

Amiga TRANSFORMER™

**For Using Popular
IBM™ PC Software**

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Chapter 1

Introducing the Amiga Transformer

The Amiga Transformer, a software product created by Simile Research, enables you to run on your Amiga computer many of the popular programs written for the IBM PC; this capability is commonly referred to as “emulation.”

Included in this package is

- One 3 1/2-inch diskette, labeled “Transformer”

What the Amiga Transformer Emulates

Below is a list of the IBM PC features that the Amiga Transformer permits on the Amiga computer:

- use of all IBM-equivalent keys on the Amiga keyboard
- up to 640K of memory
- use of the Amiga parallel port as LPT1
- use of the Amiga serial port as COM1
- use of 3.5-inch disk drives for software and data storage in 40-track format
- use of 5.25-inch disk drives for reading and writing standard IBM PC DOS format diskettes
- 80-column monochrome video mode
- all DOS and BIOS interrupts
- direct read and write to video memory
- direct control of all special chips, such as video, interrupts, disk, serial, and parallel

Notice that your software must be appropriately configured for the IBM PC rather than be configured for any other IBM-compatible computer.

Required Reading

This manual teaches you how to use and modify the Amiga Transformer. Although no experience with PC-DOS or MS-DOS is necessary, this manual cannot describe, in depth, the extensive topics encountered while using DOS or DOS software. Therefore, you should refer to your DOS and DOS software manuals for information concerning their operation.

About this Manual

Throughout this manual, the Amiga operating system is referred to as AmigaDOS. IBM and compatible operating systems are referred to as DOS.

Chapter 2, "Setting Up the Amiga," lists the hardware and software you need to use the Amiga Transformer and shows you how to connect the hardware to the Amiga.

Chapter 3, "Changing Amiga Transformer Preferences," describes the Amiga Transformer preference tool and each of its menus, which let you customize the Amiga Transformer to your individual tastes.

Chapter 4, "Getting Started," contains a complete tutorial, which gives simple, step-by-step instructions for using the Amiga Transformer.

Chapter 5, "Amiga Transformer Reference," discusses the IBM PC-equivalent keys on the Amiga keyboard and the original preference color settings and outlines the IBM PC hardware functions that the Amiga Transformer imitates.

The appendix describes the Amiga connectors and their configurations.

A glossary is included for additional explanations and information that may be specific to the Amiga Transformer tool.

Chapter 2

Setting Up the Amiga

What You Need to Begin

Here is a list of what you need in order to use your Amiga Transformer:

- Amiga computer and video monitor
- Amiga Kickstart and Workbench microdisks
- Amiga Memory Expansion Cartridge
- Amiga Transformer microdisk

- formatted DOS disk containing IBM Personal Computer Disk Operating System (PC-DOS) or MS-DOS (version 2.0, or higher)
- one blank 3.5-inch microdisk to back up supplied software
- Amiga 1020 5.25-inch external disk drive

Optional Add-ons You May Need

- One or two 5.25-inch Amiga External Disk Drives and/or one 3.5-inch Amiga External Disk Drives (a total of three external drives can be utilized).

Most DOS software is currently available on 5.25-inch diskettes. Any data contained on a 5.25-inch diskette, which is not copy-protected, may be transferred to and from a 3.5-inch microdisk.

- A printer for producing a permanent copy of data on paper.
- A modem for transmitting data across telephone lines to another computer.
- A plotter for drawing graphic images on paper or overhead transparencies.

You can attach hardware that connects to the standard serial and parallel ports.

Note that the Amiga does have special requirements for the serial or parallel connections. Check the manual "Introduction to Amiga" for more information on cabling requirements.

For your convenience, the Amiga serial and parallel pinouts have been included as an appendix of this manual. For other specialized equipment, check with your dealer for assistance.

Caution: The Amiga normally only needs 3 wires to use a serial device. In IBM compatibility mode it needs 7 wires, just like the IBM PC.

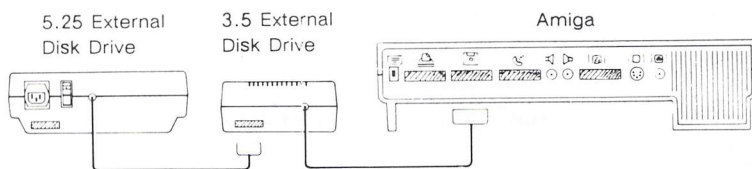
Connecting an Amiga

5.25-inch External Disk Drive

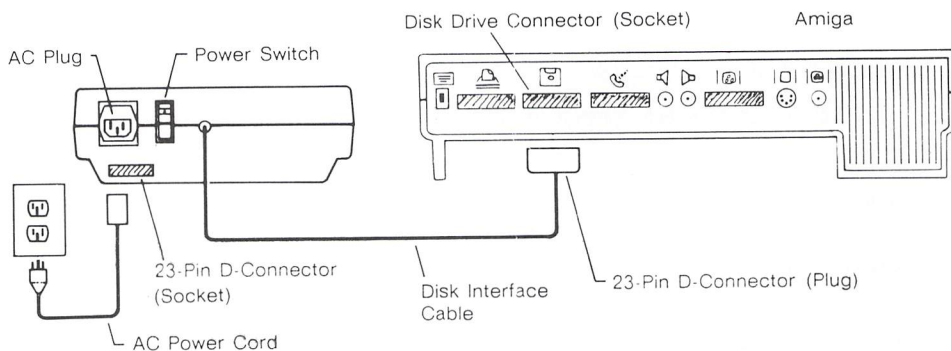
After connecting any 3.5-inch disk drives, you may connect your 5.25-inch disk drive. **Please note: the 3.5-inch external drive, if used, MUST be attached to the Amiga first.**

Make sure that the Amiga, the externally powered 3.5-inch disk drives (if any), and the 5.25-inch disk drive are disconnected from all power sources.

