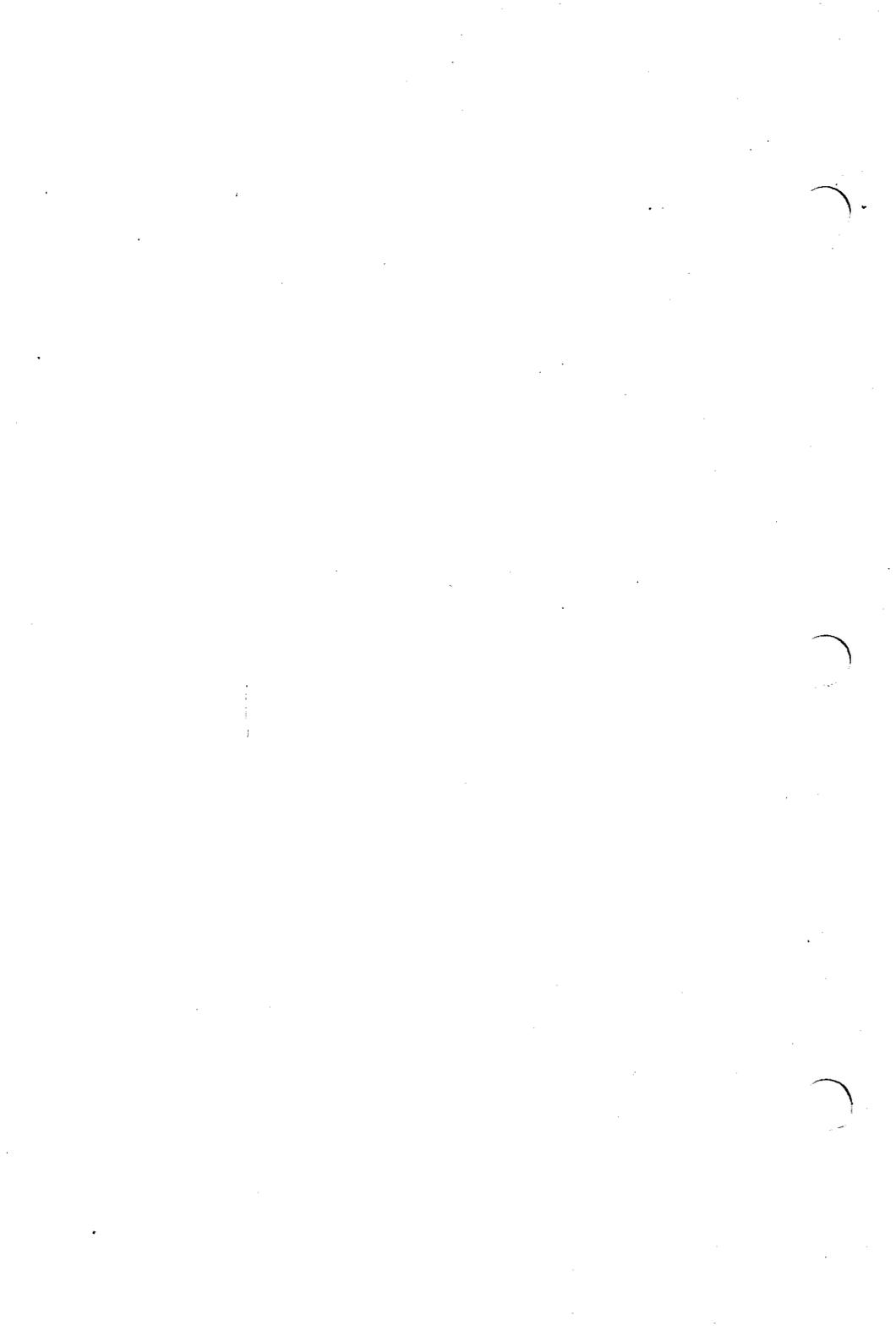# AVL GENESIS

PORTABLE COMPUTER

INSTALLATION GUIDE

Audio Visual Laboratories, Inc.

CONTENTS

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CHAPTER 1

INTRODUCTION

1.1 GENERAL INFORMATION

The AVL Genesis Portable is a business and personal computer for the serious user who wants to run application programs quickly and efficiently.

Packed into a compact design, the AVL Genesis Portable is a business computer system that combines the performance of a personal computer with an array of features and software which include professional audio visual capabilities.

To meet the future computing needs of today's business, AVL provides a family of computer systems. This family approach ensures compatibility, expandability, and the capability to solve business problems. The inherent economics in this approach yields profitability through increased efficiency. Your AVL Genesis Portable computer will fit right in.

1.3   GENERAL INDEX

This manual is divided into the following chapters:

CHAPTER 2

SYSTEM DESCRIPTION

2.1   GENERAL

This chapter introduces you to the basic components of the AVL   Genesis   Portable Computer.

> NOTE: If you are unfamiliar with a term or abbreviation used in this manual refer to the Glossary.

The remainder of this   chapter describes each piece of hardware that makes up AVL Genesis Portable.

2.2   CENTRAL PROCESSING UNIT (CPU)

The main unit of the computer,   referred to   as   the CPU contains the main   power ON/OFF control and disk   drives.   Inside the   main   unit   is   the   Intel   8088 microprocessor,   256K   bytes (expandable to 640K bytes) of RAM, and the   circuits to control interfacing of all devices.

2.2.1 FRONT PANEL

The front panel (Figure 2-1) consists of the display screen, the brightness and contrast controls, the ON/OFF switch, and two disk drives. The display and drives are discussed in the subpara- graphs that follow.
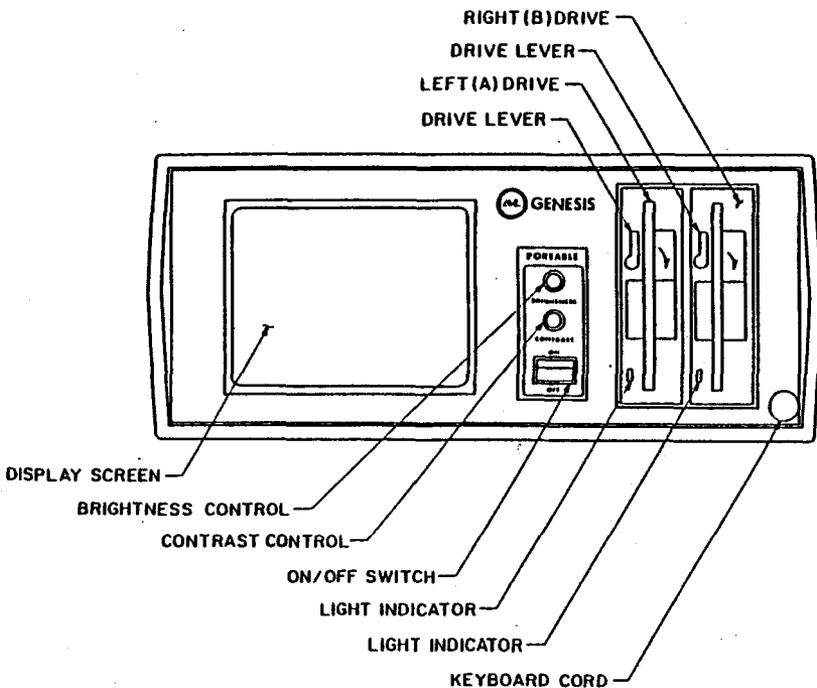
FIGURE 2-1   GENESIS PORTABLE FRONT PANEL

2.2.1.1 VIDEO DISPLAY MONITOR

The video display monitor is a high resolution (640 x 200 pixels) CRT with a green nonglare screen. It displays 80 characters by 25 lines.

The monitor is conveniently located to the left of the enclosure for best visability.

2.2.1.2 DISK DRIVES

The computer RAM or internal memory is a temporary storage area for creating, correcting, and viewing data. When the computer is turned off, any information in that temporary memory is lost. A disk drive provides you with a permanent recording of data on a floppy disk.

Your AVL Genesis Portable has two floppy disk drives (see Figure 2-1). The floppy disk drives use 5-1/4 inch, 48 TPI (tracks per inch) disks. Either single sided or double sided formatted disks can be used.

Purchased software application program disks must conform to these specifications to be read by your AVL Genesis Portable. The disk drive lever locks the disk into place after insertion. If a disk is not loaded properly or the

lever is not closed, your system will
not be able to access the disk,
resulting in a disk read error message
on your screen.

The A Drive is used to boot operating
systems from system disks and store
(save) program and data files onto
floppy disks.

The B Drive is principally used to load
files to temporary storage and save or
copy data files onto disks.

2.2.2 REAR PANEL

The rear panel (see Figure 2-2) has two
male 25-pin RS-232 serial communication
ports (COM1) and (COM2) and one 25-pin
female parallel port (LPT1). The serial
port allows you to interface with a
variety of serial devices like serial
printers or modems. The parallel port
is the communications connection for
parallel printers. Refer to Using
Genesis User's Guide for information
about serial and parallel printers.

The panel also contains the multi-image
input and output jacks. The Kodak type
Remote Cue jack is used to advance or
reverse the AVL Genesis Portable from
a remote location. The XLR type Out1
and Out2 jacks are for sending program

data to dissolve units. The XLR type
Data In jack is used for loading all
incoming data: load programming
information stored on magnetic tape;
verify saved tapes; play data through
Genesis Portable without entering it
into memory, in the MT (magnetic Tape)
BYPASS MODE; and input sync and timing
pulses.

The main unit rear panel also contains
the the main unit power cord, the fuse,
and the additional keyboard connector.
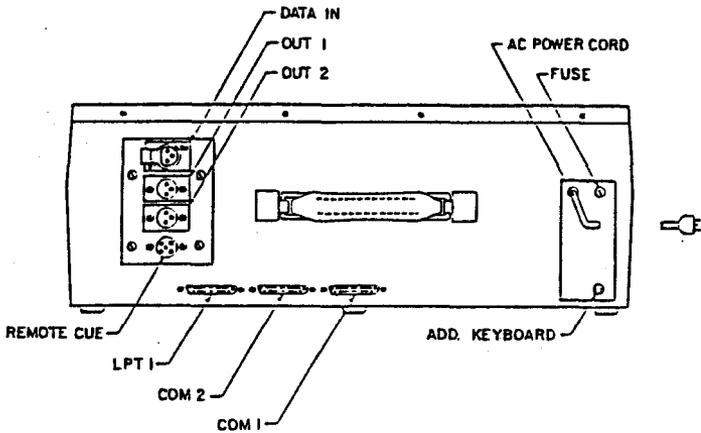
FIGURE 2-2   GENESIS PORTABLE REAR PANEL

2.2.3   ACCESS AREA

The Access Area (Figure 2-3) has a side panel door with a magnetic catch. The door can be opened by inserting your fingers into the access area through the rear opening and pushing the door open.

