CONCURRENT DOS 8-16 INSTALLATION GUIDE

Hayward, CA 94545

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1. INTRODUCTION

When you purchase Concurrent DOS 8-16 from VIASYN, you get an operating system with the following features:

Built-in directory buffering reads the directory from disk into memory improving disk access.

Built-in LRU (least recently used) caching lists files in memory in order according to frequency of use for quicker access time.

Shared code support allows several users access to the same code segment in memory. Each user creates their own data segment while sharing one code segment.

Multi-user 8087/287 support uses the 8087/287 math processor and allows for several users to share the same registers clearing data out to memory for each user.

Full record and file lock out so more than one person at a time can use the same data file without corrupting the file.

File password protection sets up a system in which users need a password to access certain commands or data files within Concurrent DOS 8-16.

User log on/log off password and accounting is a feature of the CompuPro Concurrent DOS. Passwords are kept in an encrypted file so they can not be read by anyone trying to get into your system.

Password utility is provided to set up the system passwords for log on/log off of the Concurrent DOS operating system. (This keeps unauthorized users off of the system and can restrict users to certain parts of the system, commands, and user numbers.)

User start-up files sets up start-up files unique for each console.

Support for networking systems with the aid of the CompuPro Net 100 network board.

"Who" command gives the name of those users logged on. It will also tell who is on which console.

Status line update feature displays the current program and current active drives. (This feature will not work with all terminals. Refer to your System Center for information on the proper terminals.)

Virtual screen switching is supported with one keystroke. (This feature is also terminal dependent.)

Automatic detection of drive door opening, so you can change disks without having to remember to tell the system you've done so. Concurrent DOS 8-16 will read the current disk.

Supports MDRIVE/H RAM Disk

System can directly boot off the hard disk in a system with a DISK 3 and a DISK 1A with EPROM #291 or greater (no floppy disk is needed.)

Some IBM® -PC compatibility is provided. Using the CompuPro Disk 1A, you can execute some DOS 1.X-type programs. With the optional PC Video board, you can execute many screen dependent programs. Refer to the "PC Video Installation Guide" included with your PC Video board.

2. HARDWARE REQUIREMENTS

To use a basic Concurrent DOS 8-16 system, you need Compupro's IEEE 696/S-100 components in the following minimum configuration:

Enclosure:	Computer Enclosure with 20 or 21-slot motherboard
Processor:	Either a CPU 8085/88, CPU 8086 or CPU 286
Support:	System Support 1 featuring one serial port for connection to system console, interrupt controller, real-time calendar/clock, three interval timers, EPROM sockets with "GO 86" EPROM or 6116 RAM chip installed.
Memory:	RAM 16, 17, 21, 22 or 23 to provide 256K or more of RAM.
I/O Control:	Interfacer 3 or 4 board for console and printer I/O control.
Mass Storage:	Disk 1 or 1A floppy disk controller with two 8-inch double-sided, double-density floppy disk drives that will support 3 msec. step rate.

Recommended Options:

Terminal:	Any terminal that supports cursor addressing, user writable status line, extra paging capability. (For example, Televideo 925/950, Qume 108.)
Hard Disk:	Disk 2 or Disk 3 hard disk controllers and a hard disk drive. (CompuPro supports Quantum hard disk models Q520, Q540, and Q2080; Seagate

ST506 and Fujitsu 20 and 40 megabyte hard disk drives.)

Suggested Options:

Memory:	As much memory as you can get (up to 1 megabyte). You'll find that with Concurrent DOS 8-16, you'll want to run more programs, and this will require more memory. (With 256K, one user with one console, and no networking, approximately 112K of free space remains. Each additional console requires approximately 4K of memory. Networking uses approximately 64K of memory.)
MDRIVE/H:	Disk drive emulator.
Additional Interfacer 3 or 4:	For connecting up to 14 users.
5.25" Floppy Drives:	96 TPI double-sided drives, equivalent to Mitsubishi M4853 drives. (These drives require a Disk 1A).

If your CompuPro system has not been connected, installed (set up) and tested, continue with these instructions. If it has been set up, turn to Section 5 for instructions on how to copy your master diskette.

3. CONNECT, SET UP AND TEST YOUR SYSTEM

Unpacking the System

Carefully consider where you want to place your computer. Make sure you have an adequate amount of power outlets for the plugs and enough space surrounding your system for ventilation. You will also need to work at both the back and front of the computer to install your system. Allow yourself enough room to get to both these areas.

Your computer has been shipped in packing materials that help prevent damage during shipping. Save these packing materials in case you have to return any equipment to your System Center/Dealer. Repacking the system in the original containers gives you the best shipping protection.

An invoice is shipped with each system. Use it to verify that all components have been received. We suggest you file the invoice away with your records for future reference.

Open all boxes and carefully remove each unit from the packing material. Place the units on a flat surface and inspect the cabinets for any signs of shipping damage. Find and remove all the cables, cords, and system diskettes and put them aside for the moment.

Unpacking the Floppy Disk Drives

To prevent shipping damage, the floppy disk drives are shipped with a cardboard shipping diskette inserted in the drive slots. Be sure to remove this diskette before using the drive. **Save these cardboard diskettes and packing materials in case the disk drives need to be re-shipped.**

Unpacking the Hard Disk Drive

Some hard disk storage heads are manually locked in place for shipping. Some heads are locked automatically. If you have a Quantum Q520, Q540 or Q2080 hard disk drive, there is no external locking. The hardware will unlock when the power is turned on.

If you have a Pragmatic Design 20 Mbyte or 40 Mbyte hard disk, in order to unlock the heads, remove the cover, then find the LOCKED and UNLOCKED label on the drive. There is a lever underneath this label. Unlock the drive by switching the lever to the UNLOCKED position. This lever is held in place in two notched areas. Hold the lever down, pulling it out of the first notched area marked LOCKED, then slide it across and up to the second notched area marked UNLOCKED. Your hard disk is now unlocked.

NOTE: Allow the system to power up or down for at least 20 seconds before turning the system on or off again.

Repacking the System

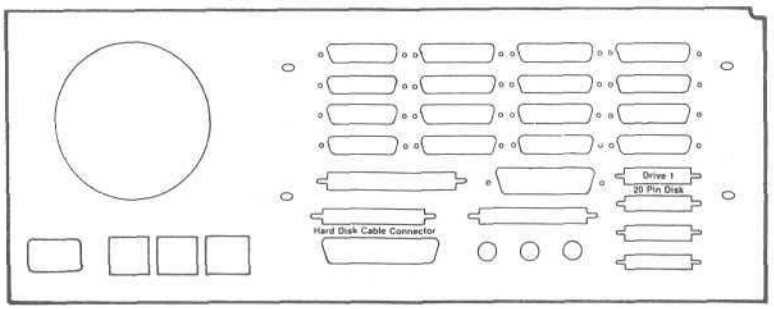
If it is necessary to repack your system, make sure it is packed as it was originally shipped. Take special care in repacking the disk drives. It is important that both the floppy and hard disk drives be secured before moving or shipping. Reverse the procedure in the section above so that your hard disk is LOCKED.

4. INSTALLING YOUR HARDWARE

This section describes the hardware setup for Concurrent DOS 8-16. It is assumed at this point that all necessary boards are installed within the enclosure and all necessary jumper and switch settings have been made. The jumper and switch settings for each board can be found in the back of this manual.

Use the following illustration as a guide for making the external connections to your system.

Fig. 4-1: Computer Enclosure Back Panel



Connecting the Terminals and Serial Printers

The connector for terminals and serial printers is a 25-pin "D" style connector. Make a complete connection, first connecting the cable connector to the back panel connection, then connecting the other end of the cable to the terminal or printer. Begin with the system console, then proceed to terminal 1, terminal 2, and so on until all terminals and printers are connected.

All your terminals should be RS-232 terminals set as follows:

1) 9600 baud
2) 8 data bits, 2 stop bits, no parity
3) DTR handshaking enabled
4) Shielded RS-232 cable with a minimum of the following lines connected:
   - (1) chassis ground
   - (2 & 3) data lines
   - (7) signal ground
   - (20) DTR for handshaking

If you desire screen switching, your terminal must support the Televideo 925/950 screen switching format. This includes the Qume 108, the Freedom 200 and others. If you have a Z-19 style terminal, you can configure the system to run screen switching, but this requires reassembly of your XIOS as explained in the "Concurrent DOS 8-16 Customization Guide" included with your documentation.

Ideally, each terminal should be of the same type, meaning the same number of virtual screens or memory pages. If you do have a mix of screen switching and non-screen switching terminals, and you have screen switching enabled, remember your non-screen switching terminals are still unable to run two or more tasks simultaneously.

Connecting the Floppy Disk Drives

The 8" floppy disk drives are connected internally to the floppy controller board with one 50-pin cable connected to the left 50-pin connector (rear view). Double-check that the board and cable connections are securely installed. The external connection is made with a 50-pin cable.

Connect the end of this cable to the back panel of the floppy disk drive enclosure. Take care not to bend the pins, and be sure that all the pins are included when you plug in the cable.

The 5.25" floppy disk drives are connected in the same manner, using a 34-pin cable.

Connecting the Hard Disk - DISK 3

If you are using the DISK 3, the internal connections are made to the hard disk controller board by a 34-pin control cable and a 20-pin data cable, connected to the leftmost 20-pin connector.

The external connections are made with a 34-pin and a 20-pin cable. Connect the end of these cables to the back panel of the hard disk. Take care not to bend the pins and be sure that all the pins are included when you plug in the cable.

Connecting the Hard Disk - DISK 2

Two cable connections are made for the hard disk. If you are using the DISK 2, the internal connections are made to the hard disk controller board by a 50-pin control cable and a 20-pin data cable, connected to the leftmost 20-pin connector.

The external connections are made with a 50-pin and a 20-pin cable. Connect the end of these cables to the back panel of the hard disk. Take care not to bend the pins and be sure that all the pins are included when you plug in the cable.

Connection Test

Test your connections now. Plug in all power cables. The computer enclosure has provisions on the rear panel for plugging in disk drives, terminals or printers. These AC utility outlets are switched by the main power switch, located on the front of the computer enclosure. Each outlet is rated for a maximum of 120 watts.

1) Turn on power to the computer enclosure by pressing down the top portion of the red power switch on the front panel.

2) Turn on power to the floppy disk system by flipping up the toggle switch on the back panel.

3) Turn on power to the hard disk system by flipping up the power switch on the rear panel.

4) Go to the front of the system now and check for the following:

- The red RESET button on the computer enclosure is lit.

- The red indicator light on one of the floppy disk drives is blinking.

If the indicator light on a floppy drive is lit but not blinking, and pressing the RESET button does not start it blinking, you may have installed the cable backwards, or a switch may have been set incorrectly. Turn off all power to all systems before going any further.

If the floppy light(s) are on brightly, flip the cable over. First try correcting the problem by unplugging the rear panel connection on the floppy disk. Turn the ribbon cable connector over and re-connect it. Changing this cable will not correct the problem if none of the lights are on. If none of the lights on the floppy drives are on, the cable itself may be bad. First try connecting a different cable. If a new cable does not solve the problem, check your switch settings again.

Turn on power to the systems and go over the above check again. If the system still does not power up correctly, make sure that you followed previous connection instructions correctly. A troubleshooting chart follows in Section 25 of this manual; check this out also.

If you are satisfied that all connections are made properly, but are still unable to get your system to operate correctly, contact your dealer.

5. BOOTING A FLOPPY SYSTEM

Connect the cable of your system console to the serial port of your System Support 1 board. Set the terminal to work at 9600 baud, as described in Section 4 of this manual.

Insert your Concurrent DOS 8-16 boot diskette into the leftmost or top floppy drive on your system. If you have a CPU 8085/88, your boot floppy is labeled "Master Diskette Number 1 of 4". If you are using a CPU 8086 or a CPU 286, your boot diskette is labeled "Master Diskette Number 2 of 4.

The following system message will appear on your screen:

```
CP/M 8-16  1.1Sb  loader -

Can't open CCPM.SYS
What CCPM*.SYS Do You Want To Read?:
```

To get your system up and running, use the floppy only system file, FLPY, located on disk #1 of 4. Type in **FLPY.** The system will display something similar to the following message:

```
CompuPro XIOS Ver 3.1C
0.5 Megabyte MDRIVE/H active as M:
Disk 1A Controller present:
        8" Drives on A: B:
        5 1/4" Drives on C: D:

Concurrent CP/M-86 3.1
Copyright (C) 1983, Digital Research
Concurrent CP/M 8-16 Copyright (C) 1984, CompuPro
PC Mode

XIOS, LOADER, SW, SHELL, Copyright (C) 1981, 1982 CompuPro

14:27:16    A:MFORM.CMD

CompuPro Concurrent-CP/M 8-16
PC Mode

0A>
```

Later you will choose the SYS file which is more appropriate to your system. In addition 14 XIOS files have been provided to help customize your operating system to your needs. These are listed toward the back of the manual.

If you are running a hard disk on your system, skip to Section 8, "Formatting Your Hard Disk".