If you have a 3.5-inch drive connected, connect the 5.25-inch drive to the last 3.5-inch drive in the chain. See the illustration below.



If you have no external 3.5-inch drives, connect the 5.25-inch disk drive cable to the floppy disk expansion connector on the rear of your Amiga. (The plug from the disk drive cable fits only one way and will plug into only one connector.) If you are unsure which connector to use, see *Introduction to Amiga* for more information.



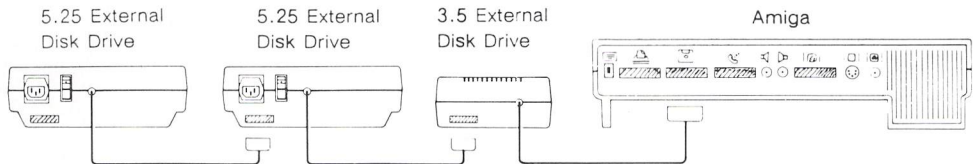
Connecting an Optional Amiga 3.5-inch External Disk Drive

If you have an Amiga 3.5-inch external disk drive, attach it to the floppy disk expansion connector on the rear of your Amiga. (The plug from the disk drive cable fits only one way and will plug into only one connector.) If you are unsure of the connector to use, see *Introduction to Amiga* for more information.

Connecting Multiple Amiga 5.25-inch External Disk Drives

If you have additional 5.25-inch disk drives, attach the second disk drive's cable to the rear of the previously connected disk drive. Repeat this step for each additional disk drive you have.

Warning: You can attach a maximum of three external disk drives to the Amiga.



Turning On the Amiga

Plug in the power cord(s) and turn on any 5.25-inch disk drives or externally powered 3.5-inch disk drives.

Turn on any other add-on hardware.

Now turn on the Amiga.

Note: Whenever 5.25-inch disk drives are connected to the Amiga, they **MUST** be turned on first, or the Amiga may not run.

Each 5.25-inch drive has two indicator lights:

- POWER light illuminates when the drive is on.
- DRIVE light illuminates when the Amiga is reading or writing data on the diskette in the drive.

The 3.5-inch drives have only a DRIVE light.

Chapter 3

Changing Amiga Transformer Preferences

This chapter tells you how to modify certain features of the Amiga Transformer to suit your own tastes and needs. But first make a copy of your disk.

Copying the Amiga Transformer Microdisk

You should always use a copy of the Amiga Transformer disk and not the original disk you purchased. Permanent wear or other accidents could cause erasure or loss of data on the Transformer disk.

Therefore, before you begin, make a copy of your original microdisk following the instructions for duplicating your disks in *Introduction to Amiga*. After making a copy of it, place your original Amiga Transformer disk in a safe place.

Using the Amiga Transformer Microdisk

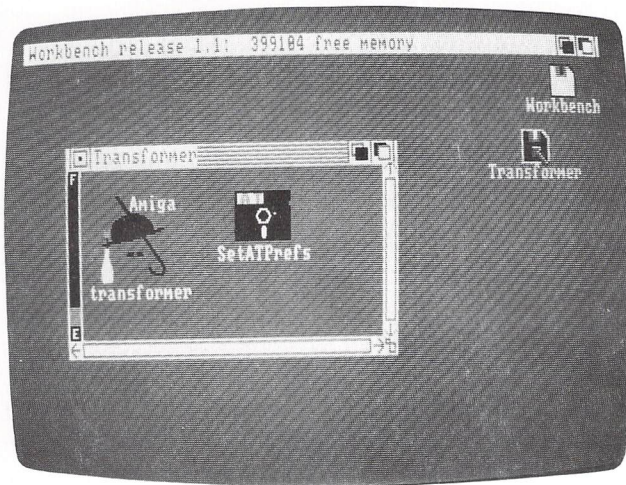
If your Amiga is turned off, follow the procedures for turning on the Amiga at the end of Chapter 2 in this manual. Insert the Kickstart and Workbench disks when requested.

If your Amiga is running any other tools, you should finish with them before opening the Transformer. **(The Amiga Transformer uses the entire Amiga, and cannot be used with other AmigaDOS tools.)**

Without any Amiga tools running, your screen should show the Amiga Workbench icon.

Insert your Amiga Transformer microdisk into any 3.5-inch disk drive.

Select the icon named Transformer, which contains the Amiga Transformer tool and its preferences tool, SetATPrefs. The Transformer window opens and displays the icons for the Amiga Transformer and SetATPrefs.



At this time you have three options:

- You may close the window;
- You may open the SetATPrefs tool to choose certain preferences for your DOS environment, such as number of disk drives attached, screen colors, memory used, and so on. Setting and using preferences is described below; or
- You may open the Transformer tool.

Changing Amiga Transformer Preferences

In this subsection, you will learn how to select the various options of your Transformer environment.

Because AmigaDOS or Workbench software is very different from DOS software, any of the preferences you might specify for AmigaDOS cannot carry over to a standard DOS.

If you use DOS software that requires special preference settings, please refer to that software's manual for setting its options, or contact your dealer or the software company's authorized customer service representatives.

When you change Transformer preferences, the new preferences will be effective beginning with the next use of the Transformer. There is no way to change preferences during a run of the Transformer.

