ProGate User Manual



protar

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Preliminary remarks

This user manual introduces you to the installation and operating procedures for the ProGate. Please take the time to read it through thoroughly. Hopefully, operating errors can then be avoided. Even if you are already an experienced hard disk user you should pay attention to the manual to familiarize yourself with the special facilities which the Manager software supplied provides.

Important: In order to be able to use all possible facilities in conjunction with your ProGate, i.e. also the Autoboot capability, you will require the ROM version of the TOS Operating System.
If you are currently still working with the diskette version of TOS, please contact your dealer so that he can install the ROM version on your computer.

1.0 General

1.1 What is a hard disk?

A hard disk consists of one or more metal-oxide coated aluminium disks continually rotating at high speed; a read/write head glides closely above each disk. These disks are mounted in an airtight and dust-free housing. In order to attain the very high speed of rotation which is then maintained constant during the entire period of operation, hard disks require an initialization period before they can proceed with their task of storing data. Depending on the disk type, this initialization period may be accompanied by a louder operating sound level than that which is audible when the constant operating speed has been reached.

All hard disks are subject to the danger of a so-called head-crash, where the read/write head strikes the disk surface and damages the very fine disk coating. For this reason, hard disks should be transported and set up in a vibration-free condition and (obviously), particularly during normal operation, they should not be subjected to vibrations or bumps.

During the rest status, there is hardly any danger of a head-crash for the hard disks used in a ProFile because all of the disks use an automatic (mechanical) head-parking routine; this routine activates when power is switched off and moves the heads to an unused part of the disk, the so-called parking position. In this parking position, damage which may be caused to the disk surface has no further detrimental effect. Protar disks thus do not need special software for parking the read/write heads

1.2 Handling removable disks

General

When the computer is switched on or when a medium (cartridge) is inserted, the drive reports a medium change. The Operating System's system boot routine recognizes this as an error; it is thus no longer possible to cold boot from a medium. Only when the system is reset again does it recognize the medium and boot up from it.

Inserting a medium

- Insert medium into drive.
- Shift the lever to the left. (The red lamp starts to blink. At this time the drive is in a cleaning phase.)
- When the lamp switches off and the green lamp switches on, the medium is ready for operation

Removing a medium

- Press ejector on the drive. (The red lamp starts to blink.)
- When the red lamp switches off, shift the lever to the right.
- Remove medium.

Important: It is essential to only work with the medium after the red lamp has switched off and the green lamp has switched on!
Before switching off the removable disk drive, it is ESSENTIAL to first remove the medium from the drive; otherwise data may be lost!

1.3 Standard equipment supplied

You will find the following items when you unpack your ProGate:

ProGate, DMA-bus cable, power cable, system diskette, user manual, warranty card, cartridge medium (in conjunction with removable disk drive)
If any one of the above listed items is missing, please contact your dealer. You should keep the original packaging as an ideal means for transporting your ProGate.

1.4 Connecting the ProGate to an ATARI ST computer

It is essential to set up your ProGate in a vibration-free location. Only then is it possible to ensure proper operation. For example, if you have a MEGA computer, the ProGate can be placed on or under it, and/or it could be used as a monitor stand.

Before connecting the ProGate, please check that all devices connected to the ST are switched off. Then use the data cable to connect the "ACSI-In" port on the hard disk with the 19-pin "HardDisk" socket on the computer.
Then use the power cable to connect the hard disk to a (220 volt) mains outlet. If several hard disks and other devices are to be connected to the ST, it is additionally necessary to set the ACSI number for the hard disk (this setting is not required when only one device is to be connected); this number is used by the computer to differentiate between several devices which may be connected to the computer's DMA port.
The ACSI-number switch is located on the rear side of the hard disk. There are eight possible device addresses (from 0 through 7) which can be selected by repeatedly pressing the switch. It must be ensured that each fixed disk or removable disk has its own unique ACSI number, i.e. no two disks should have the same number.

The hard disk from which the driver software is to be booted must have the lowest ACSI number; all other disks are mounted by the system in the order of their respective ACSI number. It must be ensured that the chain of devices is not interrupted by a device which is not

switched on; i.e., if you have three devices numbered 2, 3, and 4, then you must not switch on 2 and 4 and leave number 3 off. Thus, if you wish to boot your system with the protar driver software, then the protar hard disk used must have the lowest ACSI number in the system.

Important: Please do not connect more than four hard disks to your ST computer. Due to the concept of the ST computer, data transmission errors may occur when more than four hard disks are connected.

1.5 Contents of the ProGate System Diskette

The following programs and files are located on the system diskette supplied:

MANAGER.PRG Manager program for all administrative work necessary in conjunction with the ProGate.

MANAGGER.RSC German text and graphics data
MANAGENG.RSC do. English
MANAGFRA.RSC do. French

If any one of the last three files is missing when the MANAGER.PRG is started, the respective menu function for selecting that particular language is blocked.

READ.ME A subdirectory which contains individual files which you should definitely read. These files contain information on short-term changes made to the system software, for which there was no time left to describe them in the manual.

BOOT.PRG Driver software for starting the ProGate without an installed autoboot, and for copying into the auto folder on your boot diskette.

BOOT.TTP Driver software. This program displays icons for all of the drives which are served by the protar driver; other partitions are assigned the name "HARD DISK".

FOLD100 Subdirectory with a program and explanation of procedure for solving the so-called "40-folder problem".

The system software provides all the tools necessary for installing, operating and administrating your ProGate. You should definitely make a copy of your system diskette (the procedure for copying diskettes is described in the ST computer user manual and elsewhere).
Of course, the ProGate is delivered ready for use. It comes formatted and partitioned and is thus ready for operation.

Nonetheless, every user will want to adapt the ProGate to his own personal requirements. All the operations necessary for doing this can be carried out with the help of the Manager software.

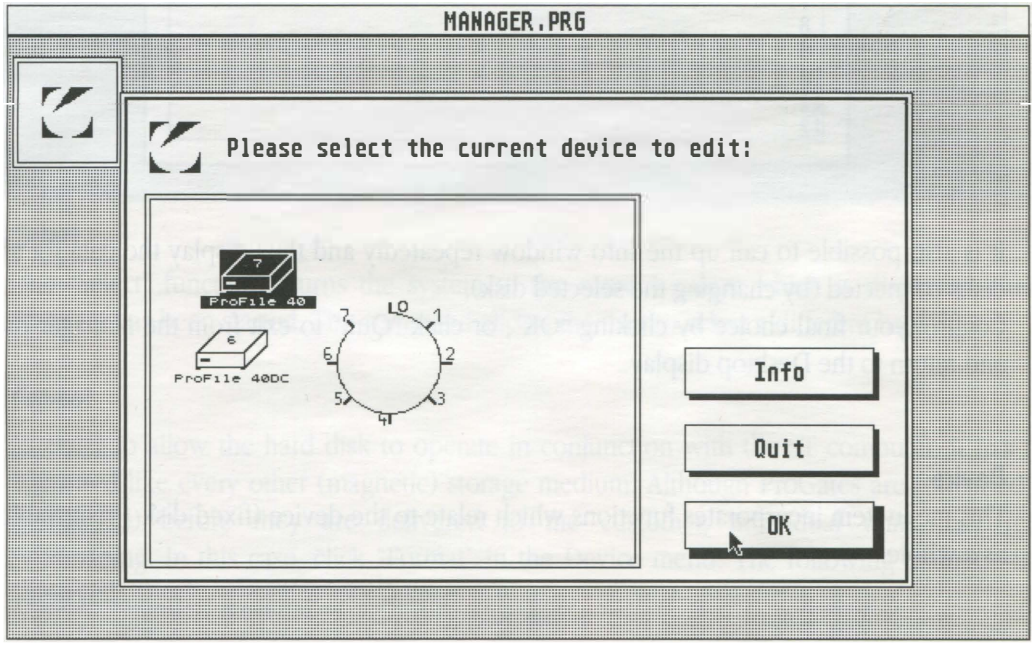
1.6 Starting the ProGate

Before switching on the ProGate, all other devices connected to your ST computer should be switched off. After a brief initialization period (approx. 25 seconds) the ProGate is ready for operation; now you can start the computer. It is important to observe this initialization period carefully because when the ST is started it only searches the DMA bus for a few milliseconds to find an autobootable hard disk; if the ProGate is not ready when this happens, no automatic start takes place.

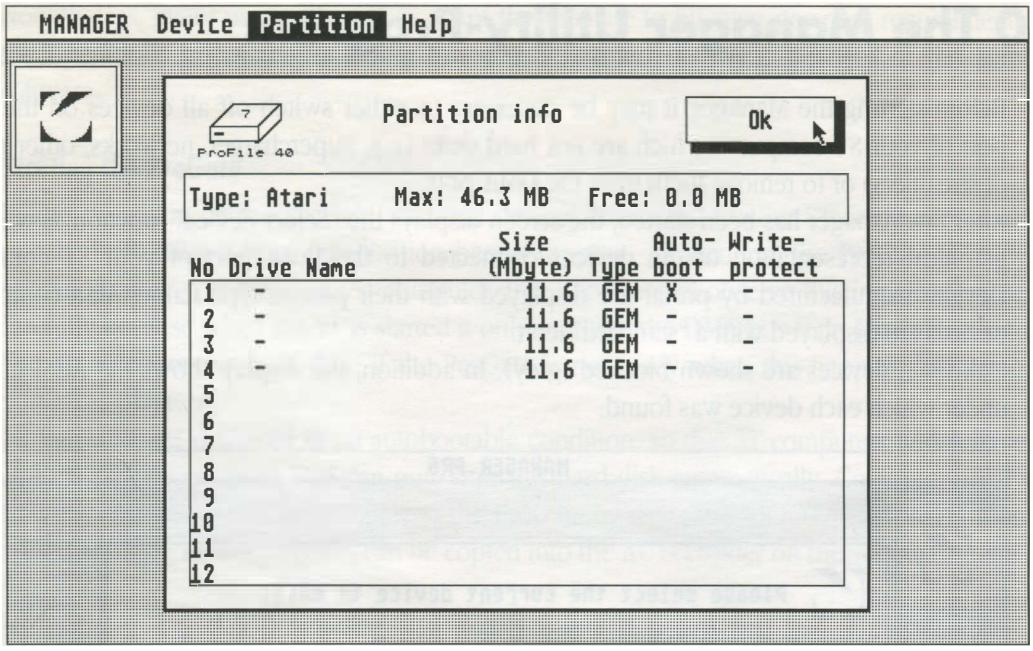
All ProGates are delivered in an autobootable condition, so that ST computers which have the built-in ROM versions of TOS can now start this hard disk automatically. Computer users who have the diskette TOS version can start the ProGate by using the "BOOT.PRG" program on the system diskette, or this program can be copied into the AUTO folder on the system diskette.