The side panel provides access to the connectors for the RCA and video display monitor. It contains the following:

a.   RCA JACKS   The middle RCA jack (OUT1) and the bottom RCA jack (OUT2) are used to send programming data to the dissolve units or other interfacing equipment. The top RCA jack (Data In) is used to input all incoming data and sync pulses.

b.   VIDEO OUT   The top Composite RS-170 Video Out jack is
     JACKS   an NTSC jack used with monochrome or color monitors. The bottom RGB Video Out jack is used with higher resolution monitors. (See Appendix A for pin outs.)

COMPOSITE
R.S.-170 VIDEO OUT

DATA IN

OUT 1

OUT 2

RGB VIDEO OUT
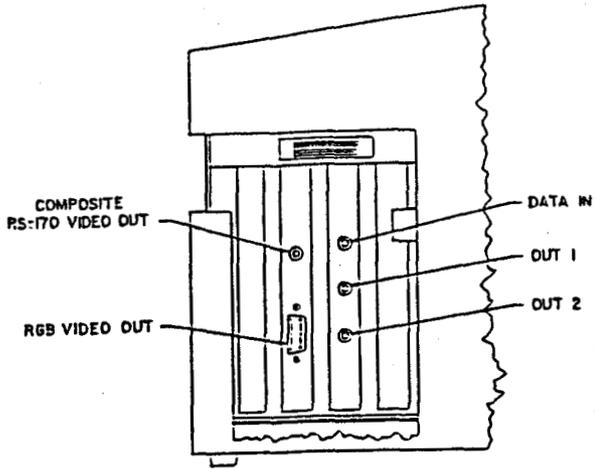
FIGURE 2-3 GENESIS ACCESS AREA

2.3 KEYBOARD

The keyboard (see Figure 2-4) is attached to the main module by a lengthy cord to allow for individual placement. The keyboard contains 84 keys, including 10 function keys and a complete numeric keypad. Refer to the following pages for a brief description of the keyboard components. For more information on all of the functions of the keyboard refer to Using Genesis User's Guide.

When closing up the system, set the keyboard into the front of the main unit and slide the fasteners towards the sides of the unit.

2.3.1 MAIN KEYBOARD

The main section of the keyboard on the Genesis Portable is similar to a standard typewriter. (Refer to Figure 2-1). You will find three shift keys, two are identical and act exactly as found on a standard typewriter. The third shift key, Caps Lock, shifts only the letters into uppercase. A convenient LED display on the Key will indicate whether or not the Caps Lock function is in use.

2.3.2 KEYPAD

The calculator keypad, like the keypad
on an adding machine or calculator, is
used for entering numbers and mathema-
tical expressions. The keypad consists
of 14 keys: numbers 0-9, decimal point
(.), plus (+), minus (-), and asterisk
(*) keys.

The keypad keys will also control cursor
movement when used with certain software
packages. In those instances the Num
Lock key is pressed (LED light on), the
keypad keys are used as numeric keys.

2.3.3 FUNCTION KEYS

The gray keys to the left of the main
keyboad, labeled F1-F10, are called
FUNCTION KEYS. They perform special
functions which will differ depending
upon the software program used.
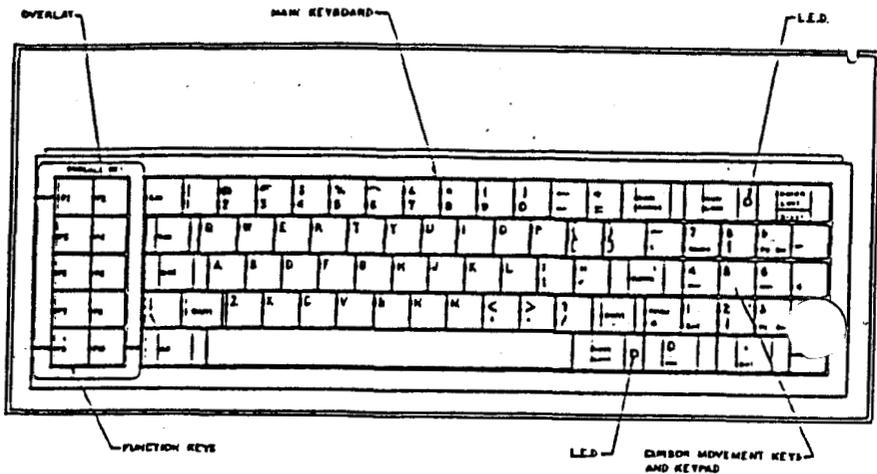
FIGURE 2-4   GENESIS PORTABLE KEYBOARD

2.4 KEYBOARD OVERLAY

The keyboard overlay fits over the function keys as shown in Figure 2-4. It names keys F1 HELP, F9 REV Q, AND F10 CUE. HELP, REV Q, and CUE are used when programming in PROCALL-X and PROCALL-5. Refer to Figure 2-5 for an illustration of the overlay.

```
PROCALL   X

HELP




REVQ                    CUE
```
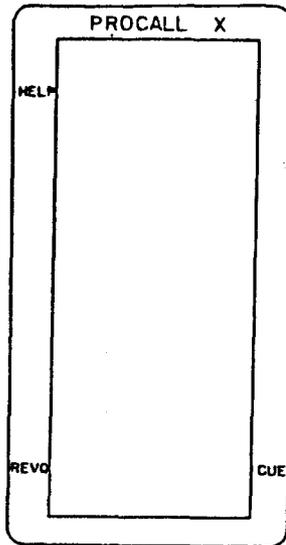
FIGURE 2-5   GENESIS KEYBOARD OVERLAY

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NOTES:

CHAPTER 3

SYSTEM REQUIREMENTS AND INSTALLATION

3.1 GENERAL

The AVL Genesis Portable computer is a
well designed system which can be easily
unpacked and installed for immediate
use.

The following topics are covered in this
chapter:

*   Site Requirements

*   Electrical Requirements

*   Initial Unpacking and Inspection

*   Installation and Set-up Procedure

*   System Description

*   Closing Up the System

*   Transporting Precautions

Before removing the computer from its
shipping box, save yourself some time
and trouble by taking a few moments to
read about site requirements and
unpacking precautions.

3.2 SITE REQUIREMENTS

The compact, portable design of your
computer allows you considerable flexi-
bility in choosing a suitable location.
Most office and residential environments
are fine; however, extremes of humidity
and temperature should be avoided (Refer
to Appendix A).

3.3 ELECTRICAL REQUIREMENTS

Before plugging in the computer's power
cord, make certain the following listed
requirements are met.

a. A properly Grounded 3-hole
    outlet.

b. Correct AC line voltage: 110
    VAC, 60 Hz, or 220 VAC, 60 Hz.

c. Motor driven appliances such
    as refrigerators, copiers,
    etc., should be plugged into a
    separate circuit.

WARNING: The Genesis Portable
operates on either of the above
voltages, but not both because of
differences in fuses and power
supplies. Use the correct voltage
for your machine.

3.4 INITIAL UNPACKING AND INSPECTION

Keep the shipping container in an upright position until the unit is unpacked.

Save the shipping container and packing material. Should you need to repack the computer for moving, the original container provides the best protection for the system.

If the system is returned for repair, the computer must be in the original shipping container; otherwise, AVL will not accept it for servicing.

When unpacking the system, inspect it for any evidence of shipping damage. If you find any evidence of damage, stop unpacking, replace the system in the container, and notify your dealer immediately.

STEP 1 Place the shipping container upright on a flat work surface. Clear another large flat work surface for the computer system once it is removed from the shipping container.

STEP 2 Cut the strapping and open the top of the container.

STEP 3   Place a hand under each side
         of the system and carefully
         lift it out. Place it on the
         cleared work surface.

STEP 4   Remove the foam shipping
         blocks, packing material, and
         manuals.

STEP 5   Check to see that the items
         listed below have been shipped
         with your Genesis Portable:

         a.   Computer with keyboard

         b.   AVL   Genesis   Portable
              Installation Manual

         c.   MS-DOS Operating System
              Manual

         d.   PROCALL-X User's Guide

         e.   PROCALL-5 User's Guide

STEP 6   If the system is found to be
         damaged, or if one of the
         items listed is missing,
         contact your dealer.

3.5   INSTALLATION AND SET-UP PROCEDURE

STEP 1   To lower the keyboard and open up the Genesis Portable, slide the keyboard latches in the front to an open position (inwards). Lower the keyboard, rotating it along its lower edge, as the keyboard cable extends from the cable opening. Refer to Figure 3-1.

STEP 2   Remove the cardboard insert from each floppy disk drive. Save this insert. You will need to reinsert it in the drive to protect the drives when you transport your system.

WARNING: Be sure to remove the cardboard inserts before turning on the power. If left in place, the insert could damage a floppy disk drive motor.

STEP 3   Make sure the power ON/OFF switch, located on the front panel of the main unit, is in the OFF position. (The red circle on the switch should be showing). Refer to Figure 2-1.

STEP 4 Check that the power voltage listed on the product label on the system's rear panel matches the voltage of your power outlet. (Refer to ELECTRICAL REQUIREMENTS earlier in this section).

STEP 5 Plug the power cord into a grounded, 3-hole AC outlet.

You are now ready to use your computer.
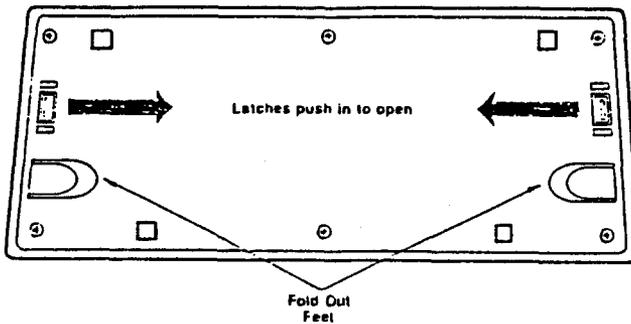
FIGURE 3-1   KEYBOARD BOTTOM

3.6 CLOSING UP THE SYSTEM

STEP 1   Exit from the software program after saving your work, and return to the operating system prompt C>.

STEP 2   Remove diskette from floppy drive.

STEP 3   Type PD to run the power down program.