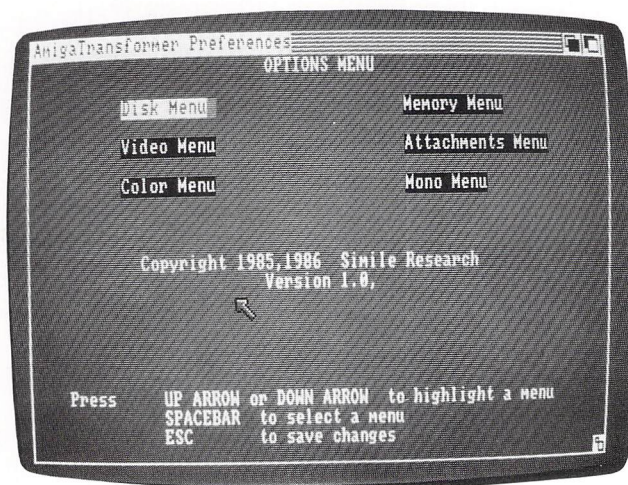
You may, however, exit the Transformer, return to AmigaDOS, change the preferences, and return to the Transformer. (Be sure to exit the Transformer as described in the section "Ending a Transformer Session" in Chapter 4).

Thus you may change the preferences as often as you like.

Opening the SetAT Preferences Session

First make sure the write protect tab on the back of the Amiga Transformer microdisk is set to write enable (slide the tab away from the edge of the microdisk so you cannot see through the hole).

Open the SetATPrefs tool and wait for the following window to appear on the screen:



The preferences are divided into several categories, and each category is shown on this opening screen.

Use the Arrow keys to highlight different menus. Use the spacebar to select a menu item.

You may explore the contents of any and all categories freely. This does not harm the system, and it prevents you from making improper choices for preferences. If you later change your mind about a preference, you can return to the category and choose a different preference.

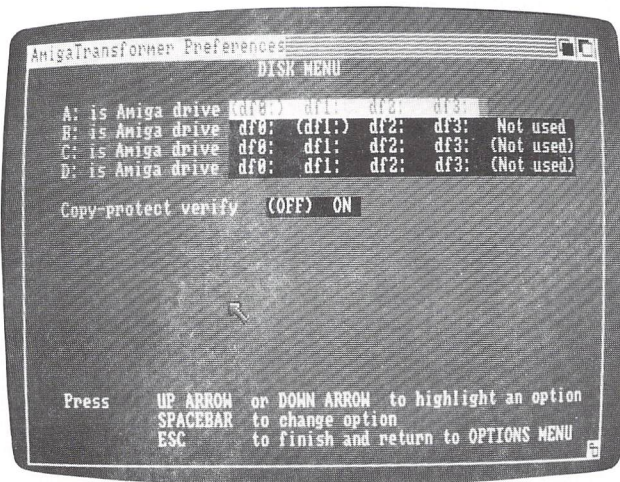
Ending the SetATPrefs Session

When you have finished with the preferences tool just press the ESC key. You will be returned to the Amiga Workbench.

The Disk Menu

In this category, you may assign the Amiga disk drives to any specific DOS drive letters and enable/disable the copy protection verification.

- To choose the option you wish to change, press the up or down arrow keys until the desired option is highlighted.
- To make a change to the option, press the Space Bar until your chosen option is shown in parentheses.
- Press the ESC key to finish and return to the main Options menu.



Disk Drive Assignments

AmigaDOS refers to the disk drives as df#:, where the # is 0, 1, 2, or 3. DOS, on the other hand, refers to disk drives using the letters A:, B:, C:, D:.

You will notice on the menu, that drive A: does not include a Not used option. This is because DOS requires at least one drive to start DOS from, and that drive is always the A: drive.

Now, you can tell DOS that A: is a particular Amiga drive by just choosing the desired df#:. When you first receive the Transformer, A: is assigned to df1:. Initially, the Transformer assumes that the first external drive is a 5.25-inch drive that contains the DOS. (DOS is most frequently sold on a 5.25-inch diskette.)

You can transfer the DOS to a 3.5-inch microdisk by using the software supplied with the DOS (DISKCOPY). If you transfer your DOS to a 3 1/2-inch microdisk you will be able to start the DOS from that microdisk by assigning drive A: to one of your 3 1/2-inch disk drives.

If you have an external 3.5-inch drive connected to the Amiga, and a 5.25-inch external drive connected to the external 3.5-inch drive, you may want to start the DOS from a 5.25-inch diskette. Just change the A: allocation to df2:.

Multiple DOS Drives Assigned to Single Amiga Drive

Advanced users of DOS may need to have more than one letter drive allocated to a single Amiga drive.

For example, assume that DOS software expects drives A:, B:, and C: to be active. Assume also that the information normally contained on disks in drives A: and C: can be placed on a single disk in A:. You simply assign both A: and C: to df0:, thus ending the need for a third drive.

Preventing Assignment of Amiga Disk Drives

To tell the DOS to ignore a drive that is not connected, such as a third drive, you can choose the **Not used** option.

Because DOS uses drives starting with A: and assigns each additional drive to a consecutive letter, such as B:, C:, and so on, when you indicate that a drive is not used, SetATPrefs changes all following drive letters to **Not used**. Consequently, you cannot have drive A:, skip B:, have C:, etc, because SetATPrefs will not allow it since this is not a proper DOS environment.

Verifying Copy Protection

When the Transformer performs disk reads and writes, it does so at intervals that enhance disk read/write efficiency. This may cause certain copy-protected software to function improperly and may potentially crash the system.