6. COPYING YOUR MASTER DISKETTES (Making a "Backup")

Before you go any further, make a backup copy of your Concurrent DOS 8-16 system diskettes. **Use the backup copies to run the system and put the original masters in a safe place.**

EXCEPTION: If you have a hard disk with your system, ignore this section and skip ahead to the section on formatting your hard disk.

The CompuPro FORMAT and COPY utilities are on Master Diskette #2 of 4. Insert this diskette into a drive and log onto that drive. Locate several blank diskettes and use the CompuPro FORMAT utility to format a blank diskette (must be single sided and 1024 bytes/sector) and the COPY utility to make a track by track copy.

A. Format a Diskette

STEP 1. Insert a **write-enabled** single-sided blank diskette into an empty floppy drive and shut the drive's door.

STEP 2. Type the command: **FORMAT x:3** (where x is the logical

drive letter A - P) and press the return key.

NOTE: From now on, when you see the symbol [RET], it means to press the RETURN, or ENTER key.

The drive will make some noise, its light will flash, and the following message (or one which is similar) will appear on the screen.

CompuPro Disk FORMAT Version 4.x
8 inch disk: 77 track, 1 sided, not formatted
Confirm ready to format disk in drive X: (Y/N):

anytime by pressing ^C. (Hold down the control [CTRL] key and press the "C" key.)

STEP 3. Because formatting a diskette erases any existing files on the diskette, the system gives you a last chance to reconsider.

If you are sure you are ready, type: Y

Do not press the return key, as the program does this automatically. The screen will display symbols of the tracks of the diskette. These tracks are the actual locations of the stored information. The formatting program looks at each of these tracks, and makes sure that each track is in perfect condition. Here is what you will see on the screen after the operation is complete; it does not all appear at once, but rather "builds" sequentially.

```
          1         2...6         7
01234567890123456789...01234567890123456789
FFFFFFFFFFFFFFFFFFFF...FFFFFFFFFFFFFFFFFFFF
VVVVVVVVVVVVVVVVVVVV...VVVVVVVVVVVVVVVVVVVV
```

NOTE: 8" diskettes have 77 tracks (0-76) to be formatted and 5.25" diskettes have 80 tracks (0-79) to be formatted.

If an E or S appears in the bottom row, something is physically wrong with a track. Insert another diskette and try the formatting procedure again.

After the bottom row is completed, the following message appears:

FORMAT complete.
Do you want to FORMAT another disk?
R - request new parameters.
cr - duplicate last FORMAT
N - exit back to system

When these messages appear, it means you have a formatted diskette.

STEP 4. Type: N (unless you want to format more diskettes.)

If you want to format more diskettes, press the return key, replace the diskette you just formatted with another blank diskette, and continue from STEP 2.

When you reach STEP 4 after formatting the last diskette, type N. The OA> symbol will appear on the screen to indicate that the formatting process is complete.

B. Copy a Diskette

STEP 1. Insert a formatted diskette into an available drive. (Make sure that the format of the diskette you insert is the same as the diskette already in your system. It should be, if you followed the instructions above.)

STEP 2. Type: COPY [RET]

The selection screen will appear:

```
Select one:
    (A) All tracks
    (D) Data tracks only
    (S) System tracks only
    (X) Return to Concurrent DOS operating system
    (?) Provide helpful information
Selection:
```

STEP 3. Type: A to copy all tracks.

The following screen will appear:

```
Source drive (a - p):
Destination drive (a - p):
Enter newline to start copying (cr)
```

STEP 4. Enter the names of your source and destination drives. The source drive is the one you want to copy from. The destination drive is the one you want to copy to. Press the return key and an updating message will appear on the screen. When the copy is finished, you will be asked:

Are there any more copies to make?

STEP 5. Answer Y if you want to make another copy of the diskette.

You will be shown your choices again. If you are not going to make another copy, enter an N and you will be returned to the system prompt.

To put your system on a double-sided diskette or one with different sectoring (256 or 512 bytes/sector), format a diskette as above. Then, to copy the system tracks over, use the SYSGEN utility provided with Concurrent DOS 8-16. After copying the system tracks onto the diskette with the SYSGEN utility, you must PIP the remainder of the files onto the new diskette.

7. CREATING A BOOT DISK FOR A FLOPPY ONLY SYSTEM

This section is for those of you with no hard disk included with your system. If you do have a hard disk on your system, skip ahead to Section 8 of this manual.

Most of the files on your four Concurrent DOS 8-16 Master Diskettes are not necessary for everyday use. We need to create a diskette to boot your system with only the files necessary to get you up and running and doing work.

The necessary files to put on your boot diskette are:

CCPMFLPY.SYS	LPRS
*.CMD	*.HLP
TTYS	AUTO.SUB (optional)

where '*' includes all names.

Use the PIP command to put these files on a boot diskette. Insert Disk #1 of 4 into your 'A' drive. Insert one of the diskettes you have just formatted into your 'B' drive. Enter into the PIP command by typing:

```
OA>PIP        [RET]
```

In the PIP command, a '*' will appear each time PIP has completed a task and is ready for the next entry. To exit PIP, press the return key at the '*' prompt. PIP the necessary files by typing:

```
* B:=A:CCPMFLPY.SYS[VROW]        [RET]
* B:=A:*.CMD[VROW]               [RET]
* B:=A:LPRS[VROW]                [RET]
* B:=A:TTYS[VROW]                [RET]
```

where B: is the drive containing your newly formatted diskette and A: is the drive containing Disk #1 of 4.

Remove Disk #1 of 4 from the floppy drive. Insert Disk *#2* of 4. Leave the diskette in drive B and type:

```
* B:=A:*.CMD[VROW]               [RET]
* B:=A:*.SUB[VROW]               [RET]
```

Remove Disk #2 of 4 from the floppy drive. Insert Disk #3 of 4 and type:

```
* B:=A:*.CMD[VROW]          [RET]
* B:=A:HELP.HLP[VROW]       [RET]
```

You now have to put a floppy loader on the diskette you are creating in drive B to complete your boot diskette. Remove Disk #3 of 4 from the floppy drive and insert Disk #4 of 4. Disk #4 contains four different floppy loaders. Review the list of floppy loaders below and determine which one applies to your system.

LDRCCPM5.88 (for a 5.25" floppy disk drive and a CPU 8085/88)

LDRCCPM8.88 (for an 8" floppy disk drive and a CPU 8085/88)

LDRCCPM5.86 (for a 5.25" floppy disk drive and a CPU 8086/286)

LDRCCPM8.86 (for an 8" floppy disk drive and a CPU 8086/286)

After choosing the proper loader for your system, type:

```
OA>SYSGENLDRCCPM?.??          [RET]
```

where ?.?? is replaced with the parameters of the loader you have chosen for your system.

When asked for a destination drive, answer 'B' followed by a return. A second return will exit you from the SYSGEN utility and return you to the system prompt.

Before you attempt to boot up the system with your new boot diskette, rename your CCPMFLPY.SYS file. To do this log on to drive B where your new boot diskette is and type:

```
OA>REN  CCPM.SYS=CCPMFLPY.SYS      [RET]
```

Remove the Master Diskette in drive A. Remove your new boot diskette in drive B and be sure to label it. Then insert your boot diskette into drive A and push the reset button. Your system should boot up. If you have any problems booting the system with this diskette, repeat the steps for creating a floppy boot diskette.

Now set all the command files to system read-only by typing:

```
OA>SET *.CMD [SYS,RO]      [RET]
```

This will allow all users use of the command files.

You may now skip to Section 10, "Installing Setup Files".

8. FORMATTING YOUR HARD DISK

Boot your system using your Concurrent DOS 8-16 diskette #1 of 4 if you have a CPU 8085/88 or diskette #2 of 4 if you are using a CPU 8086 or CPU 286. Use the FLPY SYS file to bring up your system, as described in Section 5. If you have been using the hard disk on your system, you will need to back up the files on your hard disk before formatting. Formatting your hard disk will erase all the files on it, so be sure everything is backed up first.

If you are using Concurrent DOS 8-16 with a hard disk or disks, you must run the DISK2 or DISK3 formatter/diagnostic. The DISK2 and DISK3 programs are included on your Concurrent DOS 8-16 Disk #2 of 4. Insert this diskette into a floppy drive and log onto it.

To run the formatter/diagnostic on a system with a DISK 2 hard disk controller, type:

```
OA>DISK2 [drive type] ALL          [RET]
```

DISK 2 drive types:

M20	(Fujitsu 20 megabyte drive (default value))
M40BE	(Fujitsu 40 megabyte drive with Pragmatic modification)

To run the formatter/diagnostic on a system with a DISK 3 hard disk controller, type:

```
OA>DISK3 [drive type] ALL          [RET]
```

DISK 3 drive types:

Q520	(Quantum 20 megabyte drive)
Q540	(Quantum 40 megabyte drive)
Q2080	(Quantum 80 megabyte drive)
ST506	(Seagate 5 megabyte drive)

Both the DISK 2 and the DISK 3 formatter can take up to 17 hours to complete. It begins by formatting the tracks, which is evidenced by something like the following display:

```
Formatting Track : NNN  Hard NNN  Soft NNN
```

The track number (NNN) and number (NNN) of hard and soft sector errors are displayed to the right of each entry. If 12 or more errors are reported, consult the DISK 2 or DISK 3 Technical Manuals.

The test continues with:

```
Verifying Track
```

Data Test Track

and ends with:

Seek Test

There are 12 "passes" through the sectors in this last test. Upon completion, a bad sector report is given. Any bad sectors found are "mapped out" or effectively blocked from use.

NOTE: You should record all of the reported bad sectors found in your hard disk format in the NOTES section at the back of this manual for future reference.

9. BOOTING A HARD DISK SYSTEM

DISK 2 Systems

If you have a hard disk system using a DISK 3 hard disk controller, skip to the next section.

With a DISK 2 and either a DISK 1 or DISK 1A floppy disk controller, you can setup a system to boot off of a floppy or off of the hard disk. First, we will put the files on your Master Diskettes onto your hard disk. Next, we will take you through the steps of creating a boot floppy and then we will setup a hard disk boot. Decide if you want a floppy boot or a hard disk boot and follow the appropriate instructions below.

Insert your Concurrent DOS 8-16 Disk #1 of 4 (CPU 8085/88) or Disk #2 of 4 (CPU 8086 or CPU 286) in drive A. Press the reset button. You will again be asked which SYS file you want to read. There are two SYS files for the DISK 2 depending on the size of your hard disk. They are as follows:

CCPM220.SYS - for DISK 2, 20 Mbyte hard disk
CCPM240.SYS - for DISK 2, 40 Mbyte hard disk

If you have a 20 Mbyte hard disk, type 220. If you have a 40 Mbyte hard disk, type 240.

Your system will sign-on with the following message or one that is similar.

```
CompuPro XIOS Ver3.1x
0.5 Megabyte MDRIVE/H active as M:

DISK 1A Controller present:
        8" Drives on I: J:
        5 1/4: Drives on K: L:
DISK 2/ 40MB  A: B: C: D: E:

Concurrent CP/M-86 3.1
Copyright (C) 1983, Digital Research
```

```
XIOS, LOADER, SW, SHELL, Copyright (C) 1981, 1982 CompuPro

14:27:16   ?Error opening MFORM.CMD

CompuPro Concurrent CP/M 8-16
PC Mode

OA>
```

Your hard disk now begins on drive A. Your 8" floppy drives are designated drives I and J, and your 5.25" floppies are designated drives K and L.

Next, PIP the files on your Concurrent DOS 8-16 Master Diskettes onto your hard disk. Disk #1 of 4 and Disk #2 of 4 should be PIPed onto drive A by typing:

```
OI>PIP A:=I:*.*[VROW]    [RET]
```

Disk #3 of 4 and Disk #4 of 4 should be PIPed onto drive B of your hard disk. Log onto the 'A' drive of your hard disk and type:

```
OA>PIP   B:=I:*.*[VROW]  [RET]
```

To allow for more room on the 'A' drive of your hard disk, you may want to have only the necessary files for everyday work on your hard disk. The necessary files are:

```
*.SYS (you need only the one you will be using)
*.CMD
LPRS
TTYS
AUTO.SUB
HELP.HLP
```

You may choose to PIP only these files onto to drive A of your hard disk. Be sure you still PIP all of Disk #3 of 4 and Disk #4 of 4 onto drive B of your hard disk.

Drive B: of your hard disk contains a few .CMD files that should be located on drive A. Move these files over to drive A by typing:

```
OA>PIP A:=B:*.CMD[VROW]          [RET]
```

Set your .CMD files to system read-only by typing:

```
OA>SET *.CMD   [SYS,RO]   [RET]
```

You may now put your Master Diskettes away in a safe place.

A. Booting Off of a Floppy

We need to create a floppy disk to boot up your system. This floppy disk needs only two files to boot it. The remaining files

needed to do everyday work are now on your hard disk.

Insert a formatted disk into your floppy drive. Log on to drive A of your hard disk by typing A: followed by a return. The two files needed on your boot floppy are the SYS file and the correct loader for your system. To put the hard disk SYS file on your floppy disk, type:

```
OA>PIP I:CCPM.SYS=A:CCPM2??.SYS[VROW]          [RET]
```

where ?? is 20 for a 20 Mbyte hard disk and 40 for a 40 Mbyte hard disk.

