AutoCAD/SCO XENIX

AutoCAD® Release 10
Installation and Performance Guide

Edition for 80386 computers
running the SCO XENIX 386 operating system.
Copyright © 1989 Autodesk
All rights reserved

This publication, or parts thereof, may not be reproduced in any form, by any method, for any purpose.

AUTODESK MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, REGARDING THESE MATERIALS AND MAKES SUCH MATERIALS AVAILABLE SOLELY ON AN "AS-IS" BASIS.

IN NO EVENT SHALL AUTODESK, INC. BE LIABLE TO ANYONE FOR SPECIAL, COLLATERAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF PURCHASE OR USE OF THESE MATERIALS. THE SOLE AND EXCLUSIVE LIABILITY TO AUTODESK, INC., REGARDLESS OF THE FORM OF ACTION, SHALL NOT EXCEED THE PURCHASE PRICE OF THE MATERIALS DESCRIBED HEREIN.

For conditions of use and permission to use these materials for publication in other than the English language, contact Autodesk,

Autodesk, reserves the right to revise and improve its products as it sees fit. This publication describes the state of this product at the time of its publication, and may not reflect the product at all times in the future.

Trademarks

The following trademarks of Autodesk, Inc. are registered in the U.S. Patent and Trademark Office: AutoCAD, AutoCAD AEC, AutoCAD Training Center, Autodesk, the Autodesk logo, AutoLISP, AutoShade, AutoSketch, and ADI.

The following are all Autodesk trademarks: ACAD, Advanced User Interface, Autodesk Animator, Autodesk Device Interface, ATC, AUI, AutoFli.x, AutoSolid, CA Lab, and DAX.

ACAD is a registered trademark of Autodesk, Inc. in Colombia, France, the People's Republic of China, and Switzerland. ADI is a registered trademark of Autodesk, Inc. in the U.S.A. AutoCAD is a registered trademark of Autodesk, Inc. in Austria, Canada, Chile, Denmark, France, Great Britain, Greece, Indonesia, Israel, Italy, Mexico, Norway, the People's Republic of China, Panama, South Africa, South Korea, Switzerland, Taiwan, Thailand, the U.S.A., and the U.S.S.R. AutoCAD AEC is a registered trademark of Autodesk, Inc. in France, Italy, Switzerland, and the U.S.A. AutoCAD Training Center is a registered trademark of Autodesk, Inc. in the Benelux countries, Switzerland, Taiwan, Turkey, and the U.S.A. Autodesk is a registered trademark of Autodesk, Inc. in Brazil, Chile, France, Great Britain, Indonesia, Italy, the People's Republic of China, Panama, Switzerland, Thailand, the U.S.A., and the U.S.S.R. The Autodesk logo (square with nested chevrons) is a registered trademark of Autodesk, Inc. in France, Italy, Sweden, Switzerland, the U.S.A., the U.S.S.R., and West Germany. AutoLISP is a registered trademark of Autodesk, Inc. in France, Italy, the People's Republic of China, Switzerland, the U.S.A., and the U.S.S.R. AutoShade is a registered trademark of Autodesk, Inc. in France and the U.S.A. AutoSketch is a registered trademark of Autodesk, Inc. in France, Switzerland, Taiwan, the U.S.A., and the U.S.S.R.
Apple and ImageWriter are registered trademarks of Apple Computer, Inc. COMPAQ and COMPAQ DESKPRO are registered trademarks of Compaq Computer Corporation. Hercules is a registered trademark of Hercules Computer Technology. Hewlett-Packard, HP, LaserJet, ColorPro, DraftPro, and DraftMaster are registered trademarks of Hewlett-Packard Company. Hitachi is a registered trademark of Hitachi, Ltd., IBM, PC-DOS, and PS/2 are registered trademarks of International Business Machines Corporation. Intel is a registered trademark of Intel Corporation. MS-DOS and XENIX are registered trademarks of Microsoft Corporation. Okidata is a registered trademark of Oki America, Inc. PostScript is a registered trademark of Adobe Systems, Incorporated. SCO is a trademark of The Santa Cruz Operation, Inc. Summagraphics and SummaSketch are registered trademarks of Summagraphics Corporation. UNIX is a trademark of AT&T Bell Laboratories.
# Table of Contents

**Chapter 1: INTRODUCTION** ............................................. 1

1.1 Notational Conventions ............................................ 1
1.2 System Requirements ............................................... 2
1.3 Keyboard Functions ................................................ 3
1.4 A Short Course in XENIX Multiscreens ............................ 4
1.5 File Permissions .................................................... 4
1.6 Peripheral Connections ............................................ 5
   1.6.1 XENIX System Mouse ........................................ 5

**Chapter 2: SOFTWARE INSTALLATION** ............................... 7

2.1 Making a Backup ................................................... 7
2.2 Release Format ..................................................... 7
2.3 Installing AutoCAD for SCO XENIX 386 ........................... 10

**Chapter 3: CONFIGURING AUTOCADE** ............................. 13

3.1 Initial Configuration ............................................... 13
3.2 Configuration Menu ................................................ 14
   3.2.1 Allow Detailed Configuration ............................... 14
   3.2.2 Configure Video Display .................................... 14
   3.2.3 Configure Digitizer .......................................... 16
   3.2.4 Configure Plotter ............................................ 16
   3.2.5 Configure Printer Plotter .................................... 18
   3.2.6 Configure System Console .................................. 18
   3.2.7 Configure Operating Parameters ............................ 18
3.3 Testing the Configured Version ................................... 22
   3.3.1 Configuring Your Tablet Menu ............................... 23
3.4 Running the Slide Show ............................................ 25
3.5 Using DOS and XENIX on the Same System ......................... 25
3.6 File Transfer between DOS Systems and SCO XENIX ............... 26
   3.6.1 Moving Pre-Release 9 Drawing Files from DOS to SCO XENIX 26
   3.6.2 Moving Support Files from DOS to SCO XENIX ............... 27
3.7 Plot Spooling ...................................................... 27
   3.7.1 Through AutoCAD ............................................ 27
   3.7.2 Through XENIX ............................................... 28
3.8 Shell Command ...................................................... 29
# Table of Contents

## Chapter 4: PERFORMANCE

4.1 Environment Variables ............................................. 31

4.1.1 Setting Environment Variables ................................. 32
4.1.2 ACADCFG ............................................................. 33
4.1.3 ACAD ................................................................. 33

4.2 Additional Memory ..................................................... 33

4.2.1 AutoCAD Pager ...................................................... 33

4.3 Out of RAM .................................................................. 34

4.3.1 Increasing Swap Space ............................................ 34

4.4 Killing AutoCAD .......................................................... 35

4.5 Digitizer Considerations .............................................. 35

4.6 Multiuser Considerations ............................................. 35

4.6.1 Multiple Copies of AutoCAD .................................. 35

4.7 Using AutoCAD and Other Graphics Programs ............... 35

4.7.1 AutoCAD and AutoSolid ....................................... 35

4.8 Directory Usage ........................................................... 36

4.9 Drafting Conventions .................................................. 36

4.9.1 Using Layer Freeze/Thaw ...................................... 36

4.9.2 Setting Reasonable Drawing Limits ......................... 36

4.9.3 Using Timesaving Modes ....................................... 36

## Chapter 5: VIDEO DISPLAY OPTIONS

5.1 ADI Display ............................................................... 37

5.1.1 Configuring ADI Display ....................................... 37

5.2 Hercules Graphics Card .............................................. 38

5.3 IBM Enhanced Graphics Adapter (EGA) ....................... 38

5.4 IBM Video Graphics Array (VGA) ............................... 39

5.5 Null Display .............................................................. 40

## Chapter 6: DIGITIZER OPTIONS

6.1 Autodesk Device Interface (ADI) Digitizer ..................... 42

6.2 CalComp 2500 Series Tablets .................................... 43

6.3 CalComp 9000 Series Tablets .................................... 45

6.4 CalComp 9100 Series Tablets .................................... 47

6.5 Hitachi HICOMSCAN HDG Series Tablets .................... 49

6.6 Kuna Series I Tablet .................................................. 51

6.7 Summagraphics MM Series and SummaSketch Series Tablets ........................................ 52

6.8 XENIX System Mouse ................................................ 54
6.8.1 XENIX Configuration ............................................................ 54
6.8.2 AutoCAD Configuration .......................................................... 54

Chapter 7: PLOTTER OPTIONS .......................................................... 57
7.1 Alpha Merics (Alphaplot) .............................................................. 58
7.2 Autodesk Device Interface (ADI) Plotter ............................................. 59
7.3 CalComp 960/907/PCI Plotter Controllers .......................................... 63
7.4 Hewlett-Packard Plotters ............................................................... 64
7.5 Houston Instrument DMP Series ..................................................... 66
7.6 IBM Series 7300 ..................................................................... 67
7.7 PostScript Laser Printers ............................................................... 68
7.8 UNIX Plot File Plotter ................................................................. 69

Chapter 8: PRINTER PLOTTER OPTIONS .............................................. 71
8.1 Autodesk Device Interface (ADI) Printer Plotter .................................... 72
8.2 Hewlett-Packard LaserJet .............................................................. 75
8.3 Okidata 84 Step 2 ................................................................. 77
8.4 Okidata 93 ................................................................. 78

INDEX .................................................................................. 79
Chapter 1
Introduction

This guide is a supplement to the main AutoCAD Reference Manual. It explains how you install and configure AutoCAD software, and how AutoCAD uses memory. It also provides information on installing graphic input/output devices (video displays, digitizers, plotters, and printer plotters) on 80386 machines running SCO® XENIX® 386.

The software installation procedure assumes that you have mastered the general operation of your computer. In particular, you should understand how to create directories, install software via the /etc/custom command, and copy files with XENIX commands.

The sections of this guide on peripheral devices assume an understanding of computer terminology. If you run into difficulty, ask your AutoCAD dealer for assistance. Consult Appendix E of the main AutoCAD Reference Manual for the type of information you will be asked to supply.

The last few pages of this Installation Guide consist of a Wish List Request Form, a User Survey, removable Bug Report forms, and a drawing submittal form. If you have problems with AutoCAD, follow the directions on the back of the bug report form and contact your AutoCAD dealer.

1.1 Notational Conventions

As in the main AutoCAD Reference Manual, sample dialogues in this guide are presented with user input underlined. The Enter or Return key is represented by the symbol \[Enter\]. Function keys and other special key combinations are represented with keycap symbols as well.
1.2 System Requirements

- COMPAQ DESKPRO® 80386 or IBM® PS/2® model 70 or 80 system.

- One double-sided, high density floppy disk drive (1.2 megabytes, or 1.44 megabytes on the PS/2).

- At least 2.5 megabytes of available hard disk space in the /usr file system where you will be installing AutoCAD.

- The Intel® 80387 Math Coprocessor.

  Because the 80386/80387 technology is still quite new and not every software application takes advantage of the math coprocessor, you may experience problems with your system while running AutoCAD that you have not previously experienced. For example, users with older machines may experience problems with the 80387 math coprocessor and should consider installing the Bell Technologies Math Adapter to rectify the 80386 chip Erratum 21. This problem was most apparent during the first year of production and has not been apparent in faster (20 MHz and up) machines. Please consult your dealer to determine if you are experiencing this or any other problem associated with the 80386/80387 chip set.

- SCO XENIX 386 operating system, version 2.3 or later. When XENIX is first installed, you should specify that the optional LINK, LPR, MOUSE, and DOS packages be loaded as well. If you are using the Autodesk Device Interface™ Kit (ADI® Kit) to develop software, you should also install the XENIX Development System. If disk space allows, load the entire system.

- One of the video display options listed in Chapter 5 of this manual.

- At least 4 megabytes of memory. We recommend a minimum of 6 megabytes.

  As with all XENIX software, the performance of AutoCAD improves with the addition of extra memory. AutoCAD reads a drawing into your system’s available memory; when memory is full, XENIX pages or “swaps” the information in memory out to the swap space allocated from your hard disk. If your system contains extra memory, AutoCAD can read more of a drawing before the slower paging process becomes necessary.

- Sufficient space in the XENIX swap partition to hold AutoCAD while you edit your largest drawing. We recommend the XENIX swap partition be at least 20 megabytes. Note that this is larger than the amount of swap space XENIX allocates by default. AutoCAD can be instructed through environment variables to perform its own paging; see Chapter 4, Performance, in this manual for more information on how to increase swap space.

- Asynchronous Communications Adapter (required for digitizer and plotters).

- Parallel port for the Hardware Lock (required for the international version of AutoCAD).

- Digitizing tablet or mouse (optional).

- Plotter (optional).

- Printer plotter (optional).

- Hardware Lock (for the international version of AutoCAD).

NOTE: The international version of AutoCAD requires the Hardware Lock, a small box with an electronic connector at each end. This is included with your AutoCAD manuals and diskettes. The international version of AutoCAD cannot execute without the lock properly attached to your computer. Follow the instructions that come with the Hardware Lock to install it.
WARNING! Autodesk, Inc. cannot guarantee that the SCO XENIX version of AutoCAD will operate on every machine that claims to be an IBM work-alike. AutoCAD works through XENIX and the Autodesk Device Interface (ADI) to manipulate input and output devices including video adapter and pointing devices. If your work-alike does not behave exactly the same as a Compaq or an IBM PS/2 in communicating with I/O devices, AutoCAD may work improperly. Autodesk will not respond to problems with machines other than those 386-based systems listed in the Compatible Hardware appendix of the SCO XENIX System V Operating System Release Notes.

1.3 Keyboard Functions

The following chart defines the functions assigned to various keys on your 80386 system. Feel free to copy this page and keep it by your computer for easy reference.

<table>
<thead>
<tr>
<th>AutoCAD Function</th>
<th>Related Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTRL</td>
<td>CTRL</td>
</tr>
<tr>
<td>FLIP SCREEN</td>
<td>F</td>
</tr>
<tr>
<td>MENU CURSOR</td>
<td>INS</td>
</tr>
<tr>
<td>SCREEN CURSOR</td>
<td>HOME</td>
</tr>
<tr>
<td>ABORT CURSOR</td>
<td>END</td>
</tr>
<tr>
<td>FAST CURSOR</td>
<td>PGUP</td>
</tr>
<tr>
<td>SLOW CURSOR</td>
<td>PGDN</td>
</tr>
<tr>
<td>UP CURSOR</td>
<td>1</td>
</tr>
<tr>
<td>DOWN CURSOR</td>
<td>4</td>
</tr>
<tr>
<td>LEFT CURSOR</td>
<td>6</td>
</tr>
<tr>
<td>RIGHT CURSOR</td>
<td>8</td>
</tr>
<tr>
<td>TOGGLE COORD</td>
<td>F9 or CTRL D</td>
</tr>
<tr>
<td>TOGGLE GRID</td>
<td>F7 or CTRL E</td>
</tr>
<tr>
<td>TOGGLE ORTHO</td>
<td>F8 or CTRL D</td>
</tr>
<tr>
<td>TOGGLE SNAP</td>
<td>F9 or CTRL B</td>
</tr>
<tr>
<td>TOGGLE TABLET</td>
<td>F10 or CTRL Y</td>
</tr>
</tbody>
</table>

Keep in mind that the control key, CTRL, when used in combination with other keys, should be held down while those keys are pressed. The cursor movement keys, illustrated with arrows above, are located on the numeric key pad on your keyboard. Please note that the FLIP SCREEN function has no effect in dual-screen configurations where one monitor is used for graphics and a second for text displays; this configuration is available with some Autodesk Device Interface (ADI) drivers. The status line feature must be present for the TOGGLE COORD function to be effective (see Chapter 3, Configuring AutoCAD, for more information about the status line).
1.4 A Short Course in XENIX Multiscreens

XENIX allows you to operate with virtual terminals, or multiscreens, so that you may execute multiple processes in separate environments. Only one process appears on the screen at any given time; it is referred to as the “current” process, and any keyboard or pointing device input is associated with that process. XENIX automatically establishes multiscreens based on the amount of memory available in your system. You may change the current multiscreen using the alternate key, m, in combination with one of the function keys. The screen that is current when the system is first booted is associated with m [ ]. There is also a tty associated with each multiscreen beginning with tty0/ up to tty12.

You may switch multiscreens while AutoCAD is running in order to execute other programs or XENIX commands. While in the drawing editor, before switching multiscreens, you must perform a FLIP SCREEN so that the text screen is available. You may not switch while the graphics display is active.

1.5 File Permissions

The most common source of problems installing and running AutoCAD is granting and controlling access permissions to files and directories. If you follow the procedure for loading AutoCAD described in the next chapter, your directories will be set up as follows:

```
usr/
|----- acad/ | mary/ | paul/ | john/ |
|----- acad/ | slides/ | dwgs/ | bonus/ | misc/ |
|----- dwgs/ |
```

Under such a setup, bin will be the owner of /usr/acad, /usr/acad/acad, /usr/acad/dwgs, /usr/acad/slides, /usr/acad/bonus, /usr/acad/adikit, and /usr/acad/misc. The permissions of all these directories should be set to drwxrwxrwx. In addition, if user John wants to use AutoCAD, he must own his home directory (/usr/john) and have read and write permission on it.

1.6 Peripheral Connections

Plotters and printer plotters and some digitizers are supported through serial ports that have been configured as tty devices. You will need to know the names of these ports in order to configure AutoCAD. Before attempting to configure a digitizer, plotter, or printer plotter on anything other than the first two serial devices in your system, the additional port must be defined for XENIX.

The system administrator, or any user with super user privileges, must define additional devices using the command /etc/mkdev serial. To properly execute this command, the additional serial board must be installed with the next unused serial address as its starting address — COM1, COM2, COM3, or COM4.

When you execute the /etc/mkdev serial command, you will be prompted for the number of serial ports supported by the board — 1, 2, 4, 5 or 8 — and the starting address. After entering this information, the tty’s assigned to the additional board appear listed on the screen and you are returned to the XENIX prompt. These tty devices must provide read and write access to all users who want to configure them for use in AutoCAD.

As an example, if you have two COM ports in your computer and want to make sure that they are accessible as /dev/tty1a and /dev/tty2a, you would log on as root in order to be super user and execute the mkdev serial command as follows:
\texttt{\textbackslash etc/mkdev serial} (execute the \texttt{mkdev} command)
\texttt{\textbackslash l} (install a two-port card)
\texttt{\textbackslash tty} (configured as COM1)

The \texttt{mkdev} command responds that \texttt{/dev/tty1a} and \texttt{/dev/tty2a} are installed as a result of the above operation.