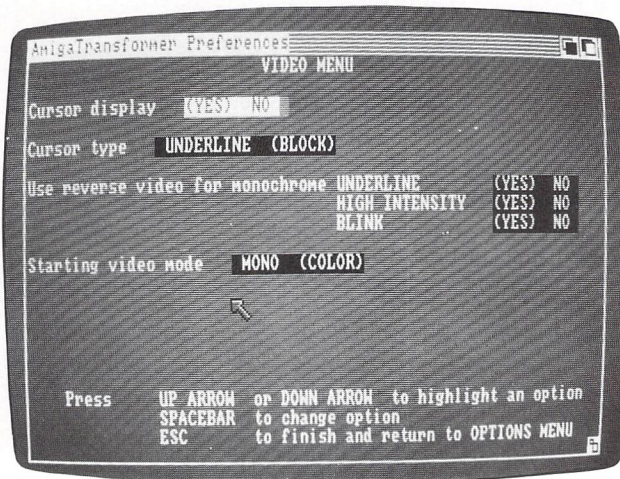
Normally, the copy-protect verify option is off, but if you experience problems while starting copy-protected DOS software, try changing this option to on.

If you still experience problems, contact your Amiga dealer for assistance.

The Video Menu

This menu allows you to modify certain video preferences. The reverse video options cannot be changed by DOS software. The other items are used when DOS first starts up. The DOS or DOS software may change an item and it will remain changed until DOS is restarted.

- To choose the option you wish to change, press the up or down arrow keys until the desired option is highlighted.
- To change an option, press the Space Bar until the option is shown in parentheses.
- Press the ESC key to finish and return to the main Options menu.



Cursor Options

Two cursor options are provided.

The first option lets you choose to display or hide the cursor.

The second option lets you select the form of the cursor as a block or a line. No matter which type of cursor you select, the chosen cursor will blink on and off. Only if a DOS program provides its own cursor can the blinking be controlled. In other words, the Transformer provides a blinking cursor or no cursor at all.

Monochrome Reverse Video

The IBM PC and many compatibles can cause the characters on monochrome video equipment (usually shown as green or yellow characters on a black background) to be displayed as any combination of (1) normal or high-intensity, (2) underlined, (3) blinking, or as (4) reverse video (i.e., black characters on a green or yellow background). These are called display attributes.

Of these attributes the Transformer can only show normal characters or normal characters displayed in reverse video. The menu option Starting Video Mode is not implemented in this Version.

The Color Menu

Only monochrome video is emulated by the Amiga Transformer, Version 1.0. The color menu has no effect on the current revision of the product and is therefore not further described here.

The Memory Menu

Because of the large memory requirements of DOS and of some DOS software, such as spreadsheets, a minimum of 512K memory is required in your Amiga. If you add sufficient external memory to your Amiga, the Transformer will recognize this additional memory capacity and allow as much as 640K of memory for DOS and its applications.

This menu instructs the Transformer to require that a minimum amount of DOS memory be available before it will start a DOS, and can limit the amount of memory provided to DOS. Neither of these can be modified by DOS after it starts. Note: The available memory is the amount of memory left over after the Transformer has been loaded. Set the minimum memory value to 64K.

If your Amiga does not have enough memory, the Transformer displays a message on the screen specifying that not enough memory is available and specifying the minimum amount you required it to have. You can return to the AmigaDOS Workbench by pressing the ESC key.

The maximum memory option is used primarily by programmers who want to test their software to ensure that it runs in certain restricted environments.

- To choose the option you wish to change, press the up or down arrow keys until the correct option is highlighted.
- To increase the amount of memory press the

F1 key to increase amount by 1K

F3 key to increase amount by 16K

F5 key to increase amount by 64K

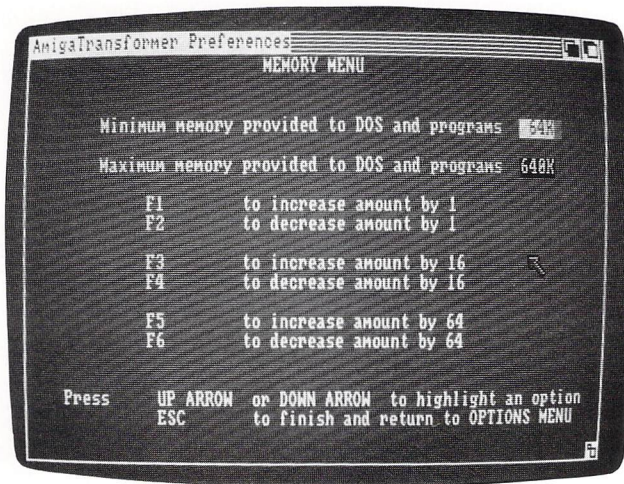
- To decrease the amount of memory press the
 F2 key to decrease amount by 1K
 F4 key to decrease amount by 16K
 F6 key to decrease amount by 64K
- Press the ESC key to finish and return to the main Options menu.

Note: When the Amiga Transformer allocates memory for DOS there can be no breaks in the memory addressing range. When you add memory to the Amiga by using an expansion bus connector a break exists between the memory addressing range in the system unit and the memory addressing range in the expansion bus. For this reason, adding an additional 512K of memory to a 512K Amiga system yields only 138K of total additional memory available for DOS applications. In no case will the Amiga Transformer make more than 640K of memory available to DOS.

Amiga Configuration

Memory Available to IBM DOS

256K memory (in main unit) plus 256K memory expansion (model 1050)	373K
512K Amiga (with memory expansion) plus 512K external memory	511K
512K Amiga (with memory expansion) plus 1024K external memory	640K
Additional memory	640K



The Attachments Menu

Use this menu to configure the Transformer for various keyboard, bell, mouse, lightpen, and joystick/digitizer options.

With all of the options on this menu, each time you press the space bar, the option selections are redrawn and the option that is then enclosed in parentheses will be the option used when you finally exit SetATPrefs.