2.0 The Manager Utility-Program

Before starting the Manager, it may be necessary to either switch off all devices on the DMA port of your ST computer, which are not hard disks (e.g. supercharger, networks, other makes of streamers) or to remove them from the DMA port.
After the Manager has been started, the screen displays the "Select device" function as well as a graphical representation of the devices connected to the DMA port of your ST computer. Devices manufactured by protar are displayed with their precise type name; Atari-compatible devices are displayed with a "standard" icon.
Unknown devices are shown blocked (grey). In addition, the display shows the ACSI number under which each device was found.



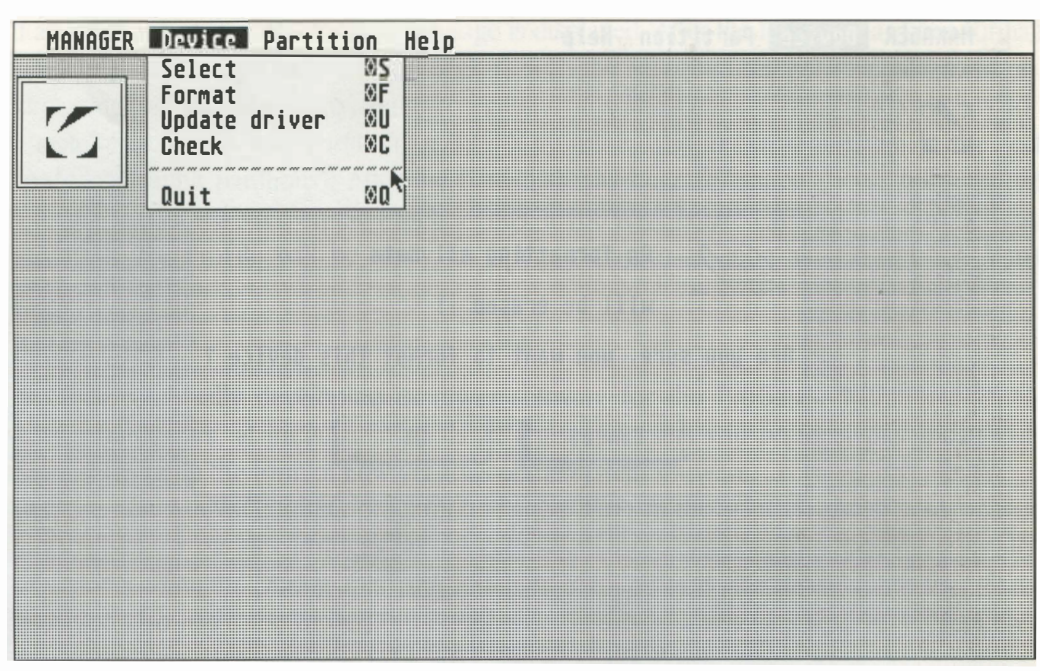
The first disk found on the ST computer is displayed in inverse mode as the current device, i.e. the system suggests this disk for processing. The current disk can be changed easily by clicking the icon for a different disk.
Confirm the selected disk by clicking the "OK" button, or select "Info". The display then shows information on the size of existing partitions including the operating system for which they are provided, boot partition label as well as existing write protection on individual partitions.



It is also possible to call up the Info window repeatedly and thus display the data for all hard disks connected (by changing the selected disk).
Confirm your final choice by clicking "OK", or click "Quit" to exit from the Manager program and return to the Desktop display.

2.1 Device

This menu item incorporates functions which relate to the device (fixed disk / removable disk) as a whole.

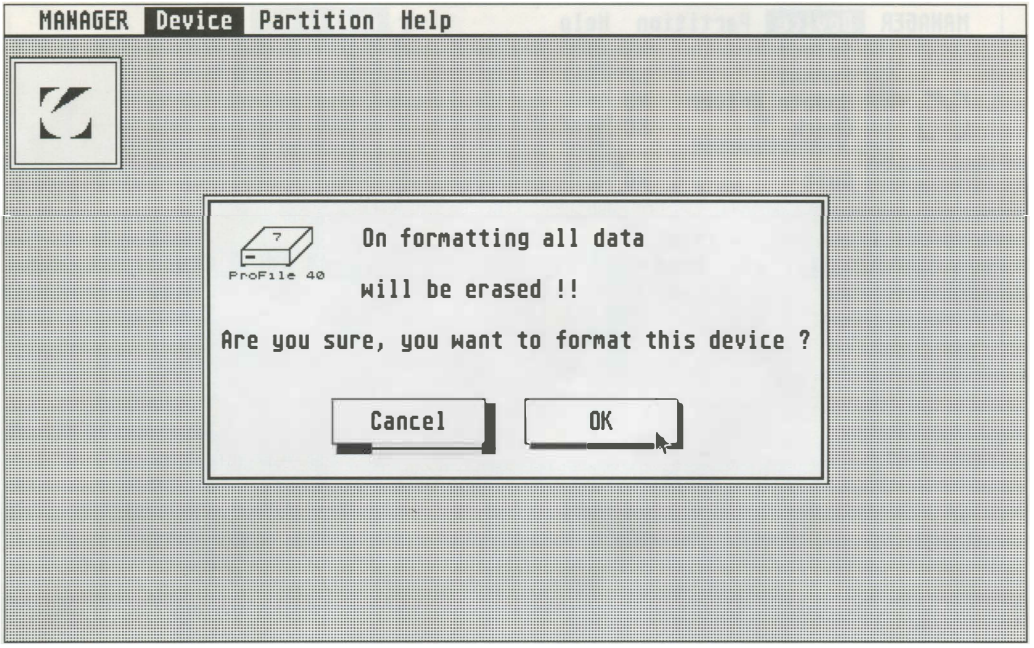


2.1.1 Select

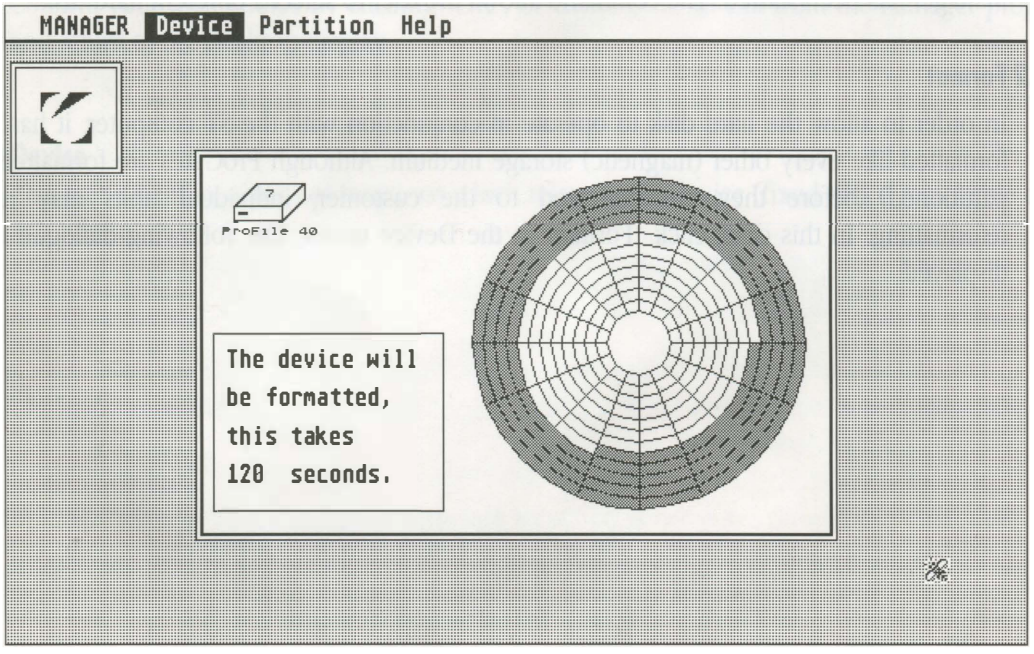
The "Select" function returns the system to the same window which is displayed after the Manager has been started. The command allows the user to select a different hard disk.

2.1.2 Format

In order to allow the hard disk to operate in conjunction with the ST computer, it has to be formatted like every other (magnetic) storage medium. Although ProGates are formatted (and partitioned) before they are delivered to the customer, individual units may require reformatting. In this case, click "Format" in the Device menu. The following dialogue box is displayed:



The formatting process is displayed on the screen graphically together with the expected time required.

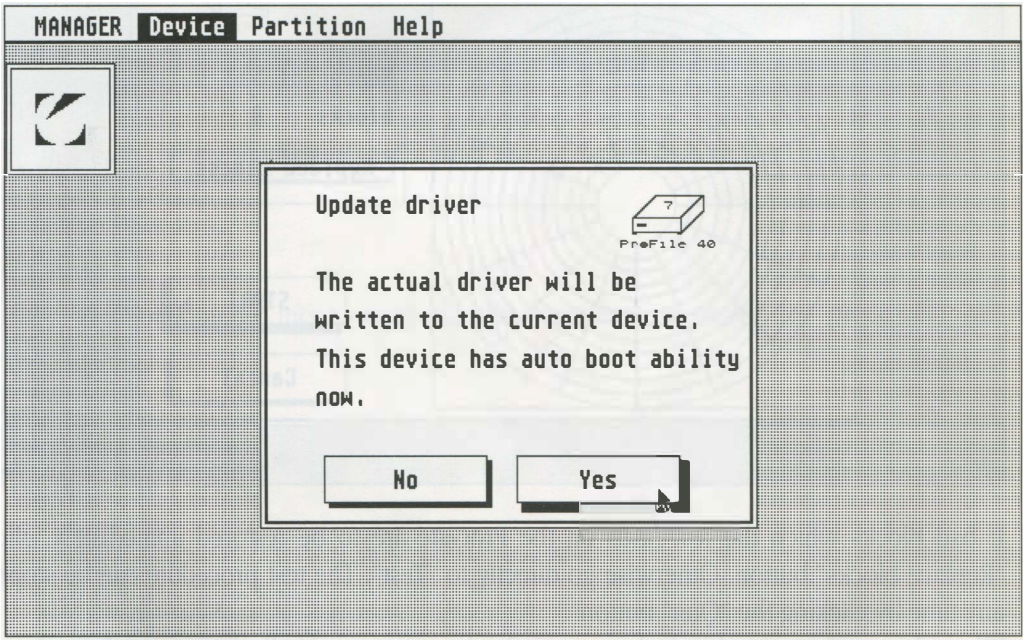


If an error occurs, a corresponding message is displayed. After the ProGate has been formatted, it has to be partitioned before it can operate with the ST computer. For this reason, when the formatting process has completed successfully, the Manager automatically switches to the "Create" function in the "Partition" menu. Now follow the instructions given in the section headed "Creating partitions". After the hard disk has been formatted successfully, the driver software is installed back on the ProFile. Thus, if you have created at least one partition on the hard disk, the ProFile will be ready for operation again as soon as you quit the Manager program.