Note that AutoCAD allows you to avoid associating a port with any device when you enter a single period (.) in place of the device name. Please refer to the lists of compatible hardware in your SCO XENIX System V Operating System Release Notes for more information on supported serial port boards.

\section*{1.6.1 XENIX System Mouse}

For information on installing the XENIX System Mouse, refer to Chapter 6 of this guide. The following XENIX System mice are supported by AutoCAD:

- Logitech Serial Mouse
- Microsoft Serial Mouse
- Mouse Systems PC Mouse
- Microsoft Bus Mouse
- Logitech Bus Mouse

For additional information on supported mice and graphic input devices check your SCO XENIX System V Operating System Release Notes.

\textbf{NOTE:} The XENIX System Mouse does not support the mouse port on Compaq and IBM PS/2 systems.
Chapter 2
Software Installation

AutoCAD for IBM computers is released in two disk formats — 1.2 megabyte 5-1/4" diskettes and 1.44 megabyte 3-1/2" diskettes — but the installation procedure is basically the same. Once the software is properly installed, go on to Chapter 3, Configuring AutoCAD.

2.1 Making a Backup
You should make backups of the AutoCAD release disks using the command /usr/bin/diskcp, and store the original disks in a safe place. Be sure to copy the information from the original disks’ labels (including the AutoCAD serial number and the Autodesk®, Inc. copyright notice) onto your new copies. It is a good idea to write-protect the new copies.

2.2 Release Format
AutoCAD is installed through the /etc/custom command. The following table describes the packages available:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>Entire XENIX AutoCAD package</td>
<td>(must be loaded)</td>
</tr>
<tr>
<td>SUPP</td>
<td>AutoCAD and support files</td>
<td>(not required)</td>
</tr>
<tr>
<td>SLID</td>
<td>Slide show</td>
<td>(not required)</td>
</tr>
<tr>
<td>BON</td>
<td>Bonus files</td>
<td>(not required)</td>
</tr>
<tr>
<td>SAMP</td>
<td>Sample drawings</td>
<td>(not required)</td>
</tr>
<tr>
<td>MISC</td>
<td>Miscellaneous files</td>
<td>(not required)</td>
</tr>
<tr>
<td>ADI</td>
<td>Autodesk Device Interface Kit</td>
<td>(not required)</td>
</tr>
</tbody>
</table>

The first package, ALL, provides a quick means of installing all available files. The second package installs only the files necessary to configure and run the program; these files are covered by the AutoCAD Software License Agreement and are copyrighted by Autodesk. The remaining packages contain sample drawings, a self-running slide show, bonus files and special utilities, miscellaneous files, and the Autodesk Device Interface Kit for you to experiment with. The sample drawings are not copyrighted. A partial listing of the files on the release disks follows. Where name appears in a file name, substitute the name of the actual file.
### AutoCAD/SCO XENIX

<table>
<thead>
<tr>
<th>Directory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/usr/acad/acad:</td>
<td>AutoCAD Execution and Support (approximate size 1.6 megabytes)</td>
</tr>
<tr>
<td>acad</td>
<td>AutoCAD execution file</td>
</tr>
<tr>
<td>acadl</td>
<td>AutoLISP execution file</td>
</tr>
<tr>
<td>acad.dwg</td>
<td>Standard prototype drawing</td>
</tr>
<tr>
<td>acad.hlp</td>
<td>Standard help text</td>
</tr>
<tr>
<td>acad.hdx</td>
<td>Standard help index file</td>
</tr>
<tr>
<td>acad.lin</td>
<td>Standard linetypes</td>
</tr>
<tr>
<td>acad.mnx</td>
<td>Standard menu, compiled form</td>
</tr>
<tr>
<td>acad.msg</td>
<td>AutoCAD signon message</td>
</tr>
<tr>
<td>acad.pat</td>
<td>Standard hatch patterns</td>
</tr>
<tr>
<td>acad.pgp</td>
<td>Program parameters</td>
</tr>
<tr>
<td>acad.slb</td>
<td>Slide library used by standard menus</td>
</tr>
<tr>
<td>afkinet.lsp</td>
<td>AutoFlix Lisp file</td>
</tr>
<tr>
<td>aflix.lsp</td>
<td>AutoFlix Lisp file</td>
</tr>
<tr>
<td>afwalk.lsp</td>
<td>AutoFlix Lisp file</td>
</tr>
<tr>
<td>ashade.lsp</td>
<td>Release 10 AutoShade Lisp program, Kelvinated and protected for AEC Architectural</td>
</tr>
<tr>
<td>name.dwg</td>
<td>Sample drawings</td>
</tr>
<tr>
<td>name.lsp</td>
<td>AutoLISP support files</td>
</tr>
<tr>
<td>name.shx</td>
<td>Standard text fonts, compiled form</td>
</tr>
<tr>
<td>name.sld</td>
<td>Support slide files</td>
</tr>
<tr>
<td>slidelib</td>
<td>Constructs slide libraries</td>
</tr>
<tr>
<td>/usr/acad/slides:</td>
<td>AutoCAD slide show (approximate size 0.5 megabytes)</td>
</tr>
<tr>
<td>instruct.doc</td>
<td>Instructions for slide show</td>
</tr>
<tr>
<td>name.scr</td>
<td>Script file</td>
</tr>
<tr>
<td>name.slb</td>
<td>Slide library file</td>
</tr>
<tr>
<td>slide.dwg</td>
<td>Sample drawing for slide show</td>
</tr>
<tr>
<td>slide.mnu</td>
<td>Menu for slide show, source</td>
</tr>
<tr>
<td>slide.mnx</td>
<td>Menu for slide show, compiled form</td>
</tr>
<tr>
<td>vpirl.lsp</td>
<td>View port lisp slide show program</td>
</tr>
<tr>
<td>/usr/acad/dwgs:</td>
<td>AutoCAD sample drawings (approximate size 0.4 megabytes)</td>
</tr>
<tr>
<td>name.dwg</td>
<td>Sample drawing</td>
</tr>
</tbody>
</table>
### Software Installation

<table>
<thead>
<tr>
<th>Directory Path</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/usr/acad/bonus</td>
<td>Bonus programs (approximate size 0.1 megabytes)</td>
</tr>
<tr>
<td>acad.mnd</td>
<td>Source for standard AutoCAD menu</td>
</tr>
<tr>
<td>name.dwg</td>
<td>Sample drawings</td>
</tr>
<tr>
<td>name.lsp</td>
<td>Sample AutoLISP programs</td>
</tr>
<tr>
<td>mc</td>
<td>Menu compiler</td>
</tr>
<tr>
<td>mc.doc</td>
<td>Information on menu compiler</td>
</tr>
<tr>
<td>/usr/acad/bonus/source</td>
<td>Source to certain bonus files</td>
</tr>
<tr>
<td>acad.mnu</td>
<td>Standard AutoCAD menu</td>
</tr>
<tr>
<td>ashade.lsp</td>
<td>Release 10 AutoShade Lisp program</td>
</tr>
<tr>
<td></td>
<td>Unkelvinated and unprotected source</td>
</tr>
<tr>
<td>name.shp</td>
<td>Source for standard text fonts</td>
</tr>
<tr>
<td>/usr/acad/adikit</td>
<td>Autodesk Device Interface/ADI Kit†</td>
</tr>
<tr>
<td>/usr/acad/misc</td>
<td>Miscellaneous files ††</td>
</tr>
<tr>
<td>plotter.spl</td>
<td>Plotter interface file for XENIX</td>
</tr>
<tr>
<td>readme.doc</td>
<td>Describes the files in this directory.</td>
</tr>
</tbody>
</table>

†NOTE: The ADI Kit is distributed by Autodesk, Inc. so that independent parties can develop peripheral device drivers for use with Autodesk software products. All associated materials and the software developed using these materials, that is, ADI device drivers intended to function with Autodesk software products, may be distributed freely without royalty to Autodesk, subject to the following conditions.

Users of the Autodesk Device Interface/ADI Kit are granted a limited license to use and/or make copies of these materials for use by others in order to develop peripheral device drivers for Autodesk products. This limited license does not include:

- Distributing the ADI Kit in connection with any other product.
- Making the ADI Kit available for any consideration or disk fee.
- Distributing the ADI Kit in modified form.

††NOTE: The /usr/acad/misc directory contains additional files that you may find useful. Note, however, that although the files in this directory are provided, they are not supported by Autodesk, Inc.
2.3 Installing AutoCAD for SCO XENIX 386

The installation procedure must be performed by the system administrator or any user with super user privileges (log on as root to be super user). If you don’t know how to execute the /etc/custom command, you should first consult the XENIX Installation and Maintenance manual for details. Follow the procedure outlined below to copy AutoCAD into your file system. AutoCAD must be installed on the /usr file system, so please verify the amount of room available by executing /bin/df -v prior to beginning the installation.

NOTE: If you are reinstalling AutoCAD, first remove the file /etc/perms/autocad. Use the following command sequence:

```bash
cd /etc/perms
rm autocad
```

1. To load the AutoCAD release disk format onto your system, enter the following command:

   `/etc/custom`

2. A menu of customization appears. Enter the number associated with the Add a Supported Product selection.

3. The following message appears:

   Installing custom data files...
   
   Insert distribution volume 1 and press <RETURN> or enter q to quit:

   Insert the AutoCAD disk (or volume) #1 and press ⏤ to continue with the installation.

4. From the next customization menu, enter the number associated with the Install One or More Packages selection.

5. You will be prompted to install one or more packages from the following table:

<table>
<thead>
<tr>
<th>Package</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>Entire AutoCAD package</td>
</tr>
<tr>
<td>SUPP</td>
<td>AutoCAD and support files</td>
</tr>
<tr>
<td>SLID</td>
<td>Slide show</td>
</tr>
<tr>
<td>BON</td>
<td>Bonus files</td>
</tr>
<tr>
<td>SAMP</td>
<td>Sample drawings</td>
</tr>
<tr>
<td>MISC</td>
<td>Miscellaneous files</td>
</tr>
<tr>
<td>ADI</td>
<td>Autodesk Device Interface Kit</td>
</tr>
</tbody>
</table>

6. You must specify either ALL or the SUPP package. If you specify the support package, you can install other packages as well by specifying them at the custom prompt.

7. After making your selection from the above table, the following prompt appears:

   Insert AutoCAD Xenix 386 Release 10 volume 1

   Press ⏤.

8. The installation program proceeds, asking you to insert the remaining AutoCAD disks #2, #3, #4 and #5.

NOTE: If AutoCAD has previously been installed, then after installing the last disk, the installation program prompts you to answer the following questions:
AutoCAD's device driver currently installed. Do you wish to reinstall this driver causing kernel rebuild? (Y/N)

Enter yes or y.

9. If this is the first installation of AutoCAD, then after installing the last disk, the installation program prompts you to answer the following questions:

AutoCAD needs to relink the kernel before it can be used. Do you wish to relink the kernel now? (Y/N)

Enter yes or y.

Re-linking the kernel ...

Kernel with driver modification(s) is in /usr/sys/conf/xenix

Do you want this kernel to boot by default? (Y/N)

Enter yes or y.

NOTE: It is important that you reboot your computer as instructed!

Reboot your system to activate it
Checking file permissions ...

10. The installation program returns to the customization menu. Enter q to quit.

11. Add the /usr/acad/acad directory to the path environment variable so that XENIX can find AutoCAD.

If you are using the C Shell, enter:

`set path = ($path /usr/acad/acad)`

If you are using Bourne Shell or Korn Shell enter:

`PATH=SPATH:/usr/acad/acad`  
`export PATH`  

NOTE: You may find it convenient to add the appropriate statement to your .profile or .login file so that the path variable is set automatically whenever you log on.

This completes installation of the necessary files. Proceed to the next chapter to configure AutoCAD for your particular display, digitizing device, plotter, and printer plotter.
Chapter 3
Configuring AutoCAD

You must configure AutoCAD to recognize the graphics devices attached to your computer: digitizers, plotters, and printer plotters. You can also use the configuration task to set various defaults and operating parameters to suit your particular needs.

3.1 Initial Configuration

This section assumes that you have connected your graphics devices as instructed in the following chapters of this guide. If you have any questions about a device during configuration, consult the chapter describing the uses of that device.

The initial configuration menu appears automatically when AutoCAD is first executed. Each configuration menu provides a default setting that you may accept by simply typing `<` or pressing the space bar. Defaults appear within corner brackets; for example `<Y>` indicates that the default setting is “yes.”

**NOTE:** To exit from the configuration routine at any time without configuring AutoCAD, use the `CTRL` combination.

Configuring AutoCAD the First Time

The first step is to create a drawing directory; in the following examples, we’ll call it `/usr/john/dwgs`. This is the directory where you will start AutoCAD and store your drawings. Create the directory by entering at the XENIX prompt:

```
mkdir /usr/john/dwgs
```

(make the drawing directory)

Next, change to this new directory and execute AutoCAD:

```
cd /usr/john/dwgs
acad
```

(change to drawing directory)
(execute AutoCAD)

If you receive an error message that the command “acad” could not be found, return to Chapter 2, *Software Installation*, for information on setting up your path. If this does not work, check the permissions on `/usr/acad/acad` and `/usr/acad/acad/acad`.

Respond to the on-screen prompts to establish the AutoCAD screen format and to set up AutoCAD for your particular hardware. If you change your mind about one of your selections during the configuration routine, continue to the end of the configuration process and redo the incorrect setting after you have completed the initial configuration. Once AutoCAD is initially configured, you can change any setting by selecting the Configure AutoCAD task from the main menu. By this method, you may reconfigure any device separately without affecting the others. See the next section for details on reconfiguring.
3.2 Configuration Menu

After AutoCAD has been initially configured, the main menu appears. From this menu, select Task 5, Configure AutoCAD, in order to edit the configuration information. The current configuration information is presented, followed by the configuration menu:

0. Exit to Main Menu
1. Show current configuration
2. Allow detailed configuration
3. Configure video display
4. Configure digitizer
5. Configure plotter
6. Configure printer plotter
7. Configure system console
8. Configure operating parameters

Enter selection <0>:

To select a configuration task, simply enter the task number, followed by \[\text{g}\]. When the task is complete, AutoCAD returns to the configuration menu and asks you to select another task. Continue selecting tasks until you are satisfied with the configuration as it stands; then select Task 0 to exit from the configuration menu.

In each task, reasonable defaults are provided for all options. The defaults appear within corner brackets; for example, \(\langle 1 \rangle\) indicates that the default setting corresponds to the option offered as number one in the list. You may accept the default by simply typing \[\text{g}\] or pressing the spacebar.

3.2.1 Allow Detailed Configuration

Tasks 3-7 of the configuration menu let you adjust many device parameters and select typical modes of operation. Some devices have additional fine-tuning parameters, but the prompts for setting these parameters are ordinarily suppressed. Select Task 2 if you want to specify these additional parameters. AutoCAD prompts:

Do you want to do detailed device configuration? <N>

If you answer yes, subsequent device configuration tasks will let you control all parameters provided by the device handlers.

3.2.2 Configure Video Display

AutoCAD can operate with a variety of graphics displays. Task 3 lists the available displays and asks you to indicate which of them you want to use. You may also be prompted to set various parameters associated with the display. The particular displays with which AutoCAD can operate on your computer and more details on their configuration and installation may be found in later sections of this guide.

Most video displays allow you to disable the status line, screen menu and prompt areas.

<table>
<thead>
<tr>
<th>Status Line</th>
<th>You can choose to enable or disable the status line. The default for most displays is enabled.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menu/Prompt Areas</td>
<td>On some displays, the screen menu can be disabled to make more room for graphics. The command prompt area can also be disabled to enlarge the drawing area. On single-screen systems, turning off the prompt area is not recommended.</td>
</tr>
</tbody>
</table>
Dot Aspect Ratio Correction

On many video displays, the physical resolution (dot density) is different in the horizontal direction from the vertical. The ratio of horizontal to vertical dots per inch is called the dot aspect ratio. This ratio will affect the visual representation of your drawings and may result in squares appearing nonsquare or circles appearing elliptical.

A default correction factor is built into the display driver for each video display supported by AutoCAD, but variations may be caused by the type of monitor used. Therefore, provisions are made for you to adjust the aspect ratio correction factor of AutoCAD if you have measured the height and width of a square drawn with AutoCAD that appeared not to be square.

AutoCAD prompts:

If you have previously measured the height and width of a "square" on your graphics screen, you may use these measurements to correct the aspect ratio.

Would you like to do so? <N>

When you first configure a display device, you should accept the default response of N for no change to the aspect ratio. If you later find that drawings do not appear true, adjust the aspect ratio as follows:

1. Instruct AutoCAD to draw a square.
2. Use a ruler or tape measure to measure the edges of the square as it appears on the screen. If you have specified a 5-unit-by-5-unit square with AutoCAD, the on-screen result may actually measure 2.0 inches by 2.2 inches. Record these measurements for step 6 below.
3. Exit from the drawing editor.
4. Select Task 3 from the main menu.
5. Answer no, to indicate that you do not wish to specify a different video device at the following prompt:
   
   Your current video display is: <video display>
   Do you want to select a different one? <N>

6. Answer yes to the question about correcting the aspect ratio. AutoCAD then asks for the lengths of the lines you measured on your monitor:
   
   Width of square <1.0000>
   Height of square <1.0000>

Once you have entered your values to correct the aspect ratio, save the new configuration settings. If you find that the visual representation of AutoCAD drawings is still not true, repeat this process until you are satisfied with the results.

NOTE: If for some reason you want to return to the default aspect ratio, simply respond that you do want to specify a different video device during the configuration routine, but specify the same one that is named as the current setting.
3.2.3 Configure Digitizer

Many digitizers (tablets and mice) are supported by AutoCAD. Task 4 is provided to let you designate from a list of available digitizers which device you have. When you choose one, additional information may be requested. If you have no digitizer, indicate this by selecting the first entry in the list, None.

You will find the list of supported digitizers as well as their configuration and installation requirements in Chapter 6 of this guide.

3.2.4 Configure Plotter

AutoCAD supports several pen and electrostatic plotters. Task 5 of the configuration menu lets you designate which plotter you have. When you select a plotter, AutoCAD asks you to specify the initial values for various plot specifications and parameters. These are described in Chapter 13 of the main AutoCAD Reference Manual. If you have no plotter, indicate this by selecting the first entry in the list, None.

NOTE: You can configure one plotter and one printer plotter (available through Task 6) for use with AutoCAD.

Multipen Plotting with a Single-Pen Plotter

One additional question will be asked if the plotter you choose supports just one pen:

Do you want to change pens while plotting? <N>

If you answer yes, indicating that you may change pens, AutoCAD will pause and you will be prompted to insert a new pen each time one is needed.

Plotter Calibration

The AutoCAD plot routine assumes that your plotter meets the manufacturer's specifications. For instance, a 10-inch line in a drawing plotted at a scale of 1:1 should be exactly 10 inches long on paper. You can adjust for any scaling discrepancy you find when plotting through AutoCAD.

The following prompt appears during the plotter configuration:

If you have previously measured the lengths of a horizontal and a vertical line that were plotted to a specific scale, you may use these measurements to calibrate your plotter.

Would you like to calibrate your plotter? <N>

When you configure a particular plotter for the first time, respond no (to use the default calibration). If you later find that plotted output does not “measure up,” you can reconfigure and change the calibration.

To reconfigure:

1. Create and plot a drawing of a 5-unit by 5-unit square.
2. Measure the lengths of the resulting horizontal and vertical lines on the paper. Use these measurements in step 6 below.
3. Exit from the drawing editor.

4. Return to Task 5 on the configuration menu.

5. Answer no to the question at this prompt:

   Your current plotter is: <name of current plotter>
   Do you want to select a different one? <N>

6. After answering any specific questions about your plotter, answer yes to this question:

   Would you like to calibrate your plotter? <N>

AutoCAD then asks for the horizontal and vertical lengths of the lines you measured, along with the correct length for each. The prompt sequence is as follows:

   Enter measured length of horizontal line <1.0000> (enter measurement from step 2)
   Enter correct length of horizontal line <1.0000> (enter 5 for a five-unit square)
   Enter measured length of vertical line <current> (enter measurement from step 2)
   Enter correct length of vertical line <current> (enter 5 for a five-unit square)

If your original measurements were not accurate enough, you can repeat this process until you are satisfied with the appearance of the plot.

NOTE: If for some reason you want to return to the default calibration initially configured for your plotter, simply reconfigure and tell AutoCAD that you want to choose a new plotter, then select the same one. This will reset the calibration to its initial value.

Pen Motion Optimization

AutoCAD can perform various optimizations when plotting in order to minimize wasted pen motion and reduce plot time. If you use Task 2 to allow detailed configuration and then reconfigure AutoCAD for your plotter, you can specify the plot optimization level. The following menu is displayed:

   The pen motion optimization can be selected from the following list. Higher numbers represent more optimization.

   0. None.
   1. Endpoint swap only.
   2. Pen sorting + endpoint swap.
   3. Pen sorting + endpoint swap + limited motion optimization.
   4. Pen sorting + endpoint swap + full motion optimization.

Select degree of pen motion optimization, 0 to 4 <current>:

The default setting is 4, the highest level of optimization. However, in some cases optimization can be counterproductive depending on the plotter's speed, the computer's speed, and the plotter's pen-change mechanism.
3.2.5 Configure Printer Plotter

AutoCAD supports several printer plotters. Task 6 of the configuration menu allows you to select your printer plotter from the list of available devices. When you do, AutoCAD asks you to specify the initial values for various plot specifications and parameters. These are described in Chapter 13 of the main AutoCAD Reference Manual. If you are not using a printer plotter, indicate this by selecting None from the list of devices.

Task 6 for printer plotters follows the same set of prompts as Task 5 for plotters. You can calibrate the printer plotters as described above for pen plotters.

**NOTE:** You can configure one plotter (through Task 5) and one printer plotter for use with AutoCAD.

3.2.6 Configure System Console

This is Task 7 of the configuration menu. This option is not used because the IBM PS/2 system and COMPAQ system consoles have no configurable options.

3.2.7 Configure Operating Parameters

This is Task 8 of the configuration menu and displays the following submenu when selected:

**Operating parameter menu**

0. Exit to configuration menu  
1. Alarm on error  
2. Initial drawing setup  
3. Default plot file name  
4. Plot spooler directory  
5. Placement of temporary files  
6. Network node name  
7. AutoLISP feature  
8. File name case  

**Enter selection <0>:**

**Alarm on Error**

If you want to hear an alarm whenever AutoCAD detects an invalid entry, you can enable it using this subtask.

**Initial Drawing Setup**

This subtask allows you to specify the default prototype drawing for creation of new drawings:

**Enter name of default prototype file for new drawings  
or . for none <current>:**

The AutoCAD default prototype drawing is `acad.dwg`. You can always override the prototype drawing during the Create new drawing task on the main menu. If you want to set the default to no prototype drawing at all, enter a single period in response to the prompt.
Plot to File Name

If you choose to output the AutoCAD plot or prplot command to a file, the current drawing name is presented as the default plot file name. Subtask 3 of the operating parameters menu lets you specify a different default plot file name. You can override this default at plot time, of course.

Before you can send the plot file to a plotter through XENIX, the plotter must be installed for XENIX with the /etc/lpinit command. You will need to know the tty device name; /dev/tty1a is the default for the first COM port, /dev/tty2a for the second. And you may need to edit the file /usr/acad/misc/plotter.spl for your plotter. See the section Plot Spooling for more information.

Plot Spooler Directory

If you configure AutoCAD to plot to file and then specify the file name autospool, AutoCAD will queue plots to a user-supplied background spooling program. If you wish, you can use the configuration option described above to set autospool as the default plot file name.

When autospool is specified as the plot file name (either by default or in response to the plot/prplot dialogue), AutoCAD writes the plot to the spooler directory, which you can specify by means of Subtask 4 of the operating parameters menu illustrated above. The default setting is:

/usr/spool/acad/

This default is a directory within the standard XENIX spooling directory. The spooler directory name is used only when AutoCAD is configured to plot to a file and the file name is autospool. This directory must exist prior to plotting, and should not be used for any purpose other than spool files. The user-supplied spooling program can check the contents of the spooler directory periodically, sending and then deleting each file it finds there. If you are not plotting to a file or if the file name is not autospool, AutoCAD ignores the spooler directory name. See the section Plot Spooling in this chapter for more information.

The network node name (described below) is used as the file type for spool files. If the spooler directory is shared by several users, be sure to set a different network node name for each user to avoid file name conflicts.

Your spooling program should ignore any files with names beginning with the dollar sign character ($). AutoCAD uses that character when writing the spool file and removes the $ files when plotting is complete. Plot and prplot files are differentiated by the first letter of the final file name — v indicates vector plot files and r indicates raster prplot files. The remainder of the file name is based on the current time. See the section Plot Spooling in this chapter for additional information on AutoCAD spooling features.

Placement of Temporary Files

This subtask allows you to designate which directory will contain temporary files when AutoCAD automatically writes a portion of a drawing to disk. If you have a large amount of random-access memory (RAM) and swap space available on your computer, this will seldom occur because the entire drawing can fit either in RAM or in the swap area. If AutoCAD runs out of swap space, temporary files are created. These files always have the same names and by default are placed in the current drawing directory. It is therefore possible for one user’s temporary files to overwrite those of another user in certain network configurations. To avoid this, each user should configure a different directory for his temporary files. The following prompt appears when this subtask is selected:

Enter directory name for temporary files, or DRAWING to place them in the same directory as the drawing being edited.

<DRAWING>:
AutoCAD/XENIX

To place the temporary files in a user's temporary directory, enter:

```
/usr/john/tmp
```

In the above example, `/usr/john` is the home directory for the user. The `/usr/john/tmp` directory must have been created before AutoCAD tries to access it, and it should have enough free space to accommodate one copy of the final drawing file. More space will be needed for extended editing sessions with the undo function enabled or for sessions in which a majority of the entities in a drawing are altered. Running out of space in the temporary directory will cause AutoCAD to abort with a disk full error message, but you will be given a chance to save your changes.

When the original drawing file resides on a network file server, you can improve the speed of AutoCAD by placing the temporary files in a directory on the local network node. When combined with the unique `network node names` discussed in the next section, this technique permits multiple users on a network to edit different drawings at the same time in the same server directory.

When you plot or printer plot from the AutoCAD main menu, temporary files are placed in the current directory if no temporary directory is specified.

To return to the default file placement, enter:

```
drawing
```

NOTE: This directory setting does not affect the placement of the following temporary files:

- Files that have the suffix `.sa`. This includes the file `ef.sa` that becomes the final drawing file when you end an editing session. The final drawing is always placed in the same directory as the original drawing.
- Spacer files that allocate blocks of memory for use by AutoCAD. In XENIX, these files have the general name `spxxxxxx.sa`, where `xxxxxx` is an automatically assigned number.

See the following section, `Network Node Name`, for more information.

**Network Node Name**

The temporary file directory mechanism described above lets AutoCAD run in a network environment by segregating most of its temporary files on a user-by-user basis. A few files must reside in the drawing directory, however; for this reason, another approach is needed to ensure that multiple users can edit different drawings in the same directory without interfering with each other.

Using Subtask 6 on the operating parameters menu, each user in the network can configure AutoCAD to use a different `network node name`. This name is a string, one to three characters long, suitable for use in a file name. It need not match any names used for similar purposes by other software. The string `acs` is offered as the default node name. The network node name becomes the file type for spool files.

Specific uses for the `network node name`:

- The network node name becomes the file name suffix for spool files.
- It is used as a prefix on the temporary files that reside in the drawing directory. Such files also have the suffix `.sa`. For example, the file that eventually becomes the final drawing file is named `<node>ef.sa`, where `<node>` represents the specific node name.
AutoLISP Feature

Subtask 7 allows you to enable or disable the AutoLISP® feature. AutoCAD prompts:

Do you want AutoLISP enabled? <current>

Reply yes or no. The current setting is offered as the default response.

NOTE: With AutoLISP enabled, AutoCAD occupies more memory than with it disabled. If sufficient memory is not present when AutoCAD is executed, a message will be printed and AutoLISP will be disabled for that execution. This will happen every time you execute AutoCAD, unless additional memory is made available or you use this subtask to explicitly disable AutoLISP. This situation rarely occurs when running XENIX.

File Name Case

Subtask 8 will force all file names within AutoCAD and LISP functions to lowercase letters. It is provided primarily to make it easier to use drawing files and LISP programs created under DOS, which often contain embedded file names in uppercase letters.

XENIX file names are normally lowercase, and AutoCAD will automatically search for the file in lowercase letters. It will therefore not be able to find your file if you have used uppercase letters to name it.

Do you want all file names forced to lower case? <N>

NOTE: This option will not change path or directory names to lowercase, only file names. File names specified with the files and shell commands will not be changed to lowercase.

If you wish to use this option, you must enter yes at the prompt.

Error Recovery

Although AutoCAD attempts to validate the choices you make and provides reasonable defaults, mistakes can occur. Therefore, three levels of error recovery are provided.

- Entering a $CTRL$ $C$ during any configuration task discards all changes made since you selected that task and returns to the most recent menu.

- Upon exiting the configuration menu, you are asked whether you really want to save the new configuration.

- Configuration data (device selections, operating parameters, and so on) are kept in a file on your hard disk named acad.cfg. If you are updating an existing configuration, the old file is retained with its name changed to acad.bak. If you produce a bad configuration, you can delete the acad.cfg file, rename acad.bak as acad.cfg, and start over.

Configuration File

When you configure AutoCAD, the configuration information (device selections, operating parameters, etc.) is stored in a special configuration file called acad.cfg. The configuration file is placed in the directory from which you initially invoked AutoCAD. If AutoCAD doesn't find the file acad.cfg in the current directory, it will look in the configuration directory (as defined by the ACADCFG environment variable). If the configuration file isn't
found, AutoCAD performs an initial configuration. For more details, see Appendix B in the main Reference Manual on *Maintaining Multiple AutoCAD Configurations*.

### 3.3 Testing the Configured Version

Once the configuration process is complete, you can test AutoCAD using the sample drawings provided.

**Video Display**

1. Go to the main menu.
2. Select Task 6, *File Utilities*.
3. Select Task 1, *List Drawing Files*, to see the names of the sample drawings available.
4. At the prompt *Enter drive or directory*, type:

   ```
   /usr/acad/acad
   ```

5. Select Task 0, *Exit File Utility Menu*, to return to the main menu.
7. At the prompt *Enter NAME of drawing*, type:

   ```
   /usr/acad/acad/colorwh
   ```

The drawing editor should start displaying the AutoCAD Color Wheel on your monitor. At this point, you know that AutoCAD is properly configured for your video display. When the drawing is completely regenerated, the *Command:* prompt appears.

**Pointing Device**

1. If you have configured a pointing device, try it. Crosshairs should appear on the screen and follow the movements of the pointer.
2. Designate points and select commands from the screen menu. (See Chapter 2 of the main AutoCAD Reference Manual.)

If your pointing device does not work:

1. Verify that it is turned on.
2. See if it is connected to the proper port on the computer.
3. Make sure that the cabling and switch settings match those described in Chapter 6, *Digitizer Options*, in this guide.
Plotter or Printer Plotter

1. Enter the command `plot` or `prplot` to send the current drawing to the device.
2. If the plotter or printer plotter does not work, check the switch settings. Make sure that they are set as indicated in Chapter 7, *Plotter Options*, or Chapter 8, *Printer Plotter Options*, in this guide.
3. Make sure the cable connects the device to the correct port on the computer.

When the plot is complete, AutoCAD will return to the drawing editor. See Chapter 13 of the main AutoCAD Reference Manual for more information on plotting.

To exit to the AutoCAD main menu, enter the `quit` command:

```
Command: quit
```

You can get back to the operating system prompt by selecting menu Task 0. More detailed information on the main menu and use of the drawing editor may be found in Chapter 2 of the main AutoCAD Reference Manual.

Configuration Problems

If any problems arise during these tests, check your configuration. Select the Configure AutoCAD task from the main menu and use its Show Configuration subtask to list the current configuration. If you cannot determine what is wrong, contact your dealer for assistance. (See Appendix E of the main AutoCAD Reference Manual for the information you'll need to provide.)

3.3.1 Configuring Your Tablet Menu

The optional tablet menu, requiring a digitizing tablet and pointing device, can be used in conjunction with the screen menu. The AutoCAD standard tablet template is designed for use on a digitizing tablet with an active area of at least 11 inches by 11 inches. If your tablet is a different size, a drawing of the template (tablet.dwg) is provided in the bonus directory so you can plot it to a scale that will fit. When you configure the tablet menu for the first time, you can use the temporary paper template included in your AutoCAD package. When Autodesk receives your registration card, you will be sent a free, full-size plastic template. The menu areas and number of rows and columns are specific to the AutoCAD template, so if you have another template, configuration may differ. Check your template manufacturer’s documentation for instructions. To configure the tablet menu follow these steps:

1. Attach the template to your tablet so it will not shift during use.
2. From the main menu, bring up a new or existing drawing.
3. At the command prompt, enter this series of choices:

```
Command: tablet
Option (ON/OFF/CAL/CFG): cfe
Enter number of tablet menus desired (0-4) <0>: 4
```

4. You are next asked to pick three points on the template for the first menu area. These points are illustrated in the following diagram. After picking these points, you are asked for the number of columns and rows. This information is given on the diagram and summarized in a table below. AutoCAD prompts you to repeat this process for each of the four menu areas.
Here are the values AutoCAD asks you to supply for the columns and rows in each menu area:

<table>
<thead>
<tr>
<th>Menu area</th>
<th>Columns</th>
<th>Rows</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>25</td>
<td>7</td>
</tr>
</tbody>
</table>

After you complete the selection of menu areas, AutoCAD prompts you for two points to define the screen area, as shown in the diagram above. This completes the configuration of the tablet menu. For more information on tablet menu configuration, see Appendix A of the main AutoCAD Reference Manual. For details on the tablet command, see Chapter 12 of the main AutoCAD Reference Manual.
NOTE: The tablet menu is designed for use with a puck or a stylus; it will not function with a mouse.

3.4 Running the Slide Show

If you have installed the /usr/acad/slides directory and configured AutoCAD, you can run the AutoCAD slide show. You must be logged on as root or have super user privileges. The file instruct.doc in the slides directory lists the options available while running the slide show. To start the slide show, exit AutoCAD (if it is still running) and move to the slide show directory by entering:

```
   cd /usr/acad/slides
```

Now enter one of the following commands, depending on the type of monitor you have:

```
   acad slide show
   acad slide show1
```

(for color monitors)

(for monochrome monitors)

3.5 Using DOS and XENIX on the Same System

You may have both XENIX and DOS operating systems installed on your hard disk in order to run DOS and XENIX applications on the same computer. XENIX provides many DOS-compatible commands including /usr/bin/doscp, which allows you to copy DOS files to XENIX disks and vice versa. The doscp command supports DOS devices through the following names:

<table>
<thead>
<tr>
<th>Device name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a:</td>
<td>first floppy drive</td>
</tr>
<tr>
<td>b:</td>
<td>second floppy drive</td>
</tr>
<tr>
<td>c:</td>
<td>first DOS partition of hard drive</td>
</tr>
<tr>
<td>d:</td>
<td>first DOS partition of second hard drive</td>
</tr>
</tbody>
</table>

The corresponding XENIX device name (for example, /dev/hd0d) is established in the file /etc/default/msdos.

To copy the drawing file sample.dwg from the first DOS partition of your hard disk, for example, you might execute the following command:

```
   doscp -r c:/acad/dwgs/sample.dwg /usr/john/dwgs
```

This will place the file in the drawings directory in user John's home directory. The file will be named sample.dwg on the XENIX system.

To copy the drawing file nextsample.dwg from XENIX to the first DOS partition of your hard disk, you might execute the following:

```
   doscp -r /usr/john/dwgs/nextsample.dwg c:
```

This will place the file in the root directory on the DOS partition, and will truncate the name to fit the DOS character length; nextsamp.dwg is the file name under DOS.
NOTE: You might enter simply a: rather than c: to indicate the first floppy drive in the examples above. XENIX attempts to read various densities until the diskette is readable.

3.6 File Transfer between DOS Systems and SCO XENIX

Beginning with AutoCAD Release 9, all binary files (.dwg, .mnt, .shx, .sld) as well as ASCII support files (.hlp, .lin, .mntu, .pat, .shp) that AutoCAD reads and writes are compatible across all operating systems on which AutoCAD runs. This section outlines procedures you should follow if you want to transfer AutoCAD drawings and support files between the XENIX system and computers running the DOS operating system.

You may access the files directly on another machine over a network or you may move a binary copy of the file from one machine to another with no conversion. Binary files are compatible across different machines only after they have been written with a version of AutoCAD that is Release 9 or later. If you have binary files written by an older version of AutoCAD and you are not able to rewrite them with an appropriate newer version of AutoCAD, see below for details of interchanging them.

3.6.1 Moving Pre-Release 9 Drawing Files from DOS to SCO XENIX

Pre-Release 9 AutoCAD drawing (.dwg) files are hardware specific, and cannot be directly interchanged between DOS computers and XENIX. The simplest procedure is to edit the drawing file with a version of AutoCAD that is Release 9 or later, and then move a binary copy of the file. If you are unable to edit the drawing with a version of AutoCAD that is Release 9 or later, create a drawing interchange (.dxf) file by using the AutoCAD dxfout command. The ASCII .dxf file can then be moved to the other computer and the drawing can be re-created using the dxfin command.

NOTE: If extreme accuracy is important, select 16-digit output when using the dxfout command. However, the .dxf files will be larger than ones created using the default 6-digit output accuracy.

For example, if you have a Pre-Release 9 DOS drawing named house.dwg that you want to move to XENIX, enter the following commands on your DOS machine:

```
 acad
 2
 house
 dxfout
 house
 16
 quit
 0
```

Now move house.dxf to the XENIX system by whatever means you have (the XENIX doscp command, NFS, Ethernet, a communications program, etc.). Although most communications programs automatically strip the extra carriage returns that were inserted by DOS, this need not be done (it is no longer necessary to use the stripcr program previously used with older versions of AutoCAD). Once the .dxf file is on the XENIX system, you can create a drawing file from it, using the following commands:

```
 acad
 1
 house
 dxfin
 house
```

Now move house.dxf to the XENIX system by whatever means you have (the XENIX doscp command, NFS, Ethernet, a communications program, etc.). Although most communications programs automatically strip the extra carriage returns that were inserted by DOS, this need not be done (it is no longer necessary to use the stripcr program previously used with older versions of AutoCAD). Once the .dxf file is on the XENIX system, you can create a drawing file from it, using the following commands:

```
 acad
 1
 house
 dxfin
 house
```

Now move house.dxf to the XENIX system by whatever means you have (the XENIX doscp command, NFS, Ethernet, a communications program, etc.). Although most communications programs automatically strip the extra carriage returns that were inserted by DOS, this need not be done (it is no longer necessary to use the stripcr program previously used with older versions of AutoCAD). Once the .dxf file is on the XENIX system, you can create a drawing file from it, using the following commands:

```
 acad
 1
 house
 dxfin
 house
```

Now move house.dxf to the XENIX system by whatever means you have (the XENIX doscp command, NFS, Ethernet, a communications program, etc.). Although most communications programs automatically strip the extra carriage returns that were inserted by DOS, this need not be done (it is no longer necessary to use the stripcr program previously used with older versions of AutoCAD). Once the .dxf file is on the XENIX system, you can create a drawing file from it, using the following commands:

```
 acad
 1
 house
 dxfin
 house
```
NOTE: Drawings created on MS-DOS®/PC-DOS sometimes contain uppercase names for shape files (TXT.SHX) and menu files (ACAD.MNU). However, on XENIX systems, these files will usually have lowercase names (txt.shx and acad.mnu). Thus, during a dxfin command, AutoCAD will indicate that it is unable to find certain files, and will request that you enter a new name. At that point, you can simply reenter the name in lowercase. As an alternative, during AutoCAD configuration, you may use the Configure operating parameters item on the configuration menu, and then select the File name case option to specify that all file names should be forced to lowercase.

3.6.2 Moving Support Files from DOS to SCO XENIX

Any AutoCAD ASCII support file (.hip, .lin, . lsp, . mnu, . pat, . scr, . shp, etc.) can be moved from one system to another with no conversion. Binary files (.dwg, .hdx, .mnx, . shx, . slx, etc.) created with a version of AutoCAD that is Release 9 or later can also be moved from one system to another. AutoSketch 1.02 slide files and AutoShade 1.0 slide files are not compatible with Release 9 and later; however, AutoSketch 1.04 and AutoShade 1.1 slide files are compatible.

Binary files created with a pre-Release 9 AutoCAD on a DOS computer cannot be read by AutoCAD under XENIX and must be re-created. Compiled menu files (.mnx) and the help index file (.hdx) will be automatically created by AutoCAD from the original .mnu and .hip files, respectively. Shape files (.shx) must be explicitly created from the original .shp files by selecting main menu Task 7 (Compile shape file). To re-create a slide (.slx) file, move the original drawing file to XENIX via the dxf mechanism described above. Then use the mslide command to make the slide.

3.7 Plot Spooling

3.7.1 Through AutoCAD

If AutoCAD is requested to create a plot or printer plot spool file with the file name autospool, AutoCAD places the plot file in the user-specified spooler directory (the default is /usr/spool/acad/ and can be changed using the Plot spooler directory item listed in Configure Operating Parameters in this chapter). After the plot or printer plot file is written, AutoCAD searches for the environment variables ACADPLCMD (for plotters) and ACADPPCMD (for printer plotters). If the environment variable is found, the first occurrence of %s in the variable string is replaced with the full name of the plot/printer plot file just created. (Technical note: the environment string is used as the format string of a C programming language printf statement. Consequently, all other percent characters are stripped.) AutoCAD then submits the resulting string to the AutoCAD shell command for execution by the operating system. This allows either a XENIX command or a script file to be invoked to send the plot or printer plot to the appropriate output device. Using the Bourne shell, the following XENIX commands will send AutoCAD output autospool to the default printer.

ACADPLCMD="lpr %s"
export ACADPLCMD

Using the C Shell, the same XENIX command is:

setenv ACADPLCMD "lpr %s"

To use plot spooling, you must either ensure that the AutoCAD default spool directory (/usr/spool/acad) exists and that you can write to it, or you must change the default spool directory to another directory by using the AutoCAD configuration Operating parameters menu (configuration Subtask 8) and selecting item 4, Plot
spooler directory. For additional information on AutoCAD plot spooling, see the section *Plot Spooler Directory* in this chapter.

### 3.7.2 Through XENIX

If you have elected to plot or prplot to a file, you will need to install your plotter in the following fashion to be able to send the plot files to the plotter from a XENIX prompt. The plotter must be installed for XENIX with the `/etc/lpinit` command. You will need to know the tty device name; `/dev/tty1a` is the default for the first COM port, `/dev/tty2a` for the second. And you may need to edit the plotter interface file `/usr/acad/misc/plotter.spl` for your plotter. See “Initializing the Line Printer,” later in this section.

#### Editing the Interface File

The `/usr/acad/misc/plotter.spl` file contains information about your plotter’s hardware configuration including baud rate, parity, stop bit, and handshake. Have your system administrator or any user with super user privileges edit this file if necessary. You may need to refer to the plotter’s documentation to properly edit this file.

The line containing hardware configuration information appears after the comments:

```
# If it is necessary to change the baud rate or other stty settings for
# your plotter modify the following line:
```

The line itself reads as follows in the original file:

```
stty 9600 evenp -cstopb cread clocal ixon cr3 0<&1
```

This indicates that the plotter is operating at 9600 baud with 7 data bits, even parity, one stop bit, XON/XOFF handshake, and a 0.15-second delay after carriage returns.

Baud rate is indicated by “9600” in the above line. If this is not the correct baud rate for your device, you may substitute 50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, or 4800.

Parity is indicated by “evenp” in the above line. Valid entries include:

- `evenp`: 7 data bits, even parity
- `oddp`: 7 data bits, odd parity
- `parity`: 8 data bits, no parity.

Stop bit may be set to “-cstopb” for one stop bit or “cstopb” without the leading hyphen to indicate two stop bits.

Handshake may be set to any of the following:

- `ixon`: XON/XOFF
- `ixany`: resume output on receipt of any character
- `ixon`: no XON/XOFF protocol.

To specify delay of transmission following a carriage return, use one of the following:

- `cr0`: no delay
- `cr1`: delay dependent on current column position
Configuring AutoCAD

If your plotter has an automatic sheet feed and no delay is required for paper changes, you may want to insert a "#" at the start of the line "disable -r 'Paper change' $printer" so that the printer does not have to be enabled after every plot. If your printer requires a delay for paper changes, leave this line unedited. After inserting paper to reset the plotter, enter the command:

```enable <plottername>```

Initializing the Line Printer

To install the plotter, have your system administrator or any user with super user privileges execute the line printer installation routine as follows:

```/etc/lpinit```

You will be offered a list of options including adding a new printer and reconfiguring an existing printer. Select the option for adding a new printer, and then specify that it is a serial printer. Next, a prompt appears requesting the tty device associated with the plotter followed by a prompt requesting a name for the plotter. You may have multiple plotters installed, and each will require a unique name. Lastly, a list of supported devices appears. Rather than selecting one of these devices, enter the path and file name for the plotter.spl interface. For example, if your plotter is connected to /dev/tty2a, respond to the prompts as follows:

1 (add a new printer)
2 (specify serial printer)
tty2a (specify device name)
acad (enter a name for this plotter)
/usr/acad/misc/plotter.spl (specify the full pathname for the interface program)

You may then accept this plotter as the default or specify a new one and quit the line printer initialization routine.

Plotting from Files

When you have files to send to the plotter through XENIX, use the Ip command. Specify the plotter name and the file to be plotted as in the example below:

```Ip -dacad columbia.plt```

Note: You must enable your plotter for each subsequent plot file you want plotted. See the section above on "Editing the Interface File." Use the following command format:

```enable <plottername>```

Other options for the Ip command can be found in your XENIX User's Reference.

3.8 Shell Command

Any XENIX command may be invoked within AutoCAD by using the shell command. From the AutoCAD Utility screen menu, the shell command is listed under External Commands. For XENIX systems, shell and sh are identical commands. The other external commands are for MS-DOS® systems and they respond with
AutoCADISCO XENIX

Unknown command if selected. All commands issued by the AutoCAD shell command are passed to /bin/sh unless an environment variable SHELL is defined, in which case the command is passed to the program defined by that variable. While the shell command is in progress, AutoCAD will be inactive and all input and output will go to the original window from which AutoCAD was invoked. If you wish to enter multiple XENIX commands, press ⍵ at the shell command prompt. AutoCAD then displays:

Type “exit” from the parent window to return to AutoCAD

You can now enter multiple commands, just as you would at the normal XENIX prompt. To return to AutoCAD, type the following text in the window from which AutoCAD was originally invoked:

```
exit
```

NOTE: The shell command does not work if AutoCAD is started by a script file, or in background by `acad&`. This is because the parent window is no longer accessible for output. To regain control, you must kill the shell created by AutoCAD.

### 3.9 Shell Expansion of File Names

When you enter a file name for AutoCAD, it examines the name for the following shell metacharacters:

```
- \ $ [ ] * ? ' < > "
```

If any metacharacter is found in the name, the file name is sent to the shell (/bin/sh or the program defined by the SHELL environment variable) for metacharacter expansion. This feature coupled with the AutoCAD `setenv` command described below allows you to create short expressions that can be used in place of very long file names.
Chapter 4
Performance

This chapter describes a number of things you can do to optimize or enhance the performance of AutoCAD on your computer.

4.1 Environment Variables

The table below lists the environment variables which affect AutoCAD’s performance.

<table>
<thead>
<tr>
<th>Environment Variable</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACAD</td>
<td>tells AutoCAD which directory to search for support files if they are not in the current directory. For more details see Appendix B of the main AutoCAD Reference Manual and the information later in this section.</td>
</tr>
<tr>
<td>ACADCFG</td>
<td>establishes where AutoCAD will store the hardware configuration files created when you configure AutoCAD. For more details see Appendix B of the main AutoCAD Reference Manual and the information later in this section.</td>
</tr>
<tr>
<td>ACADMAMEX</td>
<td>specifies the maximum amount of memory in bytes that the pager will request from the operating system (not including control structures). For more details see the section “AutoCAD Pager” later in this Chapter.</td>
</tr>
<tr>
<td>ACADMAXPAGE</td>
<td>specifies the maximum number of bytes to write in the first page file. For more details see the section “AutoCAD Pager” later in this Chapter.</td>
</tr>
<tr>
<td>ACADPAGEDIR</td>
<td>specifies the directory where the first page file will be created. For more details see the section “AutoCAD Pager” later in this Chapter.</td>
</tr>
<tr>
<td>ACADPLCMD</td>
<td>places the name of a plot file (created using the autospool file name) in the variable string so that you can use a XENIX command or script file to send the plot to an appropriate plotter. For more details see the section “Plot Spooling” in Chapter 3.</td>
</tr>
<tr>
<td>ACADPPCMD</td>
<td>places the name of a printer plot file (created using the autospool file name) in the variable string so that you can use a XENIX command or script file to send the printer plot to an appropriate printer plotter. For more details see the section “Plot Spooling” in Chapter 3.</td>
</tr>
<tr>
<td>XADI</td>
<td>tells AutoCAD where the XENIX ADI driver can be found. For more details see “Configuring XENIX ADI Display” in Chapter 5.</td>
</tr>
</tbody>
</table>
4.1.1 Setting Environment Variables

You can set environment variables from the XENIX prompt and from the drawing editor command line in AutoCAD.

XENIX Command Format

To set environment variables from a C Shell, use the following command format:

```
setenv <variable name> <variable value>
```

For more details on the `setenv` command refer to the built-in commands under `csh` in your SCO XENIX System V Operating System User’s Reference.

To set environment variables from a Bourne or Korn Shell, use the following command format:

```
<variable name>=<variable value>
export <variable name>
```

AutoCAD Command Format

To set environment variables from the AutoCAD drawing editor command line, use the following command format:

```
setenv
Enter variable name: <variable name>
Enter value: <variable value>
<variable name>=<variable value>
```

After entering the `setenv` command, AutoCAD prompts for the variable to be defined and the value of the variable:

```
Enter variable name: (type name and press enter or spacebar)
Enter value: (type value and press enter)
```

The `Enter variable name`: prompt is satisfied at the first carriage return or space; the `Enter value:` prompt requires a carriage return (to allow embedded spaces). When entered, the two parts are connected with an equal sign as in the `<name>=<value>` and put into the AutoCAD local environment. This environment will be passed to any child processes, but will be discarded when AutoCAD exits. Shell expansion of the value is performed before the string is placed in the environment. The resulting environment string is printed so the user can see it fully expanded. Due to the way XENIX implements environment variables, it is not possible to reclaim the memory acquired to hold the new environment string. Unless you create a huge number of environment strings (with AutoLISP for example), this should not noticeably affect performance.

Here is an example of how to use `setenv` to create an alias for a path name by defining a variable (in this case "a") by a specific path name ("/usr2/home/acad/acad"). From the AutoCAD drawing editor, enter:

```
setenv
Enter variable name: a
Enter value: /usr2/home/acad/acad
a=/usr2/home/acad/acad
```
Following this command, $a can be used when AutoCAD is requesting a file name. For example, in the save
command, you could enter:

File name <X>: $a/mydwg

to save the current drawing in /usr2/home/acad/acad/mydwg.dwg.

4.1.2 ACADCFG

Create a drawings directory (for example, /usr/john/dwgs) for storage of your own drawings. Make your drawings
directory the current working directory before executing AutoCAD. If you want to be able to execute AutoCAD
from various directories while using a common configuration, use the ACADCFG system environment variable.
See Appendix B of the main AutoCAD Reference Manual for details. If you are using C Shell, enter the follow­
ing:

setenv ACADCFG /usr/acad/acad

If you are using Bourne Shell or Korn Shell enter:

ACADCFG=/usr/acad/acad
export ACADCFG

4.1.3 ACAD

The environment variable ACAD tells AutoCAD which directory to search for support files (prototype drawing,
text fonts, menus, lisp, and drawings to be inserted) if they are not in the current directory. If you are using C
Shell, enter the following:

setenv ACAD /usr/acad/acad

If you are using Bourne Shell or Korn Shell enter:

ACAD=/usr/acad/acad
export ACAD

4.2 Additional Memory

Although AutoCAD will run on a XENIX 386 system equipped with 4 megabytes of memory, additional memory
will permit larger drawings to be edited with fewer disk accesses. We recommend a minimum of 6 megabytes.

NOTE: Running several processes, or two sessions of AutoCAD, at the same time takes up much of
the available memory space and can degrade the performance of AutoCAD.

4.2.1 AutoCAD Pager

The AutoCAD pager for XENIX divides every file into pages; the memory for the pages is allocated from the
operating system. The file data is read and written between AutoCAD and the system in memory pages.

When a user-specified amount of memory has been acquired for pages or an error occurs in an attempt to
allocate more memory from the system, the pager takes the least recently used page and writes its data out to a
AutoCADISCO XENIX

page file. You can specify the location and maximum size of this page file with the environment variables described below.

When this page file fills, a second page file is created. You can specify a RAM disk as the first page file and a regular file as the second page file. AutoCAD can have a maximum of 256 files open at once.

Variables that Control the Pager

Although under normal conditions you will not need to use them, there are three environment variables that enable you to control the AutoCAD pager, ACADMAXMEM, ACADPAGEDIR, and ACADMAXPAGE. For information on setting environment variables see the section "Environment Variables" at the beginning of this Chapter.

ACADMAXMEM specifies the maximum amount of memory in bytes that the pager will request from the operating system (not including control structures). When this number is exceeded or a request for more memory fails, the pager will begin writing data to the first page file and reusing the existing page buffers. You need to set ACADMAXMEM only when you want to restrict the amount of memory that AutoCAD uses for paging, since AutoCAD will use all available memory for paging if ACADMAXMEM is not set.

ACADPAGEDIR specifies the directory where the first page file will be created. This allows you to place the first page file on a RAM disk or other "fast" device if one is available. If ACADPAGEDIR is not specified, the temporary file directory (as specified with Task 5 of the Operating parameters configuration menu) is used. If the temporary file directory is not specified, then the current directory is used.

ACADMAXPAGE specifies the maximum number of bytes to write in the first page file. Normally you do not need to set this variable, since if it is not specified, the first page file is used until it is full and then the second page file is created. When the second page file is needed, it will be created in the temporary directory if one is specified; otherwise, it is created in the current directory. One reason to use ACADMAXPAGE, however, is to limit use by AutoCAD of a fast device (such as a RAM disk) so that other programs can also use the device.

4.3 Out of RAM

If you get out of RAM messages while running AutoCAD with large drawings, it is probably because your XENIX swap partition is not large enough. The actual swap size required depends on the size of drawings you edit and how many other programs or windows are running at the same time as AutoCAD. In most cases a 20-megabyte swap partition is sufficient. The swap file space required by AutoCAD can be very roughly computed as 3 megabytes plus 3 times the drawing file size. Thus a 4-megabyte drawing file would require approximately 15 megabytes of allocable process space in the swap file. You can use the command /etc/djyyy -b 1 -c 1 to obtain information on the swap space and amount of memory allocable by a process.

4.3.1 Increasing Swap Space

To increase the amount of space in the swap partition, you must reload the operating system. As a temporary measure, you can create swap file space by terminating as many processes as possible. You can also control the amount of space used by AutoCAD by using the environment variable ACADMAXMEM described in the previous section Additional Memory.

4.4 Killing AutoCAD

If AutoCAD must be killed for any reason (for example, an infinite loop in a user's AutoLISP program), always kill the program acadl first, followed by acad. "acadl" is the AutoLISP child process of AutoCAD. If not killed before AutoCAD, it may remain as an "orphan" or "zombie" process. Orphan processes, in our experience, tend...
to seriously degrade system performance. Once an orphan is created (that is, the parent process has died before
the child), only rebooting the computer will eliminate it.

4.5 Digitizer Considerations

If you have configured a digitizer other than the XENIX mouse, AutoCAD will poll both the digitizer and the
keyboard while in the drawing editor. This can be significant in two cases: first, if you are running other processes
at the same time as AutoCAD, you may notice a decrease in their performance since AutoCAD will consume
CPU time as it polls; second, if your digitizer is configured but not functioning (for example, if it had a broken
digitizer or bad wiring), the response by AutoCAD to your keyboard input will be very slow. These considerations
do not apply when no digitizer is configured.

4.6 Multiuser Considerations

4.6.1 Multiple Copies of AutoCAD

You can run multiple copies of AutoCAD on separate 386 computers linked together on a network. If you do
this, you should be aware that AutoCAD locks its files when writing (for example, during the save or end
command). However, in the current version, the drawing file is not locked while you are in the drawing editor, so
a second user can edit the same drawing. When the drawing is saved, AutoCAD creates a new drawing file. In the
case of two users editing the same drawing, the user who last saves his drawing will destroy the previous user’s
changes.

NOTE: AutoCAD is not a multiuser product and the current license agreement allows only one user
on one computer at a time. XENIX is a multiuser operating system and you can have nodes attached
to your XENIX server. It is required that you execute AutoCAD on the host or server machine. You
can run other programs on remote terminals while running AutoCAD at the server using the local
graphics display and serial input/output for digitizer and plotter support.

4.7 Using AutoCAD and Other Graphics Programs

Because AutoCAD uses the graphics devices so intensively, we do not recommend running other graphics pro-
grams simultaneously with AutoCAD.

4.7.1 AutoCAD and AutoSolid

If you intend to run AutoCAD and AutoSolid™ on the same system, please note that AutoSolid Release 3.1 and
earlier support a smaller number of video and pointing devices. You will need to be sure that your hardware
meets the requirements of both AutoCAD and AutoSolid before installing them on the same system. Please make
sure that your computer has a minimum of 8 megabytes of memory, and 100 megabytes of disk space to maintain
the data for both programs. Note that AutoSolid requires sufficient swap space and does not have the paging
environment variables that AutoCAD provides with which you can bypass swap requirements.

Sharing Files

AutoCAD and AutoSolid share data through IGES and DXF™ transfers. The DXF transfer provides a means for
either two-dimensional or three-dimensional data to be transferred from AutoSolid to AutoCAD for dimension-
ing, plotting, and so on. The DXF information that AutoSolid prepares may be composed of two- or three-
dimensional lines, circles, and polylines, or it may be a surface model composed of three-dimensional face
entities.
AutoCAD/SCO XENIX

AutoSolid accepts only two-dimensional data as input into its Sweep Contour Grid. Contours may then be extruded or rotated into a three-dimensional solid. AutoSolid can analyze the solid's Mass Properties or stresses and displacements with various user-defined loads and boundary conditions. The solid may also be shaded. Note that IGES data was not valid for input prior to AutoSolid 3.1.

With the AutoSolid Programming Interface (API), a sample conversion routine is provided for three-dimensional DXF input into AutoSolid. This conversion routine is provided only as a sample and is not supported by Autodesk, Inc.

4.8 Directory Usage

XENIX permits you to have hundreds of files in one subdirectory, but file searches take longer and longer as you add more files. Therefore, you may wish to take advantage of the XENIX tree-structured directories when using AutoCAD. By setting the appropriate environment variables, you can tell AutoCAD to find its support and configuration files in particular directories. See Appendix B of the main AutoCAD Reference Manual for details.

4.9 Drafting Conventions

Here are some techniques you can employ to ensure maximum performance when using AutoCAD.

4.9.1 Using Layer Freeze/Thaw

You can use the layer freeze command to deactivate layers containing details irrelevant to your current editing work. When regenerating a drawing, AutoCAD skips the objects on frozen layers. This can speed up the regen process considerably, since AutoCAD doesn't have to calculate where the frozen objects should appear, clip them at the screen boundaries, or draw them.

4.9.2 Setting Reasonable Drawing Limits

Even if you have disabled checking of the drawing limits, set the limits to reasonable values for the type of drawing you are doing. This will help AutoCAD run efficiently, because the limits are used in calculations for fast rejection of objects to be drawn.

4.9.3 Using Timesaving Modes

Certain AutoCAD commands will enable or disable modes that can save you time during drawing or plotting. These include viewres, fill, and qtext. See the AutoCAD Reference Manual for more information on these commands.
Chapter 5

Video Display Options

This chapter describes the video display configurations supported by AutoCAD on XENIX systems. The AutoCAD software must be informed about your equipment; this process is described in Chapter 3, Configuring AutoCAD.

Due to changes in design introduced by the PS/2, graphics adapter cards used with these systems must be made specifically for the PS/2 in order to physically fit into the unit and to function correctly. Therefore many of the video display devices listed in this chapter may not currently function with the PS/2.

5.1 ADI Display

The ADI Display interface is a generic (that is, device independent) driver that communicates with an installed ADI Display driver. If your display is supported via the ADI interface, instructions on how to prepare your system for use with this display should be included with the ADI driver documentation provided by the board manufacturer.

ADI devices are not supported by Autodesk technical support. If problems arise from the use of one of these devices, please contact the manufacturer of the device rather than Autodesk.

5.1.1 Configuring ADI Display

Before you can configure AutoCAD to use an ADI Display driver, copy the XENIX ADI driver file to any location on your hard disk. Then set the AutoCAD XADI variable so that the display driver can be found.

NOTE: If you want to use AutoCAD in another XENIX window, you must set the XADI variable in that window. The default setting for the XADI variable is "/usr/acad/adikit/adi_display." If you reboot or logout of the XENIX window, you will have to reset the AutoCAD XADI variable or add the appropriate statement to your .profile or .login file so that the path variable is set automatically whenever you log on.

Setting the XADI Variable

If you are using C Shell, after copying the ADI driver to your hard disk, use the following command format:

```
setenv XADI <path name/driver name>
```

For example, to set the path name "/usr/acad/adikit" for the driver "adi_display", you would give the following command:

```
setenv XADI /usr/acad/adikit/adi_display
```

If you are using Bourne Shell or Korn Shell use the following command format:

```
XADI=<path name/driver name>
export XADI
```
For example, to set the path name "/usr/acad/adikit" for the driver "adi_display", you would give the following command:

```
XADI=/usr/acad/adikit/adi_display
gexport XADI
```

### 5.2 Hercules Graphics Card

In this single-screen configuration the monochrome Hercules® Graphics Card, or Hercules Graphics Card Plus, is used for both graphics (at 720 x 348 pixel resolution) and text. The Hercules Graphics Card supports the AutoCAD Advanced User Interface™ (AUI™). (The Hercules card will not operate if either the IBM Monochrome Display Adapter or the IBM Color/Graphics Display Adapter is in the computer.)

If you want to use AutoCAD in this configuration, you must first make sure the Hercules Graphics Card is installed, and that any IBM Display Adapters that may be present have been removed. Clear directions are given in the Hercules Operation Manual.

### 5.3 IBM Enhanced Graphics Adapter (EGA)

AutoCAD uses the IBM Enhanced Graphics Adapter (EGA) in single-screen mode. Your EGA card must have at least 256K of memory (most EGA cards have that much memory). The IBM EGA supports the AutoCAD Advanced User Interface (AUI).

The IBM EGA comes with an installation guide that describes the settings of the required system unit board switches, and of four switches located on the adapter itself. The system unit board switch settings may not be the same as those given at the beginning of this chapter.

**IMPORTANT:** Set these switches according to the information in the manufacturer’s documentation.

AutoCAD on XENIX only supports the IBM Enhanced Color Display for attachment to the EGA. Of the three monitor types listed during this part of the video display configuration, select monitor type 3.

AutoCAD continues to prompt you to enter information, but the exact sequence of questions will vary slightly depending upon your answers to earlier questions and whether or not you selected Allow detailed configuration. Most of the questions prompt you to express color preferences (or intensity levels, if configuring a monochrome display) for the various areas of the display screen. Unless you select Allow detailed configuration, you are asked the following questions:

**Do you want dark vectors on a light background field? <Y>**

**Do you want to supply individual colors for parts of the graphics screen? <N>**

Answer yes to the first question to instruct AutoCAD to use a light background for the graphics screen and to draw AutoCAD color 7 (white) vectors in black. Reversing colors in this way produces a screen image that approximates a black-ink drawing on white paper. Some display monitors have difficulty showing black lines on a light background, especially if the lines are vertical or nearly vertical. If vertical black lines fade into the background on your display, answer no to the first question.

**NOTE:** If you select Allow detailed configuration, you can select any of the available colors or intensity levels for the background color of the graphics screen.
Answer no to the second question to accept the AutoCAD default color assignments for the various screen areas. Answer yes to the second question if you want to select the color of each portion of the graphics display. AutoCAD will present a menu of color numbers for you to use to answer the subsequent prompts. When prompted, select the color you want from the column corresponding to the display you are configuring.

NOTE: If you selected Allow detailed configuration, you will be presented with additional color configuration prompts giving you a wider range of color selections for personal customization.

You can select a color for each of the following portions of the graphics screen:

- The command, menu, and status-line areas at the bottom, right, and top of the screen
- The border lines separating the command and menu areas from the graphics area of the screen
- The menu bar overlaying the status line at the top of the screen
- The pull-down menus below the menu bar
- The dialogue and alert boxes that some commands display in the middle of the screen
- The button outlines within dialogue and alert boxes

You can select two colors for the screen’s text areas: a background color and a text color. If an area has a border or a shadow line, you can choose a color for that as well.

**IBM Enhanced Color Display**

An IBM Enhanced Color Display with an EGA with 256K of memory installed supports 15 colors (plus black) with a 640 x 350 pixel resolution. AutoCAD uses the same color-number assignments for these 15 colors.

**5.4 IBM Video Graphics Array (VGA)**

AutoCAD on XENIX only supports Video Graphics Array (VGA) and EGA resolution displays. This represents a resolution of 640 x 480 pixels and 15 colors (plus black) on color monitors attached to the VGA. The IBM VGA supports the AutoCAD Advanced User Interface (AUI). AutoCAD assigns the following numbers to these 15 colors:

1. Red
2. Yellow
3. Green
4. Cyan
5. Blue
6. Magenta
7. White
8. Dark grey
9. Low intensity red
10. Low intensity yellow
11. Low intensity green
12. Low intensity cyan
13. Low intensity blue
14. Low intensity magenta
15. Light grey

AutoCAD will display all other color numbers as color 15. The exact sequence of configuration prompts will vary, depending upon your answers to earlier questions and whether or not you chose Allow detailed configuration before configuring the VGA. Most of the questions prompt you to express color preferences (or intensity levels, if configuring a monochrome display) for the different areas of the display screen. In any case, unless you selected Allow detailed configuration, the following questions are always asked:

Do you want dark vectors on a light background field? <Y>

Answer yes to instruct AutoCAD to use a light background for the graphics screen and to draw AutoCAD color 7 (white) vectors in black. Reversing colors this way produces a screen image that approximates a black-ink draw-
AutoCADISCO XENIX

ing on white paper. Some display monitors may have difficulty showing black lines on a light background, especially if the lines are vertical or nearly vertical. If vertical black lines fade into the background on your display, answer no to the first question.

NOTE: If you selected Allow detailed configuration, you can select any of the available colors or intensity levels for the background color of the graphics screen.

Do you want to supply individual colors for parts of the graphics screen? <N>

Answer no to accept the AutoCAD default color assignments for the various screen areas. The default colors look good on most displays, but you may want to make different color selections. On monochrome monitors, colors are represented by one of the available intensity levels.

Answer yes to the second question if you want to select the color of each portion of the graphics display. AutoCAD will present a menu of color numbers for you to use to answer the subsequent prompts. When prompted, select the color you want from the column corresponding to the display you are configuring.

NOTE: If you selected Allow detailed configuration, you will be presented with a number of color configuration prompts giving you a wider range of color selections for personal customization.

You can select a color for each of the following portions of the graphics screen:

- The command, menu, and status-line areas at the bottom, right, and top of the screen
- The border lines separating the command and menu areas from the graphics area of the screen
- The menu bar overlaying the status line at the top of the screen
- The pull-down menus below the menu bar
- The dialogue and alert boxes that some commands display in the middle of the screen
- The button outlines within dialogue and alert boxes

You can select two colors for the screen’s text areas: a background color and a text color. If an area has a border or a shadow line, you can choose a color for that as well.

If you selected dark vectors on a light background, AutoCAD will draw color 7 in black, color 15 in white, and make the background color of the graphics screen Light Grey. If the background color is not black, AutoCAD will also ask:

Should the outer screen edges be colored? <Y>

Answer yes to place a thin colored border around the outside of the displayed areas.

5.5 Null Display

When you use AutoCAD in this configuration, the graphics editor screen is disabled and only a text display screen is available. You can use this configuration for those instances when you need to use AutoCAD on a video terminal not capable of graphics display. Some examples of this kind of usage include using IGES input and output or DXFin and DXFOut, which are not available from the Main Menu.
Chapter 6
Digitizer Options

If your digitizer is supported by SCO XENIX, you need to install it as recommended by your XENIX documentation. If you encounter problems, please contact the device manufacturer or SCO before calling Autodesk.

As explained in the XENIX installation manual, the system administrator should configure the digitizer using /etc/mkdev mouse. For more details please refer to the section on XENIX System Mouse later in this Chapter.

You may select any one of several digitizing tablets or mice to use with AutoCAD. Most connect to a serial I/O port, which must be configured as a serial tty device as described in Chapter 1 of this guide.

You may have to make your own cable to connect the digitizer to the serial port. Some special wiring may be required at each end of the cable, and it is possible for both ends to require the same kind of connector. Therefore, be sure to clearly label the ends to distinguish them from one another.

NOTE: If you have a COMPAQ DESKPRO 386, you may need to buy or make your own 9-pin-to-25-pin cable. The cable should follow the wiring diagram below:

<table>
<thead>
<tr>
<th>9-Pin Serial Port</th>
<th>Standard RS-232C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CARRIER DETECT</td>
</tr>
<tr>
<td>2</td>
<td>RECEIVE DATA</td>
</tr>
<tr>
<td>3</td>
<td>TRANSMIT DATA</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
</tr>
<tr>
<td>5</td>
<td>GROUND</td>
</tr>
<tr>
<td>6</td>
<td>DATA SEND READY</td>
</tr>
<tr>
<td>7</td>
<td>READY TO SEND</td>
</tr>
<tr>
<td>8</td>
<td>CLEAR TO SEND</td>
</tr>
<tr>
<td>9</td>
<td>RING INDICATOR</td>
</tr>
</tbody>
</table>

The following sections describe tablet and mouse operation in general terms. You'll find specific operating instructions, cabling requirements, and switch settings for each particular device in subsequent sections of this chapter.

Tablet Operation

A digitizing tablet can be used as a screen pointing device. When the AutoCAD drawing editor is active, crosshairs appear on the screen and move in accordance with the movement of the tablet's pointer. Any portion of the tablet's surface can be defined as the screen pointing area; other areas can be reserved for command entry from tablet menus. You can also use the tablet to trace an existing paper drawing if Tablet mode is on.

Some tablets use a cursor, or puck, as the pointer; others use a pen-like stylus. One button on the pointer is the pick button; press this button to designate a point or to select the menu item at which the pointer (or screen crosshair) is positioned. If the pointer has additional buttons, these are usually assigned to successive items in the AutoCAD button menu.
Mouse Operation

A mouse is a screen pointing device. When the AutoCAD drawing editor is active, you can move the screen crosshairs in any direction by moving the mouse on the desktop. A pick button is provided for point entry and for selection of items from the screen menu. Many mice have additional buttons; these are usually assigned to successive items in the AutoCAD button menu. However, a mouse cannot be used to trace existing paper drawings, or to support tablet menus.

Some mice have optical motion sensors and must be used with special reflective mouse pads; other mice sense motion by means of a ball that rolls on any flat working surface. In either case, if you are using the mouse to move the screen crosshairs in a particular direction and the mouse reaches the edge of the surface, simply lift the mouse and place it back on the surface in a location that will allow you to move the mouse in the desired direction. Lifting the mouse off its work area to move it leaves the cursor unaffected.

If You Have No Digitizer

If you don’t want to use a pointing device with AutoCAD, choose the None selection from the digitizer menu during the configuration process. You can designate points and select items from the screen menu using the keyboard as described in Chapter 2 of the main AutoCAD Reference Manual.

6.1 Autodesk Device Interface (ADI) Digitizer

The Autodesk Device Interface (ADI) digitizer option is a generic (that is, device independent) driver that will communicate to an installed ADI digitizer driver. An ADI device must not use a configured AutoCAD serial port. Autodesk does not support peripherals implemented using the ADI, and you should contact the manufacturer of your peripheral if you encounter problems.

Configuration

When you select ADI Digitizer from the AutoCAD configuration menu, the only prompt is:

Enter the ADI digitizer/pointer filename <dgadi>:

Enter the file name of the installable ADI digitizer or pointer driver. The file name can be preceded by a complete path specification. If no path is given, AutoCAD will use the PATH environment variable to search for the ADI driver. The specified ADI driver is automatically loaded by AutoCAD when the drawing editor is entered.
6.2 CalComp 2500 Series Tablets

AutoCAD supports the CalComp 2500 series tablets, models 25120 and 25180, using the RS-232C serial I/O interface. Rather than DIP switches, the CalComp 2500 has eight banks of eight soft switches. These soft switches should be set as follows:

<table>
<thead>
<tr>
<th>Bank</th>
<th>On</th>
<th>Off</th>
<th>Don't Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>1-7</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1,2,4</td>
<td>3,5-8</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2,3,6</td>
<td>1,4,5,7,8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3,8</td>
<td>1,2,4-7</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2,4,6</td>
<td>1,3,5,7,8</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1-8</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>1-8</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>1-8</td>
<td></td>
</tr>
</tbody>
</table>

Use the following procedure to configure the soft switches:

1. Position the cursor over the **bank** block and select it. One of the eight numbered blocks will light indicating which bank is selected.

2. Select the block whose number corresponds to the number of the desired bank.

3. Once you have chosen the bank, select the **setup** block. The lights in the eight numbered blocks now represent the switches in that bank (unlit = off, lit = on). The switches toggle between on and off each time they are selected.

4. Repeat the above steps until all the bank switches are configured as shown.

5. Select the **setup** block again to return to the operating mode.

The soft switches will retain their values after the tablet is turned off. A three-wire cable can be used to connect the tablet and computer as shown below:

<table>
<thead>
<tr>
<th>Tablet End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

You can also use a 25-wire (straight-through) cable.
You can use a stylus or a multibutton cursor to designate points or to select an item from the screen or tablet menu. With a multibutton cursor, you can invoke specific items from the button menu, regardless of the position of the cursor. The following table illustrates cursor use.

<table>
<thead>
<tr>
<th>Cursor</th>
<th>Pick Button</th>
<th>Menu Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stylus</td>
<td>Stylus tip</td>
<td>None</td>
</tr>
<tr>
<td>4-button</td>
<td>0</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>16-button</td>
<td>0</td>
<td>1–9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A–F = 10–15</td>
</tr>
</tbody>
</table>
6.3 CalComp 9000 Series Tablets

AutoCAD supports the CalComp 9000 series tablets, models 9120, 9240, 9360, 9480, and 9600, using the RS-232C serial I/O interface. The DIP switches should be set as follows:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Up</th>
<th>Down</th>
<th>Model-dependent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-5,8</td>
<td>6,7</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>1-3</td>
<td>5-8</td>
</tr>
<tr>
<td>3</td>
<td>2,3,6</td>
<td>1,4,5,7,8</td>
<td></td>
</tr>
</tbody>
</table>

Switches 5, 6, 7, 8 in SW2 depend on the tablet model:

<table>
<thead>
<tr>
<th>Model</th>
<th>Up</th>
<th>Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>9120</td>
<td>5</td>
<td>6,8</td>
</tr>
<tr>
<td>9240</td>
<td>6</td>
<td>5,7,8</td>
</tr>
<tr>
<td>9360</td>
<td>5,6</td>
<td>7,8</td>
</tr>
<tr>
<td>9480</td>
<td>7</td>
<td>5,6,8</td>
</tr>
<tr>
<td>9600</td>
<td>5,7</td>
<td>6,8</td>
</tr>
</tbody>
</table>

The connection between the tablet and the computer is via Port A (Host, J7) on the tablet controller. The cable is shown below.

```
Tablet End       Computer End
2                2
3                3
4                5
7                6
               8
               20
```

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end.

You can use a stylus or multibutton cursor to designate points or to select an item from a screen or tablet menu. If you use a cursor, its additional buttons invoke specific items from the button menu, regardless of the position of the cursor.
<table>
<thead>
<tr>
<th>Cursor</th>
<th>Pick Button</th>
<th>Menu Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stylus</td>
<td>Stylus tip</td>
<td>None</td>
</tr>
<tr>
<td>4-button</td>
<td>Pick</td>
<td>1–3 = items 1–3</td>
</tr>
<tr>
<td>12-button</td>
<td>0</td>
<td>1–9 = 1–9, #=10, *=11</td>
</tr>
<tr>
<td>16-button</td>
<td>0</td>
<td>1–9 = 1–9, A–D = 10–13, # = 14, *=15</td>
</tr>
</tbody>
</table>

NOTE: On the 12- and 16-button cursors, the * button can be used to select menu items, but only if the tablet's Cursor Function Disable sequence **0 has been executed. See pages 4–6 of the CalComp 9000 Series Digitizer Operator's Manual, 50090–1.
6.4 CalComp 9100 Series Tablets

AutoCAD supports the CalComp 9100 series tablets, models 9136, 9148, and 9160, using the RS-232C serial I/O interface. There is one switch on the first board that slides out, called the Digitizing Processor Board (or AREA 1). The 9100 tablets should be installed with the following switch settings:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Open</th>
<th>Closed</th>
<th>Model-dependent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-2</td>
<td>3-6</td>
<td>7,8</td>
</tr>
</tbody>
</table>

Switches 7,8 depend on the tablet model:

<table>
<thead>
<tr>
<th>Model</th>
<th>Open</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>9136</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>9148</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9160</td>
<td>7,8</td>
<td></td>
</tr>
</tbody>
</table>

There are two switches on the second board that slides out, called the Communications Interface Board (or AREA 2).

<table>
<thead>
<tr>
<th>Switch</th>
<th>Open</th>
<th>Closed</th>
<th>Don’t care</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2,3,8</td>
<td>1,4-7</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>1,3,5-8</td>
<td>2</td>
</tr>
</tbody>
</table>

The connection between the tablet and the computer is via Port A on the tablet controller. The cable is shown below.

Tablet End | Computer End
------------|--------------
2           | 2
3           | 3
4           | 4
5           | 5
7           | 6
6           | 8
8           | 20

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end.
You can use a stylus or multibutton cursor to designate points or to select an item from a screen or tablet menu. If you use a cursor, its additional buttons invoke specific items from the button menu, regardless of the position of the cursor.

<table>
<thead>
<tr>
<th>Cursor</th>
<th>Pick button</th>
<th>Menu Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stylus</td>
<td>Stylus tip</td>
<td>None</td>
</tr>
<tr>
<td>4-button</td>
<td>Pick</td>
<td>1–3 = items 1–3</td>
</tr>
<tr>
<td>16-button</td>
<td>0</td>
<td>1–9 = 1–9, A–F = 10–15</td>
</tr>
</tbody>
</table>
6.5 Hitachi HICOMSCAN HDG Series Tablets

AutoCAD supports the Hitachi\textsuperscript{1} HICOMSCAN HDG series of tablets, models 1111B, 1515B, 1216, 2222, 2436, 3648, and 4460. The tablet must be equipped with the RS-232C serial interface, and the DIP switches should be set as follows:

Models 1216, 2222, 2436, 3648, and 4460:

<table>
<thead>
<tr>
<th>Switch</th>
<th>On</th>
<th>Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode rate</td>
<td>1-4</td>
<td>5-8</td>
</tr>
<tr>
<td>Baud rate</td>
<td>8</td>
<td>1-7</td>
</tr>
</tbody>
</table>

Models 1111B and 1515B:

<table>
<thead>
<tr>
<th>Switch</th>
<th>On</th>
<th>Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-3</td>
<td>4-8</td>
</tr>
<tr>
<td>2</td>
<td>3.5</td>
<td>1, 2, 4, 6-8</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>1-8</td>
</tr>
</tbody>
</table>

For HICOMSCAN models 1216, 2222, 2436, 3648, and 4460, AutoCAD assumes that the jumpers on the tablet's PC board have been set to the following (factory standard) settings:

Jumpers installed: 1S, RxC ASYNC, TxC ASYNC
Jumpers removed: SYNC, OP, F0, F1, RxC SYNC, TxC SYNC

The cable between the tablet and the computer's serial I/O port is shown below.

<table>
<thead>
<tr>
<th>Tablet End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end. You can use a stylus, 4-button cursor, or 12-button cursor to designate points or to select an item from a screen or tablet menu. On a multibutton cursor, the additional buttons invoke specific items from the button menu, regardless of the cursor position.
<table>
<thead>
<tr>
<th>Cursor</th>
<th>Pick Button</th>
<th>Menu Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stylus</td>
<td>Stylus tip</td>
<td>None</td>
</tr>
<tr>
<td>4-button</td>
<td>1</td>
<td>2-4 = items 1,2,3</td>
</tr>
<tr>
<td>4-button color</td>
<td>Yellow</td>
<td>White, blue, green = items 1-3</td>
</tr>
<tr>
<td>12-button</td>
<td>0</td>
<td>1-9 = items 1-9, *=10, #=11</td>
</tr>
</tbody>
</table>
6.6 Kurta Series I Tablet

The Kurta Series I digitizing tablet connects to an RS-232C serial I/O port. AutoCAD expects the tablet to be set for binary data transmission at 9600 baud, with 8 data bits, 2 stop bits, no parity, and polled mode. To select these modes, set the tablet’s switches as follows:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Up</th>
<th>Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program</td>
<td>1,5,8</td>
<td>2-4,6,7</td>
</tr>
<tr>
<td>Mode/baud</td>
<td>4</td>
<td>1-3</td>
</tr>
</tbody>
</table>

A four-wire cable can be used, with the following connections:

<table>
<thead>
<tr>
<th>Tablet End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end.
AutoCAD/SCO XENIX

6.7 Summagraphics MM Series and SummaSketch Series Tablets

AutoCAD supports the Summagraphics® MM series tablets, models 961 (9 x 6 inch), 1201 (12 x 12 inch), and 1812 (18 x 12 inch), and the Summagraphics SummaSketch® series tablets. The MM series model 961 can be used with its long direction oriented either vertically or horizontally.

With the Summagraphics MM 1812, the shape of your tablet is not exactly the same as the shape of your video display screen. When the 1812 is used as a pointing area, either the top or the right edge of the tablet is inactive. You can use the AutoCAD tablet configuration command to respecify the screen pointing area if you want to use the entire tablet or to place tablet menus in the unused area.

All Summagraphics MM series and SummaSketch series tablets may be run in either conventional digitizer mode, or in relative-motion mouse mode, using either a stylus or a 3- or 4-button cursor. AutoCAD allows you to select any combination of these options but assumes the standard factory settings for the internal jumpers.

All of the above digitizers connect to an RS-232C serial port. A three-wire cable is sufficient, connecting the following pins between the tablet and the computer:

<table>
<thead>
<tr>
<th>MM Series Tablets</th>
<th>SummaSketch Series Tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablet End</td>
<td>Computer End</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end.

The model 1812 has three sets of switches on the bottom of the tablet. AutoCAD is concerned only with the first three positions of SW1 (the switch set closest to the reset switch). The required settings, shown below, select 9600 baud binary format, with 8 data bits, no parity, and 1 stop bit.

<table>
<thead>
<tr>
<th>Switch</th>
<th>On</th>
<th>Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,2</td>
<td>3</td>
</tr>
</tbody>
</table>

During digitizer configuration, AutoCAD will ask which model and cursor type you have, and which mode (digitizer or mouse) you want. If you select the model 961, AutoCAD will also request the orientation of the tablet. If you select mouse mode, the AutoCAD tablet-mode and tablet-menu capabilities will be disabled. Also, during repositioning the cursor/stylus must be lifted further from the surface than is typical with real mice; this is an aspect of the hardware design, not of the AutoCAD tablet handler.

The tip of the stylus is the pick button. Press down on the stylus to designate a point or to select a menu item. The switch on the barrel of the stylus selects the first item from the button menu, regardless of the position of the stylus or the screen crosshairs.

The button with one dot is the pick button of the 3-button cursor. The buttons with two and three dots select the first and second items from the button menu, respectively, regardless of the position of the tablet's cursor.
The yellow button is the pick button of the 4-button cursor. The white, blue, and green buttons select the first, second, and third items from the button menu, respectively, regardless of the position of the tablet's cursor.
6.8 XENIX System Mouse

The following XENIX System mice are supported by AutoCAD:

- Logitech Serial Mouse
- Microsoft Serial Mouse
- Mouse Systems PC Mouse
- Microsoft Bus Mouse
- Logitech Bus Mouse

For additional information on supported mice and graphic input devices check your SCO XENIX System V Operating System Release Notes.

NOTE: The XENIX System Mouse does not support the mouse port on Compaq and IBM PS/2 systems.

6.8.1 XENIX Configuration

As explained in the XENIX installation manual, to configure the mouse using /etc/mkdev mouse you must be logged on as root or have super user privileges. When you execute this command, XENIX prompts for the type of digitizer to be configured and, for serial mouse devices, the serial port associated with the device. You must know the tty device for the serial port to which the device is attached. By default, tty1a is the device name for the first COM port, tty2a for the second; any other ports you installed will have device names assigned by the mkdev serial command when it is executed.

You access the mouse by specifying the device to which the mouse is attached and responding to the prompt for your terminal devices (including terminals or multiscreens). For most installations, entering multiscreen when prompted for terminal devices will be sufficient. This will allow any virtual terminal to access the mouse whenever it is the current process.

Please refer to the lists of compatible hardware in your SCO XENIX System V Operating System Release Notes for more information on supported mice and graphic input devices.

6.8.2 AutoCAD Configuration

To configure AutoCAD to use the XENIX System Mouse it must have been previously installed in the XENIX operating system (see the section above).

When you select XENIX System Mouse from the AutoCAD configuration menu you will be prompted to enter the type of mouse you are using:

The Xenix System Mouse can have any of the following types:

1. Two button mouse
2. Three button mouse
3. Four button mouse

Enter the type of mouse you are using <2>:

Enter the number of buttons on your mouse.

For the two button mouse, the left button is the pick button and the right button selects the first item of the button menu, regardless of the position of the mouse.
For the three button mouse, the left button is the pick button, the middle and right buttons select the first and second items from the button menu respectively, regardless of where the mouse is positioned.

AutoCAD then asks if you want to adjust the crosshair motion versus the mouse motion. Accept the default value (N for no); you can experiment with this parameter and if you need to adjust it, you can change the configuration later.
To obtain the hard copy output of your drawings, you may choose one of several plotters to use with AutoCAD. Each plotter connects to a serial I/O port, which must be configured as a serial tty device as described in Chapter 2 of this guide. If you intend to plot to a file (for example, with the PostScript® driver), you can configure the null tty device by entering a period (.) when AutoCAD requests the serial port device name. You must also install the device as described in Chapter 3 of this manual in the section for plotting to a file.

You may have to make your own cable to connect the plotter to the serial port. Some special wiring may be required at each end of the cable, and it is possible for both ends to require the same kind of connector. Therefore, be sure to clearly label the ends to distinguish them from one another. The cabling requirements and switch settings for individual plotters will be noted in the following sections.

**NOTE:** If you have a COMPAQ DESKPRO 386, you may need to buy or make your own 9-pin-to-25-pin cable. The cable should follow the wiring diagram below:

<table>
<thead>
<tr>
<th>9-Pin Serial Port</th>
<th>Standard RS-232C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CARRIER DETECT</td>
</tr>
<tr>
<td>2</td>
<td>RECEIVE DATA</td>
</tr>
<tr>
<td>3</td>
<td>TRANSMIT DATA</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
</tr>
<tr>
<td>5</td>
<td>GROUND</td>
</tr>
<tr>
<td>6</td>
<td>DATA SEND READY</td>
</tr>
<tr>
<td>7</td>
<td>READY TO SEND</td>
</tr>
<tr>
<td>8</td>
<td>CLEAR TO SEND</td>
</tr>
<tr>
<td>9</td>
<td>RING INDICATOR</td>
</tr>
</tbody>
</table>

Many plotters provide multiple pens, programmable dash/dot line types, and programmable pen speeds. For such plotters, AutoCAD allows you to choose a pen speed, line type, and pen number to be used for each of the first 15 drawing colors. You can establish permanent settings or change them whenever you begin a plot; see Chapter 13 or the main AutoCAD Reference Manual for details.

**If You Have No Plotter**

Choose the None item from the plotter menu if you don't have a plotter to use with AutoCAD.
7.1 Alpha Merics (Alphaplot)

Alpha Merics Alphaplot models I and II are supported via an RS-232C serial I/O port, at 9600 baud, even parity, 7 data bits, and 1 stop bit. A three-wire cable is sufficient; it should connect the following pins between the plotter and the computer:

<table>
<thead>
<tr>
<th>Plotter End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>20</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end. Attach the cable to the plotter's 25-pin connector.

The switch settings are as follows:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Open</th>
<th>Closed</th>
<th>Model-dependent</th>
<th>Your choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>External</td>
<td>1,2,4-7</td>
<td>3,8</td>
<td>Model-dependent</td>
<td>Your choice</td>
</tr>
<tr>
<td>Internal</td>
<td>3-7</td>
<td>2</td>
<td>1,8</td>
<td></td>
</tr>
</tbody>
</table>

For the internal switch, set switch 2 open for the Alphaplot I and closed for the Alphaplot II.

At configuration time AutoCAD asks:

Is the Automatic Pen Changer installed? <Y>

If the Automatic Pen Changer is installed, respond yes (the default). Otherwise respond no.

WARNING: Attempting to use the Automatic Pen Changer when it is not installed can damage your plotter.

Plotting with the Automatic Pen Changer

Before plotting, you must press Reset, Key E, Key F, Key A, Key B, Pen up, wait until pen carriage stops moving, and then press Remote.

Plotting without the Automatic Pen Changer

Before plotting, you must press Reset, Key 7, Remote.
7.2 Autodesk Device Interface (ADI) Plotter

The Autodesk Device Interface (ADI) Plotter option is a generic (that is, plotter independent) driver that will produce either a binary, DXB, or ASCII data file, or communicate to an installed ADI Plotter driver. An ADI device must not use a configured AutoCAD serial port. Autodesk does not support peripherals implemented using the ADI, and you should contact the manufacturer of your peripheral if you encounter problems.

Configuration

Because the driver is generic, the process of configuring it is more complex than that required by most other plotters. The following is the prompt sequence for ADI Plotter configuration. Note that if you select DXB output format, some of the prompts are not presented. First the driver’s output format is selected. The following prompt appears:

```
Select output format:
0. ASCII file
1. Binary file
2. AutoCAD DXB file
3. Installed ADI driver
Output format, 0 to 3 <0>:
```

The DXB file format is described in Appendix C of the main AutoCAD Reference Manual and the ASCII and binary file formats will be described here later. If the generic driver is selected via option 3, the following prompt appears.

```
Enter the ADI printer filename <pladi>:
```

Enter the file name of the installable ADI plotter driver. The file name can be preceded by a complete path specification. The specified ADI driver is automatically loaded by AutoCAD during initialization of each plot. You will then be asked for information on plotter-implemented pens:

```
Does the plotter have multiple pens? <N> (Yes)
How many pens does it have, 2 to 127 <2>:
```

Next, information on plotter-implemented line styles is requested:

```
Does the plotter have multiple dashed line styles? <N> (Yes)
How many line styles are there, 2 to 127 <5>:
```

If the plotter has multiple pen speeds, you can define them by responding to the following questions:

```
Is the plotter variable speed? <N> (Yes)
What is the numeric code for the fastest speed, 1 to 127 <10>
```

Next the maximum plot size and plotter step size are specified. These parameters can be given either in inches or millimeters. The units are selected by the following prompt:

```
Specify plot size in millimeters? <N>
```
If the answer is the default no, the prompts that follow and their responses will refer to inches; if yes, millimeters. The examples given below assume inches were selected.

- Maximum horizontal (X) plot size in inches <11.0000>
- Plotter steps per inch in the horizontal (X) direction: <1000.0000>
- Maximum vertical (Y) plot size in inches <8.5000>
- Plotter steps per inch in the vertical (Y) direction: <1000.0000>

These parameters are real numbers that are used to compute the plotter size in plotter steps. The calculated step count may not exceed 65535. If the specifications given exceed the limit, the following message will appear (after the steps per inch are specified):

** Error: Plot size multiplied by steps per inch cannot exceed 65535. Specifications resulted in ???.

The question marks in the prompt are replaced by the step count you have tried to configure. After this error message, the pair of prompts for plot size and steps per unit is reissued. Once the driver-specific configuration is completed, the regular plotter configuration is performed, refer to the section on “Plotter Calibration” in Chapter 3.

Using the Driver

If you have selected ASCII, binary, or DXB output format, when a plot is made with the driver, following the runtime plot configuration dialogue, this prompt appears:

Enter file name for plot <default>:

Reply with the file in which the plot data should be written. The name may be entered with a file type, if desired. If none is specified, .plt will be used (.dxb for DXB output). If the file cannot be opened, the message will be repeated until a file can be opened or you type CTRL C to cancel the plot.

Output Format

Generally, plot data are expressed in a single representation. Each plot command consists of a type code, possibly followed by arguments. The exceptions are the DXB output format (see the AutoCAD Reference Manual) and the UNIX ADI driver (see the Autodesk Device Interface/ADI, Driver Development Kit for details). The following table gives the plot codes and their arguments:
The type field in the above table specifies how the information is represented in the file or passed to the driver. Before discussing the representation, we’ll examine the various plot commands and the meaning of their arguments.

The first code generated for any plot is the BEGIN PLOT code. Its argument is a number specifying the version of the plot command file that follows (specifying this number allows upward compatibility if the generic plot driver is extended in the future). Plots generated by this version of the driver will have a file level of 1. If the UNIX ADI driver option is selected, the BEGIN PLOT record is considerably more complex (see the Autodesk Device Interface/ADI, Driver Development Kit for details). The different BEGIN PLOT record applies only to UNIX installed drivers; binary and ASCII files produced on UNIX versions of AutoCAD will be identical to the MS-DOS/PC-DOS® files documented here.

The Pen change code is generated before every pen change at the start of a pass over the vectors. It allows the plotter to prepare for a possible manual pen change (for example, raising the pen and moving it to the middle of the carriage). It is not the actual change pen command, which is the New pen code. Note that a Pen change command will always be generated at the start of a plot.

The New pen code is the actual command to select a pen. This code is followed by an argument specifying the pen number.

The Select speed code chooses a drawing speed for a variable speed plotter. The code is followed by an argument that selects the speed. Note that the speed argument is range checked and will not exceed the maximum speed configured, but it is not otherwise checked. When a driver processing this command encounters a speed number that a plotter with discrete speeds cannot handle, the driver should send the next SLOWER speed.

The Set line type code selects a plotter line font. This code is followed by an argument that selects the line font. It is a universal convention within AutoCAD that zero selects a continuous (solid) line. The meaning of the other fonts is up to the driver.

The Move code is followed by two arguments specifying the absolute coordinates to which the pen should be moved with the pen up. The coordinates are specified X first, Y second, both as unsigned numbers in the inclusive range from 0 to 65535.
The **Draw** code is followed by two arguments specifying the absolute coordinates to which the pen should be moved with the pen down. The coordinates are specified X first, Y second, both as unsigned numbers in the inclusive range from 0 to 65535.

The **End plot** code is output at the end of a plot. It has no arguments.

The **Abort plot** is relevant only for installed drivers. It is sent to indicate that the user terminated the plot by pressing the interrupt key (normally control C). If the plot is being sent to a file, this action causes the file not to be generated, so the Abort plot code will never be seen by a program processing a plot file. An installed driver will receive the code to indicate that abnormal termination action should be taken (flushing a buffer, for example). This code will be followed by an END PLOT code, which should perform the usual end-of-plot functions (such as putting the pen back).

**ASCII File Format**

If the output format is an ASCII file, each plot command will appear on a new line, starting in the first text column. All codes and arguments appear as decimal numbers, separated by commas. Type A codes appear by themselves. Type B codes consist of the command code followed by the argument. Type C codes consist of the command code, followed by the X and Y coordinates, comma delimited. All numbers appearing in a plot file are unsigned. Arguments to type B codes range from 0 to 127, and arguments to type C codes from 0 to 65535. The following is an actual plot file generated by plotting a square. The annotations did not appear in the original file but were added to explain the commands.

```
1,1  Begin plot, file level 1
08  Pen change (start of pass)
5,1  Select new pen 1
7,0  Select line type 0 (solid)
6,1  Select speed 1
3,0,6953 Move to 0, 6953 – pen up
4,6954,6953 Draw to 6954, 6953 – top of square
4,6954,0 Draw to 6954, 0 – right side
4,0,0 Draw to 0,0 – bottom
4,0,6953 Draw to 0, 6953 – left side
2  End of plot
```

In a binary file, the codes and arguments appear precisely as they do in an ASCII file but are stored as binary numbers. Type A codes are written as single bytes. Type B codes consist of a single-byte code, followed by a one-byte argument. Type C codes are written as a single-byte code, followed by two 16-bit arguments representing the X and Y coordinates. Each 16-bit argument is written least significant byte first, most significant byte last, the standard 8086 representation. The following is a hexadecimal dump of a binary file generated by the same drawing that created the ASCII file above. Spacing has been added to the dump to aid readability.

```
01 01
08
05 01
07 00
06 01
03 00 00 29 1B
04 2A 1B 29 1B
04 2A 1B 00 00
04 00 00 00 00
04 00 00 29 1B
02
```

62
7.3 CalComp 906/907/PCI Plotter Controllers

AutoCAD supports all CalComp plotters using the 906, 907, or PCI plotter controllers via an RS-232C interface to the computer’s serial I/O port. A three-wire cable is sufficient; it should connect the following pins between the controller and the computer:

<table>
<thead>
<tr>
<th>Plotter End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>20</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end.

Set the plotter controller for 9600 baud, even parity, 7 data bits, 1 stop bit, no hardware handshake, and checksum enabled. Set the end-of-message character to hex D, double sync on, and the sync character set to hex 16. See your CalComp manual to determine the proper switch settings for your plotter and controller.

CalComp plotters must be set to XON/XOFF control mode. AutoCAD is automatically set to XON/XOFF mode during configuration. To use this mode, both AutoCAD and the CalComp plotter must be configured to use XON/XOFF control mode. XON/XOFF control mode must be specified in order to use the AutoCAD plot-to-file feature.

During configuration, AutoCAD prompted you for the number of plotter steps to be included in each physical plotter increment. Increasing the number of plotter steps per plotter increment will increase the coarseness of the plot. In most cases, increasing the coarseness of the plot will produce a plot more quickly with only a slight loss of resolution.

Setting the plotter step size correctly is critical. Consult your CalComp plotter manual for the correct step size for your plotter. Some experimentation may be necessary if the published step size is approximate.

Hardware line types are not supported with the CalComp plotter controller.

NOTE: You can also use the cabling and switch settings provided in CalComp's guide “Getting Started Using CalComp's 1040 Series Plotter with AutoCAD.”
7.4 Hewlett-Packard Plotters

AutoCAD supports Hewlett-Packard® models 7220, 7470, 7475, 7550, 7580, 7585, 7586, 7600 240D and 240E, ColorPro®, DraftPro® DXL and EXL, and DraftMaster® plotters via an RS-232C serial I/O port. Set the HP® plotters at 9600 baud (2400 baud for the model 7220), with 7 data bits, 1 stop bit, and even parity. Automatic roll/sheet feed is supported on the 7220, 7550, 7586, and DraftMaster, but the long plot capability of the 7586, 7600 240D and 240E, and DraftMaster is not supported at this time.

We recommend the following cable; others can be used, but this one requires only three wires and works with any HP plotter. When there is a choice, attach the cable to the jack marked “Computer” on the plotter, not the jack marked “Terminal.”

<table>
<thead>
<tr>
<th>Plotter End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end.

On the 7470, 7475, and ColorPro plotters, establish the proper communication modes by setting the switches as follows:

<table>
<thead>
<tr>
<th>Switch</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>B2</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>B3</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>B4</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>S2</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>D-Y</td>
<td></td>
<td>D</td>
</tr>
</tbody>
</table>

(D 7470/7475 only)

On the 7600 240D plotter:

<table>
<thead>
<tr>
<th>Switch bank</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>1</td>
<td>2-10</td>
</tr>
<tr>
<td>Right</td>
<td>3,6,7,9</td>
<td>1,2,4,5,8,10</td>
</tr>
</tbody>
</table>
On the 7600 240E plotter:

<table>
<thead>
<tr>
<th>Switch bank</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>1</td>
<td>2–10</td>
</tr>
<tr>
<td>Right</td>
<td>6,7,9</td>
<td>1–5,8,10</td>
</tr>
</tbody>
</table>

On the ColorPro, the effective plotting area is 10.0 x 7.5 inches for A size paper and 10.73 x 7.53 inches for the A4 size paper.

On the 7550 and DraftMaster plotters, follow the instructions provided by Hewlett-Packard for using the front panel’s Enter and Next Display keys to set monitor mode off, remote mode, stand-alone mode, XON/XOFF handshake, direct mode, full duplex, 7-bit data, parity on, even parity, and 9600 baud. Automatic sheet feed is enabled on the 7550 when an asterisk (*) is displayed below the Sheet Feed key.

On the 7580, 7585, 7586, and DraftPro models, set the RS-232C speed selector to 9600 and set parity on, even parity, and eavesdrop off. The emulate and expand switches should be set to normal. If roll media is loaded in the 7586 or DraftMaster II, AutoCAD will advance the paper and draw a cutting line between plots.

When you begin a plot, AutoCAD asks you to adjust the paper and press. If the plotter does nothing in response to the wires 2, 3, or 7 may be strung incorrectly, or the plotter may be improperly set up. (With a 7580, 7585, or a 7586, the remote light may be off.) If the plotter’s error light turns on, then the speed or parity switches are probably wrong.

If the plotter starts a plot correctly but drops data and turns on the error light, there is probably an error in wiring pin 2, 5, or 6 at the plotter end of the cable. In this case a 7550, 7580, 7585, 7586, DraftPro, or DraftMaster generates the message Invalid hard clip limits returned from plotter.
AutoCAD/SCO XENIX

7.5 Houston Instrument DMP Series

Houston Instrument HI-PLOT plotters, models DMP-7, DMP-8, DMP-29, DMP-40, DMP-41, DMP-42, DMP-51, DMP-52, DMP-56, DMP-61, DMP-62, DMP-51MP, DMP-52MP, DMP-56MP, DMP-61MP, and DMP-62MP are supported via an RS-232C serial I/O port. AutoCAD supports the extended buffer feature of the DMP-60 series plotters. A three-wire cable is sufficient; it should connect the following pins between the plotter and the computer:

<table>
<thead>
<tr>
<th>Plotter End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end. The plotter must be set to communicate at 9600 baud with 7 data bits plus even parity, 1 stop bit, and XON/XOFF protocol. The method of accomplishing this depends on the model of plotter: DMP-7 and DMP-8: At the plotter end of the cable, strap pin 6 to pin 14 as shown below.

<table>
<thead>
<tr>
<th>Plotter End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>14</td>
</tr>
</tbody>
</table>

DMP-29: Connect the cable to the plotter's MODEM port. On the back of the plotter, set the switches as follows:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Open(1)</th>
<th>Closed(0)</th>
<th>Your choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5</td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,7</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>6,8</td>
<td></td>
<td></td>
<td>✔️</td>
</tr>
</tbody>
</table>

DMP-40, DMP-41, DMP-42: Before plotting, set the baud rate to 9600 by pressing [Esc] and then [Tab].

DMP-50 and DMP-60 Series: Before plotting for the first time, press [Esc] and then Scale UR to activate Menu mode. Then follow the instructions in the plotter manual to set the communication parameters noted above. You need to perform this setup only once. On some plotters you will need to press the paper-size button between consecutive plots.
7.6 IBM Series 7300

IBM model 7371, 7372, 7374, and 7375 plotters are supported via an RS-232C serial I/O port, at 9600 baud with even parity. A three-wire cable is sufficient; it should connect the following pins between the plotter and the computer. (When there is a choice, attach the cable to the plotter’s Serial jack, rather than to the one marked Monitor.)

<table>
<thead>
<tr>
<th>Plotter End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end.

On the model 7371 and 7372 plotters, establish the proper communication modes by setting the switches on the back of the plotter as follows:

- B4 – 1
- B3 – 0
- B2 – 1
- B1 – 0
- S1 – 1
- S2 – 0
- D-Y – D

On the 7374 and 7375 models, set the RS-232C speed selector to 9600 and set parity on, even parity, and eavesdrop off. The emulate and expand switches should be set to normal. Although the remaining switches should have no affect on plotting with AutoCAD, to be safe set monitor mode to normal, local to normal, duplex to full, direct connect to reserve, and dtr-bypass to normal.

When you begin a plot, AutoCAD asks you to adjust the paper and press g. If the plotter does nothing in response to the g, wires 2, 3, or 7 may be strung incorrectly or the plotter may be improperly set up. With a 7374 or a 7375, the remote light may be off. If the plotter’s error light turns on, then the speed or parity switches are probably wrong.

If the plotter starts a plot correctly but drops data and turns on the error light, there is probably an error in wiring pin 2, 5, or 6 at the plotter end of the cable. In this case a 7374 or 7375 generates the message Invalid hard clip limits returned from plotter.
7.7 PostScript Laser Printers

AutoCAD supports PostScript laser printers and plotters at 9600 baud, with 7 data bits, 1 stop bit, and even parity. Set the printer to XON/XOFF (some have a choice of XON/XOFF or DTR). Consult your hardware documentation for specific installation instructions.

AutoCAD will produce output at either 300 dots per inch, 1270 dots per inch, or 2540 dots per inch. Select the AutoCAD output resolution that most closely approximates the resolution of your laser printer. Although output produced by AutoCAD at any resolution will print correctly on any printer, if you choose a higher resolution than your device supports, plotting will take longer than it should. For example, if you have a printing device that has a resolution of 1270 dots per inch, and you would like to see a rough draft of your output, choose a resolution of 300 dots per inch for quick output. Then, when you are ready to produce the final output, use the full resolution of your printer.

Set the AutoCAD line width to one appropriate for your laser printer. For example, on a 300-dots-per-inch laser printer, a .003-inch AutoCAD pen width will produce the finest line possible on your printer.

In order to ensure that the plot appears on an imageable area of the paper, AutoCAD offsets the X and Y values by 20/72 inch. If necessary, this origin may be changed during the plot dialogue to any negative or positive origin offset. On a standard plotter, choose rotate during this plot dialogue so that your image will be oriented with the longer dimension horizontally.

NOTE: Some printers may time-out before AutoCAD can complete its processing when you remove hidden lines while plotting or plot unusually large drawings. To avoid this problem, direct your plot output to a file, and use the autospool feature in conjunction with the spooling environment variables described in the Plot Spooling section of Chapter 3.
7.8 UNIX Plot File Plotter

The UNIX Plot File option is a plotter independent driver that will produce an output file in UNIX Plot(5) format. Most UNIX systems include a number of filters that can plot this file format (e.g. plot, aedplot, bgplot, crtplo, dumplot gipiplot, hpplot, t300, t300s, t4013, t450, tek). See the manual pages for Plot(1G) on your system for details.

Configuration

Because the driver can be used with a wide variety of devices, the process of configuring it is more complex than that required by most other plotters.

The following is the configuration prompt sequence:

First, the “pseudo” model is selected. The following prompt is issued:

Supported models:
1. 300 steps per inch
2. 1000 steps per inch
3. 2000 steps per inch
4. User defined

Enter selection, 1 to 4 <1>:

If you answer 1, 2, or 3, the driver will automatically configure the file output for 10 inch by 10 inch paper at the number of steps per inch selected, with one pen, and no hardware linetypes. You will then be asked the standard AutoCAD questions.

If you answered 4 for the supported model (User defined), the following additional questions will be asked allowing you to specify the device characteristics.

First, information on plotter-implemented line styles is requested with the questions:

Does the plotter have multiple dashed line styles? <N>

Enter “yes”

How many line styles are there, 2 to 5 <2>:

The following “hardware” linestyles are supported by the driver. However, these linestyles may not be available for all UNIX filters.

0 - solid
1 - dotted
2 - shortdashed
3 - longdashed
4 - dotdashed

Next the maximum plot size and plotter step size are specified. These parameters may be specified either in inches or millimeters. The units are selected by the prompt:

Next you will specify the maximum plot size the plotter can make, and the step size of the plotter. You may specify these either in millimeters or inches. The next question selects the units.
Specify plot size in millimeters? <N>

If the answer is the default, "no", the prompts which follow and their responses will refer to inches, otherwise millimeters. The examples given below assume inches were selected.

Maximum horizontal (X) plot size in inches <11.0000>
Plotter steps per inch in the horizontal (X) direction: <1000.0000>

Maximum vertical (Y) plot size in inches <8.5000>
Plotter steps per inch in the vertical (Y) direction: <1000.0000>

These parameters are real numbers which are used to compute the plotter size in plotter steps. The calculated step count may not exceed 65535. If the specifications given exceed the limit, the following message will appear (after the steps per inch are specified):

** Error: Plot size multiplied by steps per inch cannot exceed 65535. Specifications resulted in ?????.

The question marks in the prompt are replaced by the step count you have tried to configure. After this error message, the pair of prompts for plot size and steps per unit is reissued.

Once the driver-specific configuration is completed, the regular plotter configuration is performed, refer to the section on "Plotter Calibration" in Chapter 3.

Using the Driver

When a plot is made with the driver, following all the runtime plot configuration dialogue, the prompt:

Enter file name for plot <default>:

will appear. You should reply with the file in which the plot data should be written. The name may be entered with a file type, if desired. If none is specified, .plt will be used. If the file cannot be opened, the message will be repeated until a file can be opened or you type Ctrl C to cancel the plot.
Chapter 8

Printer Plotter Options

To obtain the hard copy output of your drawings, you may choose one of several printer plotters to use with AutoCAD. Each plotter connects to a serial I/O port, which must be configured as a serial tty device as described in Chapter 2 of this guide. If you intend to plot to a file, you can configure the null tty device by entering a period (.) when AutoCAD requests the serial port device name. You must also install the device as described in Chapter 3 of this manual in the section for plotting to a file.

You may have to make your own cable to connect the printer plotter to the computer’s serial port. Some special wiring may be required at each end of the cable, and it is possible for both ends to require the same kind of connector. Therefore, be sure to clearly label the ends to distinguish them from one another. The cabling requirements and switch settings for individual printer plotters will be noted in the following sections.

**NOTE:** If you have a COMPAQ DESKPRO 386, you may need to buy or make your own 9-pin-to-25-pin cable. The cable should follow the wiring diagram below:

<table>
<thead>
<tr>
<th>9-Pin Serial Port</th>
<th>Standard RS-232C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CARRIER DETECT</td>
</tr>
<tr>
<td>2</td>
<td>RECEIVE DATA</td>
</tr>
<tr>
<td>3</td>
<td>TRANSMIT DATA</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
</tr>
<tr>
<td>5</td>
<td>GROUND</td>
</tr>
<tr>
<td>6</td>
<td>DATA SEND READY</td>
</tr>
<tr>
<td>7</td>
<td>READY TO SEND</td>
</tr>
<tr>
<td>8</td>
<td>CLEAR TO SEND</td>
</tr>
<tr>
<td>9</td>
<td>RING INDICATOR</td>
</tr>
</tbody>
</table>

In addition to the serial wiring examples given in this chapter, we recommend connecting the protective ground, pin 1, straight through from the printer to the computer.

If You Have No Printer Plotter

Choose the None item from the printer plotter menu if you don’t have a printer plotter to use with AutoCAD.
8.1 Autodesk Device Interface (ADI) Printer Plotter

The Autodesk Device Interface (ADI) Printer Plotter option is a generic (that is, machine independent) driver that will produce either a binary data file, or communicate to an installed ADI Printer Plotter driver. An ADI device must not use a configured AutoCAD serial port.

Autodesk does not support peripherals implemented using the ADI, and you should contact the manufacturer of your peripheral if you encounter problems.

Configuration

Because the driver is indeed generic, the process of configuring it is more complex than that required for most other printer plotters. All the hardware information provided by a conventional driver must be supplied by the user when configuring this driver. As a result, the dialogue is extended.

First the maximum paper size and resolution are specified. These arguments can be given either in inches or millimeters. The units are selected by the following prompt:

Next you will specify the maximum plot size the printer can make, and its resolution (dots per unit). You may specify these either in millimeters or inches. The next question selects the units.

Specify plot size in millimeters? <N>

If the answer is the default, no, the prompts that follow and their responses will refer to inches or otherwise millimeters. The examples given below assume inches were selected.

Maximum horizontal (X) plot size in inches <11.0000>
Printer dots per inch in the horizontal (X) direction: <100.0000>

Maximum vertical (Y) plot size in inches <8.5000>
Plotter dots per inch in the vertical (Y) direction: <100.0000>

These parameters are floating point numbers, used to compute the printer X and Y size in dots. The calculated sizes may not exceed 65535. If the specifications given exceed the limit, the following message will appear (after the dots per unit are specified):

** Error: Plot size multiplied by dots per inch cannot exceed 65535. Specifications resulted in ?????.

The question marks in the prompt are replaced by the size the user tried to configure. After this error message appears, the pair of prompts for plot size and dots per unit are reissued.

Finally, the driver's output format is selected. The following prompt appears:

Select output format:
0. Binary file
1. CAD/camera image file
2. Installed ADI driver

Output format (0 to 2) <0>:
The CAD/camera image file format is described in the CAD/camera User Guide, and the binary file format will be described here later. If the generic driver is selected via option 2, this additional prompt appears:

Enter the ADI printer plotter filename <ppadi>:

You should enter the file name of the installable ADI printer plotter driver. The file name may be preceded by a complete path specification. If no path is given, AutoCAD will use the path environment variable to search for the ADI driver. The specified ADI driver is automatically loaded by AutoCAD during initialization of each printer plot.

If binary file format is selected, the user must specify whether color information is to be written to the file. The prompt appears:

Does the printer plotter support color? <N>

If answered with the default no, the output file will be 1 bit per pixel. If color is selected, the output will be 4 bits per pixel and will contain color information.

Once the driver-specific configuration is completed, the regular printer plotter configuration is performed. The generic printer plotter driver remembers all its configuration options and supplies them as defaults on subsequent configurations. The defaults given in the prompts above are those assumed on a new configuration of the driver.

Using the Driver

If binary file or CAD/camera image file output format has been selected, when a plot is made with the driver, following the runtime printer plot configuration dialogue, this prompt appears:

Enter file name for plot <default>:

The user replies with the file in which the printer plot data should be written. The name may be entered with a file type, if desired. If none is specified, .prp will be used (or .img for CAD/camera image file output). If the file cannot be opened, the message will be repeated until a file is successfully opened or until CTRL C is entered to cancel the printer plot.

Output Format

If you are writing the printer plot to a binary file, each record in the file begins with a single 16-bit value. If the sign bit is set in this value, it is a control function; otherwise it is a count specifying the number of bytes of plot data that follow. The function codes are given below.

<table>
<thead>
<tr>
<th>Function</th>
<th>Code</th>
<th>Arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begin plot</td>
<td>8001h</td>
<td>File_level, Xdots, Ydots, Color</td>
</tr>
<tr>
<td>End plot</td>
<td>8002h</td>
<td></td>
</tr>
</tbody>
</table>

A binary file will begin with the BEGIN PLOT code (all 16-bit values in the file are written in standard 8086 fashion: least significant byte first, most significant byte last), followed by the 16-bit values FILE LEVEL, XDOTS, YDOTS, and COLOR. FILE LEVEL identifies the format of the file for upward compatibility with future extensions. Files written by this version of the driver will have a file level of 1. XDOTS and YDOTS specify the
(8) Printer Plotter Options

horizontal and vertical size, respectively, of the printer for which this file was generated. COLOR will be 0 if the file is monochrome format (1 bit per pixel) and 1 if the file is color format (4 bits per pixel).

Following the BEGIN PLOT record are 0 or more line records. Each line record consists of a 16-bit byte count followed by that number of bytes of raster data. If the printer plotter was configured as supporting color, each byte will contain 2 pixels, with 4 bits per pixel indicating color. If the printer plotter was configured as monochrome, 8 one-bit pixels will be stored per byte. In either case, pixels are arranged on the page left to right starting with the most significant pixel of each byte, proceeding to the least significant, and then continuing to the next byte. Records in the file are variable length; trailing zero bytes are not written. A totally blank line on the printer will be written with a byte count of 0 and no following data bytes. Totally blank lines at the end of the plot are not written to the file. Consequently there may be fewer line records in the file than the YDOTS count given in the BEGIN PLOT record.

The end of the plot is indicated by an END PLOT record instead of a byte-count word.
8.2 Hewlett-Packard LaserJet

AutoCAD supports the Hewlett-Packard LaserJet®, LaserJet Plus, LaserJet 500 Plus, and LaserJet Series II printer plotters via the RS-232C serial I/O port. For this interface, a three-wire cable is sufficient; it should connect the following pins between the printer and the computer:

<table>
<thead>
<tr>
<th>PrPlot End</th>
<th>Computer End</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end.

During configuration, select your model from the AutoCAD menu of LaserJet models:

1. HP LaserJet
2. HP LaserJet Plus or 500 Plus
3. HP LaserJet Series II
4. HP LaserJet or LaserJet Plus w/2 Mbyte upgrade
5. HP LaserJet Series II with 1, 2, or 4 Mbyte memory board

Select desired model <current>:

Next you must select the resolution (dots per inch) to be used for printer plots. You can choose 75, 100, 150, or 300 dots per inch. LaserJet models with at least 1.5 megabytes of total memory (selections 4 and 5 from the above menu) can produce a full-page plot at any of these resolutions, but the other models are limited in the size they can plot at the higher resolutions. The limits published by Hewlett-Packard are shown in the following table.

<table>
<thead>
<tr>
<th>DotsPer Inch</th>
<th>(1) Laser Jet</th>
<th>(2 &amp; 3) LaserJet Plus, 500 Plus</th>
<th>(4 &amp; 5) Models with at least 1.5 MB total memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>85.9 sq. in.</td>
<td>full page</td>
<td>full page</td>
</tr>
<tr>
<td>100</td>
<td>48.3 sq. in.</td>
<td>full page</td>
<td>full page</td>
</tr>
<tr>
<td>150</td>
<td>21.5 sq. in.</td>
<td>full page</td>
<td>full page</td>
</tr>
<tr>
<td>300</td>
<td>5.4 sq. in.</td>
<td>30-32 sq. in.</td>
<td>full page</td>
</tr>
</tbody>
</table>

If your LaserJet model cannot plot a full page at the chosen resolution, you will need to set a user plotting size (as described in Chapter 13 of the main AutoCAD Reference Manual) conforming to the limits noted above. After the first copy, the LaserJet can print additional copies rapidly. You can configure AutoCAD to produce 1 to 99 copies of each plot. Also, if you would like an opportunity to override the number of copies before each plot, you can request this during configuration.
NOTE: When plotting on a LaserJet Plus, AutoCAD deletes all downloaded fonts and macros to ensure that there is enough memory available for the graphics. If you use the LaserJet Plus for text applications as well as for AutoCAD, you will have to reload the desired fonts and macros after plotting.
8.3 Okidata 84 Step 2

AutoCAD supports only the standard version of the Okidata® 84 printer plotter and will not work if any of the following options have been installed:

- Plug 'n Play option
- IBM®-compatibility option
- Apple® (ImageWriter®)-compatibility option

The Okidata 84 printer plotter is supported via a serial interface. For this interface, the communications mode should be set to 9600 baud, no parity, 8 data bits, and 1 stop bit. A three-wire cable is sufficient for the serial interface; it should connect the following pins between the printer plotter and the computer:

```
PrPlot End   Computer End
  2           3
  3
  4
  5           7
  6
  20          20
```

Note that some pins must be strapped together in the connector at one end of the cable, without running them to the other end. Switches on the main board inside the printer plotter (the one closer to the front of the printer plotter) should be set as follows:

```
Switch  On     Off
3       ✓   ✓       ✓
1,2,4,8 ✓       ✓
```

There are five jumper plugs numbered SP1, SP2, ... SP5 on the serial board (the one closest to the rear of the printer). They all should be set with the jumper on side A. Set the DIP switches on the serial board for 8 bits, no parity, ready/busy, busy line = RTS, 9600 baud, 32-byte threshold, and RS-232C interface. These parameters are established as follows:

```
Switch  On       Off
1       1-3,5-7  4,8
2       2,3,4,6  1,5,7,8
```
AutoCAD supports the standard version Okidata 93 only and will not work if any of the following options have been installed:

- Plug 'n Play option
- IBM®-compatibility option
- Apple® (ImageWriter®)-compatibility option

The Okidata 93 printer plotter is supported via a serial interface. There are two sets of switches that must be set. Switch 1 (SW1) is located on the right of the front operating panel; switch 2 (SW2) on the upper-right corner of the control circuit board. The printer user's manual gives instructions for accessing these switches. The settings are:

<table>
<thead>
<tr>
<th>Switch</th>
<th>On</th>
<th>Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.4</td>
<td>1,3,5-8</td>
</tr>
<tr>
<td>2</td>
<td>1.8</td>
<td>2,3</td>
</tr>
</tbody>
</table>

The other settings on SW2 are fixed at the factory and should not be touched. Serial cabling for the Okidata 93 is the same as for the Okidata 84.
Index

A
ACAD, 31, 33
ACADCFG, 31, 33
ACADMAMEM, 31, 34
ACADMAXPAGE, 31, 34
ACDPAGEDIR, 31, 34
ACADPLCMD, 27, 31
ACADPPCMD, 27, 31
ADI
configuring ADI display, 37
digitizer, 42
display interface, 37
XADI variable, 37
kit, 9
plotter, 59
printer plotter, 72
Alpha Merics Alphaplot, 58
AutoCAD
killing, 34
pager, 33
Autodesk Device Interface kit, 9
AutoLISP, 21
AutoSolid, 35
autospool, 19

B
Backups, 7

C
CalComp
2500 Series tablets, 43
9000 Series tablets, 45
9100 Series tablets, 47
plotter, 63
tables, 43, 45, 47
Calibration, of plotter, 16
Communication ports, 4
Configuration, 13-30
console, 18
detailed, 14
digitizer, 16
error recovery, 21
file, 21
initial, 13
menu, 14
operating parameters, 18
pen motion optimization, 17
plotter, 16
printer plotter, 18
tablet menu, 23, 24
testing, 22
video display, 14
Connecting peripherals, 4
Console, configuration, 18
Control keys, 3
Conventions, 36

D
Detailed configuration, 14
Digitizer, 4, 35, 41
ADI, 42
CalComp, 43, 45, 47
configuration, 16
Hitachi, 49
Kuta, 51
Summagraphics, 52
XENIX supported, 41
Directory
plot spooler, 19
usage, 33, 36
Displays
ADI, 37
configuring, 37
XADI variable, 37
Hercules, 38
IBM Enhanced Graphics, 38
IBM Video Graphics Array, 39
Null, 40
Dot aspect ratio, 15
Drafting conventions, 36
Drawing files
moving, 26
transferring, 26
Drawing limits, 36
Index

E
Enhanced Graphics display, 38
Environment variable, XADI, 31
Environment variables, 33
ACADMAXMEM, 31, 34
ACADMAXPAGE, 31, 34
ACADPAGEDIR, 31, 34
ACAD, 31, 33
ACADCfg, 31, 33
ACADPLCM, 27, 31
ACADPPCMD, 27, 31
setenv command, 32
setting, 32
AutoCAD command format, 32
Bourne shell XENIX, 32
C Shell XENIX, 32
Korn Shell XENIX, 32
XENIX command format, 32
XADI, 37
Error recovery, configuration, 21

F
File
configuration, 21
name case, 21
permissions, 4
Files, drawing, 26
Freeze/thaw layers, 36

H
Hercules Graphics Card, 38
Hewlett-Packard
LaserJet, 75
plotter, 64
HI-PL0T, plotter, 66
HICOMSCAN tablet, 49
Hitachi tablet, 49
Houston Instruments, plotter, 66

I
IBM
Enhanced Graphics display, 38
Series 7300, 67
Video Graphics Array, 39
Initial configuration, 13
Installation
AutoCAD, 10
procedure, 7
software, 7

K
Keyboard functions, 3
Keys, control, 3
Killing AutoCAD, 34
Kurta tablet, 51

L
LaserJet
500 Plus, 75
Plus, 75
Series II, 75
Layer freeze/thaw, 36
Limits, drawing, 36

M
Memory, additional, 33
Menu
areas, 14
configuration, 14
Mouse
operation, 42
two/three button, 54
XENIX System, 5, 54
Moving
drawing files, 26
support files, 27
MS-DOS, 26, 27
Multiscreens, 4
mkdev command, 54

N
Network node name, 20
Node name, 20
Notation, 1
Null display, 40

O
Okitdata, printer plotter, 77, 78
Operating
  parameter configuration, 18
  systems, DOS/XENIX transfer, 26, 27
Optimization, of pen motion, 17
Out of RAM, 34

P
Pager, AutoCAD, 33
Paging, 33
Parallel ports, 4
PC-DOS, 26, 27
Pen motion optimization, 17
Performance, 31
Peripheral connections, 4
Plot
  spooler directory, 19
  spooling, 27
Plotter, 57
  ADI, 59
  Alpha Merics, 58
  CalComp, 63
  calibration, 16
  configuration, 16
  Hewlett-Packard, 64
  Houston Instrument, 66
  IBM series 7300, 67
  PostScript laser printers, 68
  UNIX plot file, 69
Ports, communication, 4
PostScript Laser Printers, 68
Printer plotter, 71
  ADI, 72
  configuration, 18
  HP, 75
  Okidata, 77, 78
Prompt areas, 14

R
Reinstallation, 10
Release format, 7-12
Requirements, system, 2

S
Serial ports, 4
Setenv command, 32
Shell
  command, 29
  file name expansion, 30
Slide show, 25
Software installation, 7
Spooler, directory, 19
Status line, 14
Summagraphics tablet, 52
Support files, moving, 27
System requirements, 2

T
Tablet
  CalComp, 43, 45, 47
  Hitachi, 49
  Kurta, 51
  menu configuration, 23
  operation, 41
Temporary files, placement, 19
Testing configuration, 22
Time savers, 36
Transferring, drawing files, 26

U
UNIX plot file plotter, 69

V
Video, configuration, 14
Video Graphics Array, 39

X
XADI variable, 31, 37
XENIX
  System Mouse, 5, 54
  two/three button, 54
  supported digitizers, 41