

Multifunction Products

SuperPak[™]

AST[®]
RESEARCH INC.

User's Manual

ZERO MEMORY OPTION

AST recently introduced multifunction boards with no (0 kilobytes) on-board memory. When you purchase a board with no memory chips, you have the option of purchasing a memory upgrade kit from your authorized AST reseller or purchasing chips separately. Refer to your user's manual for a list of approved chips.

For information on how to install chips, refer to your user's manual. Line up the notch on the chip with the notch on the socket on the board.

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INTRODUCING SUPERPAK

SuperPak™ is a collection of memory resident programs that take advantage of your AST board's special features. SuperPak software enables you to use the clock/calendar on boards like SixPakPlus®, install random access memory (RAM) disks and print spoolers on extended memory boards like Advantage® /2 and Advantage/2-386, and run expanded memory software on expanded memory boards like Rampage® /2, Rampage 286, and Rampage/2-286.

The SuperPak installation program (called INSTALL or ASTART, depending on the AST board), enables you to select basic configurations of your SuperPak utilities. For most applications, these configurations are all you ever need.

The SuperPak utilities can be modified for greater compatibility or to take advantage of their special features. You may do this by entering commands from the disk operating system (DOS) or by changing the statements in the AUTOEXEC.BAT and CONFIG.SYS files.

This manual will show you how to modify and use the SuperPak utilities. For basic installation instructions, see the *SuperPak Installation Supplement* or the *User's Manual* included with your AST board.

Product Overview

The SuperPak utilities include these programs:

- The AST Expanded Memory software, which enables Expanded Memory Specification (EMS) and Enhanced Expanded Memory Specification (EEMS) application programs to use your board's expanded memory.
- SuperSpool™, a print spooling buffer that enables you to continue using your computer while your files print.
- fASTdisk™, a RAM disk that emulates a fixed disk drive. You may install up to two fASTdisks in your system, if memory permits.
- SuperDrive™, a RAM disk that emulates a diskette drive. This feature is available only for PC-, XT-, or AT-compatible computers.
- ASTCLOCK™, a clock/calendar program that keeps track of the time and date even when your computer is off. You can use ASTCLOCK for AST boards with clock/calendars.

SuperPak Operation

SuperPak programs are memory-resident. Once you load them, they continue to work in memory as you use other applications. You can install these programs so they will be loaded each time you boot your system.

The SuperPak installation program copies the needed SuperPak program files onto your boot diskette and adds statements to the AUTOEXEC.BAT and CONFIG.SYS files on your boot diskette. If these files do not already exist, your installation program creates them.

AUTOEXEC.BAT is a batch file containing commands that are automatically executed when you start up your computer. CONFIG.SYS contains the software drivers that allow devices external to your computer (such as the AST expanded memory software and fASTdisk) to function.

You can modify SuperPak statements in the AUTOEXEC.BAT and CONFIG.SYS files by editing them in a text editor or word processor. The program options listed in this manual enable you to configure the SuperPak utilities for greater compatibility and to use special features.

With SuperSpool and ASTCLOCK, you may enter commands from DOS while the computer is running. SuperSpool commands stop and start printing and clear out the print queue. ASTCLOCK commands enable you to set and change the time and display formats.

NOTES

ABOUT THIS MANUAL

This manual will show you how to configure the SuperPak utilities for advanced applications. Part I, *Using SuperPak*, provides instructions and examples of SuperPak configurations. Part II, *Appendices*, provides background technical information.

For instructions on using the installation program to configure and install SuperPak utilities, see the *SuperPak Installation Supplement* included with your AST board.

How to Find Information

For information on compatibility and system requirements:

Section 1 provides important considerations for installing SuperPak utilities.

To configure and use fASTdisk:

Section 2 shows you how to modify the fASTdisk configuration and use it with overlay software.

To configure and use SuperSpool:

Section 3 gives you instructions on configuring SuperSpool and lists the commands to control printing.

To configure and use SuperDrive:

Section 4 shows you how to configure SuperDrive to emulate different types of drives.

To use ASTCLOCK:

Section 5 explains how to use ASTCLOCK to set and configure the AST board's clock/calendar. You only need to read this section if your computer has an AST board with a clock/calendar.

To use SuperPak utilities together:

Section 6 provides important considerations for using SuperPak utilities together.

For allocating memory:

Appendix A gives suggestions on using SuperPak utilities with different memory configurations.

For instructions on creating AUTOEXEC.BAT and CONFIG.SYS files:

Appendix B shows how to create and modify the AUTOEXEC.BAT and CONFIG.SYS files.

For instructions on patching DOS to support additional disk drives:

Appendix C tells you how to modify DOS to support additional disk drive designations. This is useful if you are using FASTdisk and SuperDrive.

For instructions on using the installation program:

The *SuperPak Installation Supplement* gives detailed instructions on using your SuperPak installation program.

For information on using the expanded memory software:

The user's manual for your AST board explains how expanded memory software works and how to modify it, if necessary.

Format Notation

The following format notation is used in this manual:

- *Boldface characters* indicate information you enter.
- *Uppercase characters* indicate items (such as commands) that you enter as shown. You may type either upper- or lowercase letters.

- *Lowercase characters* represent parameters you define. These parameters must satisfy the conditions of the command descriptions.
- *Angle brackets (< >)* tell you to press a key. For example, < **Esc** > means to press the Esc key. You will only press the Enter key when you see the instruction < **Enter** >.
- *Hyphens between keys* tell you to press them simultaneously. For example, < **Ctrl** > - < **Alt** > - < **Del** > tells you to hold down Ctrl and Alt while pressing the Del key.
- *Square brackets ([])* indicate an optional term you may omit. Do not enter the brackets.
- *Color* indicates prompts and messages you see on the screen.
- *A leading zero and trailing lowercase "h"* indicate a hexadecimal number (for example, 02C0h).

Related Documentation

This manual assumes you are familiar with your computer's hardware and DOS operating system. Refer to your computer's user and DOS manuals for more information.

NOTES

PART I. USING SUPERPAK

1. Before You Begin
2. fASTdisk
3. SuperSpool
4. SuperDrive
5. ASTCLOCK
6. Using SuperPak Utilities Together

This section presents information you will need before you install SuperPak.

1.1 SuperPak Diskette Contents

In addition to the SuperPak utilities, there may be other software included on your SuperPak diskette. Information about each software product is contained in a file on the SuperPak diskette.

To display the file, boot your computer with DOS, place your SuperPak diskette (or a copy) in drive A and type the following command:

README < Enter >

Follow the instructions on the screen to view the information.

1.2 Compatibility and System Requirements

The minimum hardware requirements for installing SuperPak are an IBM-compatible computer with at least one diskette drive. SuperPak is compatible with DOS 2.0 and above.

1.3 What You Need to Know Before You Start

This section tells you what you need to know before installing SuperPak. A checklist appears in Section 1.3.1. Fill out the checklist as you answer each question.

Since SuperPak programs are memory-resident, the amount of memory installed in your system will determine which utilities you can use. Section 1.3.2 provides a general overview of memory requirements. For more detailed information, see Appendix A.

In most cases, you will be able to use the configurations provided by the SuperPak installation program. For some configurations, you may need to modify the SuperPak configurations. See Section 1.3.3 for information.

A. *In what computer are you installing SuperPak?*

SuperPak is designed to work with AST Premium™ computers (Premium/286, Premium/386, and Premium Workstation), IBM[®] Personal Computers (PC, XT, and AT), IBM Personal System/2™ (PS/2™) computers (Models 25, 30, 50, 60, and 80), and compatible computers.

The type of computer and expansion boards you have determines the SuperPak utilities you can install. For example, SuperDrive is compatible with PC, XT, and AT computers, but not the PS/2.

For more information, refer to the user's manual for your AST board and the *SuperPak Installation Supplement*.

B. *How much conventional memory is in the computer?*

Conventional memory is the memory up to 640 kilobytes (KB) that can be directly addressed by DOS.

C. How much expanded and extended memory is in the computer?

Memory above DOS's 640-KB limit can be used as extended or expanded. Extended memory is located above 1 megabyte (MB) and can be used by print spoolers and RAM disks (such as SuperDrive, fASTdisk and SuperSpool).

Expanded (or paged) memory swaps segments of memory (called *pages*) in and out of conventional and high memory. The expanded memory software included in SuperPak enables you to use paged memory.

You can use expanded memory with programs that meet EMS or EEMS specifications. Expanded memory can also emulate extended memory for RAM disks and print spoolers .

The SuperPak expanded memory drivers are compatible only with AST expanded memory boards. They are not compatible with boards from other manufacturers.

D. Which boards are installed in your computer?

Select SuperPak utilities appropriate for the expansion boards in your computer.

For computers with AST expanded memory boards (such as Advantage Premium or Rampage/2-286), run the SuperPak installation program to configure memory. To use fASTdisk, SuperSpool, and SuperDrive with expanded memory boards, allocate memory on the board as conventional and extended.

For computers with AST clock/calendar boards (like SixPakPlus), install ASTCLOCK. Do not use ASTCLOCK with other manufacturer's clocks (including the built-in clock for the AST Premium computers, IBM PC AT or IBM PS/2).

In order to use SuperSpool, your computer must have a printer port (either serial or parallel). If you have a serial printer, direct the output from a parallel to a serial port (Section 3).

E. Which SuperPak utilities do you want to use?

Install SuperPak utilities that are best suited for your computer's configuration.

If you have an AST expanded memory board, such as Rampage 286, Rampage/2, or Rampage/2-286, run the SuperPak installation program to install the AST software that makes expanded memory available.

If you have an AST board with a clock/calendar, such as SixPakPlus and SixPakPremium, install the ASTCLOCK software.

If your computer has more than 256 KB conventional memory, extended memory, or emulated extended memory, you may install fASTdisk, SuperSpool, and SuperDrive.

F. Do you have RAM disks or print spoolers already installed on your boot disk?

If so, remove them before installing SuperPak.

G. Do you have AUTOEXEC.BAT and CONFIG.SYS files on your boot disk?

AUTOEXEC.BAT and CONFIG.SYS are files that set your system's configuration upon booting. If AUTOEXEC.BAT and CONFIG.SYS files do not already exist on your boot disk, the SuperPak installation program will create them for you.

If AUTOEXEC.BAT and CONFIG.SYS already exist on your boot disk, the SuperPak installation program will add or change commands pertaining to SuperPak utilities only. AUTOEXEC.BAT and CONFIG.SYS commands not

pertaining to SuperPak will not be changed. For example, if you have an AUTOEXEC.BAT file set up to log you onto a local area network (LAN), the installation program will add the necessary SuperPak statements and leave your network commands alone.

If you run the installation program more than once and specify the same configuration, the CONFIG.SYS and AUTOEXEC.BAT files will contain duplicate entries. Delete the redundant commands with a text editor or word processor.

1.3.1 Configuration Checklist

- A. In what computer are you installing SuperPak?
- AST Premium computer (or compatible)
 - IBM PC or XT (or compatible)
 - IBM PC AT (or compatible)
 - IBM Personal System/2 (or compatible)
- B. How much conventional memory is in the computer?
_____ KB (640 KB maximum.)
- C. How much extended and expanded memory is in the computer?
- Extended memory: _____ KB
- Expanded memory: _____ KB

D. Which boards do you have installed in your computer?

Expanded memory boards? Yes No

Name Amount of Memory

Extended memory boards? Yes No

Name Amount of Memory

AST clock/calendar installed? Yes No

Printer port installed? Yes No

Check which port is used for the printer:

- | | |
|-----------------------------------------|-----------------------------------------|
| <input type="checkbox"/> LPT1 | <input type="checkbox"/> COM1 |
| <input type="checkbox"/> LPT2 | <input type="checkbox"/> COM2 |
| <input type="checkbox"/> LPT3 | <input type="checkbox"/> COM3 |
| <input type="checkbox"/> Other LPT ____ | <input type="checkbox"/> Other COM ____ |

E. Which SuperPak utilities do you want to use?

- fASTdisk
- SuperDrive
- SuperSpool
- ASTCLOCK

F. Do you have RAM disks and print spoolers already installed on your boot disk?

Yes No

G. Do you have AUTOEXEC.BAT and CONFIG.SYS files on your boot disk?

Yes No

1.3.2 Memory Requirements

An important consideration in installing SuperPak is the amount of memory in your computer. For example, you may want to set up the following SuperPak utilities:

- One 512-KB fASTdisk.
- One 64-KB SuperSpool.

To do so, you will need a minimum of 576 KB of memory, not counting memory needed for application programs. You can skip over creating a fASTdisk, SuperDrive, or SuperSpool, if you want. Install the AST expanded memory software to use paged memory on an AST expanded memory board.

For more information on allocating memory, see Appendix A.

1.3.3 Modifying SuperPak Utilities

In most cases, the basic configurations provided by the installation program will suit your needs. You may need to modify your SuperPak configuration to enhance compatibility or perform special functions, such as the following:

- Configuring SuperDrive to emulate an AT-compatible 1.2 megabyte (MB) diskette drive.
- Routing SuperSpool's printer output to a serial or second parallel port.
- Stopping SuperSpool printer output and reprinting the previous page.

To implement these features, you add parameters to the SuperDrive utility's commands.

For example, to redirect SuperSpool's printing from the first parallel port (LPT1) to the first serial port (COM1) and set the baud rate to 9600, enter:

SUPERSPL LPT1:=COM1:/RATE=9600

You can execute this command upon starting by adding it to the AUTOEXEC.BAT file. First, use the installation program to copy the SuperSpool software to your boot disk and add the basic SUPERSPL command to your AUTOEXEC.BAT file. Then, use a text editor or word processor to modify your AUTOEXEC.BAT file to this form of the command.

You may also execute a command at any time by entering it at the DOS prompt. For example, if you have a parallel dot matrix printer and a serial laser printer, you can enter this command to switch printers. If you do not want to type in the entire command each time, you can incorporate it in a batch file. (See your *DOS Manual* for more information on creating and using batch files.)

This section gives you the full set of optional fASTdisk parameters in the standard format and in an alternate VDISK-compatible format. Sample commands illustrate how the fASTdisk parameters work.

2.1 Complete fASTdisk Device Statement

The fASTdisk statement is located in the CONFIG.SYS file. To set up a fASTdisk in its default configuration, enter this command in your CONFIG.SYS file:

```
DEVICE=FASTDISK.SYS
```

The FASTDISK.SYS file can be in any directory as long as you specify the drive and path in the DEVICE statement. If you are booting from a diskette, it must contain both CONFIG.SYS and the fASTdisk driver FASTDISK.SYS.

If the fASTdisk is to run in emulated extended memory, the DEVICE = FASTDISK.SYS statement must appear after the commands for the REMM.SYS and REX.SYS expanded memory drivers.

The complete form for the fASTdisk DEVICE command is as follows:

```
DEVICE=FASTDISK.SYS [/SSIZE=xxx] [/DIR=xxx]  
  [/M [=xxx]] [/U=xxx] [/EXTM [=xxxx [,yyyy]]]  
  [/DEXTM] [/TSIZE=xxxx] [/DL] [/DH] [/DNC]
```

Lowercase letters represent variables for the different parameters.

Enter the DEVICE command on one continuous line. Use a slash (/) to separate the options, not a comma. Parameters shown in brackets are optional and can be entered in any order.

These commands are divided into three types of options, which are covered in the following sections:

- *Sector and directory sizes:* See Section 2.1.1 for the options /SSIZE and /DIR.
- *Memory allocation:* See Section 2.1.2 for the options /M, /U, /EXTM, /DEXTM, and /TSIZE.
- *Disabling memory regions:* See Section 2.1.3 for the options /DH, /DL, and /DNC.

2.1.1 Sector and Directory Size Options

Sector and directory size parameters enable fASTdisk to emulate attributes of different types of hard disks. Table 2-1 shows the available parameters:

Table 2-1. Sector and Directory Size Parameters.

Parameter	Default	Description
/SSIZE =	128	Sets the sector size in bytes. Allowable sizes are 128, 256, and 512.
/DIR =	64	Sets the number of root directories that fASTdisk can contain. Allowable values range from 2 to 512. One directory will be used for the volume label.

2.1.2 Memory Allocation Options

Memory allocation parameters reserve areas of memory for fASTdisk and other applications and enable fASTdisk to operate in extended memory. You may use these options if fASTdisk's default configuration conflicts with the memory requirements of other programs. Table 2-2 lists the parameters.

Table 2-2. Memory Allocation Parameters.

Parameter	Default	Description
/M=	all memory	Sets the size of the fASTdisk in KB. If just /M is specified, all available linear memory is used for the fASTdisk.
/U=	64	Reserves a minimum amount of memory for applications other than the current fASTdisk.
/EXTM=	0,1024	Enables fASTdisk to use extended memory over 1024 KB. The first value specifies the maximum size for fASTdisk. (The default value 0 indicates no limit.) The second value specifies fASTdisk's starting address in KB, ranging from 1024 KB to the maximum amount of extended memory.
/DEXTM	none	Specifies that a second fASTdisk be installed in conventional memory. This parameter avoids conflicts with a fASTdisk already installed in extended memory.
/TSIZE=	2048	Sets in bytes the maximum amount of data that can transferred to and from a fASTdisk in extended memory. Acceptable values range from 16 to 32,000 bytes. Enter a value that is a multiple of 16.

2.1.3 Disabling Memory Regions

The options shown in Table 2-3 apply to older PCs and XT's that determine memory allocation by switch settings. Older computers divide conventional memory into contiguous and non-contiguous ranges. (For more information on memory types, see Appendix A.)

Table 2-3. Memory Region Options

Parameter	Default	Description
/DH	none	Prevents fASTdisk from using contiguous memory above the limit set by the system board switches. fASTdisk can use memory below the limit set by the switches and non-contiguous memory above address 0C0000h (768 KB).
/DL	none	Prevents fASTdisk from using contiguous memory below the limit set by the system board switches. fASTdisk can use memory above the limit set by the switches and non-contiguous memory above address 0C0000h (768 KB).
/DNC	none	Prevents fASTdisk from using non-contiguous memory beginning at address 0C0000h (768 KB). fASTdisk can use memory above the limit set by the switches.

2.2 VDISK-Compatible fASTdisk Device Command

An alternate form of the `DEVICE = FASTDISK.SYS` command is similar to that of the IBM VDISK RAM disk. This format is for applications that require compatibility with VDISK.

The parameters in the fASTdisk's VDISK command format are the same as those for the regular format. Their order has been changed to maintain compatibility with VDISK.

The VDISK-compatible format of the `DEVICE = FASTDISK.SYS` command is as follows:

```
DEVICE=FASTDISK.SYS [aaa[ bbb  
[ ccc]]] [/E[:t]] [/DEXTM] [/U=xxx] [/DH] [/DL]  
[/DNC]
```

Lowercase letters indicate parameters, which are described in Table 2-4.

Table 2-4. VDISK-Compatible Command Parameters

VDISK Format Parameter	Corresponding Regular Format Parameter	Description
aaa	/M	Specifies the amount of memory (in KB) to be used by fASTdisk.
bbb	/SSIZE	Specifies the sector size (in bytes).
ccc	/DIR	Specifies the number of directory entries in the root directory.
/E	/EXTM	Enables fASTdisk to operate in extended memory.
:t	/TSIZE	Specifies the transfer rate from a fASTdisk in extended memory.
/DEXTM	/DEXTM	Configures a second fASTdisk to operate in conventional memory to avoid conflict with another fASTdisk in extended memory.
/U	/U	Specifies the minimum amount of memory (in KB) to be allocated for applications other than the current fASTdisk.
/DL	/DL	Prevents fASTdisk from using contiguous memory below the system board switch settings.
/DH	/DH	Prevents fASTdisk from using contiguous memory above the system board switch settings.
/DHC	/DHC	Prevents fASTdisk from using non-contiguous memory.

2.3 Rules for Using fASTdisk

Follow these rules as you configure fASTdisk:

- If you are installing the REMM.SYS and REX.SYS drivers for expanded memory, put the DEVICE statement for the drivers before the DEVICE = FASTDISK.SYS statement in the CONFIG.SYS file. The SuperPak installation program will write the commands in their proper order.
- The computer installs fASTdisk before installing SuperSpool and SuperDrive. If fASTdisk uses the /EXTM option, so will the other SuperPak utilities (unless they disable it with the /DEXTM option).
- If your computer has extended memory, there is no noncontiguous memory and the [/DNC] option is not used.

2.4 Examples of fASTdisk Commands

This section provides examples of the DEVICE = FASTDISK.SYS command. You may use these examples to help you configure fASTdisk for your system.

2.4.1 Single fASTdisk Command Examples

The following examples show how to configure one fASTdisk.

Example 1

To allocate all extended memory above 1 MB to a fASTdisk, enter this command:

```
DEVICE=FASTDISK.SYS /M/EXTM
```

This command performs the following:

- The /M parameter indicates that all available memory will be used for the fASTdisk.
- The /EXTM parameter indicates that the fASTdisk is to use extended memory. No offset is indicated, therefore fASTdisk will start at 1024 KB.

Example 2

To create one fASTdisk that uses all available conventional and extended memory, except for 512 KB reserved for applications, and has 128 root directory entries, enter this command:

```
DEVICE=FASTDISK.SYS /M/EXTM/DIR=128/U=512
```

This command performs the following:

- The /M parameter indicates all available memory will be used for the fASTdisk.
- The /EXTM parameter enables fASTdisk to use extended memory.
- The /DIR = 128 parameter indicates that 128 entries can be used in the fASTdisk root directory.
- The /U = 512 parameter reserves 512 KB for other applications.

2.4.2 Dual fASTdisk Command Examples

The following examples show you how to install two fASTdisks.

Example 1

To create one 200-KB fASTdisk in extended memory and a second 100-KB fASTdisk, enter these commands in this order in the CONFIG.SYS file:

```
DEVICE=FASTDISK.SYS 200 /E
```

```
DEVICE=FASTDISK.SYS /M=100
```

The first command, entered in VDISK format, does the following:

- The number 200 allocates 200 KB for the fASTdisk.
- The /E parameter instructs fASTdisk to operate in extended memory.
- Since no other parameters have been specified, fASTdisk will use defaults for those values.

The second command, entered in the regular fASTdisk format, does the following:

- The parameter /M = 100 allocates 100 KB for the fASTdisk.
- Since the first fASTdisk was created in extended memory, the second fASTdisk will be also. (To configure the second fASTdisk in conventional memory, use the /DEXTM parameter.)
- Since no other parameters were specified, fASTdisk will use defaults for those values.

Example 2

To create one 50-KB fASTdisk in conventional memory with 128 root directory entries and a second fASTdisk in extended memory, enter the following commands in this order:

```
DEVICE=FASTDISK.SYS 50/DIR=128
```

```
DEVICE=FASTDISK.SYS /EXTM
```

The first command, written in VDISK format, does the following:

- The number 50 allocates 50 KB for the first fASTdisk.
- The /DIR = 128 parameter indicates that fASTdisk will have a maximum of 128 root directory entries.
- Since the /E parameter was not specified, memory for the first fASTdisk will come from conventional memory.
- Since no other parameters were specified, fASTdisk will use defaults for those values.

The second command, written in regular fASTdisk format, does the following:

- The /EXTM parameter indicates that the second fASTdisk will operate in extended memory.
- Since no other parameters were specified, fASTdisk will use defaults for those values.

2.5 Application Notes

This section provides suggestions on using fASTdisk to the best advantage.

2.5.1 fASTdisk Compatibility

fASTdisk functions as an already formatted hard disk. You can use DOS commands and applications with it.

Any program you can copy to a diskette or hard disk can also be copied to a fASTdisk. If your program is copy-protected, you will not be able to copy it to a fASTdisk.

If you want to run an application on a fASTdisk from the AUTOEXEC.BAT file, you must enter commands to copy the program to the fASTdisk before executing it. For example, to copy and run Microsoft[®] Word, enter these commands in your AUTOEXEC.BAT file:

```
COPY A:*. * D:  
D:  
WORD
```

These commands copy the Word program files from floppy drive A to fASTdisk D. The AUTOEXEC.BAT file then changes to drive D and executes Word.

Some programs require an application to be launched from a specific drive, even when the default drive has been changed. If this is the case for your program, you may configure your fASTdisk to be the same designation as that which the program expects.

2.5.2 Using fASTdisk with Modular Software

You can enhance the speed and performance of disk-intensive or modular software by installing it on a fASTdisk.

For example, if you have a word processor with a spelling checker, you can copy the dictionary files to the fASTdisk. This will speed up the time the spelling checker requires to search for words. Likewise, you can copy to the fASTdisk applications broken into different modules (such as accounting software, word processors, and other large programs). You will not have to keep your program disk in the drive or wait for software modules to load.

Keep your data on a diskette or hard disk so you do not lose any information if the computer is turned off.

2.5.3 Protecting Important Data Files

Since fASTdisk is a part of the computer's memory, any data stored on the fASTdisk will be lost if the computer is turned off or rebooted. Therefore, do not store files you cannot afford to lose on your fASTdisk. The best way to use fASTdisk is to run your application programs on it and keep your data files on your diskettes or hard disk.

If you decide to store data files on a fASTdisk, you may want to create a batch file to back up your data files to a diskette or hard disk after you exit from the application.

The following sample AUTOEXEC.BAT file copies the program and data from the diskette in drive A to the fASTdisk drive D and runs the application. After you quit the program, the batch file continues by copying the contents of the RAM disk back to drive A.

```
COPY A:*.* D:  
D:  
program  
COPY D:*.* A:
```

Replace *program* with the file name of the application to run from drive D.

This AUTOEXEC.BAT does the following:

- The COPY A:*.* D: command copies all the files on drive A, presumably the program diskette, to the fASTdisk drive D.
- The D: command makes fASTdisk the default drive.
- The third line executes the program. Replace the variable *program* with the name of your application file.
- After you exit from the application, AUTOEXEC.BAT continues. The COPY D:*.* A: command copies the fASTdisk's contents to the diskette in drive A.

For more information on any of these commands, see your computer's DOS manual.

NOTES

This section provides the options that you can use to modify or control the SuperSpool printer spooler. Sample commands and application notes will demonstrate how the options work.

3.1 Using the SuperSpool Command

To set up a SuperSpool each time you boot the computer, use the SuperPak installation program to add the SuperSpool command to your AUTOEXEC.BAT file by using the SuperPak installation program or by typing commands at the DOS prompt.

If you are using SuperSpool with parallel port LPT1 or any serial port, enter the following command before running SuperSpool:

MODE LPT1:

This command initializes LPT1 and enables SuperSpool to print from DOS and other applications using LPT1. Do not use the MODE LPT1: command if you are using another parallel port.

To set up SuperSpool in its default configuration for a parallel port, enter this command:

SUPERSPL LPT p :

Substitute p for the parallel port number.

To set up SuperSpool in its default configuration for a serial port, enter this command:

SUPERSPL LPT1:=COM s :

Substitute s for the serial port number.

There are different versions of the SUPERSPL command for configuring SuperSpool with parallel and serial ports. To use SuperSpool with a parallel printer, see Section 3.2. To use SuperSpool with a serial printer, see Section 3.3.

3.1.1 Printing with SuperSpool

To use SuperSpool from DOS, use the COPY command to direct the file to the printer port used for SuperSpool. Do not use the DOS PRINT command because it uses the DOS print buffer.

For example, to print the file SAMPLE.TXT to a SuperSpool set up for LPT2, enter the following:

```
COPY SAMPLE.TXT LPT2: <Enter>
```

The text for SAMPLE.TXT will print on the printer attached to LPT2.

With applications, use your normal printing procedures. Configure SuperSpool for the port to which you normally send your printing. When you print, the output will go to SuperSpool before going to the printer. If your application comes with a print spooler, be sure to disable it before using SuperSpool.

3.1.2 SuperSpool Help

For a complete list of SuperSpool commands, type the following at the DOS prompt:

```
SUPERSPL /? <Enter>
```

The SuperSpool commands will appear on the screen with explanations.

3.2 Using SuperSpool with Parallel Printers

The complete form of the SuperSpool command for parallel printers is as follows:

```
SUPERSPL LPTp: [/?] [/U=xxx] [/M[=xxx]]
[/EXTM[=xxxx[,yyyy]]] [/DEXTM] [TSIZE=xxxx]
[/DH] [/DL] [/DNC] [/DBI] [/DMMGMT] [/LPP=xx]
[/FF] [/STRING=xxx[,xxx,...]] [/S] [/C] [/P]
[/B] [/R] [/RP] [/PINT[=X]]
```

Lowercase letters represent variables for the different parameters.

Enter the command on one continuous line. Use a slash to separate the options, not a comma. Enter the optional parameters in any order.

These commands are divided into three types of options, which are covered in the following sections:

- *Printer port controls:* See Section 3.2.1 for the options LPTp: and /PINT.
- *Memory allocation:* See Section 3.2.2 for the options /U, /M, /EXTM, /DEXTM, /TSIZE, /DH, /DL, /DNC, /DBI, and /DMMGMT.
- *Printer controls:* See Section 3.2.3 for the options /LPP, /FF, /STRING, /S, /C, /P, /B, /R, and /RP.

3.2.1 Printer Port Controls

By default, SuperSpool sends the output to LPT1. You may use another printer port with SuperSpool by typing its DOS name after the SUPERSPL command. To direct SuperSpool output to LPT2, enter the following:

```
SUPERSPL LPT2:
```

NOTE

The PS/2 designates parallel ports as PARALLEL_1, PARALLEL_2, and so forth. Under DOS, these ports are called LPT1 and LPT2. Be sure to use the DOS names for parallel ports in the SUPERSPL command.

By default, SuperSpool uses the interrupt request (IRQ) number for the port you specify. If you configured your port for another IRQ number, use the /PINT option to specify it. You may use any value from 0 to 7, but IRQ values other than 7 are used with specially designed printer hardware.

To specify IRQ7 and LPT1, enter the following SuperSpool command:

```
SUPERSPL LPT1: /PINT=7
```

See your printer's user manual for more information on IRQ assignments.

3.2.2 Memory Allocation Parameters

Memory allocation parameters reserve areas of memory for SuperSpool and other applications and enable SuperSpool to operate in extended memory. You may use these options if SuperSpool's default configuration conflicts with the memory requirements of other programs. Table 3-1 lists the parameters.

Table 3-1. Memory Allocation Parameters.

Parameter	Default	Description
/M=	all memory	Sets the size of the SuperSpool in KB. Entering only /M uses all available linear memory for the SuperSpool.
/U=	64	Reserves a minimum amount of memory for applications other than the current SuperSpool.
/EXTM=	0,1024	Enables SuperSpool to use extended memory over 1024 KB. The first value specifies the maximum size for SuperSpool. (The default value 0 indicates no limit.) The second value specifies SuperSpool's starting address in KB, ranging from 1024 KB to the maximum amount of extended memory.
/DEXTM	none	Disables SuperSpool's use of extended memory after it has been installed with the /EXTM command.
/TSIZE =	2048	Sets in bytes the maximum amount of data that can transferred to and from a SuperSpool in extended memory. Acceptable values range from 16 to 32,000 bytes. Enter a value that is a multiple of 16.
/DMMGMT	none	Prevents SuperSpool from using additional unallocated memory. Disables SuperSpool's calls to DOS memory management.
/DBI	none	Disables the block transfer interface to avoid conflicts with other applications. Use this parameter if your application uses interrupt vector INT 058h.

Table 3-2 lists options that apply to older PCs and XT's which determine memory allocation by switch settings. Older computers divide conventional memory into contiguous and non-contiguous ranges. (For more information on memory types, see Appendix A.)

Table 3-2. Memory Region Controls.

Parameter	Default	Description
/DH	none	Prevents SuperSpool from using contiguous memory above the limit set by the system board switches. SuperSpool can use memory below the limit set by the switches and non-contiguous memory above address 0C0000h (768 KB).
/DL	none	Prevents SuperSpool from using contiguous memory below the limit set by the system board switches. SuperSpool can use memory above the limit set by the switches and non-contiguous memory above address 0C0000h (768 KB).
/DNC	none	Prevents SuperSpool from using non-contiguous memory beginning at address 0C0000h (768 KB). SuperSpool can use memory above the limit set by the switches.

3.2.3 Printer Control Options

The options in this section enable you to control printing, set print format, and send text strings to the printer.

You may use these commands to control the printer from DOS. You do not have to enter the entire SUPERSPL command. For example, type the following to stop printing.

SUPERSPL /S <Enter>

To continue printing, type the following command.

SUPERSPL /C <Enter>

Table 3-3 lists options for printer formats and controls.

Table 3-3. Printer Format and Control Options.

Parameter	Default	Description
/LPP =	66	Sets the number of lines per page. Default value prints an 11 inch page with 6 lines per inch.
/FF	none	Sends a form-feed character to the printer.
/STRING =	none	Sends a series of decimal ASCII codes to the printer. List each code in order (up to three digits) and separate them with commas. You may include control and character codes. The printer will interpret and print them.
/S	none	Stops printing. No data will be lost. To restart printing, use the SUPERSPL/C command.
/C	none	Continues printing from where it was stopped by the SUPERSPL /S command.
/P	none	Purges all data from the SuperSpool. Any data stored there will be lost.

SuperSpool has three options for controlling reprinting pages: /B, /R, and /RP. They are used in combination after the printer has been stopped with the /S option.

The /B option sets a buffer for storing pages. Your SuperSpool should have at least 16 KB to use this option. The /B option enables the /R and /RP options. /R restarts printing at the beginning of the current page. /RP restarts printing at the beginning of the previous page.

Do not combine the /B option with the /R or /RP options in the same line. The /B option is to be used when first initializing your spool buffer. The /R and /RP options are for use only after printing has already begun.

Use the /R and /RP options in this sequence:

STEP 1

Set up a buffer: Before printing, use the /B parameter to set up a buffer for reprinting pages, as shown in this command:

SUPERSPL /B

STEP 2

Stop printer output: From DOS, enter this command to stop printer output:

SUPERSPL /S

STEP 3

Set the paper at the top of the form: Use the printer's top-of-form control to place the print head at the top of the next page.

STEP 4

Continue printing: Enter the following command to restart printing at the current or previous page, respectively.

SUPERSPL /R or SUPERSPL /RP

3.3 Using SuperSpool with Serial Printers

The complete form of the SuperSpool command for serial ports is as follows:

```
SUPERSPL LPTp:=COMs:[/?][/RATE=baud[,parity
[,databits[,stopbits]]]] [/U=xxx[/M=xxx]
[/EXTM=xxxx[,yyy]][/DEXTM[/ON=option]
[/OFF=option[/TSIZE=xxxx[/DH[/DL[/DNC]
[/DBI[/DMMGMT[/LPP=xx[/FF]
[/STRING=xxx[,xxx,...]][/S[/C[/P[/B]
[/R[/RP[/SINT[=X]]]
```

Lowercase characters represent variables for the different parameters.

Enter the command on one continuous line. Use a slash to separate the options, not a comma. Parameters shown in the brackets are optional and can be entered in any order.

Many serial port options are the same as for the parallel port. Refer to the following sections for these options:

- *Memory allocation options:* See Section 3.2.2 for the options /U, /M, /EXTM, /DEXTM, /TSIZE, /DH, /DL, /DNC, /DBI, and /DMMGMT.
- *Printer controls:* See Section 3.2.3 for the options /LPP, /FF, /STRING, /S, /C, /P, /B, /R, and /RP.

The rest of the options configure the printer port and are unique to serial printers. These are covered in Section 3.3.1.

3.3.1 Serial Port Controls

To work with serial printers, SuperSpool requires you to redirect printing from LPT1 to the serial port of your choice. This enables SuperSpool to use < Print Screen > and other print commands specific to LPT1.

To use SuperPak with a serial port, enter this command:

SUPERSPL LPT1:=COMs :

Substitute s for the serial port number.

This command does the following:

- It redirects printing from the parallel port to the serial port you specify.
- LPTp responds as the next available LPT port. (LPT1 becomes LPT2, LPT2 becomes LPT3, and so forth.).

For example, enter the following command sets up SuperSpool to print to COM1:

SUPERSPL LPT1:=COM1 :

This command redirects the output from LPT1 to COM1 and changes LPT1 to LPT2.

You must redirect printing from LPT1 to a serial port to use a serial printer with SuperSpool. The following format is not valid:

SUPERSPL COM1 :

By default, SuperSpool uses the IRQ for the port you specify. If you configured your port for another IRQ number, use the /SINT option to specify it. You may use any value from 0 to 7, but IRQ values other than 3 and 4 are used by specially designed printer hardware.

To specify IRQ4 and COM1, enter the following SuperSpool command:

```
SUPERSPL LPT1:=COM1: /SINT=4
```

See your printer's user manual for more information on IRQ assignments.

In many cases, you also need to set communications parameters for the serial port, including baud rate, parity, and stop bits. Table 3-4 lists the communications parameters.

Table 3-4. SuperSpool Communications Parameters.

Parameter	Default	Description
/RATE	none	Sets the serial ports baud rate, parity, databits, and stopbits. All four values must be indicated in this parameter.
baud	none	Sets the serial device's baud rate. Valid rates are 110, 150, 300, 600, 1200, 2400, 4800, and 9600. If the rate is not specified, SuperSpool will use the baud rate previously configured for that device (as with the MODE command).
parity	E (even)	Set the parity. Valid values are N (none), O (odd), and E (even). Do not spell out the values.
databits	7	Sets the number of bits in the byte used to represent characters. Valid values are 7 and 8.
stopbits	1	Sets the number of bits in the byte used to indicate the end of the character. Valid values are 0 and 1.
/ON	CTS,DSR	<p>Enables serial port protocol options. Valid options are XON (for XON/XOFF), DCD, DSR, and CTS.</p> <p>Most printers require CTS and DSR to be on before it can receive output. For information on the serial port protocols required for your printer, see your printer's user manual.</p>
/OFF	DCD,XON	Disables serial port protocol options. Valid options are XON (for XON/XOFF), DCD, DSR, and CTS.

3.4 SuperSpool Examples

The following examples show how options are used with parallel and serial printers. Specific examples are covered in the following sections:

- *For parallel printer configuration examples:* See Section 3.4.1.
- *For serial printer configuration examples:* See Section 3.4.2.
- *For memory allocation examples:* See Section 3.4.3.
- *For printer control examples:* See Section 3.4.4.

3.4.1 Parallel Printer Configuration Examples

These examples show you how to use SuperSpool with parallel printers.

Example 1

To configure SuperSpool for LPT2 each time you start the computer, add the following lines in your AUTOEXEC.BAT file:

```
MODE LPT1  
SUPERSPL LPT2:
```

This command performs the following:

- **MODE LPT1** initializes the printer port. You must enter this command or add it to your AUTOEXEC.BAT file before using SuperSpool.
- **SUPERSPL LPT2:** sets up SuperSpool for parallel port LPT2.

Since these commands are in your AUTOEXEC.BAT file, they will be executed every time you boot your computer.

Example 2

To use SuperSpool with a printer configured for LPT1 and IRQ7, enter this command:

```
SUPERSPL LPT1: /PINT=7
```

This command does the following:

- SUPERSPL LPT1: sets up SuperSpool for LPT1.
- The /PINT = 7 parameter indicates the port is configured as IRQ7.

3.4.2 Serial Printer Configuration Examples

These examples show you how to configure SuperSpool for the serial port.

Example 1

To set up SuperSpool for serial port COM1 each time you boot your computer and use a 9600 baud rate, even parity, 8 databits, and 1 stopbit, enter the following commands in your AUTOEXEC.BAT file:

```
MODE LPT1:  
SUPERSPL LPT1:=COM1: /RATE=9600,E,8,1
```

These commands do the following:

- **MODE LPT1:** initializes the printer port. Enter this command before using SuperSpool with LPT1 or a serial port.
- **SUPERSPL LPT1: = COM1:** directs printer output from LPT1 to COM1. LPT1 will be renamed LPT2.
- The **/RATE** parameter sets the serial port configuration. The values 9600, E, 8, and 1 set the baud rate, parity, databits, and stopbits respectively.

Since these commands are included in your AUTOEXEC.BAT file, they will be executed every time you boot your computer.

Example 2

To use SuperSpool with a serial port configured for COM2, IRQ3, 9600 baud, no parity, 7 databits, 1 stopbit, and CTS and DSR off, enter the following:

```
SUPERSPL LPT1:=COM2: /SINT=3  
/RATE=9600,N,7,1/OFF=CTS/OFF=DSR
```

This command does the following:

- **SUPERSPL LPT1: = COM2:** redirects the printer output from LPT1 to COM2. LPT1 is renamed LPT2.
- The **/SINT = 3** parameter specifies that COM2 is configured for IRQ3.
- The **/RATE** parameter sets the serial port configuration. The values 9600, N, 7, and 1 set the baud rate, parity, databits, and stopbits respectively.

- The /OFF = CTS parameter disables the CTS signal.
- The /OFF = DSR parameter disables the DSR signal.

3.4.3 Memory Allocation Examples

These examples show you how to configure SuperSpool for different memory allocations.

Example 1

To allocate 128 KB of extended memory for SuperSpool, enter the following:

```
SUPERSPL LPT1: /M=128/EXTM
```

This command does the following:

- SUPERSPL LPT1: sets up SuperSpool for a parallel port, in this case, LPT1.
- The /M = 128 parameter allocates 128 KB for the SuperSpool.
- The /EXTM parameter enables SuperSpool to use extended memory. No offset is indicated, therefore, SuperSpool will start at 1024 KB.

Example 2

To create a SuperSpool for COM1 that uses all available conventional and extended memory except for 512 KB reserved for applications, enter this command:

```
SUPERSPL LPT1:=COM1: /M/EXTM/U=512
```

This command does the following:

- **SUPERSPL LPT1:=COM1:** directs printer output from LPT1 to COM1. LPT1 is renamed LPT2.
- The **/M** parameter indicates that all available memory will be used for SuperSpool.
- The **/EXTM** parameter enables SuperSpool to use extended memory.
- The **/U=512** parameter reserves 512 KB for other applications.

3.4.4 Printer Control Examples

These examples show how to use the SuperSpool printer controls.

Example 1

To set the page length to 51 lines (8.5 inches at 6 lines per inch), enter the following:

```
SUPERSPL /LPP=51
```

This command does the following:

- SUPERSPL invokes the SuperSpool program. You do not have to specify the port designation unless you are changing it.
- The /LPP = 51 parameter sets the page length to 51 lines.

Example 2

To send codes to print enhanced text on Epson® printers (27 and 69 decimal), enter the following:

```
SUPERSPL /STRING=27,69
```

This command does the following:

- SUPERSPL invokes the SuperSpool program. You do not have to specify the port designation unless you are changing it.
- The /STRING parameter sends decimal ASCII codes 27 and 69, which are used to invoke the Epson printer's enhanced mode.

Example 3

To stop printing, force a form feed, and resume printing at the beginning of the previous page, enter the following commands:

```
SUPERSPL /B  
SUPERSPL /S  
SUPERSPL /FF  
SUPERSPL /RP
```

These commands do the following:

- SUPERSPL /B sets up a buffer for storing pages to reprint.
- SUPERSPL /S stops the printing.
- SUPERSPL /FF sends the form feed character to the printer.
- SUPERSPL /RP resumes printing at the start of the previous page.

3.5 SuperSpool Application Notes

The following sections discuss how to best handle particular tasks when using SuperSpool, such as checking on the SuperSpool status and changing the printer configuration.

3.5.1 Determining Printing Status

To check the status of your SuperSpool, type the following at the DOS prompt:

```
SUPERSPL < Enter >
```

You will see the port attached to SuperSpool and the amount of data in the buffer, as shown in the following example. (The printer port designation and amount of memory are examples and may be different from your actual configuration.)

```
LPT1:  is ready

        24653 bytes buffered for output
```

The status will also appear whenever you issue a SUPERSPL command at the DOS prompt. If you stop printing with the SUPERSPL /S command, you will see this message:

```
LPT1:  is stopped

        24653 bytes buffered for output
```

3.5.2 Changing Printer Configuration

You can change the SuperSpool-directed printer port configuration when the spool buffer is empty. To attach SuperSpool to another printer port, use the SUPERSPL /P command to purge the buffer before entering the command to select the port.

You can only modify the memory and buffer configuration options (/M, /M = xxx, or /U = xxx) after rebooting the computer. These commands can be added to the AUTOEXEC.BAT file to configure memory each time you start the computer.

3.5.3 SuperSpool Compatibility

SuperSpool works with applications that send files directly to parallel and serial ports. You may use SuperSpool to print files directly from DOS with the COPY command and < Print Screen >. SuperSpool is also compatible with most versions of BASIC.

Some applications, especially word processors and desktop publishing software, have custom printer drivers that modify data during printing. While SuperSpool may enhance the performance of these programs, their formatting routines will slow down printing.

Custom serial printer drivers may not be compatible with SuperSpool. Refer to your application's user manual if you have questions about using printer drivers with print spoolers.

3.5.4 SuperSpool Utility Batch Files

You can invoke the SuperSpool program from an AUTOEXEC.BAT or other batch files. Refer to your computer's DOS Manual for more detailed information on batch files.

Before you use the SUPERSPL command with LPT1 and any serial port, enter MODE LPT1: to initialize the printer port. Add this statement to your AUTOEXEC.BAT file in a line before the command for SuperSpool. You do not have to type MODE LPT1: again until you reboot. Omit the MODE LPT1 command if you are using SuperSpool with another parallel port.

You may want to add one or more batch files to change the printer configuration or display the status. This eliminates the lengthy commands you would have to use otherwise.

The commands in the following example create a batch file, called NEC.BAT, that spools print data to a typical NEC™ serial printer at 1200 baud, even parity, 7 data bits, 1 stop bit. It monitors the CTS signal, ignores the DCD and DSR signals, sets up a 16KB print spool buffer, and selects page reprint functions. It also allocates a minimum of 64 KB for an applications program.

```
MODE LPT1: <Enter>  
SUPERSPL LPT1:=COM1:/RATE=1200,E,7,1  
/ON=CTS/OFF=DCD,DSR/M=16 /B<Enter>
```

Once the NEC.BAT file is on your DOS diskette, all you have to do to initialize SuperSpool for this NEC printer is type the following:

NEC < Enter >

3.5.5 Using SuperSpool with Other Buffers

You may use SuperSpool when there are no other print spoolers on your system. If you have another print spooler installed in your computer, disable it before using SuperSpool.

Some printers, especially laser printers, come with their own built-in buffers. Printing will slow down if both SuperSpool and the printer's buffer are active. To correct the problem, disable either SuperSpool or the printer's buffer.

Microsoft® Windows and other operating systems come with their own print spoolers. Disable SuperSpool before using an application's spooler.

NOTES

You can configure SuperDrive to emulate a variety of drives, including single-sided, double-sided, and high-density. Like the other SuperPak utilities, SuperDrive can be set up to run in specific areas of memory.

This section provides the optional parameters you can use to modify SuperDrive. Sample commands and application notes will show you how to use the options. A list of error messages help you look for configuration problems.

NOTE

SuperDrive is not compatible with the PS/2 and not recommended for AT-compatible computers with only one diskette drive.

4.1 Entering the SuperDrive Command

To set up a SuperDrive each time you start the computer, add the SuperDrive command to your AUTOEXEC.BAT file by using the SuperPak installation program or by typing the commands. Once you set up a SuperDrive, do not modify it until you reboot your computer.

4.1.1 Creating a SuperDrive with Default Settings

To create a SuperDrive in its default configuration, enter the following:

SUPERDRV drive:

Substitute *drive* for any valid DOS letter designating the drive.

To set up a SuperDrive in its default configuration as drive D, enter the following:

SUPERDRV D:

If you want to install SuperDrive on an AT-compatible computer, you must select a drive designation for an existing diskette drive. If you have two diskette drives (A and B), you may name SuperDrive device B.

However, if you assign SuperDrive the same letter as a diskette drive, you cannot use the physical drive. If you have only one drive in your Premium/286 or PC AT (drive A), do not use SuperDrive. Use fASTdisk instead.

4.1.2 Inserting a SuperDrive

With the PC, XT, and compatible computers, you may assign SuperDrive the same drive designation of a physical drive without disabling it. The /I parameter inserts SuperDrive at the drive designation you select and moves the physical drives up one letter.

For example, to install SuperDrive as drive B in a two-diskette drive system, enter the following:

SUPERDRV B:/I

This command does the following:

- The first physical drive remains drive A.
- SuperDrive becomes drive B.
- The second physical drive is reassigned as drive C.

4.1.3 SuperDrive Help

For a complete list of SuperDrive options, type the following at the DOS prompt:

```
SUPERDRV /? <Enter>
```

The SuperDrive commands will appear on the screen with explanations. Do not use this command in your AUTOEXEC.BAT file.

4.2 SuperDrive Options

The complete form of the SuperDrive command is as follows:

```
SUPERDRV drive: [/I] [/U=xxx] [/M=xxx]  
                [/EXTM=xxxx[,yyy]] [/DEXTM] [/1] [/4] [/8]  
                [/15] [/TSIZE=xxxx] [/DH] [/DL] [/DNC]  
                [/DMMGMT]
```

Lowercase letters represent variables for the different parameters.

Enter the command on one continuous line. Use a slash to separate the options, not a comma. Optional parameters can be entered in any order.

These commands are divided into two types of options, which are covered in the following sections:

- *Drive configuration options:* See Section 4.2.1 for the options drive: /1, /4, /8, and /15.
- *Memory configuration options:* See Section 4.2.2 for the options /U, /M, /EXTM, /DEXTM, /DH, /DL, /DNC, and /DMMGMT.

4.2.1 Drive Configuration Options

The options in this section determine the type of drive SuperDrive will emulate. (See Table 4-1.) SuperDrive's capacity depends on the type of drive emulation you select. If you configure SuperDrive as single-sided, it will be 180 KB. To specify a different memory size, use the /M option described in Section 4.3.

Table 4-1. SuperDrive Configuration Options.

Parameter	Default Size	Description
/1	180 KB	Emulates a single-sided diskette (for DOS 2.0 and 2.1).
/4	360 KB	Emulates a double-sided diskette (for DOS 3.0 and above).
/8	none	Specifies 8 sectors per track. If this option is omitted, SuperDrive will emulate 9 sectors per track.
/15	1.2 MB	Specifies 15 sectors per track and emulates a high-density 1.2 MB drive. (This option requires an AT-compatible computer and DOS 3.0 or above.)

4.2.2 Memory Configuration Options

Memory allocation parameters reserve areas of memory for SuperDrive and other applications and enable SuperDrive to operate in extended memory. You may use these options if SuperDrive's default configuration conflicts with the memory requirements of other programs. Table 4-2 lists the parameters.

Table 4-2. Memory Allocation Parameters.

Parameter	Default	Description
<code>/M=</code>	360	Sets the size of the SuperDrive in KB.
<code>/U=</code>	64	Reserves a minimum amount of memory for applications other than the current SuperDrive.
<code>/EXTM=</code>	0,1024	Enables SuperDrive to use extended memory over 1024 KB. The first value specifies the maximum size for SuperDrive. (The default value 0 indicates no limit.) The second value specifies SuperDrive's starting address in KB, ranging from 1024 KB to the maximum amount of extended memory.
<code>/DEXTM</code>	none	Disables SuperDrive's use of extended memory after it has been installed with the <code>/EXTM</code> command.
<code>/TSIZE=</code>	2048	Sets in bytes the maximum amount of data that can transferred to and from a SuperDrive in extended memory. Acceptable values range from 16 to 32,000 bytes. Enter a value that is a multiple of 16.
<code>/DMMGMT</code>	none	Prevents SuperDrive from using additional unallocated memory. Disables SuperDrive's calls to DOS memory management.
<code>/DBI</code>	none	Disables the block transfer interface to avoid conflicts with other applications. Use this parameter if your application uses interrupt vector INT 058h.

Table 4-3 lists options that apply to older PCs and XT's which determine memory allocation by switch settings. Older computers divide conventional memory into contiguous and non-contiguous ranges. (For more information on memory types, see Appendix A.)

Table 4-3. Memory Region Controls.

Parameter	Default	Description
/DH	none	Prevents SuperDrive from using contiguous memory above the limit set by the system board switches. SuperDrive can use memory below the limit set by the switches and non-contiguous memory above address 0C0000h (768 KB).
/DL	none	Prevents SuperDrive from using contiguous memory below the limit set by the system board switches. SuperDrive can use memory above the limit set by the switches and non-contiguous memory above address 0C0000h (768 KB).
/DNC	none	Prevents SuperDrive from using non-contiguous memory beginning at address 0C0000h (768 KB). SuperDrive can use memory above the limit set by the switches.

4.3 SuperDrive Examples

This section provides examples of using SuperDrive in specific configurations. Use these examples to help you configure SuperDrive for your own applications.

4.3.1 Drive Configuration Examples

These examples show you how to configure SuperDrive for different applications.

Example 1

A PC XT has a diskette drive and a hard disk. To create an 8-track-per-sector double-sided SuperDrive as drive B, enter the following command:

```
SUPERDRV B: /4/8
```

This command does the following:

- The B: parameter specifies that SuperDrive is drive B. Since the /l parameter is not used, the designations of the other drives are not affected.
- The /4 parameter specifies a double-sided drive. By default, SuperDrive will have a 360 KB capacity.
- The /8 parameter specifies an 8-track-per-sector diskette.

Example 2

A PC-compatible computer has two diskette drives. To create a single-sided SuperDrive and insert it as drive B, enter the following:

SUPERDRV B: /I/1

This command does the following:

- The B: parameter specifies that SuperDrive is drive B.
- The /I parameter indicates SuperDrive is to be inserted in the sequence after the first physical drive (Drive A), and the second physical drive will move down a letter to become drive C.
- The /1 parameter specifies that SuperDrive is a single-sided 180-KB drive. Be sure to use DOS 2.0 or 2.1 with this configuration.

Example 3

A Premium/286 has two diskette drives and one hard disk. To create a 1.2 MB SuperDrive as drive B, enter the following:

SUPERDRV B: /15

This command does the following:

- The B: parameter specifies SuperDrive as drive B. SuperDrive will replace and disable your computer's physical drive B.
- The /15 parameter configures SuperDrive as a high-density diskette.

4.3.2 SuperDrive Memory Configuration Examples

These examples show you how to configure SuperDrive for different memory allocations.

Example 1

A PC has 512 KB of conventional memory and a single diskette drive. To set up a 128 KB double-sided SuperDrive as drive B and reserve a minimum of 256 KB for other applications, enter the following:

```
SUPERDRV B: /4/M=128/U=256
```

This command does the following:

- The B: parameter specifies SuperDrive as drive B.
- The /4 parameter instructs SuperDrive to emulate a double-sided diskette.
- The /M = 128 parameter sets the SuperDrive capacity to 128 KB. The computer will remind you that SuperDrive is less than the normal double-sided configuration when you boot. (See Section 4.5.)
- The /U = 256 parameter reserves a minimum of 256 KB for applications other than SuperDrive.

Example 2

An XT-compatible computer has 640 KB of conventional memory, 512 KB of emulated extended memory on a paged memory board, and two physical diskette drives. To create a double-sided SuperDrive as drive D in extended memory only, enter the following:

SUPERDRV D: /4/EXTM

This command does the following:

- The D: parameter specifies SuperDrive as drive D.
- The /4 parameter specifies that SuperDrive will be double-sided. Since no memory amount is specified, SuperDrive will use the default capacity of 360 KB.
- The /EXTM parameter enables SuperDrive to use extended memory. No offset is specified, so SuperDrive will start at 1024 KB.

Example 3

A Premium/286 has 640 KB of conventional memory, 256 KB of extended memory, and two diskette drives. To create a high-density SuperDrive that uses only extended memory, enter the following:

SUPERDRV B: /15/EXTM/M=256

This command does the following:

- The B: parameter specifies SuperDrive as drive B. On AT-compatible computers, SuperDrive must replace an existing drive. This command replaces and disables the second physical drive.

- The /15 parameter instructs SuperDrive to emulate a high-density diskette.
- The /EXTM parameter enables SuperDrive to run in extended memory.
- The /M = 256 parameter limits the SuperDrive capacity to 256 KB. The computer will remind you that SuperDrive is less than the normal high-density configuration when you boot. (See Section 4.5.)

4.4 SuperDrive Application Notes

This section provides suggestions on making the best use of SuperDrive with different applications.

Since any data stored on a SuperDrive is actually stored in RAM, it will be lost turn off or reboot the computer. Be sure to copy SuperDrive files regularly to a diskette or the hard disk.

4.4.1 Creating SuperDrive A from an AUTOEXEC.BAT File

DOS will not let you create a SuperDrive as drive A from an AUTOEXEC.BAT file. (Appendix B describes AUTOEXEC.BAT files.) You can work around this limitation by creating a batch file called from AUTOEXEC.BAT that creates the drive A SuperDrive. Your computer needs two physical drives to perform this operation.

Use a text editor or word processor to create an AUTOEXEC.BAT file on your boot diskette or hard disk root directory. It will contain the following commands:

```
ASTCLOCK  
MODE LPT1:  
B:  
MAKE-A
```

MAKE-A is a batch file that contains the commands for creating SuperDrive. Create it with a text editor or word processor, and copy it to your boot diskette and the program diskette you will put in drive B. A sample MAKE-A.BAT file contains the following commands:

```
SUPERDRV A:/I  
SUPERSPL LPT1:  
COPY B:*.* A:  
A:  
program
```

Substitute *program* for the filename of the software to run from drive A.

When you are ready to start the computer, put in drive A the diskette contains all of the programs that you want to execute from the SuperDrive. Put in drive B the diskette with the SuperDrive and SuperSpool programs. Both the diskettes in drive A and drive B contain the MAKE-A.BAT batch file.

4.4.2 Single-Drive Systems

This section provides several suggestions for using SuperDrive with one physical diskette drive. Do not use SuperDrive with AT-compatible computers with one physical drive.

You must be aware of two things when copying files from one diskette to another:

- If you want to use the COPY command to move files from one diskette to another, copy the files to SuperDrive first and then transfer them to the other diskette.

- The DISKCOPY command can transfer the entire contents of a diskette to another diskette or SuperDrive. To copy to another diskette, type **DISKCOPY A: A:** and press < **Enter** >. You can use DISKCOPY to transfer files to and from SuperDrive if it is the same size as your diskette.

4.5 Error Messages

SuperDrive shows error messages under the conditions described below.

INVALID DRIVE SPECIFICATION....ABORTING

Explanation: This message indicates that either the system board switches were not set for the correct number of drives (see Section 2.4), or you used an invalid drive letter in your SuperDrive command.

Action: Set the system board switches for the correct number of drives. (See your AST board user's manual.) Do not select a drive specification letter other than A, B, C, or D.

INSUFFICIENT MEMORY....ABORTING

Explanation: This message indicates that there is not enough unallocated memory available in the system to create a SuperDrive of any size.

Action: Reduce the amount of memory allocated to other SuperPak utilities, memory-resident programs, or applications in the system. If there is still insufficient memory to use SuperDrive, you will have to install additional memory in your system or remove SuperDrive.

SHORT XXXXXX BYTES

Explanation: This message indicates that the SuperDrive you have just created is less than a standard sized drive. You will see it if you use the /M = xxx option to create a nonstandard drive, or if there were some memory available, but not quite enough to make the drive exactly the size you specified.

Action: No action is required. To create a standard sized drive, either reduce the amount of memory allocated to other SuperPak utilities or memory-resident programs, or increase your computer's memory.

If you see a message other than one of those while trying to initialize SuperDrive, it is a DOS error message described in your computer's DOS manual.

The SuperPak ASTCLOCK program sets and reads the time from the clock/calendar on your AST board. By adding commands for ASTCLOCK to your AUTOEXEC.BAT file, you will not have to set the date and time manually when you boot the computer.

Before you begin using ASTCLOCK, make sure the clock/calendar is enabled on your AST board. For more information, refer to your AST board's user manual.

NOTE

Only use ASTCLOCK with the clock/calendar hardware on AST boards. Do not use ASTCLOCK with other manufacturer's clocks, including clocks built into the computer.

5.1 Installing ASTCLOCK

The SuperPak installation program can install the ASTCLOCK software automatically. If you have not installed the ASTCLOCK software, or if you do not have an AUTOEXEC.BAT file on your boot disk, follow this procedure:

STEP 1

Copy the SuperPak diskette: If you have not already done so, copy the ASTCLOCK.COM program from the SuperPak diskette to your boot disk.

If you are unsure how to copy a file, consult your *DOS Manual*.

STEP 2

Edit the AUTOEXEC.BAT file: Using a text editor or word processor, add the following command to your AUTOEXEC.BAT file:

ASTCLOCK

If your boot disk has no AUTOEXEC.BAT file, create one with a text editor or word processor, or use the following sequence to create one from the DOS prompt (the only command in the file will be ASTCLOCK).

COPY CON: AUTOEXEC.BAT <Enter>

ASTCLOCK <Enter>

<F6> <Enter>

For more information about AUTOEXEC files or the DOS COPY command, see your *DOS Manual*.

NOTE

If you want ASTCLOCK to display the date in European format (dd/mm/yy) when you boot the system, substitute the command ASTCLOCK/E for ASTCLOCK in your AUTOEXEC.BAT file. The /E parameter changes how ASTCLOCK shows the date, and not how the date is displayed by DOS and other applications.

STEP 3

Reboot your computer: Press **<Ctrl>-<Alt>-**. The ASTCLOCK command will display the time and date on the screen. If necessary, use the ASTCLOCK /R parameter to set the time and date (Section 5.2).

5.2 Setting the Time and Date

Once you have copied ASTCLOCK to your boot disk, set the clock/calendar on the AST board. You will not need to set the clock/calendar again until you change the battery.

STEP 1

Start the computer: Boot your system with the diskette or hard disk containing ASTCLOCK.COM and your revised AUTOEXEC.BAT file.

STEP 2

Start the ASTCLOCK setting procedure: Change the default drive and directory to the one containing ASTCLOCK.COM. Enter this command:

ASTCLOCK /R<Enter>

The /R parameter keeps the ASTCLOCK program resident in memory and enables you to set the date and time. Typing ASTCLOCK without the /R parameter reads the date and time without loading the application.

You will see a message similar to the following (the actual date and time will be different):

```
A S T c l o c k   Version x.xx  
(c) Copyright AST Research, Inc.,  
    1982, 1984, 1985.
```

```
Resident clock/calendar  
DATE & TIME processors loaded.
```

```
Current date is 08/15/88  
Current time is 08:07:56.65
```

NOTE

If you want ASTCLOCK to display the date in European format (dd/mm/yy) when you enter this command, type **ASTCLOCK/R/E** instead of ASTCLOCK/R.

The /E parameter changes how ASTCLOCK shows the date, and not how the date is displayed by DOS and other applications.

STEP 3

Set the date: Enter this command:

DATE <Enter>

Your PC will display the current date (the actual date displayed may be different):

Current date is Monday 8-15-1988
Enter new date:

Enter the new month, day, and year as follows:

mm-dd-yy <Enter>

Replace *mm* with the one- or two-digit month designation, *dd* with the day, and *yy* with the year. Separate the month, day, and year with hyphens, slashes, or periods.

If you do not want to change the date, press **<Enter>** only.

STEP 4

Set the time: Enter this DOS command:

TIME <Enter>

Your computer will then display the current time (the actual time displayed may be different):

Current time is 8:14:15.82

Enter new time:

Enter the new hour, minute, and second as follows:

hh:mm:ss <Enter>

Substitute *hh* for the hour, *mm* for the minute, and *ss* for the second. Separate the hours, minutes, and seconds with colons. Use 24-hour format for the hour (that is, 1:00 PM = 13:00, 2:00 PM = 14:00, and so forth). Do not enter hundredths of a second.

If you do not want to change the time, press <**Enter**> only.

NOTE

For maximum accuracy, type in a time that is 10 to 15 seconds ahead of the actual time and press <**Enter**> when your watch or time signal indicates the time you typed.

STEP 5

Reboot your computer: Press <**Ctrl**>-<**Alt**>-<**Del**>. The computer will boot with the new date and time.

NOTES

This section provides information on using SuperPak utilities together and with other applications.

6.1 Order of Installation

The SuperPak installation program will install SuperPak utilities in their correct order. You need to know the order in which SuperPak utilities are installed only if you write your own CONFIG.SYS and AUTOEXEC.BAT files.

Enter these commands in the following order:

- In the CONFIG.SYS file, enter the FASTDISK.SYS command. If you are installing expanded memory drivers, enter the commands for REMM.SYS and REX.SYS before FASTDISK.SYS.
- In the AUTOEXEC.BAT batch file, enter the SUPERDRV command to install SuperDrive . Do not use this command with PS/2 computers or AT-compatible computers with only one diskette drive.
- Enter the commands for SuperDrive followed by the SuperSpool commands.
- The ASTCLOCK command can appear anywhere in the AUTOEXEC.BAT file.

When you boot the computer, the commands in the CONFIG.SYS file are processed before AUTOEXEC.BAT. Therefore, FASTdisk will be installed before your other SuperPak utilities.

6.2 Program Compatibility

FASTdisk, SuperSpool, and SuperDrive function properly with DOS, BASIC, BASICA, and most DOS applications. There may be programs that will not work properly with RAM disks or print spoolers.

Some applications programs require specify memory ranges. Configure fASTdisk, SuperDrive, and SuperSpool to avoid using these areas.

Using SuperSpool with built-in printer buffers and other printer spoolers will slow down printing. Either remove SuperSpool or disable the other print spooler.

ASTCLOCK will only work properly with clock/calendar on AST boards. Do not use ASTCLOCK with other manufacturer's clock/calendars, including ones built into the computer. If you have more than one clock/calendar in your computer, enable only the AST clock/calendar for use with ASTCLOCK.

The utilities will function properly only with DOS, not with other operating systems.

6.3 Memory Requirements

FASTdisk, SuperSpool, and SuperDrive use certain parameters to control memory allocation. Follow these rules if you are installing more than one SuperPak utility:

- If you are using the /U parameter to reserve space for other programs, enter the same amount of reserved memory for all SuperPak utilities.
- To change the memory allocation for fASTdisk, SuperDrive or SuperSpool, modify the commands in the CONFIG.SYS and AUTOEXEC.BAT files and reboot the computer.

- To use extended memory for all SuperPak utilities, you need to add the /EXTM option only to the first FASTdisk command. All subsequent SuperPak options will be installed in extended memory. To install a SuperPak utility in conventional memory, use the /DEXTM option.

For information on memory allocation, see Appendix A.

NOTES

PART II. APPENDICES

- A. Memory Allocation
- B. Creating AUTOEXEC.BAT and CONFIG.SYS Files
- C. Patching DOS for Additional Drives

The SuperPak installation program automatically selects the memory allocation for your SuperPak utilities. You do not need to change the basic memory configuration unless a SuperPak utility conflicts with an application, or you want to allocate a portion of memory for special programs.

This section provides information on how to allocate memory to SuperDrive, SuperSpool, and fASTdisk to make the best use of your particular configuration.

For more detailed information on the fASTdisk, SuperSpool, and SuperDrive command options, see Sections 2, 3, and 4, respectively.

A.1 Memory Configuration

PC-compatible computers can contain the following types of memory:

- *Conventional memory*: Memory in the 0- to 640-KB range that can be addressed directly by DOS. All computers must have conventional memory.

Older PC- and XT-compatible computers divide conventional memory into two types depending on the switch settings:

- *Low memory*: Conventional memory below the switch settings.
- *High memory*: Conventional memory above the switch settings or 640 KB.

- *Reserved high memory*: Memory in the 640-KB to 1-MB range reserved for video RAM, the read only memory basic input/output system (ROM BIOS) and other system and peripheral functions. SuperPak utilities can use noncontiguous blocks of reserved high memory.
- *Extended memory*: Memory in the 1- to 16-MB address range that can be directly addressed by AT-compatible computers. PC- and XT-compatible computers can use expanded memory which emulates extended memory on memory expansion boards like Rampage/2.
- *Expanded (paged) memory*: Memory that swaps segments of information (called *pages*) in and out of conventional and reserved high memory to provide data space beyond the 640-KB DOS limit.

Conventional and extended memory are called *linear memory* since they use a continuous line of memory addresses. Expanded memory is not part of the memory map. Instead, it is addressed by swapping memory pages in and out of conventional and reserved high memory.

SuperPak utilities are designed to run in linear memory. FASTdisk, SuperSpool, and SuperDrive can run in conventional or extended memory, or expanded memory emulating extended memory.

A.2 How SuperPak Utilities Allocate Memory

The following example will help describe how SuperPak utilities use memory. An XT-compatible has 640 KB of conventional memory on the system board and a 2-MB Rampage/2 board. The Rampage/2 board uses 384 KB as emulated extended memory and the rest is used as expanded.

Figure A-1 shows this sample memory configuration.

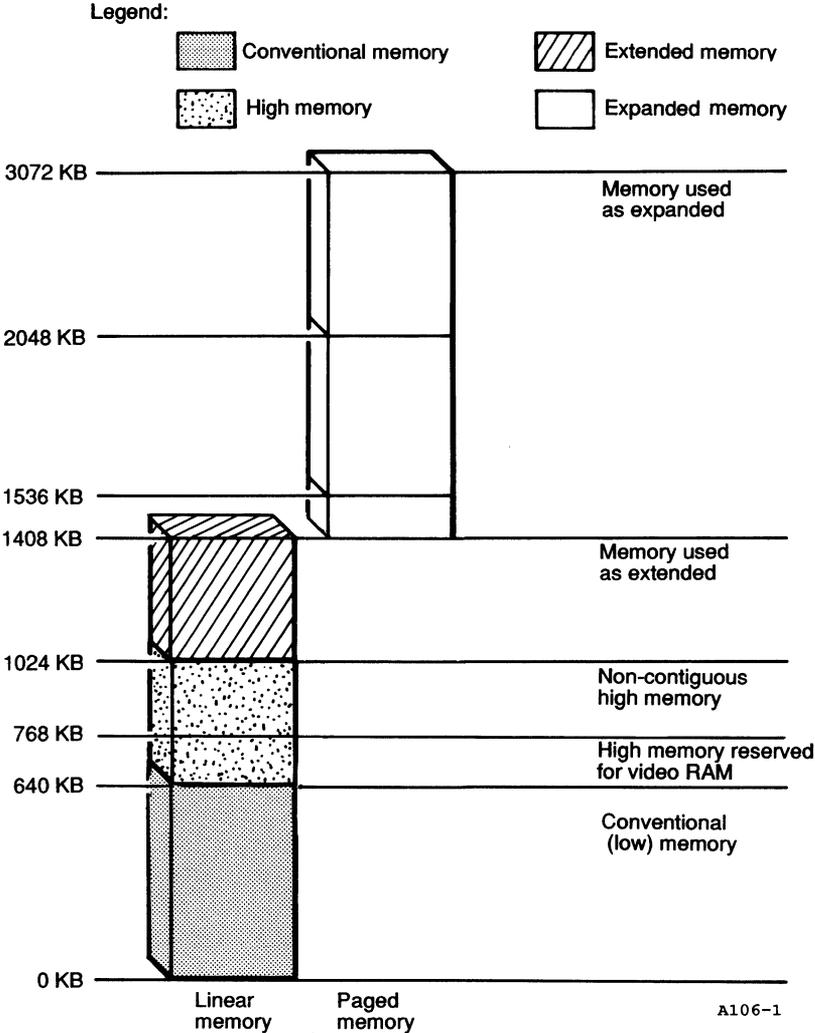


Figure A-1. Memory Configuration Example.

The SuperPak utilities allocate memory in the following order:

1. Extended or extended memory emulated by expanded memory is used first if it is enabled by the /EXTM option. In this example, SuperPak utilities can use the 384 KB of emulated extended memory from 1024 to 1408 KB.
2. If there is insufficient memory for the SuperPak configuration in extended memory, the utilities will use noncontiguous reserved high memory above the 0C0000h (768 KB) address reserved for video RAM. Expanded memory also uses this space for paging, so the amount of memory available for SuperPak will be limited.
3. Conventional memory will be used if there is insufficient extended and reserved high memory for the SuperPak utilities or if the /DEXTM option is used. SuperPak utilities will reduce the amount of memory available for other applications.

The application portion of the SuperPak utilities always resides in conventional memory.

A.3 Memory Allocation Options

Optional command parameters can be used to alter the default amount and areas of memory allocated by the SuperPak utilities. A brief description of the memory allocation options follows. (More detailed descriptions are found in Sections 2, 3, and 4). Each option described can be used in a command by adding it to the end of one of the basic command forms for the utilities described in Section 2.

A.3.1 Allocating Memory to a Utility

SuperDrive, SuperSpool, and fASTdisk can use the /M = option to specify the amount of memory allocated for their use. The option has a slightly different format and usage for each utility.

With SuperDrive, you can use the /M option to reduce the drive's capacity. You cannot create a SuperDrive larger than the default (180 KB for single-sided, 360 KB for double-sided, and 1.2 MB for high-density diskettes). Both fASTdisk and SuperSpool use the /M option to decrease or increase the default memory allocation. If you use the /M option without specifying an amount, all available memory will be used for fASTdisk or SuperSpool.

Example

To create a double-sided, double-density SuperDrive with 200 KB of memory, and a SuperSpool with a 100-KB spool buffer (for a parallel printer), enter the following commands:

```
SUPERDRV C:/M=200  
SUPERSPL LPT1:/M=100
```

These commands do the following:

- The SUPERDRV C: command sets up a SuperDrive in its default configuration (double-sided, double-density) as drive C. The /M = 200 parameter limits the SuperDrive to 200 KB.
- The SUPERSPL LPT1: command sets up a SuperSpool for LPT1 in its default configuration. The /M = 100 parameter allocates 100 KB for the SuperSpool.
- A total of 300 KB is reserved for both SuperPak utilities.

A.3.2 Reserving Memory for a Program

The /U option reserves memory for other applications and SuperPak utilities. Enter the same amount of reserved memory for each SuperPak utility command. (Only the amount specified in the most recent command remains reserved.)

Occasionally, you may want to use the /U = xxx option to reserve space for another SuperPak utility. In this case, specify different amounts of memory in different SuperPak utility commands.

For example, if you were to create a fAStdisk with an /M option assigning it all available memory, add the /U = 400 option to reserve 400 KB for other programs. In a subsequent SuperSpool command, you could then include the /M and /U = 300 options in order to use all remaining memory (minus the 300 KB) for a SuperDrive.

Example

A PC-compatible computer has 640 KB of conventional memory. To reserve 150 KB for use with applications programs (other than the SuperPak utilities) and create a 360-KB SuperDrive and a 100-KB fAStdisk, enter the following command in your CONFIG.SYS file:

```
DEVICE=FASTDISK.SYS/M=100/U=150
```

Enter the following command in your AUTOEXEC.BAT file:

```
SUPERDRV C:/U=150
```

These commands do the following:

- The `DEVICE = FASTDISK.SYS` command in the `CONFIG.SYS` file creates a fASTdisk upon booting the system. The `/M = 100` option sets the fASTdisk size to 100 KB. The `/U = 150` option instructs the computer to reserve a minimum of 150 KB for other applications. (Actually, 540 KB is still available.)
- The `SUPERDRV C:` command in the `AUTOEXEC.BAT` file creates a SuperDrive as drive C in its default configuration (double-sided, double-density). SuperDrive uses 360 KB. The `/U = 150` option instructs the computer to reserve a minimum of 150 KB for other applications. (Actually, 180 KB is still available after allocating a total of 460 KB for SuperPak applications.)

A.3.3 Enabling and Disabling Memory Regions

Several options are provided to enable or disable SuperPak utilities from using the certain types of memory.

- */EXTM*: Enables SuperPak utilities to use extended memory or extended memory emulated by expanded. You may specify the amount of extended memory to be used and the starting address. Resident code for the SuperPak programs, and an intermediate buffer for SuperSpool, will still be located in conventional memory.

Once you use the */EXTM* option for one SuperPak utility command, it applies to all subsequent SuperPak commands.
- */DEXTM*: Enables SuperPak utilities to use conventional memory after the */EXTM* command is used. Use this command to avoid conflicts with SuperPak utilities already installed in extended memory.

- */DL*, */DH*, and */DNC*: Disables the use of low, high, and noncontiguous reserved high memory, respectively, for older PC- and XT-compatible computer.

Example

To install a 256-KB fASTdisk in a 512-KB range of extended memory starting at 1280 KB, enter the following command in your CONFIG.SYS file:

```
DEVICE=FASTDISK.SYS /M=256/EXTM=512,1280
```

This command does the following:

- The `DEVICE = FASTDISK.SYS` command sets up a fASTdisk upon booting the computer.
- The `/M = 256` option allocates 256 KB for the fASTdisk.
- The `/EXTM = 512,1280` option reserves 512 KB of extended memory starting at 1280 KB for this fASTdisk and subsequent SuperPak utilities.

A.4 Memory Allocation for Conventional Memory

With the SuperPak installation program, you can easily install your utilities to fit your memory requirements. If you are creating your own CONFIG.SYS and AUTOEXEC.BAT files, you need to calculate your memory allocation before setting up your SuperPak utilities.

Computers with 640 KB or less require special planning. The following formula can help you to decide how to allocate your memory:

xxxx KB	Total actual memory installed.
- 064 KB	Approximate DOS requirement.
- yyy KB	Memory required by applications.
<hr/>	
= zzzz KB	Memory available for SuperPak utilities.

To specify memory allocations for SuperPak utilities, use the /U and /M options for all computers and the /DL, /DH, and /DNC options for older PC- and XT-compatible computers.

Example

You have a PC-compatible computer with 640 KB total memory and double-sided diskettes. You want to create a double-sided SuperDrive as drive D, reserve 384 KB for your applications and use the remaining memory for SuperSpool. Your computer's memory will be allocated as follows:

640 KB	Total actual memory installed.
- 064 KB	Approximate DOS requirement.
- 384 KB	Memory required by user program.
<hr/>	
= 192 KB	Memory available for SuperDrive and SuperSpool (approximate).

As you can see, there is not enough memory left to create an entire double-sided SuperDrive and SuperSpool. Instead, you can create a 160 KB SuperDrive and 32 KB SuperSpool. Enter the following commands:

```
SUPERDRV D:/U=384/M=160
SUPERSPL LPT1:/U=384/M
```

These commands perform the following:

- The SUPERDRV D: command sets up a SuperDrive as drive D. Since the /I command is not used, no other drive designations are affected.
- The /U = 384 parameter reserves a minimum of 384 KB for other applications. This application memory is reserved before any memory can be allocated for SuperDrive.
- The /M = 160 parameter allocates 160 KB for SuperDrive. This is less than the default capacity for double-sided drives. Approximately 416 KB remains for other applications.
- The SUPERDRV LPT1: command sets up a SuperSpool for printer port LPT1.
- The /U = 384 parameter reserves a minimum of 384 KB for other applications. At this point, approximately 416 KB remains for other applications.
- The /M parameter indicates that all remaining memory will be used by SuperSpool (approximately 32 KB.)

When planning SuperPak configurations in conventional memory, be sure to leave enough memory for any applications you plan to run. See the application user's manual for minimum memory requirements.

CREATING AUTOEXEC.BAT AND CONFIG.SYS FILES

B

Normally, the SuperPak installation program will create AUTOEXEC.BAT and CONFIG.SYS files or modify existing ones. This section will show you how to create and modify AUTOEXEC.BAT or CONFIG.SYS files, in case you need to modify SuperPak commands yourself.

AUTOEXEC.BAT and CONFIG.SYS are text files containing DOS commands. You can create these files with a text editor or word processor. Type each command on a single line and press **< Enter >**. Save your files in non-document or text-only mode.

If you do not have a word processor, you may create AUTOEXEC.BAT and CONFIG.SYS files directly from the keyboard as shown in the following sections.

B.1 Creating an AUTOEXEC.BAT File

To create an AUTOEXEC.BAT file from DOS, start by entering the following command at the DOS prompt:

```
COPY CON: AUTOEXEC .BAT < Enter >
```

This command allows you to copy the information you will enter from the keyboard (also known as the *console*) into an AUTOEXEC.BAT file located on the diskette in your default drive.

After you enter the COPY command shown above, the cursor will drop down a line. Type each command to be included in your AUTOEXEC.BAT file on a separate line and end it by pressing **< Enter >**. To complete the file, press **< F6 >** and then **< Enter >**.

The following example shows how to create an AUTOEXEC.BAT file from DOS with commands using SuperDrive and SuperSpool in default parameters.

```
COPY CON: AUTOEXEC.BAT <Enter>
```

```
SUPERDRV C: <Enter>
```

```
SUPERSPL LPT1: <Enter>
```

```
<F6> <Enter>
```

B.2 Modifying an AUTOEXEC.BAT File

If you already have an AUTOEXEC.BAT file on your boot diskette or hard disk, and you want to edit it in DOS, do the following:

STEP 1

Determine what is currently in your AUTOEXEC.BAT file: Change to the root directory of your hard disk or boot diskette. Enter the following:

```
TYPE AUTOEXEC.BAT <Enter>
```

You will see a listing of your AUTOEXEC.BAT file's contents.

STEP 2

Start a new AUTOEXEC.BAT file: Enter the following command at the DOS prompt:

```
COPY CON: AUTOEXEC.BAT <Enter>
```

The cursor will drop down one line.

STEP 3

Type the AUTOEXEC.BAT file commands: Type in the contents of the AUTOEXEC.BAT file as it is listed on your screen, except add the SuperDrive and/or SuperSpool commands to the file in the appropriate location. (For example, if one of the commands in your AUTOEXEC.BAT file copies files to the SuperDrive, then your SuperDrive command must precede the COPY command.) Press < **Enter** > at the end of each line.

STEP 4

Check the file carefully: Ensure that all commands have been properly entered. After you have done this, press < **F6** > and then press < **Enter** > to close the file:

B.3 Creating or Modifying a CONFIG.SYS File

The instructions for creating a CONFIG.SYS file from DOS are identical to those for creating an AUTOEXEC.BAT file, except that the COPY command would be as follows:

COPY CON: CONFIG.SYS <Enter>

The CONFIG.SYS file must reside on your boot diskette or in the hard disk root directory with your AUTOEXEC.BAT file.

NOTES

PATCHING DOS FOR ADDITIONAL DRIVES

C

DOS recognizes SuperDrive and treats it as a physical diskette drive. Under normal circumstances, you must set the system board switch to include SuperDrive in the total number of diskette drives (real and emulated).

If you experience difficulty in copying files between diskettes after you change the switch settings, you may need to patch DOS to recognize SuperDrive. This appendix provides programs to modify DOS to change the number of acceptable diskettes drives.

Since this procedure alters DOS, you may experience incompatibility with applications that also make DOS patches. If so, use your unaltered version of DOS with these programs.

To perform this procedure, you need to make a backup copy of your DOS boot diskette and a copy of DEBUG for your DOS version. Always modify a copy of your DOS diskette, not the original. Do not modify DOS on your hard disk.

These patches include variables for inserting the total number of diskette drives. Look up the corresponding values in Table C-1 and enter them where indicated in the programs.

Table C-1. Variable Values for Setting the Number of Drives.

Switches Set for One Drive	Switches Set for Two Drives
xx = 40 2 Drives	xx = C0 3 Drives
xx = 80 3 Drives	xx = 80 4 Drives
xx = C0 4 Drives	
yy = 02 2 Drives	yy = 03 3 Drives
yy = 03 3 Drives	yy = 04 4 Drives
yy = 04 4 Drives	

C.1 Patching DOS 2.0 for Additional Drives

Boot the computer with a DOS 2.0 diskette containing DEBUG.COM. Make the diskette is not write-protected. To start the DEBUG program, type at the DOS prompt:

DEBUG <Enter>

Enter the following commands in order. Comments on the right side are for reference only. For more information, refer to the DEBUG program's user manual.

-L100 0 10 1 <Enter> Load the section
from the diskette.

-A10D <Enter>
XOR SI,SI <Enter>
PUSH SI <Enter>
POP DS <Enter>
XOR BYTE PTR [410],xx <Enter>
PUSH CS <Enter>
PUSH CS <Enter>
POP DS <Enter>
POP ES <Enter>
MOV WORD PTR [SI],71B <Enter>
POP AX <Enter>
MOV AL,yy <Enter>
NOP <Enter>

<Ctrl>-<Break>

-W100 0 10 1 <Enter> Write patch to the
diskette.

-Q <Enter> Quit DEBUG

<Ctrl>-<Alt>- Reboot the computer
with this patched
DOS 2.0 diskette.

C.2 Patching DOS 2.1 for Four Drives

Boot the computer with a DOS 2.1 diskette containing DEBUG.COM. Make sure the diskette is not write-protected. To start the DEBUG program, type at the DOS prompt:

DEBUG <Enter>

Enter the following commands in order. Comments on the right side are for reference only. For more information, refer to the DEBUG program's user manual.

-L100 0 10 1 <Enter> Load section from
the diskette.

-A18A <Enter>
XOR SI,SI <Enter>
PUSH SI <Enter>
POP DS <Enter>
XOR BYTE PTR [410],xx <Enter>
PUSH CS <Enter>
PUSH CS <Enter>
POP DS <Enter>
POP ES <Enter>
MOV WORD PTR [SI],798 <Enter>
POP AX <Enter>
MOV AL,yy <Enter>
NOP <Enter>

<Ctrl>-<Break>

-W100 0 10 1 <Enter> Write the patch to
diskette.

<Ctrl>-<Alt>- Reboot the computer
with this patched
DOS 2.1 diskette.

C.3 Patching DOS 3.0 for Four Drives

Boot the computer from drive A with a DOS 3.0 diskette containing DEBUG.COM. Make sure the diskette is not write-protected. Type the following command:

DEBUG <Enter>

Enter the following commands in order. Comments on the right side are for reference only. For more information, refer to the DEBUG program's user manual.

-L100 0 14 1 <Enter> Load the sector
from diskette.

-A23F <Enter>
XOR AX,AX <Enter>
MOV DS,AX <Enter>
OR BYTE PTR [410],C0 <Enter>
MOV AL,4 <Enter>
JMP 251 <Enter>

<Ctrl>-<Break>

-W100 0 14 1 <Enter> Write patch to diskette.

<Ctrl>-<Alt>- Reboot the computer
with this patched
DOS 3.0 diskette.

C.4 Patching DOS 3.1 for Four Drives

Boot the computer from drive A with a DOS 3.1 diskette containing DEBUG.COM. Make sure the diskette is not write-protected. Enter the following command:

DEBUG < Enter >

Enter the following commands in order. Comments on the right side are for reference only. For more information, refer to the DEBUG program's user manual.

-L100 0 15 1 < Enter >	Load sector from diskette.
-A224 < Enter >	
XOR AX,AX < Enter >	
MOV DS,AX < Enter >	
OR BYTE PTR [410],C0 < Enter >	
MOV AL,4 < Enter >	
JMP 236 < Enter >	
< Ctrl > - < Break >	
-W100 0 15 1 < Enter >	Write patch to diskette.
< Ctrl > - < Alt > - < Del >	Reboot the computer with this patched DOS 3.1 diskette.

GLOSSARY

Basic input/output system (BIOS)

A set of low-level input and output routines the computer calls to perform its functions.

Buffer portion

The data storage area of memory used by a SuperPak utility.

Byte

The basic unit of measure for computer memory. A character -- such as a letter, number or punctuation mark -- uses one byte of memory. Computer memory is often measured in *kilobytes* (approximately one thousand bytes) or *megabytes* (about one million bytes).

Each byte is made up of eight *bits*. For more information on bytes and bits, see an introductory book on computers.

Conventional memory

Memory from 0 to 640 KB that is directly accessible by DOS. (Also called *base memory*.)

Device driver program

A program that allows extra devices, such as disk drives or add-on boards, to be linked into DOS.

Enhanced Expanded Memory Specification (EEMS)

An enhanced version of the expanded memory specification which provides a more flexible system for paging expanded memory. EEMS can be used by software that supports it.

Expanded memory

Also called *paged memory*, expanded memory is memory provided on expanded memory boards that is not allocated as part of the computer's conventional memory. Expanded memory is swapped in and out of windows in the address space recognizable by DOS, using special software device drivers.

Extended memory

Linear memory at or above 1 MB. On PC- and XT-compatible computers, expanded memory may be used to emulate extended.

fASTdisk

AST's program that uses RAM to emulate a fixed disk.

Hexadecimal

The base-16 numbering system. Numbers are represented by values from 0 to F (15). For example, the hexadecimal number 0100000h is equal to the decimal value 1,048,576.

High memory

On older PC and compatible computers, memory above the limit set by the system board switches.

Kilobyte (KB)

A unit of measure for memory. One KB is equal to 1024 bytes of memory.

Linear memory

Memory that can be addressed directly.

Logical disk drive

A device recognized by DOS as a diskette drive or hard disk whether it is mechanical or a RAM disk emulating a drive.

Low memory

Memory on PC, XT, and compatible computers below the limit set by the system board switches.

Megabyte (MB)

A unit of measure for memory. One MB is equal to one thousand kilobytes, or approximately one million bytes, of memory.

Noncontiguous memory

Available memory locations above video RAM in reserved high memory that can be used by SuperPak utilities. (See also *reserved high memory*.)

Paged memory

See *expanded memory*.

Parameter

A variable that changes a SuperPak utility's configuration. For example, the `/EXTM=0,1408` parameter enables fASTdisk, SuperSpool, or SuperDrive to use all extended memory starting at 1408 KB.

Physical disk drive

A mechanical diskette drive (not a RAM disk).

Print spooler

A program that allocates a portion of computer RAM as a printer buffer. AST's print spooler program is called *SuperSpool*.

A print spooler sends a file to be printed to a buffer rather than directly to the printer. The spooler then sends the file from the buffer to the printer. Once the file is stored in the buffer, the computer can do other work while the printer is printing.

Rampage Expanded Memory Manager (REMM)

REMM is a device driver program that enables your computer to use Rampage expanded memory with application programs.

Random access memory (RAM)

The computer's memory. Information can be written to and read from RAM.

RAM disk

A program that allows you to use part of the computer's memory as if it were a disk drive. *fASTdisk* program is a hard disk emulator. *SuperSpool* is a diskette drive emulator.

RAM disks are erased when the computer is turned off or rebooted. This means you must save data you want to keep on a diskette or hard disk.

Read only memory (ROM)

Computer memory that can be read but not overwritten. ROM is usually dedicated to a particular function, such as the *basic input/output system (BIOS)*.

Reserved high memory

Memory from 640 KB to 1024 KB reserved, for video RAM, ROM BIOS, and peripherals. SuperPak can use non-contiguous areas of reserved high memory for utilities. (See also *non-contiguous memory*.)

Resident portion

The program portion of either SuperDrive or SuperSpool, as opposed to the portion used for storing data (the buffer portion). Also refers to the program portion of the DOS MODE command used by SuperSpool.

SuperSpool

The AST program that allows you to use part of computer memory as a *print spooler*.

User area

The area of memory set aside by SuperPak utilities for the application software. SuperPak programs will not use memory in the area you specify.

VDISK

An IBM software product that allows you to create simulated hard disks in RAM.

Video RAM

A portion of reserved high memory provided by the display adapter board to store and process screen images.

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