

PC-SPEED MANUAL

Thank you for purchasing PC-SPEED, the premier DOS calculator for the Amri ST and Mega ST.

In the PC-SPEED box you will find the PC-SPEED

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PC-SPEED MANUAL

Preface

Thank you for purchasing PC-SPEED, the premier DOS emulator for the Atari ST and Mega ST.

In the PC-SPEED box you will find the PC-SPEED SYSTEMDISK which contains a file named README. This file contains additional information on PC-SPEED and should be read before you read this manual.

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PC-SPEED Manual Version 1.4 November 1990

Disclaimer

Whilst every effort has been made to ensure that PC-SPEED works with the vast majority of PC Software 100% compatibility can not be guaranteed. Software with which there is a known problem is listed in the README file. If you do encounter problems with any PC compatible software PLEASE PHONE THE HOTLINE AND TELL US. We may be able to modify the PC-SPEED program in order that your software will run. If not, we will make sure that other people know about the incompatibility.

Neither Sack Electronics GmbH nor the PC-SPEED distributor accept any responsibilities for damages however caused which result from the installation or use of this product. Your warranty is void if the original product has been damaged or any attempt has been made to modify it. The distributor of PC-SPEED's liability to you for whatever reason is strictly limited to the original purchase price you paid for the product.

This manual has been prepared with the utmost care. However neither Sack Electronics GmbH nor the distributor accept any responsibilities for the correctness of the subjects stated in this manual and disclaim any liability for errors or omissions.

Important Note

Installation of PC-SPEED will make the warranty on your Atari null and void. Although PC-SPEED can be fitted by anyone with good soldering skills we recommend that you arrange for a COMPO Software Authorised Dealer to fit the PC-SPEED circuit board for you. PC-SPEED has been tested for use with all currently available Atari peripherals. Its compatibility with any other hardware add-ons designed for use with either the Atari ST range of computers or for IBM compatible PC's can not be guaranteed.

This manual was produced using That's Write Postscript on an Atari ST.

PC-SPEED Manual Version 1.4 November 1990.

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1. Introduction

PC-SPEED is a powerful hardware add-on to the Atari ST allowing you to run most popular PC products on your Atari computer. In fact, at the time of writing this manual we know of no popular PC products that will not run with PC-SPEED.

In your PC-SPEED package you should find:

PC-SPEED circuit board

Two 64 pin IC sockets (not by the STE-version)

This manual

The PC-SPEED SYSTEMDISK containing the following files:-

PC_SPEED.PRG

PCS_INST.PRG

TIMER.COM

PC_MOUSE.PRG

PCS_OPT.COM

ADD_PART.SYS

MEGADISC.SYS

MOUSE.COM

MTEST.EXE

README

PC-SPEED will work on all Atari ST and STE computers with at least 512k of RAM. Both colour and monochrome monitors are supported. Although PC-SPEED will work on a single sided disk drive a double sided drive is virtually essential as most PC Software is supplied on double sided disks.

2. Installation of PC-SPEED

2.1. Preparation for Installation

THIS IS A VERY IMPORTANT SECTION OF THE MANUAL - PLEASE READ IT!

The installation of PC-SPEED in your Atari should only be done by someone with good soldering skills (if you have not used a soldering iron for a while we recommend you practice your technique before attempting to fit PC-SPEED). Even if you do have these skills we still recommend you have your PC-SPEED fitted by a COMPO Software Authorised Dealer.

To install PC-SPEED you will need the following tools (for ATARI STE only Philips screwdriver and Pliers):

Philips screwdriver

Pliers

Small soldering iron which is earthed with a fine tip

A wrist strap connected to earth with a 10K series resistor

Thin solder (60 Sn / 40 Pb)

Metal shears (some 1040 ST's only)

Glue (some 1040 ST's only)

Insulating tape

A 220 Ohm 1/8 W resistor (some Mega ST's only)

The Atari 1040 ST and Mega ST computers have their power supply attached to the main system board. The power supply is potentially dangerous. Even after being disconnected from the mains some components of the power supply (capacitors) may still carry a high voltage that could cause injury.

WARNING! At no time during the installation of PC-SPEED should you touch any part of the power supply either through bodily contact or with any tools you are using.

The PC-SPEED circuit board is mounted with sensitive CMOS logic chips which can be damaged by electrostatic discharge. When installing PC-SPEED always make sure you and your soldering iron have been discharged (ie touch a radiator or metal pipe). A grounded soldering iron and a wrist strap are highly recommended. To avoid electrostatic discharge do not touch any metal parts on the PC-SPEED circuit board during installation.

Before commencing installation of PC-SPEED please make a backup copy of your PC-SPEED SYSTEMDISK. The original copy of the PC-SPEED SYSTEMDISK should be stored in a safe place. From now on you should only use the backup copy you have created.

Instructions for fitting PC-SPEED to various models of Atari ST computer follow. Please refer to the section applicable to your model of ST.

2.2. 520 ST (260 ST)

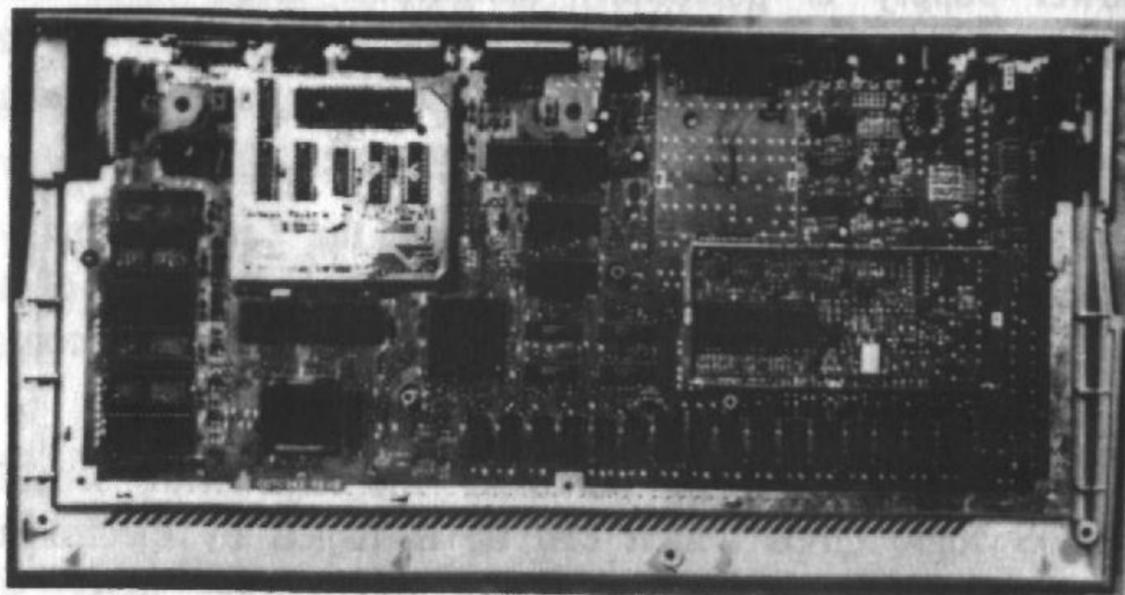


Figure 1: System board of a 520 ST (+).

1. First switch off your 520 ST computer and remove all connecting cables including those to your monitor, printer and mouse. Disconnect the power at the mains and remove the mains plug from it's socket.
2. Turn your computer over and remove the 6 screws from the underside which hold the case together. Take careful note of which screws come from which holes in your computer's case, the screws may be of different sizes depending on the hole.

3. Hold the case of your computer firmly together and turn it back over. Remove the top and the keyboard will now be exposed. You should see a connector from the keyboard to the right hand side of the main system board. Disconnect this connector from the system board.
4. Now remove the metal shield by straightening the metal clips and, if they are present, removing the 3 screws. If there is a strip of copper tape attached to the metal shield which prevents you from removing the shield then detach the tape from it.
5. You should now see the system board as illustrated (Figure 1).
6. Locate the Motorola 68000 microprocessor on the system board. It is a big 64 pin chip which measures 80 x 25mm. Place one of the 64 pin IC sockets onto the 68000 so that the pins of the IC correspond to those on the 68000. Solder the pins of the IC socket to the contacts of the 68000 starting with the four corners. As usual when soldering you should solder in short intervals so that the 68000 chip does not overheat.
7. Now carefully check all the joints by eye. Insert the second 64 Pin IC socket onto the newly soldered one.
8. Take the PC-SPEED board and hold it carefully above the IC socket. It should be positioned so that the mark on the 68000 matches the mark (black dot) on your PC-SPEED board, as shown in figure 1.

9. Initially push the PC-SPEED board in quite gently until you are sure that all of the pins are correctly located and none have bent. Then push the PC-SPEED board in firmly.
- 10 Reassemble your computer covering any parts of the metal shield that may come into contact with your PC-SPEED board with insulating tape. Remember to attach the keyboard connector to the socket on the right hand side of the main system board.

PC-SPEED is waiting to be tested. Turn to section 2.6. Testing PC-SPEED.

2.3. 1040 ST

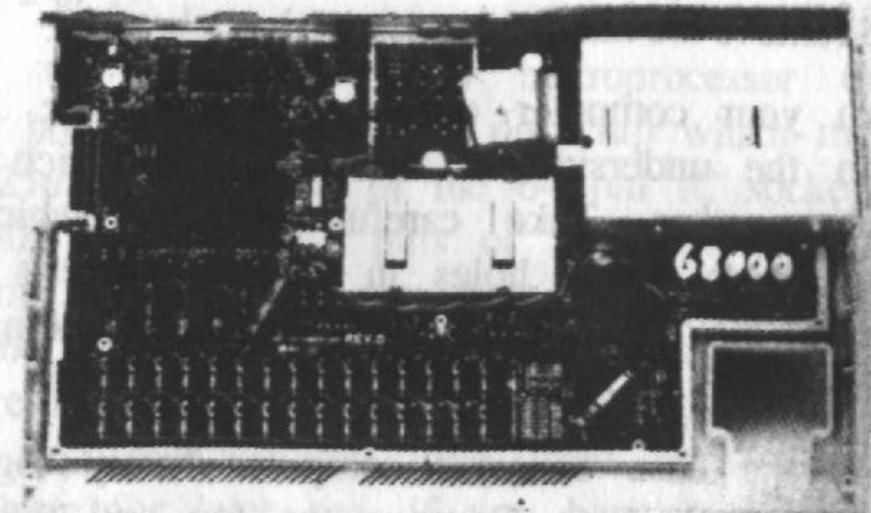


Figure 2: System board of a 1040 ST with the 68000 microprocessor mounted under the floppy disk drive.

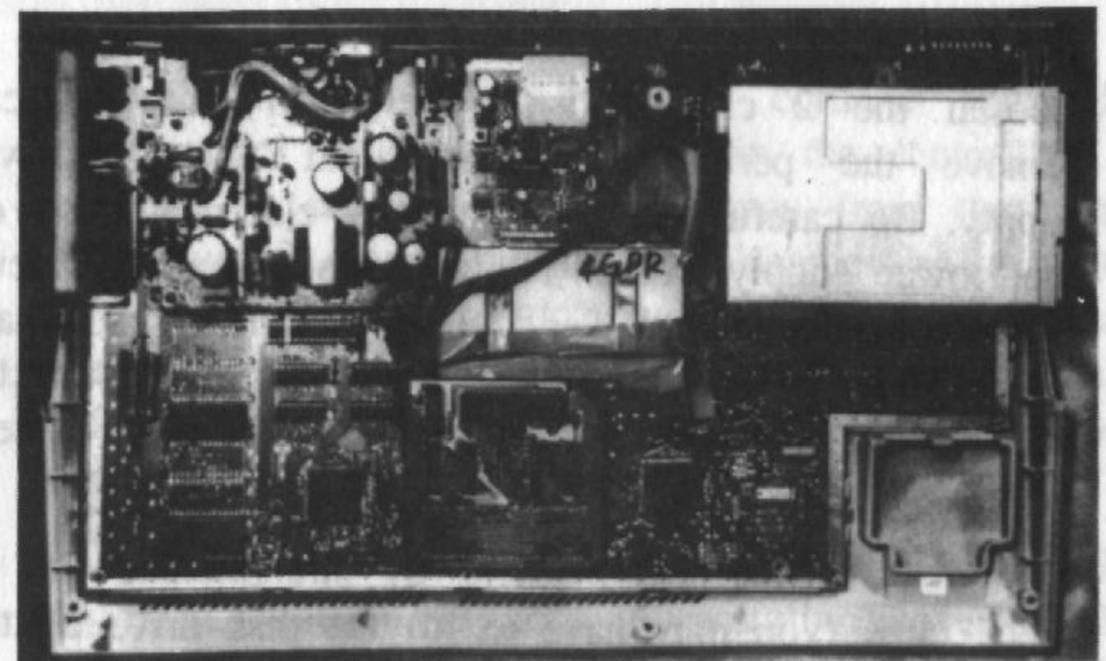


Figure 3: System board of a 1040 ST (new model) with the 68000 microprocessor mounted in the middle of the main board under the keyboard.

1. First switch off your 1040 S/T computer and remove all connecting cables including those to your monitor, printer and mouse. Disconnect the power at the mains and remove the mains plug from it's socket.
2. Turn your computer over and remove the 10 screws from the underside of the computer which hold the case together. Take careful note of which screws come from which holes in your computer's case, the screws may be of different sizes depending on the hole.
3. Hold the case of your computer firmly together and turn it back over. Remove the top and the keyboard will now be exposed. You should see a connector from the keyboard to the right hand side of the main system board. Disconnect this connector from the system board.
4. Loosen the 2 clips and 2 screws so that you can remove the perforated metal shield of the power supply. Be careful not to touch any electrical parts on the power supply board. Now loosen 2 further screws which connect the power supply board to the main system board. Disconnect the power supply connector and remove the power supply from the main system board.
5. Now remove the metal shield by straightening the 11 metal clips (you may have to lift the disk drive a little to get at one of the clips) and, if they are present, removing the 8 screws. When removing the shield you may have to lift up the floppy disk drive a little so

- that the disk drive fits through the opening.
6. You should now see the system board as illustrated (Figure 2 or 3).
7. Locate the Motorola 68000 microprocessor on the system board. It is a big 64 pin chip which measures 80 x 25mm. Place one of the 64 pin IC sockets onto the 68000 so that the pins of the IC correspond to those on the 68000. If you have an older model 1040 with the 68000 located under the disk drive (Figure 2), carefully break off the two pieces of black plastic which support the disk drive from the motherboard. Save these for later use. If you have a newer model 1040 with the 68000 in the centre of the motherboard then cut off the grey plastic keyboard support located just in front of the 68000 using metal shears.
8. Solder the pins of the IC socket so that every pin is connected starting with the four corners. With the newer model 1040's, (the 68000 in the centre), it is necessary to tilt the IC socket away from the metal canned video circuit by about 5 degrees so that the main PC-SPEED board does not touch the metal can when it is fitted. As usual when soldering you should solder in short intervals so that the 68000 chip does not overheat.
9. Now carefully check all the joints by eye. Take the PC-SPEED board and hold it carefully above the IC socket but do not attempt to fit it, it should be positioned so that the mark on the 68000 matches the mark (black dot) on your PC-SPEED board, as shown

in figure 2 or 3. Note all the parts of the system board that may be touched by the PC-SPEED board when you fit it later. Now put your PC-SPEED board aside and cover those parts with insulating tape.

- 10 You can now reposition your PC-SPEED board and carefully fit it. Initially push the PC-SPEED board in quite gently until you are sure that all of the pins are correctly located and none have bent. Then push the PC-SPEED board in firmly.
- 11 With older model 1040's (68000 under the disk drive) you can now glue the two disk drive supports back onto the system board. Do not attempt to glue the supports onto the disk drive. Some models of disk drive have a metal shield on the base of the drive which protrudes out below the natural space normally occupied by a drive. If this is the case the shield should be removed with a screwdriver.
- 12 Now reassemble your computer covering any parts of the metal shield, disk drive or metal can of the video circuit that may come into contact with your PC-SPEED board with insulating tape. Be careful not to touch any electrical parts of the power supply.
- 13 Make sure that you reconnect the power supply correctly and that the keyboard connector is attached to the socket on the right hand side of the main system board.

- 14 If you have a newer model 1040, (68000 in the middle), you may need to cut a hole with metal shears about 8 x 11cm in the metal shield in order to fit it without touching the PC-SPEED board. With the older model 1040, two of the longer screws in the case which pass towards the disk drive can no longer be fitted.

PC-SPEED is waiting to be tested. Turn to section 2.6. Testing PC-SPEED.

2.4. 520 STE and 1040 STE.

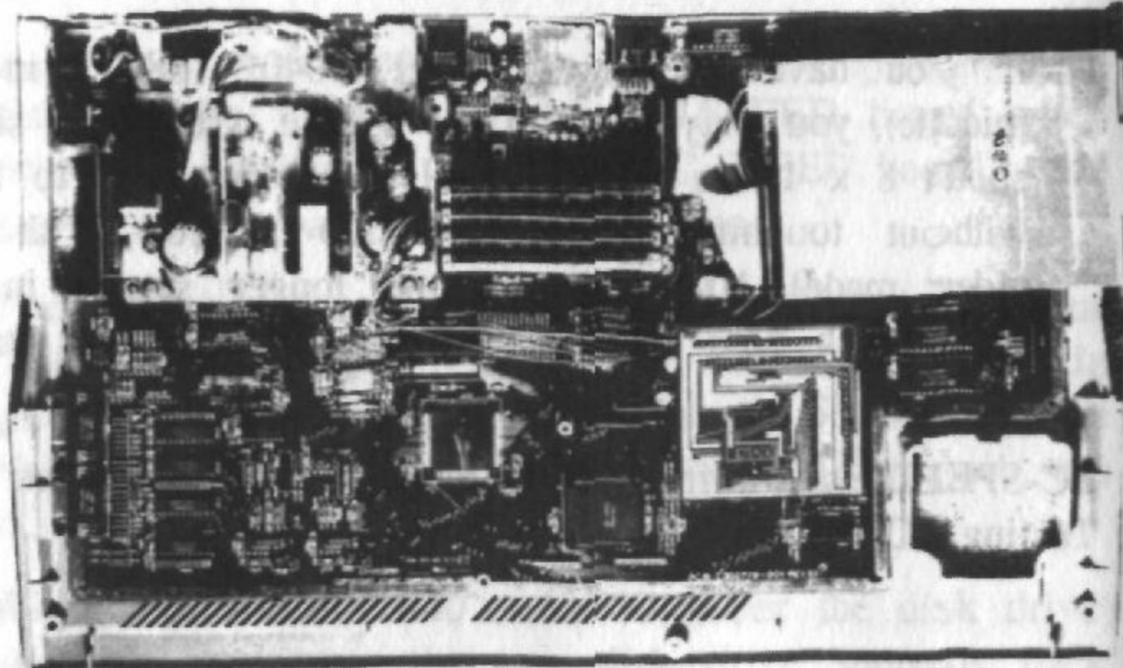


Figure 4: System board of a 1040 STE.

1. First switch off your STE computer and remove all connecting cables including those to your monitor, printer and mouse. Disconnect the power at the mains and remove the mains plug from it's socket.
2. Turn your computer over and remove the 10 screws from the underside of the computer which hold the case together. Take careful note of which screws come from which holes in your computer's case, the screws may be of different sizes depending on the hole.
3. Hold the case of your computer firmly together and turn it back over. Remove the top and the keyboard will now be exposed. You should see a connector from the keyboard to the right hand side of the main system board. Disconnect this connector from the system board.

4. Loosen the 2 clips and 2 screws so that you can remove the perforated metal shield of the power supply. Be careful not to touch any electrical parts on the power supply board. Now loosen 2 further screws which connect the power supply board to the main system board. Disconnect the power supply connector and remove the power supply from the main system board.
5. Now remove the metal shield by straightening the 11 metal clips (you may have to lift the disk drive a little to get at one of the clips) and, if they are present, removing the 8 screws. When removing the shield you may have to lift up the floppy disk drive a little so that the disk drive fits through the opening. (You should now see the system board as illustrated (Figure 5).
6. Locate the square 68000 microprocessor on the systemboard. It's the big 68 pins chip with measures 1x1 inch, with "68000" printed on it, located in a PLCC socket. If the processor is fixed with metal clips, you should remove these from the PLCC socket.
7. Position the PC-Speed module on top of the 68000 processor as shown in figure 5.
8. Place the PC-Speed module with its 68 pin connector at the inner-edge within the PLCC socket on top of the 68000 processor. The connector should be attached to the processor-pins and the pins of the chip socket securely. Be very careful not to damage one of the 68 pins of the connector!

- 9 Take great care to ensure that you have placed the connector correctly. Very gently push the PC-SPEED into the socket increasing pressure until it is fitted.
- 10 Reassemble your computer covering any parts of the metal shield that may come into contact with your PC-SPEED board with insulating tape. Remember to attach the keyboard connector to the socket on the right hand side of the main system board.

PC-SPEED is waiting to be tested. Turn to section 2.6. Testing PC-SPEED.

2.5. Mega ST

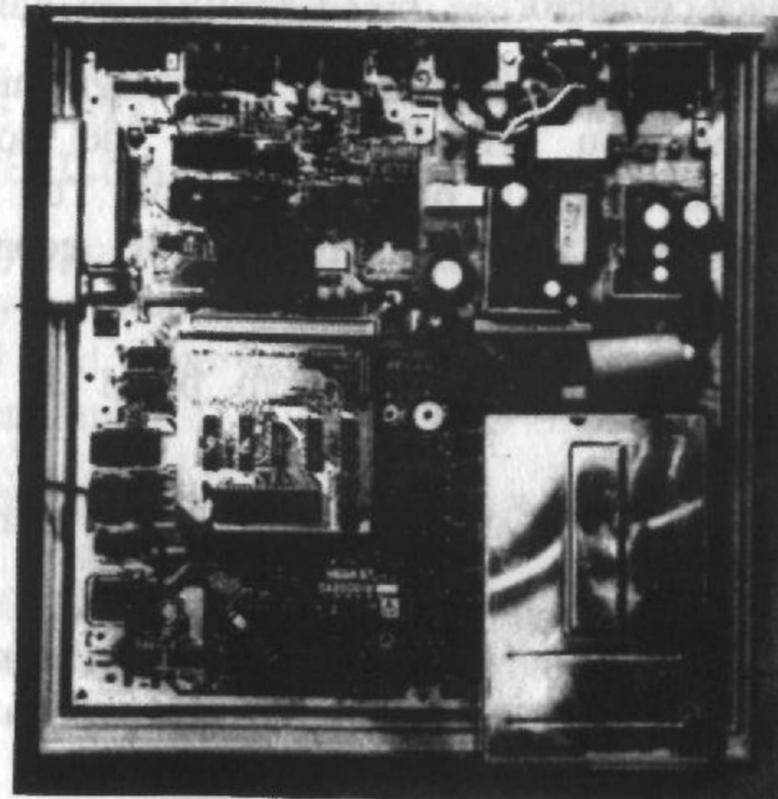


Figure 5: System board of a Mega ST

1. First switch off your Mega ST computer and remove all connecting cables including those to your monitor, printer and mouse. Disconnect the power at the mains and remove the mains plug from it's socket.
2. Turn your Mega ST over and remove the 12 screws from the underside which hold the case together. Take careful note of which screws come from which holes in your computer's case, the screws may be of different sizes depending on the hole.

3. Hold the case of your Mega firmly together and turn it back over. Remove the top disconnecting the battery pack connector.
4. Now remove the metal shield by straightening the 9 metal clips. You may have to lift the floppy disk drive a little to get at one of the clips. You will have to lift the disk drive and remove the connector for battery back up in order to remove the shield.
5. You should now see the system board as illustrated (Figure 4).

Warning!!!!!! Please do not touch any electrical parts of the power supply.

6. Locate the Motorola 68000 microprocessor on the system board. It is a big 64 pin chip which measures 80 x 25mm. Some Mega ST's have a small accessory circuit board containing a 74LS74 IC which is soldered on top of the 68000 CPU. If this is the case with your computer you will have to relocate this board within your computer and reconnect it using multi wire cable. When you do this connect a 220 Ohm series resistor between the wire of pin 1 on the IC and pin 12 of the 68000 CPU. Insulate the board carefully in its new location.
7. Now place the 64 pin IC sockets onto the 68000 so that the pins of the IC correspond to those on the 68000. Solder the pins of the IC socket so that every pin is connected starting with the four corners. As usual when soldering you should solder in short intervals so that the the 68000 chip does not overheat.

8. Now carefully check all the joints by eye. Insert the second 64 Pin IC socket onto the newly soldered one. Take the PC-SPEED board and hold it carefully above the IC socket. It should be positioned so that the mark on the 68000 matches the mark (black dot) on your PC-SPEED board, as illustrated in figure 4.
9. Initially push the PC-SPEED board in quite gently until you are sure that all of the pins are correctly located and none have bent. Then push the PC-SPEED board in firmly.
- 10 Reassemble your computer covering any parts of the metal sheet that may come into contact with your PC-SPEED board with insulating tape. Remember to reconnect the battery pack connector.

PC-SPEED is waiting to be tested. Turn to section 2.6. Testing PC-SPEED.

2.6. Testing PC-SPEED

Switch on your ST. If the monitor stays blank or the disk drive motor does not spin after the normal 4 seconds switch off your ST immediately and go to section 2.7. Troubleshooting PC-SPEED Installation.

Now using your backup copy of the PC-SPEED SYSTEMDISK start PC_SPEED.PRG by double clicking on it as normal. If you are prompted to insert a DOS System Disk then you have successfully installed PC-SPEED and you should proceed to Chapter 3. Otherwise refer to section 2.7. Troubleshooting PC-SPEED Installation.

2.7. Troubleshooting PC-SPEED

Installation

All PC-SPEED boards are individually factory tested. If yours does not work, it is likely to be caused by some small error in installation.

If after fitting PC-SPEED your ST will not start then check the following.

There may be a short circuit either 'tin bridges' in your soldering or because the PC-SPEED board is not insulated properly. (On some ST's the power supply will produce an audible warning to indicate this).

Check the integrity of all soldered joints with a tester.

If the disk drive will not start on an older 1040 ST it may be because the flywheel on the underside of the disk drive is touching the PC-SPEED board. Check that you glued the disk drive supports in place properly and that the PC-SPEED board is pushed into the IC socket as fast as it will.

The ST works but PC-SPEED will not start.

Push the PC-SPEED board into the IC socket more firmly.

If PC-SPEED still won't work refer to a COMPO Software Authorised Dealer or call the hotline - details of which are inside your PC-SPEED box.

3 Software Installation

This section of the manual gives instruction on how to install PC-SPEED software and load the DOS operating system.

However this is neither a guide to the internal workings of an PC type computer nor a guide to the DOS operating system.

You will need a copy of the DOS operating system in order to install and use PC-SPEED.

3.1. Starting PC-SPEED & Loading DOS

Initially, the default set up in the PC_SPEED.PRG program can be used to get PC-SPEED working. Later you may need to configure PC-SPEED as described later in this chapter to get the most from your particular hardware and software setup.

To install PC-SPEED you will need a copy of the DOS operating system version 2 or higher. (Most suppliers of DOS use double sided disks. If you only have a single sided disk drive ask your dealer to create you a single sided version of DOS).

Some copies of DOS come supplied with a special setup program. If this is the case, you will need to get either your dealer or a friend with a PC to create you a DOS 3 1/2" system disk containing the DOS *.COM, *.EXE and *.SYS files.

Load PC_SPEED.PRG and you will get a prompt to insert your DOS system disk. PC-SPEED will now load DOS from that disk. From now on your Atari ST will function as if it were an PC compatible computer. We recommend you now create a backup copy of your DOS system disk using the DOS command DISKCOPY. If DOS fails to load then refer to section 3.7. Troubleshooting DOS Installation.

At any time you can reset the DOS system either by pressing the Reset button on the back of your ST or by holding down the keys [Alternate] and [Control] and then pressing [Delete]. The ST will then prompt you for a DOS system disk. Either insert it and press [Return] to reload DOS, or press [Esc] to return to TOS.

3.2. Configuring your system

Run the program PCS_INST.PRГ by double clicking on it from the Atari desktop to define or change the attributes of your system and the particular monitor type you want your ST to emulate.

PC-SPEED installationsprogram V1.4 (C) SACK electronic GmbH 1989

(K)eyboard/Mouse (F)loppy/Hard-disk (S)creen (C)olors (O)ut

PC-SPEED allows you to emulate a number of different screen display standards when using your Atari ST. However with a colour monitor only CGA mode can be emulated.

3.2.1. CGA

Screen installation

If you use the HYPER-HERC emulation, you can display the full HERCULES resolution. You only need a little hardware called HYPER-SCREEN. (see ST-magazin 5/89)

| | | | | |
|------------|----------|---------|----------|------------|
| Grafikcard | HERCULES | [CGA] | OLIVETTI | HYPER-HERC |
| Fonts | [BOTH] | LIGHT | DARK | CHANGE |

The 'Colour Graphics Adaptor' (CGA) was the first colour graphics standard for the IBM PC. The standard supports graphics monitors with 320 x 200 pixels in 4 colours, 640 x 200 in two colours or text only with 80 x 25 characters in 16 colours or 40 x 25 characters in 16 colours.

PC-SPEED can emulate all CGA modes except when in text mode it will only display 4 colours. These 4 colours can be set within PCS_INST.PRГ.

3.2.3. Hercules

Screen installation

If you use the HYPER-HERC emulation, you can display the full HERCULES resolution. You only need a little hardware called HYPER-SCREEN. (see ST-magazin 5/89)

| | | | | |
|------------|----------|-------|--------------|------------|
| Grafikcard | HERCULES | CGA | [OLIVETTI] | HYPER-HERC |
| Fonts | [BOTH] | LIGHT | DARK | CHANGE |

The Hercules graphics standard for monochrome graphics display gives a 720 x 350 pixel resolution in 2 colours or a 80 x 25 character text only mode. The Atari monochrome monitor can not display this resolution in full. However if you install PC-SPEED for Hercules emulation a part of the full monitor will be displayed on your ST. The rest can be viewed by holding down the [C] key on the numeric keypad and scrolling using the right and left arrow keys.

3.2.3. Olivetti

Screen installation

If you use the HYPER-HERC emulation, you can display the full HERCULES resolution. You only need a little hardware called HYPER-SCREEN. (see ST-magazin 5/89)

| | | | | |
|------------|----------|-------|--------------|------------|
| Grafikcard | HERCULES | CGA | [OLIVETTI] | HYPER-HERC |
| Fonts | [BOTH] | LIGHT | DARK | CHANGE |

Olivetti mode. It gives a resolution of 640 x 400 pixels in 2 colours or 80 x 25 characters in 2 colour. Olivetti mode is also often known as AT&T 400 or AT&T monochrome.

3.2.4. Direct video

Direct video is a special PC-SPEED monitor mode for use by programmers (see Appendix A). It allows direct addressing of the normal ST's monitor memory and hence is extremely fast.

3.3 Keyboard Mapping

Not all keys typically found on a standard keyboard are present on your Atari ST. PC-SPEED therefore maps some of your ST keys to give you access to some special IBM keyboard functions.

The upper four keys on the numeric keyboard are mapped as:-

[()] maps to [SysReq]

[D] maps to [Num Lock]

[/] maps to [Scroll Lock] or [Break]

[*] maps to [Print Screen] or [*]

When [Num Lock] is off the numerical keys are defined as

| | | |
|-----------------|-----------------|------------------|
| [7] Home | [8] Cursor Up | [9] Page Up |
| [4] Cursor Left | [5] null | [6] Cursor Right |
| [1] End | [2] Cursor Down | [3] Page Down |
| [0] Insert | [.] Delete | |

In DOS mode the Atari keyboard keys [Help] and [Undo] map to [Page Up] and [Page Down] respectively.

By holding down the [()] key on the numeric keypad and pressing [i] the screen will invert on a monochrome monitor.

All other keys on the ST keyboard are unchanged.

In Hercules graphics mode the display on the Atari monitor can be scrolled by holding down [()] and using the Atari keyboard right and left cursor keys.

It is also possible to change the keyboard layout in PCS_INT.PRG for different countries.

Keyboard installation

| | | | | | |
|-----------------|--------|--------|---|-----|---|
| Keyboard_repeat | AUS | [1] | 2 | 3 | 4 |
| Keyboard_delay | AUS | [1] | 2 | 3 | |
| Keyboard_layout | GERMAN | [UK] | | USA | |

3.4 Disk Formats

PC-SPEED supports the following disk formats:-

180kB 40 track, single sided

360kB 80 track, single sided

360kB 40 track, double sided

720kB 80 track, double sided

To use disks formatted as 80 track you must have DOS 3.2 or higher.

With most versions of DOS you can set the type of disk formatting you want using the DOS device driver DRIVER.SYS supplied on your DOS system disk. For instance if you want to make your drive 720kB 80 track insert the following command in your CONFIG.SYS file:

```
DEVICE=DRIVER.SYS/d:0
```

Note: The CONFIG.SYS file is an optional file you must create. Sometimes it is produced by DOS installations programs when a DOS systems disk is created. It can be created or modified under DOS with the editor supplied with DOS (often this is called EDLIN) or by using a standard text editor or with a word processor that will save in ASCII format.

In order to work with 720 kB disks you must now reboot DOS having changed the CONFIG.SYS file. Press [Control], [Alternate] and [Delete]. When the machine reboots you will see a message on screen showing a new driver letter (usually C or E) that you should use to access the Floppy Disk.

Some versions of DOS have a command DRIVPARM in which case you would add the following command to your CONFIG.SYS file instead:

```
DRIVPARM=/d:0/f:2/t:80
```

If you own an external 3.5" or 5.25" 80 track floppy disk drive it may be necessary to adjust the step rate of the read/write head using PCS_INST.PRG.

Floppy/Harddisk installation

| steprate : | | 3ms | 6ms | 12ms |
|------------|------------|-----------|-------|-------|
| drive A | | [3 1/2] | 5 1/4 | 5 1/4 |
| drive B | [KEINE] | 3 1/2 | 5 1/4 | 5 1/4 |
| drive A | [INTERN] | EXTERN | | |

The step rate is 3ms by default but can be changed to 6 or 12ms. Only adjust the step rate if your external drive does not function at 3ms.

3.5. Hard Disk Support

Most hard disks for the Atari ST, including those from Atari, ICD, Supra and Vortex,, can be accessed using PC-SPEED. Other hard disks should work if they are AHDI 3.0 compatible.

Please note that if you are using either MS DOS or PC DOS you should never use the DOS command FDISK at any time during installation or use of PC-SPEED.

In order to configure your hard disk for use with PC-SPEED run PCS_INST.PRG and set the hard disk option to yes, not hd-boot.

Floppy/Harddisk installation

| steprate : | 3ns | 6ns | 12ns |
|------------|------------|--------|-------|
| drive A | [3 1/2] | 5 1/4 | 5 1/4 |
| drive B | [KEINE] | 3 1/2 | 5 1/4 |
| drive A | [INTERN] | EXTERN | |

If a harddisk is connected you can choose between starting an attempt to boot from disk (YES) or from harddisk straight away.

Harddisk NONE [YES] HD-BOOT

PCS_INST.PRG will then prompt you to assign a partition of your hard disk to DOS drive C. With PC-SPEED you do not have to have the same drive letter to partition mapping as under Atari TOS. Thus if you wanted to use the drive D from Atari TOS as drive C under DOS you would select drive D to map to DOS drive C.

Floppy/Harddisk installation

| steprate : | 3ns | 6ns | 12ns |
|------------|------------|--------|-------|
| drive A | [3 1/2] | 5 1/4 | 5 1/4 |
| drive B | [KEINE] | 3 1/2 | 5 1/4 |
| drive A | [INTERN] | EXTERN | |

If a harddisk is connected you can choose between starting an attempt to boot from disk (YES) or from harddisk straight away.

Harddisk NONE [YES] HD-BOOT

You can now assign a partition of your harddisk to each drive under DOS.

| | | | | | | | | |
|----------------------|---|-------|-------|-------|-------|-------|-------|-------|
| DOSdrive C =TOS-part | C | [D] | E | F | G | H | I | J |
| DOSdrive D =TOS-part | C | D | [E] | F | G | H | I | J |
| DOSdrive E =TOS-part | C | D | E | [F] | G | H | I | J |
| DOSdrive F =TOS-part | C | D | E | F | [G] | H | I | J |
| DOSdrive G =TOS-part | C | D | E | F | G | [H] | I | J |
| DOSdrive H =TOS-part | C | D | E | F | G | H | [I] | J |
| DOSdrive I =TOS-part | C | D | E | F | G | H | I | [J] |

This useful feature allows you to use your hard disk partitions in the most convenient way and it is very important you understand this concept if you want to make your hard disk auto boot as described in the following section of this chapter.

Note: The partitions that you assign to be DOS drives C and D must be between 4.2 and 16 MB in size. Bigger partitions of up to 32 MB can be accessed using ADD_PART.SYS as described later in this chapter.

When you are configuring your hard disk initially always set the hard disk option to YES not to HD-BOOT.

On exiting PCS_INST.PRG you can then save the changes in the installation which will update PC_SPEED.PRG. You can then restart PC-SPEED, put your system disk in the floppy drive as normal and then access your hard disk.

Note: If you have already set up your floppy disk for 720 kB operation using DRIVER.SYS then the drive letter may have changed, probably from C to E. You will see the revised drive letter appear whilst booting DOS.

Now DOS drives C and D should be immediately accessible - there is no need at all to format them.

3.6. Setting your Hard Disk to Auto boot.

It is possible to install your hard disk to auto boot. Before attempting this you should first have got your hard disk working as described in section 3.5.

Then follow the following steps:

1. If you want to set both DOS and Atari TOS to auto boot then the auto boot files must be on different partitions.

The Atari TOS partition C must contain the Atari TOS hard disk booting routines. The DOS partition C must contain the DOS hard disk booting routines.

Therefore, run first PCS_INST.PRG and set DOS partition C to be any partition other than TOS C (for instance TOS D) that is between 4.2 and 16 MB in size. At this stage do not set the hard disk to HD-BOOT.

2. Load up DOS and check that it recognises drive C and that the drive C it recognises is the partition that you want to be the auto boot partition.

3. The next step will irrevocable delete all the files on the DOS C directory. Any files that are important should be copied to another partition or to floppy disk. (In fact we recommend that you back up the complete contents of your hard disk before continuing).

Now with the DOS system disk in drive A issue the command:

```
FORMAT C:/S/V
```

This will reformat the hard disk partition with room for the DOS system tracks and then copy these automatically to drive C.

4. Now make a directory on drive C with the commands:

```
C:
```

```
MD DOS
```

```
CD DOS
```

```
A:
```

Then copy all the DOS files from your DOS system disk to your DOS directory on drive C with the command:

```
COPY *.* C:
```

5. Check if the files AUTOEXEC.BAT and CONFIG.SYS are present on your DOS system disk. If they are then copy these to the root directory of Drive C with the commands:

```
COPY AUTOEXEC.BAT C:\*.*
```

```
COPY CONFIG.SYS C:\*.*
```

6. Now using the editor that comes with DOS, a standard text editor or a word processor that will edit ASCII files examine the contents of both the CONFIG.SYS and AUTOEXEC.BAT files in the root directory of drive C.

For example if you wish to use the MS DOS editor EDLIN then issue the DOS Command:

```
C:
```

(This should take you straight to the DOS directory if you have followed these instructions carefully; otherwise you will have to issue the command CD\DOS).

```
EDLIN AUTOEXEC.BAT
```

Then type [l] to list the contents of the AUTOEXEC.BAT file.

You should check to see if the file contains a PATH command. If so you should amend it to include a path to the DOS directory. Otherwise, type [i] to insert a new line and then type the command:

```
PATH C:\DOS
```

Press [Return].

You should then get the number 2 appear on screen, press [Control] [C] and then [e] to end and save the changes to the AUTOEXEC.BAT file. (If you make a mistake, typing [q] should quit EDLIN without updating the AUTOEXEC.BAT file).

Now edit CONFIG.SYS with the commands:

```
EDLIN CONFIG.SYS
```

```
[l] (to list the contents)
```

Check to see if any of the lines in the CONFIG.SYS file refer to files in the DOS directory eg. DRIVER.SYS. If so then edit the line by typing the line number, pressing [Return], then re-typing the line adding DOS\ in the front of the command eg. DRIVER.SYS would become DOS\DRIVER.SYS.

Having done that exit EDLIN again by typing [e].

7. Now return to the Atari GEM desktop either by holding down the [Alternate] and [Control] and then pressing [Delete] or by pressing the reset button on your ST. Reload PCS_INST.PRG and now change the hard disk from YES to HD-BOOT.

Floppy/Harddisk installation

| steprate : | | 3ns | 6ns | 12ns |
|------------|------------|-----------|--------|-------|
| drive A | | [3 1/2] | 5 1/4 | 5 1/4 |
| drive B | [KEINE] | 3 1/2 | 5 1/4 | 5 1/4 |
| drive A | [INTERN] | | EXTERN | |

If a harddisk is connected you can choose between starting an attempt to boot from disk (YES) or from harddisk straight away.

Harddisk NONE YES [HD-BOOT]

The next time you load PC_SPEED.PRG your hard disk should auto boot. If you use PC_SPEED.ACC reboot your system when your are back at the GEM desktop.

3.7. Mouse Support

You can either use a standard Atari mouse or a Microsoft compatible serial mouse with PC-SPEED.

To use your Atari mouse run PCS_INST.PRG and select the option for 'Microsoft mouse'.

Keyboard installation

| | | | | | |
|-----------------|--------|--------|---|-----|---|
| Keyboard_repeat | AUS | [1] | 2 | 3 | 4 |
| Keyboard_delay | AUS | [1] | 2 | 3 | |
| Keyboard_layout | GERMAN | [UK] | | USA | |

Mouse-mode RS232 [MICROSOFT-KOMPATIBLE] CURSOR-MOUSE

Your mouse will now act like a Microsoft mouse under DOS. However with some software you may need a mouse driver. This driver is supplied with PC-SPEED. A mouse driver is normally also supplied with Microsoft or compatible mice. If you have a driver named MS_MOUSE.SYS this is for a Mouse System mouse and will not work with PC-SPEED and the Atari mouse.

To use a mouse driver copy it to your DOS system disk or the DOS directory of your hard disk.

If your mouse driver is named MOUSE.SYS, then add the following command to your CONFIG.SYS files:

DEVICE=MOUSE.SYS

Or, for hard disk users:

DEVICE=DOS\MOUSE.SYS

If your mouse driver is named `MOUSE.COM`, then add the following command to your `AUTOEXEC.BAT` files:

```
MOUSE
```

Or, for hard disk users:

```
DOSMOUSE
```

If you select 'cursor mouse' in `PCS_INST.PRG`, your mouse will emulate the cursor keys, enabling you to speed up some DOS applications which don't normally support mice.

Alternatively you can connect a standard Microsoft compatible serial mouse to your ST's RS232 port (sometimes called Modem port). Select the RS232 option within `PCS_INST.PRG`, you can now install the mouse at up to 9600 baud attached to COM1 under DOS. You can also use this mouse under TOS in place of the standard Atari mouse by running `PC_MOUSE.PRG` from your PC-SPEED SYSTEMDISK.

Most TOS programs work very well with a serial mouse installed. However a few do not, so you will still have to use the Atari mouse with these.

3.8. Extended Memory

When you load PC-SPEED any extra free memory over 1MB is automatically configured as Extended memory. Software that will use Extended memory include the DOS command `VDISK` (DOS V3.3 or higher).

If you have DOS 3.3 or higher you will be able to use the DOS utility program `VDISK` to create a RAM disk.

To do this insert the following command into your `CONFIG.SYS` file:

```
DEVICE=VDISK.SYS [capacity in kB] /E
```

Or for hard disk users:

```
DEVICE=DOS\VDISK.SYS [capacity in kB]/E
```

Note: If you want to use a large RAM disk for many files you will also have to increase the maximum number of directory entries, the default is 64.

Be careful not to confuse extended memory with expanded memory. If your DOS software will only support expanded memory you will need to get a utility program that allows you to emulate expanded memory using extended memory. Softbyte's `EXTMEMS.SYS` works well.

3.9. Troubleshooting DOS Installation

DOS will not boot from floppy.

You are using a version of DOS which is incompatible with PC-SPEED. Check that your version of DOS is 2.0 or higher.

The DOS disk you are trying to use is corrupt. Try another DOS system disk.

You are using a DOS disk set up for a specific computer manufacturer. Order a standard copy of DOS; either Microsoft's MS DOS or Digital Research's DR DOS.

The DOS disk you are trying to use does not have system tracks on it. Ensure that the DOS disk was created either by using the /S option with the DOS FORMAT command or by using DISKCOPY.

The system disk is not in a format compatible with your ST's drive. Ensure that the disk is either 40 track (360k double sided) or 80 track (720k double sided). These are the only formats compatible with standard Atari ST disk drives, you can't use high density (HD) PC disks on your ST without special hardware.

DOS has loaded and is attempting to execute a program not compatible with PC-SPEED. Rename the CONFIG.SYS and AUTOEXEC.BAT files on your DOS disk and try to load DOS again.

The wrong configuration option has been chosen when running PCS_INST.PRG. Rerun PCS_INST.PRG, correct your configuration and try to load DOS again.

DOS will load from floppy but will not auto boot from the hard disk.

Boot DOS from floppy and check that the partition size of drives C and D are between 4.2 and 16MB using the DOS command CHKDSK. If drive C: is not recognised as being present then check the settings in PCS_INST.PRG.

Is your hard disk AHDI compatible?

The files AUTOEXEC.BAT and CONFIG.SYS are in the root directory of drive C and that any commands in either file have the correct path to other files specified. For instance in the file DRIVER.SYS is in the MSDOS directory then the line in the CONFIG.SYS file to call it should be:

```
DEVICE=C:\DOS\DRIVER.SYS/d:0
```

If after trying the above you still can't load DOS refer to your nearest COMPO Software Authorised Dealer or call the hotline- details of which are inside your PC-SPEED box.

4. Working with PC-SPEED

4.1 PC-SPEED DOS utilities

The following DOS utilities are supplied on the PC-SPEED SYSTEMDISK: PCS_OPT.COM

ADD_PART.SYS

MEGADISC.SYS

TIMER.COM

First copy these from your PC-SPEED SYSTEMDISK to your DOS system disk or the DOS directory of your hard disk.

4.1.1. PCS_OPT.COM

PCS_OPT.COM can be run from the command line, just type in PCS_OPT at the DOS prompt and press [Return]. You may need to load PCS_OPT to run 'difficult' DOS programs with PC-SPEED.

4.1.2. ADD_PART.SYS

ADD_PART.SYS is a device driver which enables you to use more than two partitions on your hard disk. Install the driver in your CONFIG.SYS file with the command:

DEVICE=ADD_PART.SYS

Or for hard disk users:

DEVICE=DOS\ADD_PART.SYS

You can now access partitions C: to Z:. (No options are required).

4.1.3. MEGADISC.SYS

MEGADISC.SYS is a device driver which allows you to configure a portion of RAM as a fast RAM disk. It will only work if your ST has more than 1MB of RAM. Add the following line to your CONFIG.SYS file:

DEVICE=MEGADISC.SYS

Or for hard disk users:

DEVICE=DOS\MEGADISC.SYS

All available memory above 1MB will be allocated to the RAM disk. When you boot DOS the drive letter of the RAM disk will be displayed on screen.

Note: Any data stored on the RAM disk will be lost when you reset your computer or return to TOS.

4.1.4. TIMER.COM

TIMER.COM gives the TOS time to DOS.

You can add the following command to your AUTOEXEC.BAT files:

TIMER

or, for hard disk users:

DOS\TIMER

4.2. Troubleshooting Software Problems

Problems with DOS.

The message BAD Command! or File Name usually indicates that DOS either can't find a command file - because it is looking in the wrong place for it, or that the file is not present - because it wasn't on your original DOS system disk, or you did not copy it correctly to the hard disk.

If DOS reports error messages in booting there is probably a problem in either your CONFIG.SYS file or your AUTOEXEC.BAT file. Check that the reference to any command includes the correct PATH and that the syntax of the command is correct. (Syntax means the contents of the command line are as described in your DOS manual. Common problems are, including a space where there should be one and similarly, getting the characters / and \ wrong.)

If the changes you make to either CONFIG.SYS or AUTOEXEC.BAT have no effect then check that both files are in the root directory of your disk and not in a folder/sub directory - if they are, DOS will not find them.

Software will not load.

The message 'unable to find key disk' or similar shows that your software is copy protected. Sometimes copy protection mechanisms will not work with an ST disk drive controller - tell the software publisher to fix the problem!

If the screen goes blank when trying to load a program, it suggests that the software is installed for a different graphics display standard than the one PC-SPEED is currently set up for.

Software runs, but the performance is slow.

Remove memory resident keyboard programs such as KEYBUK or KEYB UK from your AUTOEXEC.BAT file and set the national language keyboard from within PCS_INST.PRG.

Increase the file and buffer allocations in the CONFIG.SYS file either editing the current values or adding the lines:

```
FILES=20
```

```
BUFFERS=20
```

If after trying the above you still can't load your software refer to your nearest COMPO Software Authorised Dealer or call the hotline - details of which are inside your PC-SPEED box.

4.3. Hints and Tips using DOS with PC-SPEED

This section of the PC-SPEED manual is not a substitute for your DOS manual or a good book on DOS. However it may help you get your PC-SPEED running quickly.

Below are a list of the most commonly used DOS commands and an introduction as to how to use them.

- Command:** CD
- Full name:** Change Directory
- Purpose:** Changes the default directory DOS will use when looking for a file
- Format:** CD {pathname}
-
- Command:** CLS
- Full Name:** Clear Screen
- Purpose:** Clear the screen and place the cursor in the top left corner
- Format:** CLS

- Command:** COPY
- Full Name:** COPY
- Purpose:** Copy files from one path to another
- Format:** COPY {path}\filename {path}
- Example:** COPY C:\DOS\AUTOEXEC.BAT D:\ would copy the file AUTOEXEC.BAT from drive C subdirectory DOS to the root directory on drive D:
-
- Command:** CHKDSK
- Full Name:** Check Disk
- Purpose:** Checks the size of a particular partition of your hard disk.
- Format:** CHKDSK {drive:}
-
- Command:** DEL
- Full Name:** DELETE
- Purpose:** Delete files
- Format:** DEL {path}\{filename}

Command: DIR

Full Name: DIRECTORY

Purpose: List some or all files in a directory

Format: DIR {path}\{file name}

Options: /w produces a more compact listing on screen,
/p causes a pause after each screen full of information.

Command: FORMAT

Full Name: FORMAT

Purpose: Format a floppy disk or a hard disk partition

Format: FORMAT {drive:} /s

Options: /s causes the disk to be formatted as a DOS boot disk.

Command: MD

Full Name: Make Directory

Purpose: Create a new directory

Format: MD {path}\{new directory name}

Command: REN

Full Name: Rename

Purpose: Rename an existing file

Format: REN {path}\{filename} {filename}

Command: PATH

Full Name: PATH

Purpose: DOS will search for files with an extension of .COM or .EXE in those directories specified by the path command after checking the default directory.

Format: PATH {path};{path};.....

Example PATH C:\DOS would search for DOS command files on drive C: in directory DOS if they were not present in the default or specified directory when a DOS command was issued

Command: RD

Full Name: Remove Directory

Purpose: To delete an empty directory

Format: RD {path}

Command: TYPE
 Full Name: TYPE
 Purpose: Display the contents of a file on screen
 Format: TYPE {path}\{filename }

A.1 PC-SPEED Memory Map

| | |
|-----------------|--------------------------|
| 0H - 3FFFFH | DOS memory (=512k RAM) |
| 0H - AFFFFH | DOS memory (>512k RAM) |
| B0000H - BFFFFH | CGA/HGC screen memory |
| C0000H - CFFFFH | 64k Free RAM (>512k RAM) |
| D0000H - DFFFFH | 64k Free RAM (>512k RAM) |
| E0000H - E7FFFH | ST screen memory |
| E8000H - F7FFFH | PC-SPEED system RAM |
| F8000H - FFFFFH | PC-SPEED BIOS |