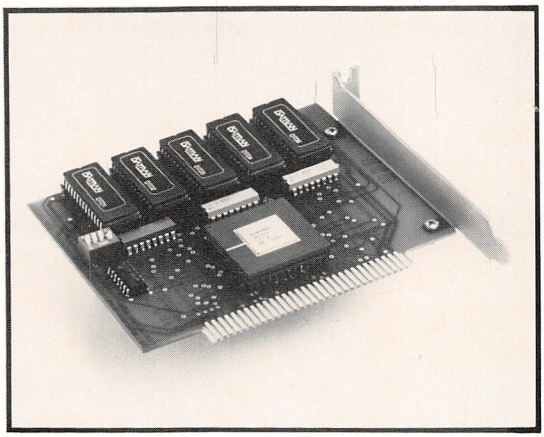
DATRAN

dd2000

diskdoubler™

USER MANUAL



© 1988 DATRAN CORPORATION

DiskDoubler
USER MANUAL

Released Edition 1.1, August 1988

Copyright (C) 1988, Datran Corporation

Datran Corporation has developed the DiskDoubler software and hardware and has prepared this User Manual to describe its operation. Datran believes that the statements made in the Manual are accurate, but makes no warranty with respect to these statements, the software or the hardware except as stated in Section 10.0 below. Datran may make modifications and improvements to this Manual anytime without notice. Any questions or comments regarding the operation of the software or contents of this manual should be referred to Datran Corporation.

TOLL FREE HOTLINE FOR ORDERS/SUPPORT
1-(800)-332-0456

Datran has reserved all rights. You are prohibited from reproducing all or any part of the software or this Manual in any form without written permission from Datran Corporation, except for making a backup or working copy.

IBM PC, XT, AT are registered trademarks of International Business Machines Corporation; dBASE is a registered trademark of Ashton-Tate Corporation.

For future reference, please write down the Serial Number located on the DiskDoubler board, both below and on the Product Warranty Card prior to installation.

Serial Number:_____

PREFACE

The Datran DiskDoubler was designed for the PC user who uses their PC for general business applications. They have a hard disk that is nearly full with wordprocessing, spreadsheet, and database files and needs to upgrade to more disk capacity. DiskDoubler is the simple, low-cost upgrade solution that compresses your data files at an average ratio of 2:1, which can double the storage capacity of your existing hard disk and controller.

This means that with the DiskDoubler any 20 megabyte hard disk can hold the equivalent of 40 megabytes. Its operation is completely transparent: it automatically compresses and uncompresses files without slowing down your hard disk!

The DiskDoubler works in any IBM PC/XT/AT, 286, 386 or compatible running DOS 2.0 or greater, and is compatible with any hard disk and controller, 3-1/2" and 5-1/4" floppy, multiple hard drives, removable hard disk, Bernoulli Boxes, and even optical drives. One DiskDoubler card allows you to store compressed data onto every disk storage device in your system. It will even double the compression on drives using RLL controllers.

The DiskDoubler utilizes Datran's proprietary high-speed data-compression engine. This state-of-the-art HCMOS VLSI custom chip increases the processing speed of the DiskDoubler while providing low power consumption and high reliability in a small package. This is why we back the DiskDoubler with a 3-year warranty.

We know that you will be happy with your purchase of the DiskDoubler. It is an investment in your system that will serve you for many years, even if you eventually upgrade to larger disk drives.

TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 Features 1
1.2 Packing List 1
1.3 DiskDoubler Diskette 2

2.0 BEFORE YOU START 3

2.1 System Requirements 3
2.2 How the DiskDoubler Works 3
2.3 Compatibility 7
2.4 Conventions 7

3.0 INSTALLATION INSTRUCTIONS 8

3.1 Recommended Switch Settings 8
3.2 Installation of DiskDoubler Board 9
3.3 What the Installation Program Does 12
3.4 Installation of DiskDoubler Software 13

4.0 UTILITY PROGRAMS -- Manually Compressing and Uncompressing Files 20

4.1 DDCMP - Compressing Files 20
4.2 DDUNCMP - Uncompressing Files 22
4.3 COPYC - Copying and Compressing Files 23
4.4 COPYU - Copying and Uncompressing Files 25
4.5 AUTOCMP - Automatically Compresses Entire Drive 26

5.0 UTILITY PROGRAMS -- Managing Files 29

5.1 DDIR and DDIR/C - Displaying File and Directory Information 29 25
5.2 DDEXCLUD - Excludes Files from Compression 31
5.3 DDINCLUD - Includes Files for Compression 32

TABLE OF CONTENTS

6.0 UTILITY PROGRAMS -- Managing DD 34

6.1 DD - TSR Program 34
6.2 DDCHECK - Checking Status of DD in Memory 35
6.3 DDREMOVE - Removing DD from Memory 36
6.4 DDISABLE - Disabling DD while in Memory 36
6.5 DDENABLE - Activating DD while in Memory 37
6.6 DDTEST - Functionally Tests Board and Switch Position 37

7.0 USING DISKDOUBLER IN NETWORKS 39

APPENDIX A: DDSWITCH -- SWITCH SETTINGS 40

APPENDIX B: DDCONFIG -- CONFIGURING DRIVE DEFAULT and GLOBAL CONFIGURATION FILE 43

APPENDIX C: TROUBLESHOOTING / ERROR MESSAGES 45

APPENDIX D: WARRANTY 49

1.0 INTRODUCTION

The DiskDoubler is compatible with all IBM PC/XT/AT, 286, 386 and compatible computers operating under DOS 2.0 or greater. It is designed to compress data files at a typical ratio of 2:1, depending on file structure and data, so you can significantly increase your storage capacity at a very low cost.

The DiskDoubler is very easy to use. When you are using an application, the DiskDoubler will automatically compress and uncompress only those parts of the file being addressed. The DiskDoubler interface to the disk is interactive and does not require the entire file be uncompressed for use. Furthermore, with Datran's high speed technology, you will typically not notice any loss of performance when using your application programs.

1.1 FEATURES

1. IBM PC, XT, AT, 286, 386 or compatible
2. 1/2 Card works in ANY 8 or 16 Bit Bus slot
3. Increases capacity of ALL disk drives in your PC
4. Low-Power CMOS Technology
5. High Reliability
6. Transparent User Interface
7. Archival Storage of Data
8. Easy-to-Use Compression and Uncompression Utilities
9. Three-Year Warranty

1.2 PACKING LIST

The Datran DiskDoubler package should contain the following:

1. DiskDoubler board
2. DiskDoubler SYSTEM & UTILITIES diskette (5-1/4")
3. DiskDoubler User Manual
4. Product Warranty Card

PLEASE NOTE:
As with all software, it's a good idea to make a working copy of your DiskDoubler diskette and store it in a safe place.

1.3 DISKDOUBLER DISKETTE

The Datran DiskDoubler diskette contains the following software files:

DDINSTAL.EXE	Installs DiskDoubler software to hard disk.
DD.COM	RAM resident DiskDoubler System Software.
DDIR.EXE	Expanded DOS Directory.
DDCMP.COM	Compresses files.
DDUNCMP.COM	Uncompresses files.
COPYC.COM	Copies and compresses files.
COPYU.COM	Copies and uncompresses files.
AUTOCMP.COM	Compresses entire drive.
DDEXCLUD.COM	Excludes any file(s) from compression.
DDINCLUD.COM	Includes file(s) for compression.
DDCHECK.COM	Checks and displays status of DD.
DDREMOVE.COM	Removes DD from memory.
DDENABLE.COM	Enables DD when in memory.
DDISABLE.COM	Disables DD when in memory.
DDCONFIG.EXE	Configures the Compress/Uncompress default setting for each drive and creates a G__.__ file when not present in root Directory C.
DDSWITCH.EXE	Changes switch setting to match board.
DDTEST.COM	Performs functional and switch test on board.

2.0 BEFORE YOU START

2.1 SYSTEM REQUIREMENTS

1. IBM PC, XT, AT, 386 or Compatible
2. 1/2 card slot in PC bus
3. Hard disk
4. 256K memory or greater
5. One 5-1/4" floppy drive
6. Dos 2.0 or greater
7. 64K resident memory available
8. Compress maximum file size of 128MB
9. Total number of open files cannot exceed 16MB
10. Use with application programs employing DOS FCB or File Handler (not compatible with programs using direct disk calls)

2.2 HOW THE DISKDOUBLER WORKS

The DiskDoubler is an integrated hardware/software system that uses Datran's proprietary data-compression technology to automatically compress files when they are written to the disk drive, and uncompress them when they are read from the disk. The proprietary HCMOS VLSI chip used in the DiskDoubler board makes this process so fast that, even if you have a high-speed disk, you will typically not notice any loss of performance associated with the operation of the DiskDoubler.

Once the simple installation is complete, you should find that the operation of DiskDoubler and the DD utilities are nearly identical to that of using DOS and its utilities.

Compression Ratios

DiskDoubler uses special, proprietary methods of data compression optimized for general business applications such as word processing, spreadsheet, and database files. The compression you see on your files will vary according to their type. You can also compress program and binary files (ie. COM, EXE, etc.) but will find that the ratios are typically much lower than average. If you have a larger than normal number of these type of files on you hard disk you may find your average compression ratio to be lower than

normal.
The following are the typical range of compression ratios you will see:

Word Processing:	1.5:1 to 2.5:1
Spreadsheets:	1.3:1 to 2.5:1
dBase files:	1.5:1 to 8.0:1
COM and EXE files:	1.0:1 to 2.0:1

If you have a typical PC installation containing word-processing, spreadsheet, and dBase files, you should average approximately 2:1 in compression ratio. The DDIR utility (Section 5.1) will give you a more accurate measure of the compression ratios you are actually getting.

Transparent Operation
DiskDoubler has been designed to operate in a completely invisible fashion. Once it is enabled, neither you nor the application program will notice anything different -- except that you'll have more room on your disk! We've given you a number of utilities (explained in Sections 4, 5, and 6) that enable you to compress and uncompress files, check file status and size, estimate the amount of space available on your disk, and control DD.COM -- but you needn't use any of these to realize the benefits of the DiskDoubler. Once installation is complete, just use your programs as you always have -- the DiskDoubler will do the rest.

Memory Resident (TSR) Program
The software portion of the DiskDoubler system is a memory-resident (or TSR) program called DD.COM, which requires about 64K of RAM. DDINSTAL.COM will automatically modify your CONFIG.SYS and AUTOEXEC.BAT files so that DD.COM is loaded into memory each time you boot-up your PC. DD intercepts the read and write DOS calls to the disk drive(s) and compresses or uncompresses the files as they are handled by DOS. DD.COM is easily turned on or off while in memory by simply typing DDENABLE or DDISABLE at the DOS command line.

Automatically Compresses and Uncompresses Files

DiskDoubler "automatically" compresses and uncompresses files when performing various operations, making it transparent and easy to use.

DiskDoubler eliminates the time-consuming task of manually compressing the files in each directory of your hard disk. When the DiskDoubler is installed for the first time, AUTOCMP will automatically compress all data files on your hard disk(s) with the exception of those files with a COM, EXE, SYS, BAT, or BIN extension. (DiskDoubler cannot currently execute these files in their compressed form but can be manually compressed after installation.)

DiskDoubler automatically recognizes if a file is compressed or uncompressed and handles it appropriately during the normal operation of your application program. It automatically loads either a compressed or uncompressed file and compresses the file when "saved" to the disk drive. If you loaded an uncompressed file and did not make any changes, it will save the file to disk in its original uncompressed form.

If you wish to have a file remain uncompressed at all times, you can override this feature with the DDEXCLUD utility (Section 5.2). DDEXCLUD allows you to define specific filenames, groups of files, or entire directories that you wish to remain uncompressed or "Excluded" from compression.

You don't even need to do anything special to "import" or "export" files from a floppy. The DDCONFIG utility allows you to configure each logical drive in your system as either a "Compressed" or "Uncompressed" drive. So if you "import" a file by copying it to any disk drive configured as a "Compressed drive with the DOS COPY command, DiskDoubler automatically compresses the file. If a compressed file is copied to a drive that is configured as an "Uncompressed" drive it will automatically be uncompressed.

DiskDoubler also provides to special utilities, COPYC and COPYU, to override these default configurations. COPYC allows you to copy and compress files to an "Uncompressed" drive and COPYU copies and uncompresses files to a "Compressed" drive.

In cases where you want to manually compress or uncompress a file, we've given you the DDCMP utility, which allows you to compress files, and DDUNCMP allows you to uncompress files. (Sections 4.1 and 4.2)

Please Note:

Even though DiskDoubler can compress files up to 128MB in size, DiskDoubler can currently handle in the transparent mode, single or multiple open files that do not exceed a total of 20MB. If you attempt to open a file or files that exceed 20MB, you will be informed that there is insufficient memory.

Special Global Configuration File: "G___.___"

The Global Configuration File is copied into your root directory when you DDINSTAL the DiskDoubler. This file defines which drives A thru Z (including RAM drives) are to automatically have compressed or uncompressed data written to them. This file is can be modified to change the default setting of any drive at any time by running DDCONFIG (See APPENDIX B). DDCONFIG will also create a new "G___.___" file in the event it is accidentally removed from the root directory.

The Global Configuration File also serves as Global Exclusion File (see below) for all directories that do not yet have their own Exclusion File. The main use of this Exclusion File is to exclude COM, EXE SYS, BAT and BIN files from automatic compression in directories that do not yet have their own Exclusion File. If a directory is accessed by the DiskDoubler prior to the creation of a Exclusion File, the system refers to the Root Configuration File.

Special Directory Exclusion File: "B___.___"

Directory Exclusion Files are created for each directory only when you use the DDEXCLUD and DDINCLUD utilities (Sections 5.2 and 5.3). The DDEXCLUD utility lets you define a file, groups of files, and even the entire directory to remain uncompressed at all times. When compressed files are excluded from compression, DiskDoubler will automatically uncompress them.

To remove one or more files from the Exclusion File so that those files will once again be automatically compressed, use the DDINCLUD utility. This utility allows you to compress any COM, EXE, SYS, BAT, or BIN file you wish as well as any files you may have previously excluded from compression. As with DDEXCLUD, when you include any file, group of files, or all files in a directory, DiskDoubler will automatically compress the file. In order to use a compressed COM, EXE, SYS, BAT, or BIN file, you must be sure to uncompress it first with DDUNCMP.

2.3 COMPATIBILITY

Since the DiskDoubler system is a kind of DOS shell, it is compatible only with "well-behaved" applications that observe the DOS "rules of the road." The DiskDoubler will work with any program that uses the DOS FCB or File Handler conventions for reading and writing disk files. It will NOT work with programs that bypass DOS and employ "direct" calls to the disk drive.

But don't worry -- this means that the DiskDoubler is compatible with the vast majority of popular programs. And if you have any doubts about the compatibility of a program, just try it! The DiskDoubler won't damage anything if used with an "ill-behaved" application. You'll just see compressed data that looks like meaningless characters on the screen. In that case, just exit the program to DOS and use DDEXCLUD to define those files to remain uncompressed. Then use your program as you normally would. (Remember: all files excluded will be automatically uncompressed when using DDEXCLUD.)

If one of your programs does turn out to be incompatible, please feel free to call us on our toll free (800) 332-0456 line and let us know for future DiskDoubler releases.

2.4 CONVENTIONS

In the following examples, the ">" is used merely to indicate that the following command is to be entered on the command line after the DOS prompt. The "<cr>" is used to designate the ENTER key.

3.0 INSTALLATION INSTRUCTIONS

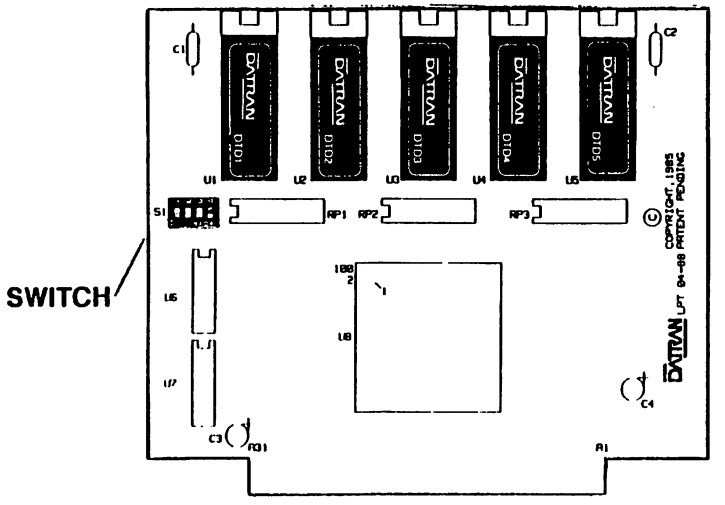
3.1 RECOMMENDED SWITCH SETTINGS

VERY IMPORTANT! BEFORE HANDLING THE DISKDOUBLER BOARD OR SOFTWARE, PLEASE TOUCH ONE OF THE SECURE CHASSIS SCREWS ON YOUR PC TO DECREASE THE CHANCE OF STATIC ELECTRICITY DAMAGING THE PRODUCTS.

The DiskDoubler board is equipped with a 4-position DIP switch that allows you to assign an I/O port address that will not conflict with other boards or devices in your system. The DiskDoubler is shipped from the factory preset to POSITION 2 (see below) and should not require any adjustments to work properly.

POSITION 2 = I/O CHANNEL (Hex) 220

Switch 1=ON, Switch 2=ON, Switch 3=ON, Switch 4=OFF



PLEASE NOTE:

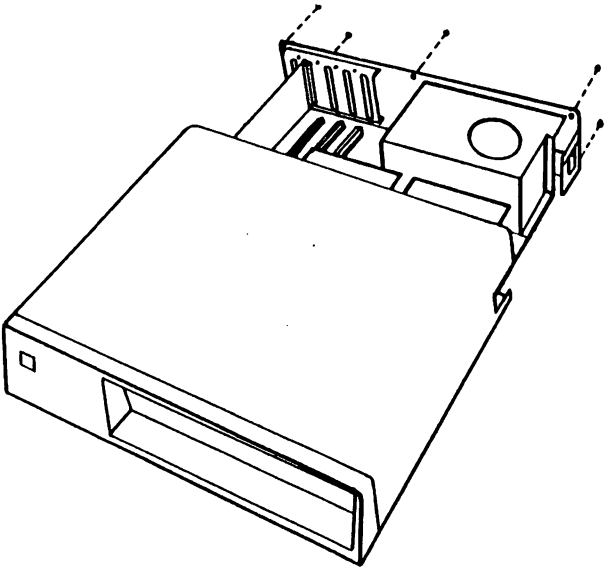
Verify that the switch settings on the DiskDoubler board match the settings shown above before installing the board into your system. If you experience problems on power-up or during installation of the DiskDoubler software, you will more than likely have to select another position for the switch settings.

The software installation will automatically verify that the DiskDoubler software recognizes the board and will advise you if the switch settings need to be changed. If adjustments are necessary, refer to APPENDIX A for the POSITION TABLE and directions using the DDSWITCH utility.

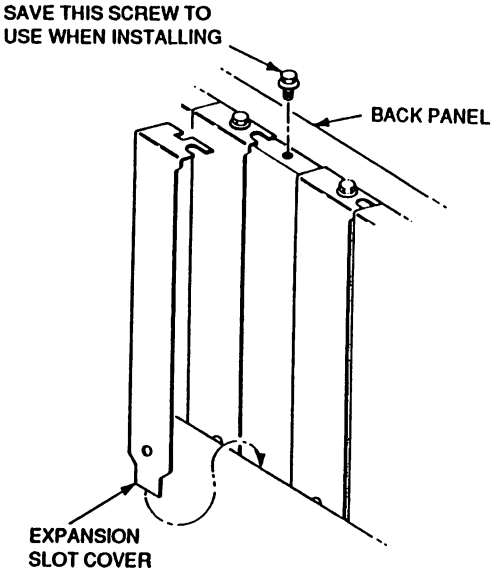
3.2 INSTALLATION OF THE DISKDOUBLER BOARD

1. Turn off the power to your computer and unplug the power cord. This will help ensure that you will not damage the DiskDoubler board or your computer during installation.

2. Verify the DIP switch setting on the DiskDoubler board per Section 3.1 and APPENDIX A.



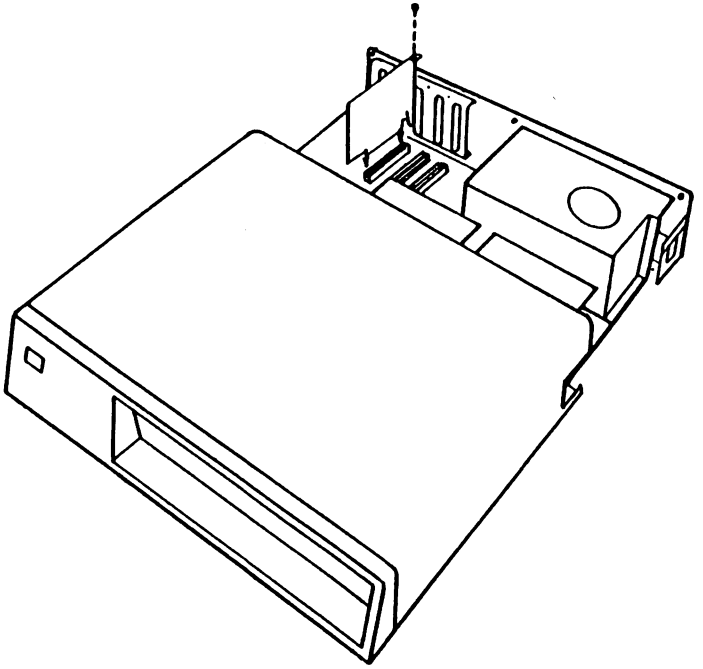
3. Remove the cover-mounting screws from the rear of the PC. Pull the cover away from the back panel, past the power switch, and lift off the cover. (If you do not have an IBM PC, refer to your computer manual for instructions on removing the cover.)



4. Locate an unused expansion slot and remove the slot cover. Save the mounting screw to use for installing the DiskDoubler board.

5. Hold the DiskDoubler by its top corners and slide it into the system unit.

6. Firmly press the DiskDoubler board down straight into the expansion slot.



7. Insert the screw into the DiskDoubler bracket and secure it to the PC chassis.

8. Confirm that the DiskDoubler is firmly seated into the expansion connector. It should be straight and level in your PC.

9. Replace the cover and fasten the chassis screws.

10. Your system should be ready to run. Plug in the power cord and turn on the power switch.

11. Your system will boot up in the normal manner.

3.3 WHAT THE INSTALLATION PROGRAM DOES

Now that you have installed the DiskDoubler board, you will need to install the DiskDoubler software using the DDINSTAL program.

IMPORTANT INSTALLATION INSTRUCTIONS:

Before using the installation program, DDINSTAL, it is important that you verify the contents of the CONFIG.SYS file that may be resident in your system. If there are any files defined in CONFIG.SYS that have a file extension other than COM, EXE, SYS, BAT, or BIN they MUST be excluded from compression by using the DDEXCLUD utility prior to using DDINSTAL. This prevents the automatic compression of any files that may cause a problem when re-booting your PC. Refer to Section 3.4 for detailed instructions.

DDINSTAL performs several tasks:

1. It checks the switch setting on the DiskDoubler board to make sure they are compatible with your system configuration. If they are not, it aborts the installation and directs you to use the DDSWITCH utility (Appendix A) to set them correctly.

2. Allows you to select the drive you want to install the DiskDoubler software on. The default is drive C.

3. Creates a new directory of your choosing for DiskDoubler on the selected drive. The default directory is "DD".

4. Copies all the files from the DiskDoubler floppy to the selected drive and directory.

5. It modifies or creates the CONFIG.SYS file to include FILES=25 and the AUTOEXEC.BAT file to include the path for the DiskDoubler directory and to automatically load DD.COM during boot-up.

6. Reminds you to Reboot your system and test run your software for compatibility before compressing files.

3.4 INSTALLATION OF DiskDoubler SOFTWARE

IMPORTANT INSTALLATION INSTRUCTIONS !!

BEFORE USING DDINSTAL:

1. Make sure that you have at least 500KB of space available on your hard disk. This ensures that all of the DD UTILITIES on the Master Diskette files can be copied to the specified hard disk during installation.

2. IMPORTANT: Verify the contents of the CONFIG.SYS file that may be resident in the root directory of your system for any files that have a file extension **OTHER THAN** COM, EXE, SYS, BAT, or BIN. If you do, they MUST be excluded from compression by using the DDEXCLUD utility prior to using DDINSTAL. DDEXCLUD prevents these particular files, required by CONFIG.SYS, from future compression for any reason . Compression of these files may prevent your PC from booting until they are uncompressed.

   EXAMPLE:

   1. Change to your root directory on your hard drive which is drive C in this example.

      C>CD \ and press <cr>

      This returns you to your root directory no matter what directory your currently in.

   2. Use the DOS TYPE command to view the contents of your CONFIG.SYS file.

      C>TYPE CONFIG.SYS and press <cr>

      This displays contents of the file on screen so you can determine and note if there are any files that need to be excluded.

EXAMPLE OF A TYPICAL CONFIG.SYS FILE:

```
DEVICE=\DOS\ANSI.SYS
DEVICE=\DOS\DRIVER.SYS /d:0 /f:0 /h:2
DEVICE=\DOS\DRIVER.SYS /d:1 /f:2 /h:2
DEVICE=\DOS\DRIVER.SYS /d:2 /f:5 /h:4 /n /t:612
DEVICE=\DOS\DMDRVR.BIN
DEVICE=\TAPE\TAPEDRVR.SLS
BUFFERS=10
FILES=25
```

As you can see in the above example there a number of files required by CONFIG.SYS to allow the system to boot properly:

ANSI.SYS	(located in DOS sub-directory)
DRIVER.SYS	(located in DOS sub-directory)
DMDRVER.BIN	(located in DOS sub-directory)
TAPEDRVR.SLS	(located in TAPE sub-directory)

Each of the above files with either a COM, EXE, SYS, BAT or BIN extension are automatically excluded from compression by the Global Exclusion File installed in the root directory at the time of installation and will not require any further action. In this example, it will be necessary however, to exclude the TAPEDRVR.SLS file from compression during installation.

MAKE A NOTE OF THE CORRECT PATH AND FILENAMES THAT NEED TO BE EXCLUDED.

4. Place your "DD SYSTEM & UTILITIES" diskette into floppy drive A and change to drive A.

   C>A: and press <cr>

5. Copy the "G___.___" file from the floppy to the root directory on the hard drive.

   A>COPY G___.___ C:\ and press <cr>

6. Use DDEXCLUD to exclude TAPEDRVR.SLS from being compressed during installation. Be sure to define the correct path and filename.

   A>DDEXCLUD C:\TAPE\TAPEDRVR.SLS and press <cr>

   DDEXCLUD will create a Directory Exclusion File "B___.___" in the TAPE directory that excludes the filename TAPEDRVR.SLS from compression.

7. Verify the "B___.___" file is present in the TAPE sub-directory.

   A>DIR C: and press <cr>

   You should see the file in the TAPE sub-directory.

8. Also verify the status of the B___.___ file by simply executing DDEXCLUD without designating a filename.

   A>DDEXCLUD C: and press <cr>

   You will see TAPEDRVR.SLS is now excluded from compression in the \TAPE sub-directory.

   "????????.COM has been Excluded from compression."
   "????????.EXE has been Excluded from compression."
   "????????.BAT has been Excluded from compression."
   "????????.SYS has been Excluded from compression."
   "????????.BIN has been Excluded from compression."
   "TAPEDRVR.SLS has been Excluded from compression."

9. You are now ready to begin your installation. The rest is easy!

INSTALLING DISKDOUBLER AFTER EXCLUDING ANY CONFIG.SYS FILES:

1. Log on to either A or B drive and place the "DD SYSTEM & UTILITIES" diskette into the logged drive and type DDINSTAL at the DOS prompt.

   EXAMPLE: A>DDINSTAL and press <cr>.

2. The DD2000 message is displayed and you are asked to press any key to continue with the installation.

3. A diagnostic test is performed to verify the system can recognize the current switch position on the board (the factory setting is SWITCH POSITION: 2) and there are no I/O channel conflicts.

   Testing current SWITCH POSITION: 2

   In the event the switch settings on the DiskDoubler board and software switch settings in DDSWITCH are set correctly you will be notified:

   Current SWITCH POSITION is correct.

   If the diagnostic test fails, you will be prompted to refer to the APPENDIX A to select another SWITCH POSITION.

PLEASE NOTE:

1. *Turn POWER OFF before changing the SWITCH POSITION on the board,*

2. *Set BOTH the switch position on the board and the switch position in DDSWITCH on your Master Diskette,*

3. *Once this is complete test the new SWITCH POSITION with DDTEST to verify if the new position works properly.*

4. A functional test is performed to verify the board is properly compressing and uncompressing data.

   Performing functional test on DiskDoubler board...

   If the board is working properly:

   DiskDoubler board is functioning perfectly and installation can begin !

   If the test reports errors in the compress or uncompress routine you will be prompted to return the board for replacement.

5. You are prompted to indicate what hard drive your system boots from.

   Please indicate your BOOTUP drive: C press <cr> for C or select other BOOTUP drive and press <cr>.

   You will be prompted to make sure this is the correct selection.

6. Now select default drive C or other drive on which you wish to install the DiskDoubler software.

   Please select the drive you want DiskDoubler installed on. (C,D,E,etc): C press <cr> for C or select new drive and press <cr>.

   You will be prompted to make sure this is the correct selection.

7. Next you are asked if you want to use "DD" as the default directory name and you want to install the DiskDoubler software on the selected drive in a directory called "DD".

   Do you wish to use "DD" as the directory name for DiskDoubler? Yes/No (Y/N): Y press <cr> for Yes or enter N for no and press <cr>.

If No, you will be asked for the directory name of your choice:

Please enter the directory name of your choice: enter the directory name and press <cr>.

If the directory name currently exists, you will continue to be prompted to select a directory name that does not exist. Once the directory name has been selected, DiskDoubler will create the new directory on the selected drive.

8. The DiskDoubler software will now automatically:

   A. Copy all files from the DiskDoubler "DD SYSTEM & UTILITIES" Master Diskette to the new directory.

   B. Modify or create the CONFIG.SYS file -

      Add: FILES=25 (will not modify if current FILES is already equal to or greater than 25)

   C. Modify or create the AUTOEXEC.BAT file -

      Add: Insert four lines to the AUTOEXEC.BAT file, starting on line one:

      ```
      ECHO OFF
      PATH C:\DD
      DD
      ECHO ON
      ```

      Add: Append Drive and Directory name to existing PATH. (default PATH= ....;C:\DD)

   This makes sure that during BOOTUP, DD is properly loaded before any other programs are executed so that compressed files can be uncompressed prior to being loaded so they can work properly. The only time the AUTOEXEC.BAT file should require manual modification is

for network TSR programs that require they be loaded first. (See Section 7.0)

9. Once this is complete you will be prompted to reboot your system and run the different programs to verify compatibility by the following screen:

IMPORTANT! PLEASE READ CAREFULLY...

1. **After rebooting your system, verify the operation of your DiskDoubler now that it is installed by running various applications programs in your system for compatibility.**

2. **Once you have verified the operation of DiskDoubler in your system you can use AUTOCMP to automatically compress the files on ALL of your hard disk drives.**

3. **Place your DiskDoubler Master Diskette in a safe place.**

4. **Reboot your system <Ctrl><Alt><Del>.**

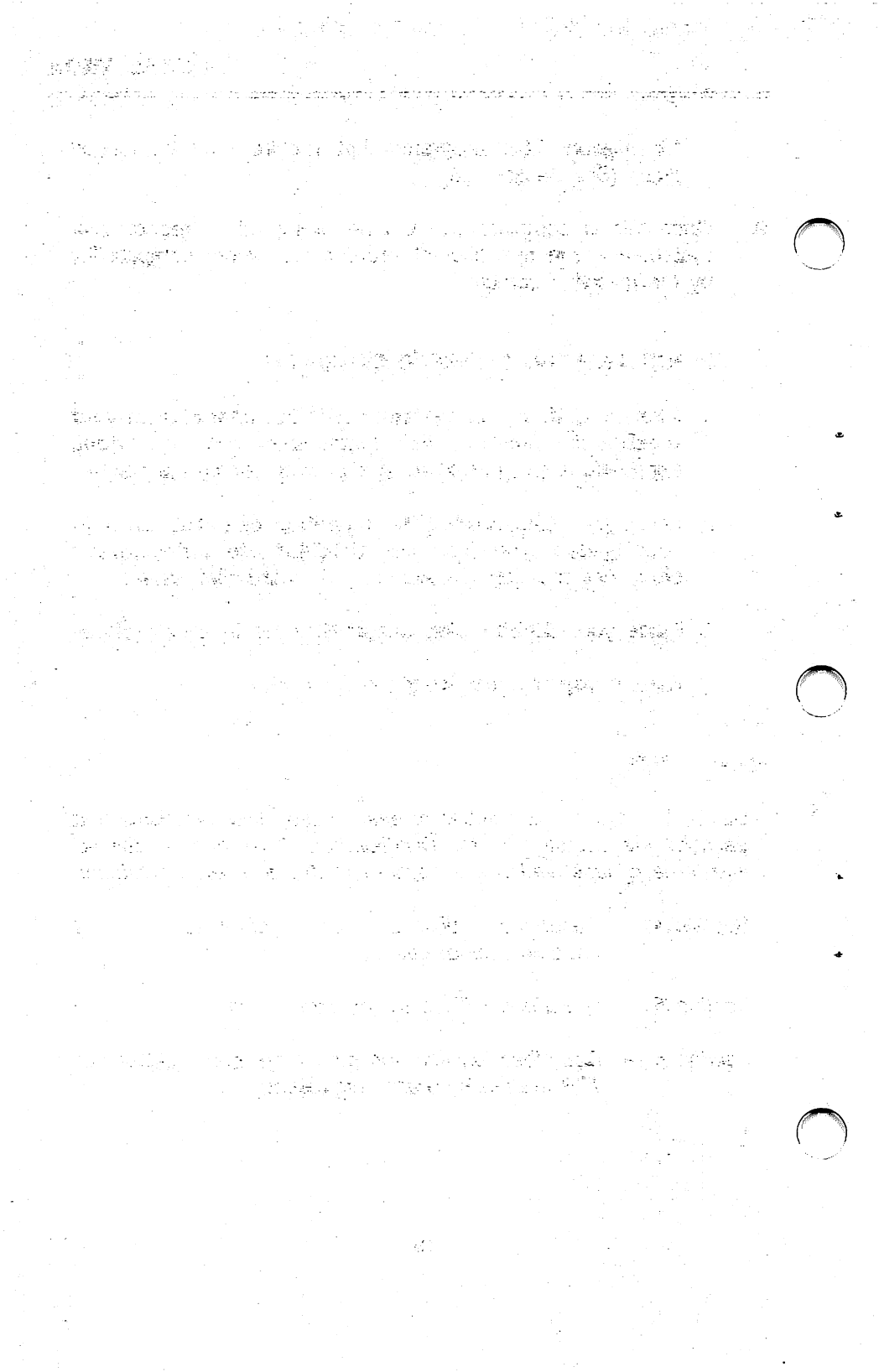
PLEASE NOTE:

Datran has created a number of easy-to-use utility programs that enhance the operation of the DiskDoubler. They can be divided into three groups, which are covered in the next three sections.

Section 4 - Describes utilities for compressing and uncompressing files.

Section 5 - Describes utilities for managing files.

Section 6 - Describes utilities for managing the DiskDoubler TSR system software and testing.



4.0 UTILITY PROGRAMS -- Manually Compressing and Uncompressing Files

4.1 DDCMP -- COMPRESSING FILES

DDCMP is a command-line program that lets you selectively compress any file up to a maximum file size of 128MB. Remember however, that you cannot load a file greater than 20MB into an application program with the DiskDoubler in operation.

DDCMP will NOT compress a file that has been excluded from compression by DDEXCLUD (Section 5.3) or has been previously compressed. If you attempt to compress a file that has been "excluded", a message will tell you that 0 file(s) were compressed. You can also use DDCMP on a compressed file an unlimited number of times and it will NOT harm the file.

Like most DOS commands, DDCMP can use WILDCARD characters to selectively compress many files in one command. If you use a wildcard in your filename and one of the files happens to be compressed, it will simply ignore that file and compress only those files that are uncompressed.

DDCMP displays the names of all the files being compressed during its operation, very much like the display generated by the DOS COPY command.

EXAMPLE:

```
C>dccmp \Pathname\Filename.* <cr>

\Pathname\Filename.001 (Compressed)
\Pathname\Filename.002 (Compressed)
\Pathname\Filename.003 (Compressed)
etc....
    # file(s) Compressed
```

If you wish to compress COM, EXE, SYS, BAT, and BIN files for

the first time, you must use DDINCLUD to define any file with one of these extensions in a particular directory you want compressed. Once the file is "included" and compressed you can use DDCMP to compress the file again after you have uncompressed it with DDUNCMP. We don't recommend compressing these files if you use them frequently.

When compressing a file with one of these extensions, the extension will be modified to indicate to you that the file is compressed and to make sure that DOS will not attempt to execute that file. DOS cannot execute a compressed file.

EXAMPLE:

Uncompressed FILENAME .EXT	Compressed FILENAME .EXT
COMMAND.COM	COMMAND.C!!
EXECUTE .EXE	EXECUTE .E!!
SYSTEM .SYS	SYSTEM .S!!
BATCH .BAT	BATCH .B!!
BIN .BIN	BIN .B!N

DDCMP will not modify the file extension of any files except COM, EXE, SYS, BAT, and BIN.

PLEASE NOTE:

DO NOT ATTEMPT TO COMPRESS A FILE LARGER THAN THE CURRENT AVAILABLE DISK SPACE. *When compressing a file that is larger than the available disk space, DOS will allocate the space in the FAT table and DD will attempt to compress the file. The compression will abort and indicate Disk Full, display 0 Bytes Free, and the file will remain unchanged. In order to free up the space allocated in the FAT table, you must remove a file from the drive. You can either copy a file to another drive and delete it, or simply delete an unwanted file from the drive.*

4.2 DDUNCMP -- UNCOMPRESSING FILES

DDUNCMP is the reverse of the DDCMP program and the operation is nearly identical to DDCMP. It is a command-line program that lets you uncompress files previously compressed by DDCMP. DDUNCMP WILL uncompress any file that has been compressed regardless if it has been DDINCLUDed or DDEXCLUDed.

Like DDCMP, DDUNCMP can use wildcard characters to selectively uncompress many files with one command. If you use a wildcard in your filename and one of the files happens to be uncompressed, it will simply ignore that file and uncompress only those files that are compressed.

DDUNCMP displays the names of all the files being compressed during its operation, very much like the display generated by the DDCMP command.

EXAMPLE:

```
C>DDUNCMP \PATHNAME\FILENAME.* <cr>

\PATHNAME\FILENAME.001 (Uncompressed)
\PATHNAME\FILENAME.002 (Uncompressed)
\PATHNAME\FILENAME.003 (Uncompressed)
etc...
     # file(s) uncompressed
```

If you have compressed COM, EXE, SYS, BAT, or BIN files, you will need to use the DDUNCMP utility to uncompress them before they can be used normally. DDUNCMP will automatically restore the proper file extension so that DOS can recognize and execute them.

EXAMPLE:

Compressed FILENAME .EXT	Uncompressed FILENAME .EXT
COMMAND.C!!	COMMAND.COM
EXECUTE .E!!	EXECUTE .EXE
BATCH .B!!	BATCH .BAT
SYSTEM .S!!	SYSTEM .SYS
BIN .B!N	BIN .BIN

DDUNCMP will not modify the file extension of any files except C!!, E!!, S!!, B!! and B!N.

To uncompress one of these files, DDUNCMP will recognize either the "!!" or the original (i.e. COM) extension and proceed to uncompress the file and restore the original extension.

EXAMPLE:

```
C>DDUNCMP COMMAND.C!!
```

or

```
C>DDUNCMP COMMAND.COM
```

4.3 COPYC -- COPYING AND COMPRESSING FILES

COPYC is an absolute OVERRIDE to any "Uncompressed" drive configuration (DDCONFIG) and any Exclusion File that contains files to be "Excluded" from compression (DDEXCLUD). COPYC is designed to compress ALL files as they are copied from one drive or directory to another drive or directory.

The COPYC command is nearly identical in format and operation of the DOS COPY command, except that as it copies the files it compresses any uncompressed files as they are copied to their destination. Do not use COPYC to rename files!

COPYC is particularly useful when you want to copy compressed files to a drive that is configured to be an "Uncompressed" drive by DDCONFIG. COPYC will OVERRIDE this configuration and copy

files from a "Compressed" drive to an "Uncompressed" drive.

COPYC will also OVERRIDE and copy and compress a file to a disk or directory where that file has been excluded in the "B___.___" file by DDEXCLUD (See Section 5.3).

COPYC is an ideal command to store more data to a floppy disk when backing up files from your hard disk. If the files to be copied are already compressed, the COPYC command will simply copy the files in their compressed form to the destination drive and directory.

The following example shows a series of files (using wildcard "*") in the directory specified by the pathname on drive D that are to be copied and compressed to drive A.

EXAMPLE:

```
>COPYC d:\Pathname\Filename.*  a:

 d:\Pathname\Filename.001 (Compressed)
 d:\Pathname\Filename.002 (Compressed)
 etc....
      # file(s) copied
```

COPYC will also copy and compress COM, EXE, SYS, BAT, and BIN files even if the destination drive or directory has an Exclusion File (B___.___) in either the root or sub-directory and change their extensions as shown below.

EXAMPLE:

Uncompressed		Compressed	
FILENAME	.EXT	FILENAME	.EXT
COMMAND	.COM	COMMAND	.C!!
EXECUTE	.EXE	EXECUTE	.E!!
BATCH	.BAT	BATCH	.B!!
SYSTEM	.SYS	SYSTEM	.S!!
BIN	.BIN	BIN	.B!N

4.4 COPYU -- COPYING AND UNCOMPRESSING FILES

The COPYU command is also an absolute OVERRIDE to any "Compressed" drive configuration (DDCONFIG) and any Exclusion File that contains files to be "included" for compression (DDINCLUD). COPYU is the opposite of COPYC and is designed to uncompress ALL files as they are copied from one drive or directory to another drive or directory.

The COPYU command is also nearly identical in format and operation of the DOS COPY command, except that as it copies the files it uncompresses any compressed files as they are copied to their destination. Do not use COPYU to rename files!

The COPYU command can be used to restore compressed files from a floppy disk backup or archival directory. If the files to be copied are already uncompressed the COPYU command will simply copy the files in their uncompressed form to the destination drive and directory.

The following example shows a series of files (using wildcard "*") are to be copied from drive A and uncompressed to drive D in a directory specified by the pathname.

EXAMPLE:

```
C>COPYU a:Filename.* c:\Pathname\

a:Filename.001 (Uncompressed)
a:Filename.002 (Uncompressed)
etc...
        # file(s) copied
```

As with DDUNCMP, you can also uncompress COM, EXE, SYS, BAT, and BIN files that were compressed with either DDCMP or COPYC. The filename extensions will be restored as shown below so that DOS can recognize them.

EXAMPLE:

Compressed FILENAME	.EXT	Uncompressed FILENAME	.EXT
COMMAND	.C!!	COMMAND	.COM
EXECUTE	.E!!	EXECUTE	.EXE
BATCH	.B!!	BATCH	.BAT
SYSTEM	.S!!	SYSTEM	.SYS
BIN	.B!N	BIN	.BIN

As with the DDUNCMP command, COPYC will recognize either the "!!" or normal file extension.

EXAMPLE:

C>COPYU COMMAND.C!! A:

or

C>COPYU COMMAND.COM A:

4.5 AUTOCMP - Automatically Compresses Entire Drive.

AUTOCMP is used to automatically compress ALL files on any or all disk drives in your system with the exception of COM, EXE, BAT, SYS and BIN files. It is recommended that you use this utility only after you have verified the compatibility of the programs you use on your PC. You may find it necessary to exclude a few files from compression for your programs to work properly.

Once you have verified the operation of DiskDoubler in your PC, you can compress more than one drive during an AUTOCMP session and you can elect to pause after each drive or compress all drives selected until complete. A typical almost-full 20MB disk on an XT will take approximately 60 minutes.

You need only compress your files this once. Once the DiskDoubler is operational, any new files that are created or copied to any

drive defined as "compressed" in DDCONFIG will automatically be compressed. Most existing uncompressed files will be automatically compressed the first time you change them. (See Section 2.3 for exceptions).

DiskDoubler requires an equivalent amount of space for each file be available when compressed for the first time. In the event a file is not compressed on the first pass due to its size, AUTOCMP will attempt to compress it again on a second pass now that more disk space is available. Any files not compressed due to their size will be listed at the end of the installation and can be manually compressed at a later time when the necessary disk space is available.

EXAMPLE:

1. Execute AUTOCMP to compress drives C and D:

   C>AUTOCMP and press <cr>.

   Press any key to continue with installation.

2. SELECT EACH DRIVE (A thru Z) TO BE AUTOMATICALLY COMPRESSED:

   Enter drive (A-Z) to be compressed: C press <cr>.
   Enter ADDITIONAL drive (A-Z) to be compressed: D <cr>
   Enter ADDITIONAL drive (A-Z) to be compressed: press <cr>

   If no additional drives are selected the following is displayed:

   CURRENT DRIVES TO BE COMPRESSED —
   Drive to be compressed: C
   Drive to be compressed: D

   Are the above drives to be AUTOMATICALLY compressed correct? Yes/No (Y/N): Y press <cr> to continue installation.

   If you changed your mind or made a mistake in a drive

selection, a "N" will prompt you to ADD or DELETE a drive selection.

3. You can next select to pause after compressing each drive. If you choose "No", AUTOCMP will compress each drive until finished. This means you can perform this operation after hours if you have a lot of disk drives to compress. You can EXIT to DOS at anytime by pressing the ESC key.

4. Upon completion of AUTOCMP if there were any file too large to be compressed they will be listed. Please make a note of these files so you can compress them at a later date with DDCMP or running AUTOCMP again.

EXAMPLE:

Please make a note of the following files as they were too large to compress because of INSUFFICIENT DISK SPACE during AUTOMATIC compression. It should now be possible to either manually compress these files with DDCMP or run DDINSTAL again from the DiskDoubler directory on your hard disk now that disk space has been made available. A second pass of DDINSTAL will be much faster as it ignores files that have already been compressed.

Total number of files NOT compressed:

PATHNAME\FILENAME.001
PATHNAME\FILENAME.002
PATHNAME\FILENAME.003
etc.....
PATHNAME\FILENAME.010

5.0 UTILITY PROGRAMS -- Managing Files

These utilities let you check the status and compression statistics of files, and tell DiskDoubler which files to compress and which to leave alone.

5.1 DDIR AND DDIR/C -- DISPLAYING FILE AND DIRECTORY INFORMATION

DDIR is an expanded directory very similar in format to the DOS DIR command. It shows you the status of all the files in the current directory.

EXAMPLE:

>DDIR D:\PATHNAME and press <cr>

DD RESIDENT IN MEMORY (1)
DiskDoubler DIRECTORY--DDIR
Directory on Drive C has no label
Directory of D:\PATHNAME

Filename.EXT (2)	Uncomp. File Size (3)	Comp. File Size (4)	Comp. Ratio (5)	Date 00-00-00 (6)	Time 00:00a/p (7)
Filename.001	10,000	6,300	1.59	1-30-88	10:16a
Filename.002	10,000	4,900	2.04	1-15-88	8:26a
Filename.003	10,000	3,500	2.86	1-30-88	11:16p
Files: 3 (8)	30,000 (9)	14,700 (10)	2.04 Ave. (11)		

Bytes Free: 10,432,711 (12)

Definitions of DDIR directory:

(1) Verifies if DD is resident in memory.
(2) Filename and extension (listed in alphabetical order).
(3) Uncompressed file size.
(4) Compressed file size.
(5) Compression ratio.
(6) Date file was created or modified.
(7) Time file was created or modified.
(8) Total number of files in current directory.
(9) Total bytes of uncompressed files in current directory.
(10) Total bytes of compressed files in current directory.
(11) Average compression ratio for compressed files in the current directory.
(12) Bytes Free: Bytes available on disk drive.

You can verify that a file (or files) in any directory is compressed by utilizing the DDIR/C command. This command will display all the files in the specific directory that are compressed.

EXAMPLE:

>DDIR/C and press <cr>

This will display only those files that are compressed in the current directory. If the file you are checking for doesn't appear, it is not compressed.

To verify if a particular file is compressed in the current directory you can specify a particular filename (including wildcard characters) with the DDIR/C command.

EXAMPLE:

>DDIR/C test*.db

If DDIR/C reports the statistics on that file (or files), then the file is compressed. If it reports "No File," then the file is not compressed.

5.2 DDEXCLUD -- EXCLUDES FILES FROM COMPRESSION

DDEXCLUD allows you to "exclude" a file, a group of files, or an entire directory from compression by creating an Exclusion File ("B___.___") file in that directory. It is primarily used to prevent the DiskDoubler from automatically compressing COM, EXE, SYS, BAT, and BIN files, or files used with an incompatible application program.

Once a file is has been added to the Exclusion file and is excluded from compression, it cannot be compressed by using either DDCMP or the DOS COPY command to copy a file that is compressed in another directory. Attempting to compress a file that has been excluded by DDEXCLUD will result in a display of "0 file(s) compressed." When a previously compressed file is excluded by DDEXCLUD, it is automatically uncompressed.

DDEXCLUD works by creating or modifying the Exclusion File called "B___.___", in the directory in which it is executed or specified by the pathname. This file is read by the DiskDoubler before any compression operation is performed (except COPYC) in that directory, and any files listed in the Exclusion File will not be compressed. If DDEXCLUD has never been used in a directory, the DiskDoubler refers to the Global Configuration File "G___.___" as a default Exclusion File as discussed in Section 2.2.

DDEXCLUD can be used to:

1. Create a "B___.___" file in the specified directory,
2. Exclude individual files from compression,
3. Exclude groups of files from compression,
4. Exclude entire directories from compression, and
5. List all files in the Exclusion File: "B___.___".

The command format for DDEXCLUD is:

```
>DDEXCLUD \PATHNAME\FILENAME.EXT
```

To exclude a group of files, use the DOS wildcard characters:

>DDEXCLUD \PATHNAME\FILE???.* and press <cr>.

As with all DOS commands, if you do not use the pathname, DDEXCLUD will assume the current directory is being specified.

To exclude an entire directory from compression, type:

>DDEXCLUD \PATHNAME*.* and press <cr>.

The above command is used primarily to prevent the DiskDoubler from attempting to compress data files used by an incompatible application program.

To list all files excluded in the Exclusion File "B___.___" for a specified directory, type:

>DDEXCLUD \PATHNAME and press <cr>.

If you had excluded the entire directory with "*.*" you will see the following display:

"????????.??? has been Excluded from compression."

Any and all files created or placed in the directory where they have been included in the "B___.___" file **WILL NOT BE** compressed!

5.3 DDINCLUD -- INCLUDES FILES FOR COMPRESSION

DDINCLUD is primarily used to compress COM, EXE, SYS, BAT and BIN files as well as modify an existing "B___.___" file. Like DDEXCLUD, a "B___.___" file is created if one does not exist for that directory. When an uncompressed file is "included" by DDINCLUD, it is automatically compressed.

DDINCLUD can be used to:

1. Create a "B___.___" file in the specified directory,
2. Include individual files from compression,
3. Include groups of files from compression,
4. Include entire directories from compression, and
5. List all files in the Exclusion File: "B___.___".

The command format of DDINCLUD is the same as DDEXCLUD:

>DDINCLUD \PATHNAME\FILENAME.EXT

If you invoke DDINCLUD with the file specification *.* to include all files in a directory, it creates an empty Exclusion File. In this case the DiskDoubler will automatically compress ALL files in that directory, including COM, EXE, SYS, BAT, and BIN files.

To include an entire directory for compression, type:

>DDINCLUD \PATHNAME*.* and press <cr>.

To list all files excluded in the Exclusion File "B___.___" for a specified directory, type:

>DDEXCLUD \PATHNAME and press <cr>.

If you had excluded the entire directory with "*.*" you will see the following display:

"????????.??? has been included for compression."

Any and all files created or placed in the directory where they have been included in the "B___.___" file **WILL BE** compressed!

6.0 UTILITY PROGRAMS -- MANAGING DD

6.1 DD -- TSR PROGRAM

DD.COM is the Terminate and Stay Resident ("TSR") program that allows DiskDoubler to operate in a transparent mode with your application programs. It intercepts the DOS calls that read and write data to your disk drives which allows DiskDoubler to automatically compress and uncompress files you are working on.

"DD" currently requires:

- 64K of memory, and,
- No more than 20MB (uncompressed size) of open files at one time (i.e. one- 20MB file, or four-5MB files).

INSTALLING THE DD TSR INTO MEMORY:

When DiskDoubler was initially installed, the AUTOEXEC.BAT file was either modified or created so that under normal operation DD is automatically downloaded into memory when you boot-up your PC. It is possible, however, to manually load DD into memory if you should elect to not have DD installed in your AUTOEXEC.BAT file by simply typing "DD". If DD was previously installed it will not be loaded into memory again.

There are no sure fire methods of making sure that all TSR's will be compatible as there are no standards. You may find conflicts with other TSR programs used in your system.

If you are finding some incompatibilities, the following guidelines are recommended:

1. Network TSR programs typically need to be loaded into memory first.

2. DD typically requires that it be loaded into memory prior to the loading of many DOS Menuing Shells.

3. Load DD before SideKick.

Once DD has been successfully loaded into memory, either during boot-up or manually, you can easily manipulate and manage DD with the following utilities as described in detail in the following sections.

DDCHECK: Checks the status of DD in memory and displays one of the following:

1. "DiskDoubler" IS resident and ENABLED"
2. "DiskDoubler" IS resident and DISABLED"
3. "DiskDoubler" is NOT resident in memory"

DDREMOVE: Removes DD from memory if there no other TSR programs have been loaded "on top" of it. Otherwise it will "disable" DD until the other TSR programs are removed.

DDENABLE: Enables or "turns-on" DD when it is in memory.

DDISABLE: Disables or "turns-off" DD when it is in memory.

6.2 DDCHECK -- CHECKING STATUS OF DD IN MEMORY

DDCHECK is a simple utility that allows you to quickly check the current revision of DD software and display the status of DD in memory. By typing the DDCHECK at the DOS prompt you will find one of the following displays:

1. **"Version 1.0, Revision 1.XX"**
   "DiskDoubler is Resident and Enabled"
   DD is currently resident in memory and has been "enabled" to allow DiskDoubler to work transparently with your applications.

2. **"Version 1.0, Revision 1.XX"**
   "DiskDoubler is Resident, but Disabled"
   DD is currently resident in memory and has been "disabled" so DiskDoubler will not conflict with an application programs you may be using that is not compatible with it.

3. **"Version 1.0, Revision 1.XX"**
   "DiskDoubler is not in memory"
   DD is not currently resident in memory.

DDIR can also be used to verify if DD is resident and enabled or disabled (See Section 5.1).

6.3 DDREMOVE -- REMOVING DD FROM MEMORY

DDREMOVE lets you reclaim the 64K of RAM used by DD if you need to. DDREMOVE looks for other TSRs higher in memory than DD. If it was necessary to load other TSRs on top of DD, it will NOT remove DD; instead, it will "disable" it.

To remove DD, type DDREMOVE at the DOS prompt.

EXAMPLE:

>DDREMOVE and press <cr> and it displays either:

"DiskDoubler is Removed from memory"

or

"DiskDoubler is Disabled, but resident"

Once DD or DiskDoubler has been removed from memory it is recommended that you re-boot your system to install it into memory again. It is also possible to install DiskDoubler by typing "DD" at the command line.

6.4 DDISABLE -- DISABLING DD WHILE IN MEMORY

DDISABLE turns off the DiskDoubler system by disabling DD without removing it from RAM.

A typical use of DDISABLE is when you have temporarily exited an application using its built-in DOS shell to run another program that is not compatible with DiskDoubler.

EXAMPLE:

>DDISABLE and press <cr> the following is displayed:

"DiskDoubler Disabled"

or

"DiskDoubler was already disabled"

If you use DDISABLE from within the temporary DOS shell, be sure to use DDENABLE (Section 6.4) to re-enable DD after exiting the other program and before returning to the application that invoked the DOS shell. If you don't, DiskDoubler will not be able to automatically access any of your compressed files.

6.5 DDENABLE -- ACTIVATING DD WHILE IN MEMORY

DDENABLE turns on the DiskDoubler system by enabling DD if it is already in memory and was disabled by using either DDREMOVE or DDISABLE.

EXAMPLE:

>DDENABLE and press <cr> and the following is displayed:

"DiskDoubler is now Enabled"

or

"DiskDoubler was already Enabled"

You can verify if DD has been enabled by using DDCHECK. If DD was resident, you should get the message "DD IS resident and ENABLED".

6.6 DDTEST -- BOARD AND SWITCH POSITION TEST

DDTEST is a thorough test that MUST be executed from your DiskDoubler directory and requires the use the XXXX.EXE, DATRAN.ZZX, and DATRAN.XXX files. It tests for both the:

1. Correct SWITCH POSITION setting on the board and in DDSWITCH and,

2. The functional characteristics of the DiskDoubler board to verify it is functioning properly.

It is used primarily for an easy check to make sure the current SWITCH POSITION will work correctly and will not cause an I/O Channel conflict error. It will also check at the same time the functional integrity of the board to ensure it is working properly.
EXAMPLE:

>DDTEST and press <cr> and one of the following will be displayed:

"SWITCH POSITION is Correct and Board is Functioning Properly."

or

"Incorrect SWITCH POSITION or Board is NOT Functioning Properly."

If the first message is displayed you can proceed to use DiskDoubler normally as both the SWITCH POSITION and the board are functioning properly.

If the second message is displayed you should verify the switch positions selected on the board and DDSWITCH are correct as described in APPENDIX A. If you are unable to get the board to pass DDTEST after trying a number of available switch positions as displayed in APPENDIX A you more than likely have a board that is not functioning correctly or a system configuration that is not compatible with DiskDoubler.

7.0 USING DISKDOUBLER IN NETWORKS

DiskDoubler is currently not designed to work directly in network fileservers or "network drives" that incorporate and use operating systems other than PC/MS-DOS 2.0 or greater. A special version of DiskDoubler is expected to be released at a future date that will operate in these environments.

DiskDoubler will however work in the "local" PCs that use the DOS operating system. You will find however that use of some of the DD utilities across the network boundaries will cause some problems.

It is recommended that when using DiskDoubler in a network environment:

1. BE SURE TO LOAD DD AFTER ANY NETWORK TSR.

2. DO NOT EXECUTE ANY DD UTILITIES WHILE LOGGED ON THE NETWORK (or fileserver) DRIVE!

3. Use DDCONFIG to configure the network drives as "Uncompressed" drives. DDCONFIG is pre-configured with default settings of only drives A and B to be uncompressed.

4. DO NOT use DDEXCLUD, DDINCLUD on any network drive.

5. DO NOT use DDIR on any network drive as it will cause your PC to hang requiring a re-boot.

6. Use DOS COPY to copy data TO and FROM the network drives and the files will be automatically compressed to your drive and uncompressed to the network drive as defined by DDCONFIG.

Datran currently has limited support for network environments. Should you wish to be placed on our mailing list to be notified of availability of our network products please note it on your Product Warranty Card or call our Toll Free number: 1-800-332-0456.

APPENDIX A: DDSWITCH -- SWITCH SETTINGS

The Datran Port Address Switch Position chart shows the various port addresses that can be occupied by the DiskDoubler. This was done to provide as many locations as possible to prevent I/O channel conflicts with other products. As you can see, the "DiskDoubler default" setting is SWITCH POSITION 2.

DATRAN PORT ADDRESS SWITCH POSITION

SWITCH SETTING				PORT	POSI-	POSSIBLE BOARDS
S1	S2	S3	S4	ADDRESS	TION	INSTALLED
on	on	on	on	200	1	Video game adapter
on	on	on	off	220	2	**DiskDoubler default**
on	on	off	on	240	3	
on	on	off	off	260	4	LPT2
on	off	on	on	280	5	
on	off	on	off	2A0	6	
on	off	off	on	2C0	7	AST clock
on	off	off	off	2E0	8	COM 2
off	on	on	on	300	9	
off	on	on	off	320	10	
off	on	off	on	340	11	
off	on	off	off	360	12	LPT1
off	off	on	on	380	13	
off	off	on	off	3A0	14	monochrome adapter
off	off	off	on	3C0	15	color adapter
off	off	off	off	3E0	16	disk controller/COM1

CURRENT POSITION: **2** SELECT NEW POSITION OR <cr> FOR DEFAULT:2

IMPORTANT!

IF YOU KNOW OF A POTENTIAL CONFLICT OR ARE INSTRUCTED TO CHANGE THE SWITCH SETTINGS DURING INSTALLATION, PLEASE MAKE SURE THAT **BOTH** *THE SOFTWARE SWITCH SETTING (DDSWITCH) AND THE SWITCH SETTING ON THE DISKDOUBLER BOARD ARE IDENTICAL. IF YOU DON'T, THE DISKDOUBLER BOARD WILL NOT WORK.*

PROCEDURE TO CHANGE SWITCH SETTINGS:

PRIOR TO INSTALLING DISKDOUBLER:

1. Review the switch chart and pick a switch setting that will not conflict with your installed boards, as indicated in the "Possible Boards Installed" column.

2. Set the switches on the DiskDoubler board accordingly.

3. Make note of the switch setting on the DiskDoubler board and use DDSWITCH to change the software switch setting on the floppy and proceed with DDINSTAL. DDINSTAL automatically performs a thorough check to verify if the current SWITCH POSITION is correct.

AFTER INSTALLING DISKDOUBLER:

1. Turn off your PC and unplug it.

2. Remove the cover and take out the retaining screw from the DiskDoubler bracket.

3. Grip the DiskDoubler board by the two top corners and pull firmly to remove it.

4. Refer to the Datran Port Address Switch Position Chart and pick a switch setting that will not conflict with your installed boards, as indicated in the "Possible Boards Installed" column.

   EXAMPLE:

   POSITION 6 S1=on, S2=off, S3=on, S4=off

5. Make note of the switch setting on the DiskDoubler board.

6. Reinstall the DiskDoubler board in your system, put on the cover, and power up your system.

7. When you see the DOS prompt change to the new DiskDoubler directory (\DD) and type:

   C>DDSWITCH and press <cr>

8. The Datran Port Address Switch Position Chart will appear on the screen.

9. The CURRENT POSITION Number has to be changed to match the present switch setting of the DiskDoubler board.

10. Pick the correct POSITION number to match the switch setting on the DiskDoubler board.

11. Enter the new POSITION number at the bottom of the Datran chart display after the colon. For instance, to select Position 6, enter 6 after the colon and the display will be:

    CURRENT POSITION: 2 SELECT NEW POSITION OR <cr> FOR DEFAULT: 6

12. Then press <cr> and DDSWITCH will modify the necessary software in the DiskDoubler directory and return you to the DOS prompt.

13. Run DDTEST from the DiskDoubler directory to verify the new Switch Position.

PLEASE NOTE:
The DDSWITCH utility can be used at any time to change the software switch setting to match any changes made to the switches on the DiskDoubler board but must be made from within the DiskDoubler directory.

APPENDIX B: DDCONFIG -- CONFIGURING DRIVE DEFAULT / GLOBAL CONFIGURATION FILE

DDCONFIG is a powerful utility that allows you to specify a particular drive in your PC to have a default setting as either an "Uncompressed" or "Compressed" drive. For example, you can select any hard or floppy disk drive with DDCONFIG to be a "Compressed" drive, and all data written to that drive will automatically be "Compressed" when using DiskDoubler in its transparent operation.

DDCONFIG comes with a default setting for both drives A and B to be "Uncompressed" drives (typically floppy) and for ALL other drives (C thru Z) to be "Compressed" drives. Compressed drives are not displayed when DDCONFIG is executed, only Uncompressed drives.

Default Configuration Setting

Drive - A:Uncompressed (displayed)
B:Uncompressed (displayed)

C-Z:Compressed (compressed drives are not displayed)

To modify this default configuration setting, simply type DDCONFIG at the DOS prompt and follow the directions. After making the desired changes the new configuration is displayed for your approval.

The next time you use DDCONFIG only those drives that have been selected to be "Uncompressed" drives will be displayed. All other drives are set to be "Compressed" drives.

After Changing DDCONFIG

DD must be modified to reflect any changes to DDCONFIG. If DD is currently in memory when DDCONFIG is modified, you must remove it with DDREMOVE and then re-install it by typing DD at the DOS command line. DD will then automatically configure itself to the new DDCONFIG changes when it is downloaded into memory.

Creating a Global Configuration File: G___.___

The Global Configuration File is stored in the root directory and contains the necessary information concerning the configuration of the drives and globally excluding COM, EXE, SYS, BAT, and BIN files for directories that do not have a "B___.___" file.

It is not possible to modify the files contained in the G___.___ file, only the information regarding drive configurations. If however, the file is inadvertently erased or removed from the root directory, DDCONFIG will automatically create a new file when executed.

APPENDIX C: ERROR MESSAGES / TROUBLESHOOTING

PROBLEM: SYSTEM LOCKS OR WILL NOT BOOT PROPERLY

SOLUTION:

1. DiskDoubler board may be conflicting with another board in your system. Remove DiskDoubler board, change switch setting per APPENDIX **A** of this manual, and reinstall.

2. A specific driver required by your CONFIG.SYS that did not have a either a COM, EXE, SYS, BAT, or BIN extension may have been compressed.

   Boot your system from a floppy disk that contains your current DOS operating system and examine the CONFIG.SYS file in the root directory as described in Section 3.4. Use a text editor or the DOS TYPE command to display the contents of the file.

   EXAMPLE: C>TYPE \CONFIG.SYS

   If there are files in your CONFIG.SYS file that do not have an excluded extension, you will need to uncompress those drives and exclude them from future compression. Go to your DiskDoubler directory (DD) which should now be resident on your hard disk and execute DDEXCLUD which uncompresses the file and prevents it from future compression.

   EXAMPLE:

   C>CD \DD (or other DiskDoubler directory)

   C>DDEXCLUD \PATH\FILENAME.EXT

   (Be sure to include the correct pathname and filename when using DDEXCLUD.)

3. If there are no apparent problems with your CONFIG.SYS file you should next examine your AUTOEXEC.BAT file the same way you examined the CONFIG.SYS file. DDINSTAL modifies the AUTOEXEC.BAT file by appending the DiskDoubler directory to an existing PATH string and adding DD load routine to the beginning of the file.

   It is difficult to anticipate where to place DD to avoid potential conflicts with other TSR programs you may be using. Network TSR's typically require they be loaded first into memory. If you are using some kind of DOS Menuing Shell it is recommended that DD be loaded prior to the shell and SideKick should be loaded last.

   First, try experimenting by removing various TSR programs from the AUTOEXEC.BAT file with your text editor or the DOS EDLIN utility and re-booting with <Ctrl> <Alt> <Del> to see if an incompatibility exists. Use DOS COPY to create a backup AUTOEXEC.BAT file called AUTOEXEC.BU prior to experimenting with various configurations.

   C>COPY AUTOEXEC.BAT AUTOEXEC.BU

   If experimentation proves unsuccessful try deleting all but the PATH and DD in the AUTOEXEC.BAT file and re-boot. If your system still doesn't boot call our tech support hot line 1-800-332-0456.

PROBLEM: COMPUTER DISPLAYS THE MESSAGE "DATRAN CARD not installed or not set correctly"

SOLUTION: Make sure the DiskDoubler board is firmly seated in its slot. Use DDSWITCH from with-in the DiskDoubler directory to check the switch settings (see APPENDIX A).

PROBLEM: DISKDOUBLER BOARD NOT RECOGNIZED

SOLUTION: Verify that your switch settings on the board and the software switch position match. If they do, and the system still cannot recognize the DiskDoubler, you must change the board switch setting and the software switch setting to eliminate the memory conflict. Please refer to APPENDIX A for details.

PROBLEM: CANNOT OPEN FILE WHEN TRYING TO COMPRESS A FILE OR OPEN A NUMBER OF FILES AT THE SAME TIME.

SOLUTION: In the case of compressing a file you are probably trying to compress a file that is greater than 128MB, or you may be opening a number of smaller files at the same time that total greater than 20MB.

PROBLEM: APPLICATION PROGRAM IS NOT RECOGNIZED BY DOS AND WILL NOT BOOT

SOLUTION: Program may be compressed. Verify by using DDIR/C or checking file extension for C!!, E!!, S!!, B!! or B!N. If the program is compressed, use the DDUNCMP command to uncompress the file and proceed to execute normally.

PROBLEM: UNREADABLE CHARACTERS ARE DISPLAYED ON THE SCREEN WHEN USING WORDPROCESSING, SPREADSHEET, OR OTHER APPLICATION PROGRAMS

SOLUTION: Most likely you have attempted to load a file with an incompatible or application program that does not use the DOS File Handler or FCB function calls, DD is not resident in memory, or DD is resident in memory but disabled.

1. Exit directly to DOS. Do NOT use DOS Shell in program.

2. Use DDCHECK to verify the status of DD in memory.

3. If DiskDoubler is Disabled, use DDENABLE to enable DD and restart program.

4. If DiskDoubler not resident in memory, type DD to install DiskDoubler into memory.

5. If DiskDoubler is resident and enabled, you probably have an incompatible program and will need to refer to Section 5.2 for DDEXCLUD to uncompress them and prevent them from future compression.

PROBLEM: A FILE WAS BEING COMPRESSED EITHER BY THE UTILITIES OR DISKDOUBLER AND THE PROCESS WAS ABORTED AND DISK FULL WAS INDICATED WITH 0 BYTES LEFT FREE ON DISK DRIVE

SOLUTION: When compressing a file that is larger than the available disk space DOS will allocate the space in the FAT table and DiskDoubler will begin compressing the file. The original file will remain unchanged. In order to free up the space allocated in the FAT table files must be either copied to another drive and deleted, or simply deleted from the drive.

APPENDIX D: WARRANTY

LIMITED WARRANTY

DATRAN CORPORATION MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING NO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, EXCEPT AS PROVIDED BELOW.

THE SOLE REMEDY FOR BREACH OF WARRANTY SHALL BE REPAIR OR REPLACEMENT, AT THE OPTION OF DATRAN, OF THE DEFECTIVE PRODUCT AS PROVIDED BELOW. IN NO EVENT WILL DATRAN BE LIABLE FOR DAMAGES, INCLUDING LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THIS PRODUCT.

WARRANTY PROVISIONS

DATRAN WARRANTS TO THE ORIGINAL PURCHASER THAT THIS PRODUCT IS IN GOOD WORKING CONDITION FOR A PERIOD OF THREE YEARS FROM DATE OF PURCHASE. SHOULD THIS PRODUCT MALFUNCTION WITHIN THE WARRANTY PERIOD, DATRAN WILL REPAIR OR REPLACE, AT DATRAN'S OPTION, THIS PRODUCT WITHOUT CHARGE AS DEFINED BY THIS WARRANTY. REPLACEMENT OF EITHER THE BOARD OR COMPONENTS ON THE BOARD WILL ONLY BE ON AN EXCHANGE BASIS. ANY BOARDS OR COMPONENTS REPLACED BY DATRAN WILL BECOME THE PROPERTY OF DATRAN AND MUST BE DELIVERED TO DATRAN. THIS WARRANTY DOES NOT APPLY TO THOSE PRODUCTS WHICH HAVE BEEN DAMAGED DUE TO ACCIDENT, ABUSE, IMPROPER INSTALLATION, NATURAL OR PERSONAL DISASTER OR UNAUTHORIZED ALTERATIONS, REPAIRS, OR MODIFICATIONS.

WARRANTY SERVICE

BEFORE RETURNING ANY PRODUCT FOR WARRANTY SERVICE, PLEASE CALL DATRAN CUSTOMER SERVICE FOR A RETURN AUTHORIZATION NUMBER.

ANY PRODUCT RETURNED DIRECTLY TO DATRAN MUST HAVE A COPY OF PROOF OF PURCHASE, A NOTE WITH AN EXPLANATION OF THE PROBLEM, AND RELEVANT SYSTEM INFORMATION. THE CUSTOMER AGREES TO ACCEPT LIABILITY FOR DAMAGE TO OR LOSS OF THE PRODUCT, TO PREPAY ALL SHIPPING CHARGES AND TO USE PACKING MATERIAL SIMILAR TO THE ORIGINAL PACKING MATERIAL USED.

DATRAN CORPORATION / 2505 Foothill Blvd. / La Crescenta, CA 91214
Telephone (818)248-8780 / Telefax (818)248-8788 / TurboCom (818)248-8789

NOTES: