InSyder

User's Manual

CIRTECH

Using InSyder With DOS 3.3

DOS 3.3 can usually use only 5.25-inch disk drives for storing files, so it must be modified to work with *InSyder*. Before starting to use *InSyder* with DOS 3.3 you should make one or more "System Partitions", and associated "Partition Startup Programs" (see Chapter 5 for details), for DOS. Each partition should be 896K in size (as DOS can only use a maximum of 800K on a volume), and on NO MORE than two volumes (if available). Using several partitions allows you to put more DOS programs onto *InSyder*.

To modify DOS 3.3 for *InSyder*, just follow the procedure below:

1) Start up (activate) your DOS 3.3 partition (see Chapter 5 for details). When the message "CANNOT STARTUP" appears, put a DOS 3.3 startup disk into slot 6, drive 1, and press key "6".

2) When DOS 3.3 has started up (the cursor appears beside the "]" prompt), replace your DOS startup disk with your *InSyder Support Disk*, then type "BRUN UDOS.LANG" and press Return.

3) When you see the "]" prompt again type "INIT HELLO,S*x*" (replace "*x*" with the *InSyder* slot number) then press Return.

Your partition is now formatted as a DOS startup disk, and you should repeat this for any other *InSyder* DOS partitions.

You can now start up DOS instantly from your *InSyder* partition, which will appear as two 400K DOS drives (D1 and D2). If you have two volumes on *InSyder*, and created the partition on both volumes, then the second volume will be D3 and D4 to DOS.

To copy DOS files to or from an *InSyder* partition, you must use the "UNIFID" program supplied on the *InSyder Support Disk* (the normal FID program will not operate correctly with 400K drives).

The version of DOS on *InSyder* operates in EXACTLY the same way as ordinary DOS (and using your 5.25-inch drives is still exactly the same). All commands and operations are identical (for full instructions refer to your *Apple II DOS 3.3 Manual*).

ProDOS devices This version of DOS has another important feature; it allows you to use ANY ProDOS compatible storage device with DOS (including 3.5-inch drives, RAM disks, etc). All drives appear as two 400K DOS disks for each "physical" drive. Use the DOS "INIT" command to make DOS startup disks on any drive.

Using DOS 3.3 With The InSyder Printer Adaptor

The *InSyder SCSI Printer Adaptor* lets you use *InSyder* as a printer interface. With the SCSI Printer Adaptor you may have to set your printer for "LF after CR", and to "ignore eighth bit" (control code interpretation is NOT provided by *InSyder*).

Just use "PR#*s*" (*s* is the *InSyder* slot) to turn on the card from AppleSoft BASIC. Programs that use the standard BASIC entry point will work perfectly with the SCSI Printer Adaptor.

Using InSyder With CP/M

Cirtech CP/M Plus is automatically fully compatible with *InSyder* as a storage device. You can start up from a "System Master", and use EXACTLY the same commands as with 5.25-inch drives (for details see your CP/M Plus manual). However, you SHOULD make a "System Partition" for CP/M Plus (see Chapter 5 for details), to leave space for other operating systems on your *InSyder* drive.

Microsoft CP/M is only compatible with 5.25-inch drives UNLESS you use the CP/M support software on your *InSyder Support Disk* to modify Microsoft CP/M for use with *InSyder*, see below.

InSyder And Microsoft CP/M Versions 2.23 & 2.20b

Ordinary Microsoft CP/M can only use 5.25-inch drives for storing files, so it must be modified for *InSyder*. Before starting you should make one or more "System Partitions" and "Partition Startup Programs" for CP/M (see Chapter 5 for details). Each partition can be up to 1536K (the maximum size per volume) and on NO MORE than two volumes (if available). Using several partitions will let you use more of *InSyder* for CP/M.

You must now use "INSYDER.COM", from your *InSyder Support Disk*, to modify CP/M. First start up your CP/M partition then (after "CANNOT STARTUP" appears) put your CP/M startup disk into slot 6, drive 1, and press "6". CP/M will now start up. When the "A>" prompt appears replace this disk with your *InSyder Support Disk*, type "INSYDER", then press Return (this will modify CP/M in memory). Now run "INFORM.COM" to format your CP/M partition for use. *InSyder* will now appear as one or two drives (if you made a partition on two volumes) to CP/M and CP/M programs.

■ *CP/M 2.23 (60K):*
After running *INSYDER.COM* the first *InSyder* volume can be accessed as drive "C:" (a second volume will be drive "D:").

■ *CP/M 2.20B (56K):*
After running *INSYDER.COM* the first *InSyder* volume can be accessed as drive "E:" (a second volume will be drive "F:").

Starting Up CP/M As MicroSoft CP/M cannot startup directly from *InSyder*, you must startup from your CP/M System disk, then run "INSYDER.COM". You must ALWAYS startup your CP/M partition, then type "6" to boot CP/M from disk, or you will not be able to access your CP/M data or programs on *InSyder*).

All standard CP/M commands work in EXACTLY the same way with *InSyder* as with an ordinary disk. You can use "PIP.COM" (or an equivalent) to transfer CP/M programs and data to *InSyder*.

Leaving CP/M The "BOOT.COM" program (supplied on your *InSyder Support Disk*) will let you re-start (or *boot*) your computer from any slot. Just type "BOOT *s*" (*s* is the start up slot) then press Return.

Using InSyder With Pascal 1.3

Apple II Pascal 1.3 will automatically recognise *InSyder* (when installed in slot 4, 5 or 6), and will support the first two volumes provided by *InSyder*. Before you start to use Pascal, you should make one or more "System Partitions" and "Partition Startup Programs" for Pascal (see Chapter 5 for details). Pascal can only use up to 16Mb per volume (and two volumes maximum). Placing Pascal into more than one partition allows you to use more space on your *InSyder* drive for Pascal.

First start up your Pascal partition (see Chapter 5), then, when the "CANNOT STARTUP" message appears, place your APPLE1: disk into slot 6, drive 1, and press "6". Pascal will now start up as usual. Use the Pascal Formatter to format your *InSyder* volumes, then copy the Pascal System Files, using F)iler, from your Pascal disks to the first *InSyder* volume. Next time you start up your Pascal partition, Pascal will start up directly from it.

All Pascal commands and functions operate in EXACTLY the same way with *Insyder* as with ordinary disk devices.

How To Start Up From InSyder

You can start up from *InSyder* if you make it into a startup disk (if you do not have an integral drive you can only start up from an external SCSI device which is set to SCSI ID number 0).

With GS/OS, ProDOS, Cirtech CP/M Plus, or Pascal 1.3 you can make *InSyder* into a startup disk in EXACTLY the same way as an ordinary disk. For full details of startup disks (sometimes referred to as "boot" disks) you must refer to the instruction manuals supplied with your operating system.

- *DOS 3.3*

  With DOS 3.3 the *INIT* command will automatically make your *InSyder* DOS partititon into a startup disk (refer to your *Apple DOS 3.3 Manual* for full instructions).

- *Microsoft CP/M*

  With Microsoft CP/M you CANNOT start up from your *InSyder* partition (because this CP/M was designed to work only with 5.25-inch disk drives), so you must always start up from your ordinary Microsoft CP/M *System Master* disk (AFTER starting up your partition), then run the *INSYDER.COM* program.

With the Apple IIGS you can use the built-in Control Panel Program to make the *InSyder* slot (or any slot) the start up slot.

With the Apple //e you can restart your computer from *InSyder* if it is in a higher slot than any other disk device.

To start up from *InSyder* (when using BASIC) type "PR#s", where s is the *InSyder* slot number, HOLD DOWN the Option and Apple keys (or both Apple keys on the Apple //e), then press the Return key.

CHAPTER 5

InSyder PARTITIONS

Two types of partitioning can be used with *InSyder*. The first is the *Automatic Partition System*, used by GS/OS and ProDOS 8, which partitions *InSyder* drives larger than 32Mb (the maximum size usable by GS/OS and ProDOS 8).

Secondly, the versatile *System Partitions* will let you use your first two *InSyder* drives with several operating systems, and also (if one or both are EXTERNAL), share them other computers.

Automatic Partitions

The built-in *Automatic Partition System* makes any *InSyder* drive larger than 32Mb appear as multiple 32Mb volumes and a remainder volume (other SCSI cards, unlike *InSyder*, need special software to do this). This feature automatically allows full use of a large *InSyder* drive with GS/OS and ProDOS 8.

For example, a 40Mb integral drive will automatically be divided into two volumes, which are accessed as a 32Mb drive 1 and an 8Mb drive 2 (the remainder of the drive); a 100Mb SCSI drive will be divided into three 32Mb volumes and a 4Mb volume.

With GS/OS (when the "INSYDER" driver is installed) this system will operate with any and all *InSyder* drives. If you are using ProDOS 8, due to its limitations in disk and slot handling, only the first two *InSyder* drives can be automatically partitioned.

System Partitions

A *System Partition* is a special reserved area that you can create on an *InSyder* drive. Up to 63 partitions can be created on each of the first two drives and, if several volumes are available, you can make a partition appear in all or some of the volumes.

Any partition on an *InSyder* drive is completely separate from any other partition or area on that drive.

Figure 5-1 shows an 80Mb *InSyder* drive which contains several System Partitions (of course, before these partitions were created the drive was divided into three volumes by the built-in *Automatic Partition System*).

The three partitions on this drive are described below.

- **Partition Number 1**

    This partition has three equal-sized parts, one in each volume provided for the *InSyder* drive. In this example a 4Mb partition has been created on three volumes, which reserves a total of 12Mb (see "How To Create Partitions" for full instructions). From figure 5-1 you will see that, for any partition created on more than one volume, the parts in each volume are always the same size.

- **Partition Number 2**

    This 10Mb partition is the simplest one on the drive, as it has been created on only the first volume. The space reserved is simply 10Mb.

- **Partition Number 3**

    This partition has two equal-sized parts, one in each of the first two volumes provided by *InSyder*. As a 5Mb partition has been created on two volumes, a total of 10Mb is reserved.

There are two reasons for using System Partitions to allocate space on an *InSyder* drive: for different (non-ProDOS) operating systems, and for different users in a multi-user system.

A partition is started up (or activated) using a *Partition Startup Program*, which is a small ProDOS "SYSTEM" program that starts up specific partitions on either or both *InSyder* drives.

With ProDOS 8, when a partition is active it replaces the volume in which it was created. The partition appears as a drive volume, and behaves just like any other normal drive, with all other parts of the physical drive being inaccessible while the partition is being used. For example, starting up Partition Number 3 (in figure 5-1) makes the rest of the drive "invisible"; until you leave the partition ONLY drive 1 (the Volume 1 part of the partition) and drive 2 (the Volume 2 part) are available.

A partition on the first Drive and a partition on the second Drive (if one is connected) can be linked together using a Partition Startup Program; starting up the drive 1 partition will automatically make the linked drive 2 partition accessible. For full details see, "How To Create A Partition Startup Program".

With GS/OS you can access a ProDOS partition WITHOUT having to start it up, as it will appear as a drive on the Finder Desktop, but for a partition which contains a non-ProDOS operating system you must still start up the partition before it can be used (and the rest of the drive becomes "invisible", as for ProDOS 8).

Running Programs To run a GS program in a partition on the Finder Desktop, use the mouse to "double-click" on the program icon. You can also run ProDOS 8 programs in this way, but ONLY if they are in an active partition on the first two *InSyder* drives, or in another drive.

You can remove and create partitions at any time. When any partition is removed the space that it reserved will be restored to the main ProDOS area of the *InSyder* drive.

Partition Number 1 - a 4Mb partition on all three volumes (12Mb)
Partition Number 2 - a 10Mb partition on volume 1 only (10Mb)
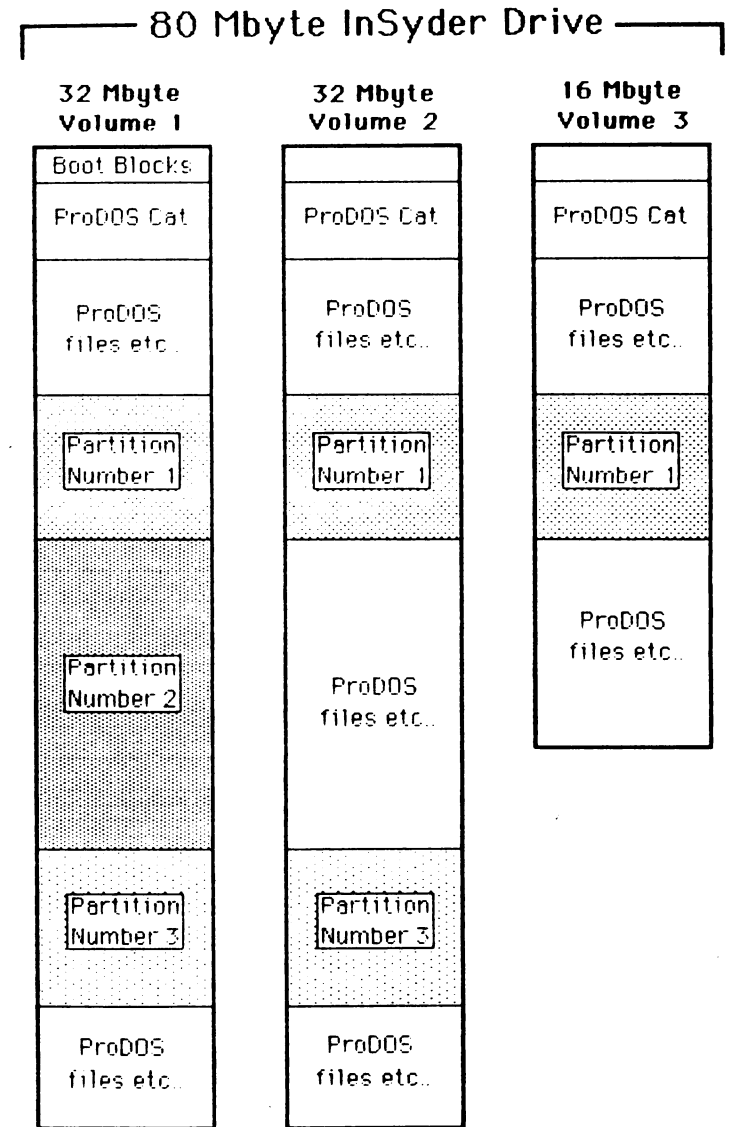Partition Number 3 - a 5Mb partition on volume 1 and 2 (10Mb)

Figure 5-1: *InSyder System Partitions.*

Now read the following sections for full details on creating and using *InSyder* partitions.

InSyder Partition Creation And Maintenance

The first and second drives connected to *InSyder* (for example, integral drive and SCSI drive, or two SCSI drives) can each have up to 63 partitions created within them.

If *InSyder* provides more than one volume for a drive, you can create partitions which exist on several or all of the volumes.

Each *InSyder* partition works like a completely separate drive, and it can be used ONLY by the operating system you put into it.

How To Create Partitions

To create a partition just follow the instructions below (but note that any drive must already be formatted for use by ProDOS before you can create partitions on it).

1) Start up from your *InSyder Support Disk*.

2) Press "1" for "Partition Creation & Maintenance"; you will see a partition map (which is empty) for drive 1, with a list of commands along the top of your screen:

   (C)reate, (R)emove, (A)lter, Dev (1), (2), or (Q)uit?

3) Press "C" to create a partition on the first drive.

   A "window" will now appear on your screen, showing the maximum size of partition that you can create. If only one volume is provided you can go straight to step 4.

   If more than one volume is available, you must now enter the number of volumes on which to create the partition.

   A partition can be created on all *InSyder* volumes, on 32Mb volumes only (which may make the most space available) or on some 32Mb volumes (for example, some operating systems limit access to the first two *InSyder* volumes, so it would waste space to create a partition on any more than two volumes).

4) Enter the "Partition size", mininmum 128K (this will be rounded DOWN to the nearest 128K boundary).

5) Press "N" for the "Make Protected?" option.

   (this option is only relevant within a multi-user system, see Chapter 6, "THE InSyder MULTI-USER SYSTEM", for details.

6) Press "0" - "4" for the appropriate "Operating System".

   This defines the operating system type for use in the partition (none, ProDOS, DOS 3.3, etc), which you can change at any time using the (A)lter command (remember that GS/OS will IGNORE any non-ProDOS partition).

7) Press "Y" to create your partition.

   A "PARTITION.MAP" file is now automatically created in the first volume in which your partition exists. This file contains all the details for ALL partitions on this drive.

WARNING   *If you delete the "PARTITION.MAP" file, any partitions (and ALL data and programs in them!) on the drive will be LOST, and the partition space will NOT be restored to ProDOS; the drive would have to be re-formatted to recover the partition space!*

Now your screen will show the number of your partition and its size, number of volumes, operating system and "owner" (which is the SCSI ID number of the computer that created the partition, again, only important in a Multi-User System).

You can create more partitions on drive 1, and also on a second drive; press "2" to select drive 2, then (after the partition map has been displayed) follow step 1 to step 7 again.

For use with ProDOS 8 (assuming that you do not use GS/OS), and for any partition which is to contain a non-ProDOS operating system, you should now create one or more Partition Startup Programs, so that you can activate your partition(s) (for full details, see "How To Create A Partition Startup Program", below).

If you use GS/OS with GS and ProDOS programs you will not need Partition Startup Programs, as ProDOS partitions in the main ProDOS area of your *InSyder* drives (and within active ProDOS partitions) will appear as drives on the GS Finder Desktop.

After creating all your partitions, you should make a back-up copy of the "PARTITION.MAP" file on a drive. If deleted accidentally, you can copy the back-up version to the drive to restore your partitions. You MUST make a NEW back-up copy of the "PARTITION.MAP" file if you add, remove or alter any partitions on the drive. You MUST NOT move a "PARTITION.MAP" into a folder or sub-directory, or rename it or lock it, otherwise your partitions will not be accessible (the PARTITION.MAP file MUST be in the main (root) ProDOS directory of a drive.

How To Change The Size Of A Partition

To change the size of a partition, remove it, then create a new partition of the size that you want. Remember that you must back up anything important stored in your partition BEFORE you remove it, as removing a partition will DESTROY the contents. After you create your new partition you MUST make a NEW back-up copy of the "PARTITION.MAP" file, and MUST NOT keep any old back-up copies!

Removing a Partition

To remove a partition, start up from your *InSyder Support Disk*, press "1" for "Partition Creation & Maintenance", then press "R" to remove a partition. MAKE SURE that you copy any valuable data from the partition BEFORE you remove it. Removing a partition will PERMANENTLY destroy all data contained in it!

How To Create A Partition Startup Program

You must create Partition Startup Programs so that you can start up and use partitions which (with ProDOS 8 or GS/OS) are for different (non-ProDOS) operating systems, or (with ProDOS 8 only) are for a multi-user system.

You can create as many Partition Startup Programs as you want, at any time, which you can copy to another ProDOS partition to let you "switch" directly from one partition to another.

A Partition Startup Program (for ProDOS 8) can also "link" a partition on the first *InSyder* drive to a partition on a second drive; the second partition will then automatically be activated (and accessible) when you run the startup program. Partitions on each drive can be switched independently, and you can even switch partitions on drive 2 WITHOUT restarting from drive 1!

To create a Partition Startup Program (which is a ProDOS 8 "SYSTEM" program), follow the step-by-step instructions below.

1) Startup from your *InSyder Support Disk*.

2) Press "2" for "Make System Startup Program"; you will see a partition map (which is empty) for drive 1, with a list of commands along the top of your screen:

   (C)reate, Dev (1), (2), or (Q)uit?

   At this point you can press "1" or "2" to change the list of partitions displayed for drive 1 or drive 2 (although you can only select drive 2 if a second drive is connected).

3) Press "C" to create a Startup Program on your drive.

   A "window" will now appear on your screen, showing the options you have for creating Startup Programs.

4) Enter the number of the partition that you want to start up on the first drive, use "X" if you do not want to startup or change a partition (so you can, for example, remain in a drive 1 partition but change the drive 2 partition). You can also enter "0" to DISABLE the drive, so that NO partition OR volume will be available (but if you disable drive 1 you will also be unable to activate any drive 2 partitions).

5) Enter the number of the partition that you want to start up on the second drive. You can also press "X" or "0" for this drive, see step 4 for details.

6) Type a name for the Partition Startup Program (this must not start with a number, can be up to 15 characters long, and must only contain letter, number, or "." characters.

7) Press "Y" to create the Partition Startup Program.

Now you can run your Startup Program to activate the appropriate partition(s). However, when you try to start up a partition for the first time there will be no operating system, just like an ordinary blank disk, so you must now format your partition for the appropriate operating system.

When you try to start up, a "CANNOT STARTUP..." message will be displayed. You should then put a startup disk (for the operating system that you want to use in the partition) into a disk drive, then type the slot number of that drive. DO NOT RESTART YOUR COMPUTER, just insert the startup disk for your operating system, then press the disk drive slot number.

When your operating system has started up you can format your partition (see "How to use InSyder"), make it into a startup disk (if it is on drive 1), then use it in EXACTLY the same way as an ordinary disk drive.

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IMPORTANT   *You can leave a ProDOS 8 partition by running a Partition Startup Program, to switch to a different partition. You can leave any partition by starting up from InSyder, which returns you to the main (or "root") ProDOS area of the first two InSyder drives. If you launch a ProDOS 8 program from GS/OS you can just "quit" back to GS/OS, which can access any "root" ProDOS partitions and also ProDOS partitions within a ProDOS partition (if not protected by another user in a multi-user system, see Chapter 6 for details).*

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With ProDOS 8, if you want to make a backup copy of anything in a partition (whether ProDOS or non-ProDOS), you must first start up the partition before you can make a copy. With GS/OS you can copy anything from a root ProDOS partition, or any ProDOS partitions within a ProDOS partition (which also appear as drives on the Finder Desktop), but you must still start-up a non-ProDOS partition before you can copy anything in it.

You can make as many Partition Startup Programs as you want, to start up partitions for different operating systems or, under ProDOS 8, for different users in a multi-user system. You can safely delete a Partition Startup Program without affecting the contents of a partition.

CHAPTER 6
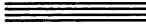
THE InSyder MULTI-USER SYSTEM

This chapter describes how to set up a multi-user system, which will allow sharing of SCSI drives between up to seven computers.

Integral drive
> If you have an integral 20Mb or 40Mb drive you can share ONLY the first external SCSI drive connected to *InSyder*. You CANNOT share the integral drive with other users

The *Multi-User System* uses System Partitions (see Chapter 5) to allow safe sharing of SCSI drives. Up to seven computers can be connected to the same drive, using SCSI cables to "chain" one computer to the next (see figure 6-1). This saves having an expensive hard disk for each computer, AND allows users to share common programs and data.

Why You Need The Multi-User System

You need the *Multi-User System* so that you can safely share an SCSI drive with several other people.

In theory, you could just connect several computers to the same SCSI hard disk. Unfortunately, current operating systems for Apple II computers do not support simultaneous access by several systems to the same file or disk. The example below shows what can go wrong when two people try to use the same file.

1) Cathy loads the data base file called "NAMES" and starts adding new entries to it.

2) At the same time, Tom also loads "NAMES" and begins to add entries to it.

3) Cathy finishes adding entries and saves "NAMES" back to disk.

4) Finally, Tom also finishes using "NAMES" and saves it back onto the disk.

As you can see, only the version of "NAMES" modified by Tom is now on the disk; the version Cathy modified has been LOST!

Even more seriously, if Cathy and Tom happened to save something to the disk at exactly the same time, the catalog on the disk could be DESTROYED and ALL files on the disk could be LOST.

How The Multi-User System Works

The *Multi-User System* overcomes the problems described above by using "System Partitions" to reserve space for each computer connected to an *InSyder* SCSI drive.

Each user creates their own System Partitions (see Chapter 5, "InSyder PARTITIONS", for details), and NO user can modify data or save to another user's partition. However, any user CAN activate a partition "owned" by another user and READ programs and files from it (the "owner" of a partition can make the partition "protected", in which case other users will NOT be able to activate it OR read from it).

This system lets several users SAFELY share an SCSI hard disk, and the files stored in it, for such things as a database, word processing, Desk-Top-Publishing, and so on; for more details see "An Example Multi-User System" at the end of this chapter.

How To Set Up A Multi-User System

You must have the following items to set up a multi-user system:

■ One *InSyder* (with or without integral drive) for EACH computer in your multi-user system

■ One *SCSI T-connector* for each *InSyder*

■ One *SCSI cable* for each *InSyder*

■ One *SCSI Terminator* for the LAST computer in your system

■ One or two SCSI hard disk drives which use a block size of 512-bytes, and which comply with the ANSI X3T9.2 (Common Command Set) specification.

Just follow the step-by-step instructions below to connect your multi-user system together.

1) Install each *InSyder* for each computer in your system, see Chapter 3 for full installation instructions.

IMPORTANT You must set different SCSI ID numbers, from 7 to 1, for each InSyder in your system (see Chapter 8, "The InSyder Links", for details). Also, your first SCSI drive MUST have ID 0, and a second drive have ID 1.

2) Attach a *T-connector* to the SCSI port on each *InSyder*.

3) Attach the cable from your SCSI drive to the *T-connector* on the first computer in your system.

4) Attach the first computer in your system to the next computer (using an SCSI cable), then attach all the remaining computers together (see figure 6-1).
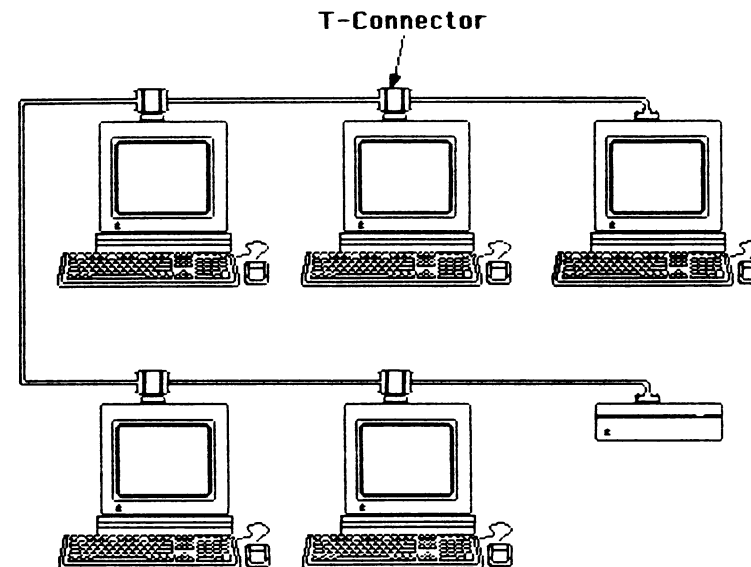
T-Connector

Figure 6-1: *A Multi-User System.*

5) Attach your *SCSI Terminator* to the *T-connector* on the LAST computer in your system.

IMPORTANT You must have SCSI bus terminators at BOTH ENDS of the chain of cables connecting your system, one terminator at your SCSI device (the correct type should be supplied with the device) and one connected to the empty T-connector socket on the LAST computer in your multi-user system.

6) Each user should now create a "personal" System Partition, to reserve the amount of storage space that they require on each drive, then they can make their own Partition Startup Program to activate their partitions (for details see Chapter 5, "InSyder Partition Creation And Maintenance").

IMPORTANT You MUST make ABSOLUTELY SURE that no other user is also creating their personal partition, or the Partition Startup Program for it, at the same time as you! For details of the reasons why this would cause problems, see "Why You Need The Multi-User System".

Each user now has a Partition Startup Program, for their personal partition, in the main ProDOS section of the hard disk. Once each user has created their own personal partition on a drive

they can safely do anything while inside it, such as creating other partitions within it (for other operating systems, using the same procedure as above) or using programs, see figure 6-2.

The main section of the hard disk must contain "PRODOS" (which is the ProDOS 8 "SYS" file) and a simple program launcher (such as "ProSEL" or "BASIC.SYSTEM") so that Partition Startup Programs can be run. Each user first starts up from the main, or root, ProDOS area of the hard disk, then runs their Partition Startup Program to activate their personal partition. It is MOST IMPORTANT that the main ProDOS area of the hard disk is NOT used to store any files or programs; it must be used only for entering a particular personal partition (for full details of the reasons see "Why You Need The Multi-User System").

GS/OS ....
If you want personal partitions to be activated as fast as possible, GS/OS should NOT start up from the main ProDOS section of the hard disk (this is because GS/OS takes much longer to start up than ProDOS 8; also, if you are going to use GS/OS in your partition, there is no point starting it up twice!).
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It is possible to make starting up in a multi-user system completely automatic! For example, when you switch on your computer it can enter your personal partition directly, without having to "manually" run a Partition Startup Program. For details see "Automatic Partition Startup" at the end of this chapter.

If two drives are connected to *InSyder*, you can create Partition Startup Programs that switch partitions on the second drive WITHOUT affecting the first drive (see Chapter 5 for details). This provides an easy method for copying data from another user's second drive partition into your second drive partition. To do this you would run the Partition Startup Program that activates your drive 1 partition and the OTHER USER'S drive 2 partition. You would then copy the file you want from drive 2 (the other users partition) to drive 1 (your partition). The next step is to run the Partition Startup Program that leaves the current drive 1 partition active (option "X" during the startup program creation) and activates YOUR drive 2 partition. You can then copy the file from drive 1 to your drive 2 partition!

It is always best to think out and plan what you want to be able to do first, then try it out (remember that you can easily remove partitions, or startup programs, if something does not work out properly); the examples on the following pages may help to guide you, and we are sure that the versatility of the partitioning system will provide a solution!
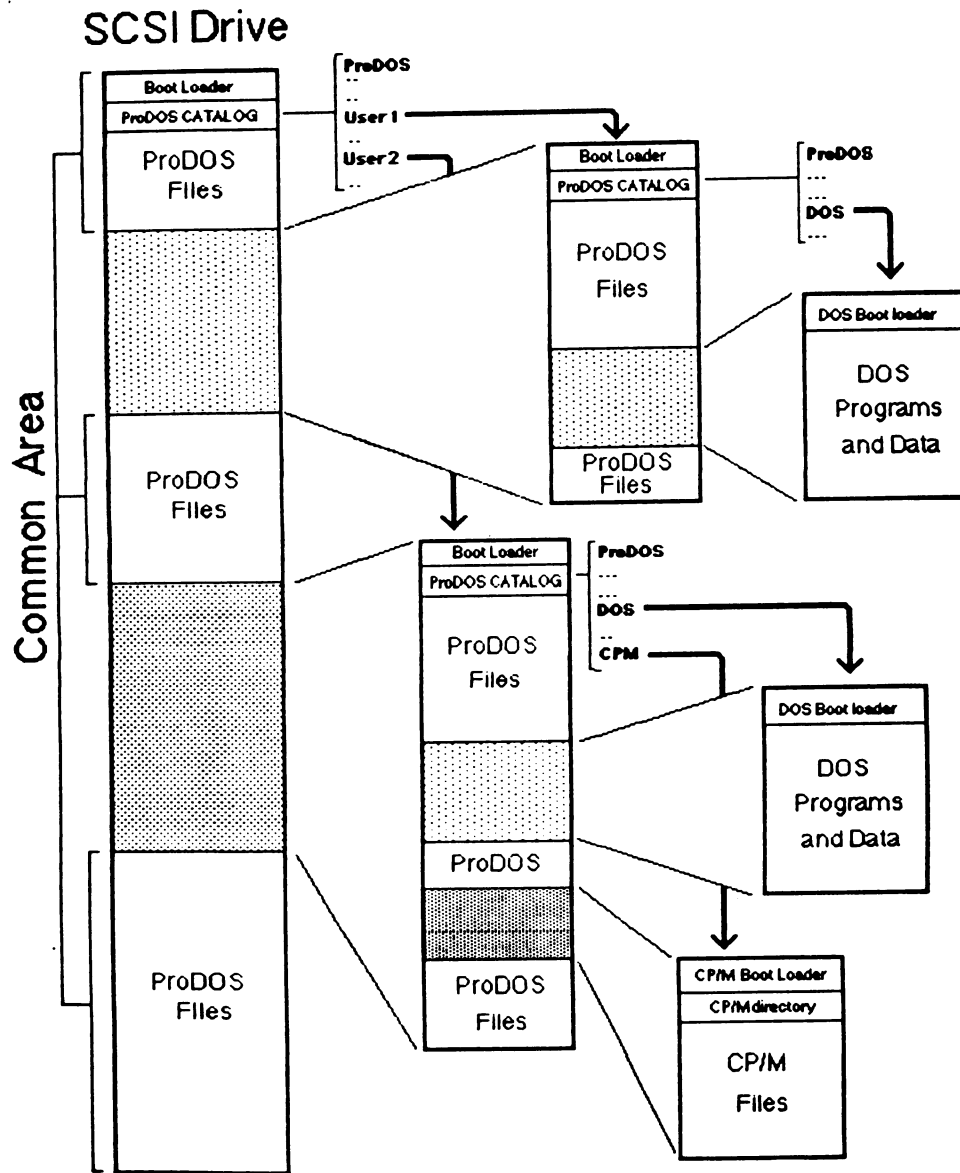

Figure 6-2: *Multi-User Partitions.*

An Example Multi-User System

In this example, a small shop contains a system of three computers. The first is used to generate sales receipts, the second for account information and the third to generate marketing information. The sales receipt data includes customers names and addresses, in addition to sales values. The accounts and marketing computers have an integral drive fitted to an *InSyder* card and are connected to a single external SCSI hard disk using the Multi-User System. The sales computer has an *InSyder* card without an integral drive, and is also connected to the SCSI hard disk. Each user has their own partition on the SCSI hard disk; partition #1 belongs to sales, #2 to accounts and #3 to marketing. The accounts and marketing computers partitions are marked as PROTECTED, to prevent any other user viewing their contents. All the computers use AppleWorks as their main program; sales uses the database to enter receipts, accounts uses the spreadsheet to prepare cash flows and marketing uses the word processor to prepare mailings to customers. It is clear that all three computers need to extract information from the database of sales receipts.

The Multi-user System allows all three computers to access the same database file. The setup required is as follows:

1) The integral drives fitted to the accounts and marketing computers have no partitions (remember that the integral drive cannot be "shared" by other users) and are used to keep sensitive information that is not "shared" with others.

2) Each user has a Partition Startup Program to let them access their own partitions on the external drive. The sales computer ONLY has a partition on the external SCSI drive, so it would have a startup program with "0" for drive 2 and "1" for drive 1; the other computers having "2" or "3" for drive 2 and "X" (for NO CHANGE) for drive 1.

3) In addition, the accounts and marketing computers have a second Partition Startup Program with "1" for drive 2 and "X" for drive 1. This program activates the "SALES" partition on the external SCSI drive, without changing the drive 1 partition (there are no drive 1 partitions in any case).
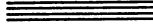
Now the system has been explained, it should be clear that the accounts and marketing computers can very easily access the sales database by running the second startup program. Although they cannot modify the database, they can easily copy it onto their integral drive at any time and, by running their own startup program, copy the file into their external SCSI drive partition.

Automatic partition startup

As you know, all users in a multi-user system start up from the "common" ProDOS area on the hard disk. This means that normally each user has to select and run a Partition Startup Program to activate their partition. It is possible to make the startup sequence completely automatic, so that when computer 6 (for example) starts up from the hard disk the correct partition for it is activated. This is achieved by using a small BASIC program which checks the SCSI ID number of the *InSyder* in the computer and, depending on the ID number, runs the correct Partition Startup Program. A sample version of this program is given below.

```
10 D$ = CHR$(4):SLOT = 7:REM set slot to InSyder slot number
20 N = PEEK(53247):N = PEEK(SLOT * 256 + 49152):ID = PEEK(53120)
30 FOR N = 7 TO 3: IF ID > 2^N THEN ID = ID - 2^N
40 NEXT N:REM loop to extract SCSI ID bits from other links
50 ON N+1 GOTO 100,200,300,400,500,600,700,800 :REM go run prog
100 PRINT D$"-startup.prog7"
200 PRINT D$"-startup.prog6"
300 PRINT D$"-startup.prog5"
400 PRINT D$"-startup.prog4"
500 PRINT D$"-startup.prog3"
600 PRINT D$"-startup.prog2"
700 PRINT D$"-startup.prog1"
800 PRINT D$"-startup.prog0"
```

To use this program you must save it as "STARTUP" in the main ProDOS area of your hard disk. You must also have "PRODOS" and "BASIC.SYSTEM" (this must be the first "SYS" type program on the disk which ends with ".SYSTEM), from your *InSyder Support Disk*, in the main part of the hard disk. In addition, all computers MUST have an *InSyder* card in the SAME slot (change the variable "SLOT" in the program for the actual slot used). You should replace "startup.prog0" to "startup.prog7" with the names of the actual Partition Startup Programs that each user has created (0-7 correspond to the SCSI ID number on each *InSyder*).

CHAPTER 7

TROUBLESHOOTING

If you seem to have a problem with *InSyder* the information below
may help you to solve it (reading all the way through this manual
may also help). At the very least, by working through the
following suggestions you will provide more information to help
in solving your problem.

■ PROBLEM: *Software cannot find InSyder*

If you are using GS/OS you must install the special *INSYDER*
driver program (from your 3.5-inch *InSyder Support Disk*) in
the "/SYSTEM/DRIVERS" folder on your startup disk.

If you are using DOS 3.3 you must run the *UDOS.LANG* program
(from your *InSyder Support Disk*) to modify DOS so that it
will work with *InSyder*.

If you are using Microsoft CP/M 2.20B (56K) or 2.23 (60K) you
must run *INSYDER.COM* (from your *InSyder Support Disk*) to
modify these operating systems to work with *InSyder*.

The program you are using may modify your operating system,
or may be using it incorrectly (you should only use standard
programs and operating systems with *InSyder*).

■ PROBLEM: *Cannot start up from InSyder*

You can only start up from *InSyder* if you have made it into a
startup disk for your operating system (see below). If you
do not have an integral 20Mb or 40Mb drive then your first
SCSI device MUST have SCSI ID 0 (see Chapter 4).

Use *Filer* (from your *InSyder Support Disk*), or an equivalent
program, to make *InSyder* into a ProDOS startup disk.

Use the *ToolKey Format* function and *COPYSYS.COM* program to
make *InSyder* into a Cirtech CP/M Plus startup disk.

Use the *FORMATTER* and *FILER* (from your *APPLE1:* and *APPLE3:*
disks) to make *InSyder* into a Pascal startup disk.

Use the *INIT* command to make *InSyder* into a DOS startup disk.

With Microsoft CP/M *InSyder* CANNOT be a startup disk.

CONTENTS

To start up from *InSyder* using "PRen" (from BASIC.SYSTEM or AppleSoft BASIC) or "ctrl-P, n" (from the Apple monitor) you must hold down the Option and Apple keys (on the IIGS) or both Apple keys (on the //e) BEFORE pressing the Return key.

■ PROBLEM: *GS/OS can only find one volume*

To make GS/OS find other volumes provided by *InSyder* you must install the *INSYDER* driver (from your *InSyder Support Disk*) in the "/SYSTEM/DRIVERS" folder on your startup disk.

■ PROBLEM: *Cannot access InSyder*

DO NOT save to InSyder until you have solved this problem! Make sure that it is formatted for your operating system and, if an external SCSI device, switched on and properly connected. If this does not solve your problem you must test your SCSI device, for full details see "How To Test InSyder".

■ PROBLEM: *Getting Problems Using A DOS 3.3 Program*

If *UDOS.LANG* does not seem to work with your DOS 3.3 program you must try *UDOS* instead (which is also supplied on your *InSyder Support Disk*). If *UDOS* also seems not to work then your program must modify DOS 3.3 itself, or it uses DOS incorrectly (*UDOS* and *UDOS.LANG* are designed to work only with standard DOS 3.3 programs).

How To Test InSyder

If *InSyder* starts to give messages such as "Cannot read drive", "I/O error" or "Having problems using disk", you should use your *InSyder Support Disk* to test it. Just follow the appropriate step-by-step instructions below for an integral drive or an external SCSI device.

Testing An Integral Drive

1) Start up from your *InSyder Support Disk*.

2) Press "3" for "Test INTERNAL hard disk" (full instructions will now be displayed on the screen).

   You can stop the test at any time by pressing the Escape key.

3) When the test has finished it will tell you either that the integral drive is OK, or the number of bad blocks found.

If the test finds no bad blocks on the integral drive then the source of your problem must be some other part of your system.

If the test DOES find bad blocks on your integral drive you must refer to the "Don't Panic" section below.

Testing An External SCSI Device

1) Start up from your *InSyder Support Disk*.

2) Press "4" for "Test EXTERNAL hard disk" (full instructions will now be displayed on the screen).

3) Press the SCSI ID number (0-7) of the device you want to test (the test will begin immediately).

   You can stop the test at any time by pressing the Escape key (the test usually takes about 30 seconds per megabyte).

4) When the test has finished it will tell you either that the SCSI device is OK, or the number of bad blocks found.

If the test finds that your SCSI device has no bad blocks then the source of your problem must be another part of your system.

If the test DOES find bad blocks on your SCSI device you MUST continue from step 5, below.

5) If any bad blocks were found then either the information they contained has been corrupted, or your SCSI device has been damaged at the places where those blocks were stored.

   Although the information in each bad block has been destroyed you should now re-assign these blocks (when you do this each bad block is marked as bad by your SCSI device, and the block number is assigned to a new place in the device).

6) After re-assigning the bad blocks on your SCSI device you can try to rescue any important files or programs which are still left on the device (but if the catalog is damaged you may not be able to rescue anything).

IMPORTANT　*If bad blocks are found on your SCSI device then any file or program may have been damaged. The Bad Block Repair program is designed only to give you a chance (which will vary depending on your luck) to rescue some of your files and programs.*

After you have rescued as much as you can you must re-format your external SCSI device for your operating system. You can then start again by recreating the state of your files and programs using the last backup copies that you made.

Don't Panic!

If you seem to have a problem that you really cannot solve you should contact the dealer who supplied your *InSyder*.

BEFORE YOU CONTACT YOUR DEALER you must have checked every plug, fuse, cable, switch and everything else in your system.

When you contact your dealer you must give as much information as you can (use the list shown below as a guide) so that your problem can be dealt with as quickly and efficiently as possible.

■ The number from your *product registration card*

■ Your type of integral drive or external SCSI device

■ Your type of Apple computer

■ Full details of everything connected to or installed in your computer, including slot, version, model and manufacturer.

■ Full details of all settings or positions of any switches, links or connectors.

■ Full details of the program in use when the problem occurs, including version number and publisher (and/or author).

■ A description of what happens when the problem occurs:

What were you trying to do when the problem occurred?
What appeared on your screen, *before* the problem occurred?
What appeared on your screen *after* the problem occurred?
Does the problem occur occasionally/every time?
What keys did you press *before* the problem occurred?
Do any keys work *after* the problem occurs?
Does your computer seem to stop working?
Is a cursor displayed on your screen?
Do asterisks or random characters appear on your screen?
Does your computer make any peculiar or unusual noises?

You MUST provide as much information as possible, something which may not seem relevant may actually be VERY important!

CHAPTER 8

TECHNICAL INFORMATION

This chapter contains technical information for *InSyder*, which is not usually required for normal operation.

The InSyder Integral Drive

The following specification is for the 20Mb and 40Mb integral drives which are available for InSyder.

Capacity: 20,054,016 bytes or 42,771,456 bytes
Access time: 28mS average
10mS track-to-track
45mS maximum
Data transfer rate: 2.5Mb per second
Reliability: 30,000 hrs MTBF
Data reliability: <1 non-recoverable error in 10^{12} bits read
Shock resistance: 100G non-operating, 5G operating

InSyder ID Bytes

InSyder has a controller ROM which also contains several ID bytes, so that programs and operating systems can search for and locate it. To search for *InSyder* (or any SCSI interface) each slot must be checked for the following ID bytes:

ID byte 1 (ROM address \$Cs01) = \$20
ID Byte 2 (ROM address \$Cs03) = \$00
ID byte 3 (ROM address \$Cs05) = \$03
ID byte 4 (ROM address \$CsFB) = %xxxxxx1x (02)

If these ID bytes are valid an SCSI interface has been found. If ID byte 5 (ROM address \$Cs07) = \$3C then *InSyder* appears to be a ProDOS block storage device (the "PRODOS" link is ON).

If ID byte 5 = \$00 then *InSyder* provides a Smartport interface (the "PRODOS" link is OFF) and is NOT recognised as a ProDOS block storage device. In this case you cannot start up from *InSyder* automatically in an unenhanced Apple //e.

The InSyder Links

There are five links installed on *InSyder*, marked "P", "F", "4", "2" and "1". These are the "PRODOS" link, "FAST" link and the "SCSI ID" links.

■ *The "PRODOS" link*:

The "P" link is the "PRODOS" link, which makes *InSyder* appear as a ProDOS block storage device (when on) or a Smartport device (when removed). For full details of the *ProDOS Block Device Protocol*, refer to the Apple *ProDOS Technical Reference Manual*.

■ *The "FAST" link*:

The "F" link is on to select "FAST" mode, off to select "SAFE" mode. In "FAST" mode handshaking between *InSyder* and an external SCSI device only takes place for the first byte of a 512-byte block (during SCSI DataIn/Out phases), so a block must be transferred with no more than *2.8 microseconds* between bytes (a data transfer rate of 360,000 bytes per second – virtually *ALL* modern SCSI hard disks meet this requirement). If you are at all unsure, then just set the card to "SAFE" (remove the link), this will force handshaking to occur on every byte transferred (the transfer rate is reduced to about 156,000 bytes per second maximum).

■ *The "SCSI ID" links*:

These links are used to set the SCSI ID number for *InSyder*, which is usually 7 (4+2+1). This will not need to be changed unless you are installing a Multi-User System, where each *InSyder* MUST have a different ID number: from 7, 6 (4+2), 5 (4+1) down to 1.

Support Software

Brief technical details of the support software provided on the *InSyder Support Disk* are given below.

■ *DOS 3.3*:

The UDOS.LANG and UDOS programs only make small modifications to DOS "RWTS", First Stage Boot Loader and "INIT" Handler, which means that standard DOS 3.3 programs will operate normally, even those which use RWTS directly!

Each DOS 3.3 pseudo-drive is 400K (the maximum possible for DOS) with 8K "tracks" (32 sectors/track). The catalog on a 400K drive is also expanded, to provide space for a maximum of 217 entries, more than twice the number of an ordinary 5.25-inch disk.

UDOS.LANG and UDOS both use a 512-byte buffer for converting to and from 256-byte DOS sectors. With UDOS.LANG this 512-byte buffer is located in the first 4K bank of the "language card" (so that you do not lose any space for programs!), while UDOS reserves 512 bytes below DOS (above the DOS 3.3 file buffers).

■ *MicroSoft CP/M 2.20b/2.23*:

The drivers and buffers used by the *INSYDER.COM* program reside in the I/O device patch area at address 0F280h upwards, which means that you cannot use this area for any other type of I/O device patches when you are using *InSyder* (if you want to be able to use any standard peripherals or storage devices available for the Apple //e or IIGS then you should buy the appropriate version of *Cirtech CP/M Plus System* for your computer).

The InSyder SCSI Port Connector

Table 8-1 contains full details of the signals and connections for the *InSyder* SCSI port.

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	REQ	8	DB0	15	C/D	22	DB2
2	MSG	9	GND	16	GND	23	DB4
3	I/O	10	DB3	17	ATN	24	GND
4	RST	11	DB5	18	GND	25	TPWR
5	ACK	12	DB6	19	SEL		
6	BSY	13	DB7	20	DBP		
7	GND	14	GND	21	DB1		

Table 8-1: *SCSI Connections And Signals.*

The InSyder SCSI Printer Adaptor

The *InSyder SCSI Printer Adaptor* provides a "Centronics-standard" printer port, which supports eight data bits and the data STROBE and printer BUSY signals.

No other signals are required by the SCSI Printer Adaptor, so it will be compatible with almost any parallel interface printer.

The SCSI Printer Adaptor itself provides a "feed-through" SCSI port connector, and is supplied with a standard "IBM-type" parallel printer cable.

Compatibility — The SCSI Printer Adaptor is NOT compatible with CP/M or Pascal, because the *InSyder* card controller ROM does not contain the correct printer card ID bytes for these operating systems.

DOS 3.3, ProDOS 8, GS/OS (with the *InSyderPrint* driver) and any program which uses the standard BASIC entry for printer cards, are all compatible with the SCSI Printer Adaptor.

Please Help Us To Help You

When you are sure that all the items listed on the previous page are present please fill in your PRODUCT REGISTRATION CARD, affix the correct postage, then return the card to us.
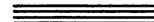
On receiving your card we will register your purchase, which entitles you to receive:

■ First class technical support

■ Upgrading opportunities (where appropriate)

■ Advance news of exciting new products from Cirtech

Returning your PRODUCT REGISTRATION CARD will help us to provide you with the most prompt and efficient service possible.

CHAPTER 2

INTRODUCTION

This manual provides full instructions for installing *InSyder* and using it with GS/OS, ProDOS, DOS 3.3, Cirtech CP/M Plus, Apple II Pascal 1.3 and Microsoft CP/M 2.23 (60K) and 2.20 (56K).

IMPORTANT
You must make sure that you have received all the items which should be supplied with InSyder (for full details see Chapter 1, "UNPACKING YOUR InSyder") and please remember to return your PRODUCT REGISTRATION CARD.

InSyder is supplied either with an integral drive connected, or as an interface card for use with external SCSI hard disks (*InSyder* provides a full function SCSI port to which you can connect up to seven external SCSI hard disks).

You can use *InSyder* in EXACTLY the same way as an ordinary disk drive, whether it has an integral drive or external SCSI hard disks connected to the SCSI port.

The unique *InSyder* System Partitions let you use *InSyder* with several different operating systems, for details see Chapter 5, "InSyderSYSTEM PARTITIONS".

You can also use System Partitions to create a "network" of up to seven computers, which can share up to two SCSI hard disks, for details see Chapter 6, "THE InSyder MULTI-USER SYSTEM".

If your *InSyder* does not have an integral 20Mb or 40Mb drive you can add one at any time. You can also upgrade from 20Mb just by changing the integral drive to 40Mb, contact Cirtech for details.

The optional *InSyder SCSI Printer Adaptor* will let you connect a "Centronics-standard" parallel printer to *InSyder*, so you no longer need a printer card and save using another slot!

Now go to Chapter 3, for full instructions on installing *InSyder*.

CHAPTER 3

HOW TO INSTALL InSyder

You must read ALL of the following instructions BEFORE starting to install *InSyder*, so that you will be completely familiar with the entire procedure before you remove any protective packing.

WARNING *Make sure that the power is OFF (check the power-on light) before you remove or install anything inside your computer. You must wait for a few seconds after switching off (thirty seconds with the Apple IIGS) before you can connect or disconnect anything inside your computer.*

Before touching *InSyder*, or any part inside your computer, you MUST touch an earthed/grounded surface (such as the power supply case) to discharge any dangerous static electricity you may be carrying. Repeat this throughout the installation.

You must hold *InSyder* only by the edges, and avoid touching the gold edge connector or any of the components.

What You Need To Use InSyder

You must have a computer system based on the items listed below before you can use *InSyder*:

- An Apple //e (with 80 column card) or Apple IIGS

- A VDU or monitor

- At least one disk drive (5.25-inch or 3.5-inch)

- A *system master disk* (for each of your operating systems)

In addition, if *InSyder* does not have an integral 20Mb or 40Mb drive, you must also have:

- A non-removable SCSI hard disk (or other storage device) which has 512-byte blocks and complies with the ANSI X3T9.2 (Common Command Set) specification.

If *InSyder* has an integral 40Mb drive, you must go to the section on "Adjusting The InSyder Drive Frame". For an integral 20Mb drive go straight to the "Step-By-Step Installation".

Adjusting The InSyder Drive Frame

If *InSyder* has an integral 40Mb drive you may have to adjust the drive frame, so that the drive does not obstruct or interfere with a card in a slot next to *InSyder* (If *InSyder* has an integral 20Mb drive, go straight to "Step-By-Step Installation").

InSyder is shipped with the drive frame fitted so that the 40Mb integral drive overhangs the next slot DOWN. In this position you can, for example, install *InSyder* in slot 7 of the Apple IIGS without interfering with the Apple IIGS memory expansion card.

If you want to install *InSyder* in slot 7 of an Apple //e, with a 5.25-inch disk controller card in slot 6, you must re-fit the drive frame so that the integral drive overhangs the next slot UP and does not interfere with the disk controller card.

Just follow the step-by-step instructions below to adjust the InSyder drive frame UP or DOWN (and also see figure 3-1).

1) Remove *InSyder* from the protective packing (remember to keep touching an earthed/grounded surface), but avoid touching the edge connector or any components.

2) Hold the *InSyder* card by the edges, then unplug both of the flat cables from the card (you MUST NOT unplug the cables from the integral drive).

3) Remove the screw and washer which lock the drive frame to the card (take care not to lose the washer).

4) Slide the card upwards, out of the slot in the drive frame.

5) Move the card to the other side of the drive frame.

6) Push the card into the slot in the drive frame and slide the card down until the fixing hole re-aligns.

7) Replace the washer and screw from step 1 (see figure 3-1).

8) Reconnect both cables to the card, MAKING SURE that all pins are correctly aligned and the connectors are fully seated.

9) Replace *InSyder* in the protective packing.

InSyder Drive Frame Mount Options
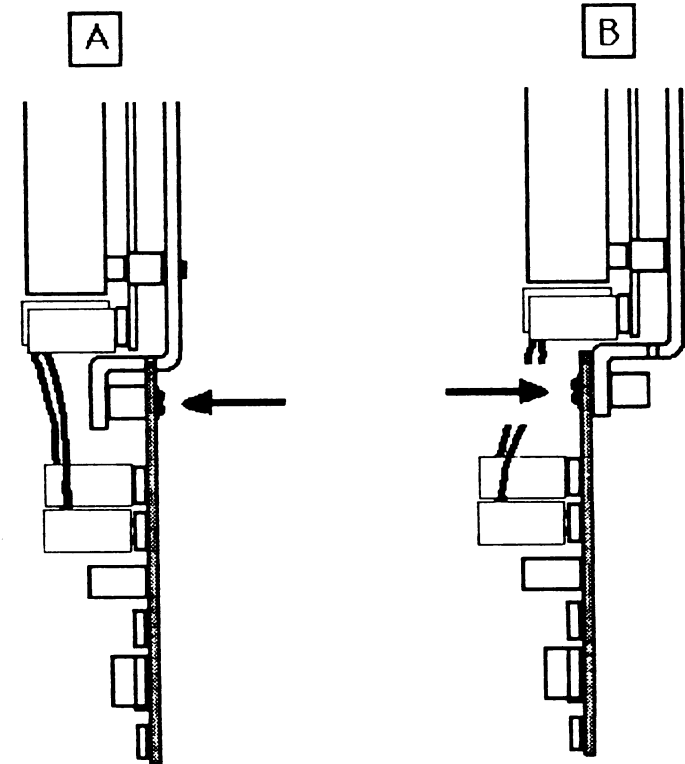
A
Frame fitted to overhang
next slot UP from InSyder

B
Frame fitted to overhang
next slot DOWN from InSyder

Figure 3-1:   *InSyder Drive Frame Options*

Step-By-Step Installation

Follow the step-by-step instructions below to install *InSyder*.

1) Set ALL switches to OFF (including computer, monitor, and anything else connected to your computer).

IMPORTANT *DO NOT unplug or disconnect the power cable for your computer (it provides the earth/ground connection for the power supply case).*

2) Follow the appropriate instructions to open your computer:

   ■ *Apple //e*

   Face the front of your Apple //e, pull the lid upwards at the back edge, slide it away from the keyboard, then lift it off.

   ■ *Apple IIGS*

   Face the front of your Apple IIGS, hold in the *lid latches*, pull the lid upwards and towards you, then lift it off.

3) Remove *InSyder* from the protective packing (remember to keep touching an earthed/grounded surface), but avoid touching the edge connector or any components.

4) Check the "PRODOS" link (see figure 3-2). *InSyder* is shipped with this ON, for automatic start up in an unenhanced //e.

   In an enhanced //e (which shows "Apple //e" at power up), or a IIGS, you should REMOVE this link. Do not alter any other links (but see Chapter 6 and Chapter 8 for further details).
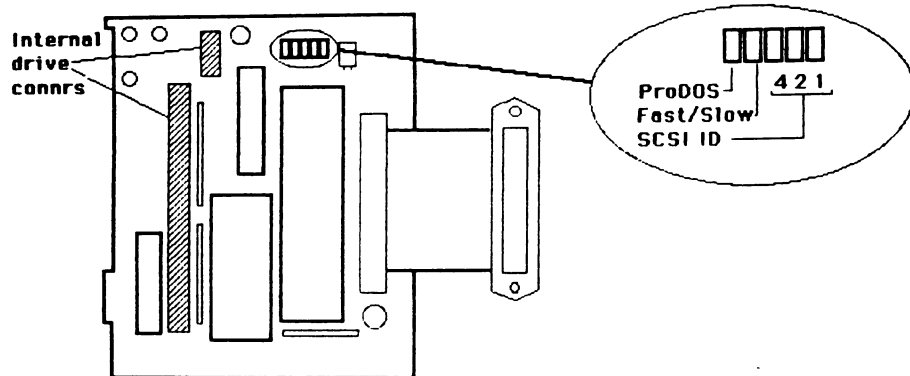

Figure 3-2: *InSyder Front View*

5) Choose an appropriate slot for *InSyder*.

IMPORTANT *You must not install InSyder in slot 3 of an Apple //e or IIGS, as 80 column text is required by some of the support programs.*

Any available slot (one which is not already occupied) can be chosen. With a //e, choosing a slot higher than any other disk device means that you can automatically start up from *InSyder* when you switch-on or restart your computer.

With a IIGS you can use the built-in *Control Panel Program* to set your chosen slot as *startup slot* (for details see your *Apple IIGS Owner's Guide*).

6) Use the *SCSI Port Hardware Kit* (see figure 3-3) to attach the SCSI port connector to the nearest large back panel opening.
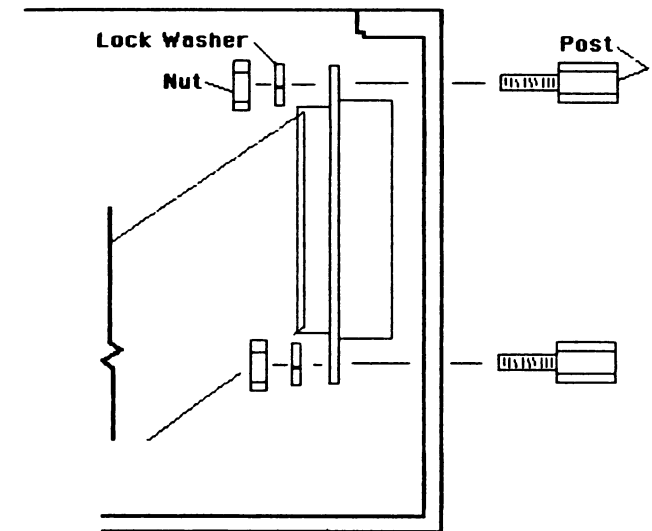

Figure 3-3: *The SCSI Port Hardware Kit*

7) Align *InSyder* so that the edge connector is directly above the slot that you have chosen.

WARNING *You MUST align InSyder CORRECTLY before you insert the edge connector into your slot (with the component side on the RIGHT, as viewed from the FRONT of your computer). SEVERE DAMAGE WILL OCCUR IF InSyder IS INSERTED INCORRECTLY!*

8) Push the *InSyder* edge connector into your slot, using even pressure along the top, until it is fully inserted. Now just replace your lid to complete installation of your *InSyder*.

If you are not fully familiar with the operation of your computer system (and your software) then you must study the appropriate manuals BEFORE you continue with this manual.

The InSyder SCSI Port

If you wish to connect a SCSI Hard Disk to *InSyder*, then you should follow the step-by-step instructions below. Up to seven SCSI devices can be connected to *InSyder*.

1) Set ALL switches to OFF (including SCSI device, computer, monitor, and anything connected to your computer.

2) Connect the power cable for your SCSI device to a convenient mains socket (but DO NOT switch on).

3) Attach one end of your SCSI cable (supplied with your device) to your *InSyder* SCSI Port on the back panel of your computer (remember to screw the plug to the back panel).

4) Attach the other end of your SCSI cable to your SCSI device.

WARNING
You must NEVER attach a non-SCSI cable (such as an RS-232 cable) to the InSyder SCSI port connector, or SEVERE DAMAGE may result!

5) Make sure that the SCSI Identification Number of the device you have connected is set to number 0. Refer to the manual for the device to find out how to change the SCSI ID.