2.1.3 Update driver

protar is continually developing its driver software for the ProGates. Within our customer service framework, at irregular intervals all registered users will be receiving updates of the driver software in the form of new versions of the system software.

Start the new MA AGER.PRG program and then perform the "Update driver" function on all protar disks (or on all cartridges, in the case of removable disks. This procedure installs the new driver version. During this procedure no data is deleted. Please remember that this operation also has to be carried out on all other makes of disks which are to be mounted by the protar driver. Here too NO DATA WILL BE DELETED!



Please remove (or replace, as the case may be) ALL OLDER VERSIONS of the following programs on your hard disk (or cartridges): MANAGER.PRG, BOOT.PRG, BOOT.TTP.

In order to be able to participate in this update scheme, it is essential that you return the warranty card accompanying each ProGate to protar. Please also read the section headed "Warranty".

2.1.3.1 Operation in conjunction with Atari-compatible hard disks

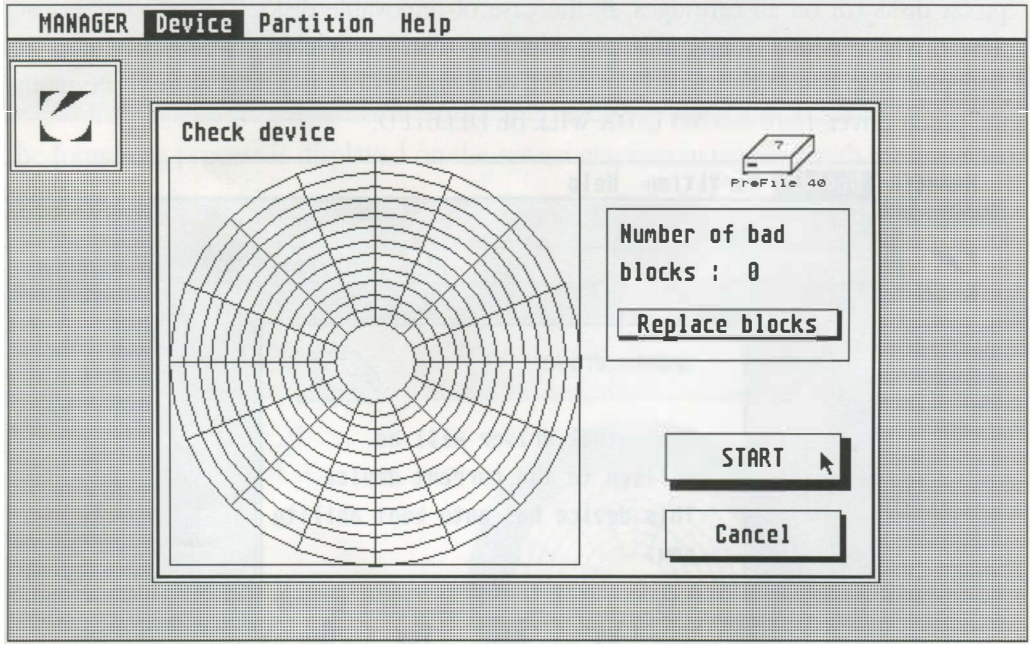
When the "Update driver" Manager function is carried out on Atari-compatible hard disks (AHDI 3.0 compatibility is assumed) the protar driver software mounts these disks into the system.

It must be ensured that the hard disk with the lowest ACSI number is a protar hard disk because this is the disk which loads the driver software.

This procedure can also be reversed by re-installing the original software for the other make of disk (e.g. HINSTALL for ATARI disks).

2.1.4 Test

The "Test" function in the Manager "Device" menu can be used to test the ProGate for bad blocks. During this test no data is destroyed; however, the test procedure is rather time-consuming.

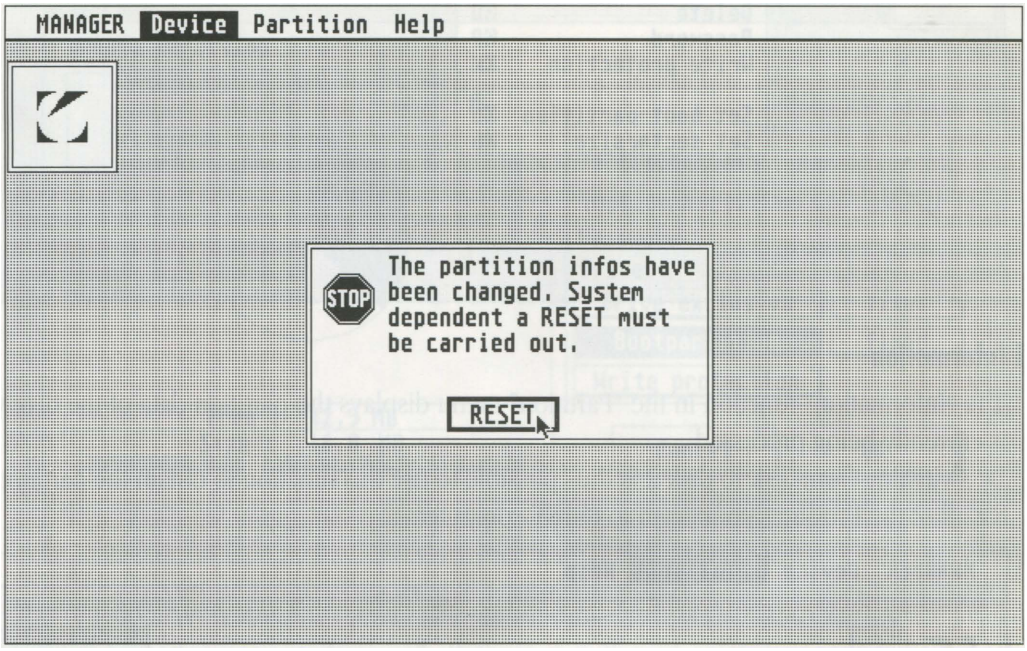


If bad blocks which the test finds on the ProGate are to be restored immediately, click the "Replace blocks" button. Otherwise go directly to "Test". The test procedure can be stopped at any time by clicking the "Quit" button.

When the test has completed, the system displays a corresponding message about the results which were obtained.

2.1.5 Quit program

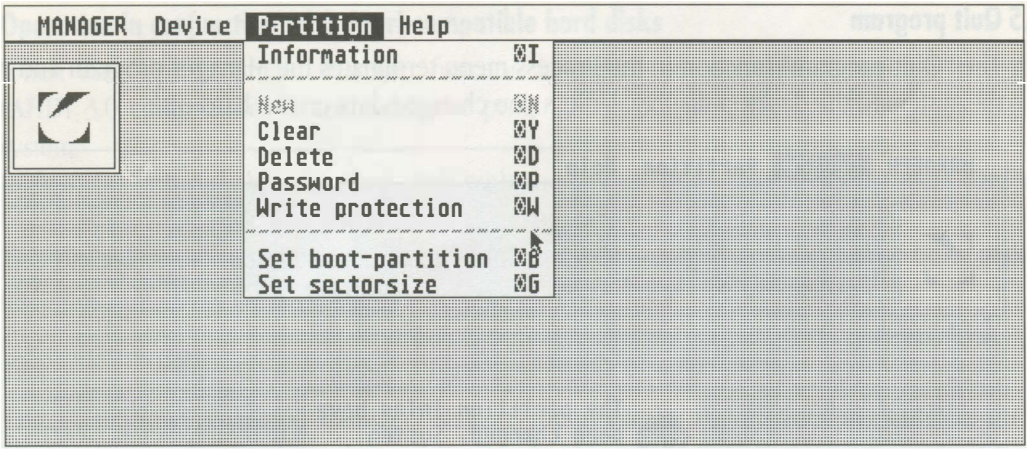
The "Quit program" function in the Process menu terminates the Manager program and returns the system to the desktop display. Unless you changed data on the hard disk.



In this case, when the system exits from the Manager program, it automatically causes the computer to reset.

2.2 Partition

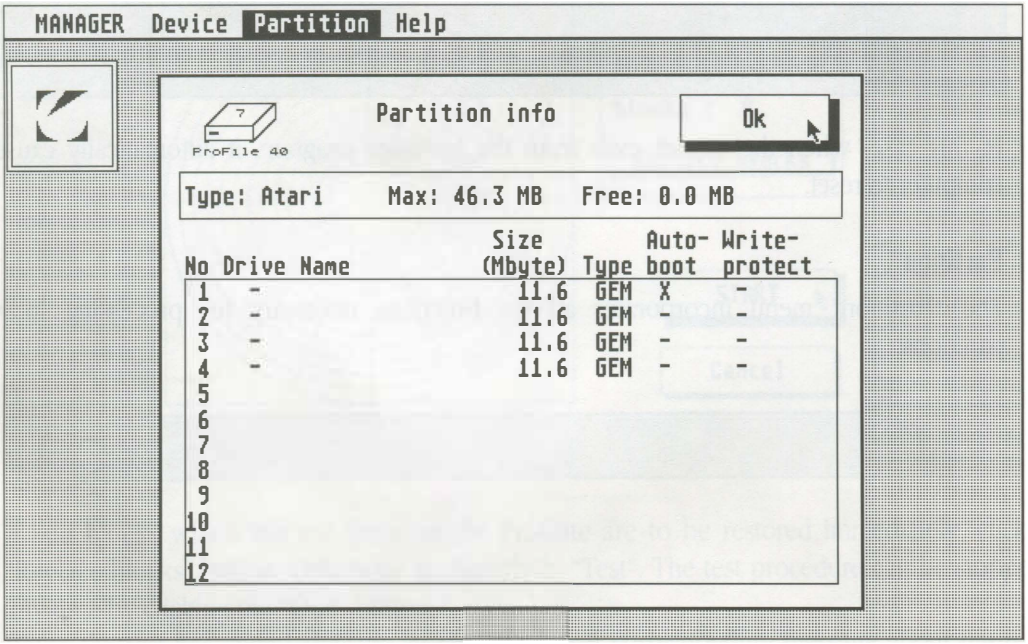
The "Partition" menu incorporates all the functions necessary for processing individual partitions.