Keyboard Repeat

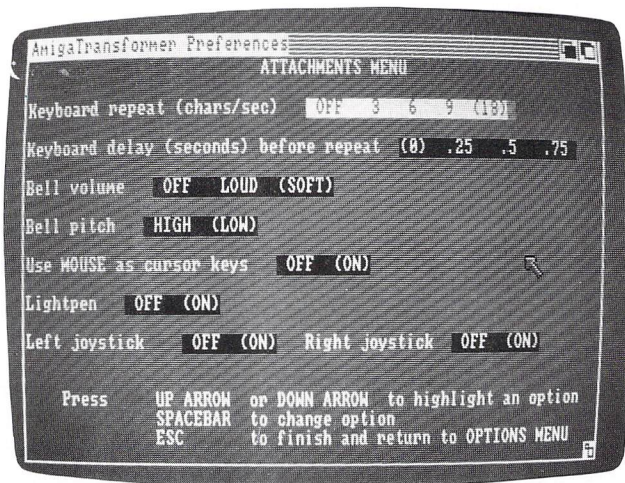
If you hold down a key on the keyboard, the Transformer will start to repeat the key. You use this menu item to prevent the key repeat or to select the number of key repeats per second.

Keyboard Delay
Before Repeat

You use this menu item to select how long you have to hold down a key before it begins to repeat.

The following items, although listed in the menu, have no effect on the Amiga Transformer Version 1.0:

- Bell volume
- Bell pitch
- Mouse
- Light pen
- Joystick



The Mono Menu

You can use the Mono Menu to change the two colors used on the screen when running in monochrome video mode. Although most standard monochrome video equipment displays characters as green-on-black, yellow-on-black, blue-on-black, white-on-black, or black-on-white, you can use any two colors you prefer.

This in no way affects DOS, nor any of the DOS software. This setting cannot be changed by DOS, except if you change between mono and color modes. But, each time the mono mode is used, the colors you choose in this menu will be used until the menu options are again changed.

You have 4096 colors to choose from, and you may preview the color before you are finished.

- To choose the option you wish to change, press the up or down arrow keys until the desired option is highlighted.
- To increase the color values within the highlighted color, press the

F1 key for Red
F3 key for Green
F5 key for Blue

To decrease the color values within the highlighted color, press the

F2 key for Red
F4 key for Green
F6 key for Blue

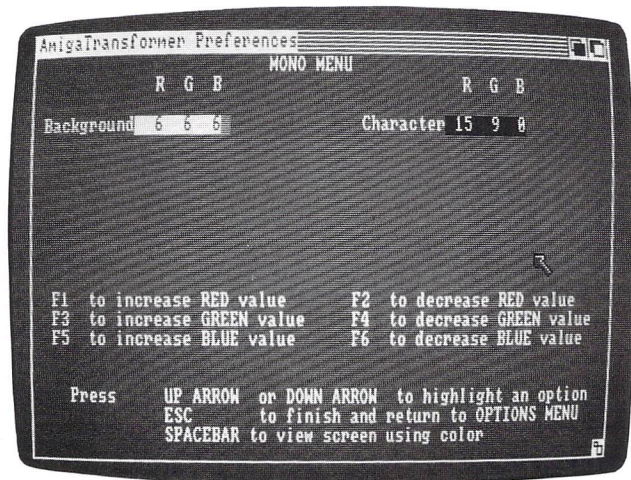
- To preview the color you have selected press the space bar once. Pressing the space bar changes the color of the text and window border to the color you have selected. The background color remains as it was.

After you have pressed the space bar once, you can continue to use the function keys F1 through F6 to adjust the color to the exact shade you desire.

To restore the screen to its original appearance, simply press the space bar again.

If you choose to exit this menu while the display is in this special show-color mode, when you press ESC, (see the next step, below), the system will automatically restore your normal Preference colors as the program returns to the main menu.

- Press the ESC key to finish and return to the main Options menu.



Chapter 4

Getting Started

This chapter describes opening and using the Amiga Transformer tool.

When you select the Transformer icon it will use the current setting of the Transformer preferences, stop the AmigaDOS and any of its tools, and show the following message:

Amiga Transformer

Copyright 1984, 1985, 1986 Simile Research

Version 1.0

Available memory: 373K

Drive A: is df2: B: is df3:

Starting video mode: Monochrome

Bell is off

Mouse as cursor is off

Highlight used for inverse video

Lightpen is off

Game ports: A is off B is off

Please insert a DOS diskette in Drive A:

Press RETURN to start the DOS

or

press ESC to return to the Amiga DOS

If you wish to start DOS, remove all AmigaDOS microdisks (including the Transformer microdisk), and insert your DOS disk in the drive you have designated for DOS drive A:.

Always insert a 5.25-inch disk into the disk drive with the label up and the label end closest to you.

When starting DOS your screen messages display the amount of memory available to DOS and its software. After placing your DOS diskette in disk drive A:, press <RETURN> to start DOS. You will see a "Starting DOS . . ." message.

If the DOS successfully starts, you will see the standard DOS date message or the standard DOS prompt, A> (depending on your DOS version):

Current data is Tue 1-01-1980

Enter new date:

Current time is 0:00:05:65

Enter new time:

The IBM Personal Computer DOS

Version 2.10 (c)Copyright IBM Corp 1981,1982,1983

A>

Now you may use DOS software. Just follow the instructions in the manuals that came with your DOS and DOS software.

The 3.5-inch microdiskettes can be used with DOS in the same way 5.25-inch diskettes are used. Thus, they can be formatted and copied by DOS and they can be used for storage of data and programs. Except for their physical size, they are no different than the 5.25-inch diskettes. When prepared by DOS, 3.5-inch and 5.25-inch diskettes can store approximately 360,000 characters of information.

The Amiga keyboard is labeled slightly differently from that of an IBM PC. All of the IBM PC keys are available on the Amiga keyboard (see the section entitled "IBM Equivalent Keys on the Amiga" in Chapter 5, for the location of all the special keys).

