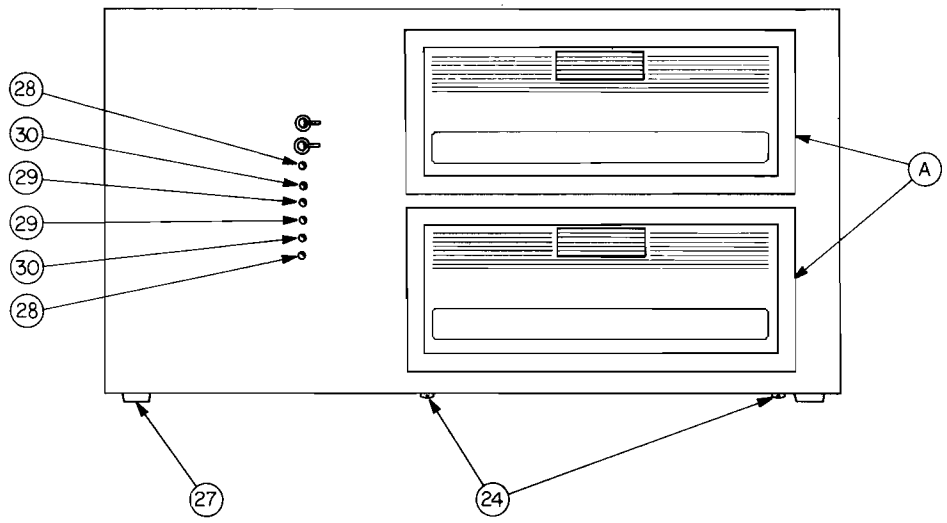
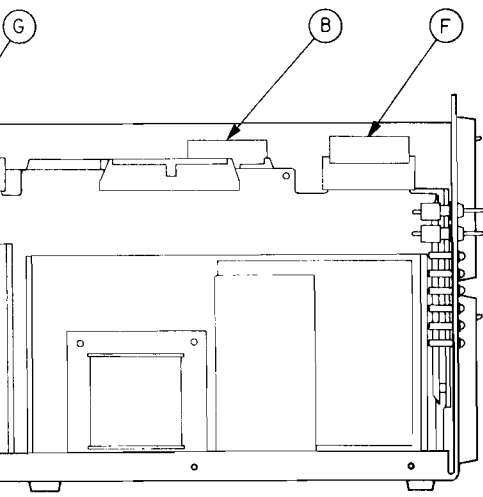
To help isolate problems, the user may perform the following checks.

1. Check the fuse and power source.
2. Check that all plugs and connectors are firmly seated, both within the drives and the interface board.
3. If power supply problems are suspect:
 - a) Disconnect the power plugs P3 to both drives
 - b) Disconnect the power plug P8 to the controller board
 - c) Refer to drawing number D-770100 and check voltages at the plug
 - d) Adjust the power supplies as required.
4. Check that all LED indicator connector blocks are firmly seated.
5. Switch the MUX boards behind the drives if drive problems are suspect.
6. Consult Synetic Designs Company or iCOM Microperipherals.

PREVENTATIVE MAINTENANCE

1. Periodically remove the cover and vacuum the inside of the cabinet to remove collected dust particles.
2. Check power supply voltages as outlined in paragraph 3 above.





FLOPPY DISK SYS.		
SCALE: HALF	APPROVED BY:	DRAWN BY KIRVEN
DATE: JAN. 77		REVISED
PARTS LAYOUT		
		DRAWING NUMBER D-770101