SCSI devices connected to *InSyder* MUST have ascending SCSI ID numbers (ie. the FIRST device MUST be number 0, the SECOND number 1, etc)

6) If your SCSI device does NOT have an internal SCSI bus terminator (check in the manual for the device) then you must fit an external terminator to the device (this should be supplied with the device).

The InSyder SCSI Printer Adaptor

The optional *InSyder SCSI Printer Adaptor* connects to the *InSyder* SCSI port to provide a parallel printer adapter (for ProDOS, GS/OS, and DOS) which saves a slot in your computer.

A feed-through connector is built-in to the SCSI Printer Adaptor, to which you can attach the SCSI cable from your SCSI device.

To install the *SCSI Printer Adaptor* just follow the step-by-step instructions below,

1) Attach your SCSI Printer Adaptor to the SCSI Port connector on the back panel of your computer (remove any SCSI device that's connected to the Port first).

2) Tighten the Printer Adaptor retaining screws to the SCSI Port connector, then re-attach the SCSI cable from your device.

HOW TO USE InSyder

This chapter shows how *InSyder* is used with GS/OS, ProDOS 8, DOS 3.3, Apple II Pascal 1.3, Cirtech CP/M Plus and Microsoft SoftCard CP/M 2.23 (60K) and 2.20B (56K) programs.

You can use *InSyder* with several different operating systems at the same time, and even share external SCSI devices with several other computers! See Chapter 5, "InSyder PARTITIONS", and Chapter 6, "THE InSyder MULTI-USER SYSTEM", for further details.

InSyder Automatic Partitions

InSyder has a built-in partitioning system which automatically divides devices larger than 32Mb into two or more *Volumes*. This feature allows GS/OS and ProDOS 8 programs, which cannot normally use devices larger than 32Mb, to make full use of a large *InSyder* device without any special installation or setup procedure.

For example, a 40Mb integral drive will automatically be divided into two volumes, accessed as drive 1 (32Mb) and drive 2 (8Mb, which is the remainder of the drive); an external 100Mb SCSI device will be divided into three 32Mb volumes and a 4Mb volume.

Operating Systems

InSyder can be used in EXACTLY the same way as an ordinary disk drive with all the normal commands that you already know (such as *CATALOG* with BASIC, *DIR* with CP/M and *TRANSFER* with Pascal).

WARNING
As with ANY storage device, you must NEVER press Control-Reset while InSyder is "in use" or "active", because this may DESTROY the contents of the integral drive or external SCSI device!

You can use *InSyder* for storing "documents", text files, BASIC programs, data files, code files, binary programs, *anything* that you would store on ordinary disks!

InSyder can support up to seven SCSI devices, plus an integral drive. However, due to limitations of each operating system, all volumes may not be available to programs (see table 4-1).

Operating System	Maximum Number Of Volumes	Maximum Capacity Per Volume or Partition
GS/OS	24	32Mb
ProDOS 8	2/4 (see below)	32Mb
DOS 3.3	2	800Kb
Pascal 1.3	2	16Mb
CP/M Plus	7	32Mb
Microsoft CP/M	2	1.5Mb

Table 4-1: *Operating System Support.*

Partitions *InSyder* can provide much more storage for DOS 3.3, Pascal 1.3 and Microsoft CP/M if you create one or more partitions for each system and switch between them (using appropriate partition startup programs) from ProDOS 8. See Chapter 5 for details.

The *InSyder Support Disk*, which contains operating system support software for *InSyder*, is supplied in two versions:

- 5.25-inch
  (a special *multi-system* disk, for ProDOS 8, DOS 3.3 and CP/M)

- 3.5-inch
  (a standard ProDOS disk, for ProDOS 8 and GS/OS only).

IMPORTANT You MUST make a working copy of the appropriate version of the *InSyder Support Disk* for your computer system, then use ONLY this copy (keep both original support disks as backup copies).

Using InSyder With GS/OS

For GS/OS, the 3.5-inch *InSyder Support Disk* contains a "driver" which lets you fully utilise the advanced features of *InSyder*.

The INSYDER driver enables GS/OS to use up to SEVEN external SCSI devices, and an integral 20Mb or 40Mb drive, with a maximum of 24 volumes (each containing up to 32Mb) simultaneously accessible.

To install the INSYDER driver, first start up GS/OS using your normal GS/OS startup disk (if the message "SCSI device requires a driver..." appears during startup, just press the RETURN key to continue). When GS/OS has started up, copy the file named "INSYDER" from your *InSyder Support Disk* to the "Drivers" folder (inside the "System" folder) on your GS/OS startup disk. If you have fitted the *InSyder SCSI Printer Adaptor* you must also copy the "INSYDERPRINT" driver to the "Drivers" folder.

Now restart GS/OS, to make GS/OS load the INSYDER driver, then you should install GS/OS onto *InSyder* (using the GS/OS Installer, as normal). After installing GS/OS you can start up directly from *InSyder*, which dramatically reduces the startup time!

If you want to run ProDOS 8 programs from GS/OS, AND *InSyder*

provides more than two volumes, you must replace the "P8" file in the GS/OS "System" folder with a new version. To replace "P8", copy "PRODOS" from your 3.5-inch *InSyder Support Disk* to the "System" folder, delete "P8", then rename "PRODOS" as "P8".

About the INSYDER Driver

The INSYDER driver dramatically improves GS/OS performance by using super-fast data transfer (over 317,500 bytes PER SECOND), multi-block read/write operations, and full GS/OS disk caching.

The GS/OS internal device name (select "Icon Info" and look at the "Where" page) for an *InSyder* volume appears as:

INSYDERs_DEV#n

where "s" = *InSyder* slot number and "n" = physical device number.

If you have an integral drive its physical device number is 1, with external SCSI devices numbered 2-8, otherwise SCSI devices are numbered 1-7. If a device is larger than 32Mb, or contains *System Partitions* (see Chapter 5), "_PARTN#p" is added to the internal device name, where "p" = partition number (0-24).

The InSyderPrint Driver

With the GS/OS *InSyderPrint* driver installed you can just click on "DC PRINTER" (in the GS/OS Control Panel), then click on "InSyderPrint", to select the SCSI Printer Adaptor as the port you want to use.

The SCSI Printer Adaptor is fully compatible with any program that uses the GS/OS Print Manager, such as *AppleWorks-GS*.

Using InSyder With ProDOS 8

ProDOS automatically recognises *InSyder* as a disk storage device, and supports up to four volumes provided by *InSyder*.

The first two volumes provided by *InSyder* can always be accessed by ProDOS. However, if more than two volumes are available, then *InSyder* should be installed in slot 5, with the "PRODOS" link OFF, so that these volumes can be "mirrored" by ProDOS to slot 2 (as drive 1 and drive 2).

If you cannot install *InSyder* in slot 5 (you may be using the IIGS slot 5 disk port, for example), you must use the special version of *PRODOS* from your *InSyder Support Disk* (which has "i" appended to the version number, e.g. 1.8i, so that you can identify it). This version allows "mirroring" of extra volumes if *InSyder* is installed in slot 5, 6 or 7.

GS/OS ···

If you use GS/OS, and also want to launch ProDOS 8 programs, you should replace the "P8" program, in the System folder of your GS/OS startup disk, with the special "PRODOS" file from your *InSyder Support Disk* (see "Using InSyder with GS/OS" above).

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If you have an *InSyder SCSI Printer Adaptor* you can also use *InSyder* as a printer interface card. Depending on your program, you may have to set your printer to add "LF after CR" and to "ignore bit 7". Try it first and see what happens! If lines are printed on top of each other you should change the "LF after CR" switch on your printer, OR tell your program to add a LF after CR. If your printer produces italics, block shapes or just rubbish, set the "ignore Bit 7" switch on your printer (check your printer manual for full details). Note that *InSyder* does not interpret any control codes, all characters are sent directly to the printer without alteration.

You can also use "PR#s" (where *s* is the *InSyder* slot) to use your printer from BASIC.SYSTEM, as normal. Any program which uses the standard printer card entry point for BASIC will work perfectly with the SCSI Printer Adaptor.

Using AppleWorks V2.0-3.0 With The Printer Adaptor

To use the *InSyder SCSI Printer Adaptor* with AppleWorks versions 2.0 through 3.0 you must first run a program (supplied on your *InSyder Support Disk*) to let AppleWorks use *InSyder* for printing.

Just start up from your *InSyder Support Disk*, press "5" to select "AppleWorks Print Fix", then follow the instructions displayed on the screen (make sure that you are using your working COPY of your AppleWorks Program Disk).

This program is needed because AppleWorks will not allow printing to a slot which appears to contain a storage device, such as *InSyder*. The fix program modifies AppleWorks so that it will print to ANY slot.

When you next start up AppleWorks you can use the "Add a printer" option, in the "Other Activities" section, to add the printer connected to *InSyder* to your list of printers. You should also set the "Interface card slot number" to the *InSyder* slot, "Current control characters" to "None", and the "Needs line feed after each Return" option to "YES".