WARNING: Always run the "PD" program before turning off your system. This step will retract the hard disk drive read/write heads into a special shipping position. You can irreparably damage the hard disk by neglecting to perform this step.

STEP 4   Turn the power switch to the OFF position (red circle showing).

STEP 5   Disconnect the cables to the external devices and close the slot access panel door.

STEP 6   Unplug the system and store the power cord in the rear

access area.

STEP 7   Place the cardboard insert in the flopply disk drive and close the drive level.

STEP 8   Raise the keyboard, rotating it along its lower edge, as you insert the keyboard cable into the front panel cable opening. Slide the keyboard latches outward to the lock position and fold the feet in (the reverse of Figure 3-1).

3.7 TRANSPORTING PRECAUTIONS

The Genesis Portable has been designed to fit under airline seats, and it is light enough to carry comfortably. The system is capable of enduring the usual bumps and jars, but it is not indestructable. We recommend that you personally handle the system when you travel to ensure its proper care and security.

Genesis offers a sturdy, attractive carrying case to transport your system. See your Genesis dealer for price and availabilty.

CHAPTER 4

USING YOUR GENESIS COMPUTER

4.1 GENERAL

Once you have unpacked and set up your computer, you are ready to begin operation. At this point, the exact procedures you perform will depend upon what system and software you have. The basics of running your system will be presented in this section.

Information regarding floppy disks is presented first in this section. Following that will be a discussion of operating systems and instructions for booting up (loading system software) from a floppy disk. A description on using the keyboad is presented, followed by a discussion of the proper way to turn off your system, and general preventive maintenance.

4.2 FLOPPY DISKS

When using your software for the first time, you should backup your initial master set of application software onto floppy disks. The master set should then be stored away, to restore your copies if problems occur. When you

purchase   additional   application
software, you should also make duplicate
copies before use.

    NOTE:· When purchasing disks for
    your system, be sure to ask for
    5-1/4 inch, double-sided, double
    density, soft sectored disks.

4.2.1· DISK CARE

A floppy disk is a circular piece of
mylar plastic coated on one or both
sides with a magnetic material. The
disk is enclosed in a plastic or paper
jacket to protect it from fingerprints,
dust, and other contaminants. Refer· to
Figure 4-1 on the next page.

The oblong cut out in the protective
jacket permits the read/write disk drive
head to contact the exposed magnetic
portion of the disk surface to record
your information. Never touch this
portion of the disk; oils from your
fingers can contaminate the disk
surface.

The square write-protect notch on the
edge of the disk prevents unwanted or
accidental erasure of information. When
the notch is covered with a small
adhesive tab accompanying the disks, the

disk can be read, but no information can
be written onto or erased from the disk.
You may write information   on   the   disk
only when the notch is left uncovered.
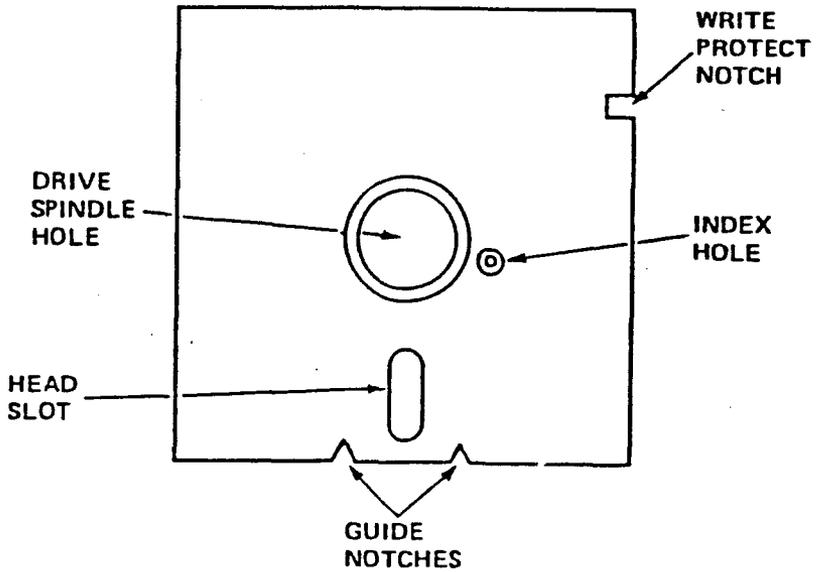
FIGURE 4-1   FLOPPY DISK

4.2.2   HANDLING PRECAUTIONS

Floppy disks are fragile and can be
easily damaged if improperly handled.
Your disks will soon be storing the
results of hundreds of hours of valuable
time and should be treated carefully.
Heed the simple precautions outlined
below to insure the continued good
health of all your disks.

*   Do not bend or fold the disk.
    The magnetic coating will crack
    and you will lose your stored
    information.

*   Do not insert or remove a disk when
    the disk drive indicator light is
    on. Pulling the disk out with the
    indicator light on can damage the
    disk's stored information.

*   Do not use paper clips, rubber
    bands, or tape on the disk.

*   Do not touch or attempt to clean
    the exposed surfaces of the disk.
    Any scratches or oil deposits can
    cause loss of stored data.

*   Keep the disk away from magnetic
    fields, which can destroy a disk's
    data. Many common devices such as

telephones and paper holder stands use magnets.

*   Do not eat, drink, or smoke when handling disks.

*   Replace the disk if it becomes physically damaged, or if the recording surface becomes con-taminated. Discard damaged disks.

*   Make duplicate copies of your disks on a regular basis.

4.2.3   FORMATTING A DISK

Before a new disk can store your programs and files, it has to be formatted. Formatting magnetically divides the disk into tracks and sectors (See Figure 4-2) which the AVL Genesis computer uses as reference points when storing and reading your files. For instructions on formatting disks, please refer to MS-DOS 2.0 Utility Procedures.

SECTOR 2
SECTOR 1
TRACK 0
TRACK 1
TRACK 2

RIM OF SURFACE
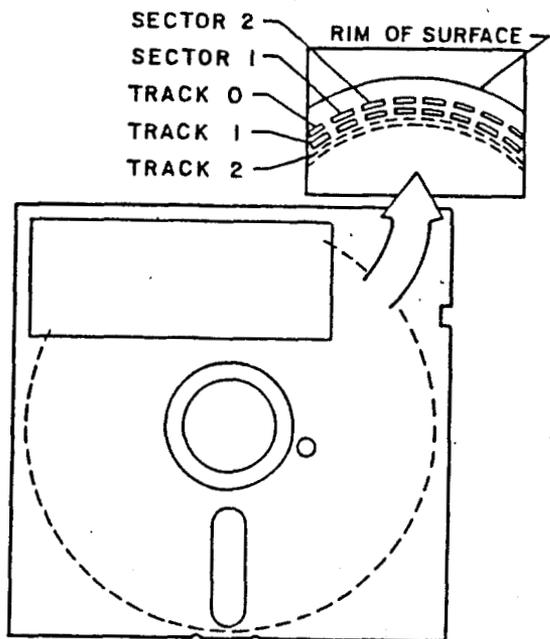
FIGURE 4-2   DISK SKELETON VIEW

4.2.4 LABELING DISKS

It is important to label your disks
carefully. The label should state what
is stored on the disk and whether it is
a master, working, or backup disk. Other
notations,   such   as   which operating
system is required, can also be valuable
label information.

To label your disk, fill out one of the
adhesive labels that accompany the disk
package BEFORE you attach it to the
disk.

> CAUTION: Writing on a label
> attached to a disk with a ball-
> point pen or pencil can gouge the
> recording surface, resulting in
> the loss of stored information.
> If you must write on a label which
> is already attached to a disk,
> then use a felt-tipped pen and
> press lightly.

4.2.5 STORING DISKS

Always   replace   the   disk   in   its
protective envelope after you remove it
from the disk drive, even if you plan to
reinsert it in a short time.

There are many ways to store your disks.
We recommend that you store them upright
in a hard plastic container (Refer to
Figure 4-3 Disk Storage Case) or in
plastic disk pockets like the one
included with this manual. Label your
containers or disk pockets for easy
reference. Both storage items can be
purchased from your local authorized AVL
computer dealer.
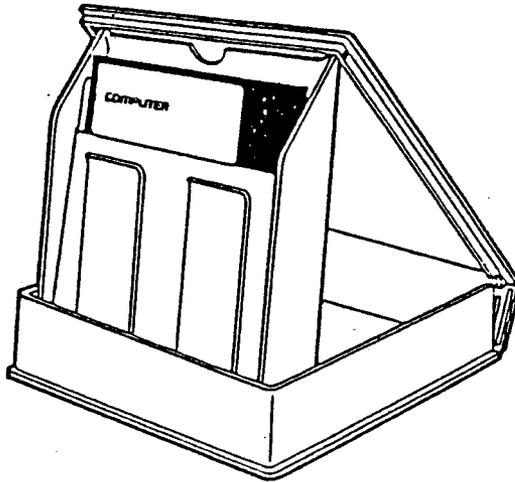
FIGURE 4-3   DISK STORAGE CASE
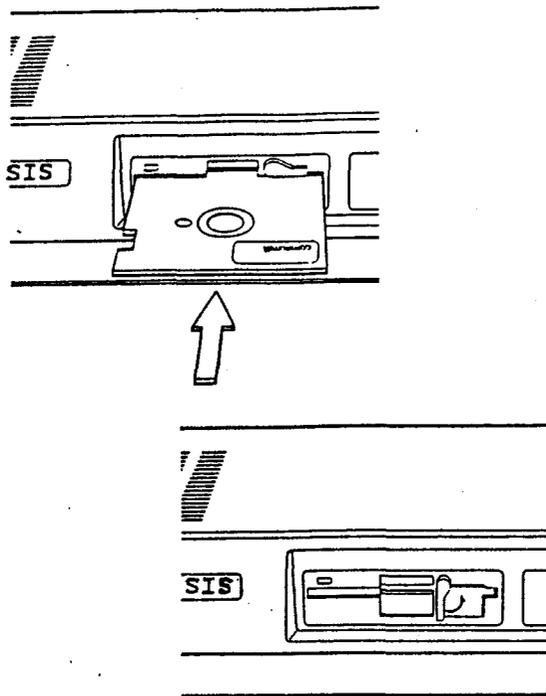
FIGURE 4-4   INSERTING A DISK

4.2.6 INSERTING AND REMOVING DISKS

Refer to Figure 4-4 when inserting or
removing a disk from a disk drive.

STEP 1 Turn the floppy disk drive
         lever to the horizontal
         position.