ITEM	NOMENCLATURE	P/N, DESCRIPTION	MATERIAL/SPECIFICATION	SYM.	VENDOR / CODE	△ 2	QTY. REQ'D.		
							1		
1	CHASSIS	J-761201	SDC	1			1		
2	CHASSIS COVER	J-761103	SDC	2		X	1		
3	FLOPPY CRADLE	D-761202	SDC	3			1		
4	POWER SUPPLY, 24V.	D24-4.8	POWER-ONE	4			1		
5	POWER SUPPLY, 5V.	C5-6	POWER-ONE	5			1		
6	POWER SUPPLY, 12V.	B15-1.5	POWER-ONE	6			1		
7	DISKETTE	3740	DYSAN	7			1		
8	FILTER, RFI	2K4	CORCOM	8			1		
9	CORD, POWER	17258	BELDEN	9		X	1		
10	HARNESS, WIRING, CONTROL	D-770100	SDC	10		X	1		
11	HARNESS, WIRING, POWER	D-770101	SDC	11		X	1		
12	FAN	MU2A1	ROTRON	12			1		
13	GUARD, FINGER, PLASTIC	550481	ROTRON	13			2		
14	SWITCH, DPST, POWER	8370K27C	CUTLER-HAMMER	14			1		
15	FACE NUT, SWITCH	15-1048-7	CUTLER-HAMMER	15			1		
16	FUSE, 4A	AGC-4, 313004	LITTELFUSE	16			1		
17	HOLDER, FUSE	342014	LITTELFUSE	17			1		
18	CARD GUIDE, WITH HOWR.	BR20-4HP	VECTOR	18			4		
19	RIVET, DOME HEAD, ALUM.	AD45H	USM	19			11		
20	WASHER, BACKING, .128 ID	SBUP	USM	20			11		

4. BLANK COVER PANEL IS OPTIONAL FOR SINGLE DRIVE SYSTEMS.

3. REFER TO DRAWING NUMBERS D-770100 & D-770101 FOR WIRING HARNESS NOTES.

△ CHECK INDICATES PART NOT SHOWN ON PARTS LAYOUT DRAWING.

NOTE: T. LETTER SYMBOL NUMBERS INDICATE ICOM SUPPLIED PARTS, REFER TO PAGE 3.

FDS-2 FLOPPY SYSTEM

PARTS LIST

SYNETIC DESIGNS CO.

ASS'Y FDS-2
NEXT ASS'Y NONE

103

ITEM	NOMENCLATURE	P/N, DESCRIPTION	MATERIAL/SPECIFICATION	SYM.	VENDOR/CODE	2	QTY. REQ'D.		
							1		
21	SCREW, BINDER HEAD,	6-32X.750 F-015	WALDOM	21			8		
22	WASHER, LOCK	#6 CW-6	WALDOM	22			8		
23	NUT, HEX	6-32X.250 F-559	WALDOM	23			8		
24	SCREW, BINDER HEAD	6-32X.375 F-504	WALDOM	24			6		
25	SCREW, BINDER HEAD	8-32X.375 F-024	WALDOM	25			8		
26	SCREW, BINDER HEAD	8-32X.250 F-023	WALDOM	26			4		
27	BUMPER, RUBBER, GREY	.75 SQ. SJ 5023	3M	27			6		
28	LED, GREEN, MINATURE	558-0202-001	DIALIGHT	28			2		
29	LED, YELLOW, MINATURE	558-0302-001	DIALIGHT	29			2		
30	LED, RED, MINATURE	558-0102-001	DIALIGHT	30			2		
31	CLAMP, CABLE	TC828	THOMAS & BETTS	31			2		
32	COVER PANEL, BLANK	(SEE NOTE 4)	iCOM	32		X	1		
33	BOX, SHIPPING	B-770102	SDC			X	1		
34	DOCUMENTATION	A-770103	SDC			X	1		

REFER TO PAGE 1 FOR GENERAL NOTES.

ITEM	NOMENCLATURE	P/N, DESCRIPTION	MATERIAL/SPECIFICATION	SYM.	VENDOR/CODE	2	QTY. REQ'D.		
							1		
35	FLOPPY DISK DRIVE UNIT	FD400	PERTEC	A			2		
36	DRIVE CABLE, RIBBON		iCOM	B			1		
37	MUX PRINTED WIRING BRD.	200012-200	iCOM	C			2		
38	PRINTED WIRING BRD. Z1	200028-200	iCOM	D			1		
39	PRINTED WIRING BRD. Z2	200028-201	iCOM	E			1		
40	JUMPER, 40 CONDUCTOR		iCOM	F			1		
41	JUMPER, 50 CONDUCTOR		iCOM	G			1		
42	I/O CABLE, RIBBON, 6 FT.		iCOM	H			1		
43	INTERFACE BOARD, S-100	200057-800A	iCOM	I			1		

REFER TO PAGE 1 FOR GENERAL NOTES.

FDS-2 FLOPPY SYSTEM

PARTS LIST

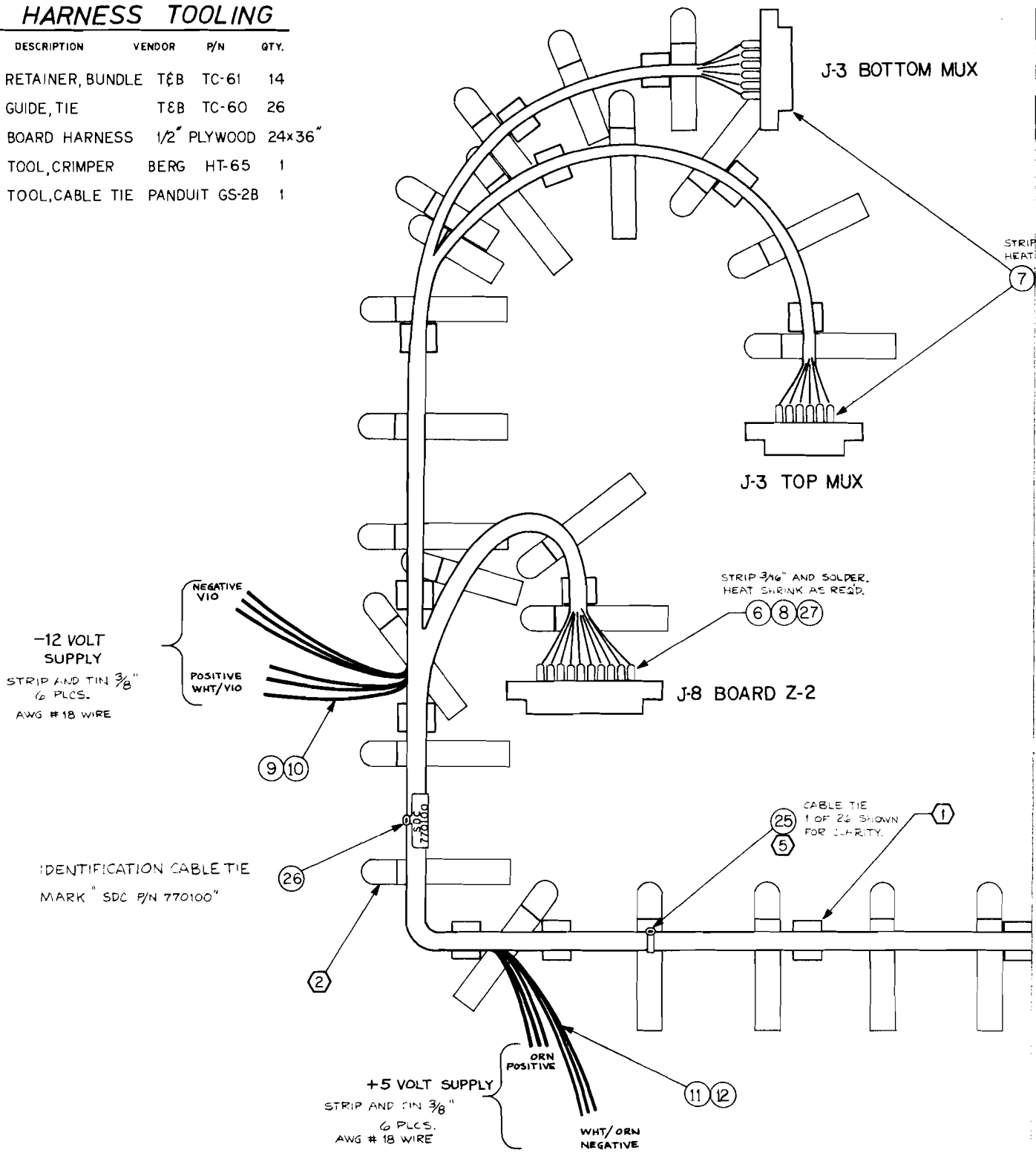
SYNETIC DESIGNS CO.

ASS'Y FDS-2
NEXT ASS'Y NONE

303
F

HARNESS TOOLING

ITEM	DESCRIPTION	VENDOR	P/N	QTY.
①	RETAINER, BUNDLE	T&B	TC-61	14
②	GUIDE, TIE	T&B	TC-60	26
3	BOARD HARNESS	1/2" PLYWOOD	24x36"	
④	TOOL, CRIMPER	BERG	HT-65	1
⑤	TOOL, CABLE TIE	PANDUIT	GS-2B	1



-12 VOLT SUPPLY
STRIP AND TIN 3/8"
6 PLCS.
AWG # 18 WIRE

IDENTIFICATION CABLE TIE
MARK "SDC P/N 770100"

+5 VOLT SUPPLY
STRIP AND TIN 3/8"
6 PLCS.
AWG # 18 WIRE

STRIP 3/16" AND SOLDER.
HEAT SHRINK AS REQD.

CABLE TIE
1 OF 26 SHOWN
FOR CLARITY.

J-3 BOTTOM MUX

J-3 TOP MUX

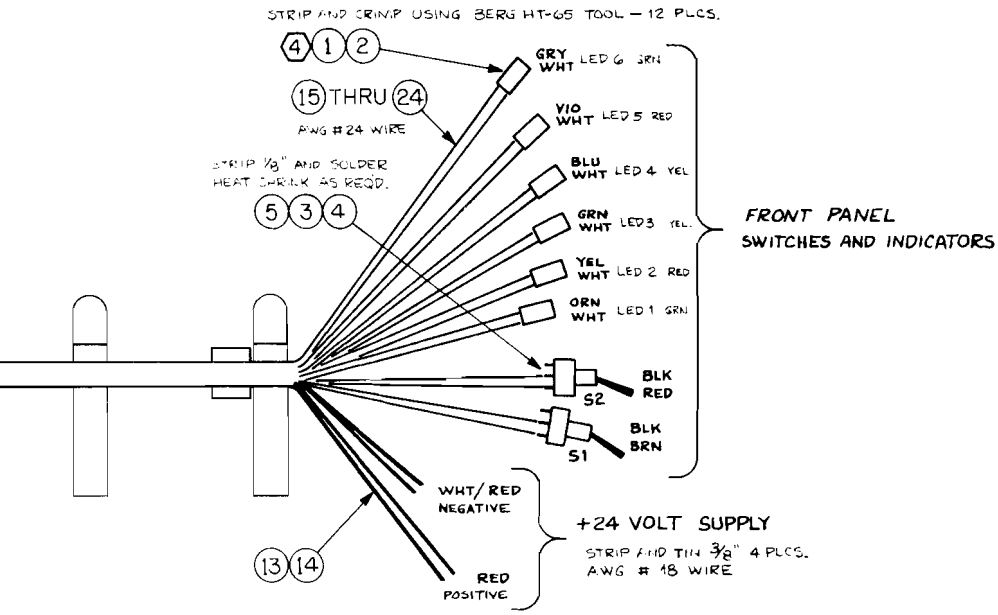
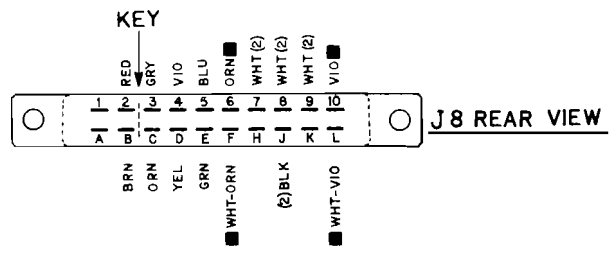
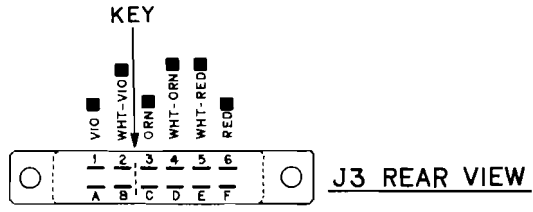
J-8 BOARD Z-2

STRIP
HEAT

ORN
POSITIVE
WHT/ORN
NEGATIVE

3/16" AND SOLDER
SHRINK AS REQ'D.

8(27)



4 REFER TO A-770105 FOR WIRING LIST
 3. ■ INDICATES #18 POWER SUPPLY CONNECTIONS.
 2. REFER TO WIRING HARNESS PARTS LIST A-770104
 NOTE: 1. DO NOT USE REDUCED PRINT.

HARNESS, WIRING, CONTROL		
SCALE: FULL	APPROVED BY:	DRAWN BY: KIRVEN
DATE: 6 JAN 77		REVISED
FDS-2 FLOPPY DISK SYSTEM		
SYNETIC DESIGNS COMPANY		DRAWING NUMBER D-770100

ITEM	NOMENCLATURE	P/N, DESCRIPTION	MATERIAL/SPECIFICATION	SYM.	VENDOR/CODE	QTY. REQ'D.			
						1			
1	CONNECTOR, .025 POST	MINI-PV #47712	BERG	1			12		
2	CONNECTOR BLOCK, 2 COND.	MINI-LATCH # 650-035	BERG	2			6		
3	SWITCH, MINATURE, SPDT	SF1SCY196	CUTLER-HAMMER	3			2		
4	NUT, FACE, SWITCH			4			2		
5	TUBING, SHRINKABLE	221-3/32 CLEAR	ALPHA	5			AR		
6	CONNECTOR, PC, .156" DOUBLE READOUT, 10 POS.	50-20A-30	CINCH	6			1		
7	CONNECTOR, PC, .156" DOUBLE READOUT, 6 POS.	50-12A-30	CINCH	7			2		
8	TUBING, SHRINKABLE	221-1/8 CLEAR	ALPHA	8			AR		
9	WIRE, #18, VIO	7155 IRRADIATED	ALPHA	9			AR		
10	WIRE, #18, WHT-VIO	↑	↑	10			AR		
11	WIRE, #18, ORN	↑	↑	11			AR		
12	WIRE, #18 WHT-ORN	↑	↑	12			AR		
13	WIRE, #18, RED	↓	↓	13			AR		
14	WIRE, #18, WHT-RED	7155 IRRADIATED	ALPHA	14			AR		
15	WIRE, #24, BLK	7150 IRRADIATED	ALPHA	15			AR		
16	WIRE, #24, BRN	↑	↑	16			AR		
17	WIRE, #24, RED	↑	↑	17			AR		
18	WIRE, #24, ORN	↑	↑	18			AR		
19	WIRE, #24, YEL	↓	↓	19			AR		
20	WIRE, #24, GRN	7150 IRRADIATED	ALPHA	20			AR		

A-770104 1/2

WIRING HARNESS FDS-2

PARTS LIST

SYNETIC DESIGNS CO.

ASS'Y SDC 770100
NEXT ASS'Y FDS-2

102

ITEM	NOMENCLATURE	P/N, DESCRIPTION	MATERIAL / SPECIFICATION	SYM.	VENDOR / CODE	QTY. REQ'D.			
						1			
21	WIRE, #24, LT. BLU	7150 IRRADIATED	ALPHA	21			AR		
22	WIRE, #24, VIO	↑	↑	22			AR		
23	WIRE, #24, GRY	↓	↓	23			AR		
24	WIRE, #24, WHT	7150 IRRADIATED	ALPHA	24			AR		
25	CABLE TIE, PLASTIC	TY-23M	THOMAS & BETTS	25			26		
26	IDENTIFICATION, CABLE TIE, PLASTIC	TY-51M	THOMAS & BETTS	26	SEE NOTES		1		
27	POLARIZING KEY, BETWEEN CONTACT	50-PK-2	CINCH	27			3		

770104 2/2

WIRING HARNESS, FDS-2

PARTS LIST

SYNETIC DESIGNS CO.

ASS'Y SDC 770100
NEXT ASS'Y FDS-2

20
F 2

ITEM	P8 BOARD Z2 PIN # 1	P3 MUX BRD. PIN # 2	SWITCHES & INDICATORS 3	POWER SUPPLIES 4	WIRE COLOR/SIZE 5	FUNCTION 6	NOTES
1	2		S2		RED/24	PROTECT DRIVE 1	GND. TO PROTECT DRIVE 1
2	3		LED6		GRY/24	DRIVE FAIL STATUS	"STATUS LED" GRN
3	4		LED5		VIO/24	CRC ERROR	"CRC ERROR LED" RED
4	5		LED4		BLU/24	UNIT SELECT b1	"SELECT b1 LED" YEL
5	6			+5 V	ORN/18	+5 V POWER SUPPLY	+5 V POWER SUPPLY
6	7		LED PWR.		WHT/24	+5 V POWER	POWER FOR LEDS.
7	7		LED PWR.		WHT/24	+5 V POWER	POWER FOR LEDS.
8	8		LED PWR.		WHT/24	+5 V POWER	POWER FOR LEDS.
9	8		LED PWR.		WHT/24	+5 V POWER	POWER FOR LEDS.
10	9		LED PWR.		WHT/24	+5 V POWER	POWER FOR LEDS.
11	9		LED PWR.		WHT/24	+5 V POWER	POWER FOR LEDS.
12	10			-12 V	VIO/18	-12 V POWER SUPPLY	-12 V POWER SUPPLY
13	B		S1		BRN/24	PROTECT DRIVE 0	GND. TO PROTECT DRIVE 0
14	C		LED1		ORN/24	DRIVE READY	"DRIVE READY LED" GRN
15	D		LED2		YEL/24	PROTECTED	"PROTECTED LED" RED
16	E		LED3		GRN/24	UNIT SELECT b0	"SELECT b0 LED" YEL
17	F			+5 V RET.	WHT-ORN/18	+5 V POWER RETURN	GND. +5 V POWER SUPPLY RETURN
18	J		S1		BLK/24	GND FOR S1	
19	J		S2		BLK/24	GND FOR S2	
20	L			-12 V RET.	WHT-VIO/18	-12 V POWER RETURN	GND. -12 V POWER SUPPLY RETURN
21		1		-12 V	VIO/18	-12 V POWER SUPPLY	-12 V POWER SUPPLY
22		3		+5 V	ORN/18	+5 V POWER SUPPLY	+5 V POWER SUPPLY

A-770105 1/2

NOTE:

3. REFER TO A-770104 FOR PARTS LIST.
2. TWO (2) P-3 MUX BOARD CONNECTORS ARE REQUIRED.
1. REFER TO D-770100 FOR WIRING HARNESS DWG.

WIRING HARNESS FDS2

WIRING LIST

SYNETIC DESIGNS CO.

ASS'Y SDC 770100
NEXT ASS'Y FDS-2

102
F

ITEM	P8 BOARD Z2 PIN # 1	P3 MUX BRD. PIN # 2	SWITCHES & INDICATORS 3	POWER SUPPLIES 4	WIRE COLOR/SIZE 5	FUNCTION 6	NOTES
23		2		-12 V RET.	WHT-VIO/18	-12 V POWER RETURN	GND. -12 V POWER SUPPLY RETURN
24		4		+5 V RET.	WHT-ORN/18	+5 V POWER RETURN	GND. +5 V POWER SUPPLY RETURN
25		5		+24 V RET.	WHT-RED/18	+24 V POWER RETURN	GND. +24 V POWER SUPPLY RETURN
26		6		+24 V	RED/18	+24 V POWER SUPPLY	+ 24 V POWER SUPPLY
		SEE NOTE					REFER TO NOTE 2.

A-770105 2/2