Next, choose the floppy loader appropriate for your system from the following list.

LDRCCPM5.88	(for a 5.25" floppy disk drive and a CPU 8085/88)
LDRCCPM8.88	(for an 8" floppy disk drive and a CPU 8085/88)
LDRCCPM5.86	(for a 5.25" floppy disk drive and a CPU 8086/286)
LDRCCPM8.86	(for an 8" floppy disk drive and a CPU 8086/286)

Use the SYSGEN command to put the appropriate loader onto your floppy boot disk by typing:

```
OA>SYSGEN    B:LDRCCPM?.??    [RET]
```

where ?.?? is replaced with the parameters of the loader appropriate to your system, and B: is the drive containing the loader file.

When asked for a destination drive, answer 'I' followed by a return. A second return will exit you from the SYSGEN utility and return you to the system prompt.

With this new boot floppy in drive I (for 8" diskettes) or drive K (for 5.25" diskettes), press the reset button and your system should boot off of the floppy and come up on drive A of the hard disk. If you have any problems, repeat the instructions above.

If you do not plan to change your system to boot directly off of the hard disk in the future, you can erase the SYS files on your hard disk by logging on to drive A of your hard disk and typing:

```
OA>ERA CCPM*.SYS
```

This will erase all of the SYS files on your hard disk. If in the future you want to change your system to boot off of the hard disk, you may PIP the necessary SYS file back onto your hard disk from your Master Diskettes.

B. Booting Directly Off Of The Hard Disk

After PIPing your Master Diskettes onto your hard disk, you may store the diskettes in a safe place.

To boot off of your hard disk, you will need to place a system loader on your hard disk. Choose the loader appropriate for your system from the following list.

LDCCPM22.88 (for a DISK 2 hard disk controller,
a 20 MB hard disk, and a CPU 8085/88)

LDCCPM24.88 (for a DISK 2 hard disk controller,
a 40 MB hard disk, and a CPU 8085/88)

LDCCPM22.86 (for a DISK 2 hard disk controller,
a 20 MB hard disk, and a CPU 8086 or
a CPU 286)

LDCCPM24.86 (for a DISK 2 hard disk controller,
a 40 MB hard disk, and a CPU 8086 or
a CPU 286)

SYSGEN the loader onto drive A of your hard disk by typing:

```
OB>SYSGEN LDRCCPM?.??
```

where ?.?? is replaced with the parameters of the loader appropriate to your system.

When asked for the destination drive, type 'A' followed by a return. To exit from the SYSGEN utility, type a second return.

Before going on, shut off power to your system. You must reset the switches on your DISK 1 or DISK 1A board, and on the SELECTOR CHANNEL board in order to boot directly off of the hard disk. Check your switch settings with those at the back of this manual.

Press the reset button and your system should boot directly off of the hard disk. If you have problems, repeat all of the above steps.

Next, rename the SYS file for your system by typing:

```
0A>PIP CCPM.SYS=CCPM2??.SYS
```

where ?? is 20 for a 20 MB hard disk and 40 for a 40 MB hard disk.

You may now erase the files the SYS files you will not be using by typing:

```
0A>ERA CCPMFLPY.SYS     [RET]
0A>ERA CCPM3*.SYS       [RET]
```

DISK 3 Systems

If you are using a DISK 3 hard disk controller, you can boot directly off of the hard disk only if you have a DISK 1A with EPROM part #291 or greater in your system. If you have a DISK 1A with an earlier EPROM, contact CompuPro and ask for an RMA number to update your EPROM. If you have a DISK 1 in your system, you can only boot your system off of a floppy disk.

Insert Disk #1 of 4 (for CPU8085/88) or Disk #2 of 4 (for CPU 8086 or CPU 286) into your floppy drive and press the reset button. You will be asked which SYS file you want to read. Choose the appropriate SYS file for your system (found on Disk #1 of 4) from the following list.

CCPM305.SYS - for DISK 3, ST506 5 MB hard disk
CCPM320.SYS - for DISK 3, 20 MB hard disk
CCPM340.SYS - for DISK 3, 40 MB hard disk
CCPM380.SYS - for DISK 3, 80 MB hard disk

For example, when asked "What SYS file do you want to read", type in 340 for a system with a 40 MB hard disk.

After typing in the 3-digit parameters of your SYS file, the following sign-on message will appear or something similar:

```
CompuPro XIOS Ver 3.1x
0.5 Megabyte MDRIVE/H active as M:
Disk 1A Controller present:
        8" Drives on I: J:
        5.25" Drives on K: L:
Disk 3/ Q540   A: B: C: D: E:

Concurrent CP/M-86 3.1
Copyright (C) 1983, Digital Research
Concurrent CP/M 8-16 Copyright (C) 1984, CompuPro

XIOS, LOADER, SW, SHELL, Copyright (C) 1981, 1982 CompuPro

14:27:16  ?Error opening MFORM.CMD

CompuPro Concurrent CP/M 8-16
PC Mode

OA>
```

PIP all of the files on your Master Diskettes onto your hard disk. Disk #1 of 4 and Disk #2 of 4 should be PIPed onto drive A of your hard disk, while Disk #3 of 4 and Disk #4 of 4 should be PIPed onto drive B of your hard disk (drive A if you are using an ST506 hard disk).

With Disk #1 of 4 and with Disk #2 of 4 inserted in the floppy drive I (for 8") or drive K (for 5.25"), type:

OI>PIP A:=I:*.*[VROW] [RET]

With Disk #3 of 4 and with Disk #4 of 4 inserted in your floppy drive, log onto drive A and type:

OA>PIP B:=I:*.*[VROW] [RET]

To save room on your hard disk, you may want to PIP only those files necessary for everyday work onto you hard disk. The necessary file are:

*.SYS (you only need the SYS file you will be using)
*.CMD
TTYS
LPRS
AUTO.SUB
HELP.HLP

You may PIP only these files onto drive A of your hard disk. Be sure you still PIP all of Disk #3 of 4 and Disk *#4* of 4 onto drive B of your hard disk.

Then put all of the .CMD files on drive B onto drive A by typing:

OA>PIPA:=B:*.CMD[VROW] [RET]
OA>PIP A:=B:HELP.HLP[VROW] [RET]

Set all of the .CMD files to system read-only by typing:

OA>SET *.CMD [SYS,RO] [RET]

You may now put your Master Diskettes away in a safe place.

A. Booting Off Of A Floppy

To create a boot floppy for your hard disk system, you need a formatted floppy diskette and two files.

Insert the formatted diskette into your floppy drive (drive I for 8" floppies and drive K for 5.25" floppies).

PIP the SYS file you used to boot up your DISK 3 system in the previous step onto your floppy diskette by typing:

OA>PIP I:CCPM.SYS=A:CCPM3??.SYS[VROW] [RET]

where I: is the drive holding your floppy disk and ?? is 05 for an ST506 hard disk, 20 for a 20 MB hard disk, 40 for a 40 MB hard disk and 80 for an 80 MB hard disk.

Next, choose the loader appropriate for your system from the following list of floppy loaders.

LDRCCPM5.88 (for 5.25" floppy disk drives with a CPU 8085/88)
LDRCCPM8.88 (for 8" floppy disk drives with a CPU 8085/88)
LDRCCPM5.86 (for 5.25" floppy disk drives with a CPU 8086/286)
LDRCCPM8.86 (for 8" floppy disk drives with a CPU 8086/286)

Use the SYSGEN utility to put the loader appropriate to your system on your floppy disk by typing:

OA>SYSGEN B:LDRCCPM?.?? [RET]

where ?.?? are the parameters of the floppy loader you have chosen for your system.

When asked for the destination drive, type 'I' if your boot floppy is on an 8" drive and 'K' if your floppy is on a 5.25" drive, followed by a return. To exit from the SYSGEN utility, type a second return.

Press the reset button and your system should boot coming up on the hard disk as drive A. If you have any problems, repeat the steps above.

If you do not plan on booting your system directly off of the hard disk you may erase the SYS files on your hard disk by typing:

OA>ERA CCPM*.SYS

B. Booting Directly Off Of The Hard Disk

Remember, you can only boot directly off of the hard disk with a DISK 3 controller if you have a DISK 1A with EPROM part #291 or greater in your system.

Choose the loader appropriate to your system from the following list:

LDRCCPM3.86 (for a DISK 3, CPU 8086 or CPU 286)
LDRCCMP3.88 (for a DISK 3, CPU 8085/88)

Use the SYSGEN utility to put the loader on your hard disk by typing:

OA>SYSGEN B:LDRCCPM3.?? [RET]

where ?? is replaced with the parameters appropriate to your system.

When you are asked what your destination drive is, type 'A' followed by a return. To exit the SYSGEN utility, type a second return.

NOTE: Make sure you have set the switches on your DISK 1A to allow a DISK 3 boot.

Press the reset button and your system should now boot directly off of the hard disk. If you have any problems, repeat all of the above steps.

Rename your SYS file by typing:

```
OA>REN  CCPM.SYS=CCPM3??.SYS
```

where ?? is the number of megabytes of your hard disk (05, 20, 40, or 80).

To create more room on your hard disk, you may want to erase the SYS files you do not need. Be sure not to erase CCPM.SYS.

10. INSTALLING SETUP FILES

In order to use Concurrent DOS 8-16, you must install several "setup" files. There are three files: the terminal setup (TTYS), the printer setup (LPRS), and the password (PASSWD) files. These files are organized so you enter information in each field. Make sure you put these files remain on Drive A, User 0.

Terminal Setup File (TTYS)

The TTYS file establishes information on each terminal used in the system, and whether or not the system will come up in single user mode or directly in multi-user mode. Information for this file may be entered with any text editor program. Call up the ttys file with a text editor.

The first line of the TTYS file tells the system whether to come up in single user or multi-user mode. If the first line of the TTYS looks like:

```
MULTI
```

the system will come up directly in multi-user mode with all of the consoles active, so there is no need to type "logout". If the first line is:

```
SINGLE
```

or anything else but "MULTI", the system will come up with only the system console active, and "logout" must be typed to invoke multi-user.

Adding HISTORY to the second line of the TTYS file will activate the HISTORY.DAT file. This gives a constant update of when users log on and off the system. Refer to Section 12 for more discussion on the HISTORY.DAT file.

These lines must be entered with capital letters.

The remainder of the TTYS file is for the system to configure the terminals.

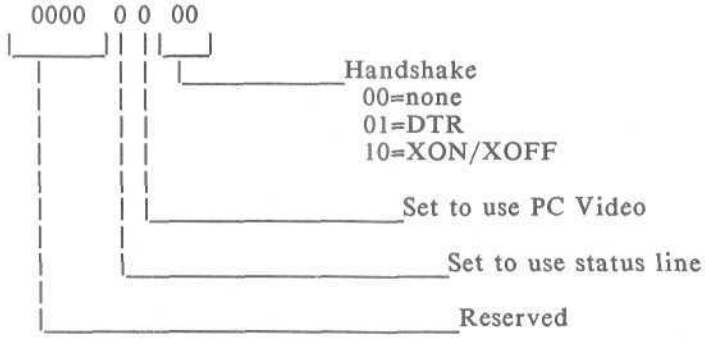
The format for each terminal entry (TTYS) is:

Use the following tables for the setup file entry.

Table 10-1: Baud Rates

```
0 =  9600
1 =   110
2 =   300
3 =   600
4 =  1200
5 =  1800
6 =  2400
7 =  4800
8 =  9600
9 = 19200
```

Table 10-2: Handshaking



Handshaking is shown in its binary form. The binary value must be converted to its hexadecimal value for the TTYS file.

Table 10-3: Serial Communication Parameters

```
#DATA BITS - can be:  8 or 7
 #STOP BITS - can be:  2 or 1
     PARITY - can be:  N = No parity
                       E = Even parity
                       0 = Odd parity
```

1) Number of terminal, corresponding to connection on computer back panel. Numbers are 0-6 for seven user system.

2) Terminal baud rate; 9600 by default. Options listed in Table 10-1.

3) Optional RS-232 hardware/software handshaking. Options listed in Table 10-2.

4) Serial communication parameters; default is 8 data bits, 2 stop bits and no parity. Options listed in Table 10-3.

5) Terminal number in the form of TTY#, where # = 0-6.

6) Description - location, for example (optional).

Information is entered between the colons. The first field (device number) must be entered, but the rest of the fields may not require any entry. Terminals with a 9600 baud rate, for example, are automatically addressed by the system and require no hardware handshaking. If your terminals require selection of a baud rate other than 9600, enter its corresponding number from the previous chart.

Hardware handshaking is not required for a terminal, but it is recommended. Check the specifications for your terminal. Enter the number corresponding to the type of handshaking needed from Table 10-2.