One Word of Caution: As with AmigaDOS, do not remove a diskette from a drive while the drive's drive light is on. This may destroy the diskette data.

When you are finished with the DOS, see the section "Ending a Transformer Session" at the end of this chapter.

If you see the following message on your screen:

Please check drive A:

Either the drive is not ready

or there is a disk error

press RETURN to try the drive again,

or

press ESC to return to the Amiga DOS

then, check for the following:

1. Be sure the disk is properly inserted in the drive with the label up and label edge closest to you.
2. Make sure you have inserted the DOS disk in the A: drive (the drive light illuminates on the drive the Transformer considers as A:).
3. Examine the DOS disk and make sure it is a properly formatted DOS disk.
4. Check to see that the power is connected and turned on to all 5.25 Amiga external disk drives and that all POWER lights are on.
5. Note: At this point, any data you may have in memory is irretrievable. Remove the diskettes, then turn off the equipment and check the connections to all external drives.

Press the Return key to retry the DOS startup (only if you haven't turned off the power). If this does not correct the problem, contact your Amiga dealer for assistance.

If you see the following message on your screen:

Non-System disk or disk error
Replace and strike any key when ready

then, the disk from which you are starting DOS is a properly formatted DOS disk, but does not contain a DOS, or the DOS is damaged on the disk.

Replace the disk with one containing a DOS, and press the Return key to retry the startup procedure.

If this does not correct the problem, contact your Amiga dealer for assistance.

Ending a Transformer Session

There are two ways to leave the Transformer:

1. Return to the AmigaDOS Workbench
2. Finish your Amiga session

To return to the AmigaDOS Workbench:

1. Press the following three keys at the same time:

CTRL

ALT

Keypad-Period

(left ALT key)

(The keypad period is the Amiga equivalent of the DEL key of the IBM PC.)

The opening Transformer menu will appear.

2. Press the ESC key to return to AmigaDOS.

To finish your Amiga session:

1. Make sure all software has finished and all DRIVE activity lights are off.
2. Remove all disks from all drives and turn off the power to the external drives and any accessories, such as video equipment.
3. Turn off the main system unit.

Warning: If you exit the Transformer or turn off the Amiga, any data you have not yet saved to disk will be lost.

Chapter 5

Amiga Transformer Reference

IBM-Equivalent Keys on the Amiga

The keystrokes generated by the Amiga keys are exactly the same as those expected by DOS and DOS software. Some of the keys on the Amiga are labeled differently from those on an IBM PC or compatible. However, all of the IBM keys are simulated on the Amiga. In addition, the Amiga has a few extra keys that the IBM PC does not have but that do work with the Amiga Transformer.

The extra keys are the four arrow keys below the HELP key, and the two special Amiga keys to the immediate left and right of the Space Bar.

The four extra arrow keys work as dedicated arrow keys, regardless of the state of the Shift, Caps, Alt, and NumLock keys. Pressing CTRL and one of these arrow keys generates the same keystroke as CTRL and a keypad arrow key.

These separate arrow keys are provided to allow the keypad to be used exclusively for number entry.

The two special Amiga keys are ignored and are generally used by AmigaDOS to move the Pointer without a mouse.

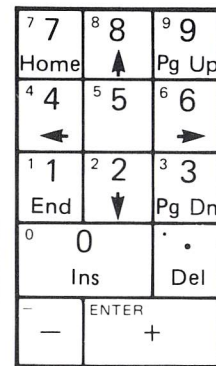
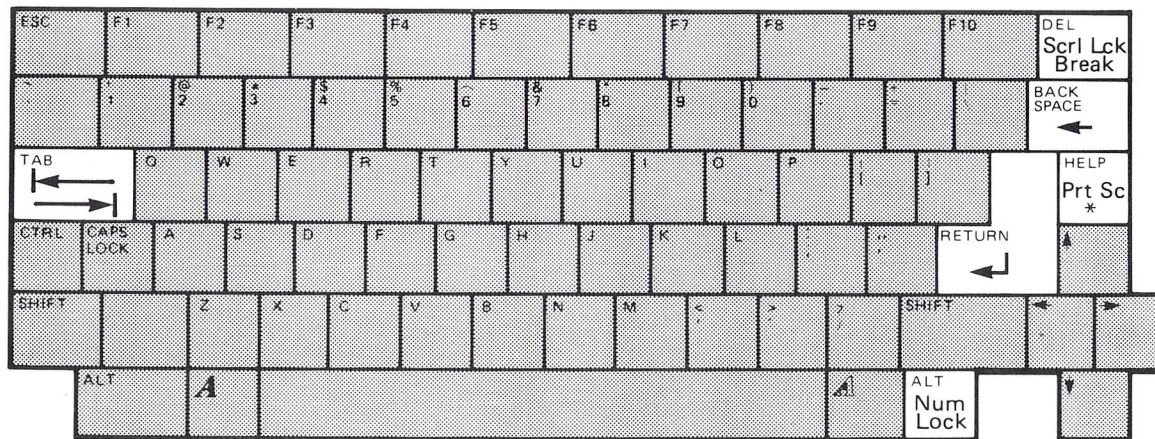
Typewriter Area Keys

Below is a list of the IBM equivalent keys on the Amiga keyboard followed by an illustration of the Amiga keyboard with the IBM equivalent keys identified.

Key on Amiga	Key on IBM
DEL	SCROLL LOCK/BREAK
HELP	PrtSc *
RIGHT ALT	NUM LOCK

Key Pad Area

Key on Amiga	Key on IBM
0	0 Ins
-	-
Enter	+
.	. DEL
7	7 HOME
8	8 up arrow
9	9 PgUp
4	4 left arrow
6	6 right arrow
1	1 END
2	2 down arrow
3	3 PgDn



Initial Mono Values

Below is the list of colors and corresponding values that are provided in SetATPrefs before option changes are made.

		R	G	B
BACKGROUND	Black	0	0	0
CHARACTER	Light green	0	12	0

Appendix

Amiga Connectors

This section lists pin assignments for several input/output connectors on the Amiga. The information in this section is highly technical and is intended only for those expert in connecting external devices to computers. Many serial devices that connect to the Amiga use 3-wire communication, the IBM uses 7-wire communication. It is therefore possible to have a serial device correctly connected to the Amiga that will not work with the Amiga Transformer. If the IBM software you are using can use 3-wire communication (XON/XOFF) then you can get the serial device working by connecting pins 4 and 5 together and connecting pins 6, 8, and 20 together.

For information about connectors not described in this section, see the *Amiga Hardware Manual* or *Introduction to Amiga*.

Warning

If you attach add-ons with cables other than those designed for use with the Amiga, note: some pins on Amiga connectors provide power outputs and non-standard signals. Attempting to use cables not wired specifically for the Amiga may cause damage to the Amiga or to the equipment you connect. The descriptions below include specific warnings for each connector. For more information about connecting add-ons, consult your Amiga dealer.

In the descriptions that follow, an asterisk (*) at the end of a signal name indicates a signal that is active low.

Serial Connector

In the following table, the second column from the left gives the Amiga pin assignments. The third and fourth columns from the left give pin assignments for other commonly used connections; the information in these two columns is given for comparison only.

WARNING: Pins 14, 21, and 23 on the Amiga serial connector are used for external power. Connect these pins **ONLY** if power from them is required by the external device. The table lists the power provided by each of these pins.

Pin	Amiga	RS232	HAYES®	Description
1	GND	GND		FRAME GROUND
2	TXD	TXD	TXD	TRANSMIT DATA
3	RXD	RXD	RXD	RECEIVE DATA
4	RTS	RTS		REQUEST TO SEND
5	CTS	CTS	CTS	CLEAR TO SEND
6	DSR	DSR	DSR	DATA SET READY
7	GND	GND	GND	SYSTEM GROUND
8	CD	CD	CD	CARRIER DETECT
9				
10				
11				
12		S.SD	SI	
13		S.CTS		
14	-5V	S.TXD		-5 VOLT POWER (50 mA)
15	AUDO	TXC		AUDIO OUT OF AMIGA
16	AUDI	S.RXD		AUDIO INTO AMIGA
17	EB	RXC		BUFFERED PORT CLOCK
18	INT2*			INTERRUPT LINE TO AMIGA
19		S.RTS		
20	DTR	DTR	DTR	DATA TERMINAL READY
21	+5V	SQD		+5 VOLT POWER (100 mA)
22		RI	RI	
23	+12V	SS		+12 VOLT POWER (50 mA)
24	C2*	TXC1		3.58 MHZ CLOCK
25	RESB*			BUFFERED SYSTEM RESET

Parallel Connector

WARNING: Pin 23 on the Amiga parallel connector supplies +5 volts of power. Connect this pin **ONLY** if the power from it is required by the external device. **NEVER** connect this pin to an output of an external device or to a signal ground.

Pins 14–22 are for grounding signals. **DO NOT** connect these pins directly to a shield ground.

Pin	Name	Description
1	DRDY*	DATA READY
2	D0	DATA BIT 0 (Least significant bit)
3	D1	DATA BIT 1
4	D2	DATA BIT 2
5	D3	DATA BIT 3
6	D4	DATA BIT 4
7	D5	DATA BIT 5
8	D6	DATA BIT 6
9	D7	DATA BIT 7
10	ACK*	ACKNOWLEDGE
11	BUSY	BUSY
12	POUT	PAPER OUT
13	SEL	SELECT
14	GND	SIGNAL GROUND
15	GND	SIGNAL GROUND
16	GND	SIGNAL GROUND
17	GND	SIGNAL GROUND
18	GND	SIGNAL GROUND
19	GND	SIGNAL GROUND
20	GND	SIGNAL GROUND
21	GND	SIGNAL GROUND
22	GND	SIGNAL GROUND
23	+5V	+5 VOLTS POWER (100 mA)
24		
25	RESET*	RESET

Glossary

ADD-ON

A PRINTER, game controller, MODEM, or other external component you use with an Amiga.

ALT KEY

One of the two KEYS next to the AMIGA KEYS at the bottom of the KEYBOARD. Left ALT key is used as IBM ALT key. Right ALT key is used as IBM NUMLOCK key.

AMIGADOS

The name of the SOFTWARE contained in the Amiga which runs the WORKBENCH and Amiga TOOLS.

AMIGA KEYBOARD

The KEYBOARD similar to a typewriter's attached to an Amiga.

AMIGA KEYS

Two KEYS on an AMIGA KEYBOARD to the left and right of the SPACE BAR. You use the right Amiga key for MENU SHORTCUTS and the left Amiga key for SELECTION SHORTCUTS.

ARROW KEYS	The four KEYS below the HELP KEY on the AMIGA KEYBOARD.
CHOOSE	To pick a MENU ITEM. You normally choose menu items with the aid of the MENU BUTTON.
CHOSEN OPTION	An OPTION that is currently in effect.
COMPATIBLE	A computer which runs much of the same software as the IBM PC.
CONFIGURATION	Permanent recording of user preferences and hardware options in a DOS program.
CONNECTOR	Any of the places on the outside of the Amiga which you use to attach external equipment.
COPY	To duplicate a TOOL, PROJECT, DRAWER, or DISK.
COPY-PROTECTED	DISKS that cannot be successfully copied due to changes to the software on the disk, or by physical changes to the DISK.
DISK	A magnetic medium for storing and retrieving information.
DISK DRIVE	A device for reading information from and saving information on a DISK.
DISPLAY	That which appears on a VIDEO MONITOR or television.
DISPLAY ATTRIBUTES	Various components which affect how a character is shown on a VIDEO DISPLAY. For example, REVERSE VIDEO is a display attribute.
DOS	The general name used to refer to the IBM PC-DOS or MS-DOS.
DOS DEVICE DRIVERS	Software used by a DOS to access nonstandard DOS hardware, such as 3.5-inch disk drives.
DOS RESTART	Starting the Amiga Transformer TOOL from the beginning.

DRIVE ASSIGNMENT	Designating the Amiga DISK DRIVE that corresponds to one or more IBM PC-DOS drive letters.
EMULATOR	Software which mimics and/or provides the features of other hardware and software.
ENVIRONMENT	The software and hardware surroundings and preference settings that exist when software is used.
ESC KEY	A special key labeled ESC on the Amiga keyboard.
FORMAT	Recording information on a diskette that tells DOS how to store data and programs on the diskette.
HARDWARE	The mechanical and electronic parts of a computer.
HIGHLIGHT	To display something in a way that distinguishes it. Normally, something is highlighted to indicate that it is SELECTED.
HOLD DOWN	To press a key or a MOUSE BUTTON without RELEASING it.
ICON	A visual representation of a TOOL, PROJECT, DRAWER, or DISK.
INSTALLATION	CONFIGURATION
ITEM	MENU ITEM
KEY	Any of the switches on a KEYBOARD.
KEYBOARD	A set of KEYS used for typing or for giving other information to an Amiga.
KICKSTART	A microdisk that contains information that an Amiga needs to begin operating.
MEMORY	Electronic circuits used to store information.
MEMORY EXPANSION CARTRIDGE	An accessory that you attach to the Amiga to add 256K of memory to the Amiga's special purpose chip memory.

MENU	A list of items you can choose from.
MENU ITEM	One of the choices in a MENU.
MESSAGE	A text phrase or sentence shown on the VIDEO DISPLAY.
MICRODISK	A 3 1/2-inch flexible DISK.
MODEM	A device that lets computers communicate with each other.
MONOCHROME MONITOR	Video equipment capable of producing a single color against a black background.
MOUSE	A device you move on a flat surface to move the POINTER.
MOUSE BUTTON	One of the two buttons on a MOUSE.
OPEN	1. To display a WINDOW, REQUESTOR, or SCREEN. 2. To make a TOOL or PROJECT available.
OPTION	A FEATURE of a TOOL that, once you CHOOSE it, persist until you choose another, mutually exclusive feature.
PARALLEL PORT	A CONNECTOR on the back of the Amiga which you use to attach PRINTERS and other ADD-ONS.
PLOTTER	A device used to record, on paper or transparency, the graphic data output from a computer.
POINTER	The screen object that moves on the DISPLAY when you move the MOUSE. You use the Pointer to (1) SELECT ICONS and GADGETS (2) CHOOSE MENU ITEMS.
PORT	A CONNECTOR for attaching ADD-ONS to the Amiga.

PREFERENCES

A TOOL that allows you to change various settings of an Amiga, including the colors of the Workbench, the shape of the POINTER, function key assignments, the interval between double clicks, the repetition rate of the keyboard keys and the interval before keys begin repeating.

PRESS

To push down a MOUSE BUTTON or KEY on a keyboard.

PRINTER

Device used to record, on paper, the data output from a computer.

PROMPT

A special group of characters or a phrase that indicates the Amiga is waiting for your response.

PROTECT TAB

A plastic tab on a MICRODISK that, when you slide it so that there is a hole through the disk, prevents the information on that disk from being changed.

PROTECTED DISK

A DISK whose contents cannot be modified.

RESET

To SET UP the WORKBENCH again after it has begun working.

REVERSE VIDEO

Display using colors opposite those normally used. For example, if letters are normally black on an a white background, white letters on a black ground are said to be shown in reverse video.

SAVE

To copy the contents of a project onto a DISK.

SCREEN

A full-width area of the VIDEO DISPLAY with the same COLOR PALETTE, RESOLUTION, and other attributes.

SELECT

To pick an ICON, GADGET, or a part of a PROJECT using the SELECTION BUTTON.

SERIAL PORT

A CONNECTOR on the back of the Amiga which you use to attach MODEMS and other ADD-ONS.

SET UP	To start the WORKBENCH.
SOFTWARE	Another name for tools used under other operating systems.
SPACE BAR	The long KEY at the bottom of the KEYBOARD that you PRESS to enter a blank space.
TEXT CURSOR	In PROJECTS containing text, a marker that indicates your position in the project.
TOOL	A facility for working with information. For example, the AMIGA TRANSFORMER tool lets you work with IBM PC information.
UTILITY	A tool used under another operating system that performs a service not contained in that operating system.
VIDEO DISPLAY	That which appears on VIDEO EQUIPMENT.
VIDEO EQUIPMENT	A video monitor or television.
WRITE PROTECT TAB	The plastic tab on a microdiskette that prevents the diskette from being written to when it is in the protect position (positioned so that the small slot is open and you can see through it).
WINDOW	A rectangular area in a SCREEN. TOOLS use windows to accept and present information.
WORKBENCH	A TOOL you use to get and manipulate the facilities of the Amiga. You use the Workbench to OPEN, CLOSE, MOVE, create, and delete PROJECTS, TOOLS, and DRAWERS, to COPY DISKS, as well as to perform other operations.
WORKBENCH DISK	A DISK that contains the WORKBENCH.
WORKBENCH SCREEN	The SCREEN used by the WORKBENCH and other tools.

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