STEP 2 With the disk label facing up
         and the notch on the left,
         slide the disk into the disk
         drive slot. If it does not

4-9

slide in easily, stop! Do not
force it. Remove it and try
again.

STEP 3 Once the disk is fully
inserted in the disk drive,
turn the lever down to the
vertical position.

STEP 4 To remove the disk, turn the
lever to the horizontal posi-
tion and remove the disk from
the drive.

4.3 OPERATING SYSTEMS

An operating system directs data traffic
to the proper destinations: it runs the
computer. It interacts intimately with
the physical hardware which makes up the
computer. Many of its operations are
invisible to the user and are quite
complex.

Usually an operating system has certain
standard routines which the user can use
to manually transfer files, direct
communications, and access the disk
drives. Often the user can configure
parameters in the operating system, so
that later internal operations of the
operating system (perhaps used by
applications programs) will
automatically perform correctly.

Every time a computer system is
successfully turned on and booted up
(started), some kind of operating system
has been used. Sometimes the operating
system is a familiar one like MS-DOS but
often games or other popular software
use a special operating system which
fulfills the minimum requirements for
their application, but which can not be
copied (it is hoped) using the usual
operating system routines.

Your Genesis computer is shipped with an
MS-DOS 2.0 operating system. MS-DOS 2.0
can read and manipulate MS-DOS 1.25
files.

   CAUTION: An MS-DOS 2.0 9-sectored
   disk if used by an MS-DOS operating
   system earlier than 2.0, cannot be
   read and, if written to, will be
   ruined.

4.4 SYSTEM START-UP

To start up the system for operation, the computer must be plugged in and the power switch turned on. When these two things are performed, the EPROM (resident memory in the computer) routines cause the computer to read the operating system).

The system retrieves the operating system from a floppy disk properly inserted in the left floppy drive.

When the operating system has been successfully loaded into the computer, various things may occur. For MS-DOS operating systems, if there is a batch file named AUTOEXEC.BAT on the disk drive from which the operating system was obtained, then the computer will perform those batch assignments before restoring control to the user. If there is no such batch file, then MS-DOS will request the correct date and time.

If you use the PROCALL-X system disk to boot up the system, it will ask you what your name is.

> NOTE: If your system fails to power up or boot from the floppy disk, please refer to: Trouble-Shooting Guide.

4.4.1 BOOT-UP FROM POWER OFF

Below is a summary of how to boot from
each of the disk drives from a power-off
condition (known as a cold boot)
assuming no initial programs are run
upon booting (for example, where no
AUTOEXEC.BAT file is present).

STEP 1   Insert a floppy systems disk
         into the left disk drive. A
         systems disk is one that has
         some type of operating system
         installed on it along with the
         program or data. You can not
         boot from a disk that just
         contains data files.

STEP 2   Close the lever over the disk
         and turn on the power. The
         power switch is located on the
         rear panel.

STEP 3   If booting is successful, the
         date and time screen message
         will appear. Enter the date
         and time and press the Return
         key to accept the defaults.
         The A> system prompt will
         appear on the screen. A>
         indicates that the default
         drive you are using is the

left floppy disk drive.

If you started the system
using a system disk other than
MS-DOS, a prompt asking a
question or giving specific
directions should come on the
screen.

NOTE: Return is a quick way to
answer date and time requests if
they are not important. Otherwise,
the date and time is stored with
the disk file information so that
later, you can determine which file
is the most current.

4.4.2   REBOOTING THE SYSTEM

After you have been using the system for
a while, you may want to boot off
another floppy disk to run a specific
program or game. Or you may want to
clear the buffer memory and restart the
system. You can do both of these tasks
by rebooting the system, which reloads
the operating system into the system
memory.

If you have trouble rebooting, consult
the Trouble-Shooting Guide.

CAUTION: Unsaved work will be lost
when rebooting is performed.

STEP 1 Put the appropriate floppy
         systems disk into the drive
         slot. Close the lever over
         the disk.

STEP 2 The floppy disk LED indicator
         should light, and the disk
         drive should engage.

STEP 3 If booting is successful, the
         date and time screen message
         will appear. Enter the date
         and time or press the Return
         key to accept the defaults.
         The A> system prompt will
         appear on the screen. A>
         indicates that the default
         drive you are using is the
         left floppy disk drive.

NOTE: Remember that only a systems
disk containing an operating system
can be booted from because the
instructions for the computer
reside in the operating system.

4.5 USING THE KEYBOARD:

The next several pages describe the functions of most of the keys on the 84-key keyboard. Refer to Figure 4-5 for the location of the keys.

4.5.1 FUNCTION KEYS

There are ten function keys labeled F1 through F10 on the left side of the keyboard. These keys have special uses depending on how software supports them. The ten function keys on the keyboad access up to forty different functions keys. F11-F20 are obtained by using the Shift key with keys F1-F10. F21-F30 are obtained by using the Ctrl key with F1-F10. And F31-F40 are obtained by using the Alt key with F1-F10. In other words Shift adds ten to any function key, Ctrl adds twenty, and Alt adds thirty. The MS-DOS Operating System uses F1-F5 for certain editing features.

See your MS-DOS OPERATING SYSTEM MANUAL for details regarding the editing uses of function keys F1-F5.

4.5.2   ALPHANUMERIC KEYS

The main section of the keyboard is
arranged in the standard format of most
typewriters. Both upper and lower case
key symbols are accessible using utility
keys like Shift. A full set of punctua-
tion symbols are also provided.

4.5.3   UTILITY KEYS

The main section of the keyboard has
several keys not always found on type-
writers for modifying the function of
other keys or providing special input to
the computer. A list of these keys
(beginning at the top left of the
keyboard and moving across the top row)
and their use follows:

   Esc   Also known as Escape.
                         Software will use the
                         ESCAPE character to
                         signal the user's intent
                         to stop or abort a
                         program. It is also used
                         sometimes as a prefix to
                         codes which determine
                         selection of print
                         styles.

Back Space   This key moves the cursor
                    to the left one position.
                    Usually,   software   will
                    delete the letter which
                    is   Back   Spaced   over.
                    This   key,   therefore, is
                    used to correct   minor
                    entry errors.

Num Lock   The   Num Lock key is used
                    to   change the definition
                    of the keypad keys. When
                    the   computer is   first
                    booted up (or rebooted),
                    the keypad., +, -, and *
                    keys are interpreted   as
                    special   function   keys.
                    Some   applications
                    software   will   then use
                    these   special   functions
                    to   control   cursor
                    movement.

Scroll Lock   This key is supported
                    only   with   certain
                    software   programs.   The
                    Break function is   used
                    with   the   Ctrl key. See
                    below.

Tab   This key is used to
                    advance the cursor to tab
                    positions. The   default
                    tab   is   every   seven
                    spaces.   Applications

software may define a
different tab field, and
may support a backwards
tab (through, perhaps,
Shift + Tab).

Ctrl   Also known as Control.
                This key modifies the
                function of other keys.
                Control characters (the
                characters resulting from
                Ctrl + C), are displayed
                on the screen, as for
                example, C.

Retrn   Also known as Return.
                This key is used to enter
                commands or data into the
                computer. As an example,
                all operating system
                commands (like DIR) are
                typed in the followed by
                pressing the Return key.

Shift   These two keys, one on
                each side of the bottom
                row of letters can be
                used interchangeable.
                The main function of the
                shift keys is to obtain
                the uppercase symbols for
                the keys in the main
                section of the keyboad

Shift   When Caps Lock is
                  depressed, the Shift key
                  with the N key untoggles
                  (inactivates)   the Caps
                  Lock function, so that
                  the lower case character
                  is obtained.

                  A Shift Key will also
                  toggle the state of the
                  Num Lock key if the
                  keypad keys are struck
                  when Shift is depressed.

PrtSc*   Shift + PrtSc* will print
                  out whatever is
                  displayed on the screen
                  on   the LPT1 (parallel
                  printer device.

Alt   Also known as Alternate.
                  This key modifies the
                  function of other keys,
                  as Shift and Ctrl do.
                  When Alt is used to
                  modify a key, the result
                  usually has no printed
                  symbol.

Caps Lock   This key changes the
                  alphabetical   characters
                  (A-Z)   to   uppercase.
                  Numbers and punctuation
                  symbols are not affected.
                  When the Lock function

is being used, the LED
indicator glows.

Ins   Allows the insertion of
text in the middle of
existing text, when
supported by software.

Del   Removes the character
underneath cursor and
shifts remaining text to
the left, when supported
by software.

Numeric data input can be speeded up by
using the keypad as a 10-key entry pad.
In order for those keys to be inter-
preted as digits and not as special
function keys used by software, press
the Num Lock key. The LED indicator will
glow, indicating that the function has
been toggled on (activated).

    NOTE: Some software programs do
    not take Num Lock into considera-
    tion if the keypad digits are used
    only for directional purposes
    (games, for instance). However,
    applications software like word
    processors and spread sheets will
    usually make the distinction
    between true "Num Locked" digits
    and special directional functions.

The Shift key in combination with one of
the keypad digits will temporarily
reverse the state of Num Lock. Num
Lock's LED indicator does not reflect
this temporary change.

4.5.4   THE KEYPAD AND NUM LOCK

The comments below which refer to
numbers concern only the numerals within
the keypad, not the numerals on the main
keyboard.

The keypad is located at the right side
of the keyboard. The keypad includes
the digits 0-9; the decimal point (.);
and the arithmetic keys, minus (-), plus
(+), and asterisk (*).

The Num Lock key is used to change the
definition of the keypad keys. When the
computer is first booted up (or
rebooted), the keypad numerals, ., -, +,
and * keys are interpreted as special
function keys. Some applications
software will then define these special
functions to control cursor movement.

> NOTE: In applications software
> which support these cursor movement
> functions, do not use the space bar
> to move the cursor to the right.

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Using the space bar in this manner
will insert spaces along the entire
path of the cursor. Instead, use
the right-direction cursor movement
key (appropriately toggled to the
un-Num Lock state).

Enter   Functionally the same as
                     Return. Can be used
                     anytime Return is used.

4.5.5   OTHER SPECIAL KEYS

Ctrl + PrtSc*   This combination will
                     cause whatever is
                     subsequently displayed on
                     the screen to be echoed
                     to the LPT1 device, until
                     Ctrl + PrtSc* is struck
                     again.

Ctrl - Break   Cancels a current
                     operation, only if the
                     Break Off command is not
                     set in the operating
                     system.

Ctrl + NumLock   Suspends system
                     operation. To resume
                     operation, strike this
                     combination again.