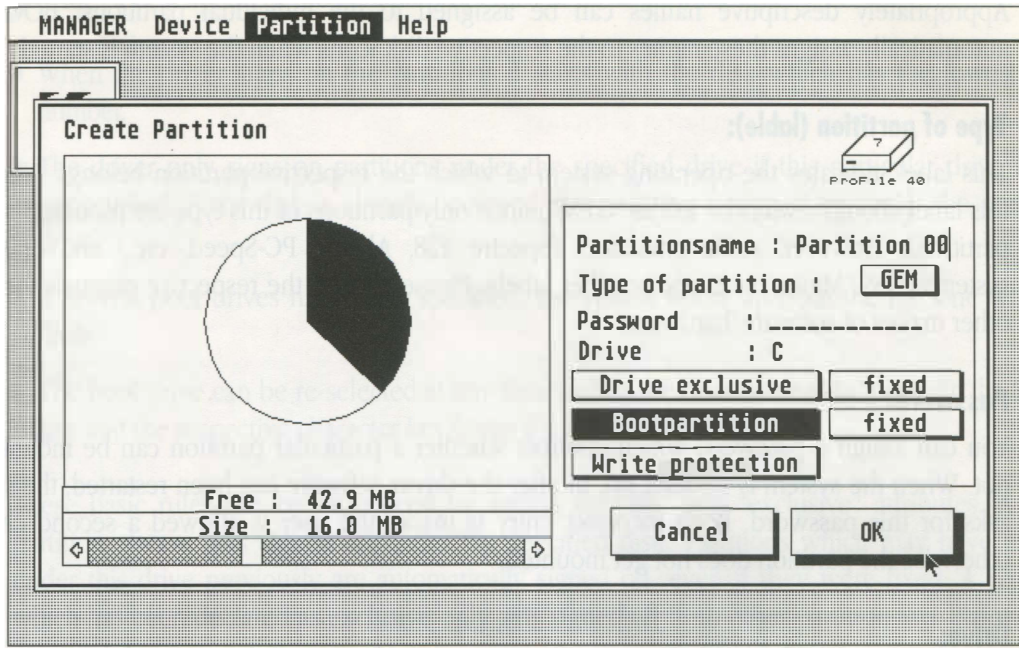
2.2.1 Information

The “Information” function in the “Partition” menu displays the partition data of the disk which is currently being processed.

By switching from disk to disk it is thus possible to use this function to obtain the partition data for all of the ProGates connected to the ST computer.



2.2.2 Create new partition



This function can be used to create new partitions. If there is no free storage space available, a corresponding message is displayed. If there is sufficient storage space, a dialogue box is displayed with the possible settings shown in the example.

Size in megabytes:

A pie chart is displayed showing the storage space available (and the space occupied, respectively). Grey zones indicate already existing partitions, the black area indicates the size of the partition which is being created and the white area represents storage space which is still empty.
The scroll-bar can be used to set the required size of the partition. The ratio of black space to white space changes proportionally with the movement of the scroll-bar; in addition, the capacity of the disk sections represented by these areas is displayed as “Size:” and “Free:” in megabytes (MB).

Partition sizes up to 512 MB are supported. ‘GEM’ partitions larger than 16 MB are automatically mounted as ‘BGM’ partitions (AHDI 3.0 compatible). For the latter, the logical sector size increases so that GEMDOS never uses more than 16384 sectors. The system buffers are automatically adapted by the driver.

Partition name:

Appropriately descriptive names can be assigned to the individual partitions. BOOT.TTP automatically assigns these names to the respective disk icons when the system is started.

Type of partition (lable):

This label indicates the operating system to which the respective partition belongs. Normally this label should always be left as "GEM", since only partitions of this type are mounted as TOS partitions. However, some emulators (Spectre 128, Aladin, PC-Speed, etc.) and operating systems (OS9, Minix, etc.) require other labels. Please consult the respective manuals for these other makes of software/hardware.

Password:

You can assign a password which controls whether a particular partition can be mounted or not. When the system is booting up, or after the driver software has been restarted, the system asks for this password. If an incorrect entry is made, the user is allowed a second chance; otherwise the partition does not get mounted.

Drive:

In contrast to other driver software, the ProGate software allows the user to assign any drive character from C through P to the drives. If no character is specified, the driver software installs the partition in the next free drive position.
In combination with the partition attributes described in the next paragraph, it is possible to set up different flexible boot sequences, particularly in more complex systems (e.g. 1-2 fixed disks + 1 removable disk).

Various attributes (boot/fixation/sign-on):

- **boot drive**
- **boot drive fixed**
- **partition fixed**
- **partition exclusive**
- **write-protect partition**

In order to clarify the attribute concept for the ProGate boot software, the following section provides a description of the general properties of these attributes:

- When the driver signs on the partitions it starts with the disk which has the lowest ACSI number.
- The driver only signs on partitions under the specified drive if this particular drive is still unoccupied. If the disk is already occupied, the partition is signed on under the next free drive.
- If several boot drives have been specified, the system boots up from the last one which it finds.
- The boot drive can be re-selected at any time during the boot process by pressing the SHIFT key and the respective character key (even if a boot drive is fixed).

These basic rules can be influenced by setting the "fix" and "exclusive" attributes. A fixed partition always gets signed on under the specified disk. Partitions which may have existed under this drive previously are automatically signed off, even if they were fixed. A partition which has been declared as exclusive only gets signed off if no other partition lays claim to the specified drive.

If the system is to boot up from the disk whenever the system cold-starts, one of the partitions must be assigned as a boot drive. This can be subsequently changed by using the "Select boot partition" function. If the system incorporates several hard disks which each have a boot drive, in this special case there is also the possibility to fix one partition as the boot drive. This partition is then always signed on as the boot drive whenever the computer is reset.

Note: **If, in a removable-disk/fixed-disk combination, a cartridge is changed, new fixed partitions will superimpose existing partitions, if these have the same drive assignment. It is then not possible to access these superimposed partitions until the driver is restarted.**

Important: **Under the old TOS 1.0 version, it is absolutely necessary to fix the partitions since, due to an error in the warmstart process, the old drives are not signed off and the program continually signs on new ones.**

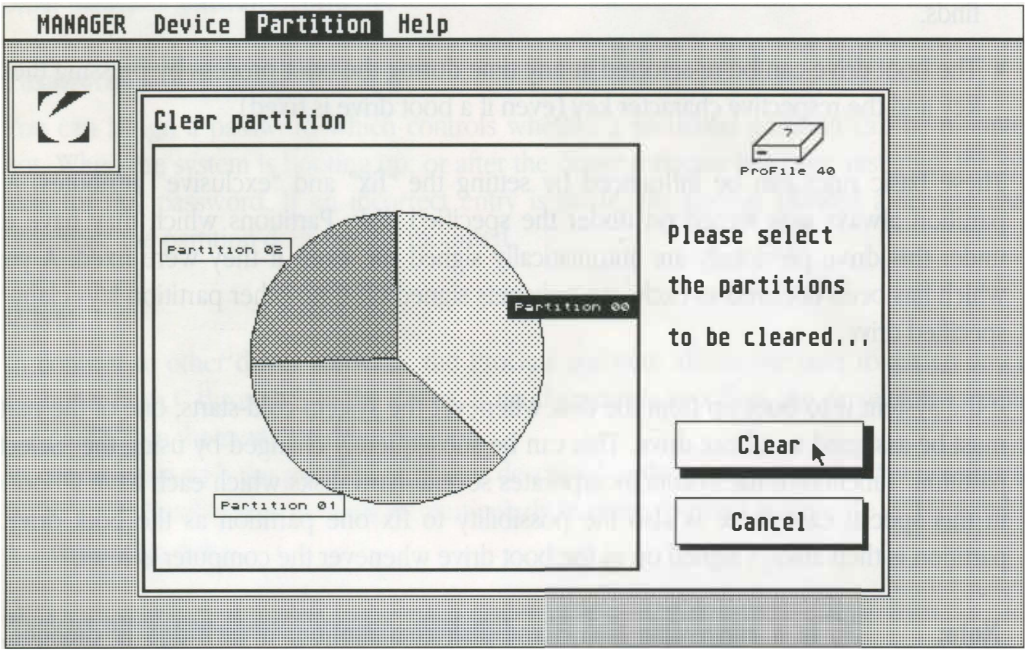
Please think about the respective applications of these attributes carefully, since they can not be readily removed!

Write protection

It is possible to write-protect partitions. This write protection has the same effect as with diskettes (same error messages); however, it is not as safe because it is based purely on software. This means that various utilities (disk monitors etc.) can still write access the disk, if they incorporate their own driver software.

2.2.3 Clear

The "Clear" function deletes all data from a partition without making any changes to the size or type of the partition itself.



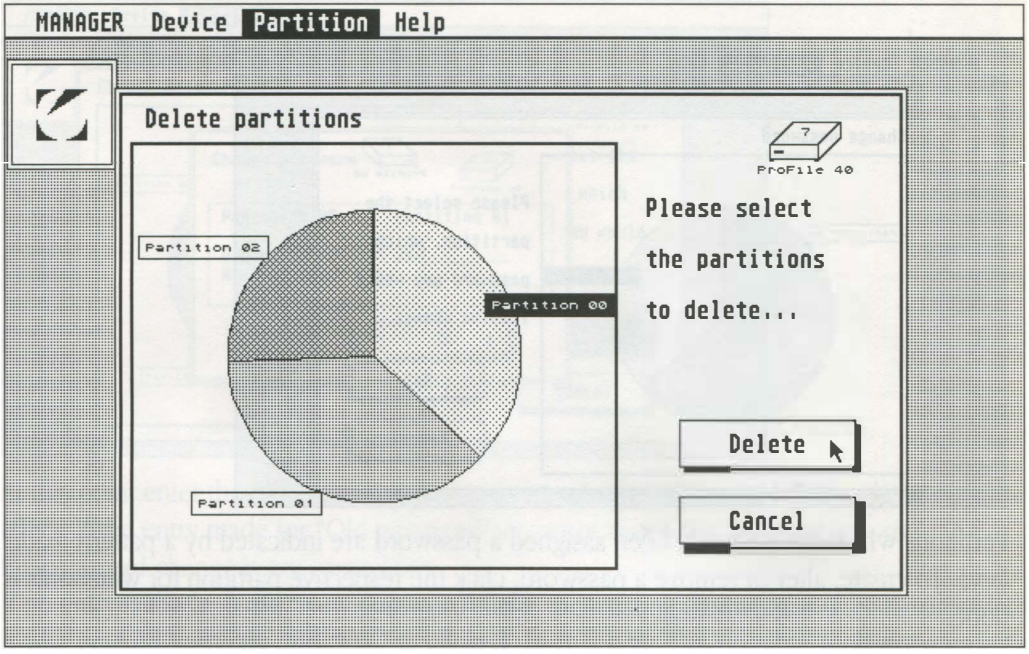
Click the name of the partition to be cleared. In the upper example, "Partition 00" was selected for clearing.

After the selection has been made, the selected function can be confirmed by clicking "Clear", or it can be cancelled by clicking "Quit".

Note: When a partition is cleared, all data in this partition is deleted!

2.2.4 Delete

The "Delete" function can be used to remove existing partitions from a disk and thus make space available for new ones. If you just require to delete the contents of a partition (not the partition itself), select the "Clear" function described previously.

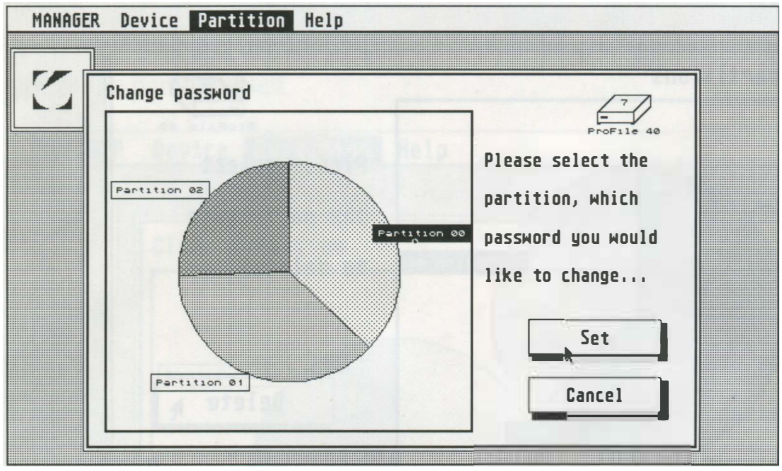


Click the name of the partition represented in the pie chart.
After the respective partition has been selected, the function can be confirmed by clicking "Delete"; or the process can be cancelled by clicking "Quit".
When partitions are being deleted, it may happen that the Manager has to reorganize other partitions since the system relocates them forwards to take up the space previously occupied by the deleted partitions. This may take some time.

Note: Under no circumstances should this reorganization process be interrupted otherwise data will be lost.

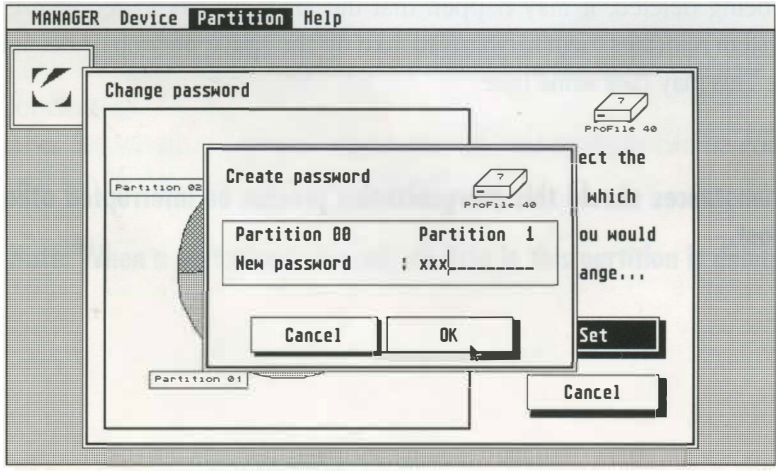
2.2.5 Password

The "Password" function in the Configuration menu can be used to assign a password to an existing partition, or to alter or remove an existing password.
When this function has been selected, a window appears which displays a pie chart showing all the partitions on the ProGate being processed:



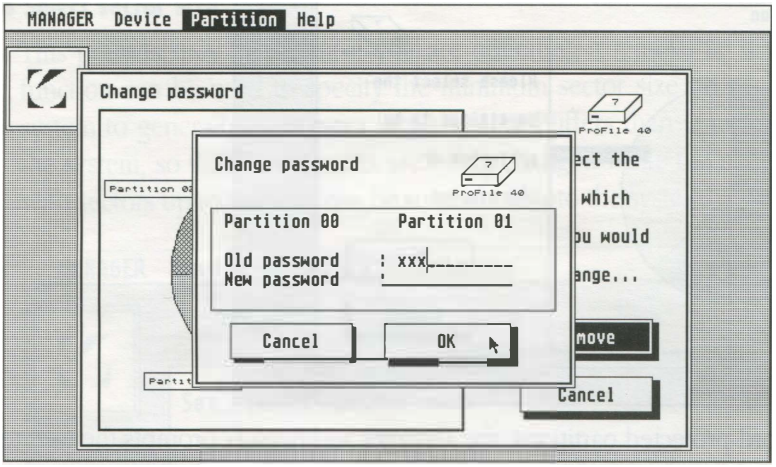
Partitions which have already been assigned a password are indicated by a pattern made up of keys. To create, alter or remove a password, click the respective partition for which this is to be done.

Now select the function "Create password" or terminate the process by clicking "Quit". In the former case a dialogue window is displayed; this window appears as follows when a new password is entered:



After you have entered the password, confirm by clicking “OK”. “Quit”
allows you to return to the previous window without a password being entered.

If there had already been a password assigned to the partition, the following window is displayed when “Change password” is clicked.



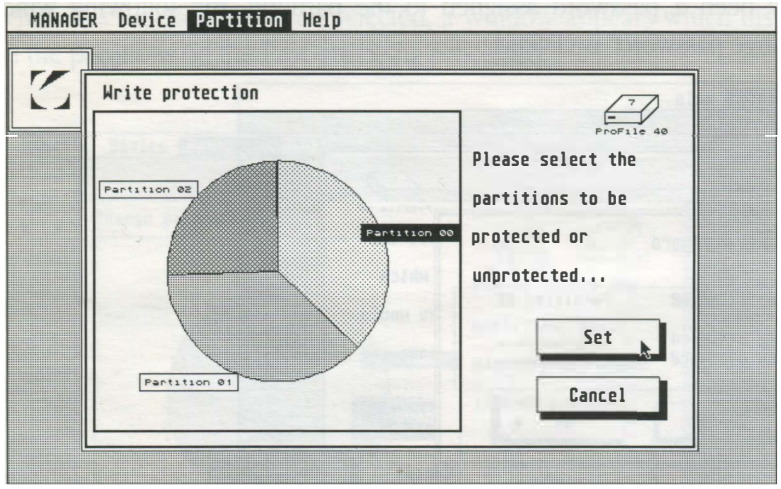
At this point enter the old and the new password; when “OK” is clicked, the change comes into effect. If the entry made for “Old password” does not match the actual password in the system, the password-change is not carried out.
If no entry is made in the “New password” field, the existing password is deleted, provided that it was entered correctly and “OK” is clicked. In this way it is possible to remove an existing password protection.

2.2.6 Write protection

To protect your data against accidental or unauthorized changes, it is possible to write-protect partitions. Data on write-protected partitions can only be read - it is no longer possible to write data to the partition. The purpose of this function is to prevent important data or programs from being deleted or modified.

The “Write protection” function in the Configuration menu allows you to activate and de-activate the write-protect status for partitions. When the “Write protection” function is selected, the display shows a list of all the partitions on the disk currently being processed.

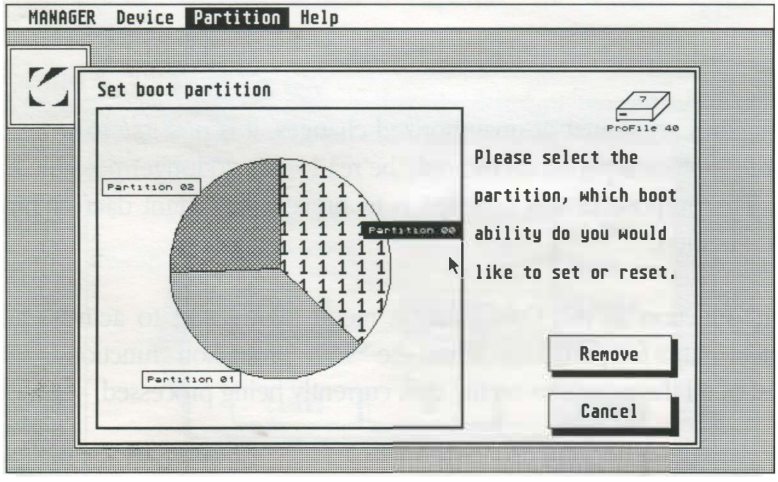
Partitions which are already write protected are identified by a pattern of crosses. Next, click the name of the partition which you wish to change and then use “Write protection” to switch its respective current write-protect status.



In the case of password-protected partitions, the Manager additionally prompts the user to enter the respective password.

2.2.7 Select boot partition

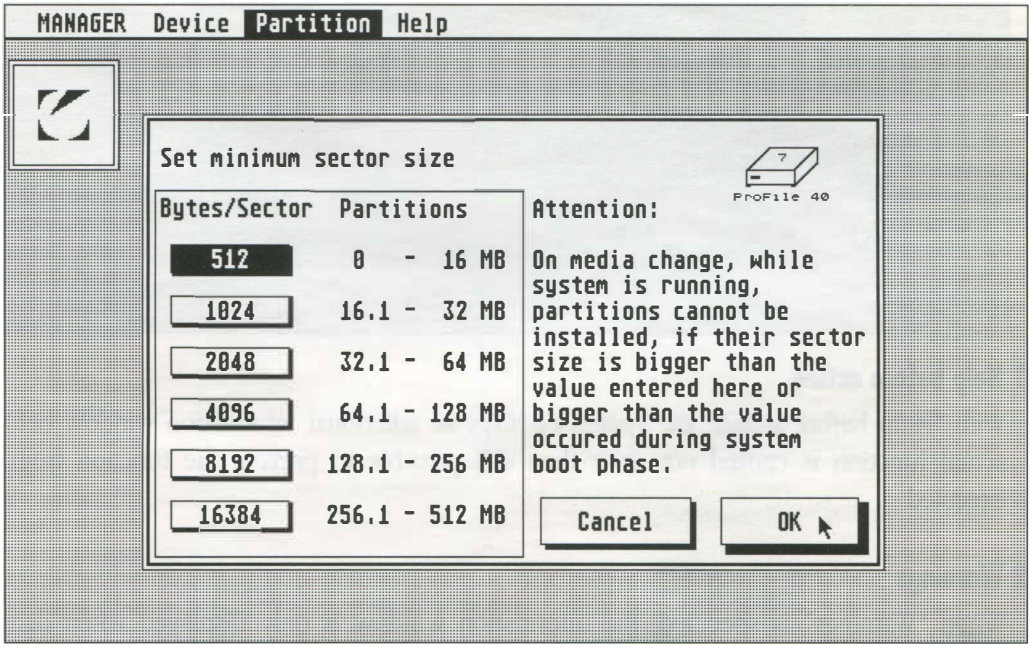
This function is used to specify the partition from which a possibly existing Auto folder and accessory files are to be loaded. Please remember that the DESKTOP.INF file may still have to be copied to the boot partition.



Simply select the boot partition by clicking it and then confirm your selection with the "OK" button.
If you do not use this function or the "Create partition" function to specify a boot partition, then, until you specify a different boot partition, the system will be booted from "C".

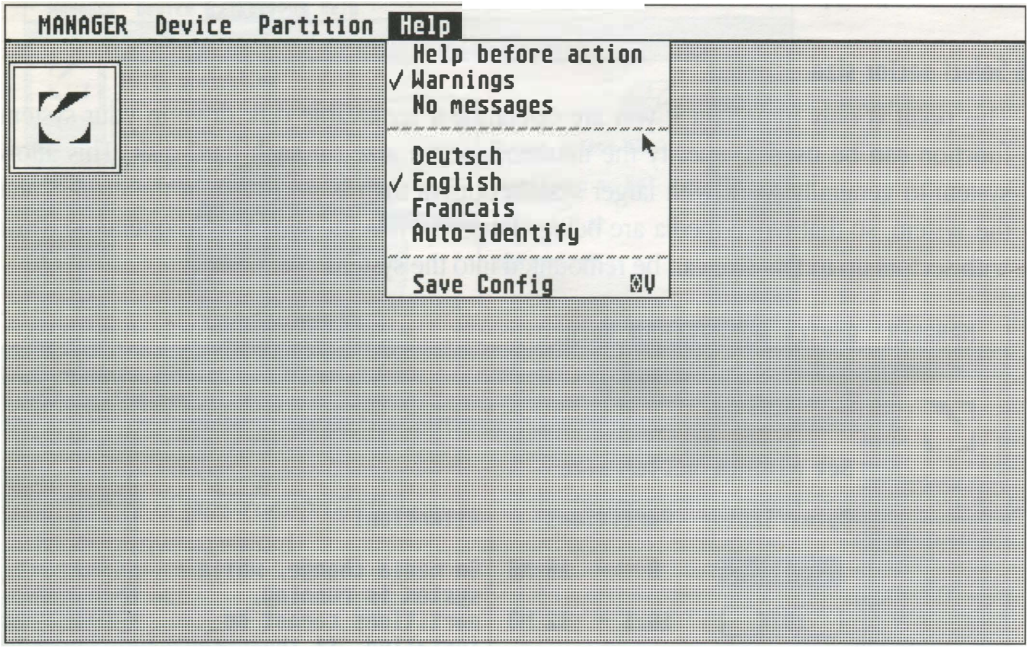
2.2.8 Select sector size

This point is only important if you are operating a removable disk drive in your system. The function can be used to specify the minimum sector size on each hard disk. This allows the system to generally work with larger system buffers than is necessary in the current status of the system, so that when media are being changed while the system is in operation, cartridges with sectors up to this size can be remounted into the system.



2.3 Help

In this menu the user can set the current help level and the language which is to be used in the Manager; these are then active when the program is restarted.



2.3.1 Help before action

With "Help before action" the system displays an additional information window before the actual function is carried out. It is then still possible to prevent the function from being executed.

2.3.2 Warnings

When "Warnings" is specified, the information window is only displayed when dangerous functions are to be carried out where data may be destroyed.

2.3.3 No messages

In the "No messages" help mode, all functions are carried out without any further safety prompts.

2.3.4 Deutsch, English, Francais, Auto-detection

This specifies the language in which messages and text is to appear on the screen. When Auto-detection is selected, the system automatically chooses the language matching your operating system. For each of the three languages there is a file with text and graphics data (MANAGGER.RSC = German, MANAGENG.RSC = English, MANAGFRA.RSC = French). If any one of these files is missing when MANAGER.PRG is started, the corresponding menu entry for selecting the respective language will be blocked.

2.3.5 Save settings

The "Save settings" function can be used to save the help level selected and the user language specified so that they become active when the MANAGER.PRG is activated the next time.

3.0 The boot process

Options during the boot process:
You can generally prevent the system from mounting the hard disks by pressing the ALTERNATE key during the boot process.
If, during the boot process, the SHIFT key is pressed (shortly after the floppy lamp lights up) the system waits for a corresponding key entry when the prompt/message for a new boot drive is displayed. When the message is displayed, the system also shows the characters for all signed-on drives.

When, after a short period, the system displays the prompt "Change boot drive?", release the SHIFT key. You can then type in a character (e.g. 'A' for drive A:) to select the required drive.

When the system asks for a password which was specified with the MANAGER.PRG program, and the password is entered incorrectly twice in succession, the protected partition does not get mounted into the system.

Note: The DESKTOP.INF file still gets logged on drive C! For this reason it is essential that you rename the DESKTOP.INF file on drive C so that it does not get overwritten..

The following procedure is to be recommended:
- Rename the old DESKTOP.INF file (e.g. to DESKTOP.OLD)
- Select the "Save job" function on the desktop
- Rename the new DESKTOP.INF file (e.g. to DESKTOP.NEW)
- Rename the old file DESKTOP.OLD to DESKTOP.INF

3.1 Signing on icons automatically

A characteristic of the TOS desktop is that, after the system has booted up, only the icon for drive C: is automatically signed on or off, respectively. To avoid having to sign on the other drives manually, you can start the BOOT.TTP program on the system diskette supplied. This program automatically signs on the respective icons together with the names specified in the MANAGER.PRG. However, it is important to select the "Save job" function on the desktop so that the sign-on procedure for these icons is stored permanently in the DESKTOP.INF file.

Important: After a reset has been carried out, icons which are visible on the desktop do not necessarily indicate that the respective partitions or drives are signed on. The TOS desktop only correctly signs on or off the icon for drive C.

3.2 The BOOT.TTP program

- Mounting connected hard disks
- Signing on icons on the desktop
- Detailed information on which partitions are signed on
- Subsequent mounting of password-protected partitions

When the BOOT.TTP program is started in the desktop level, the system asks for a number of parameters. Here, the following options are available (these have to be separated from each other by a space):

s	**(silent)**	prevents output to the screen.
v	**(verbose)**	displays detailed messages on which partitions were mounted under which drive.
b	**(banner)**	no headline with version information.
a	**(acknowledge)**	wait for key entry.
h	**(help)**	brief help text explaining the individual options.
c	**(clear)**	Clears the screen prior to output.
BN	**(boot drive N)**	sign on N as the next boot drive.
tx,y	**(target x,y,..)**	only devices numbered x, y, … are signed on.

4.0 Changing media

protar cartridges can be changed while the system is in operation; it is not necessary to perform a reset. It is only possible to change cartridges which were processed with the "Update driver" function in the MANAGER.PRG program. (Up to software version V2.03 it was only possible to change protar-formatted cartridges.)

Password-protected partitions are skipped in this case because the system can not ask for a password while it is in the operating status.

It is not possible to sign-on partitions which have larger sector sizes than the maximum sector sizes which occurred when the system was started up.

Note: When there are several hard disks mounted in the system, and the newly mounted cartridge contains fixed partitions, it may happen that it is no longer possible to access other drives (hard disk, RAM disk, network) until the driver is re-initialized.

Important: It is ONLY allowed to use CACHING PROGRAMS which can recognize MEDIA-CHANGE at BIOS level (otherwise data will be lost!).

ATARI's CACHEnnn.PRG (belongs to TOS 1.4) or the CACHyxxx.PRG program on ProGate diskettes both work without problems.
Please do not attempt to access the newly inserted cartridge until it has reached operating status (red lamp stops blinking).

5.0 The CACHEADD PRG program

Why this program?

Internally, the operating system (or GEMDOS) administrates something like a cache memory for the file system. It serves to keep previously loaded sectors in memory so that they are immediately available when next accessed. Of course, this saves time.
Normally the initial cache memory is only four sectors in size. This, of course, is much too small to obtain a phenomenal increase in speed. For this reason, ATARI provides the program CACHExxx and Claus Brod (author of the book KLEISTERSCHEIBE) has written the program CACHEADD; both these programs serve to increase the number of sector buffers. The latter program has been made available to protar and is located on the ProGate diskette.

Important: It makes little sense to expand the GEMDOS sector buffer under TOS 1.0 and TOS 1.2. These TOS versions use the sector buffer so inefficiently that an increase in the number of buffers brings little advantage. Only from TOS version 1.4 onwards has the buffer administration become efficient enough to warrant the use of CACHEADD.

Just as the original program on the KLEISTERSCHEIBE, this program is neither 'public domain' nor shareware or freeware; this program is commercial software.

Application of CACHEADD

CACHEADD is copied under the correct name (see below) into the Auto folder in the partition which you generally boot up from. However it is also possible to start the program at a later point by double-clicking it.

CACHEADD obtains the required parameter data from the name of this file. The name of the file must have the following format:

```
CACyTxxx
| | | | | |
| | | -------      Number of additional buffer sectors
| | ---------      Buffer type (D/F/B)
| ----------       "H": Buffer size = 512 bytes, or get from driver.
|                  Digits 1 ... 7: specify buffer size directly...
|                  (1 = 512 bytes, 2 = 1024 b., 3 = 2048 b., 4 = 4096 b.,
|                  5 = 8192 b., 6 = 16384 b., 7 = 32768 b.)
-----------        "C": incorporate old buffer list
                   otherwise: discard old buffer list, only install new one.
```

TOS specialists will certainly know how to handle this information. For normal use, only two parameters are of significance: the buffer type and the number of additional buffer sectors.

Possible values for the buffer type:

- **F** Buffer list for FAT and root directory sectors will be expanded
- **D** Buffer list for the remaining sectors (data sectors and subdirectories) will be expanded
- **B** Both buffer lists will be expanded (the new buffers are evenly distributed amongst the two lists)

Examples for valid file names:

CACHF10.PRG 10 new buffers for the FAT list (FAT = File Allocation Table)
CACHD100.PRG 100 new buffers for the data sector list
CACHB100.PRG 50 new buffers each for both list

A commonly used value is CACHB100.PRG; we recommend CACHB150 if you have sufficient memory. 532 bytes are required for each sector buffer (for 512-byte sectors); for 150 buffer sectors this already means 80000 bytes. Larger values hardly bring about an increase in performance, indeed, they tend to harm the system's performance. If you have no longer sufficient memory in the system, CACHEADD reports this and it does not install itself. If you expand both buffer lists (buffer type = 'B'), the number of additional sector buffers should be even.

Important: 1. It is not possible to install two copies of CACHEADD in the Auto folder. When CACHEADD searches for its file name in the current directory, it stops searching as soon as it finds the first suitable name; it disregards the second name.

2. The directory in which CACHEADD is started must not contain another program which matches the file name pattern CA*.PRG. After starting, CACHEADD looks for a file of this type.

Further information on the program can be found in the CACHEADD subdirectory on the ProGate diskette.

6.0 The FOLDxxxx.PRG program

Application:

FOLDxxxx.PRG eliminates (or delays) the so-called "40-folder problem".
This error in TOS versions 1.0 and 1.2 becomes evident as follows:

- Files are not found
- Files can not be written to or read from
- Directory listings are suddenly empty
- Directory listings only contain garbage
- other strange effects

If any one of the above effects occurs, avoid accessing your hard disk any further. Please RESET your system and then copy the file FOLD100.PRG into the AUTO folder on your boot drive.

If you have already done this and problems of the above type still arise, increase the value 100 by changing the name of the program.

Examples:

- FOLD150.PRG
- FOLD200.PRG
- FOLD400.PRG

Important: If your system has many subdirectories, you should use this program even if you have TOS versions 1.4 or 1.6. Although the actual fault has been eliminated from these versions, a new problem has arisen (this problem can be smothered somewhat with the POOLFIX3 or CB_PFIX programs).

Appendix A: Solutions to problems

If, contrary to expectation, complications arise in conjunction with hard disk operation, please read through the following information carefully. Perhaps the source of the problem is already described here and an (unpleasant) search can be avoided:

1. The driver is called up (by Autoboot or by clicking the BOOT.PRG on the diskette), but it does not place any icons on your DESKTOP or it does not rename existing icons:

   Check all connecting cables and make sure all devices are switched on.
   Perhaps you have signed on too many icons/applications so that the memory available to TOS for signing on further icons has become too small. In this case, sign off all unnecessary icons (using the "Sign-on floppy" function in the Extras menu on the desktop. Now start a second attempt.

2. When the computer is switched on, it only recognizes your ProGate but does not mount other makes of hard disks:

   Ensure that when you switch on the computer, all connected hard disks must have completed their initialization phase.
   Check the device addresses specified. If the ProGate software is to be used, the ProGate must always have the lowest address (ACSI number). The switch for setting this address is located at the back of the device.
   Furthermore, check that our driver has been installed on the other makes of disks (using the Manager's "Update driver" function). Possibly, the driver may have been damaged by some other program in the meantime; in this case it is best to make sure and update the driver once more.

3. When the computer is switched on, it does not recognize a connected ProGate:
   It may be that a hard disk with a lower device address has an older AHDI driver. This driver ignores other drivers and jumps directly into the operating system so that the ProGate does not get a turn. In this case, install our driver on this hard disk (using the "Update driver" function in the Manager) and set the hard disk to a higher device address (ACSI number) than the ProGate.
   Furthermore, it may be that the root sector on the ProGate is not executable. Various utilities manipulate the root sector of the hard disk (this is where the Autoboot information is stored). In such a case, the only thing you can do is to try and re-install the root sector by using the "Update driver" function.

4. When the computer is switched on, it recognizes none of the hard disks connected:
   Check that no two hard disks have the same device address (ACSI number).

4a The computer can not be started; the LED (which indicates access to the hard disk) is on continuously.
   Perhaps the hard disk was not fully initialized when the computer was switched on. When an attempt is made to access a hard disk while it is performing the internal selftest, the host adapter may start to malfunction because the latter blocks further data exchange.

5. The computer starts normally; however, it is not possible to read data either from floppy disks or from the hard disk (TOS error message: "Data on disk ... defective, ...").

   Check whether the ACSI in and out connections have been interchanged.

6. After a reset (or after briefly switching off) the screen remains blank, the diskette drive LED remains off and there seems to be no activity.
   This problem occasionally arises on Mega ST models. The only way to solve this internal computer problem is to switch off the system, wait approximately three minutes and then switch back on again.

7. You are using the "ALADIN" emulator; after the ALADIN Autoboot, the monitor does not display any hard disk icon.

   Check the device address (ACSI number) of the hard disk used. Some ALADIN versions only work in conjunction with device address (ACSI number) "0". Also make sure that you have called up the "MACINST" ALADIN utility.

8. The ST computer only searches for accessories on the "C" partition of the computer, or it does not find the respective resource files for the accessories:

   This error occurs in conjunction with some TOS versions; the only solution is to procure a new fault-free TOS version, or to continue starting the accessories from partition "C".

9. You have used the Manager's "Write protection" function to protect certain partitions. However, you find that you can still use, for example, "MACINSTAL" (ALADIN) or "SED" (Scheibenkleister) to write and alter data:

   The programs mentioned bypass our driver software and directly access the hard disk. The write protection installed only prevents normal write accesses sent through the driver software.

10. Your computer boots up normally after being switched on; however, when it is reset, the following message is displayed: <Partition X could not be installed as drive Y>. Inaddition, the drives are "empty" after the system has booted up. Furthermore, after several boot processes, the system reports <No more drives free>:

    This error occurs on some old TOS versions; when a reset is made, these versions do not reset the operating system variable _drvbits in which the signed-on GEMDOS drives are recorded. The driver software then occupies additional drive labels because it assumes that the others are used.

    To prevent this, you must fix your partitions (see also Chapter 2.2.2) or install a new TOS version.

Appendix B:
Technical data on the ProGate software

structure/distribtion of hard disk

Block	Explanation
0	ATARI-compatible root block (boot-loader/partition information)
1-3	Protar partition information
4-23	Protar driver software
24-32	Space for further root blocks in 'XGM' format
33	Partition 0
XX	Partition 1

Root block/ATARI partition format (Block 0)

During boot-up, this block is read and executed by TOS when all bytes in the block give a sum of $1234 (this is achieved by the addition of a corresponding compensation word). It contains the so-called "Boot Loader". This is the program which loads and starts the actual driver.

Since the root block only has space for 4 partition entries, the 4th entry is of particular significance.
This information contains the so-called 'XGM' entry (extended GEMDOS) which points to an additional root block for three further partitions.
This further root block can again contain an 'XGM' entry.

Offset	Symbol	Size	Description
$0000	st_bootload	1W	Opcode (BRA.S)
$0002	st_magic	1L	Magic ‘crac’
$0003	st_magic2	1W	Magic, for Protar discs ‘HD’, otherwise ‘SH’
$0004	st_reserved	1L	
$0008	st_bootcode		The bootload program
$01C2	st_hdsize	1L	Harddisk size in sectors
$01C6	st_part0	12B	ATARI partition entry 0
$01D2	st_part1	12B	ATARI partition entry 1
$01DE	st_part2	12B	ATARI partition entry 2
$01EA	st_part3	12B	ATARI partition entry 3
$01FE	st_1234	1W	Compensation (all 512) bytes must give $1234)

<ATARI partition entry>

Offset	Symbol	Size	Description
0	stp_flag	1B	$81 bootbar, $01 existent
1	stp_id	3B	ID like ‘GEM’,’IBM’ (or’XGM’ for pointer to next root block)
4	stp_start	1L	Start-sector of the partition
8	stp_size	1L	Partition size in sectors

Protar Partition-Information Format

Block	Offset	Description
1	$0000	Internal branch opcodes
1	$0010	Protar volume info
1	$0040	Protar partition entry 0
1	$0070	Protar partition entry 1
1	$00A0	Protar partition entry 2
1	$00D0	Protar partition entry 3
1	$0100	Protar partition entry 4
1	$0130	Protar partition entry 5
1	$0160	Protar partition entry 6
1	$0190	Protar partition entry 7
10	$01C0	Protar partition entry 8
1/2	$01F0	Protar partition entry 9
2	$0020	Protar partition entry 10
2	$0050	Protar partition entry 11

<Protar Volume Info>

Offset	Symbol	Size	Description
0	v_magi1	1L	Magic 'V1.0'
4	v_typ	1W	Device type (2=harddisk, 3=cartridge, 4=streamer)
6	v_state	1W	Device flags (2=media-change recognition required)
8	v_size	1L	Capacity in kbytes
12	v_part	1W	Number of partitions
14	v_magi2	1W	Magic 'ST'
16	v_name	13B	Product name (ZERO-Byte concluded)
29	v_magi3	19B	'CRAC GMBH'
55	v_date	4B	Date of driver version, format YYCCMMDD

<Protar partition entries>

Offset	Symbol	Size	Description
0	pp_start	1L	Start sector
4	pp_end	1L	End sector
8	pp_bsize	1L	Capacity in kbytes
12	pp-flag	1W	<Protar status flags> (see below)
14	pp_typ	3B	Label as with 'GEM', 'IBM' or other
17	pp_pw	13B	Password (ZERO-Byte concluded)
30	pp_drv	1B	Drive number (2=C, 3=D,....)
31	pp_name	13B	Partition name
44	pp_bytpsec	1W	Logical sector size (512, 1024,...) (NEW!)
44	pp_magic	1W	Magic 'ST' (NEW!)

<Protar Status Flags>

Bit	Symbol	Mask	Description
0	PA_EXIST	$0001	Partition exists
7	PA_BOOT	$0080	Partition is boot drive
8	PA_RDONLY	$0100	Partition is write-protected
9	PA_PASSWD	$0200	Partition is password-protected
10	PA_FORCE	$0400	Partition is fixed
11	PA_EXCLUS	$0800	Partition is exclusive
12	PA_BFORCE	$1000	Partition is fixed boot drive

System Vectors and Variables used

Address	Symbol	Description
$84	gemdos_vec	Patch routine for ACC boot-error is mounted
$88	aesvdi_vec	redirected during boot phase
$404	etv_critic	used for error output
$408	etv_term	^C is disabled
$43E	flock	Semaphore during ID access
$446	_bootdev	set during boot process
$472	hdv_bpb	points to Getbpb() routine with XBRA 'PRTR'
$476	hdv_rw	points to Rwabs() routine with XBRA 'PRTR'
$47E	hdv_mediach	points to Mediach() routine with XBRA 'PRTR'
$484	conterm	keyboard-repeat is switched off during boot phase
$4B2	_bufl	2 pointers to the GEMDOS system buffer
$4BA	_hz_200	time loops
$4C2	_drvbits	drive entries
$4C6	_dskbufp	buffer for odd address
$4F2	_sysbase	version label/country label
$516	pun_ptr	pointer to an AHDI 3.0 compatible structure

Appendix C:

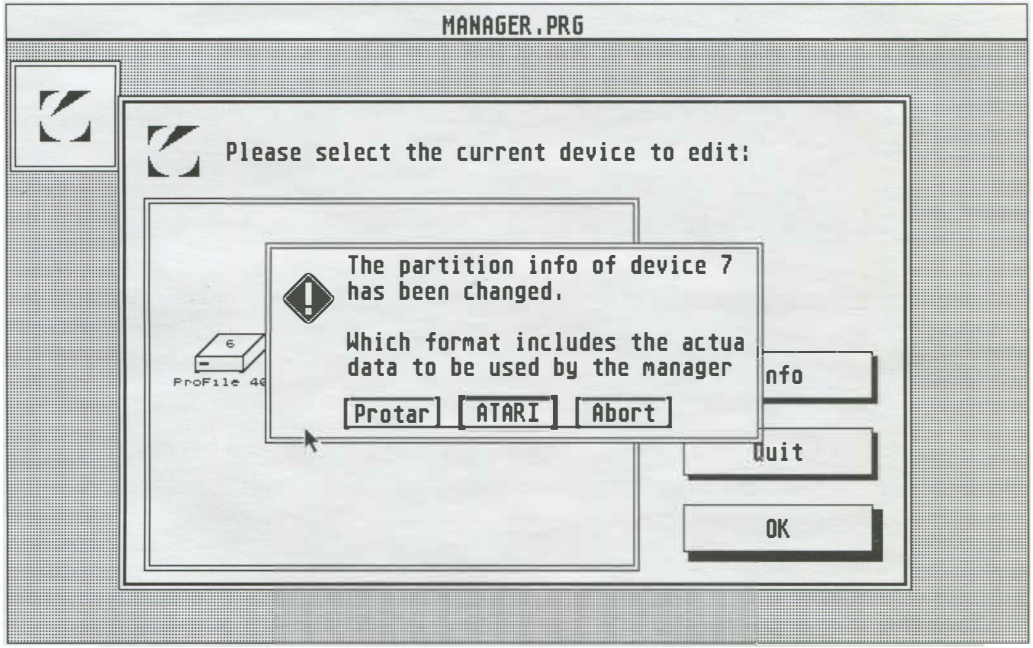
Product	Access time in ms	Size in sectors	Sectors per track	Number of tracks	Number of heads	Transferrate in KB/s	average/ track-change
ProGate 20	40	41921	26	407	4	> 650	8
	68	41004	17	612	4		15
ProGate 30	40	62933	26	615	4	> 650	8
ProGate 40	28	94860	26	615	6	> 700	8
	28	82812	17	804	4		15
ProGate 40DC	19	82029	32	834		3> 780	6
ProGate 50DC	17	102171	49	1219		2> 900	
ProGate 60	28	126790	26	630	6	> 500	
	24	118809	26	921	5	> 750	8
ProGate 80	24	163986	26	906	7	> 750	8
ProGate 80DC	19	164058	32	834		6> 830	6
ProGate 100DC	17	05561	49	1219		4> 900	
ProGate 160DC	19	329134	28	834		7> 900	6
ProGate 180	18	349760	27	1544	5	> 900	4
ProGate R44	20	86700	34	1275	2	> 500	8

Appendix D: Application of protar disks under Spectre 128 (Macintosh emulator)

The Spectre GCR Version 2.3 has been used to test co-functioning between the emulator and the hard disk.

The following steps are necessary:

- Set up your future Mac partitions as GEM partitions.
- Start the SPECTRE.PRG installation program and proceed as described in the respective manual in order to convert the Spectre partitions (label: ACK) into GEM partitions.
- Start the MANAGER.PRG from your ProGate diskette.
- Respond to the Alert box ...



... with "Atari" so that the ATARI partition data which was altered with SPECTRE.PRG is taken over into the protar data.

Important: Versions 2.3 and 2.65 of the Spectre software can only access the first three partitions.

Application of protar disks under SuperCharger (MS-DOS emulator)

So far, no problems have been encountered with the BETA SYSTEMS COMPUTER AG product SuperCharger (tested with Installation program V. 1.40).

The following points must be observed:

- When SC_INST.TOS is started, the partitions which you wish to use must have been mounted by the protar driver (the SuperCharger software orientates itself to the _drvbits system variable).
- The partitions should have a size of 4 - 16 MB.
- The boot partition for MS-DOS should not be accessed under TOS; the reason for this is that after the corresponding installation has been made, this partition is no longer ATARI compatible.

Otherwise, please follow the instructions given in the SuperCharger user manual.

Application of protar disks under PC-Speed (MS-DOS emulator)

So far, no problems have been encountered with the Hans Sack product PC-Speed (tested with Installation program V. 1.41).

The following points must be observed:

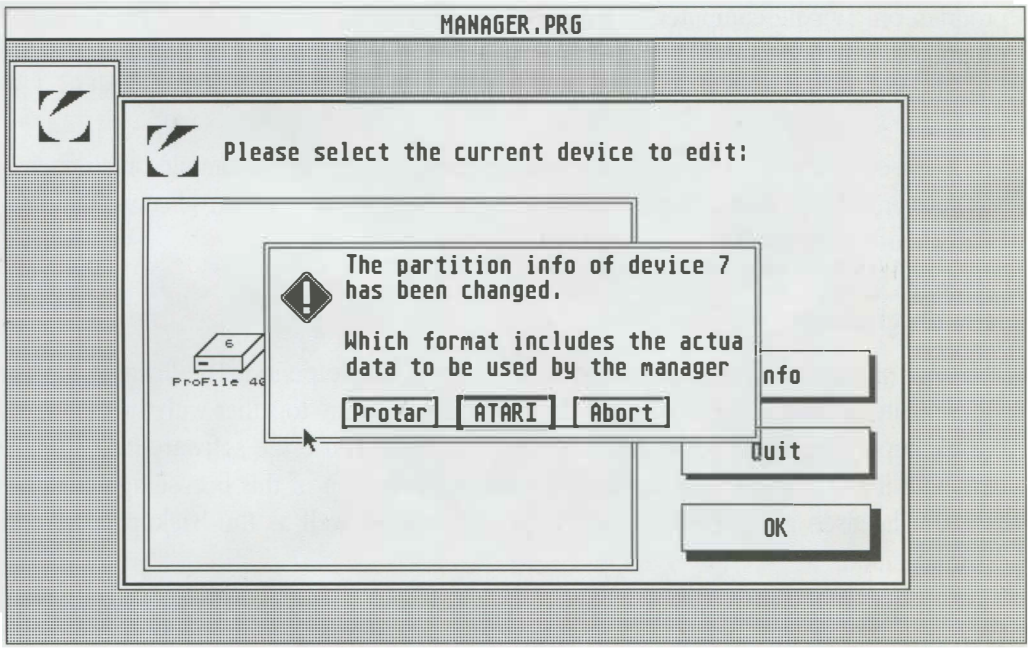
- The following settings must be made in the floppy/hard disk menu of PCS_INST.PRG:
  Hard disk: Yes
  Type: Multi
  Partition: All
- Make sure that the hard disk which you wish to use under PC-Speed has device number 0.
- Please note that PC-Speed only supports partition sizes of 4 - 16 MB.

Otherwise, please follow the instructions given in the PC-Speed user manual.

Application of protar disks under Aladin (Macintosh emulator)

- Only the first 3 partitons can be used, since Aladin does not support the new Atari partition format.
- Only partition sizes just short of 16 MB are jpermitted.
- In menu item "P" within the CONFIG.TOSprogram, the offset for the partition infos must be set to 390.
- After the "Install Hard Disk" function has been called up under Aladin, it is necessary to start MANAGER.PRG.

Respond to the Alert Box with "Atari".



Appendix E: License Agreement and Copyright

Object of agreement

The object of agreement is the computer program on the data medium (diskette), the program description and the operating instructions.

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In order to lay warranty-based claims, the licensee must return the object of agreement in its original packaging together with a copy of the invoice/receipt to the protar dealer from whom he obtained the product.

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Liability for positive breach of claim, being at fault on agreement of contract and for unauthorized acts is limited to the replacement of typical, predictable damage.

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Other

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If you have any questions dealing with this agreement, please contact protar.

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Ineffective provisions are considered to have been replaced with effective arrangements which approach the economic success striven for as closely as possible. The ineffectivity of one provision has no influence on the effectiveness of another provision.

Important note: protar is continually improving its hardware and software products. For this reason it may happen that terms used in the manual do not always match the terms which appear on the screen.

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