Information on terminal type and location is entered as a means of reference for the system operator and is optional. For example, it may be helpful to know that terminal 3 is a Teletype Model 43, which runs at 1200 baud, requires hardware handshaking, uses 8 data bits, 2 stop bits, no parity and is located in the Accounting Office. In this case, the TTYS entry for this terminal would look like:

```
3:4:1:82N:Teletype,43:Accounting Office
```

Normally, however, the TTYS file will resemble the following example:

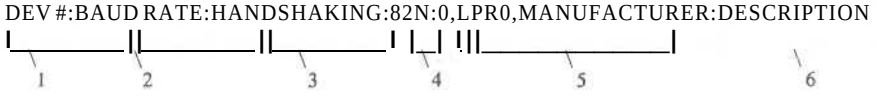
```
MULTI
HISTORY
0:0:9:82N:console:System console device
l:0:9:82N:ttyl:Interfacer 3 port 7
2:0:9:82N:tty2:Interfacer 3 port 6
3:0:9:82N:tty5:Interfacer 3 port 3
4:0:9:82N:tty6:Interfacer 3 port 2
5:0:9:82N:tty7:Interfacer 3 port 1
6:0:9:82N:tty8:Interfacer 3 port 0
```

In this example, all of the terminals run at the default 9600 baud rate, have DTR handshaking, and have status line update.

If your system has only one INTERFACER 4, you should delete the entries for device number 3-6 from the TTYS file. This will "turn off" nonexistent relative user numbers 0-3. Always set the TTYS file to match the number of consoles you actually have.

Printer Setup File (LPRS)

An entry for each printer is made in an "LPRS" file. Again, this file may be entered and edited with any text edit program; the information needed follows the same format as the TTYS file:



1. Number of printer, corresponding to connection on computer back panel. Printer 0 is user default printer.

2. Printer baud rate; 9600 by default. Baud rates listed in Table 10-1.

3. RS 232 hardware handshaking. Options listed in Table 10-2.

4. Serial communication parameters; Default is 8 data bits, 2 stop bits and no parity. Options listed in Table 10-3.

5. Printer number, name in the form of LPR#, and manufacturer name.

6. Description - location, for example (optional).

Check the manufacturer's manual for the baud rate and, if necessary, hardware handshaking requirements.

For a parallel printer, ignore the baud rate and parity entries. You must complete all the other entries. (Set the handshaking to 0 for no handshaking.)

Baud rates correspond to the same numbers established for terminals, as do the numbers for hardware handshaking (refer to Tables 10-1 and 10-2.

A sample "LPRS" file might look like:

```
0:8:2:82N:LPR0,0:Diablo 630 in Room 5
l:8:l:82N:LPRl,l:Microline 80A in Room 10
2::0::LPR2,2:Microline 80A in Room 10
```

In this sample, printer 0 is a Diablo 630 that runs at 9600 baud, has XON/XOFF is located in Room 5. Printer 1 is a Microline 80A that runs at 9600 baud with DTR, and is located in Room 10. Printer 2 is a Microline 80A parallel printer that runs at 9600 baud, has no handshaking and is in Room 10.

User Setup File - PASSWD (optional)

User passwords are set with the "PASS" utility. This program can be password protected with Concurrent DOS' file password capability. (See Digital Research's Concurrent CP/M Operating System User Guide for further information.) PASS will prompt you for needed information about each user on the system and save the information in an encrypted file called "PASSWD".

NOTE: We recommend that the program PASS.CMD be password protected to keep users from modifying passwords.

Type:

OA>PASS [RET]

The following will appear:

•CompuPro Concurrent DOS 8-16 Password Maintenance Program Vl.x

0 - Return to Concurrent DOS 8-16 without saving passwords
1 - Return to Concurrent DOS 8-16 with saving passwords
2 - Display passwords
3 - Add a password
4 - Delete a password
5 - Print this menu
6 - Modify a password

Selection: _

To add a password, enter a "3", press the carriage return and follow the prompts on the screen.

Name (must have one):	Enter no more than eight characters with no spaces. (Lower case only.)
Password:	Enter no more than eight characters with no spaces (lower case only) or a return for no password.
Default drive:	Enter one character drive name. Default is A: if a return is pressed.
Default user:	Enter a user number (0-15). Default is 0 if a return is pressed.

Default printer:	Enter a printer number (0-4). Default is 0 if a return is pressed.
User enable:	"Y" if you want this user to be able to run the user command, "N" if not.
Terminals:	Enter the number of the console(s) this user can use, separating them by a comma. (Example: 0,2) Default to all consoles if a return is pressed.
Command:	Enter command of first program to be executed. This command field will allow you to bring the user directly into a program. NOTE: If the program you want to run is an 8-bit program, you must put SW! in front of the command. Defaults to operating system prompt if a return is pressed.
Comment:	40 characters maximum. This comment is for information use only.
Selection: _	Enter a number from 0-6 (see selection menu above).

A user name must be entered in lower case for each person using the system. By default, all users enter on drive A as user 0, and may access all terminals and programs and printer 0. Use the format example above as a guide for entering specific information on user entry and access defaults. When you have finished choosing your passwords, choose selection 1 to save your passwords and return to the operating system.

In addition, Concurrent DOS 8-16 will automatically execute submit files titled using the log on name. For example, if you create submit file "JOE.SUB", each time Joe signs on to the system, the submit file "JOE.SUB" will automatically be executed. This submit file must be on the log on drive letter and user number to operate.

11. RELATIVE USER TO LOGICAL I/O DEVICE MAPPING

The mapping of Concurrent DOS 8-16 physical console number to physical device numbers is given in the table below:

NOTE: Pcon 0 is on the System Support 1 board.

LOGICAL DEVICE	PCON6	PCON5	PCON4	PCON3	PRINTER0	PRINTER1	PCON2	PCON1
I/O 3/4 USER NUMBER	0	1	2	3	4	5	6	7

LOGICAL DEVICE	PRINTER2	PCON8	PCON9	PCON10	PCON11	PCONI2	PCON13	PCON14
I/O 3/4 USER NUMBER	8	9	10	11	12	13	14	15

12. HISTORY REPORTING

The HISTORY.DAT file contains a constant update of when users log on and off of the system. It is very helpful for accounting purposes and is in data base format, so it can easily be used with data base applications. To activate the HISTORY reporting, you must add the line HISTORY to the TTYS file (see Section 10).

To review the HISTORY reporting, type:

OA>TYPE HISTORY.DAT [RET]

The HISTORY.DAT file will then be displayed on the screen in the following format.

"Name", "Console ", "Date Time ON", "Date Time OFF"

The list will build from top to bottom giving an accounting of the dates and times users log on and off of the system. The list will constantly build unless the HISTORY.DAT file is purged and a fresh listing is begun. The listing is in dBase and CB 80 format for use by custom Accounting Programs.

13. LOGGING ON TO A PRINTER

A user can select a printer other than their default printer by typing "PRINTER x", and pressing the <return>, where "x", (usually 0-4), is one of the names given in the LPRS file. Example:

OA>PRINTER 1

The system will come back with a message stating which printer you have just logged on to, in this case, printer 1. If the printer is not being used, the message "Printer is free" will appear and you may proceed with your print. If the printer is being used by someone else on the system, the message "Printer is owned by console x", will appear on the screen, where x is the console number of the terminal using the printer.

14. SETMEM COMMAND

The SETMEM command allows you to set the amount of memory allotted to each process. The memory size must be 128K to 512K. The standard system default is 256K. The format for the SETMEM command is as follows:

0A>SETMEM n [RET]

where n is the desired memory size allowed each process. To check the present setting, enter SETMEM alone without specifying 'n' and a message on the screen will display the present setting.

SETMEM is temporary and must be run each time the system is reset. SETMEM sets allowable memory for all users.

15. AUTO.SUB

If the file "AUTO.SUB" exists on the system drive, at boot up the "SUBMIT" command will be invoked in the following form:

SUBMIT AUTO

This will execute the files listed in AUTO.SUB.

Submit files can be run by typing only the name of the submit file. For example, if you have a file called SAVE.SUB, you only need to type SAVE to run the submit file. (See Digital Research's documentation of "Submit Files".)

16. THE "WHO" COMMAND

If you want to see if anyone is signed on to the system, or who is using which terminal, type "WHO" at the system prompt. Console numbers and the sign on name will appear.

17. MESSAGE OF THE DAY (MOTD)

When you are using passwords, the MOTD file enables a system-wide message to appear on the terminal screens upon log on. The contents of this file may be edited with your word processing program. This file is not included on your diskettes, you must create it.

18. AUTOMATIC EXECUTION OF SUBMIT FILES

Submit files can be run by typing only the name of the submit file. For example, if you have a file called SAVE.SUB, you only need to type SAVE to run the submit file.

See the CONCURRENT CP/M USER'S GUIDE for more information on using submit files.

NOTE: 8 bit command lines can be used in submit files by putting "sw!" at the begining of the command line. For instance if you wanted a submit file execute the file "FOO.COM", the submit file would include the following line:

SW! FOO

19. FEATURES OF CONCURRENT DOS 8-16

Screen Switching

Concurrent DOS 8-16 allows you to use one terminal and switch between several different screens. Be sure the terminal you are working with supports screen switching. The console you are working on is called the current, or "switched-in" console and the program you are working on operates in the "foreground". The "background" is where the other programs from the other consoles are working. The function keys F1 through F4 are used to switch screens.

The background can operate in either of two modes: Dynamic, or Buffered. You can change modes by using the VCMODE command explained in the next section.

Dynamic mode: If the screen fills with more than the allocated memory space, the oldest data is lost as the new data is written in, so, some data may be lost on the screen when you switch back to this console.

Buffered mode: Data output from a running program goes into a buffer file on disk rather than to the screen storage area in memory. When you switch to this console, the system gets the data stored in the buffer file on the temporary disk and writes it onto the screen. These files disappear after their data appears on the screen. If the temporary disk becomes full and cannot store any more output from the program, the program hibernates until you switch in to the console.

Changing Buffer Size - VCMODE

Use the VCMODE command to specify the maximum size of the disk buffer file. If a buffer file fills up, Concurrent DOS 8-16 suspends that console's program operation; no data is lost. Operation begins when you switch this console in again. You cannot specify a buffer size for a console set to Dynamic mode since no buffer is used in Dynamic mode. If you try to use a buffer, Concurrent DOS 8-16 will report that the console is set to Dynamic Mode, and nothing else happens.

To be reminded of VCMODES capabilities and parameters, type:

0A>VCMODE HELP [RET]

To see the background mode for your current console, type:

0A>VCMODE [RET]

To set the background mode to DYNAMIC, type:

0A>VCMODE DYNAMIC [RET]

To set the background mode to BUFFERED, type:

0A>VCMODE BUFFERED [RET]

The screen will show you the maximum file size.

To set the maximum file size, type:

0A>VCMODE SIZE=N [RET]

(where N = any number representing the file size in Kbytes) If you try to specify the maximum file size when the current console is in Dynamic mode, you will see a message that tells you the console is set to Dynamic. (See below.)

0A>VCMODE SIZE=10

Background Mode for Virtual Console 0 set to Dynamic

NOTE: You must be in the particular virtual console to set its mode. For more information, see your Digital Research documentation.

Using the Disk 1A and 5.25" Disk Drives - NEWMEDIA

With the CompuPro Disk 1A board you have the option of including 5.25" drives in your system. Concurrent DOS 8-16 contains a program called NEWMEDIA to be used with the Disk 1A board which sets up a system to read a variety of 5.25" floppy disk formats. In addition, the format program can be invoked to format 96 TPI 5.25" floppy disks. Drives formatted for 96 TPI write narrow tracks, 48 TPI formats read and write every other of these track locations. Since these two formats are not always compatible, we cannot guarantee that you will be able to write to 48 TPI disks.

NEWMEDIA sets the same type of format for both 5.25" floppy disk drives. To reset the default state, just run NEWMEDIA again, select the default, and the drives will return to their default state.

We recommend that you format 48 tpi diskettes on the target machine. If you format a 48 tpi disk on CompuPro drives, the disk must first be bulk erased. Diskettes may be bulk erased by

purchasing a bulk eraser. The format program may be used to set more than one type of format at one time because each may have a different sector size. Try each format type yourself; we can make no guarantees on formatting every type. Using the CompuPro standard will yield the most efficient results.

To learn how to use NEWMEDIA, type:

OA>NEWMEDIA ? [RET]

This will bring up the help menu.

NEWMEDIA works in two ways. It can be used as an interactive program, bringing up a menu, or, you can use it as a command line interpreter that accepts data in Number, Letter format pairs separated by spaces where:

Number = 1 or 2 (for the number of sides of the format type)

Letter = A - Z (for selecting a specific format from either the single- or double-sided menu table provided in NEWMEDIA)

This would allow you to skip the menu in order to choose the type of format you want NEWMEDIA to read.

Example: A>NEWMEDIA 2C 2H [RET]

would install a CompuPro two-sided, 80-track format and the IBM-PC CP/M-86 formats.

Typing NEWMEDIA at the system prompt will display the Active BIOS 5.25" formats with choices available to you. The screen will look like:

Active BIOS 5.25" formats:

type #	title	sides	sector size
(0)	CompuPro default	Single	128 byte
(1)	CompuPro default	Double	256 byte
(2)	IBM-PC CP/M-86	Double	512 byte
(3)	CompuPro default	Double	1024 byte

The double-sided options menu will also appear offering multiple format choices. Pressing a "1" at any point will bring up the single-sided options menu with additional format choices.

Below the options menu you will be asked to select the format you want to install. Type in the letter corresponding to your choice.

A control C (^C) will exit you from NEWMEDIA at any time.

The format program will format most 5.25" floppy disks in multiple formats. CompuPro gives no guarantees on formatting diskettes or writing to diskettes.

Changing Diskettes

Concurrent DOS 8-16 can recognize that you've changed the diskette. Simply remove the diskette and replace it with another one. Concurrent DOS 8-16 will automatically read off of the new diskette. There is no "dskreset" program.

20. SOFTWARE ENHANCEMENTS

This section describes the enhancements to Digital Research's Concurrent CP/M-86 operating system that are incorporated in Concurrent DOS 8-16 for your CompuPro system. If you have read through the manuals from Digital Research, you know that Concurrent CP/M-86 is a sophisticated operating system. Basically, it has three levels of interface:

1) The user interface, which is a Resident System Process (RSP) called the TERMINAL MESSAGE PROCESS (TMP);

2) The logically invariant interface, consisting of the Concurrent DOS 8-16 system function calls; and

3) The physical interface, which communicates with the hardware environment and receives transient and resident commands from the invariant interface.

Under Concurrent DOS 8-16 for CompuPro systems, the interface levels and basic structure of the operating system, as designed by Digital Research, Inc., remain intact. The only differences are enhancements made to areas that Digital Research, Inc. designed to be user-modified. Several of these modifications were made in the TMP, and these will be described first.

Terminal Message Process Enhancements

Under Concurrent DOS 8-16, the TMP has been modified as the system "Shell". The Shell has nine main functions:

1) Terminal, printer, user and drive assignment during log on.
2) Changes in printer default assignment.
3) Changes in user default number.
4) Changes in user default drives.
5) Acceptance and execution of user command lines.
6) User log on and logout functions.
7) Execution of the "WHO" command.
8) Invoking SWITCH to run 8-bit programs.
9) Invoking IBM-PC mode.

The SWITCH Program

The SWITCH program is the most innovative part of CompuPro's enhancements to Digital Research's Concurrent CP/M-86. This program enables the system's 8- and 16-bit file access capability. The SWITCH program is transparent to the user; there is nothing you need to do in order to have the program up and running.

When the user wishes to execute an 8-bit program, the operating system first searches for the 16-bit version of that program. When it is unable to find the 16-bit program, it then searches for the 8-bit .COM file. When this file is found, the program SW!.CMD (SWITCH) is loaded. Switch sets up a 64K block of memory to look like a CP/M 2.2 environment. The 8-bit .COM program is loaded into the 64K block and execution is started. When the 8-bit program makes operating system calls, the processor switching code translates it to the 16-bit equivalent, and passes it to the Concurrent DOS 8-16 operating system for execution.

The processor switching code switches to the 8088 environment on two conditions:

1) a CP/M system call, and
2) an interrupt.

Otherwise, it simulates CP/M 80 calls to let programs believe they are in a CP/M 80 environment.

Using SWITCH with the PC Shell

As released from CompuPro, Concurrent DOS 8-16 uses the PC Shell. The PC Shell allows the execution of PC DOS 1.x files under Concurrent DOS 8-16. The PC SHELL will search for executable programs in the following pattern:

.CMD --> PC .COM --> .EXE --> .BAT --> 8-bit .COM --> .SUB

where the first .COM files are PC .COM files; the second search finds 8-bit CP/M .COM files.

If you are using the PC mode, you will have to rename your 8-bit COM files to the command name preceeded by the number 8.

Example: If you want to use the Proteus Engineering's WRITE word processing program, rename WRITE.COM to 8WRITE.COM by typing:

```
REN  8WRITE.COM=WRITE.COM  [RET]
```

In order to use the program, just type WRITE. You do not have to type 8 before the command of any of your renamed files.

NOTE: If WRITE.COM is not first renamed, it will be run as a PC .COM file and crash!

To illustrate, suppose that you are using the PC Shell and want to execute an 8-bit version of the WRITE program and open the "user.txt" file, The user enters:

3A>WRITE USER.TXT [RET]

If WRITE.COM has not been renamed to 8WRITE.COM, the Shell first searches for the "WRITE.CMD" file. When it can't find that, it runs "WRITE.COM" as a PC file. Since "WRITE.COM" is not a PC file, the system will crash.

If "WRITE.COM" has been renamed to "8WRITE.COM", the Shell first searches for the "WRITE.CMD" file. When it can't find that, it searches for the PC file, "WRITE.COM". When it can't find that, it searches for "WRITE.EXE", then "WRITE.BAT" and finally, it finds "8WRITE.COM".

If the file does exist, SWITCH then allocates a 64K block of memory into which it moves processor switching code. It loads the .COM file into that segment then jumps to this 64K block to set up a CP/M 2.2 environment.

SWITCH intercepts all system calls, sets up the proper operating environment (8-bit or 16-bit), switches the CPUs, then invokes the appropriate Concurrent DOS 8-16 function.

If the 8-bit .COM file did not exist, it looks for the .SUB file. When it can't find that, it returns an error message saying the file cannot be found.

Using SWITCH with the Non-PC Shell

When a command is executed, the non-PC Shell first checks the default user directory for 16-bit files with a .CMD extension. If that file is not found, the Shell searches for an 8-bit file with the same file name, but with a .COM extension.

If the file does exist, SW!.CMD is loaded. SWITCH then allocates a 64K block of memory into which it moves processor switching code and sets up a CP/M 2.2 environment. It then loads the .COM file into that segment and then jumps to this 64K block.

SWITCH intercepts all system calls, sets up the proper operating environment (8-bit or 16-bit), switches the CPUs, then invokes the appropriate Concurrent DOS 8-16 function.

To illustrate, suppose that you are using the non-PC Shell and want to execute an 8-bit version of the WRITE program and open the "user.txt" file. The user enters:

3A>WRITE USER.TXT [RET]

The Shell first searches for the "WRITE.CMD" file. When it can't find that, it searches for WRITE.COM. SWITCH then loads the WRITE.COM file into the 64K memory bank and executes it.

If the 8-bit .COM file does not exist, it looks for WRITE.SUB. When it cannot find that, it returns an error message saying the file cannot be found.

> NOTE: When using the non-PC Shell, you do not need to rename your 8-bit programs!

The Concurrent DOS 8-16 enhancements made by CompuPro do not interfere with the normal operation of Digital Research's Concurrent CP/M-86 operating system. All functions as described in the accompanying manuals by Digital Research are valid. Concurrent DOS 8-16 simply makes a good multi-user operating system great, by adding dual processor capability and user-oriented utilities.

21. USING CPU 8086 or CPU 286 to RUN 8-BIT PROGRAMS in EMULATION MODE

This section tells you how to use the CPU 8086 or CPU 286 processor board with the optional EM8080.CMD program to run 8-bit programs under Concurrent DOS 8-16. If you are using the CPU 8085/88 processor board you may skip this section.

CompuPro has provided an 8080 emulator called EM8080.CMD that is written in 8086 code. It allows you to run many 8-bit programs on your 16-bit processor.

You may run 8-bit programs like WRITE by typing:

```
OA>EM8080 WRITE          [RET]
```

Or you may change the name of EM8080.CMD to SW!.CMD and have the program execute directly by typing:

```
OA>REN SW!.CMD=EM8080.CMD              [RET]
OA>SET      SW!.CMD      [SYS,RO]      [RET]
```

To run an 8-bit program, you would just type the program name followed by a return.

> NOTE: If you are running the PC Shell, you must rename the 8-bit program as described in the previous section.

22. NEED HELP?

Type "HELP" at the system prompt (OA>) and on the screen will appear:

HELP UTILITY V1.x

At "HELP>" enter topic {,subtopic}...

EXAMPLE: HELP> DIR EXAMPLES

The topics available for you to explore will appear on the screen. They may include:

ABORT	ASM86	BUFFERED	CHSET	CNTRLCHARS	COMMANDS
CONVENTIONS	DATE	DDT86	DIR	DYNAMIC	ED
ERA	ERAQ	FILESPEC	GENCMD	HELP	INITDIR
PIP (COPY)	PRINT	PRINTER	REN	SDIR	SET
SHOW	SUBMIT	SYSTAT	TYPE	USER	VCMODE

If you enter "DIR" and press the return key, you will see:

FORMAT:

DIR {filespec}

PURPOSE:

Displays the names of non-system (DIR) files in the directory of an on-line disk.

EXAMPLES:

```
A>DIR
A>DIR B:
A>DIR C:MYFILE.DAT
A>DIR * CMD
A>DIR A*.A86
A>DIR PROG???.H86
A>DIR PROGRAM.*
```

23. HOW TO CUSTOMIZE YOUR OPERATING SYSTEM

Up to this point, you have been running a version of Concurrent DOS 8-16 set for one user with one virtual console. This section will show you how to customize your system to run in multi-user mode.

A. Building a Multi-user System

To enter multi-user mode, type the "logout" command at the console terminal after the initial boot sequence:

OA>logout [RET]

Once this is done, the Shell reads a terminal set-up file (called "ttys") and a printer set-up file (called "lprs") and initializes the terminals and printers according to information contained in these files. The system returns in multi-user mode.

If you have set up passwords, you will see the Name: prompt. If passwords have not been set up, you will see the O**A>** prompt. (To set up passwords, see the section in this manual on setting up a password file).

NOTE: Your system can also be set up to automatically go into multi-user mode. See the section in this manual on setting up your TTYS file.

If the **OA>** prompt is on the screen, you can enter the system. If you see the Name: prompt, enter your log on name and password (lower case). To log out of the system, enter "logout" at the system prompt.

B. Choosing a XIOS File

The XIOS is the extended input/output system that handles the physical interface to a hardware environment. The Fourteen different XIOS files provided will help to adapt your CCPM.SYS file to your particular hardware. Choose the one appropriate to your needs. If none of the XIOS files provided satisfies your system setup, you may customize your operating system with the help of the "CUSTOMIZATION GUIDE" included with your operating system documentation. However, be sure one of the XIOS files provided will not fill your needs before deciding to customize.

The XIOS files provided come in two different formats. The generic ('G') XIOS files are setup for 1 hard disk, 7 physical consoles, 1 virtual console per physical console, no status line and 2 printers. The Televideo ('T') XIOS files are setup for 1 hard disk, 7 physical consoles, 2 virtual consoles per physical console, status update and 2 printers. Check the documentation that came with your terminal to see if your terminal emulates one of the ones offered in the XIOS files. A description of each XIOS file follows.

Generic='G'

XIOS305G - DISK 3, ST506 5 Mbyte hard disk
XIOS320G - DISK 3, 20 Mbyte hard disk
XIOS340G - DISK 3, 40 Mbyte hard disk
XIOS380G - DISK 3, 80 Mbyte hard disk
XIOS220G - DISK 2, 20 Mbyte hard disk
XIOS240G - DISK 2, 40 Mbyte hard disk
XIOSFLPG - DISK 1 or DISK 1A, floppy only system

Televideo='T'

XIOS305T - DISK 3, ST506 5 Mbyte hard disk
XIOS320T - DISK 3, 20 Mbyte hard disk
XIOS340T - DISK 3, 40 Mbyte hard disk
XIOS380T - DISK 3, 80 Mbyte hard disk
XIOS220T - DISK 2, 20 Mbyte hard disk
XIOS240T - DISK 2, 40 Mbyte hard disk
XIOSFLPT - DISK 1 or DISK 1A, floppy only system

Pick the XIOS file that best corresponds to your system. Then follow the instructions below for setting up your XIOS. If your system requires changes to the XIOS file, you may change some of the parameters of the XIOS with the help of the "CUSTOMIZATION GUIDE" later, after you have set up your system using one of the XIOS files provided.

After deciding which XIOS file you are going to use, log on to drive B and type:

```
OB>PIP XIOS.CON=XIOS????.CON          [RET]
```

where XIOS????.CON is the XIOS file of your choice.

Next, pick the appropriate SHELL for your needs. If you want PC compatability, leave SHELL.RSP as it is. If you don't want PC compatability, you must rename the Shell files as follows:

```
OB>REN SHELL.PC=SHELL.RSP      [RET]
OB>PIP  SHELL.RSP=SHELL.NPC[V]   [RET]
```

C. GENerating a SYStem - GENCCPM

You are now ready to do a GENCCPM to GENerate a new SYStem file. The necessary files to do a GENCCPM are:

GENCCPM.CMD	SUP.CON
XIOS.CON	MEM.CON
ABORT.RSP	SYSDAT.CON
PIN.RSP	BDOS.CON
STATLINE.RSP	CIO.CON
SHELL.RSP	RTM.CON
VOUT.RSP	COMPUPRO.IN
DIR.RSP (optional)	

NOTE: DIR.RSP does not work over a network. This is a bug from Digital Research, Inc. If you are using networking, ERAse DIR.RSP and use only DIR.CMD across the network.

Then type:

```
OB>GENCCPM<COMPUPRO.IN
```

This will load in the default values for GENCCPM and automatically

finish the GENCCPM. If you want to patch values in GENCCPM, remove the word GENSYS from the end of the COMPUPRO.IN file first. The GENCCPM command is covered in the Concurrent CP/M-86 User's Guide and the Concurrent CP/M-86 Operating System System Guide from Digital Research, Inc. You should familiarize yourself with that section before proceeding.

You can patch any of the GENSYS values you require. When you are finished patching values, type in GENSYS. This will create your new CCPM.SYS file. Install your new CCPM.SYS file on your A: drive (hard or floppy disk) by typing:

```
OB>PIP A:=B:CCPM.SYS[VROW]      [RET]
```

where B: is the drive that has your new CCPM.SYS file on it.

NOTE: When you do a GENCCPM, you can radically improve the performance of your system, if you have the optional MDRIVE/H board, by setting Drive M: to be the temporary drive.

If the XIOS files provided do not match your requirements, you may custom configure your system using the "Concurrent DOS 8-16 Customization Guide" included with your documentation.

24. ERROR MESSAGES (INTERPRETATION OF MESSAGES)

This list contains possible error messages that may be generated by Concurrent DOS 8-16. They are arranged alphabetically. Additional errors may be generated by the Digital Research Concurrent CP/M-86 modules. These errors may be found in the Concurrent CP/M-86 System User's Guide and Concurrent CP/M-86 System Programmers Guide.

MESSAGE	PROBABLE CAUSE & RESULT	REMEDY
BIOS Calls Not Supported	An 8-bit program attempted to do a "direct" BIOS call. 8-bit program will abort. (Program will not run under Concurrent DOS 8-16.)	Use another program.
Disk 3 Error #, Unit #	Disk 3 controller error.	Refer to Disk 3 manual.
Drive X: Not Ready	Floppy drive is not ready or no disk is in the drive. Current process is aborted.	Keep drive loaded. Work mostly with the system drive
ERROR: Divide by Zero	Assembly language divide by 0. Current process will abort.	This is an applications program error. Call your System Center/ Dealer.
Uninitialized Interrupt: Interrupt code OxxH where xx is a number 0-255	Either a software or hardware interrupt.	Call your System Center/Dealer.

Format Error	Hardware failure in the controller or drive.	Check disk controller board,disk drives, or diskette.
	Format program will abort.	Retry.
Invalid Drive Specified	An attempt was made to format a non-existent floppy drive, a hard disk or a memory disk. You are asked for another drive.	Enter another drive name.
Impossible Error!	Many possible causes. For example, You tried to use the NETWORK.SYS file to boot the system when there is no network board present.	Use another .SYS file.
NETWORK ERROR: Unable to verify Power-Up code	You tried to use the network .SYS file to boot the system when there is no network board present.	Use another .SYS file.
No Program or Bad Copy	Program requested is not on the default drive or is unreadable.	Put program on disk and retry.
PANIC: **Panic trap:** **Wild interrupt!**	Something has happened that the system software cannot deal with. System will HALT. Name of XIOS routine will also be printed.	Make sure all peripherals are powered up. Make a note of where the "panic" happened. Have you performed this routine

		successfully before? If so, you might have a hardware problem. Call your System Center/Dealer. Power down, then reboot the system. Use your backup software and try to recreate the problem. If this is a first time occurrence of the problem, you may be caught in an interrupt. Call your System Center/Dealer.
Seek Error	Hardware failure in the controller or drive. Program will abort.	Check disk controller board or drive.
SW! Disk Read Error	Unable to completely read a ?.COM file. 8-bit program will not load. Probably a bad copy of the program or a memory problem.	Erase SW! and PIP it again from your master disk. Put new copy of .COM program on drive.
SWITCH: Program File "XXXX.COM" Cannot be Opened	No 8-bit (COM) or 16-bit (CMD) program available. User is returned to the system prompt.	Check to see if your program is on your logged drive and user number. If not, look for your program

		on other drives, user numbers and disks.
Unitialized Interrupt	Unknown hardware or software interrupt has occurred. Current process will abort. The system may HALT. Current process name will be printed. Associated with "PANIC" trap.	Make sure all peripherals are powered up. (See "PANIC" instructions, above.)
Waiting for ready on hard unit x	Hard disk has not come up to speed. System will wait for the hard disk to come up to speed. If the hard disk does not come up to speed in one minute, there is a drive fault.	Make sure the hard disk is turned on and plugged in. Did you wait 20 seconds for the system to come up to speed before entering a command? Power down the system. Wait 15 seconds. Power up the system. Wait 20 seconds. Now, try your command again. Are the system cables installed properly?

25. TROUBLESHOOTING YOUR SYSTEM

The following table will help if your system does not operate correctly:

Problem	Probable Cause	Remedy
	ENCLOSURE	
Fan off, power indicator not lit	Power cord not plugged in.	Plug in cord.
	Power cord not plugged into rear panel of system.	Plug in cord.
	Wall outlet not live.	Check outlet. Check circuit breaker.
	Main circuit breaker has tripped.	Check system for shorts; turn breaker OFF, then back ON.
Fan on, power indicator not lit	Indicator light bad.	Contact System Center/dealer.
	Internal connection loose.	Contact System Center/dealer.
	Power supply connection loose.	Contact System Center/dealer.
	FLOPPY DISK	
Power on, but disk drive indicator light does not blink	Disk drive not plugged in.	Plug it in.
	Power cord not plugged in.	Plug it in.
	Floppy disk drive breaker switch not ON.	Turn it ON.
	Circuit breaker on disk drive rear panel tripped.	Check connections for shorts; turn breaker OFF, then back ON.

Problem	Probable Cause	Remedy
	FLOPPY DISK (cont.)	
Disk drive indicator light does not blink	Cable improperly connected.	Reconnect it.
	System not initialized.	Push RESET on computer enclosure front panel.
Drive head loads, seeks, but system does not come up	Incorrect or bad diskette inserted.	Insert good boot diskette.
	Cables and plugs	Check cable connections.
	HARD DISK	
Drive does not initialize	Data or control cable connected incorrectly.	Change cable connections.
	Power supply connection loose.	Contact System Center/dealer.
	Drive head not unlocked.	Unlock head.
	Incorrect switch settings.	Reset switches.
	External drive cable unplugged.	Check cable connections.
	Internal drive cable disconnected.	Undo cover of drive cabinet and reconnect.
	Error in tracks 0 and 1.	Contact dealer.

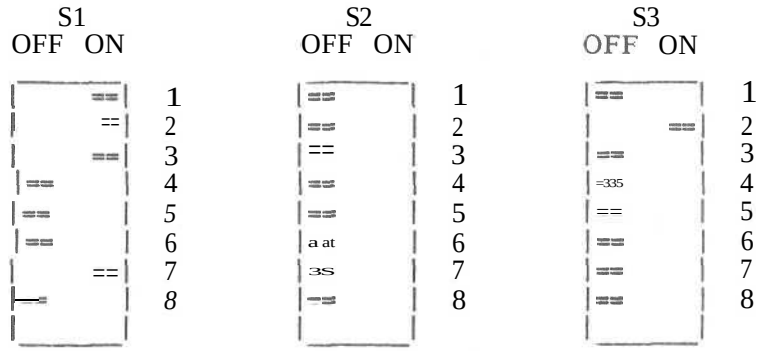
Problem	Probable Cause	Remedy
	TERMINAL I/O	
System sounds like it booted up but no message on the terminal	Cable incorrectly connected.	Check cable connections.
	Terminal incorrectly set.	Check baud rate and word size settings.
	Terminal not powered up.	Plug in terminal and turn on.
	I/O board switches not set properly.	Reset switches.
	I/O board headers not wired correctly.	Recheck connections on headers.
	Bad RS232 cable.	Try another cable.
	SYSTEM	
System hangs in middle of sign-on message	Interrupt jumper not connected on Disk 1, Disk 1A, Disk 2, or the Interfacer 3 or 4.	Reconnect it.
	Interrupts not connected on System Support 1.	Install shunt in J8.
	Shunt J13 not jumpered on System Support 1.	Install J13 on 8 and C or send board in to factory for upgrade.
	Malfunctioning System Support 1 board.	Contact dealer.

Additional users won't come up	Switches incorrectly set on Interfacer 3.	Check switches.
	Interrupt headers on Interfacer 3 or 4 not properly wired.	Check wiring of J15 & J16.
	TTYS and/or LPRS files not present.	Check your TTYS and LPRS files. If they are not set up for more than one user, change them with your word processing program.

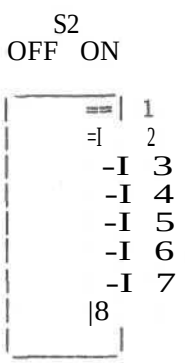
26. HARDWARE SETTINGS FOR CONCURRENT DOS 8-16

CPU BOARDS

CPU 8085/88 - Switch settings:



CPU 8085/88 - 10 **MHz**



Jumpered settings:

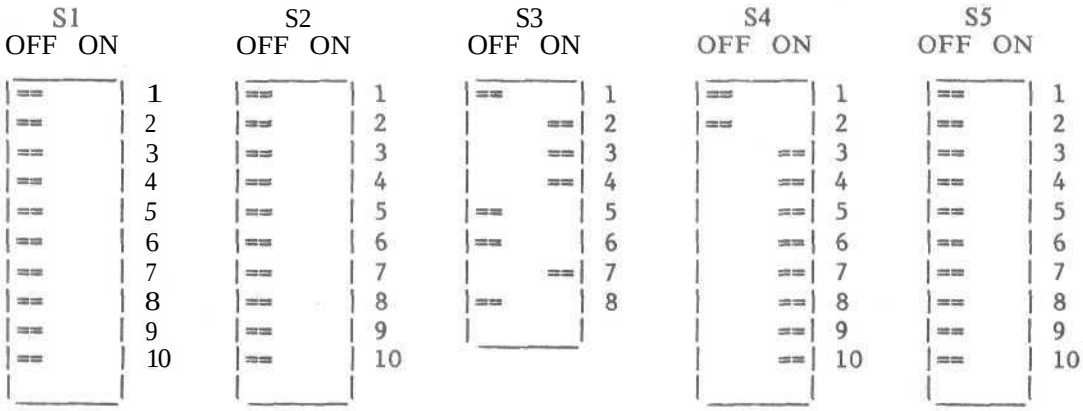
Jl--selects various operational modes of the CPU 8085/88 10 MHz.

POSITION	SET
TOP	OPEN
MIDDLE	ON (for power-on jump) OFF (otherwise)
BOTTOM	ON (for power-on jump) OFF (otherwise)

J2--selects various options and operational modes of the CPU 8085/88 10 MHz.

POSITION	FUNCTION
1	I/O wait state selection
2	Install shunt for jump on reset; remove shunt for power-on jump
3	Install shunt for power-on jump

CPU 8086 - Switch settings:

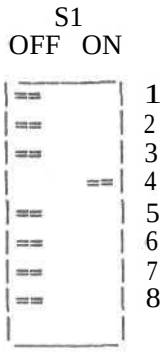


Jumpered settings: J8 -- No shunt installed if using an 8087 coprocessor, otherwise install shunt.

No other jumpers should be installed.

Since you are going to use the CPU 8086 board with SYSTEM SUPPORT 1 interrupt controllers, see the System Support 1 switch settings for a special note.

CPU 286 - Switch and jumper settings:



Jumper Settings

J1 - Install jumper across A-C.

J2 - Install jumper across A-C.

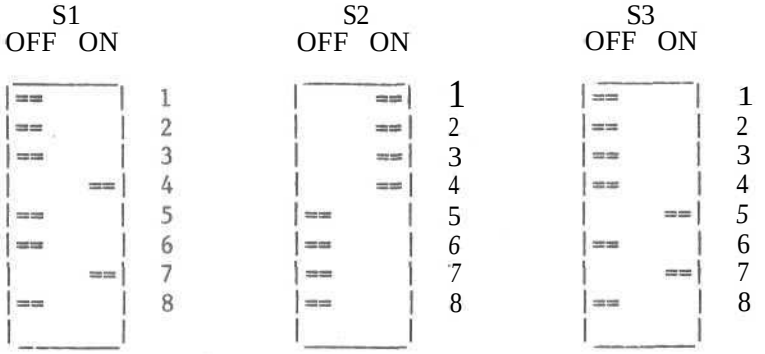
(The top two pins and bottom two pins on the six located next to U13 should have shunts.)

J3 - Install shunts in position A and B (the top two locations.)
J4 - (single pair of pins immediately below J3) No shunt.

Since you are going to use the CPU 286 board with SYSTEM SUPPORT 1 interrupt controllers, see the System Support 1 switch settings for a special note.

SYSTEM SUPPORT BOARD

SYSTEM SUPPORT 1 - Switch settings:



Jumpered settings:

J1 -- Serial port connection.
J2 -- Insert an 8-position dip shunt, leaving the one lower pin on the right side out or the shunt cut.
J3 — Plug an auxiliary battery cable into this connector, red wire toward the left.
J8 -- Install 8 position dip shunt.
*J13 -- Insert a shorting plug onto prongs 8 and C.
Remaining jumpers are left unconnected.

* System Support 1 boards with revision numbers previous to 162G will not have this jumper. Contact your System Center/dealer for help.

ROM Sockets:

U16 -- Install a "GO 86" EPROM or 6116 RAM chip (if you have a CPU 8085/88)

NOTE: If you are going to use the CPU 8086 or CPU 286 with SYSTEM SUPPORT 1 interrupt controllers, you must perform the following steps on the SYSTEM SUPPORT 1 board:

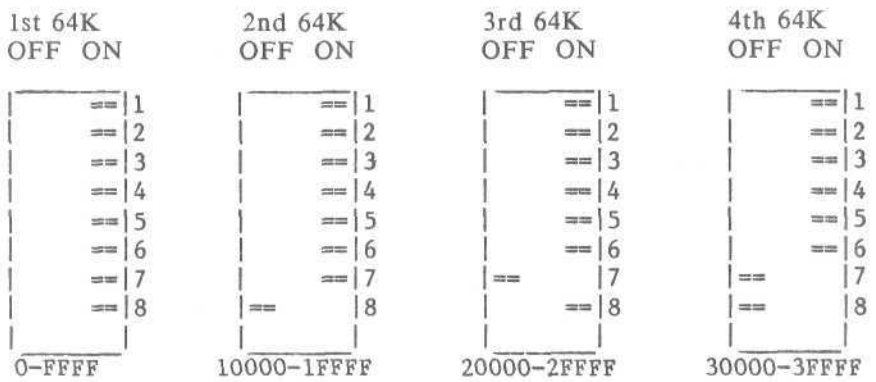
1) Carefully pull IC U28 from its socket. (IC U28 is located on the right hand side of the board.)

2) Bend out pin 4 so that when the IC is replaced, pin 4 will not make contact with the socket or anything else.

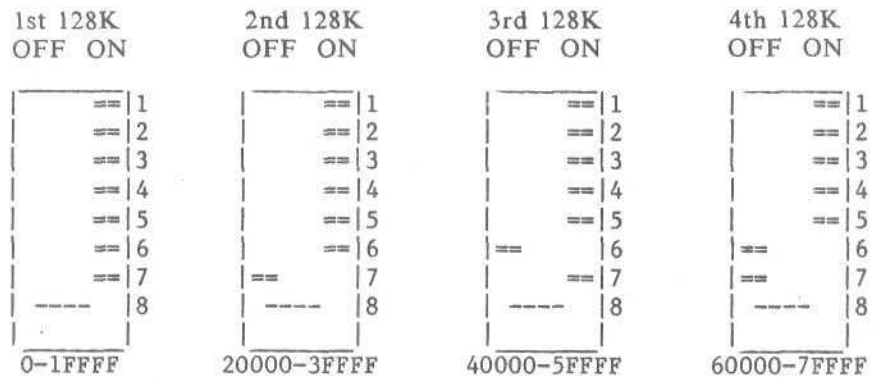
3) Replace IC U28 back in its socket and verify that each pin except pin 4 is back in its hole.

With this modification made, your System Support 1 will still work fine with a CPU 8085/88.

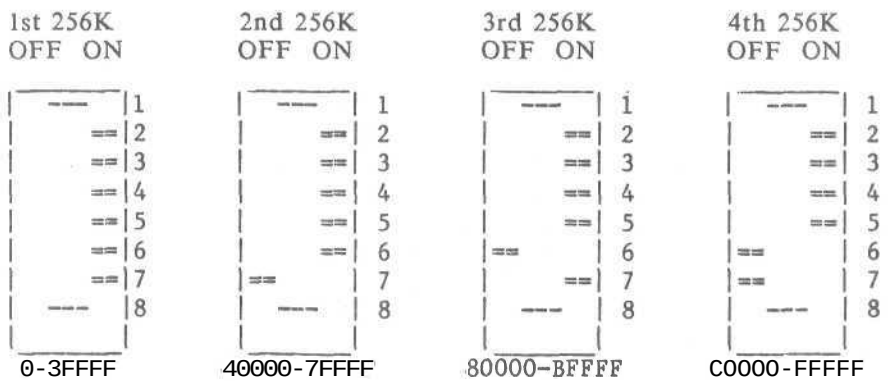
RAM 23 (64K Version) - Switch setting for S1:



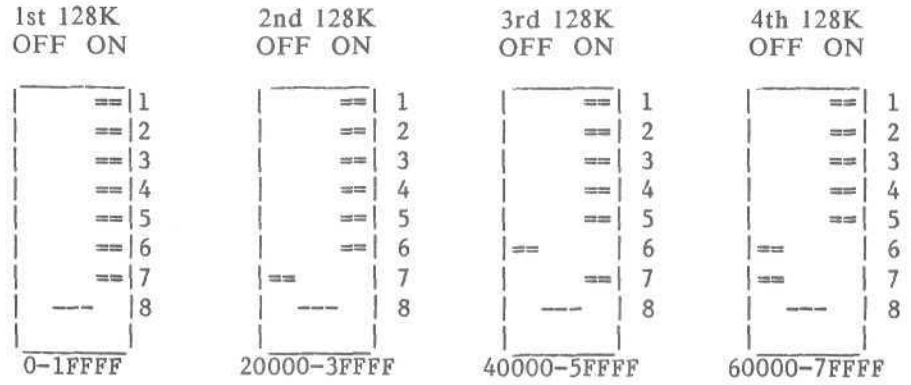
RAM 23 (128K Version) - Switch setting for S1:



RAM 22 - Switch setting for S1:

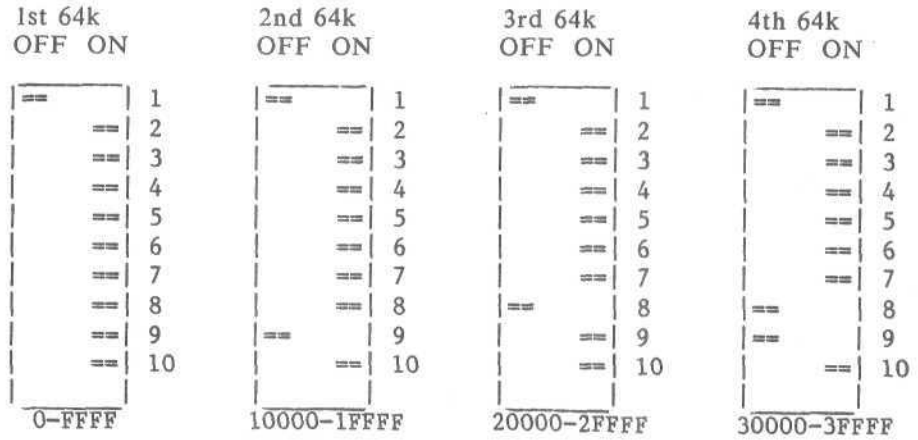


RAM 21 - Switch settings for S1:

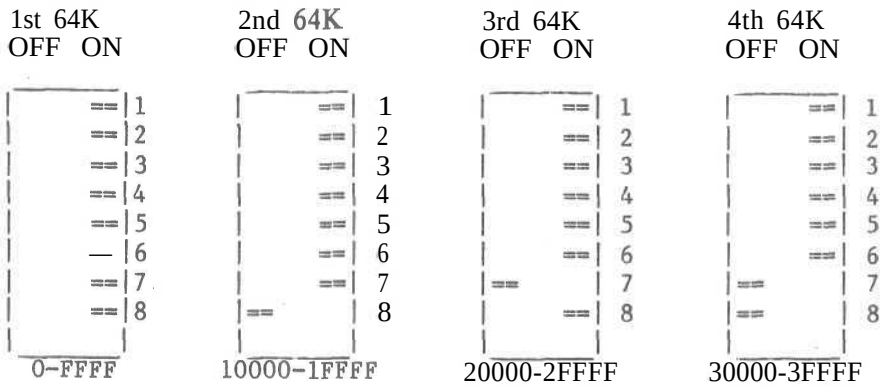


RAM 17 - Switch settings for S1:

Switch settings for S2:



RAM 16 - Switch settings for S1:



DISK CONTROLLER BOARDS

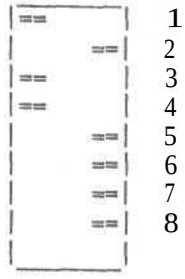
FLOPPY DISK CONTROLLERS

DISK 1 - Switch settings:

S1
OFF ON

Switch 1, paddle 4 must be set ON to boot off of the DISK 2 hard disk; OFF to boot off of a floppy.

S2
OFF ON



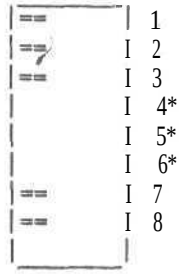
Jumpered settings: J16 — Install a jumper on B-C
J17 -- Jumper A-C if using a CPU 8085/88
Jumper B-C if using a CPU 8086
J4 -- Install a jumper

DISK 1A

SWITCH SETTINGS:

S1
OFF ON

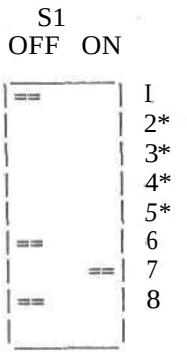
(EPROMS OLDER THAN #291)



*Set S1 positions 4-6 as shown below depending on the type of CPU and console I/O device you are using.

S1 Position 4 5 6	CPU Type	Console I/O Device
On Off On	CPU 8086	System Support 1
Off Off On	CPU 85/88 or CPU-Z	System Support 1

(EPROM #291)



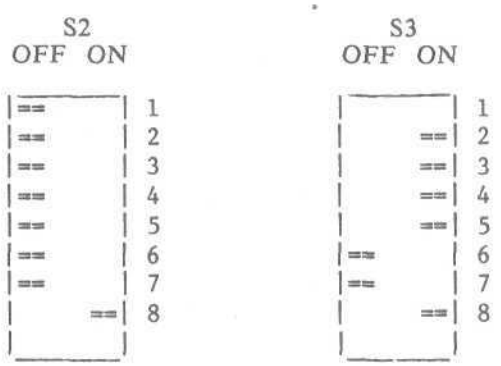
*Set S1 positions 2-5 as shown on the next page, depending on the type of CPU and console I/O device you are using.

BOOT ROUTINE	#*	SWITCH S1 POSITION 2	3	4	5	CPU
0		On	On	On	On	8085/8088/Z80
1		On	On	On	Off	8085/8088/Z80
2		On	On	Off	On	8085/8088/Z80
3		On	On	Off	Off	8085/8088/Z80
4		On	Off	On	On	8086/286
5		On	Off	On	Off	8086/286
6		On	Off	Off	On	8086/286
7		On	Off	Off	Off	8086/286
8		Off	On	On	On	68000
9		Off	On	On	Off	68000
10		Off	On	Off	On	68000
11		Off	On	Off	Off	68000
12		Off	Off	On	On	32016
13		Off	Off	On	Off	32016
14		Off	Off	Off	On	32016
15		Off	Off	Off	Off	32016

*The routine numbers are the ways the DISK 1A BOOT ROM works. An

explanation of the routine numbers follows.

Routines 0, 4, 8 and 12	look for an 8" drive as drive 0. If it is ready, it will boot from it. If the 8" drive is not ready, it will try to boot from the DISK 3.
Routines 1, 5, 9 and 13	will always boot off of the DISK 3 and never look for any floppies.
Routines 2, 6, 10 and 14	will attempt to boot off an 8" drive as drive 0. If it is not ready, it will loop and look for a 5.25" drive as physical drive 2, if that is not ready it will go look for the 8", then the 5.25" drive.
Routines 3, 7, 11 and 15	will attempt to boot from a 5.25" drive as drive 0. If it is not ready, it will look for a DISK 3. It will continue to loop as in the first routine.



Set Switch 3, position 1 ON to use the System Support 1 as the console. Set Switch 3, position 8 ON to boot off of a floppy, and OFF to boot off of a DISK 2 hard disk.

JUMPER SHUNTS

For the standard CompuPro configuration:

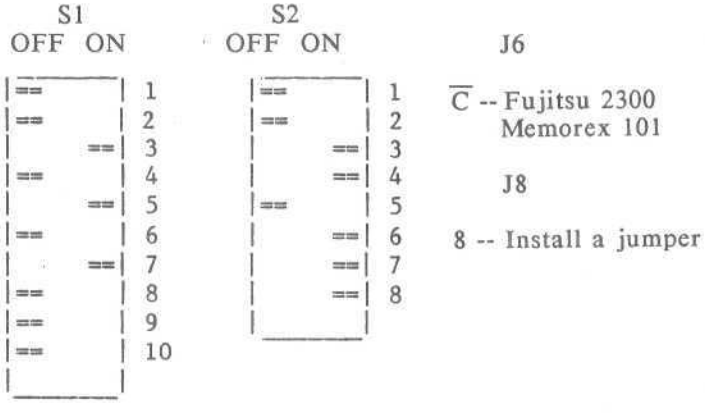
J1 Position 8 for 8" drives, 5 for 5.25" drives.
J2 Position 8 for 8" drives, 5 for 5.25" drives.
J3 Position 5 for 5.25" drives, 8 for 8" drives.
J4 Position 5 for 5.25" drives, 8 for 8" drives.
J5 Removed.
J6 A-C
J7 Removed

J8 B-C for EPROM #291, A-C otherwise.
J9 B-C for EPROM #291, A-C otherwise.
J10 Shunt position 4.
J11 Shunt installed.
J12 Removed
J13 Removed

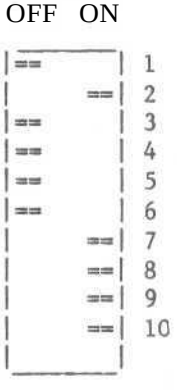
These settings select DMA arbiter priority 15, ports C0H-C3H, EPROM wait states enabled and the boot routine appropriate to the CPU selected by switch 1 positions 1-7.

DISK 2/SELECTOR CHANNEL

DISK 2 - Switch settings:



SELECTOR CHANNEL - Switch settings:



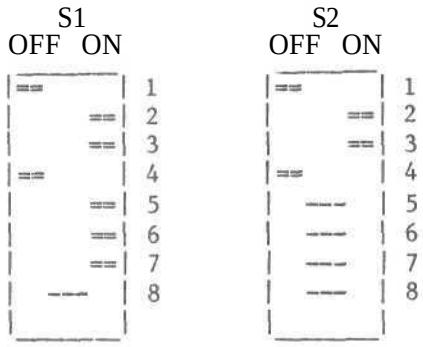
Switch 1, paddle 1 must be set to ON to boot off of a DISK 2 hard disk.

Jumper settings:

J8 -- "G"
J9 -- "+"
J10 -- Jumper installed on "G" if CPU 8085/88
Jumper installed on "+" if CPU 8086
or CPU 286

DISK 3

Revision D and F Switch Settings:



Revision G Switch Settings:

Jumper Settings:

J1 Connector for drive 1 radial cable.
J2 Connector for drive 2 radial cable.
J5 Connector for daisy chained cable for all drives.
J6 (Not currently used.)
J7 B-C
J8 A-C
J9 Jumper position 1.
J10 Jumper top position.

INTERFACER 3 - (As users 0-7) Switch settings for S1:

OFF ON

Jumpered settings:

J1 Insert a dip shunt, shunting lines 1, 2 and 3 for 3-wire, no handshaking. Consult manual for hardware handshaking.
J2 --Insert a dip shunt, shunting lines 1, 2 and 3 for 3-wire , no handshaking. Consult manual for hardware handshaking.
J15 -- Connect pins 9-16 to pin 5
J16 -- Connect pins 1-8 to pin 11
J17 — Jumper top two pins.

Remaining jumpers unconnected.

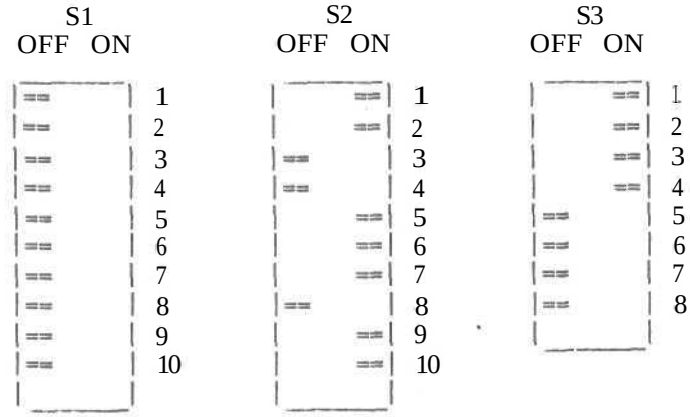
ADDITIONAL INTERFACER 3 (users 8-15)
or
INTERFACER 3 USED WITH AN INTERFACER 4 (as users 4-7):

OFF ON

Jumper Settings:

All jumper settings are the same as above, see the Interfacer 3 jumper settings.

INTERFACER 4 - (as users 4-7) Switch settings:

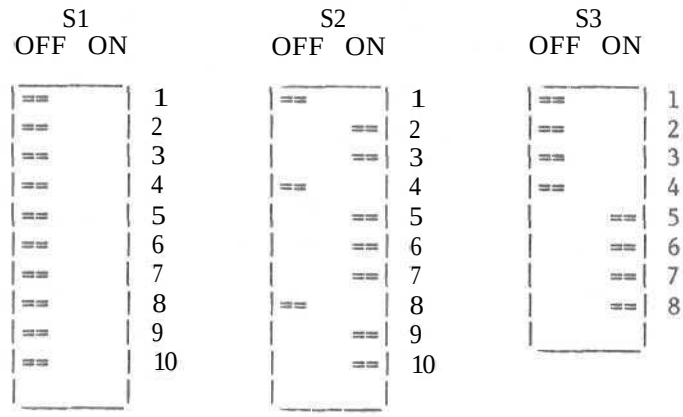


Jumper settings:

J1 -- No shunt need be installed
J2 -- Bottom installed with Microline 80A printer.
No shunt otherwise.
J3 -- Top installed with Microline 80A.
No shunt otherwise.
J4 -- Bottom installed with both Microline 80A
and Centronics.
J5-J25 -- Removed.
J26 -- Jumper A-B and C-D.
JS1,JS2,JS3 -- Install shunt, shorting all 8 lines.
JS4 — No connections.
JS5 -- Connect pins 13-16 to pin 5.
JS6 -- Connect pins 9-12 to pin 6.

ADDITIONAL INTERFACER 4 (for users 8-11)
or
INTERFACER 4 USED WITH AN INTERFACER 3 (as users 0-7):

Switch settings:

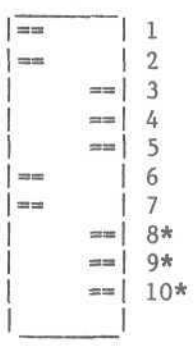


Jumper settings:

J1 — No shunt need be installed.
J2 — Bottom installed with Microline 80A printer.
No shunt otherwise.
J3 — Top installed with Microline 80A.
No shunt otherwise.
J4 -- Bottom installed with both Microline 80A
and Centronics
J5-J25 -- Removed
J26 -- Jumper A-B and C-D
JS1,JS2,JS3 -- Install shunt, shorting all 8 lines.
JS4 -- No connections.
JS5 -- Connect pins 13-16 to pin 5
JS6 -- Connect pins 9-12 to pin 6

MDRIVE/H DISK EMULATOR BOARD

MDRIVE/H - Switch settings:



Board Number	Switch Number* 8	9	10
1st	ON	ON	ON
2nd	ON	ON	OFF
3rd	ON	OFF	ON
4th	ON	OFF	OFF
5th	OFF	ON	ON
6th	OFF	ON	OFF
7th	OFF	OFF	ON
8th	OFF	OFF	OFF

Switches 1 thru 7 are set the same on all boards.

If you are installing a 2 Megabyte MDRIVE/H board along with 512K byte MDRIVE/H boards, you must set the 2 Megabyte board as the first board, and set any 512K byte boards as the fourth, fifth, sixth (and so on) board.

If you have eight 2 Megabyte boards, you need a special chip in location U17. Contact your System Center/Dealer for more details.

27. APPENDIX

This section contains technical notes from Digital Research which were not included in the Digital Research documentation you received with Concurrent DOS 8-16.

Utility Notes

CHSET:

The correct command line syntax is:

```
Chset filespec [Shared=On | Off |8087=On|Off|
                Suspend=On|Off]
```

DATE:

"DATE SET" will default to a date of 01/00/78 if a valid time is not entered and a carriage return is given for the date.

DIR:

"Control S" has been disabled to allow type-ahead. The full syntax of the DIR command is as follows:

```
DIR ([S]) (d:) (filespec) ([Gn])
```

This is not listed fully in the Concurrent CP/M User's Guide.

ED:

Ed will not allow underbar characters (_) in the filename.

ED reports a checksum error when there is no directory space left on the disk.

If the CP is in the first 23 lines of text and the -nP (Page Backwards) command is issued, ED will page through the first 23 lines n times instead of once as would be expected.

The Concurrent CP/M User's Guide states that the P command, when issued alone, will display the 23 lines of text following the CP and then move the CP 23 lines. In fact, ED moves the CP forward 23 lines and then displays the next 23 lines of text.

When the CP is positioned at the end of a file of more than 23 lines through the -B command, a preceding -nP command will move through one page of text rather than n pages.

GENCCPM:

If the total memory space specified is not evenly divisible by the partition size, GENCCPM will issue a warning.

A leading zero may not be used in the operating system start address.

If other parameters to GENCCPM force the RSP's beyond 64K of the System Data Area, the RSP queue buffers will be allocated from the system queue buffer area. The queue buffer parameter to GENCCPM should be adjusted accordingly.

INITDIR:

You may not run an application (an editor, for example) which tries to own the MXdisk queue while INITDIR is running.

INITDIR will not respond if you press the carriage return in place of the drive name.

PIP and PRINT:

Neither utility will prompt you for a password. You must enter the password at the command line.

SDIR:

SDIR will not accept an unambiguous file name that begins with a non-alphanumeric character. SDIR will not accept filenames containing a pound sign (#) .

SHOW:

"SHOW [label]" will display "labelname = off" even after

SET [labelname = on]

has been executed.

SUBMIT:

If a Submit file's command chain is terminated by a trailing space (instead of a carriage return/line feed) , the Submit file will fail. Every command chain should be terminated with a carriage return/line feed.

VCMODE:

"VCMODE [buffered]" will not execute in the background. This feature was not made clear in the Concurrent CP/M User's Guide.

There is a new BDOS Function for setting Time and Date Stamps that is not documented in the Concurrent CP/M Programmer's Guide.

BDOS Function 116 F_SETDATE
Set File Time and Date Stamps
Entry Parameters: Register CL: 74H (116) DX: FCB Address - Offset DS: FCB Address - Segment Return Values: Register AL: Directory Code AH: Physical Error BX: Same as AX

The F_SETDATE function sets the time and date stamp fields for the specified file to the time and date stamp values specified in the first eight bytes of the DMA buffer. The specified file must be currently open in Locked Mode by the calling process.

The first four-byte field in the DMA buffer contains the Access or Create stamp field. This field is copied into the file's Access or Create stamp field if the Directory Label has activated Access and/or Creation time and date stamping on the file's drive.

The second four-byte field of the DMA buffer contains the Update stamp field. This field is copied into the file's Update stamp field if the Directory Label has activated Update time and date stamping on the file's drive.

Upon return from a successful operation, the function sets register AL to O0H. If the referenced FCB does not specify a file opened by the calling process in Locked Mode, register AL will be set to O0AH. Register AH is set to OOH in both cases.

If a physical or extended error was encountered, F_SETDATE performs different actions, depending upon the BDOS Error mode (see

F_ERRMODE). In the Default Error mode, the system displays an error message and terminates the calling process. Otherwise, F_TIMEDATE returns to the calling process with register AL set to OFFH and register AH set to one of the following physical error codes:

- 01H - Disk I/O Error — Permanent Error
- 02H - R/0 — Read/Only Disk
- 04H - Select — Drive Select Error
- 09H - Illegal ? in FCB

Concurrent CP/M-86™
Version 2.0
Application Note 01
SYSTAT 6 GENCCPM Cursor Addressing

Compiled April 1983

Two Concurrent CP/M-86™ utilities perform screen manipulation that can be terminal dependent: GENCCPM and SYSTAT. These utilities assume they are running on VT52 consoles. If your terminal has a different cursor handling sequence, you will need to patch these utilities.

If you must patch GENCCPM, first make sure you have a back-up copy of GENCCPM.CMD. The sample DDT-86™ session below patches the clear screen command of GENCCPM into a sequence of line feeds (ASCII 0AH) . There is a region of 24 characters available at location 02EH (offset from the beginning of the program's data area) which is printed to clear the screen. Whatever escape sequence you enter here must be terminated by an ASCII 00.

```
A>ddt86
DDT86 1.1
-rgenccpm.cmd
  START      END
nnnn:0000 nnnn:BB7F
-s9e4e
nnnn:9e4E 1B Oa
nnnn:9e4F 48 Oa
nnnn:9e50 1B Oa
nnnn:9e51 45 Oa
nnnn:9e52 00 Oa
nnnn:9e53 OA .
-wgenccpm.cmd
-^c
```

For SYSTAT, make sure you have a copy of SYSTAT.CMD before installing the patch. SYSTAT uses two cursor sequences, Clear Screen and Home Cursor. There are 6 bytes reserved for each sequence. The first byte of each sequence is the number of characters to print in the sequence. The following patch will disable these code sequences entirely. You should modify this patch appropriately for the terminal you will be running SYSTAT on.

```
A>ddt86
DDT86 1.1
-rsystat.cmd
  START      END
nnnn:0000 nnnn:42FF
-S247B                          /* the Clear Screen sequence */
nnnn:247B 02 0
nnnn:247C 1B 0
nnnn:247D 45 0
nnnn:247E 00 0
nnnn:247F 00 0
nnnn:2480 00 .
-S2481                          /* Home Cursor sequence */
nnnn:2481 02 0
nnnn:2482 1B 0
nnnn:2483 48 0
nnnn:2484 00 0
nnnn:2485 00 0
nnnn:2486 00 .
-wsystat.cmd
-^C
```

NOTES