Ctrl + S   Suspends display

scrolling until Ctrl + S
is struck again.
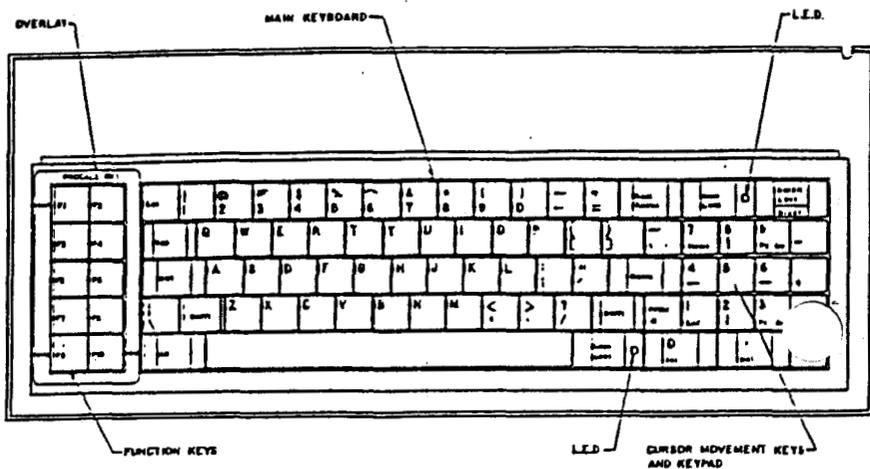
FIGURE 4.5 AVL GENESIS KEYBOARD

4.6   TURNING OFF YOUR SYSTEM

To turn off the system, follow the procedure outlined below.

STEP 1   Exit from the software program after saving your work, and return to the operating system prompt C>.

STEP 2   Remove disk from floppy drive.

STEP 3   Turn the power switch to the OFF position.

4.7   PREVENTIVE MAINTENANCE

Genesis has been designed to provide
years of trouble-free service. If the
following preventive maintenance
guidelines are followed, your system
should be as good looking and reliable
as the day it was purchased.

VIDEO SCREEN   Do not allow direct sun-
                  light to strike the dis-
                  play screen for extended
                  amounts of time. Sunlight
                  can damage the phosphor
                  screen.

                  Clean the surface of the
                  video display with a B22
                  window cleaner and a soft
                  cloth or paper towel.

KEYBOARD   Clean the keyboard keys
                  or enclosure with a damp
                  (not wet) cloth.

MAIN UNIT   Keep the ventilation
                  slots at the right rear
                  of the main unit clear
                  and clean. Do not block
                  any ventilation vents.

                  Do not place drinks,
                  food, cigarettes, or
                  small objects (like paper
                  clips) on top of the main

unit. Foreign   material
which enters the interior
of   the   computer   can
damage the electronics.

FLOPPY   Every six months the
                     floppy disk drive heads
DISK   DRIVE should   be
cleaned   with   a   head
cleaning kit recommended
by your AVL dealer.

DISK   Please refer to Disk Care
                     in Paragraph 4.2.1

NOTES:

CHAPTER 5

MS-DOS 2.0 UTILITIES

5.1 GENERAL

The information in this section concerns
only the MS-DOS 2.0 Operating System.
This material is presented so that you
can perform certain fundamental
operations without resorting to other
manuals. Several of these operations
must be performed upon initial start up
of the system, other operations are
presented as useful reference.

Creating copies of your data and program
disks on a regular basis is extremely
important. By doing so, you protect
yourself against the loss of valuable
files should one of your disks become
worn or damaged.

When you purchase software it is also
good practice to make a duplicate copy
immediately for safekeeping. There are
three valid ways to copy the contents of
a disk:

   *   Use DISKUTIL
   *   Use FORMAT and COPY
   *   Use FORMAT and DISKCOPY

A description of how to use these

commands is found in the following
pages. Details of these commands can be
found in the MS-DOS 2.0 ADDENDUM of your
MS-DOS OPERATING SYSTEM MANUAL.

5.2   DISK DRIVE DESIGNATORS

AVL Genesis can read and store data
files from either the hard disk or from
floppy disks. For convenience, the disk
drives are given abbreviated reference
symbols so that you can easily specify
which drive you wish to use.

Under the MS-DOS 2.0 Operating system
the left floppy drive is A, and the
right floppy drive is B.

When using the MS-DOS Operating System,
the standard prompt is X>, where "X"
indicates the current default disk
drive. Default means that the operating
system looks on the drive in current use
for programs and files, unless another
drive is specifically requested.

For example, A>DIR will provide a
directory of drive A. Note that "A" is
printed by operating system on the
screen. You type "DIR" and press
RETURN. This holds true for the
following examples as well. B>DIR A:
will provide a directory of the floppy
disk in the drive A.

5.3 DISKUTIL

The DISKUTIL program also formats disks.
Options include single or double sided
formatting, and eight or nine sectors
per track. DISKUTIL will not install an
operating system on a freshly formatted
disk except for certain DISKUTIL copy
options. And, a volume label cannot be
given to a disk when formatting with
DISKUTIL except when you copy a disk
which already has a volume label.

However, DISKUTIL is the easiest utility
program to use. It is a menu-driven
program that allows you to choose from
five different options: Perform a read-
only test on a floppy disk, format a
disk, copy a disk, copy a disk with
formatting, and change disk format.

The following procedure explains how to
use the program.

5.3.1 FORMATTING WITH DISKUTIL

    STEP 1 Turn on the system and enter
               the MS-DOS operating
               system.

    STEP 2 At the operating system
               prompt, type DISKUTIL and

press RETURN. The following
message appears on the screen:

Enter the number of Disk
Drives Available (1 or 2)

STEP 3   Type "2" and press RETURN.

STEP 4   The next screen that appears
concerns the format of your
disks. The format of the disk
in the default Drive A is
displayed at the top of the
screen. You may choose to
change the format. If the
current setting matches the
format of the disks you intend
to copy or format, type N
press RETURN, and skip to STEP
7. You can alter the format
selection by typing Y and
pressing RETURN.

STEP 5   If you typed Y to the last
prompt, the following menu
appears. The selections in
this menu allow you to test,
format, and copy your disks.
The options are explained
later.

```
             F1 = AVL 48 TPI Single Sided
                  160K (8 Sectors)
             F2 = AVL 48 TPI Double Sided
                  320K (8 Sectors)
             F3 = AVL 48 TPI Single Sided
                  180K (9 Sectors)
             F4 = AVL 48 TPI Double Sided
                  360K (9 Sectors)
```

STEP 6   Select the format by pressing
          the corresponding function
          key. Selection F4 is normally
          appropriate for Genesis.
          F1 and F3 are for IBM program
          disks. F2 for disks created
          under   versions   of   MS-DOS
          earlier than 2.0.

STEP 7   Once a format selection is
          made, the next menu appears.
          The selections in this menu
          will   allow you   to   test,
          format, and copy your disks.
          The options are explained in
          Paragraph 5.3.2 below.

```
             F1 = Perform read only test on
                  drive A (left)
             F2 = Perform read only test on
                  drive B (right)
             F3 = Format a disk in drive A
                  (left)
             F4 = Format a disk in drive B
                  (right)
```

```
         F5 = Copy from drive A (left)
              to drive B (right)
         F6 = Copy from drive A (left)
              to drive B (right)
              with formatting
         F7 = Change disk format
```

STEP 8   When you have finished with
         the program and wish to return
         to the operating system, press
         ESC.

5.3.2   DISKUTIL COPY FUNCTIONS

The following subparagraphs detail the
COPY funtions of DISKUTIL.

**5.3.2.1   PERFORM   READ   ONLY   TEST   ON
            DRIVE A (LEFT)**

This option tests your disks for the
integrity of data. Use this option if
you experience difficulty in reading or
saving a   file, or operating a program
from disk.   Insert the disk you wish to
test   into   the floppy drive before   you
select   the option. Once selected,   the
option will immediately go into its test
mode with this message:

     Read Only test in progress

If   the test is successful, the previous

menu will reappear. If it fails, the
screen will display the type of error
and this message:

Your options are –
1) retry the operation
2) return to the menu

If the message appears, retry the
operation. If the same message appears,
return to the menu, and try the same
test on several other disks of known
reliability. If every disk fails,
either you selected the wrong disk
format in STEP 5, or the floppy disk
drive has a problem, in which case you
will need to contact your AVL Customer
Services for assistance. To recover the
files from a failed disk, format a blank
disk and transfer the files with the MS-
DOS internal COPY command.

5.3.2.2 PERFORM READ ONLY TEST ON
DRIVE B (RIGHT)

This option tests your disks for the
integrity of data. Use this option if
you experience difficulty in reading or
saving a file, or operating a program
from disk. Insert the disk you wish to
test into the floppy drive before you
select the option. Once selected, the
option will immediately go into its test

mode with this message:

Read Only test in progress

If the test is successful, the previous
menu will reappear. If it fails, the
screen will display the type of error
and this message:

**Your options are -
1) retry the operation
2) return to the menu**

If the message appears, retry the
operation. If the same message appears,
return to the menu, and try the same
test on several other disks of known
reliability. If every disk fails,
either you selected the wrong disk
format in STEP 5, or the floppy disk
drive has a problem, in which case you
will need to contact your AVL Customer
Services for assistance. To recover the
files from a failed disk, format a blank
disk and transfer the files with the MS-
DOS internal COPY command.

**5.3.2.3   FORMAT   A   DISK   IN   DRIVE   A
(LEFT)**

To use the option, insert the floppy
disk to be formatted into   drive A
(left), then select the option. A

warning message will appear. Type Y and
press Return to continue. When the
operation is complete, the main menu
will reappear.

**5.3.2.4   FORMAT A DISK   IN DRIVE B
(RIGHT)**

To use the option, insert the floppy
disk to be formatted into drive B
(right), then select the option. A
warning message will appear. Type Y and
press Return to continue. When the
operation is complete, the main menu
will reappear.

**5.3.2.5   COPY FROM DRIVE A (LEFT) TO
DRIVE B (RIGHT)**

This option creates a duplicate copy of
a disk. The disk which is to be the new
copy must already be formatted or
contain files of no consequence, since
any existing files will be destroyed by
this routine. If the disk to be the new
copy has never been used or has not been
formatted, DO NOT use this option. Use
an option which both formats and copies.

To use the option, insert into the drive
the disk which is to be the New copy,

and NOT the original. Type "Y", and
press RETURN. The disk will now be
formatted. Wait for the prompt
instructing you to insert the source
(original) disk, and do so. Then,
following the screen messages, switch
the disks until all of the files have
been compiled onto the new disk.

To create a copy, select the option. A
warning message and instructions will
appear on the screen. Insert the disk
to be copied into drive A (left) and the
disk to be the new copy into drive B
(right). Type "Y" and press RETURN.
Once the copy routine is complete, the
main menu will reappear.

**5.3.2.6   COPY FROM DRIVE A (LEFT) TO
           DRIVE B (RIGHT) WITH
           FORMATTING**

This option formats and creates a
duplicate copy of a disk. You would use
this option whenever the new copy disk
has not been formatted.

5.3.2.7   CHANGE DISK FORMAT

This option is not available at this
time.

5.4 FORMATTING A DISK

All disks which your computer will use must be formatted in one way or another. Formatting a disk allocates the space on the disk so that the areas have recognizable locations (such as Sector 7, Track 3) for retrieval of stored data.

The blank disks which you purchase to store programs or make backups must be formatted using your computer system. The program disks you purchase which have software on them have already been formatted. Formatting a disk erases the contents, so be careful not to format disks which have information already on them.

To format a disk, you may either use the FORMAT or DISKUTIL programs. These programs reside in the Root directory of the MS-DOS Operating System.

5.4.1 FORMAT PROCEDURE

For this example procedure, assume that the default drive is "A" and the current directory is the A disk root directory.

   STEP 1   Turn on the computer and enter the MS-DOS 2.0 Operating System.

STEP 2   Type "FORMAT B:"   at the
         operating system A> prompt.
         You must specify the drive the
         disk will be in.

                A>FORMAT B:

STEP 3   The screen displays the name
         and   version   number   of   the
         FORMAT program, the   format of
         the disk, and instructs you to
         insert   a   new disk   into   the
         drive you specified and strike ·
         any key when ready.

    NOTE: Striking CNTRL + C at this
    point will cancel the formatting
    operation before it begins.

STEP 4   When the disk is formatted,
         the screen displays   the total
         disk   space   and   amount ' of
         storage available on the disk.

5.4.2   FORMAT PROGRAM OPTIONS

The MS-DOS 2.0 Operating System supports
five FORMAT options: d:,   /S,   /V,   /1,
and   /8. Some   of   these   options   are
described below; however,   all   of these
options are explained in the   MS-DOS 2.0

ADDENDUM in your MS-DOS OPERATING SYSTEM
MANUAL.

The FORMAT program used with no options
produces a disk which has nine (9)
sectors (the standard for MS-DOS 2.0).
Because earlier versions of MS-DOS used
disks with eight sectors, the FORMAT
program allows you to create 8 sectored
disks with the "/8" option. MS-DOS 2.0
can operate with disks having either
eight or nine sectors. A disk with nine
sectors has a greater storage capacity
than a disk with eight, (360 Kbytes vs.
320 Kbytes).

The "/S" option installs an operating
system onto the disk after it has been
formatted. This results in a disk from
which the system can be booted (a system
disk).

> CAUTION: An MS-DOS 2.0 9-sectored
> disk if used by an MS-DOS operating
> system earlier than 2.0, cannot be
> read and, if written to, will be
> ruined.

5.4.3   FORMAT AND COPY

COPY copies one or more files from one
disk to another formatted disk, and
gives the copy a different name if you

specify it in the command. You must
specify the source drive (the drive you
are copying from) and the target drive
(the drive you are copying to).

To copy a disk which has no subdirec-
tories, for example, you can format a
blank disk and then type, COPY A:*.*B:.
This command will copy all files from
the disk in default drive A to the disk
in drive B. If the source (original)
disk has subdirectories, do not use
COPY; use the DISKCOPY or DISKUTIL
programs.

COPY does not copy over an operating
system, so if the disk being copied is
bootable - has an operating system on it
- then after or during formatting, you
will have to install the operating
system. We recommend, for simplicity,
that you use DISKCOPY to copy disks
which boot. For more information, refer
to your MS-DOS 2.0 OPERATING SYSTEM
MANUAL.

> NOTE: Certain files which make up
> the operating system are known as
> "hidden files" and cannot be
> accessed by name with the COPY
> command. DISKCOPY can perform the
> desired copying.

5.4.4   FORMAT AND DISKCOPY

DISKCOPY produces an exact tract-for-tract copy of the one disk onto another. When using DISKCOPY, the computer will perform a single-floppy copy and prompt you when to switch the original and target disks out of the single drive. The target disk has to be formatted prior to using DISKCOPY. Refer to Paragraph 5.4 above.

The AVL Genesis system, which has two floppy disk drives, can use both drives to produce copies of your disks. When you use the FORMAT command, type "FORMAT B:" to format a disk in the right drive when your system drive is in the left drive. When you use DISKCOPY to copy your disk, type "DISKCOPY A:B" to copy the contents of the disk in drive A onto the formatted disk in drive B.

> CAUTION: Be sure that the formats of the two disks are the same. An MS-DOS 2.0 9-sectored disk, if used by an MS-DOS operating system earlier than 2.0, cannot be read and, if written to, will be ruined.

5.5   SETTING UP COMMUNICATIONS

The communications ports COM1, COM2, and
LPT 1 on the Genesis' main unit rear
panel are used to interface printers,
modems, or other devices. These ports
can be configured so that the computer
will properly communicate with these
devices. The two serial ports are known
as COM 1 and COM 2. The parallel port
is known as LPT1. SETUP is a menu-
driven program that allows you to select
the communications format between your
computer and your printer, modem, or
other communications device. Different
brands of printers and modems have
different characteristics (baud rate,
control characters, etc.). This program
adjusts the port parameters to meet your
device's specifications.

SETUP initially assigns print output to
the LPT1 (parallel) port. If you have a
parallel printer, you should review the
non-printer options (cursor type, etc.)
make necessary selections, and then save
the SETUP assignments. If you have a
serial printer, refer to the procedure
outlined in paragraph 5.6.

5.6   SERIAL PRINTER SETUP PROCEDURE

STEP 1   Turn on the computer and enter
the operating system.

STEP 2   At the operating system
          prompt, type "SETUP" and press
          RETURN. A menu similar to the
          one below will appear.

        CURRENT ASSIGNMENTS (Release 1.2)

    A   PRINTER: LPT1 (PARALLEL PORT)
    B   SELECT PARAMETERS FOR COM1:
    C   SELECT PARAMETERS FOR COM2:
    D   CURSOR: BLOCK
    E   SCROLL RATE: FAST
    F   SAVE SETUP.
    G   FILTER LINE FEEDS: NO
    H   GENERATE FORM FEED: NO
    I   SPECIAL CHARACTERS.
    J   TEST PRINTER

    ESCAPE QUIT.

    SELECT A FUNCTION

STEP 3   Type the letter (B or C) which
          corresponds to the serial port
          to   which   your   printer   is
          connected.

STEP 4   The default settings for that
          port will then appear   on the

screen. Change the settings
as needed to configure the
port for your printer. An
option is changed by typing
its corresponding letter and
selecting the proper setting
from the choices displayed.

STEP 5 After you have selected the
assignments, select TEST
PRINTER.

NOTE: If the printer test fails,
reset the assignments. If the
printer fails again, check that
your printer is working properly
by having it perform a self test
(refer to the printer manual).
If you need further assistance,
contact AVL Customer Service.

STEP 6 Review the non-printer options
(cursor type, scroll rate,
etc.) and make any changes.

STEP 7 Store the settings on disk
with SAVE SETUP. Press ESC to
exit SETUP and return to the
system prompt.

STEP 8 Type "MODE", and press Return
to direct the printer output
to the chosen serial port.

Only one serial port can be
assigned with this program at
one time.

NOTE: Whenever you turn on or
reboot AVL your Genesis, and intend
to use the serial printer, you must
enter MS-DOS 2.0 and type MODE.

5.7 MS-DOS 2.0 HIERARCHAL DIRECTORY STRUCTURE

This subsection discusses advanced
programming information on the MS-DOS
2.0 Operating System. MS-DOS 2.0
provides you with the capability to
create multiple levels of directories.
With previous versions of MS-DOS, a
single directory structure was used for
managing files on disks. Each disk or
hard disk contained a single directory
listing all the files, which could be
very cumbersome to use.

With MS-DOS 2.0, you can create new
files, and group these files into
different directories. These
directories are smaller, more specific,
and much easier to manipulate. Any one
directory can contain a number of files,
and it can also contain other
directories (or subdirectories). This
method of file organization using

multiple directories is known as a
hierarchial directory structure, or a
"tree" structure.

This tree structure is actually upside
down. The root directory is at the top,
and is the first level of the directory
structure. The subdirectories are
branches of the tree, and the files are
leaves.

If you do not use subdirectories, then
your directory structure is essentially
a tree with no branches. You have one
directory area to the root directory,
where all files are maintained. Most
instructions in this guide, so far, have
assumed that subdirectories are not
involved.

All system files are in the root
directory. When the computer is first
stated up (assuming there is no
AUTOEXEC.BAT file to change
directories), you come up in the root
directory. If you create
subdirectories, we recommend that you
keep system files in the root directory.
Other programs and data files can
usually be placed anywhere appropriate
in the directory hierarchy.

The TREE program displays all of the
subdirectories and their location in the
hierarchy. For more information, see

your MS-DOS OPERATING SYSTEM MANUAL.

5.7.1 PATHNAMES

The root directory is always denoted as
/. The directory named REPORTS, can be
accessed by the pathname REPORTS. A
pathname is a sequence of directory
names, followed by a simple filename,
separated by slashed (/). All files in
the directory REPORTS directory can be
addressed from any other directory as
/REPORTS/AUGUST.ALW.

To reference other directories in the
tree structure, there are several valid
pathnames to allow you to travel from
the one you are in to the one you want
to access.

Any time a pathname is used, and the
first directory named in the path is not
/, the root directory, the operating
system will work from the current
directory's path starting from the root
directory.

The .. directory is an abbreviation for
the current directory's parent (next
highest directory). It can be a
convenient way to move to nearby
subdirectories. It is also possible to
use the operating system commands DIR,
COPY, BACKUP, RESTORE, etc. in one

directory to handle any other directory.

Refer to the MS-DOS 2.0 OPERATING SYSTEM
MANUAL for more information.

5.7.2   DIRECTORY COMMANDS

SUBDIRECTORIES   are   created   in   the
operating system.   you do not have to be
in   the   root   directory   to   manipulate
them.   The following commands   are   used
to create, delete, locate and search for
directories   within   a   tree   heirarchy
structure.

MD [[d:]path]   This command (Make
                Directory) creates a new
                directory   within   the
                structure.   The directory
                can be specified   for any
                appropriate   disk   drive
                [d:].   Path   indicates
                where   in   the   hierarchy
                the new directory   is   to
                be located.

RD [[d:]path]   This command (Remove
                Directory) deletes a
                directory.   All   files
                must be deleted   before a
                directory can   be removed
                from the hierarchy.

CD [[d:]path]   This command (Change
Directory) informs the
operating system which
directory the user wants.
CD/ will change the
current directory back to
the root, while CD will
reveal what the current
directory is. (Also
revealed through DIR or
DIR/w.)

PATH
[[d:]path];   With this command you can
specify a string of
directories (a search
path) for the operating
system, if it cannot find
a program or file in the
current directory.

PATH \ will allow you to
access root directory
application programs from
any subdirectory.

PATH command, used alone,
reveals the currently
defined search path.

PATH; destroys the
existing search path,
keeping any searches
within only the current
directory.

For more information refer to the MS-DOS
2.0 OPERATING SYSTEM MANUAL.

5.8   PURCHASED BASIC PROGRAMS

The IBM PC's Basic language   is   BASICA.
If   you purchase Basic programs designed
for the IBM Personal Computer,   and   the
disk has an AUTOEXEC.BAT file   then some
editing of the batch file   is necessary.
Use   any   word   processor   or   editing
program   and change all references   from
BASICA   to   GWBASIC,   the   name   of   AVL
Genesis' Basic Language.

All references to BASICA must be changed
to   GWBASIC,   no   matter   whether   the
programs have been transferred to a hard
disk   or   continue   to   be used   from   a
floppy disk.

CHAPTER 6

PRINTERS

6.1 INTRODUCTION

The AVL GENESIS computer can operate the two basic types of printers through the user-programmable communication ports on the rear panel of the computer's main unit. The two types of computer-associated printers, daisy wheel and dot matrix, differ in the quality of the printed characters, speed, and cost.

This section briefly describes the types of printers you can buy for particular business applications, and details steps you should take before you actually purchase a printer. These guidelines will save you time and frustration later. A general printer installation and setup procedure is included at the end of this chapter.

Refer to PROCALL-X and PROCALL-5 for a description of printing commands.

6.2 DOT MATRIX PRINTERS

Dot matrix printers are high speed printers which form letters by a pattern of dots produced when steel pins strike

a ribbon against paper. The quality of
the printed character is not as good as
that produced by daisywheel printers.
However, the print speed is much faster.

Some of the newer high-quality printers
have better quality print, the ability
to change fonts, and sheet feeders that
handle ordinary typing paper with the
same conveniences you get with fanfold
forms.

Dot matrix printers are commonly used
for documentation, programming, and
business work.

6.3   DAISYWHEEL PRINTERS

Daisywheel or thimble printers use disks
or wheels with the typeface engraved on
the spokes of the wheel. As the wheel
rotates at high speeds, a hammer presses
the wheel spoke and ribbon against the
paper, creating the character image.

Daisywheel printers are further divided
into precision and nonprecision
printers. Precision printers can
produce book-quality print (proportional
spacing). Nonprecision printers produce
typewriter-like (fixed pitch) print.

NOTE: Contact your dealer if you do not know whether you have a precision or nonprecision printer.

A wide range of letter quality printers are available, with print speeds ranging up to 45 characters per second.

6.4   PRINTER SELECTION

Listed on the following pages are some general guidelines that should be considered before you purchase your printer. We highly recommend that you work closely with the dealer from whom the system was purchased to ensure that the printer that is purchased will meet your needs. A hands-on demonstration with your particular software and hardware configuration is an absolute must.

1. Determine the initial software that will be used with the GENESIS system particularly word processing, spread sheet, and similar applications software. Check the software manuals for restrictions (if any) on the types and makes of printers that can be used. Some applications software do not support every kind of

printer. If necessary, the
publisher of the program(s) should
be contacted directly to find out
if there are restrictions on
printers or if special instructions
must be used for specific brands of
printers.

2. Make certain that the printer
chosen is equal to the tasks it
will perform. The printer must be
intended for use with a computer.
If heavy use is to be made of the
printer, for example, stretches of
an hour or more of continuous
printing, consider using a heavy-
duty business computer printer.

3. Do not use converted electric
typewrites (either with manual or
electronic key control devices) or
teletype machines; the GENESIS will
not support them.

4. Check the normal printing speed. A
speed of 45 characters per second
(cps) or less is characteristic of
higher-priced daisywheel printers
which yield letter quality output.
A speed of 80 cps or more is
characteristic of dot-matrix
printers, some of which can yield a
quality approaching that of
daisywheel printers. Consider the
difference in price versus needs

for quality and quick output for
each type of printer.

5. Check whether the printer has a
   buffer or spooler feature. Some
   printers include a buffer which
   accepts and stores the data to be
   printed at a very high rate, so
   that the computer can be set for
   other nonprinting duties. This
   feature greatly increases the
   potential use of the computer. The
   capacity of the buffer should be
   judged by a typical document size.

6. Check that the printer offers all
   of the printing enhancements you
   require. Determine your need for
   full underlining (not character-by-
   character), boldfacing, shadow
   printing, superscripts, subscripts,
   proportional spacing (PS), bi-dir-
   ectional printing, etc. Such
   enhancements should be tested with
   the applications program(s) and the
   AVL GENESIS computer before the
   printer is purchased.

7. Check that all necessary printer
   interface cabling is supplied.
   Some of the serial or parallel
   printers can be connected to your
   computer with so-called "standard" -
   RS-232 or IBM PC parallel cables,
   but not all. The manual for the

printer should be reviewed for
cable pinouts and compared to the
GENESIS. The dealer should be able
to supply a cable, either from
stock or custom made. The
connectors at each end of the cable
should be marked GENESIS and
PRINTER to avoid incorrect cabling.

8. Determine all of the correct switch
settings for the printer. Most
printers have switches which can be
set to match the printer to the
needs of the computer or
applications software. These
settings should be supplied by the
dealer or by the printer
manufacturer. Once the switch
settings are known and proven in
use, they should be recorded in the
printer manual.

9. Check the availability of ribbons,
printwheels, accessories, etc. for
your printer. Make certain that
there is a reliable local source
for all needed supplies. The
dealer should be able to obtain
accessories.

10. Insist on a live demonstration with
the printer connected to your
GENESIS computer; use the desired
applications software which will
output to the printer. A word-

processing program is best because
it places the most demands on a
printer for text purposes. Be sure
to run a graphics program if that
is your need.

11. Other questions to consider:

   a.   Do all the special
        enhancements work?

   b.   Does the printer produce
        margins and indents correctly?

   c.   Can the printer subscript and
        superscript?

   d.   Does the buffer feature (if
        present) work as advertised?

   e.   Is the printer quality
        satisfactory?

   f.   Can print sizes be changed?

   g.   Do all of the above work in
        the PS (Proportional Spacing)
        and non-PS modes?

   h.   Can ribbons and printwheels be
        purchased conveniently?

   i.   Is it easy to install and
        interface to the GENESIS
        computer (are there compli-

cated routines to install it?)

j. Is the printer easy to
    operate?

k. Is the documentation that
    accompanies   the   printer
    complete   and   easy   to
    understand?

l. Is servicing available   for
    your printer nationwide, and
    in your own town?

6.5 PRINTER INSTALLATION

STEP 1 Place the printer near the
        GENESIS computer on a
        separate,   supported   work
        surface   to   prevent   the
        vibrations from the printer
        from jarring the computer
        video screen.

STEP 2 Follow the unpacking
        instructions in your printer's
        user's manual; comply with the
        recommended   electrical
        requirements.

STEP 3 Determine whether your printer
        is   serial or parallel   by
        referring to the   printer's
        user's manual, or by asking

your AVL Dealer.

STEP 4   If you have a serial printer,
         connect one end of the printer
         cable,   supplied   by   your
         dealer, to COM1 or COM2 found
         on   the   main unit rear panel.
         If it is a parallel printer,
         connect the cable to LPT1.

STEP 5   Connect the   other end of the
         cable to the interface
         port on   the back   of   your
         printer. Refer   to   your
         printer   manual   for   the
         location   of   the   interface
         port.

STEP 6   If you purchased an automatic
         paper feeder for your system,
         install it   on   the printer
         following the directions that
         accompanied the feeder.

STEP 7   Turn on the printer.

STEP 8   Set   the   parameters   on   the
         computer output ports to
         match the printer and perform
         a print test. Using SETUP.

STEP 9   Check to   see   that   the sheet
         feeder (if present) is also
         powered up. Check that   the
         top-of-form is set correctly.

NOTES:

CHAPTER 7

TROUBLE-SHOOTING GUIDE

7.1 GENERAL

This chapter first outlines general guidelines to follow when you have problems with your AVL GENESIS system. Once these steps have been performed, additional information is provided for further trouble-shooting in the following order: External Disk Problems, System Boot Problems, Video Problems, Keyboard Problems, Floppy Disk Problems, and EPROM T-Test.

7.2 REVIEW CHECK LIST

When your computer system fails to perform a specific instruction or else fails in a larger mechanical sense, it is important that you review the steps you performed before the failure.

    1.   Check to see that you have entered all data and commands using the correct spelling and syntax.

    2.   Check that all necessary instructions have been performed correctly and in the

proper order.

3. If the system displayed an
    error message, be sure to look
    up the meaning in the
    appropriate reference manual.

4. If it is possible to repeat
    the steps which took you to
    the failure point (without
    losing your work or having to
    laboriously re-enter
    everything), then do so. If
    there is the danger of losing
    your work when repeating
    certain steps, try to save
    your work with a filename not
    currently being used.

5. The best way to check your
    steps performed up to the
    failure point is to reboot and
    try again. (It may be
    necessary to boot up from the
    power-off condition.) Heed
    the above warnings about
    losing your work and use
    unique filenames during the
    retry.

6. Check that the floppy disk is
    properly inserted and the
    drive lever is closed.

7. Check whether peripheral

equipment (printer, modem,
etc.) is indicating an error
condition. The device may
need to be reset, or turned on
or off. Check that the device
is set up and cabled
correctly, and all switches
and controls on the equipment
are correctly set.

If the problem has not been located
after checking the above list, use the
following paragraphs to find the problem
area.

7.3   EXTERNAL DEVICE PROBLEMS

1.   Check the commands which you
     have entered to the external
     device. The device name (eg.,
     LPT1) must be used correctly,
     and the device may need
     initialization by your system
     prior to use.

2.   Check the external device for
     error conditions. For instance
     on printers, check whether the
     paper has run out, whether the
     ribbon has run out, or whether
     there has been a data error.
     Also check whether the printer
     is switched to local use. If

it seems in good shape,
perform a self-test to
determine that it indeed
works. For a modem, a self-
test is usually all that one
can do.

3.   If the device does not respond
     at all, check that it is
     plugged into an AC source (if
     necessary), that it is
     switched on, and the device's
     fuse is intact.

WARNING: Before inspecting fuses,
all power must be turned off and
the device disconnected from the AC
source. Check your device's user's
guide for further instructions.

4.   Check that cables between your
     computer and the device, and
     between other devices (such as
     phone lines), is connected
     properly at both ends. The
     connectors should be tightly
     mated. Check for bent or
     pushed-in pins. If there are
     screws or hold-down clips to
     ensure that the cables stay
     attached to the machines, then
     be sure to use them. Check
     that a cable has not been

severely creased or severed. Replace a suspect cable with a good one.

5. When connecting a cable between your GENESIS computer and a serial device for the first time, be sure to compare the pinouts of GENESIS's serial ports to that of your device's. The RS-232 interface requires specific signals, so be sure to obtain qualified help if you are unable to devise a satisfactory cable yourself.

6. External devices usually require that the computer and the device communicate with a certain common protocol. For a serial device, check that each machine is set for the same transfer speed (baud rate), and that an appropriate number of start and stop bits are used.

7. Your computer is provided with two serial ports. Try connecting your serial device to the other port; keep in mind that the new port must be set up properly (baud rates, etc.).

7.4 VIDEO PROBLEMS

If no video is displayed on the screen
of the control monitor, proceed as
follows.

1.   Make certain the monitor is
     connected to an AC power
     source and is turned on.

2.   Try adjusting the brightness
     and contrast controls.

3.   Check to see if the monitor is
     connected to the plug located
     inside the Access Panel
     located on the right-hand side
     of the CPU.

4.   Turn the computer off and then
     on again. Be aware that the
     display takes several seconds
     to warm up.

7.5 SYSTEM PROBLEMS - SYSTEM WILL NOT
        BOOT

If your system does not respond in any
way after switching the power on, check
the following items:

1.   Check that the AC power cord

is plugged into an AC source.

2.   Check that the fuse is intact.

NOTE: The fuse is located directly
above the AC outlet. Use only a
120   Volt,   2   Ampere fuse for
replacement, or 220 Volt, 1 Ampere
as indicated by the product label
on the unit's rear panel.

If the system responds to the AC power,
but does not boot, check the following
items:

1.   If you are using a floppy
disk, check whether it has or
needs an operating system.

2.   Check the video controls.

3.   If the system was running but
can not be rebooted off the
floppy disk drive, reboot from
power off.

7.6 KEYBOARD PROBLEMS

After certain combinations of keyboard
activity during disk drive accessing,
the keyboard may become locked   up,
unable to respond. Generally,   this

problem occurs when the system has
become hung, and the system requires
rebooting.

Sometimes the keyboard will act as if
the system is hung when a simpler
situation exists. Holding down a key
will cause that particular character to
be repeatedly inputted. At a certain
point, the computer's keyboard buffer
fills up and it will reject any
subsequent input from the keyboard. The
computer signals, each rejection with a
"beep". If this situation develops,
wait a few seconds for the computer to
digest the characters in its buffer.

If the computer expects this input to be
commands, it may take time for the
sequence of "bad commands" to process.
Using CTRL + BREAK may interrupt such
processing. However, if the keyboard
does not respond, reboot the system.
Remove all disks, turn off the power,
and boot from power-off.

> WARNING: Never disconnect or
> reconnect a keyboard while a
> computer is running. The
> keyboard electronics are very
> charge sensitive and can be
> damaged simply by being unplugged
> with the computer on. Only
> connect or disconnect a keyboard

when the computer is turned off.

7.7   FLOPPY DISK PROBLEMS

Various problems can occur with floppy disks and floppy drives. When a disk begins to have read problems, it is time to receive information from it (by DISKCOPY, DISKUTIL, or COPY), or else to clean the floppy drive heads.

Check for these other circumstances:

1.   Disk will not boot. Check to see if an operating system is on it (must have the file COMMAND.COM for MS-DOS).

2.   "Disk error reading drive X". This usually indicates that the drive lever is not closed, or that a floppy disk is not inserted.

3.   Misallocated sectors cause loss of information for at least one file. Recover as many files as possible by COPYing to another diskette.

4.   If you cannot write on a disk, check whether the write-protect tab is in place.

7.8   EPROM T-TEST

Whenever the system has failed, the "T-Test" should be performed to determine if there is a major hardware failure. The T-Test routines are stored in the EPROMs.

The EPROMs on your computer's mainboard contain the firmware which commands the system to boot an operating system and other information off of a disk drive. The T-Test will display the EPROM version number for your AVL GENESIS system. Another responsibility of the EPROM is to initialize the registers on all the programmable chips within the computer.

Therefore, as a variant of the initialization procedures, AVL has included routines in the EPROM which will test all the programmable chips and all the memory addresses. These tests consist of writing to all the registers and addresses and reading back the information.

To perform the T-Test routines, simply hold down the T key while booting or rebooting. No disk drive activity will occur. If a mainboard hardware problem is at fault, then the T-Test routines will produce error messages concerning

the 8253 Timer/Counter, the 8237 DMA
Controller, the serial port system, or a
message about errors found with the RAM
chips. Failure of certain chips can
prevent the T-Test from being performed.

> NOTE: The message "No RS-232 Loop
> Back Detected." indicates that the
> system will not test the serial
> ports. This is the normal
> situation, unless you have special
> cables for such testing.

After the tests begin cycling through
the Memory Tests (RAM tests), the T-Test
can be halted by turning off the system.
The T-Test can be halted at any point in
this way.

If an error is noted by the T-Test,
repeat the T-Test (by turning the power
switch off and on and holding down T to
verify the problem. If the error
persists, contact AVL Customer Services.

NOTES:

APPENDIX A

AVL GENESIS PORTABLE
TECHNICAL SPECIFICATIONS

A.1 GENERAL

The paragraphs that follow outline the technical specifications that apply to the AVL Genesis Portable Computer.

A.2 DIMENSIONS

	W x H x D (inches)
Closed System	19.38 X 8.38 X 15.9
Open System	19.38 X 8.38 X 15.5 (Add 7.4 for keyboard)
Keyboard	18 X 1.5 X 7.4

System Weight - 33 lbs.

A.3 HARDWARE

Microprocessor   Intel 8088 @ 4.77 MHz

RAM - 256K bytes on main board standard. Supports up to 640 Kb.

Storage Disks - 2 48 tpi, double-sided,
          double-density,   floppy
          disks   (each   360/320Kb
          formatted storage).

Interface - 2 RS-232 serial ports:
             COM1, COM2
          1 parallel port (25-pin):
             LPT1

          3 RCA jacks: Out1, Out2,
             and Data In

          3 XLR jacks: Out1, Out2,
             and Data In

             Remote Cue Jack

Keyboard - 84 key stations. 10 Function
            keys, numeric keypad and
            cursor controls.

Video   - 7"x6", P3 green phosphor,
            High resolution Display
            640 X 200 pixels, text mode
            80 characters by 25 lines.

A.4 SOFTWARE

Operating System   MS-DOS 2.1

System Disks   PROCALL-X and PROCALL-5

A.5 ENVIRONMENTAL REQUIREMENTS

Temperature:

System OFF	50-110 F
System ON	60-95 F

Humidity:

System OFF	20-80%
System ON	8-80%

Maximum Altitude:

System OFF	12,000 ft.
System ON	8,000 ft.

Voltage Required:

Nominal	120Volts/60 Hz
	220 Volts/50 Hz
Minimum	90 Volts/60 Hz
	180 Volts/50 Hz
Maximum	135 Volts/60 Hz
	260 Volts/50 Hz

A.6   SERIAL PORT PIN SPECIFICATIONS

The two serial ports, COM1 and COM2, on the rear panel of the main unit, use the EIA RS-232 interface standard. Female connectors are necessary to mate with the serial ports.

The following table indicates the signal names used for each pin by your Genesis Portable as set up at the factory.

PIN	SIGNAL NAME
2	Transmitted Data
3	Received Data
4	Request to Send
5	Clear to Send
6	Data Set Ready
7	Signal Ground
8	Carrier Detect
20	Data Terminal Ready
22	Ring Indicator

The following is a cable wiring diagram for use with a Serial printer.

```
      SYSTEM END                PRINTER END

Ground     Pin 7  -------- Pin 7  Ground

Data Out Pin 2    -------- Pin 3  Data In

Data In  Pin 3    -------- Pin 2  Data Out

Data Terminal
Ready      Pin 20 -------- Pin 5  Clear to
                      :            Send
                  --- Pin 6  Data Set
                             Ready

   *     Pin 5    -------- Pin 11 Printer
                                  Busy

   *     Pin 6    -------- Pin 20 Data
                             Terminal Ready

         Pin 4    -------- Pin 8

         Pin 8    -------- Pin 4
```

*   These connections are shown for printers that have a printer busy (low) signal. For printers without the printer busy feature, omit the 5 to 11 cable connection and jumper 5 to 6 at the system end of the cable.

A.7 PARALLEL PORT PIN SPECIFICATIONS

The parallel port, LPT1, on the rear panel of the main unit, uses a 25-pin connector. A male cable connector must be used to mate with the port.

The following table indicates the signal names associated with the pins.

PIN	SIGNAL NAME
1	Strobe (-)
2	Data Bit 0 (+)
3	Data Bit 1 (+)
4	Data Bit 2 (+)
5	Data Bit 3 (+)
6	Data Bit 4 (+)
7	Data Bit 5 (+)
8	Data Bit 6 (+)
9	Data Bit 7 (+)
10	Acknowledge (-)
11	Busy (+)
12	Paper End (+)
13	Select (+)
14	Auto Feed (-)
15	Error (-)
16	Init Printer (-)
17	Select Printer (-)
18-25	Ground

A.8 RGB VIDEO OUT

PIN	SIGNAL
1	Ground
2	Ground
3	Red
4	Green
5	Blue
6	Intensity
7	No connection
8	Horizontal
9	Vertical

NOTES: