Chapter XXX

Good Things
to Know About Lisa

X.1   INTRODUCTION
X.2   GOOD THINGS TO KNOW ABOUT LISA - TABLE OF CONTENTS
X.3   GOOD THINGS TO KNOW ABOUT LISA - APPLE DOCUMENTS

NOTE

THIS IS A PRELIMINARY CHAPTER FROM MY LISA LEGACY PAPER REVISION.
THIS CHAPTER MAY CHANGE IN THE FUTURE WHEN I COMPLETE THIS PAPER.

Author

David T. Craig
71533.606@compuserve.com

X.1   INTRODUCTION

This chapter contains Lisa information from the Apple Technical Information Library as of 24 September 1995. This information may be found in Apple's CompuServe forum (GO APLTIL). I searched using the keyword "Lisa". 240 documents were found, but around 20 of these only mentioned the Lisa in passing and as such these extraneous documents are not present in this chapter.

Some of this information may be very useful to Lisa users who need rather specific notes about either the Lisa's software or hardware.

This information appears to have been created by Apple's Support Information Services (SIS) department.

X.2   GOOD THINGS TO KNOW ABOUT LISA - TABLE OF CONTENTS

X.3   GOOD THINGS TO KNOW ABOUT LISA - APPLE DOCUMENTS

1   (Lisa)Mac XL : LisaTest V.2.2 - Error 3 in Step 7

Article Created: 27 September 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Lisa Test Error number 3 displayed
during Step 7 when using version 2.2 indicates a "Parallel Port
VIA Interrupt Failure".

CAUSE: The hard disk may be formatted for Macintosh software
        or have been partitioned for a shared Macintosh and Lisa
        environment when the 7/7 office system was installed.
        LisaTest version 2.2 does not operate with
        these configurations.

CURE: Use LisaTest 3.0 or later for Macintosh formatted hard disks.
       Use Mac XL/Lisa Modification Test Version 1.0 or later for Square
       Pixel Screen Driver.

If this cure does not resolve the problem, go to the Lisa 2/Macintosh
XL Technical Procedures, for the troubleshooting procedures for
this product.

Copyright 1988 Apple Computer, Inc.
Keywords: hts

2   Anti-Theft Device for the Lisa

An anti-theft device for the Lisa is available from:

 Anchor Pad of Northern California
 1255 Post St., Suite 723
 San Francisco, CA 94109
 (415) 441-2593

Good Things to Know About Lisa

Keywords:

3   Apple Cluster Controllers: Specifications

I. Technical Specifications

   1. Protocols:

   A. Systems Network Architecture/Synchronous Data Link Control
      (SNA/SDLC)
   B. Binary Synchronous Communication (BSC)

   2. Cluster Controllers Emulated:

   A. SNA/SDLC: IBM 3274, 3276 MOD 12
   B. BSC: IBM 3276 MOD 2

   3. Devices Emulated:

   A. Terminals:
      1. SNA/SDLC: IMB 3278-2
      2. BSC: IBM 3277
   B. Printer: 3287-1

   4. Physical Unit Type: SNA/SDLC: PU (1-7 LU's)

   5. Device Address:

   A. SNA/SDLC: PU2, address switch selectable
   B. BSC: Switch selectable

   6. Transmission Speed:

   A. Full Duplex: Up to 9600 bps
   B. Printer: 300 to 9600 bps, Full duplex flow control (X-on/X-off)

   7. Interface:

   A. Asynchronous:
      a. Seven-bit ASCII
      b. Full duplex
   B. Synchronous:
      a. 8-bit EBCDIC

   8. Power Requirements: 115 AC, 1 amp, 50/60 Hz

   9. Physical Connection:

   A. Synchronous port: Serial high-speed synchronous modem
   B. Asynchronous port: Serial interface (DTE or DCE) for:
      a. computer
      b. printer
      c. modem

   10. Data Security:

   A. Monitors data flow from each port in both directions
   B. Automatically terminates when the transmission is interrupted

_____

11. Diagnostics:

     A. A diagnostic line monitors every port
     B. Self-diagnostic test programs that may be run at any time
     C. Complete system test at power-on
     D. Results displayed on the Status Line

12. Environmental Requirements

     A. Operating temperature: 50 to 90 degrees F (10 to 35 degrees C)

II. Package

NOTE: For Datacomm approved dealers only
Order Numbers: Search on "Cluster" in the Product Prices Library

  1. An Apple Cluster Controller

  2. Power cord

  3. Jumper package for configuration

  4. Test loopback plug

  5. Accessory Kit
     a. Cluster Controller Operating Manual
     b. Cluster Controller Installation Guide
     c. Warranty and Product Registration Card

III. System Configuration

  1. An Apple Computer
     a. Macintosh or Macintosh XL
     b. III
     c. II, II Plus, IIe, or IIc:
       1. Not recommended
       2. Cable and pinout information on connecting your Apple II to an Apple Cluster Controller may be found by searching AppleLink's Techincal Library on "Apple Cluster Controller and pinout"

  2. Serial printer (optional)

  3. Data cables to connect to a computer, printer or asynchronous modem

  4. Data cables or a synchronous modem to connect to the IBM mainframe

  5. Terminal software:
     a. Apple III: Access III or Access 3270
     b. Macintosh XL: LisaTerminal or MacTerminal (under MacWorks)
     c. Macintosh: MacTerminal

Copyright 1989 Apple Computer, Inc.
Keywords: SPECSHT

4   Apple Color Plotter: Configuration Table

This article last reviewed: 5 April 1990

```
                          SW-1
     System              12345678     Cable Required
     ------------------------------------------------------------
     Apple III           10111100     590-0037 and 590-0166
     Apple IIGS                       590-0037 and 590-0550
     Macintosh           01111111     590-0169 *
     Lisa                  N/A          N/A
     Apple IIc           01101100     590-0191 **
     Super Serial ***    01101100     590-0037
     High Speed Serial     N/A          N/A

     Key
      0 = off = closed
      1 = on = open
      * - A special plotter driver is necessary for the Macintosh.
          The switch setting here is from an interface package for the
          Macintosh, "Plot-It"from Mesa Graphics, which works with MacPaint.
      ** - Using default port settings
      *** - Apple II,II+, IIe require the Super Serial card
```


Apple III Driver Configuration:

```
  Driver     Data Configuration Block
  ------     --------------------------------
             0  1  2  3  4  5  6  7  8  9  A  B
  RS-232     08 22 00 00 00 00 13 11 DF 84 50 80
  Printer    08 22 00 00 00
```


Super Serial Card Configuration:

```
             1     2     3     4     5     6     7
  SW1       Off   Off   Off   On    Off   On    On
  SW2       On    Off   Off   On    Off   Off   Off
```

  Jumper block should be pointing towards terminal.

Copyright 1990 Apple Computer, Inc.
Keywords:

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5   Apple II, Apple III, Lisa Family: Video Specs

Article Created: 15 November 1984
Article Reviewed/Updated: 26 June 1992

TOPIC --

The following information is for the benefit of users who may wish to interface
Apple models to video projectors:

DISCUSSION --

     Apple II, II+, IIe, IIc
     1. Number of lines in the raster.   525
     2. Whether interlaced.   No
     3. Signal type.   NTSC compatible
     4. Frame rate.   60 hz.

     Apple III, III+
     1. Number of lines in the raster.   525
     2. Whether interlaced.   No / Yes for III+
     3. Signal type.   NTSC B/W, NTSC
                                              color composite,
                                              RGB Pure Video,
                                              Composite Sync
                                              Signals
     4. Frame rate.   60 hz.

     Euro IIc, IIe, II+, Euro PAL color card
     1. Number of lines in the raster.   625
     2. Whether interlaced.   No (IIc, IIe)
     3. Signal type.   Composite PAL
                                              video
                                              (unmodulated)
     4. Frame rate.   50 hz.

     Lisa
     1. Number of lines in the raster. | video output to
     2. Whether interlaced. | Conrac or
     3. Signal type. | Electrohome
     4. Frame rate. | monitor with
                                              | 22.7 Khz scan
                                              | rate

Keywords: SPECSHT

6   Apple Products: Dates Introduced and Discontinued (9/95)

Whoever created this table forgort about the Lisa 1 :-(I've added it for
completeness. They also forgot about the DMP printer which was introduced in 1982 and
was the Lisa's first printer.

 Article Created: 20 November 1992
 Article Reviewed/Updated: 5 September 1995

 TOPIC ---

 This article lists the date of introduction and, where applicable, the date
 when the model was discontinued for various Apple products. Dates which are
 missing will be added as they occur.

 DISCUSSION --

 Begin_Table

 COMPUTER SYSTEMS
 ================

Apple II Series	Introduced		Discontinued	
---------------	-------------		--------------	
Apple II	August	1978	December	1982
Apple II+	June	1979	June	1983
Apple IIc	April	1984	September	1988
Apple IIc Plus	September	1988	November	1990
Apple IIe	January	1983	March	1985
Apple IIe Enhanced	March	1985	November	1993
Apple IIGS	September	1986	December	1992

Apple III Series	Introduced		Discontinued	
---------------	-------------		--------------	
Apple III	May	1980	September	1985
Apple III+	December	1983	September	1985

Lisa	Introduced		Discontinued	
----	-------------		--------------	
Lisa 1	January	1983	January	1984
Lisa 2	January	1984	January	1985
Lisa 2/5	January	1984	January	1985
Lisa 2/10	January	1984	January	1985

Macintosh	Introduced		Discontinued	
---------	-------------		--------------	
Mac 128K	January	1984	October	1985
Mac 512K	September	1984	April	1986
Mac 512Ke	April	1986	August	1986
Mac Plus	January	1986	October	1990
Macintosh Classic	October	1990	October	1991
Macintosh Classic II	October	1991	September	1993
Macintosh Color Classic	February	1993	May	1994
Macintosh LC	November	1990	March	1992
Macintosh LC II	March	1992	March	1993
Macintosh LC III	February	1993	February	1994
Macintosh LC 475	October	1993		

```
Macintosh LC 520            June       1993      February  1995
Macintosh LC 550            February   1994      April     1995
Macintosh LC 575            February   1994      April     1995
Macintosh LC 580            April      1995
Macintosh LC 630            July       1994      April     1995
Macintosh LC 630
DOS Compatible              April      1995
Macintosh Portable          September  1989      January   1991
Macintosh SE                March      1987      October   1990
Macintosh SE/30             January    1989      October   1990
Macintosh SE FDHD           August     1989      October   1990
Macintosh TV                October    1993
Macintosh XL                January    1985      August    1986
```

Macintosh II	Introduced		Discontinued	
Macintosh II	March	1987	January	1990
Macintosh IIx	October	1988	October	1990
Macintosh IIcx	March	1989	March	1991
Macintosh IIci	September	1989	February	1993
Macintosh IIfx	March	1990	April	1992
Macintosh IIsi	October	1990	March	1993
Macintosh IIvx	October	1992	October	1993

Centris	Introduced		Discontinued	
Macintosh Centris 610	February	1993	October	1993
Macintosh Centris 650	February	1993	October	1993
Macintosh Centris 660AV	August	1993	October	1993

Quadra	Introduced		Discontinued	
Quadra 605	October	1993	October	1994
Quadra 610	October	1993	May	1994
Quadra 630	July	1994	April	1995
Quadra 650	October	1993	September	1994
Quadra 660AV	October	1993	September	1994
Quadra 700	October	1991	March	1993
Quadra 800	February	1993	March	1994
Quadra 840AV	August	1993	July	1994
Quadra 900	October	1991	May	1992
Quadra 950	May	1992		

Power Macintosh	Introduced		Discontinued	
Power Macintosh 5200/75 LC	April	1995		
Power Macintosh 5300/100 LC	September	1995		
Power Macintosh 6100/60	March	1994	January	1995
Power Macintosh 6100/60AV	March	1994	January	1995
Power Macintosh 6100/66	January	1995		
Power Macintosh 6100/66AV	January	1995		
Power Macintosh 7100/66	March	1994	January	1995
Power Macintosh 7100/66AV	March	1994	January	1995
Power Macintosh 7100/80	January	1995		
Power Macintosh 7100/80AV	January	1995		
Power Macintosh 7200/75	August	1995		
Power Macintosh 7200/90	August	1995		
Power Macintosh 7500/100	August	1995		
Power Macintosh 8100/80	March	1994	January	1995

```
Power Macintosh 8100/80AV    March      1994        January    1995
Power Macintosh 8100/100     January    1995
Power Macintosh 8100/100AV   January    1995
Power Macintosh 8100/110     November   1994
Power Macintosh 8500/120     August     1995
Power Macintosh 9500/120     June       1995
Power Macintosh 9500/132     June       1995
```

PowerBook	Introduced	Discontinued
PowerBook 100	October 1991	July 1992
PowerBook 140	October 1991	August 1992
PowerBook 145	August 1992	June 1993
PowerBook 145b	June 1993	July 1994
PowerBook 150	July 1994	
PowerBook 160	October 1992	August 1993
PowerBook 165	August 1993	July 1994
PowerBook 165c	February 1993	December 1993
PowerBook 170	October 1991	October 1992
PowerBook 180	October 1992	May 1994
PowerBook 180c	June 1993	March 1994
PowerBook 190/66	August 1995	
PowerBook 190cs/66	August 1995	
PowerBook 520	May 1994	June 1995
PowerBook 520c	May 1994	
PowerBook 540	May 1994	October 1994
PowerBook 540c	May 1994	
PowerBook 550c*	May 1995	
(*Avail. in Japan Only)		
PowerBook 5300/100	August 1995	
PowerBook 5300c/100	August 1995	
PowerBook 5300ce/100	August 1995	
PowerBook 5300cs/100	August 1995	
PowerBook Duo 210	October 1992	October 1993
PowerBook Duo 230	October 1992	July 1994
PowerBook Duo 250	October 1993	May 1994
PowerBook Duo 270c	October 1993	May 1994
PowerBook Duo 280	May 1994	November 1994
PowerBook Duo 280c	May 1994	
PowerBook Duo 2300c/100	August 1995	

PowerBook Docking Stations	Introduced	Discontinued
PowerBook Duo MiniDock	October 1992	
PowerBook Duo Dock	October 1992	
PowerBook Duo Dock II	May 1994	May 1995
PowerBook Duo Dock Plus	May 1995	

Performa	Introduced	Discontinued
Performa 200	October 1992	April 1993
Performa 400	October 1992	April 1993
Performa 405	April 1993	
Performa 410	October 1993	
Performa 430	April 1993	
Performa 450	April 1993	
Performa 460	October 1993	
Performa 466	October 1993	
Performa 467	October 1993	

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Performa 475              October   1993
Performa 476              October   1993
Performa 550              October   1993
Performa 560              January   1994
Performa 575              April     1994
Performa 577              April     1994
Performa 578              April     1994
Performa 580              May       1995
Performa 588              April     1995
Performa 600              October   1992          October    1993
Performa 630              July      1994
Performa 630CD            July      1994
Performa 631              July      1995
Performa 635              July      1994
Performa 635CD            July      1994
Performa 636              July      1994
Performa 637CD            July      1994
Performa 638CD            July      1994
Performa 640
DOS Compatible            May       1995
Performa 5200CD           July      1995
Performa 5210             May       1995
Performa 5215             July      1995
Performa 5220             May       1995
Performa 6110             September 1994
Performa 6112             September 1994
Performa 6115             September 1994
Performa 6116             July      1995
Performa 6117             September 1994
Performa 6118             September 1994
Performa 6200             July      1995
Performa 6216             July      1995
Performa 6218             July      1995
Performa 6220             July      1995
Performa 6230             July      1995
```

PRINTERS
========

```
ImageWriters             Introduced             Discontinued
------------             -------------          -------------
ImageWriter 15"          April     1984         September 1987
ImageWriter I            June      1984         December  1985
ImageWriter II           September 1985
ImageWriter LQ           August    1987         December  1990


LaserWriters             Introduced             Discontinued
------------             -------------          -------------
Color LaserWriter 12/600 June      1995
LaserWriter              March     1985         February  1988
LaserWriter 16/600 PS    September 1994
LaserWriter Plus         January   1986         February  1988
LaserWriter IISC         January   1988         July      1990
LaserWriter IINT         January   1988         October   1991
LaserWriter IINTX        January   1988         October   1991
LaserWriter IIf          October   1991         May       1993
LaserWriter IIg          October   1991         October   1993
LaserWriter Pro 600      January   1993         October   1993
LaserWriter Pro 630      January   1993         September 1994
```

	Introduced		Discontinued	
LaserWriter Pro 810	October	1993	November	1994
LaserWriter Select 300	February	1993		
LaserWriter Select 310	February	1993	January	1994
LaserWriter Select 360	October	1993		
Personal LaserWriter LS	March	1991	May	1993
Personal LaserWriter NT	July	1990		1994
Personal LaserWriter NTR	March	1992	September	1993
Personal LaserWriter SC	June	1990	September	1993
Personal LaserWriter 300	June	1993		1994
Personal LaserWriter 320	October	1993		

StyleWriters	Introduced		Discontinued	
Color StyleWriter Pro	February	1994		
Color StyleWriter 2200	June	1995		
Color StyleWriter 2400	September	1994		
Portable StyleWriter	June	1993		
StyleWriter	March	1991	January	1993
StyleWriter 1200	April	1995		
StyleWriter II	January	1993		

Other Printers	Introduced		Discontinued	
Apple Color Printer	January	1993	February	1994
Scribe	April	1984	August	1986
Silentype	January	1980	June	1984

OTHER PRODUCTS

Scanners	Introduced		Discontinued	
Apple Scanner	August	1988	September	1991
Apple OneScanner	September	1991	June	1994
Apple Color OneScanner	January	1993		

Monitors	Introduced		Discontinued	
AppleColor High-Res RGB	March	1987	December	1992
AppleColor RGB	September	1986	January	1993
AppleVision 1710AV	August	1995		
Apple AudioVision 14	August	1993		
Apple Basic Color	February	1993	October	1993
Apple Color Plus Display	October	1993		
Apple High-Res Mono	March	1989	February	1991
Apple Multiple Scan 14	August	1995		
Apple Multiple Scan 15	July	1994		
Apple Multiple Scan 17	March	1994		
Apple Multiple Scan 20	March	1994		
Macintosh 12-inch Mono	December	1990	October	1993
Macintosh 12-inch RGB	October	1990	March	1993
Macintosh 16-inch Color	October	1991	April	1994
Macintosh 21-inch Color	October	1991	March	1994
Macintosh Color 14 Display	December	1992		
Macintosh Portrait Display	March	1989	December	1992
Macintosh Two-Page Mono	March	1989	December	1992
Performa Display	September	1992	July	1994
Performa Plus Display	September	1992		

```
Modems                      Introduced          Discontinued
------------                --------------      --------------
Apple Personal Modem        September 1985      December   1990
Apple Modem 2400            July      1989      December   1992
PowerBook Data/Fax Modem    October   1991      November   1993
PowerBook Express Modem     October   1992
PowerBook Express Modem II* October   1992
(*Avail. in Europe Only)

PIE                         Introduced          Discontinued
------------                --------------      --------------
Newton Message Pad          August 1993         March 1994
Newton Message Pad 100      March 1994          January 1995
Newton Message Pad 110      March 1994          January 1995
Newton Message Pad 120      January 1995
```

End_Table

Article Change History:
05 Sep 1995 - Added new products.
01 Sep 1995 - Added PIE products.
24 Aug 1995 - Added new products.

Support Information Services
Copyright 1992-95, Apple Computer, Inc.
Keywords: review,ktable

7   Apple Software and Hardware Diagnostic Part Numbers (9/95)

 Article Created: 20 December 1985
 Article Reviewed/Updated: 7 September 1995

 TOPIC --

 The article contains the most recent part numbers for all Apple diagnostics.

 DISCUSSION ---

 Begin_Table

 PRODUCT P/N   REV DESCRIPTION
 --------------   --

 APPLE TECHSTEP: Available Accessories
  Z077-8668   Power Adapter, Apple TechStep, Europe
  X077-8668   Power Adapter, Apple TechStep, Australia
 JA077-8668   Power Adapter, Apple TechStep, Japan
  B077-8668   Power Adapter, Apple TechStep, U.K.
   699-0578   Carrying Case, Apple TechStep
   590-4512   Cable, Stereo, Apple TechStep
   590-4501   Cable, ADB, 2-meter
   590-0623   Cable, SCSI, Apple TechStep
   077-8405   Cable Wrap Kit, Apple TechStep
   590-0552   Cable, Mini-Din 8, 2-Meter
   077-8668   Power Adapter, Apple TechStep, U.S.

 Service Parts Available for the Apple TechStep

   661-0703   Assy, TechStep w/o Port or ROM Packs
   076-0574   Port Pack, Apple TechStep
   661-0150   ROM Pack, CPU Tests, Vol. 1, v1.01
   661-0157   ROM Pack, SCSI HD Tests, v1.0
   661-0147   ROM Pack, CPU Tests, Vol. 2, v1.0
   661-0148   ROM Pack, CPU Tests, Vol. 3, v1.0
   661-0149   ROM Pack, CPU Tests, Vol. 4, v1.0

 APPLE II FAMILY DIAGNOSTICS STARTER KIT
   077-8313   Apple II Diagnostics and Updates--REQUIRED
                (includes starter kit and one year of updates)

 CONTENTS OF APPLE II FAMILY DIAGNOSTICS STARTER KIT
   077-0100 B   Apple II Product Diagnostic, (5.25)
   077-0217 A   Apple II Peripheral Diskette, (5.25)
   077-0232 E   Apple IIe,IIc Diagnostic 4.0, (5.25)
   077-0233 H   Apple IIe,IIc,IIc Plus,IIGS, IIGS 1MB
                Diagnostic 4.1, (3.5)
   077-0234 F   Apple IIGS, IIGS 1MB Diagnostic 4.1, (3.5)
   077-0274 C   Apple II Hard Disk Test 1.0 and
                SCSI Card Test 2.1 (5.25)
   077-0316 A   Apple II Video Overlay Card Diagnostic, 1.0 (5.25)
   077-0340 C   Apple II Hard Disk Test 1.0 and

```
                         SCSI Card Test 2.1 (3.5)
077-8148  A    Apple IIc Loopback Cable
077-8219  C    SCSI Loopback Test Card
077-8324  A    Apple 5.25 Floppy Drive Test Assembly,
                 Version 1.0 (replaces 077-8216)
590-0552  A    Cable, APM/ImageWriter II to
                 Apple IIGS/Macintosh Plus
661-91097 A    Apple IIe 80 Col/64K Card
686-0027  A    Profile Limited Data Recovery
                 Program 2.0, (5.25)
```

NOTE: Subscriptions are Non-Refundable.

APPLE II FAMILY DIAGNOSTIC RENEWAL
  011-7077   Renewal, Apple II Family Diagnostic
               Updates--REQUIRED

The Apple II Family diagnostics included in this package cover the
following products:

CPUs: Apple II, Apple II+, Apple IIe, Apple IIc, Apple IIc Plus,
         Apple IIGS.

Monitors: Monitor II, Monitor IIc, Monitor ///, AppleColor Monitor 100,
         AppleColor Composite Monitor, ColorMonitor IIe/IIc, Apple
         Monochrome Monitor, AppleColor RGB Monitor, Flat Panel Display.

Drives: ProFile, Disk II, Disk ///, DuoDisk, UniDisk-Apple 5.25 Drive,
         Disk IIc, UniDisk 3.5, Apple 3.5, Hard Disk 20SC.

Printers: Daisy Wheel Printer, Dot Matrix Printer, ImageWriter,
         ImageWriter II, Scribe, Silentype.

Other: Apple II Memory Expansion Card, Apple II SCSI Card, Apple IIGS
         Memory Expansion Card, Apple II Workstation Card, Apple IIc
         Memory Expansion Card, Apple II Keyboards and Mice.

MACINTOSH FAMILY DIAGNOSTICS STARTER KIT
  077-8312   Macintosh Diagnostics and Updates--REQUIRED
               (Includes starter kit and one year of updates)
               NOTE: This part number replaced 632-0582 as
               of November 14, 1988

CONTENTS OF MACINTOSH FAMILY DIAGNOSTICS STARTER KIT
  073-0301   Macintosh Family Diagnostics Reference Guide
  073-0326   MacTest Pro Diagnostics User Guide
  073-0368   MacTest Pro Diagnostics Reference Guide
  077-0370   MacTest Pro-Application & Modules Nonbootable Disk
  077-0070   MacTest Pro-Macintosh CPU Tests, Vol. 1A
  077-0071   MacTest Pro-Macintosh CPU Tests, Vol. 1B
  077-0371   MacTest Pro-Macintosh CPU Tests, Vol. 2
  077-4221   MacTest Pro-Macintosh CPU Tests, Vol. 3
  077-0372   MacTest Pro-PowerBook Tests, Vol. 1
  077-0400   MacTest Pro-PowerBook Duo Tests, Vol. 1
  077-0082   MacTest Pro-Power Macintosh CPU Tests, Vol. 1
  077-0083   MacTest Pro-Power Macintosh Upgrade Card Tests
  077-0220   MacTest 7.0
  077-0243   MacTest SE
```

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077-0244      MacTest II/IIx
077-0251      MacTest SE/30
077-0270      MacTest IIcx/IIci
077-0329      MacTest Portable
077-0359      MacTest MP
077-0360      MacTest CL
077-0258      Macintosh Peripherals Tests, Vol. 1
077-0323      Macintosh Peripherals Tests Vol. 2
077-0363      Macintosh Peripherals Test, Vol.3
077-0268      Macintosh Hard Disk Test
077-0362      Macintosh 16"/21" Color Display Patterns
077-0322      Connect Test
077-0328      Modem Test
077-0242      NodeCheck
072-8220      AppleCAT LaserWriter Quick Reference
077-0247      AppleCAT LaserWriter Test
077-8209      AppleCAT LaserWriter Test Adapter Cable
077-8319      LaserWriter II Test Connector
689-0045      Using Your ImageWriter LQ
590-0552      Cable, APM/ImageWriter II to Apple IIGS and Mac Plus
678-5064      CD Rom Test Disc
678-5059      Caddy - Compact Disc
077-8219      SCSI Loopback Test Card
690-8132      Inter*Poll, Network Administrator's Utility
077-8129      DB9 Serial Port Plug (Set of 2)
590-0169      DB9m to Din 25m Cable
590-0553      MINI DIN 8M to DB9F Adapter Cable
077-0673      Blank 800K Diskette
077-0674      Blank 1.4 Diskette
```

MACINTOSH FAMILY DIAGNOSTIC RENEWAL
```
011-7091      Renewal, Macintosh Family Diagnostic
              Updates--REQUIRED
```

The Macintosh Family diagnostics included in this package cover the
following products:

CPUs: Macintosh, Macintosh Plus, SE, SE/30, Macintosh Classic/Classic II
     Color Classic, Macintosh II/IIx/fx/IIcx/IIci/IIsi/IIvx/IIvi/IIvm
     Macintosh LC, LC II, LC III, LC 475, LC 520, LC 550, LC 575,
     Performa Series, Macintosh Quadra 605, 610, 650, 660AV, 700, 800,
     840AV, 900, 950, Macintosh Centris 610, 650, 660AV,
     Apple Workgroup Server 60/80/95, PowerBook 100/140/145/145B/160/
     PowerBook Duo 210, 230, 250, 270c, Macintosh Portable,
     Apple Macintosh TV, Power Macintosh 6100/60, 6100/60AV, 7100/66,
     7100/66 AV, 8100/80, 8100/80 AV

Diskette
Drives: Macintosh 800K, Apple 3.5, Apple PC 5.25, 1.4MB SuperDrive

SCSI
Drives: Hard Disk 20, Hard Disk 20SC, 40SC, 80SC, 160SC, 400SC, 500SC, 1 GB;
          DDS-DC Drive, AppleCD SC, AppleCD SC Plus, AppleCD 150, AppleCD 300

Comm/
Network: LocalTalk, EtherTalk Card, AppleFax Modem, Portable Data Modem 2400,
          Apple Data Modem 2400, Ethernet NB Card, Int'l XP 2400,
          PowerBook FAX/Data Modem, Macintosh Express Modem

_____
```

Printers: LaserWriter, LaserWriter Plus, LaserWriter II, ImageWriter LQ

Scanners: Apple Scanner, Apple OneScanner

Displays: 12-inch RGB displays; 12-inch Monochrome display; High Res Monochrome
**   Monitor; High Res RGB Monitor; Macintosh 13-inch Color Display;**
**   Portrait Display; 16-inch Color Display; Two-Page Monochrome Display;**
**   21-inch Color Display; Macintosh SE/30 Display; Macintosh Classic**
**   Display; Macintosh Classic II Display; Color Compact Macintosh**
**   Displays; Macintosh Portable Display; PowerBook Displays,**
**   14" AudioVision Display, Basic Color Display**

Video
Cards: Macintosh II Video Card, Macintosh II Display Card 8*24;
**   8*24 GC Card, 2-Page Monochrome Display Video Card, Portrait Display**
**   Video Card, Monochrome Video Card, High Res RGB Video Card,**
**   4*8 Video Card, Apple High Performance Video Card, Apple AV Card**

Other
Cards: Mac SE PC Drive Card, Macintosh II PC Drive Card, Mac IIci Cache
**   Card, Apple IIe Card, Workgroup Server PDS Card, Power Macintosh**
**   Upgrade Card**

STARTER KIT HARDWARE DIAGNOSTIC TOOLS SOLD SEPARATELY:

Apple II Family:
**   077-0325 A Apple 5.25 Floppy Drive Test Reference Diskette**

Apple IIe:
**   077-8219 C SCSI Loopback Test Card**

Apple IIc:
**   077-8148 A Apple IIc Loopback Cable**

Apple IIGS:
**   077-0317 A Apple II Video Overlay Card**
**   Diagnostic; 1.0 (3.5)**
**   077-8219 C SCSI Loopback Test Card**
**   590-0552 A Cable, APM/ImageWriter II to**
**   Apple IIGS/Mac Plus**
Macintosh Family:
**   076-8354 A SIMM Removal Tool**

Macintosh Plus:
**   077-8129   A DB 9 serial port plug (set of 2)--REQUIRED**
**   077-8219   C SCSI Loopback Test Card**
**   590-0552   A Cable, APM/ImageWriter to Apple IIGS and Mac Plus**

Macintosh SE & SE/30:
**   077-8219   C SCSI Loopback Test Card**
**   077-8265   A MINI DIN 8 Serial Loopback Plug**
**   590-0551   A DB9M to MINI DIN 8M Cable**
**   590-0553   B MINI DIN 8M to DB9F Adapter Cable**

Macintosh II/IIx/IIfx:
```
        076-0341   A   IWM/SWIM IC Extraction Tool
        077-8219   C   SCSI Loopback Test Card
        077-8264   A   Macintosh II BUS Master Card
        077-8265   A   MINI DIN 8 Serial Loopback Plug
        590-0551   A   DB9M to MINI DIN 8M Cable
        590-0553   B   MINI DIN 8M to DB9F Adapter Cable
```

Macintosh IIcx/IIci:
```
        076-0341   A   IWM/SWIM IC Extraction Tool
        077-8219   C   SCSI Loopback Test Card
        077-8265   A   MINI DIN 8 Serial Loopback Plug
        590-0551   A   DB9M to MINI DIN 8M Cable
        590-0553   B   MINI DIN 8M to DB9F Adapter Cable
```

Macintosh Portable:
```
        590-0552   A   Cable, APM, ImageWriter to Apple IIGS/Mac Plus
```

AppleColor Hi-Res RGB Monitor:
```
        126-6605   A   330 F, 25V, Jitter Adjustment
```

AppleCD Products:
```
        678-5064   A   CD ROM Test Disc 2.0
```

LaserWriter/LaswerWriter Plus:
```
        076-8354   A   SIMM Removal Tool
        077-8209   A   AppleCAT LaserWriter Test Adapter Cable
```

LaserWriter II:
```
        076-8354   A   SIMM Removal Tool
        077-8319   A   LaserWriter II Test Connector
```


HARDWARE AND SOFTWARE DIAGNOSTIC TOOLS NOT INCLUDED IN STARTER KITS:

NOTE: The following tools listed as required are NOT included in the Diagnostic Starter Kits and Updates. Although not included, they are REQUIRED for support of the product listed.

Apple IIe:
```
        890-5124       Loopback Plug, Communications Protocol Card
```

Apple III:
```
        077-0009   A   Clock Calibration Kit--REQUIRED
        077-0013   B   Apple/// Diagnostic Diskette--REQUIRED
```

Apple III Plus:
```
        077-0032   A   Apple/// Plus Dealer Diagnostic Diskette--REQUIRED
```

LISA: 077-8043   A   Video Align Graticule, Lisa 1.0
```
        077-8102   A   Lisa Test for Lisa 1.0
        077-8124   C   Lisa 2/Macintosh XL Diag. 3.0--REQUIRED
        077-8169   A   Video Align Graticule for Mac XL/Lisa 2.0--REQUIRED
```

Macintosh XL:
```
        077-0206   A   Screen Mod. Kit Diagnostic 1.0--REQUIRED
```

Mac Plus:

```
        077-0135   @  Macintosh Voltage Test Cable
        077-8222   A  SCSI Loopback Card to Mouse Port Cable


Macintosh II/IIx/IIfx/IIcx/IIci:
        077-0104   A  Twinax Cable w/DB 15 Connector
        077-0105   A  Twinax T-Connector
        077-0106   A  Twinax Terminator
        077-0107   A  Coax Cable
        077-0109   A  Token Ring Adaptor Cable
        077-0256   *  EtherTalk: Terminator Kit
        077-0257   *  EtherTalk: Thin Net Test Cable


Cluster Controller:
        077-8156   A  DataLine Monitor ROM Pack-Utilities
        077-8157   A  DataLine Monitor ROM Pack-SNA
        077-8158   A  DataLine Monitor ROM Pack-BSC


AppleLine:
        970-0879   A  Loopback Plug--REQUIRED


LaserWriter/Plus:
        076-0121   A  Power Checker, Laser--REQUIRED


LaserWriter II:
        076-0121   A  Power Checker, Laser--REQUIRED


Color Plotter:
        686-0020   A  Apple Plotter Interface Test


Apple Scanner:
        077-8300      Apple Scanner Service Test Chart


End_Table


@ Recommended for Stocking
* These tools are required only if you support the EtherTalk Card
```

Article Change History:
07 Sep 1995 - Made minor corrections.
04 May 1995 - Corrected minor problem; reformatted.
27 Jun 1994 - Updated information, revised formatting.

Support Information Services
Copyright 1988-95 Apple Computer, Inc.
Keywords:

8   Daisy Wheel Printer: Configuring it for all Apples (10/94)

Article Created: 04 December 1984
Article Reviewed/Updated: 13 October 1994

TOPIC --

What are the configuration settings for the Apple Daisy Wheel Printer for all
Apple systems?

DISCUSSION --

Below are the switch settings for configuring a Daisy Wheel Printer to any
Apple computer. (NOTE: To get at the switches in the rear of the printer, you
must use a screwdriver to remove the top cover.)

System	Rear Panel Switches SW-1 12345678	SW-2 12345678	Front Switches 12345678	Cable Required (see key below)
Apple III	11100111	00001001	10000100	A+B
Macintosh	N/A	N/A	N/A	N/A
Lisa	11100111	00001001	10000100	A+B
Apple IIc	11100111	00001001	10000100	C*
Super Serial	11100111	00001001	10000100	B
High Speed Serial	00100111	00001001	10000100	B

Switch Setting Key: 0 = off = open; 1 = on = closed

Cable Key:
Letter Part number Comments

A   590-0029-00 Modem Eliminator
B   590-0037-B   DB-25 Pin to pin (1-8, 12, 13, 19, 20)
C   590-0191-A   5-pin DIN to DB-25

The pinouts for these cables are contained in separate articles in
AppleLink's Technical Information Library.

* - Using default port settings

Apple III Driver, data configuration block:
----
        0 1 2 3 4 5 6 7 8 9 A B
RS-232 0E 00 10 10 10 00 13 11 DF 84 50 80
Printer 0E 00 10 10 10

Super Serial Card Configuration:

     1   2   3   4   5   6   7
SW1 Off Off Off On Off On On
SW2 On On Off Off On Off Off

Jumper block should be pointing towards terminal.

Article Change History:
13 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services
Copyright 1984-94 Apple Computer, Inc.
Keywords:

9   Daisy Wheel Printer: Specifications

Article Created: 20 February 1986

I. Technical Specifications

    A. Print Speed: 40 characters per second (average)

    B. Interface: Asynchronous Serial (RS-232C) OCITT-V-24

    C. Forms: Single sheet or continuous forms

        -- Maximum width: 15 inches (38.1 cm)

    D. Fonts: 130-character "daisy" print wheels in various alphanumeric type
              styles, including: Courier 10 pitch, Prestige Elite 12 pitch,
              Gothic 15 pitch, and Executive/Boldface in English, French,
              German, and many other languages.

    E. Character Spacing in characters per inch (CPI):

        1. 10
        2. 12
        3. 15
        4. Proportional spacing

        -- Maximum 198 characters per line

    F. Command set:

        -- ASCII

        -- space, backspace, carriage return, line feed, horizontal tab,
           form feed, end-of-text, acknowlegde, XON/XOFF

    G. Special Mode Commands:

        -- Graphics mode, forward and backward print mode, program mode
           for hammer intensity and ribbon movement

    H. Weight and Dimensions:

                  pounds kilograms
        1. Weight: 37.0   16.8

                  inches centimeters
        2. Width: 23.22   59.0
        3. Height: 6.87   17.5
        4. Depth: 14.84   37.7

II. System Configuration

    A. Lisa system

    B. Apple III system

    C. Apple IIe or Apple II Plus system

```
           -- with Apple II Super Serial Interface Card installed

III. Features

      A. Snap-in ribbon cartridge

      B. Switch-selectable features:

            -- horizontal and vertical formatting
            -- forms length selection
            -- automatic form feed

Apple Technical Communications


Keywords:  SPECSHT
```

10   DART: Utility for Duplicating Floppy Disks (10/93)

Article Created: 13 August 1991
Article Reviewed/Updated: 6 October 1993

TOPIC---

Is there a Macintosh utility program for duplicating Macintosh, Lisa,
Apple II or MS-DOS 3.5-inch floppy disks?

DISCUSSION ---

DART (Disk Archive/Retrieval Tool) is an application that enables you to
duplicate Macintosh, Lisa, Apple II, or MS-DOS disks, save disk images, and
create disks from image files. DART 1.5 can read disk image files in DART,
DiskMaker, or Disk Copy format. DART 1.5 image files are compressed,
approaching a reduction in size comparable to that obtained by using a
commercial compression utility. DART 1.5 is System 7.0 "savvy", and implements
a custom Apple event mechanism to automate the conversion of older DART or
Disk
Copy files to 1.5 format. The conversion process can be run by "remote
control" (even across a network!) using an accompanying HyperCard stack.
(For more information, please refer to the DART User Manual.)

Features of DART 1.5

 Data compression: more disk images can be archived in the same amount of
  space.
 Data checksumming for reliable disk duplication.
 Can read Disk Copy image files.
 Requires only 224K of RAM to run.
 Stack utility enables you to batch-convert DART 1.4 or Disk Copy files.
 Apple events support ("required" AE suite and custom 'cnvt' event.)
 System 7 "drag-and-drop" disk image creation.
 32-bit clean.
 A/UX compatible.
 Color icons and balloon help.

Where to Obtain DART

The current version of DART may be downloaded from two locations on AppleLink:

1) The Apple SW Updates board. Use the following AppleLink path:

 Software Sampler
   Apple SW Updates
    Macintosh
     Utilities

2) On the AppleLink version of the Tech Info Library, posted as an enclosure
   to the article: "DART 1.5.3: Version Change History (10/93)"

Article Change History:
6 October 1993 - Added new description and features information.

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Keywords:

Article Created: 28 October 1985
Article Reviewed/Updated: 13 July 1994

TOPIC --

This article details the Dot Matrix Printer configuration table.

DISCUSSION ---

System	SW-1	SW-2	CABLE REQUIRED
	12345678	12345678	Part Number
Apple III	11001010	00000110	590-0042B
Macintosh	N/A	N/A	N/A
Lisa/Macintosh XL	11001010	00000110	590-0042B
Apple IIc	N/A	N/A	N/A
Centronics Card	11001011	00000110	57-30360
2PIC	11001010	00000110	590-0042B

NOTE: 0 = OFF = OPEN
       1 = ON = CLOSED

        Apple III Driver Configuration

Driver	Data Configuration Block
---------	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B
PRINTER	60	40	00	00	64								

   Parallel Interface Card (2PIC) Configuration

Switch Bank	1	2	3	4	5	6	7
SW1	Off	Off	Off	On	On	Off	Off

Article Change History:
13 Jul 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services
Copyright 1988-94 Apple Computer, Inc.
Keywords: hts

12   Electrical Specifications of Apple Hardware (9/95)

Article Created: 21 September 1984
Article Reviewed/Updated: 01 September 1995

TOPIC ---

This article provides the electrical specifications for Apple hardware.

NOTE: This article has been revised and combines two previous articles
titled, "Electrical Specifications of Most Apple Hardware" and "BTU Ratings
for Most Apple Hardware".

DISCUSSION --

The following Apple products are manufactured for use in the USA. In
determining whether a particular product can be used internationally, there
are three classes, depending on whether a product accepts a range in voltage,
frequency or both (for more specific information, see the article, "Using
U.S. Apple Equipment Internationally"):

1) Universal

These products can be used internationally out of the box. Some of Apple's
products are self-configuring devices or "universal" within a certain range.
They can accept a range in both voltage and frequency, and only require a
plug adapter for the specific locale.

Example: The Quadra 800 accepts 100-240 volts, 47-63 Hz.

2) Frequency Independent

These products can be used internationally with a voltage transformer.
Generally they are geared for U.S. 120 volt current, but are flexible as to
the frequency they accept (for example, 47-63 Hz), and are known as
"frequency independent." These products need a stepdown isolation transformer
to adapt the voltage, and will handle the different frequency on their own.

Example: The U.S. Performa 200 accepts 120 volts, 47-63 Hz.

3) Frequency Dependent

These products generally cannot be used internationally. These are products
that can work only within a narrow range in frequency; they are "frequency
dependent." Transformers only transform voltage, so if the product requires a
certain frequency, there's no practical way to convert both voltage and
frequency.

These products can ONLY be used internationally in countries with the same
frequency as the country for which the product was manufactured. Further, a
voltage transformer will be required if the destination country has a voltage
different from the home country.

Example: The U.S. Apple Color OneScanner accepts 108-132 volts, 58-62 Hz.

NOTE:
Computers with power outlets for peripherals do not condition the current as

it passes through. So, for example, a monitor requiring 120v-60Hz current could not be used in a 220v-50Hz environment even if the computer from which it gets its power is able to accept the local current.

The AC output of a Macintosh II is as follows: the monitor receptacle is rated for 3 amps steady state, 40 amps peak power. The power supply is fused for 6 amps to include the Macintosh II and monitor.

The amperage on the back of the computer is what should be used to calculate load on a circuit. Typical circuits in businesses and houses are 15 Amps (some are 20, but rarer, and an electric dryer is usually 30, an electric range may have DUAL 30 Amp circuits wired together). With that capacity, you could have the following configuration (from the back of the CPU):

```
CPU          5 Amps
Monitor      3 Amps
LaserWriter  7 Amps
Total:      15 Amps
```

Most of the time, the CPU will draw only 1-1.5 Amps, the Monitor about .5-1 Amp, and the LaserWriter about 2 Amps. The difference is sometimes referred to as Nominal (high) versus Actual draw.

These following values are accurate regardless of peripherals used with each device. For example, a Macintosh II with an EtherTalk NB Card, an 8-bit video card, and HD40 SC draws a maximum of 230 watts and 6 amps from the power outlet it is plugged into.

Begin_Table

Product	Watts (max)	Amps*	BTU/hr**	Volts	Hertz
-------	-----	----	-----	-----	-----

Apple II and Apple III Computer Systems

Product	Watts (max)	Amps*	BTU/hr**	Volts	Hertz
Apple II	60	.5	205.2	107-132	50-60
Apple II Plus	60	.5	205.2	107-132	50-60
Apple III	100	.83	342	107-132	60
Apple III Plus	100	.83	342	107-132	60
Apple IIe	60	.5	205.2	95-127	60
Apple IIc	25	.2	85.5	105-129	60
Apple IIc Plus	60	.5	205.2	90-130	50-60
Apple IIGS	60	.5	205.2	107-132	50-60

Macintosh XL and Compact Macintosh Systems

Product	Watts (max)	Amps*	BTU/hr**	Volts	Hertz
Lisa (Macintosh XL)	150	1.25	513	120	50-60
Macintosh 128K	60	.5	205.2	105-125	50-60
Macintosh 512K, 512Ke	60	.5	205.2	105-125	50-60
Macintosh Plus	60	.5	205.2	105-125	50-60
Macintosh SE	100	.83	342	90-270	47-63
Macintosh SE/30	75	.63	256.5	120-240	48-62
Macintosh Classic	76	.63	260	120	47-63
Macintosh Classic II	76	.63	260	120	47-63
Macintosh Color Classic	100	.83	342	90-240	47-63

Macintosh II Systems

```
Macintosh II           230     1.9     786.6    90-270     48-62
Macintosh IIx          230     1.9     786.6    90-270     48-62
Macintosh IIcx         159     1.3     543.8    100-240    50-60
Macintosh IIci         159     1.3     543.8    100-240    50-60
Macintosh IIfx         230     1.9     786.6    100-240    48-62
Macintosh IIsi         160     1.33    547.2    100-240    50-60
Macintosh IIvx         230     1.9     786.6    100-240    50-60
Macintosh IIvi         N/A     N/A     N/A      N/A        N/A


Macintosh LC Series
-------------------
Macintosh LC            50     .42     171      90-240     50-60
Macintosh LC II         50     .42     171      90-240     50-60
Macintosh LC III        50     .42     171      100-240    47-63
Macintosh LC 475        30     .25     102.6    100-240    47-63
Macintosh LC 520        60     .5      205.2    90-264     47-63
Macintosh LC 550        60     .5      205.2    90-264     47-63
Macintosh LC 575        60     .5      205.2    90-264     47-63
Macintosh LC 580        60     .5      205.2    90-264     47-63
Macintosh TV            60     .5      205.2    90-264     47-63


Performa Series
---------------
Performa 200            76     .63     260      120        47-63
Performa 400, 405, 430, 450 50  .42    171      90-240     50-60
Performa 475 & 476      30     .25     103      100-240    47-63
Performa 550            60     .5      205      90-264     47-63
Performa 575            60     .5      205      90-264     47-63
Performa 577            60     .5      205      90-264     47-63
Performa 578            60     .5      205      90-264     47-63
Performa 600           230     1.9     787      100-240    50-60


Quadra and Centris Series
-------------------------
Quadra 605              53     .44     181      100-240    47-63
Quadra/Centris 610     202     1.68    691      100-240    47-63
Macintosh 630 family   150     1.25    513      100-240    50-60
Quadra/Centris 650     230     1.9     787      100-240    50-60
Quadra/Centris 660AV    86     1.68    691      100-240    50-60
Quadra 700             230     1.9     787      100-240    50-60
Quadra 800             454     3.78    1553     100-240    47-63
Quadra 840AV           454     3.78    1553     100-240    50-60
Quadra 900             600     3.77    2052     100-240    50-60
Quadra 950             600     3.77    2052     100-240    50-60


Power Macintosh Series
----------------------
Power Macintosh 6100/60   202   1.7    691      100-240    50-60
Power Macintosh 7100/66   230   1.9    787      100-240    50-60
Power Macintosh 8100/80   454   3.8    1553     100-240    50-60
Power Macintosh 6100/66   202   1.7    691      100-240    50-60
Power Macintosh 7100/80   230   1.9    787      100-240    50-60
Power Macintosh 8100/100  550   4.6    1881     100-240    50-60
Power Macintosh 8100/110  550   4.6    1881     100-240    50-60
Power Macintosh 7200      300   2.5    1026     100-130/   50-60
                                                220-270
Power Macintosh 7500      453   3.77   1549     100-130/   50-60
                                                220-270
Power Macintosh 8500      520   4.33   1778     100-240    50-60
```

```
Power Macintosh 9500        550     4.6     1881     100-240    50-60

Apple Workgroup Servers
-----------------------
Workgroup Server 60         202     1.68     691     100-240    50-60
Workgroup Server 80         454     3.78    1553     100-240    50-60
Workgroup Server 95         600     3.77    2052     100-240    50-60
Workgroup Server 6150       202     1.7      691     100-240    50-60
Workgroup Server 8150       454     3.8     1553     100-240    50-60
Workgroup Server 9150       600     3.77    2052     100-240    50-60


Portable Macintosh Systems
--------------------------
Macintosh Portable           5      .125      .3     70-270     48-62
PowerBook 100             15/17     2        51.3    100-240    50-60
PowerBook 140             15/17     2        51.3    100-240    50-60
PowerBook 145,145B        15/17     2        51.3    100-240    50-60
PowerBook 150             15/17     2        51.3    100-240    50-60
PowerBook 160             15/17     2        51.3    100-240    50-60
PowerBook 165c            24        3.2      82.1    100-240    50-60
PowerBook 170             15/17     2        51.3    100-240    50-60
PowerBook 180             15/17     2        51.3    100-240    50-60
PowerBook 180c            24        3.2      82.1    100-240    50-60
PowerBook Duo 210         25        1.04     85.5    100-240    50-60
PowerBook Duo 230         25        1.04     85.5    100-240    50-60
PowerBook Duo 250         25        1.04     85.5    100-240    50-60
PowerBook Duo 270c        25        1.04     85.5    100-240    50-60
PowerBook Duo 280         25        1.04     85.5    100-240    50-60
PowerBook Duo 280c        36        1.5     123.1    100-240    50-60
PowerBook 520/520c        40   VBatt 1.0    137      100-240    50-60
                               VMain 1.5
PowerBook 540/540c        40   VBatt 1.0    137      100-240    50-60
                               VMain 1.5
Duo Dock                  87        4.2      297     100-240    50-60
Duo Dock II               87        4.2      297     100-240    50-60
Duo Dock Plus             87        4.2      297     100-240    50-60

LaserWriter Printers
--------------------
LaserWriter               760       6.3     2599.2   115          60
LaserWriter II            900       7.5     3078     90-126     50-60
LaserWriter IISC          900       7.5     3078     90-126     50-60
LaserWriter IINT/NTX      900       7.5     3078     90-126     50-60
LaserWriter IIg/IIf       900       7.5     3078     90-126     50-60
Personal LaserWriter SC   600       5       2052     110-115    50-60
Personal LaserWriter LS   600       5       2052     110-115    50-60
Personal LaserWriter NT   600       5       2052     110-115    50-60
Personal LaserWriter NTR  600       5       2052     110-115    50-60
Personal LaserWriter 300  360       3.00    1231     100-115(US) 50-60
Personal LaserWriter 320  120       1.0      410.4   100-115(US) 50-60
LaserWriter Pro 600       560       4.67    1915     90-110     58-62
LaserWriter Pro 630       560       4.67    1915     90-110     58-62
LaserWriter Pro 810       560       4.6     1915     90-126     58-62
LaserWriter Select 300    450       3.75    1539     110-115    50-60
LaserWriter Select 310    450       3.75    1539     110-115    50-60
LaserWriter Select 360    450       3.75    1539     100-115    50-60
LaserWriter 4/600         450       3.75    1539     100-115    50-60
LaserWriter 16/600 PS     790       6.8     2701     100-120    58-62
```

```
Clr LaserWriter 12/600 PS 1100        9.2     3762        100-120     50-60

Other Printers
---------------
Dot Matrix Printer         180     1.5     615.6   100-115     60
Daisy Wheel Printer        150     1.25    513     120         60
Color Plotter               33     .28     112.9   120         48-63
Scribe                      60     .5      205.2   120         60
ImageWriter                180     1.5     615.6   120         60
ImageWriter II             180     1.5     615.6   120         60
ImageWriter LQ             180     1.5     615.6   120         60
StyleWriter                 23     .19      78.7   110-120     48-62
StyleWriter II              19.5   .16      67     100-120     48-62
StyleWriter 1200            19.5   .16      67     100-120     48-62
Portable StyleWriter        23     0.19     79     100-115(US) 50-60
Color StyleWriter 2200      31.5   1.0     107     120         60
Color StyleWriter 2400      45     .38     154     100-120     50-60
Color StyleWriter Pro       28     .23      95.8    90-132(US) 50-60
Apple Color Printer         30     .25     103     120         60

Hard Disk Drives
----------------
ProFile                    120     1       410.4   110         50-60
Hard Disk 20                30     .25     102.6    85-270     47-64
Apple HD20/40/80/160 SC     30     .25     102.6    85-270     47-64
Apple External160/230/500   40     .33     136.8    85-270     47-64

Other Peripherals
-----------------
Apple Scanner               65     .54     222.3   120         58-62
Apple OneScanner            45     .38     153.9   120         58-62
Apple Color OneScanner      45     .38     153.9   120         58-62
HD40 SC Tape Backup         15     .125     51.3    85-270     47-64
AppleFax Modem              10     .08      34.2   120         60
Apple DataModem 2400         7     .06      23.9   110         60
AppleCD SC                  40     .33     136.8   120         47-64
AppleCD SC Plus             40     .33     136.8   100-240     50-60
AppleCD 150                 30     .25     102.6   100-240     50-60
AppleCD 300                 33     .28     112.9   100-240     50-60
AppleCD 600e                33     .28     112.9   100-240     50/60
Apple PowerCD               15     .125     51.3   100-240     50-60

Apple II Monitors
-----------------
Color Monitor 100           70     .58     239.4   117         50-60
Color Monitor IIe           48     .4      164.2   108-132     50-60
Color Monitor IIc           48     .4      164.2   108-132     50-60
Monitor II                  45     .38     153.9   115         50-60
Monitor IIc                 35     .29     119.7   115         50-60
Monitor III                 30     .25     102.6   115         50-60
AppleColor RGB              90     .75     307.8   108-132     50-60
AppleColor Monitor          75     .6      256.5   108-132     50-60

Macintosh Monitors
------------------
12-Inch Monochrome Display  30     .25     102.6    90-270     47-63
12-Inch RGB Display         90     .75     307.8   110         50-60
Performa Display            85     .71     290.7    98-132     57-63
Performa Plus Display       85     .71     290.7    98-132     57-63
```

```
Apple Hi-Res Monochrome        40     .33    136.8   100-240   50-60
AppleColor Hi-Res RGB         160    1.3     547.2    85-270   47-63
14-Inch Color Display          55     .46    188.1    90-270   47-63
Portrait Display               75     .6     256.5    90-270   47-63
16-Inch Color Display         130    1.18    445      90-270   47-63
Two-Page Mono. Monitor         95     .8     324.9    90-270   47-63
21-Inch Color Display         165    1.38    564.3   120       47-63
Apple Basic Color Monitor      70     .58    240     100-125   50-60
AudioVision 14 Display         55     .46    188.1   100-240   47-63
Apple Color Plus Display       70     .58    240     100-125   50-60
Multiple Scan 15 Display       90     .75    307.8    90-134/  47-63
                                                      198-260
Multiple Scan 17 Display      150    1.25    513      90-132/  47-63
                                                      198-260
Multiple Scan 20 Display      165    1.38    564.3    90-132/  47-63
                                                      198-260
AppleVision 1710AV            130    1.8/    445     100-120/  50-60
                                     1.9             220-240
```

End_Table

Additional Information

"Current leakage" is the amount of current that is passed to earth ground.
The current leakage of all Apple equipment meets the following specifications:

- As specified by the UL standard for Apple equipment distributed in the
United States, the current leakage will be less than 5.0 milliamperes.

- As specified by the IEC 380 & 950 standards for Apple equipment distributed
in France and most of Europe, the current leakage will be less than 3.5
milliamperes.

 The PowerBook 500 series AC adapter has two separate outputs, VBatt and
Vmain. The VBatt supply is used for charging the batteries while the VMain
supply provides power for the PowerBook. Power from VBatt is automatically
diverted to power the PowerBook if additional power is needed.

* Amps calculated based on efficiency of power supply, except for Macintosh
PowerBooks (amps calculated at 7.5 volts) and Macintosh Duos (amps calculated
at 24 volts).

** The BTU calculation is Watts X 3.42 = BTU/hour.

The BTU ratings for the Macintosh systems take into account any hard disk or
expansion card(s) that may be installed internally.

Article Change History:
01 Sep 1995 - Edited LS16/600 PS for technical accuracy.
21 Aug 1995 - Edited CSW2400 for technical accuracy.
16 Aug 1995 - Added SW1200, CSW2200, LW4/600, LW16/600, CLW12/600, & CD600e
15 Aug 1995 - Added Power Macintosh 7200, 7500, 8500, 1710AV display.

Support Information Services
Copyright 1984-95, Apple Computer, Inc.
Keywords: review,ktable,ktop20

13   ImageWriter I: Settings for All Apples (4/94)

 Article Reviewed/Updated: 25 April 1994

 TOPIC ---

 **This article gives the proper settings for all Apple computers connected to
 an ImageWriter I printer.**

 DISCUSSION --

 Apple II Family with Super Serial Card:

     Interface:

        The Super Serial Card

```
              1 2 3 4 5 6 7           1 2 3 4 5 6 7
       ON          X   X X      ON  X         X
    SW1                         SW2
      OFF  X X X   X             OFF    X X X   X X
          1 2 3 4 5 6 7              1 2 3 4 5 6 7
```

        Jumper block points to terminal.

     Cables:

        **Internal cable from Super Serial Card to back of
          machine: 590-0021
        Serial Cable from back of machine to printer: 590-0037**

     Printer Settings*:

```
            8 7 6 5 4 3 2 1
      SW 1:     X X
            X X     X X X X
                      OPEN

      SW 2:         4 3 2 1
                      X X
                  X X
                      OPEN
```

 Apple III and III+:

     Interface:

        **Use .Printer Driver and set first byte in Device
        Configuration Block to 0E and use printer switch
        settings A.(9600 Baud) Or leave the settings in the
        Device Configuration Block at the Default values and use
        printer settings B. (1200 Baud)**

     Cables:

        **Modem Eliminator 590-0029
        Straight Through Cable 590-0037**

```
    Printer Settings*:

     A & B SETTING
              8 7 6 5 4 3 2 1
       SW 1:        X X
              X X       X X X X
                          OPEN
     A SETTING
       SW 2:          4 3 2 1
                        X X
                      X X
                          OPEN
     B SETTING:
       SW 2:          4 3 2 1
                            X
                      X X X
                          OPEN

Macintosh:

    Cables:

       Accessory Kit Cable 590-0169

    Printer Settings*:

              8 7 6 5 4 3 2 1
       SW 1:        X
              X X    X X X X X
                          OPEN

       SW 2:          4 3 2 1
                        X X
                      X X
                          OPEN

    To Build your own cable:

       Mac        1    3    5    7    9
                  |    |    |    |    |
       Printer    1    7    3    20   2

Lisa:

    Cables:

       Modem Eliminator 590-0029
       Straight Through Cable 590-0037

    Printer Settings*:

              8 7 6 5 4 3 2 1
       SW 1:        X X
              X X       X X X X
                          OPEN

       SW 2:          4 3 2 1
                        X X
```

```
        X X
          OPEN
```

        Make sure the preferences are set. Power off the Lisa
        so they are saved.

    *   The diagrams of these switches are presented as seen from the front
        of the Imagewriter I printer. The switches are toggle switches;
        X marks the toggle.

Article Change History:
25 April 1994 - Corrected Macintosh settings.

Support Information Services
Copyright 1987-1994, Apple Computer, Inc
Keywords:

14   ImageWriter Printer Configuration Table

This article last reviewed: 02 November 1988

System	SW-1 12345678	SW-2 1234	CABLE REQUIRED Part Number
Apple III	11001100	1100	590-0029 and 590-0037B
Macintosh	11001100	1100	590-0169
Lisa/Macintosh XL	11001100	1100	590-0029 and 590-0037B
Apple IIc	11001100	1100	590-0191A
Super Serial	11001100	1100	590-0037B
High Speed Serial	11001100	0011	590-0037B

NOTE: 0 = OFF = OPEN
         1 = ON = CLOSED

Apple III Driver Configuration

Driver	0	1	2	3	4	5	6	7	8	9	A	B
RS232	0E	00	00	00	00	00	13	11	DF	84	50	80
PRINTER	0E	00	00	00	00							

Super Serial Card Configuration

	1	2	3	4	5	6	7
SW1	Off	Off	Off	On	Off	On	On
SW2	On	Off	Off	Off	On	Off	Off

NOTE: Jumper block should be pointing towards terminal.

High Speed Serial Card Configuration

	1	2	3	4	5	6	7
Switches	On	Off	On	On	Off	Off	Off

NOTE: The High Speed card must have the PROM P8 installed.

Copyright 1988 Apple Computer, Inc.
Keywords: HTS,CNFG

15   Imagewriter: Configuring for a Lisa

Article Created: 26 September 1985
Article Reviewed/Updated: 17 October 1994

TOPIC --

The following information shows how to configure a Lisa and an ImageWriter
printer.

DISCUSSION ---

Cables:

 --From back of machine: Modem Eliminator Cable (Part #590-0166)

 --From printer: Serial and Communications Cable (Part #590-0037)

The loose end of these two cables are then joined.

Printer Switch Settings:

```
          8 7 6 5 4 3 2 1
     SW1: | | |X| | | | | |
          |X|X| |X|X|X|X|X|


               4 3 2 1
     SW2:      | | |X|X|
               |X|X| | |
```


Article Change History:
17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services
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Keywords:

_____

16   Installing LisaGuide as a Shell

If you wish, you may install LisaGuide as a shell so that you can access it
from the hard disk instead of having to boot it from a diskette. To install
LisaGuide as a shell, you'll need go into the workshop and copy all the files
on the LisaGuide diskette to the ProFile EXCEPT:

    {!CATALOG}
    {!CATALOG}$R
    {!SAVEDESKTOP} BOOT
    {!TFCATALOG}

CAUTION: If you mistakenly copy these files, the Lisa will see your ProFile as
a diskette!

Remember to set FilesPrivate to Yes with the System Manager before attempting
to copy any files; then, copy to the ProFile all the files that start with "{"
EXCEPT the ones listed above. Finally, change the name of LISAGUIDE.SHELL on
your ProFile to SHELL.LISAGUIDE.

Your environments window on the hard disk will now give you the option of
starting up LisaGuide the next time you power up.

Good Things to Know About Lisa

Keywords:

17   International Versions of Lisa Software

International versions (beginning with release 2.0) of the Lisa Office
System differed from the U.S. versions only in the language used in
the alert boxes, menus, etc.

One version of the Workshop was available worldwide. For example, France
did not have a "French" vesion of the Workshop -- available to France was
the same English version distributed to all countries.

Keywords:

18   Lisa 1/2-MB System: Error 815/315 while installing OS 3.0

Error 815/315 indicates your system is out of memory. This error appears
when you initialize your hard disk before installing Lisa Office System
Release 3.0 software on a 1/2 meg system. You will need to obtain a 512K
Add-On Memory Board before you can successfully install the software;
alternatively, you could obtain Lisa Office System Release 3.1, which allows
you to install the Office System using 1/2 megabyte.

Apple Technical Communications

Keywords:

19   Lisa 2/10 10MB Hard Disk: Specifications

These are the specifications for the 10-megabyte hard disk in the
Lisa 2/10:

    Access time   50 msec
    RPM   3100 +/- 1%
    Latency   9 msec
    Data transfer rate   5 MHz

Copyright 1984, 1992, Apple Computer, Inc.
Keywords: SPECSHT

The easiest way to backup your Office System diskettes is to use Office System 3.1. Release 3.1 allows you to duplicate a diskette to another diskette; it even prompts you when to insert your destination diskette. Office System 3.0 is unable to copy an Office System 1 diskette.

If you don't have access to a Lisa with Office System 3.1, but do have a version of the Workshop which is the same version of the Office System diskettes you're copying:

 1. Enter the Workshop.

 2. Type "S" to get into the System manager.

 3. Set FilesPrivate to Yes; Quit the System Manager.

 4. With the File Manager, Copy all of the files on the diskette to the ProFile with a unique prefix--e.g. Copy -LOWER-=,ZX=

 5. Swap microdisks so the destination diskette is in the drive. Copy all the files back to the diskette, this time stripping the unique prefix--e.g., Copy ZX=,-LOWER-=

 6. Create as many duplicates as you wish from the prefixed files on the hard disk.

 Keywords:

_____

21   Lisa 2: Failing To Respond On Large AppleTalk Networks

This article last reviewed: 9 November 1988

A number of Lisa 2s--not 2/10s--were produced with pull-up and pull-down resistors on the input line of the serial port that AppleTalk uses. These resistors can create a problem for Lisas that are part of large AppleTalk networks, such as one 1800' long and containing 32 nodes. In such complex networks, these Lisas can fail to "hear" messages addressed to them and consquently can fail to respond.

To remedy the situation:

  --On the Lisa I/O board, part #690-0117, cut the trace running pin 3 of RP4 (the resistor pack located to the left of the batteries).

  --Remove R38 (the 10K ohm resistor located above the upper left-hand corner of the battery pack).

 The pull-up/down resistors are now disabled; the Lisa will now respond properly to the network.

Keywords:

22   Lisa 2: Possible Problems With The Upgrade Kit

This article last reviewed: 9 November 1988

1. Symptom: Operating system error 10726, or error 82.
    Problem: Bad motherboard-ProFile interaction.
    Solutions:

    A. Replace the motherboard with an upgraded one. (Upgraded motherboards are
       distinguished by resistor packs around the parallel port.) Also make
       sure that the system has an I/O board with the resistors clipped and the
       proper boot ROMs installed.

    B. Use a different ProFile.

2. Symptom: CPU boot error 43.
    Problem: Bad CPU-boot ROM interaction.
    Solutions:

    A. Replace CPU board with upgraded CPU board.

    B. Use the original Lisa boot ROMs. The only noticeable differences
       between using the old (version D) boot ROMs and using later revisions
       are (a) slightly different icons displayed in the Startup Menu, and (b)
       an apparent option to boot from two drives, though only one drive
       exists. Careful, though! If you select the top drive, the system hangs
       and must be reset.

3. Symptom: Blank screen when attempting to boot system after retrofitting.
    Problem: Incorrectly labelled or placed CPU ROMs.
    Solution:

    Verify that the CPU ROMs are installed according to the directions. If
    they are correctly installed, one or both may be mislabelled. In that case,
    simply use the old version D boot ROMs instead.

4. Symptom: System goes through self-test, then hangs.
    Problem: System is trying to start from nonexistent drive
    Solutions:

    A. If you're using your old CPU ROM:
       Reset the system and tell it specifically what drive to boot from.
       Preference settings, such as the correct time and the default startup
       device, may have been lost when you unplugged the sytem to swap the
       chips. Since Preference's startup default is drive 1 with the old CPU
       ROMs, the system probably hung while booting, since (of couse) there is
       no drive 1.

    B. If you have the new CPU ROMs installed:
       a. Reinstall the software.
       b. Test the memory boards with LisaTest or the extended memory board
          test.
       c. Test the memory board #2 by swapping it with with memory board #1 or
          with one from your spares kit.

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Keywords:

23   Lisa 3.0: Printing in 10 pitch on a Daisy Wheel Printer

A problem with the Lisa Office System 3.0 software prevents 10-pitch fonts
from actually printing 10 characters per inch on a DWP; instead, these fonts
prin 9 per inch. This problem was fixed in Release 3.1.

Apple Technical Communications

Keywords:

24   Lisa 3.0: Using it with a 10 Megabyte ProFile

Lisa 7/7 (Version 3.0) incorrectly makes a 10 megabyte ProFile look like a 5 megabyte ProFile when it's used with Macintosh software. This problem is fixed in Version 3.1.

Apple Technical Communications

Keywords:

25   Lisa 7/7 (version 3.0): "UNABLE TO PRINT" message

When your Lisa informs you it's having difficulties printing your document, check everything suggested by both the dialog message and the manual, and then try the following.

1. Open Preferences and click on Connect devices. Select each of the connections (e.g., Serial A Connector), and set each to Nothing.

2. Re-select each of the connecions in Connect Devices, and select what you physically have connected to the Lisa at that connection.

3. Click on Select Defaults in Preferences and make your printer the default printer.

4. Open your document and choose Format for Printer from the File/Print menu. Click on the "New Printer..." button, then select a printer different from what is currently selected (a new default printer). Finally, select Format for Printer and choose the printer you wish to print the document on.

Apple Technical Communications

Keywords:

The first time an application is opened during a session, Lisa sets up a
process for both that application and all documents created by that
application. The first time you print from an application, another process
is opened. Because each process uses 200 blocks, using all seven
applications requires 1,400 blocks of disk space. Printing requires up to
another 1,400 blocks.

A five-megabyte ProFile containing both the Lisa 7/7 Office System and
MacWorks can easily become taxed for storage space. The Office System alone
takes up about 6,000 blocks (3 megabytes) and Macintosh software takes up
another 2,000 blocks (1 megabyte), leaving less than 2,000 blocks for
storing documents and all associated processes. In short, users who wish
to run both 7/7 software and MacWorks from the same disk should do so
from a 10-megabyte ProFile.

Keywords:

27   Lisa 7/7 Software: System Reboots During Office System Install

If, at any time during the installation of the Lisa Office system software,
the system reboots, be sure the diskettes are not write protected.
The colored tab must show through to the front of the micro diskette.

Copyright 1984 Apple Computer, Inc.
Keywords:

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Even though your Lisa Office System manual states (page 257) that you
can protect your tools (applications) with passwords -- don't do it! If
you protect a tool that hasn't been used since you powered up, when you
attempt to use it, you will get a message that the tool is damaged or is
having technical difficulties. You must remove the password before
proceeding. LisaWrite and LisaList are exceptions: they seem to function
regardless of whether you entered a password.

Copyright 1984 Apple Computer, Inc.
Keywords:

29   Lisa 7/7: "Technical Difficulty" messages

If your Lisa frequently hangs, of if it often tells you it's having "Technical Difficulty", try reinstalling the software again. If the problem persists, check to see that you are using one of these acceptable versions of the CPU and I/O ROMs:

```
  Lisa:  2.0:   D/A8 or H/A8
  Lisa 2/10:    F/88 or H/88
```

Apple Technical Communications

Keywords:

Released products compatible with Lisa 7/7:

Software:	By:	Compatible with:	Status:
Lisa Workshop	Apple Computer	*OS 3.0, 3.1	Released
Brock Keystroke	Brock SW Products	OS 3.0, 3.1	
Relational Database			Released
BPI Accounting	BPI Systems	*WS 2.0, 3.0, 3.1	
General Ledger			Released
Accounts Receivable			Released
Accounts Payable			Released
Payroll			Released
Desktop Calendar	Videx	OS 3.0, 3.1	Released
BASIC	Pterodactyl SW	WS 3.0,3.1	Released

We will update this list periodically to keep you abreast of new
developments.

Apple Technical Communications

Keywords:

31   Lisa 7/7: Form feeds during printing

If the Lisa 7/7 document you wish to print is less than 1/2" from the top of
the page, the Lisa will send a form feed to the printer and begin printing the
document on the next page of paper. This feature replaces the dialog box in
version 2.0 stating that "the paper is about to be rolled back, lift the
bail...". We made this change so that Lisa 7/7 software would be able to
support queued printing, which should be able to run unattended.

Apple Technical Communications

Keywords:

Various error numbers usually associated with hardware failures have
appeared on Lisas with the 7/7 Office System. Typically, the user
hasn't selected Erase when installing the 7/7 Office System. After
you safely backup your documents, reinstall the software to erase
the hard disk before using the system.

Keywords:

To install Lisa 7/7 Office System 3.1 or 3.0 and Pascal Workshop 3.0 on a hard disk:

1. Backup any Office System or Macintosh documents from the hard disk.

2. Install the 7/7 Office System (release 3.0 or 3.1) as detailed in Chapter 6 of the Lisa Office System manual.
   a. Select Erase when prompted.
   b. Select Share if you wish to store Macintosh software on the hard disk

3. Install the Pascal Workshop as described in Chapter 1 of the Lisa Workshop manual. Select Don't Erase when prompted.

4. If you installed release 3.0 in step 2 above and want to upgrade to 3.1,
   a. Get into the Workshop environment and insert the Release 3.1 Office System 2 diskette into the microdrive.
   b. From the Workshop command line, type R.
   c. When asked which file you wish to run, type: <-lower-StartUpdate.
   d. Press the RETURN key.
   e. You are then guided through the process of updating the system libraries. After answering a series of questions, follow the prompts to insert the necessary disks.
   f. Since the update process changes the libraries on the startup disk,
      1. Restart the Lisa when you've completed step 4e.
      2. Replace the LisaWrite and LisaProject tools and stationary pads on the hard disk with the updated versions.

Keywords:

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To install ONLY Office System 3.1 to share or not share the hard disk with Macintosh software:

1. Backup any Office System or Macintosh documents from the hard disk.

**2. Follow the procedures in Chapter 6 or the Lisa Office System manual
     to install the Lisa 7/7 Office System 3.1.**
       a. When prompted to Erase or Don't Erase, select Erase.
       b. When prompted to Share or Don't Share:
          **1. Select Share if you want to store Macintosh software on the
             hard disk.**
          **2. Select Don't Share if you use your hard disk to store only
             Office System software.**

Apple Technical Communications

Keywords:

If the system reboots at any time during installation of the Lisa Office
System software, make sure the diskettes are not write-protected. The red tab
must show through to the front of the micro diskette for the Lisa Office
system to use the diskette.

Apple Technical Communications

Keywords:

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@KEYS:

LisaTerminal occasionally changes the parity while receiving a transmission from a host computer. You can detect this change of parity by the grey boxes that appear in the place of the anticipated characters. You must cancel the transmission, reset the parity, and begin again.

Keywords:

37   Lisa 7/7: LisaTerminal Problems

LisaTerminal doesn't have a soft break: pressing the break key drops the carrier. This was true in previous versions of the Office System as well.

Keywords:

When you select to print a document on a Daisy Wheel Printer in Executive PS, the printer sometimes simply ejects a blank page. If this occurs, select Elite 12, Courier 10 or Gothic 15 instead; your DWP will then print properly.

Apple Technical Communications

Keywords:

39   Lisa 7/7: Problems printing proportional-spaced fonts on a DWP

Printing your Lisa 7/7 document in a proportional-spaced (PS) font, such as 12 Point, will yield the following results:

A. If you're using a standard "fixed" printwheel, characters such as "w", "m" and "r" will be oddly spaced.

 B. If you're using a proportional-spaced print wheel, such as the Apple Modern 10/12 PS Printwheel, the odd spacing will be less apparent.

You can eliminate the odd spacing entirely by selecting a fixed pitch, such as 12 Point-15 Pitch, and using a fixed pitch printwheel, such as the Prestige Elite Printwheel.

Keywords:

The Lisa Office System Manual for 7/7 documents a procedure to get screen dumps
to disk. When this SHIFT-OPTION-7 keystroke procedure is performed, the
diskette drive makes the noise of a diskette access. Yet, after this access,
there doesn't seem to be anything other than missing blocks on the diskette.
And even though the workshop can recognize the file that the disk access
created, this file is of little use without some software that is unavailable
to the casual user. The tried and true SHIFT-OPTION-4 screen dump is still the
best procedure for most users.

Apple Technical Communications

Keywords:

41   Lisa 7/7: Upgrade to OS 3.1 w/Pascal Workshop 3.0 on hard disk

To upgrade Lisa 7/7 Office System software to 3.1 if the hard disk already
contains both the Lisa 7/7 Office System 3.0 and Pascal Workshop 3.0:

  1. While in the Workshop environment, insert the Release 3.1 Office System 2
       diskette into the microdrive.

  2. From the Workshop command line, type R.

  3. When asked which file you wish to run, type:" <-lower-StartUpdate".

  4. Press the RETURN key.

  5. You are then guided through the process of updating the system libraries.
       After answering a series of questions, follow the prompts to insert the
       necessary disks.

  6. Since the update process changes the libraries on the startup disk,
       a. Restart the Lisa when you've completed step 5.
       b. Replace the LisaWrite and LisaProject tools and stationary pads on
           the hard disk with the updated versions.

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Keywords:

Lisa Office System:

   Hard Disk: Office Systems 1.0, 1.2, 1.4, 2.0, 3.0, and 3.1 all require you
              to use at least a 5-megabyte hard disk.

   Memory: Only Lisa 7/7 Version 3.1 will run with 1/2 megabyte of memory.
           All previous versions of the Office System require 1 megabyte of
           memory. If you're using Version 3.1, we highly recommend that
           you use a full megabyte of memory in order to improve system
           performance.

Workshop:

   Hard Disk: Within certain limitations, you can operate Lisa Pascal
              Workshop 1.2 without a hard disk; we recommend that you use
              one, though, unless you aren't concerned about system
              performance. All subsequent versions of the Workshop require at
              least a 1/2-megabyte hard disk.

   Memory: All versions of the Workshop require 1 megabyte of memory.
           Versions 1.2 and 2.0 appear to offer you, in the Preferences
           window, an option to run them with only 1/2 megabyte. If you
           choose this option, though, the system will hang if you then try
           to access either the Editor or Preferences.

MacWorks:

   Hard Disk: MacWorks Versions B and later do not require a hard disk,
              though those versions will support one. If you opt not to use a
              hard disk, the system will simply behave like a Macintosh
              without an external drive.

 Memory: All versions of MacWorks can run with either 1/2 or 1 megabyte of
        memory.

Apple Technical Communications

Keywords:

43   Lisa and Macintosh XL: Restoring Corrupted Parameter Memory

In the Lisa 2, Lisa 2/5, and Macintosh XL (Lisa 2/10), parameter memory settings are stored in two locations:

  parameter RAM on the I/O board, and
  the hard disk used for system boot.

In all Lisas and Macintosh XLs, parameter memory in the RAM is held by standby power as long as the machine is plugged in. Only the Lisa 2s and 2/5s have batteries to maintain parameter memory when the unit is unplugged.

The state of parameter memory at any one time depends on which of the following five configurations is true:

 1. Configuration:

    Neither the system disk nor the RAM has valid settings, such as when the system comes out of the box.

    State of Parameter Memory:

    The parameter memory will be set when the software is loaded.

 2. Configuration:

    The RAM does not have valid settings but the disk has, such as after the system is unplugged.

    State of Parameter Memory:

    The settings on the disk will be copied to RAM during startup.

 3. Configuration:

    RAM has valid settings but the disk does not, such as when loading software from an old system to a new disk.

    State of Parameter Memory:

    The settings in RAM will be copied to disk during startup.

 4. Configuration:

    RAM and the disk have dissimilar valid settings.

    State of Parameter Memory:

    The settings in RAM overwrite the settings saved on disk.

 5. Configuration:

    RAM and the disk have identical valid settings.

    State of Parameter Memory:

    Nothing happens to parameter memory during startup.

_____

The Lisa logo

Understanding these five possible configurations will help you track
down certain problems that may occur with Preferences. For example,
if you make the mistake of installing the unofficial Revision C of
MacWorks (configuration 1), Preferences somehow gets corrupted in RAM.
Under configurations 2 and 3, this corrupted information is copied to
the disk. When another disk is started up (configuration 4), the corrupted
RAM information is copied onto this disk as well. As a result, there
may be no uncorrupted copy of Preferences on any of your disks by the
time you notice the problem.

Workaround 1:

1. Unplug the system with the corrupted RAM.
2. Start up MacWorks XL Revision D.

Parameter settings will be copied from MacWorks XL Revision D to RAM,
as in Configuration 2 above.

Workaround 2:

1. Unplug the system with the corrupted RAM.
   On a Lisa 2 or 2/5:
   a. Leave the system unplugged overnight, or
   b. Take the I/O board out of the system, turn the battery switch
      to off, and leave the system for several hours.
2. Find a Profile with a working Lisa OS (Office System or Workshop).
3. Install a 2-port parallel card in one of the expansion slots.
4. Plug the system back in and start up from the Profile.
5. Select Preferences and make the appropriate changes.
6. Turn the system off.
7. Without unplugging the system (VERY IMPORTANT - just disconnect the
   Profile from the parallel card), start up the system from the disk
   with the copy of the corrupted RAM. This copies the parameter memory
   from RAM onto the disk, restoring the disk copy of RAM.

Keywords:

44   Lisa Basic+ 2.0

This article last reviewed: 9 November 1988

You might expect the German umlaut, not a standard ASCII character, to get
the interperter to generate a syntax error. Instead, the system hangs as
if it were in an infinite loop; use the "pc 0" in the debugger to return to the
command line. Avoid using option characters within the program text.

If a missing "&" in a multiline statement generates a syntax error instead of
a system hang, something else may be wrong with the statement or with the
system itself.

The renumbering of embedded numbers in 'REM' statements is often unsuccessful.
Usually, the problem is that the number embedded in the 'REM' statement is both
(a) the same as a line number in the program before or after the 'REM'
statement itself, and (b) also a number that would be used in the renumbered
sequence.

Lisa Basic+ supports two types of arrays, virtual and non-virtual (i.e.
resident in memory). Both virtual and non-virtual arrays contain a limited
number of elements: 2730 for real arrays and 16383 for integer arrays. (See the
Basic+ User's Guide, page 9-2.) The system allocates a maximum of 32K of
system memory to each non-virtual array dimensioned. Use the "LENGTH" command
to tell you how much memory is available. With that amount, calculate the
number of arrays you can dimension within the specific program.

Virtual array files (disk based) as well as arrays within the file can
occupy more space than the available system memory. An example:

The maximum number of non-virtual arrays of maximum size with 504K of available
memory is 16. Yet, if the program utilizes virtual arrays, the number of
arrays that can be dimensioned is limited only by the amount of free disk space.

You can delete a file from within a basic program using the system statement
'Kill'.   Refer to page 14-3 in the Basic Language manual for more details.

To transfer files with the file-manger to Slot 2 Channel 2:
        1) press f for file-manager.
        2) press t for Transfer.
        3) in response to: WHERE? type -slot2chan2-

APPLE-. does terminate a LisaBasic program at the next logical stopping
point; you can cause the program to resume by typing CONT. (Refer to page 3-11
in the Basic Language manual for details.) This method will NOT work, however,
with a system hang due to, for instance, as an infinite loop; in such a case,
you must implement the debugger in order to escape.

Copyright 1988 Apple Computer, Inc.
Keywords:

45   Lisa Disks: "Disk Is Deteriorating" Message

The dialog box stating that the "Disk Is Deteriorating" indicates that bad blocks have been found on the diskette and that spare good blocks are starting to be used.

A directory on the diskette contains the addresses of good blocks that are used as spares. When you get about as many bad blocks on your diskette as you have spare good blocks, the error message is displayed and the diskette may soon become unreadable.

If you receive a message that the Disk is Deteriorating, it's time to put the documents onto another diskette. However, if the disk works fine in other drives, there may be something wrong with the drive.

Good Things to Know About Lisa

Keywords:

46   Lisa Disks: ProFile Memory Loss

If you suspect that you don't have as many blocks available to store your
documents as you should, perform a "repair" of the hard disk. The Lisa 1
Owner's Guide describes the repair procecdure on p. D53, while in the Lisa 2
Owner's Guide, it's on p. C24. When given the option to Install or Don't
Install, click Don't Install.

Good Things to Know About Lisa

Keywords:

47   Lisa Hardware: Video State ROM

This article last reviewed: 8 November 1988

If you're unable to print to a printer which previously worked with your
system, the Lisa's Video State ROM, part number 341-0229, may be defective.

To check for a defective Video State ROM, follow these steps:

1. Verify the proper configuration of Preferences with the printer switches
and
   check the connection of the cables.

2. Borrow a functioning Lisa Video State ROM and ProFile from another system,
   then try to print again.

3. If your system now prints, replace the borrowed ROM with the original ROM.

4. If the problem persists, check the printer switches, cables, and
   Preferences. once again as well as the printer itself.

5. If the problem still occurs, you will have to apply to your local Technical
   Support address for a new Lisa Video State ROM. There is no charge for this
   ROM.

The Technical Support people will need the AppleNet number and the ROM's
serial
number. While the Lisa's serial number may be found on the serial number
sticker located underneath the left corner of the CRT, you must also get the
AppleNet number. You can get both these numbers from the Lisa by placing it in
service mode and using the Lisa's Service Mode to read the numbers encoded on
the serialized PROM.

IMPORTANT: If the CPU board is ever replaced on a system, be sure to take the
           Video State ROM from the old board and install it in the
replacement
           board.

--> Placing the Lisa in Service Mode

1. After starting up your Lisa,

     a. press either the SPACEBAR after hearing the audible "click" and before
        the "double-click",

     or else

     b. press the spacebar during the memory board test.

2. REMOVE any diskette from your drive, then select option 2 from the
displayed
   "STARTUP MENU". A dialog box will display on the screen informing you there
   is no disk (as expected) in your drive. You are starting the Lisa from an
   unattached device: i.e., booting from upper drive when there is no disk in
   that drive.

3. After the Lisa gives you this error message, hold down the Apple key while

_____

you press the "S" key. The Lisa enters the Service Mode and displays the
Service Mode menu.

--> Obtaining the Serial Number and AppleNet number with Service Mode

1. Select display memory - "Display Mem"

2. When prompted for ADDRESS, type 240 <CR>.

3. When prompted for COUNT, type 20 <CR>.

    The Service Mode window then looks something like this:

    00000240   0F0F 0002 0802 0002 0000 0400 0300 0F0F
    00000250   0000 0100 0004 0102 0002 0900 0000 0000

    The serial number is embedded in the top 16-byte memory location, which
    the window displays as 16 hexidecimal pairs, 0F... and so on. Each
    hexidecimal pair is divided into two halves or "nibbles", e.g., the hex
    number 0F consists of nibble 0 and nibble F. The second nibble of each of
    the 16 hexidecimal pairs forms the basis for the serial number.

4. First remove every other nibble like this:

    00000240   0F0F 0002 0802 0002 0000 0400 0300 0F0F
         240   F F 0 2 8 2 0 2 0 0 4 0 3 0 F F

5. Then group the numbers as follows:

    Number of the Nibble in Hex   01 23 45 678 9ABC D EF

    Address   240   FF 02 82 020 0403 0 FF
                                   XX PP YY DDD SSSS X XX

    Extract the serial number from this group of 16 nibbles as follows:

    a. Ignore nibbles 0,1,D,E and F, marked as XX or X above.
    b. Nibbles 2 and 3 are the two digit plant code (PP).
    c. Nibbles 4 and 5 are the two digit year code (YY).
    d. Nibbles 6, 7 and 8 are the day of the year code (DDD).
    e. Nibbles 9 thru C are the 4 digit serial number (SSSS).

 You would submit this serial number, 02820200403, to Technical Support in
the
 Lisa form B02B820200403, where the letter B merely 1) separates the plant
and
 year codes and 2) precedes the entire number.

6. The Applenet Number is similarly embedded in the first 8 bytes of the next
   line of the memory dump. So, using the same method as step 4 above, we get:

    00000250   0000 0100 0004 0102 0002 0900 0000 0000
         250   0 0 1 0 0 4 1 2 0 2 9 0 0 0 0 0

    Number of the Nibble in Hex   012 34567 89ABCDEF

    Address   250   001 00412 02900000
                                   PPP NNNNN XXXXXXXX

_____

```
7. To extract the Applenet Number:

    a. Ignore nibbles 8 through F, marked as XXXXXXXX above.
    b. Nibbles 0, 1 and 2 are the AppleNet prefix (PPP).
    c. Nibbles 3 thru 7 are the AppleNet number (NNNNN).
```

 You would submit this AppleNet number, 00100412, to Technical Support with
 the Lisa Video State ROM serial number to obtain a new ROM at no charge.

Keywords:

48   Lisa Migration Package: Where to Get It

Try the Logan, Utah address.

 This article last reviewed: 10 September 1987

 This product, which allows users to "migrate" their data from Lisa to Macintosh, is no longer available from Apple. It is available from:

 Sun Remarketing
 3663 North Hwy. 91
 Smithsfield, UT 84335
 (801) 752-7631
 (800) 821-3221

 Keywords:

49   **Lisa Office System 3.1: Canon Inkjet Doesn't Print All Styles**

A problem in Lisa Office System 3.1 prevents the Canon Inkjet from printing in typestyles other than plain text: styles such as bold and hollow are printed as plain. Color options, such as red backgrounds and black outlines, also don't print. The only workaround is to use Office System 3.0 software.

Keywords:

BASIC Workshop 3.0 is fully compatible with Lisa Office System Release 3.1.

If you wish to install the Office System 3.1 and BASIC Workshop 3.0:

  1. Back up your documents currently stored on the hard disk.

  2. Install the Office System 3.1. Follow the steps in Chapter 6 of the
     Lisa Office System manual. Select Erase, then select Share if you wish
     to share the hard disk with Macintosh software.

  3. Install BASIC Workshop 3.0. Follow the steps in Chapter 1 of the
     Workshop manual. Select Don't Erase when prompted.

NOTE: Running StartUpdate is not required for the BASIC Workshop; as a matter
       of fact, running it will cause an error to be displayed. Although you
       must run StartUpdate to update Pascal 3.0, doing so will not harm
       BASIC.

Apple Technical Communications

Keywords:

There is only one version of the Migration software and it is intended to be used with Office System 7/7 Version 3.1.

When the Migration software is not properly installed, there are problems of functions not being available, such as the "Make Text File" option in the "File/Print" menu as per page 11 of the Macintosh XL Migration Kit manual. Drag copying the Migration Tool icon off of the second install disk without running the installation as described in the manual is a classic example of an improper installation of the Migration software

First off, make sure to install the Lisa-to-Macintosh application in the Lisa 7/7 or Lisa Workshop environment as per page 5 of the Macintosh XL Migration Kit manual. There are many files, invisible from the desktop, that are loaded during installation. Remember, installation requires you to boot the Lisa from the Install 1 diskette.

If error messages about unavailable functions appear while the Install disk is booting, replace the software with a new copy.

Apple Technical Communications

Keywords:

52   Lisa Office System: Version 3.1 Still Calls Itself "3.0"

This article last reviewed: 19 November 1989

TOPIC --

I set up a Lisa with Lisa Office System version 3.1.

The Lisa Office System, however, although marked as version 3.1, appears as version 3.0 when it is installed. What's going on?

DISCUSSION ---

When Apple revised the Lisa Office System software to 3.1, we didn't change the dialog screens that appear when you install the software. Therefore, each disk shows version 3.0.

However, after installing the OS and starting up from the volume onto which you installed the software, check the startup "Wait" message box. This should properly reflect that the Lisa Office System you installed is in fact version 3.1 -- or, as it is commonly called, Lisa 7/7.

Copyright 1989 Apple Computer, Inc.
Keywords:

53   Lisa or Macintosh XL RAM Cache and Mouse Tracking Problems

Article Created: 16 October 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: RAM cache and mouse tracking indicators are
empty even though the computer has successfully passed
diagnostics. The system software is Finder 5.3 or System 3.2.

CAUSE: The I/O board is defective.

CURE: Remove and Replace the I/O board.

Follow the General Troubleshooting Procedures for Lisa/Macintosh
XL if the problem still persists.

Keywords: hts

54   Lisa Pascal 3.0: Can't copy protected file; error 1130

Due to a problem in the Lisa Pascal 3.0 Workshop, the File Manager will not copy a file having the copy protection attribute set (i.e., a file attribute of P); instead, the Filer returns error 1130. The workaround for copying a protected program is to use the Generic Install program, merely a generic version of the Office system and Workshop install programs.

Apple Technical Communications

Keywords:

55   Lisa Pascal Compilers after v. 3.0: Using real numbers with them

In order to use real numbers with Lisa Pascal compilers with version numbers
greater than 3.0, do the following:

 1. Include in your program the statement:

        uses {$U Lisa/SaneLib} SANE

 2. Link your program with:

        Lisa/SaneLibAsm

     Do NOT link your program with IOSFPlib.

Apple Technical Communications

 Keywords:

To create your own environment shell, merely rename your stand-alone Pascal
program to SHELL."something". Once your program is named SHELL.**xxx**, it
appears in the environments window. You may then either start your program up
from the environments window, or else set the default to have your program
automatically start up when you first power up.

I recommend using Quick Port, now that it's available with Pascal release
3.0, rather than creating a shell for your program. Quick Port is much more
vesatile, allowing you to cut and paste to the other Lisa applications, print
using the Office System print routines, and so on.

Good Things to Know About Lisa

Keywords:

Page 10-6 Pascal Language Manual indicates that a file closed with CRUNCH should move the EOF mark to the last place of access. This is not the case. If this function is important to users, they may need to write their own routines, insert their own EOF character, or possibly maintain an EOF pointer, which would suggest using block I/O.

Apple Technical Communications

Keywords:

From a Pascal program, you can indeed read the directory information of a
diskette. Once you have detected the insertion of a diskette into the drive
by using KeybdEvent (cf. Pascal Language Reference Manual, Appendix C),
perform the following commands in order to mount and read the directory:

                    mount (error, volname, passwd, device)
                    reset_Catalog (error, pathname)

Then read the file names until done (error 848) by performing the command:

                    get_next_entry (error, prefix, filename)

Chapter 2 of the Operating System Reference Manual documents these and other
file system calls that allow you to get information about the file: name,
date, size, etc.

Keywords:

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59   Lisa Pascal: Pictures

Set the ClipRect before drawing any pictures in Quickdraw. To do this,
just include:

```
ClipRect(thePort^.portBits.bounds);
```

Keywords:

Quickdraw has no facility for printing graphics except to use the debugger to print contents of the screen. Refer to the Workshop Manual in the section named The Debugger for more information on printing using the debugger. See also the AppleLink article titled "Workshop 3.1 and Earlier: How to Get a Screen Dump."

To write your own routine to print graphics, use the printer ESC sequences. Remember as you are opening the printer to make sure you specify the actual port connected, instead of "-printer".

Keywords:

61   Lisa Pascal: Printing text from a program

Here is an example illustrating printing from a Pascal program:

```
program Print__Output;
 var OutFile: text;

begin
 Rewrite (OutFile, '-printer');  {Declare the printer as a file named
OutFile}
 Writeln (OutFile, 'This is a test.')  {Output goes to the printer}
 Close (Outfile)  {Close the file "printer"}
end. {Print_Output}
```

Apple Technical Communications

Keywords:

_____

In versions 1.2 and 2.0 of the Lisa Workshop, there was a problem with
reading directly into a real array:

`READLN(FILE,STUFF[2])`

where FILE is a file and STUFF is a real array. The problem is fixed in
version 3.0.

Keywords:

63   Lisa Pascal: TextSize

TextSize in Pascal release 1.0 and 2.0 doesn't seem to work. Use pictures instead.

Keywords:

Here are the typestyles available to you from QuickDraw that are
not described in the manual:

```
Font #0          system font
Font #1          small icons and symbols
Font #2          LisaDraw shading patterns
Font #3          more icons and symbols
Font #4          ps pitch, 12 point, sans serif
Font #5          ps pitch, 18 point, sans serif
Font #6          ps pitch, 24 point, sans serif
Font #7          15 pitch, 9 point, sans serif
Font #8          12 pitch, 12 point, sans serif
Font #9          10 pitch, 12 point, sans serif
Font #10         ps pitch, 12 point, serif
Font #11         ps pitch, 18 point, serif
Font #12         ps pitch, 24 point, serif
Font #13         12 pitch, 12 point, serif
Font #14         10 pitch, 12 point, serif
Font #18         calculator symbols
Font #19         20 pitch, unknown point, sans serif
Font #20         LisaGraph tic marks
Font #21         18 pitch, sans serif
Font #22         large icons and symbols
Font #49         LisaGuide icons and symbols
```

* Pitch is the number of characters per inch; ps pitch is proportional
  spacing.
* Point is the size of the characters (1 point = about 1/72 inch).
* Serifs are the short decorative lines at the ends of strokes in classical
  typestyles.
* Sans serif refers to typestyles without serifs.

Use the number of the font as the parameter of the TextFont procedure. Font
numbers not listed comprise undefined characters.

Keywords:

It's not possible to create an intrinsic unit. Even though the manual gives
you a minimum of information, you can compile a regular unit. You don't have
to put it in a library to use it, as with the Apple II and Apple III. To
compile a regular unit, just include the following compiler command at the
beginning of your unit:

```
{$U-}
 Unit Sample;
   Interface
    . . .
   Implementation
    . . .
  end.
```

Include the object code file in your program's USES statement.

Keywords:

Here are some suggestions on how to output from the serial ports using Pascal.

Even though the serial ports are not devices for file storage, they must be

specified with a dummy file name. The Lisa handles all I/O devices this way. (See the Pascal Operating System Manual.)

```
reset (f, '-rs232a-xyz') where xyz is the dummy name
```

If you're writing a program to talk to some other type of device, such as a card reader or test equipment, review Chapter 2 in the System Software Manual, particularly the section named Device_Control. These procedures describe how to configure the drivers for either port in order to allow communication with other devices.

Keywords:

If you have a printer attached to a parallel expansion card in your Lisa and
are planning to move that card to another slot (or remove it entirely), you
must be sure to open the Preferences window and set the "Device Connection"
for the old slot to "No Device" BEFORE you remove the card from that slot. If
you move or remove the card without first reconfiguring Preferences
appropriately, you'll leave behind a "phantom device connection"--that is, the
Lisa will continue to think that there is a printer connected through the old
slot. The next time you ask your Lisa to print a document, the Lisa will try
to print the document on the "phantom" printer, fail, and end up giving you an
"Error #1222" message. If you've received such an error message, your problem
may be a phantom device connection. You won't be able to tell for sure,
though, simply by opening the Preferences window: Preferences will only list
slots that actually have cards in them. Instead, take these steps to discover
whether you have a phantom device connection:

    -- Open any document.

    -- Pull down File/Print and choose "Format for Printer".

    -- Select settings for Print Method and Paper Size that
       don't match any printer you have ever had, such as Daisy
       Wheel with 14" x 11" paper.

    -- At the bottom of the dialog box, choose "Tell Me" (or,
       in Office System 2.0, "Ask Me")

    -- Click the OK button. A new dialog box will appear
       labeled "Intended Printer Unavailable" (or, in 2.0,
       "Intended Printer not in Preferences"). In the middle
       of the box will be a list of printers next to
       checkboxes. This list of printers will include any
       phantom device connections.

To fix the problem, re-install a parallel card in the slot with the phantom
connection, open Preferences, set that slot's Device Connection to "No
Device", and then remove the card.

Apple Technical Communications

Keywords:

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For better or for worse, LisaBug is included in the Workshop in the form of
two files: SYSTEM.DEBUG and SYSTEM.DEBUG2. In version 1.0 of the software,
the mere presence of these two files enables the NMI key (non-maskable
interrupt) in the Office System. In later releases of the software, the
debugger may be invoked with the NMI key from the Workshop, or from the
Office System if you've come directly from the Workshop without first powering
down. It can be very distressing when uninitated users press the NMI key (the
minus sign on the keypad) and drop into LisaBug.

To deal with this problem with post version 1 software, power the system down
when you're done working in the Workshop and before you use the Office System;
alternatively, disable the debugger completely, as described below.

There are two ways to deal with this problem in version 1.0 of the Workshop:
change the NMI key code or disable the debugger. The first option is very
simple, but lasts only for the duration of the session. The next time you
boot your system, the NMI key code is reinitalized to the minus sign on the
key pad. To temporarily change the NMI key code for the session, use the
following procedure:

  1. Enter the debugger by pressing the NMI key (minus sign on key pad).
  2. Enter the command "NM 0" RETURN in response to the debugger prompt of
     ">". This sets the key code from hex 21 (the minus key) to hex 0 (no
     key)*.
  3. Type a "g" RETURN to go back to your starting point.

To respecify the NMI key, specify the key location--not the ASCII code
--for the character you want. The table listing the key codes is in the
Pascal Language Reference Manual.

To disable the debugger, you have three options:

  A. Delete SYSTEM.DEBUG and SYSTEM.DEBUG2.
  B. Change the names of the two files to something besides names starting
     with SYSTEM.xxxx. (This allows for easy restoration at a later time.)
  C. Transfer the two files to floppy, thus freeing up the disk space until
     you wish to restore the debugger.

Note: you must reboot the system before these changes are effective.

Good Things to Know About Lisa

Keywords:

69   Lisa Workshop: Increasing available memory

Approximately 550K bytes remain when Lisa runs the Workshop with all processes
killed.   To increase available memory over this limit, run an application as a
shell by renaming PROGRAM.OBJ to SHELL.PROGRAM.

Apple Technical Communications

Keywords:

There are a couple of ways to use LisaBug to terminate an infinite loop if your
program is in one:

When you find your program in an infinite loop:

  1. Press the NMI key (minus key on the keypad) to enter the debugger.

  2. If the domain is greater than zero--i.e., 1, 2 or 3--type a "G"o, then
     RETURN. This brings you back to your program then drops you back into
     Lisabug.

     If the domain is zero or n, Type "UBR" RETURN. If that didn't change the
     domain to 1, 2 or 3, type "ID PC-4" RETURN, "G" RETURN, then depress the
     NMI key before proceding. (It's sometimes hard to get a non-zero domain
     if the program is caught up in I/O.)

  3. Type: "PC o" RETURN.

  4. Then type "G" RETURN.

There is another situation that you may get into with procedures such as:

    Procedure QUIT;
    begin
      exit(PROGRAM_NAME)
    end;

You must include a reference to QUIT in the main program, or the Dead Code
Analysis removes QUIT from the object code. To terminate the program, invoke
Lisabug with the numeric keypad minus key (NMI), then enter the following
immediate commands:

    br
    ix movem.l d0-a6,-(a7)
    quit

You are returned to the Workshop shell when the program terminates.

Additional information on terminating loops may be found in the debugger
section of your Workshop manual.

Good Things to Know About Lisa

Keywords:

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71   Lisa Workshop: Transfer Program

In Transfer, there is a Break key for a hard break: it disconnects you. The
easiest way to get around it is to send an XOFF from the
keyboard or imbedded in your file (you would have to write a program to put it
there). The file is then sent without filtering.

Apple Technical Communications

Keywords:

72   Lisa/Macintosh XL: Cable structure to Comrex CR-IIE

```
MACINTOSH XL              COMREX CR-IIE

2------------------------2
7------------------------7
6------------------------20
                  4,5,6,8: Jumpered
Clinton Computer, MD
```

Keywords:

73   Lisa/Macintosh XL: Cable structure to Hayes SmartModem

MACINTOSH XL   HAYES SMART-MODEM

```
1------------------------1
2------------------------2
3------------------------3
7------------------------7
20----------------------20
```
Clinton Computer, MD

Keywords:

This article last reviewed: 24 February 1988

To line up the items in the table below, print it in Monaco 9.

BASIC LISA/MAC XL CONFIGURATION TABLE

Systems:-> Basic Features: (Below)	LISA 2 (LISA 2/5 if connected to ProFile)	MACINTOSH XL (LISA 2/10)	MODIFIED MACINTOSH XL (Screen Mod Kit Installed
INTERNAL HARD DISK — Present:	NO	YES	YES
INTERNAL HARD DISK — Notes:	Runs Lisa 7/7 Office System and MacWorks	Runs Lisa 7/7 Office System and MacWorks	Runs MacWorks only
MICRODISK DRIVE — Present:	YES	YES	YES
MICRODISK DRIVE — Notes:	Requires Lisa Lite adapter board in disk drive chamber		
BUILT-IN PARALLEL PORT — Present:	YES	NO	NO
BUILT-IN PARALLEL PORT — Notes:	Can connect Pro-File or other parallel device to motherboard	Must install parallel inter-face card in expansion cham-ber to access parallel device	Must install parallel interface card in expansion chamber to access par-allel device
	Can install Mac Works and/or Lisa7/7/ Office on a connected ProFile	When using Lisa 7/7 Office System internal hard disk can access ProFile and other parallel devices	Internal hard disk runs MacWorks only: cannot access ProFile, but can access parallel prin-ter if driver is installed
		When using Mac-Works, internal hard disk cannot access ProFile, but can access parallel prin-ter if driver is installed	
TWO — Present:	YES	YES	YES

```
BUILT-IN     ---------|-----------------|-----------------|--------------
SERIAL       Notes: | Has three DB-25 | Only two DB-25  | Only two DB-25
PORTS               | connectors in   | connectors in   | connectors in
                    | back            | back            | back
=================== |=================|=================|=============
8-AMP      Present: |      YES        |       NO        |      NO
POWER               |                 |                 |
SUPPLY -  rated     |                 |                 |
at 1.2 amps AC      |                 |                 |
=================== |=================|=================|=============
10-AMP     Present: |      NO         |      YES        |     YES
POWER               |                 |                 |
SUPPLY -  rated at  |                 |                 |
1.8 amps AC         |                 |                 |
============================================================================
```

Interpreting the Basic Lisa2/Macintosh XL Configuration Table

The top row (across) lists the system names for three basic
configurations of the Lisa2/Macintosh XL. The first column (down)
lists the names of basic hardware components. The YES or NO listed
under each system indicates whether the hardware component is or is
not a required part of that system. The "Notes" provide important
information about software compatibility and hardware configuration
for each system.

Copyright 1988, Apple Computer, Inc.
Keywords: HTS,CNFG

This article last reviewed: 20 July 1988

To line up the items in the table below, print it in Monaco 9.

```
                  SYSTEM BOARDS COMPATIBILITY TABLE
===================================================================
Systems:  -> |    LISA 2     |   MACINTOSH XL  |  MODIFIED
             | (Lisa 2/5 if  |                 |  MACINTOSH XL
SYSTEM BOARDS:| connected to  |   (LISA 2/10)   |  (Screen
 (below)     | ProFile       |                 |  Modification
             |               |                 |  Kit Installed)
===================================================================
MOTHERBOARD  |               | Same for MacXL and Modified MacXL
  Board Eng # |    620-0108-X |               620-X141
-------------|---------------|-------------------------------------
    Apple P/N |    661-93106  |               661-93170
-------------|---------------|-------------------------------------
      Notes: |1. Has parallel|  1. No parallel connector
             |   connector   |  2. Has total of 2 DB-25 connectors
             |2. Has 3 DB-25  |
             |   connectors   |
===================================================================
I/O BOARD    |               | Same for MacXL and Modified MacXL
  Board Eng # |    620-0117-X |               620-X142-X
-------------|---------------|-------------------------------------
    Apple P/N |    661-93198  |               661-93171
-------------|---------------|-------------------------------------
  Disk Contro-|               |
  ller ROM   |               |
        P/N |    341-0290    |               341-0281
        Rev |      B          |                 D
   Location |      1-A        |                 2-A
-------------|---------------|-------------------------------------
      Notes: |1. Resistor at |1.  Resistor at R-47
             |   R-47 is NOT  |    IS present
             |   present      |
             |2. Has batteries|2.  No batteries
===================================================================
CPU BOARD    | Same for Lisa 2 and Macintosh XL |
  Board Eng # |        620-0119-X                |  620-0119-X
-------------|----------------------------------|---------------------
    Apple P/N |        661-03203                 |  661-0298 or
             |                                  |  661-03103
-------------|----------------------------------|---------------------
  Boot ROMs  |                                  |
       P/Ns |   341-1075 and 341-1076          |341-0347 & 341-0346
        Rev |      H              H             |  3A         3A
  Locations |     13-D           14-D           | 13-D       14-D
-------------|----------------------------------|---------------------
Serialized ROM|                                  |
(Video State |                                  |
ROM)    P/N |           620-0003               | 341-0348
-------------|--------------------------------------------------------
      Notes: |1. The serialized ROM must be transferred to the
```

```
         |    customer's replacement CPU board.
         |2. The Macintosh XL (Lisa 2/10) CPU board can be used in
         |    the Modified Macintosh XL, provided the correct boot
         |    ROMs and serialized ROM are installed.
==================================================================
MEMORY BOARDS | Same for Lisa 2, Mac XL (Lisa 2/10), and Modified Mac XL
(2 identical) |
  Board Eng # |                    620-01XX-X
--------------|---------------------------------------------------
    Apple P/N |                    661-93105
==================================================================
VIDEO BOARD   | Same for Lisa 2, Mac XL (Lisa 2/10), and Modified Mac XL
(2 identical) |
  Board Eng # |                    620-0121-X
--------------|---------------------------------------------------
    Apple P/N |                    661-93107
==================================================================
```

Interpreting the System Boards Compatibility Table

**The top row (across) lists the system names for three basic
configurations of Lisa 2/Macintosh XL. The first column (down)
lists the names of the boards contained in the card cage and video
chamber. The boxes under each system list the engineering numbers
(printed near the edges of each board) and the Apple part numbers for
each system board. The part numbers and rev. level for ROM on the CPU
and I/O boards are included.**

**When inspecting or replacing system boards, use the System Boards
Compatibility Table to make sure boards and ROM (part numbers and rev.
level) match the information pertaining to the system you are working
on.**

**NOTE: Any number can be in place of the "X" in the engineering numbers
        listed on the table.**

**NOTE: Refer to the Module Identification Manual for pictures of the
        system boards.**

Copyright 1988 Apple Computer, Inc.
Keywords: HTS,CNFG

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76   Lisa/Macintosh XL: RS-232 and RS-422 Pinouts for Serial Port B

The signals available on Serial Port B of the Lisa are shown in
Figure 3-9, page 3-24 of the Lisa Hardware Manual (for RS-232) and
on page 3 of Macintosh Technical Notes #10 (for RS-422). This data is
combined here.

Pin No.	RS-232 Name	RS-422 Name	Notes
1	Ground	Ground	
2	Transmit data	TxD-	
3	Receive data	RxD-	
4	Request to send		
6	Data set ready	HSK/DSR	TRxCB or CTSB
7	Ground	Ground	
19	AppleTalk receive data	RxD+	
20	Data terminal ready	TxD+/DTR	Connected to DTRB

Keywords:

77   Lisa: Accessing the Environments Window

 This is a summary of ways to access the Enviroments window:

 **--From the Office System, press the on/off switch while holding down the
 Apple key. (Lisa 1 Owner's Guide, p. G26; Lisa 2 Owner's Guide, p. G55.)**

 **--From the Workshop, (Q)uit the main command line. When prompted to leave
 the editor, etc., press "Y". Choose Another_Shell to display the
 Environments window.**

 **--To boot the system up to the Environments window: press any key on the
 keyboard (except the Caps Lock key) after you hear the double click. (This
 double click occurs at the end of the self-tests.) If you asked to start
 up from a specific device by using the "Start Up From..." menu, press any
 key when you see the large hour glass displayed.**

 Keywords:

78   Lisa: Backing Up Large Files With a ProFile

Article Created: 21 September 1984
Article Last Reviewed: 25 March 1992
Article Last Updated: 25 March 1992

TOPIC ---

When backing up a ProFile file to a disk I keep getting errors asking for new
disks. Why is this happening?

DISCUSSION --

When you attempt to back up a ProFile file to a disk with a pre-version 3.0
Lisa, you'll have problems if the file is larger than the disk (i.e.,
>400K): the Lisa continuously asks for new disks in an attempt to find a disk
large enough to hold the entire file--which, of course, it never finds. We're
told that the problem has been fixed in Version 3.0.

Keywords:

79   Lisa: Backup Problems

This article outlines known problems both with backing up Office Systems 1.0
and 2.0 and with restoring from backups of those Office Systems.

Preferences is destroyed by restoring the hard disk from backups. The only way
to replace Preferences is to do a full Install (i.e., erase the hard disk and
reinstall everything). Instead of restoring the hard disk, then, we advise
that you simply duplicate the documents on the desktop individually from the
backup disks to the hard disk.

The Lisa 2.0 Owner's Guide, p. B36, item number 7, reads: "Everything on
Internal Hard Disk, the Internal Hard Disk, is about to be erased." This error
message in the manual is not correct. It does not erase the hard disk; it
erases the microdisks. The correct message is displayed on your screen.

Sometimes the backup has difficulties on the 3rd or 4th disk: typically, an
error message is displayed stating that there isn't room on the diskette, even
though the diskette has just been erased. This seems to happen most often when
(a) it's been a long while since installation of the software, (b) the system
has hung at one time and a Repair wasn't properly performed, or (c) Office
System 2.0 is being used, and some of the files being backed up are very large.
(Office System 2.0 has been known to have problems backing up very large
files.) Usually, the only recourse is to completely reinstall your software.

Backing up a file larger than 728 blocks onto microdisks is not possible with
releases 1.0 or 2.0: as the system tries to copy these large files, it
repeatedly asks you to "Insert the next backup diskette" and yet does no
copying to these diskettes, because it's looking for a large enough microdisk
to back up your entire file. If you have Office Systems 1.0 or 2.0, then,
simply make duplicates of any files larger than 728 blocks and place them on
your hard disk or onto an additional ProFile instead of trying to back them up
onto microdisks. Alternatively, upgrade to Office System release 3.0, which has
no problem backing up very large files: it knows how to split a large file into
portions and back up the portions onto a series of microdisks.

Good Things to Know About Lisa

Keywords:

80   Lisa: Boot ROM Versions

Many users have received notices telling them that they must upgrade to Rev. H
CPU ROMs to run Pascal 3.0. THAT NOTICE WAS IN ERROR! Acceptable ROM versions
include:

 Lisa 2:   D/A8 or H/A8
 Lisa 2/10: F/88 or H/88

 --The first (alphabet) character indicates the revision of the CPU ROM; the
   following two characters identify the I/O ROM.

Other CPU ROM versions, such as A, B, C, E and G, should definitely be
upgraded. If a user insists on Rev. H CPU ROMs, or if you need to upgrade old
CPU or I/O ROMs, order them from your Apple Regional Service Center. The part
numbers are:

	CPU ROMs	I/O ROM
Lisa 2:	341-0175, 341-0176	341-0290
Lisa 2/10:	341-0175, 341-0176	341-0281

NOTE: The ROM versions are both stamped on the chip itself and displayed in
      the upper right corner of the Lisa's screen when you boot the system.

Keywords:

81   Lisa: Converting Documents to Macintosh

This article last reviewed: 22 January 1991

TOPIC ---

Is there a product that converts Lisa documents to Macintosh format?

DISCUSSION --

You need the Lisa to Macintosh Migration Kit, available from Sun Remarketing. It converts LisaDraw, LisaWrite, LisaProject, and LisaCalc files to their Macintosh counterparts.

For the address of Sun Remarketing, search this library under "Sun Remarketing".

Copyright 1991 Apple Computer, Inc.
Keywords:

Article Created: 30 January 1985
Article Reviewed/Updated: 17 October 1994

TOPIC ---

This article describes the conversion process for Lisa Workshop documents into LisaWrite.

DISCUSSION --

Workshop ASCII files can be converted to LisaWrite documents. Once they are in LisaWrite format, the information they contain can be transferred to other applications, such as LisaCalc, using Cut and Paste. Convert Workshop files with the following procedure.

From the Workshop:

1. Initialize a diskette.

2. Copy the Workshop files to the diskette.

3. Rename the Workshop files with LisaWrite Office System names: e.g., {D200T1}, {D201T1}, {D202T1}, ...{D<200+N>T1}.

From the Office System:

4. Insert the diskette and repair it. This procedure forms a new catalog with containing all files on the diskette.

5. When you open the diskette, each of the documents appear with names such as "Document 200", "Document 201", and so on.

6. Open each of the documents; they should contain the text from the Workshop files.

7. Make a minor change (e.g., add, then delete a space) to force LisaWrite to rewrite the document, then Save and Put Away.

Article Change History:
17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services
Copyright 1985-94 Apple Computer, Inc.
Keywords:

This article last reviewed: 8 November 1988

Master tool diskettes are copy protected. The method still seems to
confuse people to a fair degree. This article should cover any question
you may have about Lisa's protection scheme.

The first time you duplicate a tool master diskette, that diskette AND its
copy are tied to the specific Lisa you're using to perform the duplication:
both diskettes are imprinted with that Lisa's serial number. This
imprinting occurs almost immediately, so even if you abort the copy, both
diskettes will probably already be tied to that Lisa. You may make as
many copies of that master diskette as you like, but those copies will
run only on the Lisa that made the first copy. Users can make as many
back-ups as they feel necessary, while we are able to protect ourselves
from unauthorized dissemination of Lisa software.

The original tool master diskette may be used on any Lisa, but you will
not be able to copy the tool onto the ProFile.

The serial number that the diskettes are imprinted with is the one burned
into the PROM located at position C6 on the CPU board. If the CPU board is
replaced for any reason, it's very important that this PROM is transferred
to the new board; otherwise, that Lisa's user will no longer be able to use
applications stored on his or her hard disk. If that particular PROM
itself is bad, request a new one from your Technical Support Center.

Files that are protected by this scheme will have the file attribute P when
listed by the Workshop. This attribute cannot be changed.

Protected Lisa software distributed by Apple includes:

 - All Lisa tools, except for LisaWrite and LisaProject 3.1. (Stationary
   pads, Office System diskettes and LisaGuide are not protected.)

 - Pascal 1.0 and 2.0: PASCAL.OBJ, CODE.OBJ and EDITOR.OBJ are protected.
   (Pascal 3.0 is not protected.)

 - COBOL 1.0, 2.0, and 3.0: overlay files are protected, as well as
   EDITOR.OBJ.

 - BASIC-PLUS 1.0, 2.0, and 3.0: BASIC.OBJ and EDITOR.OBJ are protected.

Copyright 1988 Apple Computer, Inc.
Keywords:

84   Lisa: Daisy Wheel Printer Error Numbers

Error	Meaning
1199	DMP selected in Format for Printer
648	No modem eliminator cable or Preference not set properly
3056	Generic printer problem - check cables, paper, ribbon, etc.

Keywords:

85   Lisa: Daisy Wheel Printer Settings


```
Switch 1: 11100111
Switch 2: 10010000
Numbered 8 to 1; 1 = On, 0 = Off
Space Parity
Local
EXT/ACK Handshaking
9600 Baud
Paper out on
Duplex & Auto CR/LF off
Bi directional print on
ASCII Standard
```

Use a "Modem Eliminator" cable, part number 590-0029, in series with the interface cable.

Keywords:

Dialog boxes have a default button distiguishable by its heavy outline.
When you click outside the dialog box, the default button is automatically
selected.

Good Things to Know About Lisa

Keywords:

87   Lisa: Dot Matrix Printer -- Error Numbers

Error   Meaning

0   Not configured in Preferences
1199   2 DMP's configured in Preferences
1222   More than 1 DMP in Preferences.
1885   Profile timeout error
648   Parallel DMP on Serial A or B
3056   Generic printer problem - check cables, paper, ribbon, etc.

Good Things to Know About Lisa

Keywords:

An in-line parallel printer buffer that works right out of the box is
available from:

        Practical Peripherals, Inc.
        31245 La Baya Drive
        Westlake Village, CA 91362
        (213) 991-8200

Good Things to Know About Lisa

Keywords:

Printing landscape, normal resolution (low resolution) prints any of your
documents 1/3 smaller than it appears on your screen.

Good Things to Know About Lisa

Keywords:

The Empty Folder pad is easily replaced if you happen to have lost it. Every
initialized or repaired diskette contains one. Just make a duplicate of one
those pads and place it onto the disk that lost it.

Good Things to Know About Lisa

Keywords:

91   Lisa: Error 38 is "No Boot File on Disk"

Article Created: 14 May 1991
Article Last Reviewed: 27 May 1991
Article Last Updated:

TOPIC --

When I try to boot a MacWorks disk on my Lisa, I get an error code 38.

This error is placed under an icon with a check in it. It only accesses
the floppy for a brief moment and then gives the error code. It then
prompts me to continue or to choose a startup device (STARTUP FROM...).
When I continue, the above occurs again, over and over. If I choose a
startup device, it gives me the option of the floppy only -- not the HD.

What's going on?

DISCUSSION --

Error 38 is "No Boot File on Disk." It sounds like the MacWorks disk was
erased. If the disk was good to begin with, you have a hardware problem
with the floppy drive.

Copyright 1991, Apple Computer, Inc.
Keywords:

The most common error numbers are described both in the Lisa 1 Owner's Guide
(Appendix 3, p. I7 and Appendix 6, p. I25), and in the Lisa 2 Owner's Guide
(Appendix 3, p. G59, and on pp. C49-C58). These error messages usually
simply indicate a general problem.

Other more specific error messages are located in the Workshop manual. There
are three types of error numbers that can be displayed:

  1. A single number: xxx

This may be located in the Workshop manual. The number means the
error occured in code located in the Filer. The only exception is if the
number starts with a 6 (e.g., 648), in which case the error is related to
printing.

  2. Two numbers: xxx/xxx

The first number refers to a location in the lower levels of the operating
system; the second number is the error code. Sometimes these numbers are
reversed, so it's best to look up both in the Workshop manual.

  3. Three numbers: xxx/yyy/zzz

    xxx: Indicates the system program that died.
    yyy: The error number indicating why it died.
    zzz: The actual code address where the error occured.

  If you get one of these three-number codes and the first one happens
  to be a 1033, the second number indicates the problem:

    Error   Meaning   Solution
    7   I/O problem   reinstall software
    10   Parity Error   replace memory
    21, 22   program error   none
    26, 27   bad source, bad memory

Here are some other errors that occur during startup. These error numbers in
10700 range are usually accompanied by a crossed out Lisa. Following is a
list of these errors:

    Error   Meaning
    10725   Damaged file system or file contents
    10726   Profile error, problem with boot tracks
    10727   Memory Error
    10728   Boot file is missing or damaged
    10729   "
    10730   "
    10731   "
    10732   "
    10735   "
    10736   "
    10737   "

If you encounter one of the above errors:

_____

1. Reinstall the startup software. Refer to p. D50 in the Lisa 1 Owner's
   Guide, p. C24 in the Lisa 2 Owner's Guide or p. 160 in the Lisa (7/7)
   Office System manual.

2. If step 1 doesn't work, repair the hard disk, then repeat step 1.

3. If step 2 doesn't work, you may have bad Office System diskettes.
   Obtain another set, then try steps 1 and 2 again.

4. If steps 1 thru 3 haven't worked, you'll need to reload the software.
   First, though, erase the information currently stored on your hard disk.

To save documents store on your hard disk:

1. Connect your Profile, if you're using one, to another Lisa and save any
   files if you can. If you're using a Lisa 2/10, start up your system with
   another ProFile, then save your documents to it.

2. Then reinstall your software on the hard disk, erasing the present
   software.

Good Things to Know About Lisa

Keywords:

93   Lisa: Error Tones

Some systems (usually those containing old ROMs) emit a low-high error tone
upon startup before starting the internal diagnostics. To proceed, merely
power the Lisa off and back on.

Other errors, ones usually associated with hardware failures, sometimes appear
on Lisas in the 7/7 Office System. Typically, you may have neglected to erase
your hard disk before installing the 7/7 Office System. After you safely backup
your documents, reinstall the software after first erasing the present contents
of the hard disk.

Apple Technical Communications

Keywords:

When printer format settings are made for a document, other blank documents and stationary pads may also change their printing formats to the new settings.

This can only happen to documents or stationary pads, such as the LisaWrite stationary pad, that have never had text or data entered into them. The printer format settings of non-empty documents and stationary pads will not change unless specifically set by the Format for Printer dialog box while the document is open.

Apple Technical Communications

Keywords:

A full backup of the Office System 2.0 or 3.0 copies all of your files
on the hard disk, including any Workshop files you may have stored there.
Backing up a 5-megabyte ProFile may require as many as 20-25 microdisks,
while an internal 10-Megabyte disk could require more. Release 1.0 copies
only your Office System documents.

Keywords:

Because no computer system is infallible, it is important to
periodically back up all important documents. This minimizes the risk
of loss of data due to power failure, hard disk failure, system hangs,
and so on.

There are 3 kind of backups:

 A. A full backup.
 B. An incremental backup.
 C. Individual duplication of the document onto a backup disk. (This is the
    method Apple recommends.)

To do a full or incremental backup (method A or B):

 1. Insert your diskette.
 2. Duplicate the hard disk, then move the duplicate to the diskette.
 3. Follow the directions displayed on your screen.

 Full and incremental backups are described on pp. D14-D16 in the Lisa 1
 Owner's Guide, and on pp. B32-B37 of the Lisa 2 Owner's Guide.

To duplicate a document (method C):

 1. Select the document.
 2. Scroll open the File/Print menu; choose Duplicate.
 3. A flashing duplicate of the document will appear on your screen next
    to the orignal. Move that duplicate to another folder, diskette, or
    drive.

 Duplicating a document or folder is described on p. D11 in the Lisa 1
 Owner's Guide and p. B68 in the Lisa 2 Owner's Guide.

 Keywords:

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An incremental backup theoretically copies only those files that have changed
since the last backup. In Office Systems 1.0 and 2.0, the incremental
backup does NOT work that way: it copies everything, just as if you had
selected a full backup. Because of this problem, Apple recommends in the
Lisa 2 Owner's Guide Release Notes: "Do not back up a hard disk icon to the
diskette icon. Instead, make duplicates of the tools or documents you wish to
back up, and then move the duplicates to the micro diskette icon."

At the end of an incremental backup with release 3.0 software, the error
number 941/3 may be displayed. All documents that were changed since the
last full backup are copied to the disk. These documents are accessible
only from the desktop; they may not be used to restore the ProFile using
the Office System 1 diskette's Restore routine. Lisa Office System version
3.1 corrects this problem, allowing you to restore your hard disk from
backup diskettes if you wish.

Keywords:

The Lisa hardware manual wrongly states that the line frequency should be 60 Hz
+/- 2. The actual number is 50-60 Hz +/- 2, which covers most reasonable power
sources. This is true of all Lisa 2s.

Apple Technical Communications

Keywords:

Error	Meaning
10590	Memory error encountered on startup
1033/10	Error encountered in Office System
System Hang	Memory error encountered - mouse hang

Most memory errors are caused by parity errors, characterized by
an unresponsive system and a frozen mouse pointer. Use LisaTest or the
extended memory board test to help you determine which of the two memory
boards failed.

Something else to keep in mind: memory is set up so that the starting
address is on memory board 2, while the data and overflow are on memory
board 1. This means that if you experience memory problems on startup,
it is probably a result of a bad memory board 2. If you encounter
memory errors during the use of an application, it is probably memory
board 1. If the system has hung only once, don't be concerned until it
happens again or until you get another memory error. Nevertheless, if
you get an error during startup, the memory board that is crossed out is
bad.

Keywords:

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100   Lisa: Monitors

Conrac: Conrac Corp.
                         600 N. Rimsdale Ave.
                         Covina, CA 91722
                         (213) 966-3511

What to request: 23" Black and White
                         Cabinet Model SNA-23/C
                         22.7 KHz horizontal line rate
                         60 Hz vertical field rate
                         Under scan adjusted so all 4 corners are visible
                         Modified for fast vertical retrace
                         20 MHz video amplifier

Electrohome: Electrohome (U.S.A.) Limited
                         250 Wales Ave.
                         Tonawanda, New York 14150
                         (716) 694-3332

What to request: EDP-57 Monochrome Projection monitor
                         Projects up to 15' diagonal screen
                         standard is green P1 phosphor, other phosphors available

Good Things to Know About Lisa

Keywords:

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101   Lisa: Page Numbering

The Lisa Office System numbers the pages of a documents differently, as
follows:

LisaCalc, LisaGraph, LisaList:	1	3
	2	4
LisaProject	1	2
	3	4
LisaDraw (in portrait format)	1	3
	2	4
LisaDraw (in landscape format)	1	2
	3	4

Keep these facts in mind for those occasions when you wish to print
specific pages of your document.

Good Things to Know About Lisa

Keywords:

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102   Lisa: Printing

If you have difficulties printing to a printer connected to a parallel card
in slot 3, try slot 2 or 1. Don't forget to change Preferences before you
move the card.

Good Things to Know About Lisa

Keywords:

103   Lisa: Restart After Installing the Dictionary

Even though the Lisa often restarts after installing the dictionary, this restart does not necessitate repairing the hard disk. You may begin using the system immediately.

Keywords:

104   Lisa: Screen Dumps

To print the current contents of the screen, hold down the SHIFT and OPTION
keys while pressing the 4 on the keypad. Screen dumps of the Office System 1.0
software only print to the DMP, which must be connected to the upper port of
the parallel card in slot 2.   Versions newer than Release 1.0 support either
the DMP or Imagewriter connected to any port, as long as they're selected in
Preferences.

Virtually anything displayable on the screen may be printed--including, for
instance, disk directories.

Apple Technical Communications

Keywords:

105   **Lisa: Spontaneous Reset and Power Ups**

A Lisa that resets itself spontaneously may have a bad I/O board. A Lisa
that starts itself up has a bad power supply.

Keywords:

106   Lisa: Two Port Parallel Card Pinouts

          Two Port Parallel Card
               661-93138

PIN	NAME	PIN	NAME
1	GND	14	GND
2	GND	15	PSTRB
3	RW	16	BSY
4	GND	17	CMD
5	DD0	18	PARITY
6	DD1	19	OCD
7	N.C.	20	GND
8	DD2	21	CRES
9	GND	22	DD3
10	GND	23	DD4
11	DD5	24	GND
12	DD6	25	CHK
13	DD7		

The meanings of the individual signals on the interface are:

D0-D7: Eight bidirectional data lines. Bit D7 is the MSB.
DRW: This line is driven high by the Lisa to indicate that data is
        expected to be input on the data lines. It is driven low to indicate
        that data is being output
PARITY: Bidirectional line which must be configured on the basis of the data
        currently on the data lines to give odd parity
PSTRB: Processor strobe line used as a signal by the Lisa to indicate valid
        data being output.
CMD: This line is asserted by the Lisa to indicate that a command has been
        placed on the data lines.
BSY: This line is asserted by the peripheral to indicate to the Lisa that
        it is busy and unable to process commands on the interface.
OCD: The Lisa monitors this line. If it is high, it is assumed that no
        device is connected to the interface.
CRES: This line is asserted by the Lisa when the peripheral is to be reset
        to its power-on state.
CHK: This signal may be used to interrupt the CPU in the event that a
        fault condition has occurred in the device connected to the
        interface.

NOTE: These pinouts apply to both the upper and lower connector of a two port
      parallel card installed in a Lisa or Macintosh XL.

Keywords:

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107   Lisa: When to "Repair" Your Hard Disk

Anytime your system resets or falls victim to a power outage or any other kind
of abnormal power down, you must "repair" your hard disk. Also consider
reparing your hard disk when your system is acting strangely or if you're
having difficulties locating or displaying your documents, even if they are
located on a diskette. The repair is basically a disk clean-up: it closes any
files left open, gets rid of unused scratch files, and then reconstructs the
catalog files if necessary.

If you receive the message "the disk needs minor repairs", start up with
the Office System 1 diskette to repair your hard disk. If you've just
repaired the hard disk using the Office System 1 diskette, perform the "minor
repair" as well when given the choice.

The Office System 1 repair is very thorough, while the minor repair merely
reconstructs the catalog files.

Note: Repairing the hard disk will delete folders (but not documents)
      in Office Systems older than version 3.0.

Keywords:

108   Lisa:10707 Error when Booting the Lisa Office Systems I Disk

Article Created: 13 August 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

PROBLEM DESCRIPTION: The 10707 Error occurs upon booting the
Office Systems I disk or ProFile hard disk.

BEFORE YOU START: Familiarize yourself with the Lisa (or Macintosh XL)
Technical Procedures.

CAUSE: The disk is write-protected or the system software is damaged.

CURE: To unprotect the disk, slide the write-protect tab so that
it covers the small rectangular opening (see the Lisa or Macintosh
owner's manual if you are not sure how to perform this procedure).

If using a ProFile, boot the Office System 1 diskette. Choose the
"Repair' option. If this fails, choose "Install" and reinstall the Office
System. If this still fails, back up the customer's data, reinitialize the
ProFile using the Install option, and install the Office System.

Copyright 1988, 1992 Apple Computer, Inc.
Keywords: hts

LisaCalc has difficulty handling documents over 400 blocks long. If you try to build a file that large, an error may occur after you save and put away the document. If you attempt to redisplay it, you may see a dialog box saying "Unable to Redisplay the Document."

These problems have been fixed in Lisa Office System Release 3.1. The new LisaCalc size limit is approximately 700 blocks (350K). Larger documents still require much more time to calculate, update, print, and save.

Keywords:

110   LisaCalc 7/7: Format for Printer options change

When you select Preview Pages in your LisaCalc 7/7 document, any Printing
Option selections you made revert to their previous setting. Check Preview
Pages prior to setting your Printing Options.

Apple Technical Communications

Keywords:

Some confusion has arisen regarding the F-test formula, a type of Regression value. To begin with, the formula as listed in the LisaCalc manual on 167 is incorrect; it should be $F=(r/(k-1))/((1-r)/(n-k))$.

Another cause of confusion about this formula seems to arise from the fact that the result that the function returns is the coefficient of determination, also known as the "r-square value"; the r in the formula, then, is already the r-square value as returned by the regression function. It does not need to be squared in the formula.

Two more corrections to the Regression section in the LisaCalc 7/7 manual:

1. Page 154: The formula at the bottom of the page should read: Correlation (B3:E7, H6:19).

2. On page 165, under Type of Regression Values: The fourth sentence incorrectly states that the correlation coefficients are sorted from the highest to the lowest index. In fact, they are listed in the order they appear in the data matrix.

Apple Technical Communications

Keywords:

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112   LisaCalc 7/7: The NPV function is different

The NPV function has changed in the 7/7 version of LisaCalc. In the old version (2.0), the first value of the cashflow was counted as the payment for the first period and was thus discounted (annuity due). The formula looked like this:

$$v_1/(1+discount)^1 + v_2/(1+discount)^2 + ...v_n/(1+discount)^p$$

where v is the value of your cash flow, discount is the discount percentage, n is the number of the payment, and p is the number of the period.

In the new LisaCalc 7/7, the first value of the cashflow is not counted as the first period and not discounted (annuity arrears). The formula looks like this:

$$v_1/(1+discount)^0 + v_2/(1+discount)^1 + ... v_n/(1+discount)^p$$

It's just another way of looking at the same function. Both are equally correct.
Apple TechComm

Keywords:

113   LisaCalc: Calculation Order

LisaCalc 7/7 doesn't have a specific calculation order -- it simply
determines the approach that will make for the fewest possible passes.
Therefore, you don't need to worry about placement of formulas in
relation to the cells they involve.

LisaCalc 1.0 and 2.0, on the other hand, calculate first by rows, then by
columns. They then check to see if both answers are the same. If they
aren't the same, LisaCalc calculates by rows again then rechecks the
answers. If Calculate Automatically is selected, this process is repeated
until two successive calculations yield the same answers, or until 30
seconds has passed. If Calcualate Manually is selected, the process is
repeated indefinitely.

Keywords:

If you want to select a range of cells that is larger than the window (such as
A1:A100), click in the Cells area at the top of your document (or press
APPLE-G) and type the range. Pressing ENTER will select the range.

Good Things to Know About Lisa

Keywords:

NOTE: This information applies to versions 1.0 and 2.0.

Although LisaCalc lets you Cut the whole contents of a document, you can't then Paste it anywhere -- not even back into the document you Cut it from.

Instead of using Cut and Paste when the whole document is involved, use Copy and Paste.

Keywords:

When you cut cells, formulas that directly refer to those cells are set to
ERROR. When you paste, the formulas will be adjusted to reflect the
location of the new cells. If you cut a group of cells and the formulas
that refer to them, then paste them to another location, the formulas are
automatically adjusted.

Keywords:

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Here's how to enter a cell's coordinates without typing it: just point
at the cell, and then press the OPTION key and the mouse button at the
same time.

Keywords:

Apparently innocent formulas, like A1+B1, sometimes result in an Error
if A1 or B1 is blank. The program has forgotten that blank cells are
to be treated as zero in a formula. To get around this lapse of memory,
just put a zero (0) in the blank cell.

Keywords:

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Find Next Missing Value does not always work. The problem occurs when the selected cell is in a column that never had any values in it. An alert box appears to report that there are no missing values below the selection. Be sure the selected cell is in a column that has another value.

Keywords:

120   LisaCalc: How to check for a blank cell

There are some instances which require a test for an empty or blank cell. To
test for this condition, you need to compare the cell in question with another
cell that you know will always be blank, such as in:

IF(D5=X255,'blank',G4-D5)

assuming that X255 is always empty.

Good Things to Know About Lisa

Keywords:

Please ignore the implication, on page D32 of the LisaCalc Manual, that you can enter more than one range for Range1 in your Lookup statement. In fact, when you enter the second range, LisaCalc assumes that this is Range2.

You can get around this if your Lookup table spans more than one row or column. Consider, for example, a Lookup table to look up a number in the range of 1 to 300. Obviously, this will be more than one column or row. In Cells B1:B254 you have numbers from 1 to 254. In the column to the right (C1:C254) you have the result to return. In Cell B255, instead of entering the value 255, enter 301, a number outside the range of the Lookup table. To the right of that you have a lookup that looks like this:

LOOKUP(A1,D1:D46,E1:E46).

D1:D46 has the remaining numbers in your Lookup table, the results are to the right in column E. So in your main Lookup Statement you would have this:

Lookup(A1,B1:B255,C1:C255)

If the number you are looking for in A1 is 260, then the value returned will be the result of the Lookup in Cell C255.

Good Things to Know About Lisa

Keywords:

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There are some techniques for managing the size of a spreadsheet:

1. Plan Ahead. You can enter the information more easily and, since making changes tends to increase the size of the sheet, planned entries will save you memory.

2. Structure the information to make the row and column lengths fairly even; avoid stretching your spreadsheet too oblong either way. LisaCalc keeps track of all the cells in the grid. Incidentally, this accounts for the printing of blank pages on occasion; since Lisa prints every cell in the grid, even if you haven't used them, the blank cells force a page feed.

3. Use Paste Adjusted formulas; unlike regular pasted or entered formulas, they don't take up as much accounting space on a pointer table. However, there are a few things to keep in mind when using Paste Adjust. First, it works best on long formulas pasted into large ranges; Paste Adjusting a small formula to a few cells won't save you any space. Second, LisaCalc, in the process of readjusting formulas, replaces the pointers in the spreadsheet with real formulas. Bigger than the pointer they replace, these Paste Adjusted formulas increase the size of your sheet once you start copying, cutting, pasting, and inserting rows or columns. The reason for this is that the adjusted cells contain a pointer to the original formula with an increment. Plan ahead!

Keywords:

123   LisaCalc: New vs. Used Rows and Columns

On a new Calc sheet, enter the following:

```
in cell A1 enter 20
in cell A3 enter 30
in cell A4 enter 50
in cell A5 enter 100
in cell A6 enter MIN(A1:A5)
```

The value will be 20.

Now, enter anything into any cell (other than A2) in row 2. The value in A6 changes to 0. The problem is that that LisaCalc makes a distinction between new and used rows or columns. To get around this, cut row 2 and insert another in its place.

Keywords:

When an IF test uses real numbers, problems with round off can cause
incorrect evaluations. For example, say you have the formula

  IF(A1+A2=A3,"OK","NOT OK")

and cell A1 contains 2.1, A2 contains 1.2, and A3 contains A1+A2.
Even though the values look identical, the formula will return "NOT OK",
because values in an IF statement (A1+A2) have a different precision than
values in a cell (A3).

So, when the two values are compared, they are not the same ("NOT OK"),
even though logically they are. To avoid this situation, use integer
numbers for equality tests -- or, when you use real numbers, add an
INT function to your IF statement.

Keywords:

125   LisaCalc: Problems with rounding

In cell A2, enter the formula INT(A1*100)/100; in cell A1, enter the value
1.17. You would expect the result in A2 to be 1.17; however, due to
difficulties in converting decimal to binary and back, the result returned is
1.16. If the intent of the above expression is to round to two decimal places,
then use ROUND(A1,2) or ROUND(INT(A1*100)/100,2). To compare the two cells to
see if they are equal, use IF(A2-A1<.0001,EQUAL,NOTEQUAL).

Apple Technical Communications

Keywords:

@PUBDATE:840921
@AUTHOR:EW
@KEYS:

There is a way of sorting in LisaCalc. Let's say, for example, that you
wanted to sort a column of numbers (B1:B35) in Ascending order. To do this,
you need to set up an additional column of formulas like this:

In the first cell (C1), put

   search(B1:B35,cell<result,500,cell)

In the next cell (C2), put

   search(B1:B35,cell<result and cell>C1,500,cell)

Now, Paste Adjust it to C3:C35, adjusting the C1. This will search the
range B1:B35 and sort them in ascending order. The 500 value is any number
larger then the largest number in the range. To sort in Descending order, the
formulas would look like this:

In the first cell (C1), put

   search(B1:B35,cell>result,1,cell)

In the next cell (C2), put

   search(B1:B35,cell>result and cell<C1,1,cell)

and then Paste Adjust it to C3:C35, adjusting the C1.

Please keep a couple of things in mind when sorting:

1. This method will only sort a single row or column, NOT entire rows or
   columns as in LisaList.

2. If there are repeats of numbers in the range you are sorting, they will
   show up as NAs at the end of the list.

Good Things to Know About Lisa

Keywords:

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127   LisaCalc: Specifications

I. LisaCalc: A6D0300

  Available from Sun Remarketing,
                P. O. Box 4059, Logan, Utah 84321
                (801) 752-7631.

     --Includes: LisaDraw, LisaList, LisaGraph, LisaWrite, LisaTerminal,
                LisaProject and the Lisa Office System.

1. Maximum Size:

   A. Dimensions: 255 rows by 255 columns
   B. Visible: 15 columns (8 characters each) by 29 rows
   C. Memory (recommended limit): 400 blocks

2. Precision and Accuracy:

   A. Standard IEEE numerics for calculations
   B. 15 digits for high-precision calculations

3. Editing:

   A. Cut, Copy, Paste and Clear
   B. Insert new rows or columns
   C. Copy values or formulas from or into other models

4. Formatting:

   A. Left, right and center justification
   B. Variable column widths: 1 to 80 characters
   C. Numbers:
       a. Integer, decimal, and exponential
       b. Variable number of digits after decimal or exponent
   D. Money: commas, dollar signs, cents
   E. Negative money values may be displayed in brackets
   F. Fill Pattern

5. Functions:

   A. Addition, subtraction, multiplication, division
   B. Sum, average, minimum, maximum, count, exponent
   C. NPV, compound interest factor, annuity factor
   D. Absolute value, integer portion, round
   E. Log, natural log, square root, sum of squares
   F. Sin, asin, cos, acos, tan, atan
   G. Lookup
   H. Integer division with remainder
   I. Boolean: and, or, not, if-then-else
   J. Equal, not equal
   K. Greater and less than, greater than or equal, less than or equal
   L. NA, error

6. Date/Calendar:

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    A. Specify dates as mm/dd/yy
    B. Specify date parts as a number of days, months or years
    C. Add, subtract and compare dates of date parts
    D. Many functions work with dates or date parts

7. Calculation Features:

    A. Automatic or manual:
      -- Calculates until convergence is achieved

8. Data Exchange:

    A. Move data and models between LisaCalc documents
    B. Move data and text into LisaGraph and LisaWrite

9. Special Features:

    A. "Protection" guards cells from being changed
    B. Circle Missing Values: cells that are referenced in a formula but
       do not contain valid data are highlighted
    C. Up to 6 vertical or horizontal splits of the window

10. Features:

    A. Undo function: cancels effects of last operation
    B. Revert To Previous Version: undoes all changes made to the
       document since it was last saved
    C. Display more than one document on the screen at the same time
    D. Horizontal and vertical scrolling

11. Typestyles:

    A. Variety of sizes available

12. Printing:

    A. "What you see is what you get" fidelity
    B. Fit as many as 132 columns on an 8 1.2 x 11-inch page
    C. Automatic or manual page breaks
    D. Print formulas or values
    E. Print in horizontal or vertical formats
    F. Print one or multiple copies
    G. Print whole drawing or selected pages
    H. Background printing enables you to print one or more documents
       while working on another
    I. Works with the following printers:
      a. Apple Dot Matrix Printer
      b. Apple Imagewriter: normal or wide carriage
         NOTE: Only version 3.1 of the Office System makes full use
             of the wide-carriage ImageWriter, letting you print
             on 14" x 11" paper.
      c. Apple Daisy Wheel Printer
      d. Canon Ink Jet Printer

13. Documentation: Reference guide which includes a tutorial.

Keywords: SPECSHT

Yes, it takes a long time to save large Calc spreadsheets. Fifteen
minutes or more is neither uncommon nor abnormal. If the sheet has
Lookups, Ifs, and Searches, the sheet may take even longer to save.
Simply be patient.

Keywords:

129   LisaCalc: Updating Documents From Earlier Releases

The new calculation algorithm in LisaCalc, release 3.0, may be unable to fully
update a spreadsheet created with an earlier version of LisaCalc. If no data
was included to calculate a value for a cell created using Paste Adjusting,
then the formula may not be present in the updated spreadsheet. If this
occurs, simply Paste Adjust the formula again.

Keywords:

To use a date in a formula, as for calculating cost per day, you need to transform the date part into a number. To accomplish this, use the INT function:

`INT('12/4/84'-'1/3/84')*500`

Good Things to Know About Lisa

Keywords:

131   LisaDraw, MacDraw, MacPaint: White letters on a black background

Need to put white letters on a black background? Well, just do the
following.

MacPaint:

  1. Select the text option from the pallet; select the font of your choice,
     then Outline or Shadow from the Style menu and type in your text.

  2. Select the Paint Can from the pallet, then a shade of black. Move the
     pointer (now a small paint can) off to the side of your text and double
     click.

The Paint Can fills in the region around your text in black, leaving your
typed characters white.

MacDraw or LisaDraw:

  1. Type in your line, then change your letters to Outline or Shadow, with a
     fill of none.

  2. Draw a box, circle, etc., over the top of your text.

  3. While your box is still selected, select Send to Back from the
     Arrangement menu, then choose a fill of black.

The end result gives you white letters on a black background.
Icon, Volume 1

  Keywords:

132   LisaDraw: 2.0 Stationery

Paper torn off the 2.0 LisaDraw stationary pad is 8 pages wide. To make a
pad with fewer pages: select the preferred Drawing Size, draw a box, circle,
line, etc, with lines white, shades none. Save your document, then select
Make Stationary Pad from the File/Print menu. Throw away your old
stationery pad if you wish.

Keywords:

133   LisaDraw: Centered Text

When you select certain objects in LisaDraw, such as rectangles and
circles, then start typing, the text aligns in that object. This means
that if you have "Align Centers" selected (the default), your text is
centered in the object.

Keywords:

Text can be cut or copied from LisaWrite and pasted into LisaDraw; however, LisaDraw doesn't understand "wraparound", so the information is pasted in one long line. For example, a paragraph consuming 5 or 6 lines copied from LisaWrite is pasted into LisaDraw as one long line (up to approximately 225 characters if there's sufficient room).

Good Things to Know About Lisa

Keywords:

135   LisaDraw: Error 3001 or 3007

When printing a document, you might receive error message 3001 or 3007
as a result of having entered some text in your document then backspacing
over a portion of it.

The BACKSPACE sometimes changes the type style of the text string to the
system font, the font used for displaying Lisa menus and messages.
Unfortunately, LisaDraw doesn't know how to print the system font.

The text typically displays normally, though it is sometimes displayed in
the system font which is easily distiguished when the text contains a "V".
Just compare the "V" with the V in the option Save from the File/Print menu.
The system font V, just as in the pull down menus, slants towards the right.

The easiest way to resolve this problem is to "Select All" of the document
with the Edit menu, change the type style to another type style. Change the
typstyle back to what you originally selected if you wish. Then print as you
normally would.

The other option is to locate, select and change the font of, or re-enter,
the specific offending text. Look for the "V"s as described above, or select
Print While You Wait. LisaDraw stops printing when it encounters the
offending text string.

Keywords:

Two methods for spacing objects evenly are:

- Select all the objects you wish to space evenly, then select Align
  to Autogrid from the Arrangement menu.

- Make evenly spaced copies of an object by duplicating the object and
  moving it the distance you want. While the duplicate is still selected,
  duplicate this duplicate. Each subsequent duplicate moves the same
  distance as the first duplicate you moved.

Keywords:

137   LisaDraw: Location of Pasted Objects

When pasted into LisaDraw, objects are centered around the last mouse click. If you haven't clicked in the document, the object is centered on the first page.

Keywords:

Remember that graphs pasted from LisaGraph to LisaDraw are grouped, sometimes in many layers. Therefore, to access a specific part of the graph, ungroup the objects until the one you wish can be selected individually.

Good Things to Know About Lisa

Keywords:

139   LisaDraw: Printing 18-point bold italic text

Even though 18-point bold italic appears to be fine on the screen, it may grow
10 to 15% in size when printed, possibly overrunning any boxes it may have been
placed in or graphics it was placed close to.

Apple Technical Communications

Keywords:

140   LisaDraw: Printing Landscape, High Resolution

When you print **LisaDraw** documents in landscape high resolution, horizontal lines and text may be longer on paper than they appeared on the screen. This distortion is due to the difference in the pixel size between the screen and the printer.

If you are designing a document to be printed in landscape high resolution, compensate for the line length by drawing your horizontal lines a little shorter, position text in boxes a little to the left, etc.

Alternatively, print your landscape document in normal resolution

Keywords:

141   LisaDraw: Shading Arcs and Curves

The default shade for text in LisaDraw is white, as it is for all closed objects (circles, squares, etc.). The default shade for arcs and freehand curves is "none." Consider shading arcs and freehand curves to give them a larger selectable area, making them easiler to select.

Keywords:

Shrinking and stretching objects in LisaDraw is described

 on pp. B19-B21 and C75-C76 of the LisaDraw manual

 on pp. 137-138 of the Lisa 7/7 manual

To prevent distorting your objects when you stretch and shrink
them, use the handles in the middle (not in the corners) of each side,
moving each of the handles the same distance from the center. For example,
if you have a 2 x 2 square that you wish to increase to 4 x 4, take
the handle at the middle of each side and move it an inch out from the
center. To stretch or shrink several objects, group them first.

Keywords:

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143   LisaDraw: Specifications

I. LisaDraw: A6D0300

   --Includes: LisaCalc, LisaProject, LisaGraph, LisaList, LisaWrite,
             LisaTerminal and the Lisa Office System.

  Available from Sun Remarketing,
             P. O. Box 4059, Logan, Utah 84321
             (801) 752-7631

1. Maximum Drawing Size: 32 sq. feet; about 60 pages

2. Palette Selections:

      A. Rectangles: with and without rounded corners
      B. Circles and ellipses
      C. Lines:
          a. Horizontal, vertical and diagonal
          b. Thicknesses: fine, narrow, medium, wide
          c. 36 patterns
          d. Shades: black, grey, white
          e. Arrowhead feature: one or both ends
      D. Arcs
      E. Polygons
      F. Freehand
      G. 36 patterns: for filling objects or defining shade of lines

3. Text Editing:

      A. Add text to any part of drawing
      B. Cut, Copy and Paste; same as in other Lisa applications

4. Graphics Editing:

      A. Move any object or shape
      B. Place objects in front of or behind others
      C. Shrink or expand any object yet maintain its shape
      D. Reshape freehand curves, arcs and polygons
      E. Automatically smooth curves
      F. Copy or delete any object
      G. Change pattern of shading inside a shape or object
      H. Rotate objects: left, right, horizontal, vertical

5. Colors and Shades:

      A. 36 shades (for objects, text, lines)
      B. 8 printable colors (Cannon Ink Jet Printer required to print colors)

6. Alignment Aids:

      A. Grids:
          a. Displayable on screen in various sizes
          b. Able to align objects to grid
      B. Rulers:
          a. Horizontal and vertical
          b. Increments: inches, centimeters, or custom
      C. Align middles, centers, either side, top or bottom of object

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      D. Align to Auto-Grid
      E. Measure distance between two points or the size of objects
      F. Group shapes or objects to move, copy or delete them together

7. Zoom

      A. Reduce to Fit
      B. Reduce 70%

8. Typestyles:

      A. Variety of fonts and sizes available
      B. Bold, italic, underline, outline, shadow or any combination

9. Features:

      A. Undo function: cancels effects of last operation
      B. Revert To Previous Version: undoes all changes made since document
          was last saved
      C. Display more than one document on the screen at the same time

10. Special Features:

      A. Move LisaGraph and LisaProject charts into LisaDraw for further
          customization
      B. LOCK allows you to protect objects from accidental editing

11. Printing:

      A. Prints in horizontal (landscape) or vertical (portrait) formats
      B. Prints single or multiple copies
      D. Printers supported:
          1. Apple Dot Matrix Printer
          2. Apple Imagewriter: narrow or wide carriage
          3. Apple Daisy Wheel Printer
          4. Cannon Ink Jet Printer
      E. Background printing: prints one or more documents while displaying
          another

12. Documentation: Reference guide (including tutorial).

Copyright 1985, 1992, Apple Computer, Inc.
Keywords: SPECSHT

144   LisaGraph: Changing Shades

To change the shading on the bars or legends in your bar charts:

1. Paste the graph into LisaDraw

2. Ungroup the objects until the object you want to modify can be selected individually.

3. Shade the bars.

Keywords:

145   LisaGraph: Coefficient of Determination

In the LisaGraph 7/7manual, the bottom paragraph on page 82 states:

"Lisa places a number near the end point of the line on the right
side of the chart, called the correlation coefficient or confidence
factor (r-squared)."

This value placed at the end of the regression line is actually the
r-square value or the coefficient of determination.

Keywords:

To copy rows from LisaCalc to paste into columns in LisaGraph (or columns into rows), make sure you select entire rows or columns by clicking on their headers. Selecting a random range of cells doesn't work. After pasting, cut or clear any superfluous information.

Keywords:

147   LisaGraph: Customizing the X axis

To customize the X axis, you must have a line graph or a scattergram graph selected. Customizing is described on pp. C89-C93 in the LisaGraph 1.0 or 2.0 manual, or p. 83 in the LisaGraph 3.0 manual.

Good Things to Know About Lisa

Keywords:

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148   LisaGraph: More graphs on a page

If you want more than one graph on a page, paste the graphs into a LisaDraw document, then arrange them anyway you wish.

Good Things to Know About Lisa

Keywords:

I. LisaGraph: A6D0300

>   --Includes: LisaCalc, LisaProject, LisaDraw, LisaList, LisaWrite,
>   LisaTerminal and the Lisa Office System.

>   Available from Sun Remarketing,
>   P. O. Box 4059, Logan, Utah 84321
>   (801) 752-7631

1. Graph Types:

>   A. Bar
>   B. Line
>   C. Mixed bar/line
>   D. Clustered bar (up to 8 bars per cluster)
>   E. Scatter
>   F. Pie

2. Maximum Size:

>   A. Data Points: More than 2,000
>   B. Plots up to 9 columns (sets) of data

3. Titles:

>   A. Graph title and subtitle
>   B. X and Y axis title
>   C. Footnotes and legends
>   D. Free-floating: text may be placed anywhere on graph

4. Data Entry:

>   A. Simple table for data entry
>   B. Copy and paste data from LisaCalc and LisaList

5. Editing:

>   A. Cut, Copy, and Paste: same as in other Lisa applications
>   B. Editing of data within cells
>   C. Edit graph titles
>   D. Insert new or delete row or column in data table
>   E. Paste into LisaDraw for futher customizing

6. Formatting:

>   A. Grid lines: on or off
>   B. Legends: on or off   C. Graph sizes: 1/4, 1/3, 1/2 or full page
>   D. Axis: ranges and increments created manually or automatically
>   E. Table:
>   1. Variable width columns
>   2. Left, right or center alignments
>   3. Integer, decimal, scientific or money formats

7. Typestyles:

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A. Table: A variety of fonts available:
B. Titles: A variety of fonts available plus bold, italic, underlined,
           shadow, hollow or any combination of styles

 8. Performance:

    A. Time required to replot: usually less than one second
 9. Special Features:

    A. Undo function: cancels effects of last operation
    B. Revert To Previous Version: undoes all changes made to the graph
       since it was last saved
    C. Display more than one document on the screen at the same time
    D. Enlarge or shrink viewing areas for graph or data-entry table
    E. Enter text anywhere on the screen
    F. Copy graph and Paste into LisaDraw for further embelishments

10. Printing:

    A. "What you see is what you get" fidelity
    B. Print graph and/or table
    C. Print in horizontal or vertical formats
    D. Print single or multiple copies
    E. Works with many printers:
        a. Apple Dot Matrix Printer
        b. Apple Imagewriter: narrow or wide carriage
        c. Apple Daisy Wheel Printer
        d. Cannon Ink Jet Printer
    F. Background printing: enables you to print one or more documents
       while working on another

11. Documentation: Reference guide which includes a tutorial

Copyright 1985, 1992, Apple Computer, Inc.
Keywords: SPECSHT

150   LisaGraph: Two decimal places

If you wish to have numbers with two decimal places on the X or Y axis, be
aware that LisaGraph always rounds the numbers up to the first decimal place
for any increment except .05.

Good Things to Know About Lisa

Keywords:

IMPORTANT FACT: The LisaGuide diskette doesn't contain any system startup
instructions, so if you try to start LisaGuide solely from the diskette, a
crossed out Lisa icon and an error 10735 is displayed.

To boot LisaGuide: Startup From... the ProFile with your LisaGuide diskette in
the drive.

If you're still unable to boot LisaGuide, your Office System or your
LisaGuide diskette may be damaged. First, repair and reinstall the Office
System startup software as described on p. D50 in the Lisa 1 Owner's Guide or
p. C24 in the 2's guide; then, repair the LisaGuide diskette. If LisaGuide
still doesn't boot, replace the diskette.

Good Things to Know About Lisa

Keywords:

152   LisaList: Capacity

The capacity of LisaList depends on the amount of disk storage space
available. But each record (row) has a specific capacity of 990 bytes,
with 100 fields (columns) per record.

Note: files that fit on the 5-1/4 disk may be too large to fit on a
3-1/2" microdisk under release 2.0; however, Lisa Operating System 3.0
splits the document among many diskettes if necessary.

Keywords:

153   LisaList: Error Too Many Time Components

Typing (or pasting) a time, such as 1:15 pm, into a cell may result in the
error message: "Too many time components. Format is..." when your Data
Format includes an am/pm (e.g., hh:0m am). The am and pm acts as if they
need 4 spaces instead of 2. With a Data Format of hh:0m am, you may enter up
to 4 numbers for the hours and minutes, but ONLY up to 2 characters if you
include an am or pm. For example:

```
 Your Type        LisaList Displays

    555              5:55 pm
    1155            11:55 am
    13pm             1:00 pm
    110pm           not acceptable: you have a total of 6 spaces available of
                    which the pm needs 4.
```

When your Data Format is hh:0m:0s am you may enter up to 6 numbers, 4 if you
enter the am/pm.

Remember, if the Data Format includes an am/pm and you don't specify which,
LisaList interpretes the time as:

```
  0        Midnight
  1-6      pm
  7-11     am
  12       Noon
  13-23    pm
```

Refer to your LisaList 7/7 manual, page 144.

Copyright 1985 Apple Computer, Inc.
Keywords:

People frequently use a Text format rather than a Number format for
columns of numbers. LisaList, when sorting number formatted fields, sorts
them in ascending or descending numerical order. When these numbers are
formatted as text, they are sorted via a comparison of letters. This means
that all of the numbers that start with 1 (10, 15, 100, 1000, etc.) sort
together, the 2's are grouped together, and so on. The only way to
reformat the information is to add another column with the proper format,
then transfer the information. Sort orders and comparisons are discussed
further in Appendix 4 of the LisaList manual.

Keywords:

_____

155   LisaList: Specifications

 I. LisaList: A6D0300

   Available from Sun Remarketing,
                P. O. Box 4059, Logan, Utah 84321
                (801) 752-7631

      --Includes: LisaCalc, LisaDraw, LisaGraph, LisaWrite, LisaTerminal,
                LisaProject and the Lisa Office System.

  1. Maximum Document Size: 50% of available storage space

  2. Maximum Record (row) Size: 990 bytes

  3. Maximum Number of Fields (columns) per Record: 100

  4. Data Types:

        A. Text (default)
        B. Number
        C. Date
        D. Money
        E. Time
        F. Social Security number
        G. Phone number
        H. Zip code

  5. Entering/Formatting Data:

        A. Checked for proper data type
        B. Automatically formatted
        C. Formats may be changed (data type cannot be); previously entered
           data is refomattted

  6. Editing:

        A. Add or delete columns
        B. Cut, Paste, Copy or Clear: cells or records
        C. Reorder columns
        D. Vary column width
        E. Make columns you don't want in a particular report invisible
        F. Rename any or all columns

  7. Sorting:

        A. Sort all data types in ascending or descending order
        B. Multiple sort fields may be specified

  8. Searching:

        A. Criteria specified in a search table
        B. Search on multiple criteria
        C. Criteria:
             a. equal to, not equal to
             b. greater than, greater than or equal to

_____

       c. less than, less than or equal to
       d. between

9. Typestyes:

  A. Variety of sizes available

10. Features:

  A. Undo function: cancels effects of last operation
  B. Revert To Previous Version: undoes all changes made to the graph
     since it was last saved
  C. Display more than one document on the screen at the same time

11. Special Features:

  A. Built-in file-recovery mechanism: protects data from power
     fluctuations and media failures

12. Printing:

  A. "What you see is what you get" fidelity
  B. Variety of type sizes available
  C. Horizontal or vertical formats
  D. Single or multiple copies
  E. Works with the following printers:
    a. Apple Dot Matrix Printer
    b. Apple Imagewriter: normal or wide carriage
    c. Apple Daisy Wheel Printer
    d. Canon Ink Jet Printer
  F. Background printing: enables you to print one or more documents
     while working on another

13. Documentation: Reference guide which includes a tutorial

Keywords: SPECSHT

Releases 1.0 and 2.0 of LisaProject do not allow resources to work on
different tasks simultaneously. When your tasks do not have the dates you
anticipated, rename your resources so that each resource has a unique name.
For example, if "Joe" is working on two parallel tasks, rename the resource
Joe 1 and Joe 2, so the program treats them as two different resources.
Resources also impact the scheduling of tasks later on in the project, so
keep an eye on them.

LisaProject 3.0 lets you schedule resources in parallel.

Keywords:

_____

When copying and pasting the Task Table into documents such as LisaCalc and LisaList, the late finish dates (4th column) is pasted over the top of the early finish dates (2nd column). Since you cannot select and Copy just a portion of the Task Table, you will have to correct the early finish dates manually.

Apple Technical Communications

Keywords:

**In LisaProject, entered or calculated integers greater than 2,147,483,646 will
be stored incorrectly--most likely as a negative number. Consider using
multiples of hundreds or thousands of dollars whenever you suspect the cost of
your project might exceed 2 billion.**

Apple Technical Communications

Keywords:

_____

159   LisaProject 7/7: selecting line cause display to jump

When you select a perfectly horizontal line connecting two tasks in a
multipage LisaProject document, the screen display jumps to the first page of
the document. To avoid this inconvenience, move one of the task boxes up or
down until the dependancy line is no longer horizontal before selecting it.

Apple Technical Communications

Keywords:

While the Lisa applications library offers many attractive features, LisaProject draws the attention of many executive decision makers. Apple presents LisaProject as a powerful instrument to efficiently and effectively accomplish resource scheduling. But as one explores the subject beyond this point, many questions arise. What is PERT, and how does LisaProject use PERT to achieve its schedule? What is a critical path and what are its implications? How does one apply LisaProject in the real world? Although the complete answers to these questions go beyond the scope of this publication, we will briefly discuss some of the issues and provide further research avenues for the reader.

What is PERT? PERT (Program Evaluation and Review Technique) is a scheduling algorithm, developed and utilized extensively by the Air Force during the Second World War. It identifies the tasks, resources, and their associated time-frames needed to complete an objective. Simply put, PERT is a network model which determines the significance and timing of the tasks involved in completing a project. As opposed to the majority of linear programming models that seek to maximize/minimize an objective function, PERT's algorithm uses Lisa's date arithmetic to arrive at the estimated sums of elapsed time to complete a "leg" of the project. The individual times associated with each "leg" are then compared to determine the longest route. This longest "leg", then, is the "critical path". Each task along the "critical path" is identified as a mandatory activity which is essential to timely completion of the project, and therefore, is defined by the system as having no spare ("slack") time. Again, as opposed to linear programming tools, PERT neatly avoids "supoptimization" (scheduling of two or more resources during the same time period), while arriving at an optimal solution to the problem.

Management scheduling staffs can bring the project generation phase to a rapid finish. During the progress of the project, the "what if" capabilities offer myriad uses. Specifically, the "critical path" identification feature not only indicates the relevant priorities of tasks, but its corollary argument tells the manager which tasks he can relatively ignore.   If task A, to give an example, is not on the "critical path", then one should not expend labor, money or other scarce resources to try to expedite it. Devoting further resources to task A just will not abbreviate the length of the entire project. Also, the planner may take the completed project and use it to clearly develop budgets by tagging dollar values to resource and task "classes" and using LisaCalc to crunch the numbers.

For readers who desire further information on these topics, see:

1. "PERT ORGANIZATION: A Technique for Evaluating Schedules", Publications, Inc., October 1981, pgs. 407-412. A six page discourse on the Boolean Matrix involved in PERT.

2. Elementary Systems Mathematics: Linear Programming for Business , Robert E. Machol, McGraw-Hill Book Co., NewYork, 1976. An exhaustive examination of mathematical programming techniques which are matrix oriented.

3. "Computerizing PERT for Business", Dun and Bradstreet , January, 1979, pgs. 87-95. How to apply computer generated PERT charts to everyday business situations.

Apple Technical Communications

Keywords:

161   LisaProject: Capacity

The maximum capacity of a LisaProject document is 60 pages, or more than
2,500 tasks with over 100 resources per task. LisaProject release 1 and 2.0
allow you to enter up to 20 vacation days, while release 3.0 accepts up to 40.

Good Things to Know About Lisa

Keywords:

Be careful not to draw lines connecting task boxes in LisaProject sloppily.
For example, if you have 3 tasks that are supposed to follow one another,
don't draw a line directly from the first task to the third; otherwise,
the middle task may incorrectly be assigned the start date of the first
task. In such a case, the second task may appear connected to other tasks
when it really isn't. To avoid this problem, first connect the second task
to the first, then connect the third task to the second.

Keywords:

163   LisaProject: Dates

If your task box has questions marks instead of dates, you've set a scheduled
date that caused the program to push the dates outside of the calendar range.

Good Things to Know About Lisa

Keywords:

Make sure that when entering resources and durations, you TAB over to the next field, NOT space over to it. Otherwise, LisaProject assumes the duration to be zero.

Good Things to Know About Lisa

Keywords:

165   LisaProject: Extra Pages

To get rid of extra pages in LisaProject, Save and Put Away the
document, then redisplay it. The extra pages should be deleted.
If this doesn't work, try changing the print orientation (for example,
change Portrait to Landscape), change it back, then save it and put it
away. The extra pages should be gone when you reopen your document.

Keywords:

Resources listed on the Resource chart are sorted in the order they were entered, until you save and put away your project. They are then sorted from left to right as they appear on the chart. To sort your resources differently, create a task box at the left side of your project and enter the resources in the order you want. Save your document. When you redisplay your document, the resources are sorted in the same order as in the task box you created. Additions to the chart appear at the bottom of the resource chart.

Keywords:

167   LisaProject: Scheduled dates

When you enter a scheduled date for a task, LisaProject recalculates the
dates to reflect it. However, if the date you entered is thought by the
program to be illogical, LisaProject overrides it and enters its own date.
The date is underlined just as if you had set it.

Good Things to Know About Lisa

Keywords:

168   LisaProject: Specifications

I. LisaProject: A6D0300

    --Includes: LisaCalc, LisaDraw, LisaGraph, LisaList, LisaWrite,
             LisaTerminal and the Lisa Office System.

  Available from Sun Remarketing,
              P. O. Box 4059, Logan, Utah 84321
              (801) 752-76311.

  Charts:

    A. Scheldule
    B. Resource
    C. Task

2. Tables:

    A. Resource Cost Entry
    B. Task Cost Entry
    C. Cash Flow
    D. Task

3. Maximum Capacity:

    A. Task Boxes:
       a. Quantity: 1,000
       b. Duration: 199 days
       c. Title: 50 characters
    B. Size: 32 square feet, Approx. 60 pages
    C. Resources:
       a. Quantity: May enter hundreds per project or task
       b. May be assigned to simultaneous tasks

4. Performance: Charts immediately redrawn when data is entered or changed

5. Costing:

    A. Fixed job cost assigned to a task, and/or
    B. Accumalative resource costs

6. Date/Calendar Options:

    A. Task dates: early and late start, early and late finish dates
    B. Vacation Days: up to 40
    C. Work Days: up to 7 per week
    D. Displayed Date: month/day/year
    E. Current date displayed in Resource and Task charts

7. Edit Options:

    A. Cut, Copy, or Paste: same as in other Lisa applications
    B. Proportionally shrink or expand task boxes or charts
    C. Enter titles and subtitles directly on the chart

8. Zoom:

    A. Reduce 70% or
    B. Reduce to fit

9. Typestyles:

    A. Variety of fonts, sizes and styles available
    B. Bold, italic, underline or any combination

10. Special Features:

    A. Move a LisaProject chart into LisaDraw to customize it further
    B. UNDO function cancels effects of last operation
    C. View more than one document on the screen at once
    D. Scroll horizontally or vertically
    E. Revert to Previous Version undoes all changes made to the document
       since it was last saved

11. Printing:

    A. "What you see is what you get" fidelity
    B. Automatic page breaks
    C. Print one or multiple copies
    D. Print whole document or selected pages
    E. Print in horizontal or vertical format
    F. Choose from many printers:
       a. Apple Dot Matrix Printer
       b. Apple Imagewriter: normal or wide carriage
       c. Apple Daisy Wheel Printer
       d. Cannon Ink Jet Printer
    G. Background printing: enables you to print one or more documents
       while working on another

12. Documentation: Complete reference guide which incudes a tutorial

Copyright 1985, 1992, Apple Computer, Inc.
Keywords: SPECSHT

169   LisaProject: Start Date

If your resource or task charts begin on a date other than the date set in your beginning milestone, then you've (most likely) created a task that has no predecessor, or you have encountered the "phantom task box" (very rare).

Large phantom task boxes have been discovered when the LisaProject document is copied and pasted into LisaDraw. The box has also been discovered in LisaProject just off the edge of the schedule. Since these task boxes are usually neither seen nor tied into the project, they take the start date as set by the calendar. When they do occur, there seems to be no way to eliminate them from your LisaProject document.

Good Things to Know About Lisa

Keywords:

If you're using LisaTerminal's VT100 mode to communicate with an Emac Editor,
avoid using split windows; otherwise, a problem with the 7/7 software causes
the Lisa's screen to be updated randomly. Alternatively, transmit a CTRL-I to
erase and redisplay the current screen.

Apple Technical Communications

Keywords:

_____

To use a modem from LisaTerminal 7/7, use Preferences to make the device
connection a Serial Cable rather than a Modem. If you fail to do this,
the system will constantly set LisaTerminal communications to Off-Line.

Keywords:

LisaTerminal sends an ASCII 0 (NULL) character at the beginning of each
pasted line. This does not occur when entering text from the keyboard.

The addition of the NULL character helps LisaTerminal compensate for
wordwrapping, eliminating the need to have a return at the end of each line
of text.

Apple Technical Communications

Keywords:

173   LisaTerminal 7/7: Record Separator function

LisaTerminal's Record Separator (RS) function doesn't work as documented in the manual: neither pressing "CTRL-6" nor the tilde key (upper left corner of keyboard) will send an RS.

Apple Technical Communications

Keywords:

174   LisaTerminal: Apple Modem cables

There is a deceptive similarity of the Apple modem cable (part number
540-0197) and the Macintosh printer cable (part number 590-0146). You will
have problems when you use LisaTerminal and the Apple modem with the Macintosh
printer cable.

Good Things to Know About Lisa

Keywords:

175   LisaTerminal: Capacity

The capacity of a LisaTerminal document is 1,500 lines. When you reach that limit, LisaTerminal gives you a message telling you to save the document and start on another. If you don't another document and simply continue to receive information, Lisa begins to have memory problems and you run the risk of losing your document.

Keywords:

If you are having problems with clearing the screen, try setting the
Columns Per Line from 80 to 132, then back to 80.

Keywords:

177   LisaTerminal: Cluster Controller

The Apple Cluster Controller maintains an interface between an IBM host and
the Apple Computer by emulating IBM 3278-2 terminal functions and 3287-1
printer functions. The Controller comes in two flavors:

1. SNA/SDLC, which emulates an IBM 3274 or IBM 3276 Control Unit/Display
   Station, and

2. BSC (bisynchronous), which emulates an IBM 3271 Control Unit.

The cluster controller does not support low and high intensity displays;
otherwise, the terminal and printer functions are completely emulated.

Good Things to Know About Lisa

Keywords:

178   LisaTerminal: Copy and Paste from LisaCalc

Before LisaTerminal can recieve LisaCalc Copy or Paste information in the
appropriate format (in columns), you need to set LisaTerminal's tabs to
reflect the width of each column you want LisaTerminal to send. When you don't
set the tabs, all of the information appears in one column with spaces between
each entry. To set tabs in LisaTerminal, follow the procedure on pages 46-48
in the LisaTerminal manual.

Good Things to Know About Lisa

Keywords:

179   LisaTerminal: Copy and Paste from LisaWrite

When you paste from LisaWrite to LisaTerminal, Terminal expects a carriage
return after every line and truncates the line if it is too long. There is a
way of getting around this:

1. Copy the LisaWrite document and paste into an off-line LisaTerminal document
   (one that isn't dialed into anything). The Lisa will put in put in carriage
   returns for you.

2. Copy it again, dial up, then paste.

There are two problems with this method.

1. The text breaks in the middle of words if you don't have word wrap set. To
   avoid this, you can set it to 132 characters. There will be less of a chance
   of breaking in the middle of a word. Alternatively, turn on word wrap.

2. A telecommuncations service, such as The Source, may specifically require
   that the carriage return be within 80 characters. The problem is that
   LisaTerminal puts that return in the 81st position. Having LisaTerminal set
   for word wrap will alleviate the problem somewhat.

This information applies to versions 1.0 and 2.0 only. The problem is solved
in version 3.0.

Good Things to Know About Lisa

Keywords:

180   LisaTerminal: Dialing up another Lisa

To dial up another Lisa, or any other computer, you need to have a modem that
has an auto answer capability, such as Hayes Smartmodem or an Apple Modem.

1. Make sure that the compatibility settings are the same for both computers.

2. To see what you're typing, set the compatibilities at half duplex.

3. Dial the other modem's phone number. This modem will answer and send back
   the carrier. When your modem receives the carrier it will tell you that
   you're connected. Anything that you type or paste will be sent.

4. To terminate the connection, just hang up from the phone menu.

Good Things to Know About Lisa

Keywords:

181   LisaTerminal: Hang when line is busy

When LisaTerminal dials the number automatically and the line is busy or there is no answer, the system appears to hang. In fact, LisaTerminal runs a timeout loop in these situations and nothing stops that loop except cutting off the power. You must wait a minute; once the timeout loop ends, the apparent system hang is over and the Lisa behaves normally.

Good Things to Know About Lisa

Keywords:

182   LisaTerminal: Important Things to Know

1. You can't abort the pasting into LisaTerminal of a file to be transmitted.

2. You can't set LisaTerminal to respond automatically to a prompt from a host computer, such as an editor prompt for next line.

Keywords:

183   LisaTerminal: Manual Errata, Versions 1.0 - 2.0

Page 81 in Appendix 4: VT52 Compatible Mode, (Table)

READS:
   Direct cursor address   ESC PI Pc*

IT SHOULD READ:
   Direct cursor address   ESC Ylc* [NOTE: "ell" not "one"]

Apple Technical Communications

Keywords:

_____

184   LisaTerminal: Maximum length of phone number

The LisaTerminal manual states that the phone number must not exceed 40
characters; however, when you enter a number, only the first 24 characters are
displayed. Only the first 24 characters are dialed when the dial menu is used.

The practical limit, therefore, is 24 digits, not 40.
Apple TechComm

Keywords:

Pressing the PF1 key in LisaTerminal's VT100 mode causes LisaTerminal to send an ESC-P, not an ESC-1.

To send an ESC-1, hold down the tilde key (upper-left corner of the keyboard) then press the 1 key.

Keywords:

The baud rate on the Apple 1200 modem is not unalterable, although how to
alter the rate is not very obvious: you alter the rate by passing data to the
modem at the rate you want the modem to transmit data. From whichever program
you use to send data to the modem, it determines the baud rate of the data it
recieves and sets itself at that rate. For example, when you set the baud
rate of the LisaTerminal program to 300 and instruct the program to auto-dial,
LisaTerminal sends the auto-dial message to the modem at 300 baud; from the
speed of this message, the modem assumes that you want to be communicate at
300 baud; the modem then alters its rate to 300 baud. Subtle, no? But here's
the catch: if you change the baud rate in the program without turning off the
modem first, the modem ignores the messages sent to it at the new baud rate.
You must turn off the modem if you are going to change the baud rate.

Good Things to Know About Lisa

Keywords:

I. LisaTerminal: A6D0300

     --Includes: LisaCalc, LisaDraw, LisaGraph, LisaWrite, LisaList,
               LisaProject and the Lisa Office System.

  Available from Sun Remarketing,
                 P. O. Box 4059, Logan, Utah 84321
                 (801) 752-76311

 1. Terminals Emulated:

     A. VT100/VT52
     B. TTY
     C. 3278 (when used with Apple Cluster Controller or AppleLine)

 2. Maximum Size:

     A. Document: 1500 lines (approx. 20 pages)
     B. Copy and Paste limit: 10 pages

 3. Transmission Speed (baud):

     A. Serial Ports A or B: 50, 75, 110, 134.5, 150, 200, 300, 600,
        1200, 1800, 2400, 4800, 9600
     B. Serial Port B: 3600, 19200

 4. Set-up Options:

     A. Parity: Even, odd or none
     B. Full- or half-duplex transmission
     C. Xon/Xoff
     D. Manual or automatic dialing (supported on Apple 300 or 1200 and
        Hayes-compatible modems)
     E. Auto-repeat on/off
     F. Auto-new line on/off
     G. Wraparound on/off
     H. Answer-back message on/off
     I. Margin bell
     J. On-line/local
     K. Serial Port A or B

 5. Page Layout Options:

     A. Cursor: Block or bar shape
     B. Background: White or black
     C. 80 or 132 columns
     D. Status lights on/off
     E. Characters: Upper- and lowercase
     F. Tabs and rulers

 6. Terminal Control:

     A. Function keys (such as RETURN, TAB, ESC)
     B. Cursor control codes (such as NUL, ENQ, FF, DEL)

  C. Supports all VT100 and VT52 function codes
  D. Special graphic character codes

7. Special Features:

  A. Supports communication while you use other Office System documents
  B. Cut and Paste text from and to other Lisa applications
  C. Dialog boxes and forms simplify the steps in configuring the program
   to communicate with other terminals.
  D. Save data with the Record Lines Off Top option; scroll back through
   the data (not available in 3278 mode)

8. Documentation: Reference Guide

Copyright 1985, 1992, Apple Computer, Inc.
Keywords: SPECSHT

When you want to emulate VT100 operation with LisaTerminal, set Lisa to "forget" lines that scroll off the screen. This mode appears to emulate VT100 functions more accurately. You can then set the Lisa to "remember" and download data or text, then set Lisa back for VT100 terminal operation. During this setting and resetting, Lisa does not clear that text which has been "remembered".

Keywords:

189   LisaTerminal: VT52 Errata

In the LisaTerminal manual (versions 1.2 and 2.0), page 81 gives the chart
for cursor control characters in the VT52 mode. The command for direct
cursor address is incorrect. It should read:

   Direct cursor address ESC Ylc(asterisk)

Keywords:

_____

If you aren't receiving a line feed character from the computer that you're
trying to communicate with, then you need to instruct the other computer to
send them. The lack of line feeds is a problem with the other computer and
not the with LisaTerminal. In the LisaTerminal manual it suggests that
setting Auto New-line to On will resolve this problem. It doesn't.

Good Things to Know About Lisa

Keywords:

191   LisaTest 2.2: Errors When Testing Macintosh Hard Disks

This article last reviewed: 9 November 1988

Under the following situations, LisaTest 2.2 can't test a hard disk formatted
for Macintosh software:

 1. If a Macintosh-formatted hard disk is attached to the system when you
    startup LisaTest 2.2. (The system will hang.)

 2. If you connect your Macintosh-formatted ProFile after booting LisaTest,
    and afterwards choose test ProFile. (Error message #3 is displayed.)

Two later releases of LisaTest fix this problem:

 1. LisaTest Version 3.0, which can test Macintosh-formatted hard disks.

 2. Macintosh XL/Lisa Modification Test Version 1.0, which can test
    Macintosh-formatted hard disks and contains the square pixel screen driver
    for use on those Lisas or Macintosh XLs that have the Macintosh XL Screen
    Kit installed in them.

Copyright 1988 Apple Computer, Inc.
Keywords:

192   LisaWrite 2.0: Landscape Printing

There is a problem printing in Landscape mode in LisaWrite 2.0. Missing
and partly formed characters are printed in the upper right portion of
a write document printed 'while you wait'. (Versions 3.0 and 3.1 of Lisa
7/7 don't give you the option of printing 'while you wait', so the problem
doesn't occur with these versions.)

The workaround is to print 'while you work'.

Keywords:

193   LisaWrite 3.0: How To Eliminate Previous Text Embedded In New Job

This article last reviewed: 7 April 1988

If you you begin printing a LisaWrite 3.0 document on a daisy wheel printer, then cancel the job (with the "Monitor the Printer" menu item), portions of the cancelled job will appear embedded in the text of your next printed LisaWrite document.

To obtain a clean printout of the second document, simply print it again.

Keywords:

Underlining doesn't work when you print a document in landscape mode in
LisaWrite version 2.0. Versions 3.0 and 3.1 corrects this omission.

Keywords:

Sometimes there are blank pages at the end of a document. To eliminate
them, first click three times at the beginning of the blank page to see
if anything is selected. Sometimes there are carriage returns that are
carried at the end of the document. If nothing is selected, then all
you need to do is save and put away the document. This will get rid of
any truly unused pages.

Keywords:

196   LisaWrite: Converting 7/7 Documents For Use w/ Lisa 2.0 (10/94)

Article Created: 30 January 1985
Article Reviewed/Updated: 17 October 1994

TOPIC ---

Those who wish to continue working with the Office System 2.0 software may be able to convert Lisa 7/7 LisaWrite documents to 2.0 if they need to. This article tells how.

DISCUSSION --

PREREQUISITES:

The document must not contain:

 A. Any graphics (pasted from LisaGraph, LisaDraw, etc.).

 B. Eight or fourteen point text (including spaces, etc.).

PROCEDURE:

 1. Save the documents you wish to convert to a diskette formatted
    for Lisa 2.0.

 2. In the Workshop (version 3.0), run the DumpPatch program (refer to
    the Workshop manual for details) and change the second word of each
    document from 0005 to 0004.

 3. Open the document from the 2.0 Office System, make a minor change (to
    force the application to rewrite the document), then select Save and
    Put Away.

The document should now be in Lisa 2.0 format, though we don't guarantee that this procedure will always work.

Article Change History:
17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services
Copyright 1985-94 Apple Computer, Inc.
Keywords:

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197   LisaWrite: Disappearing Text

On rare occasions, lines or possibly even pages of text may disappear from the screen of a LisaWrite document for no apparent reason. If the text has been cut, merely paste it back into the document. If the text hasn't been cut, open the page layout menu and select Don't Preview Pages. Your missing text should reappear after you select Save and Continue from the File Print menu.

There are also rare occasions when a line of text may not be printed at the bottom of a page. Selecting Save and Continue should correct the problem. If it doesn't, adjust the paragraph spacing in the line (with the Format menu) or insert a page mark (with the Page Layout menu), and then repeatedly choose Save and Continue until the line prints successfully.

Apple Technical Communications

Keywords:

Are you having problems with formats disappearing? Keep this in mind: all
formatting is retained by the carriage return. Your constant loss of formats
tells you that the carriage return isn't being carried to the next
paragraph, and you must have clicked in the wrong place before starting to
type. Make this easy fix:

1. Select a paragraph that is formatted correctly.
2. Copy that paragraph.
3. Select the paragraph to be fixed.
4. Select "Same as on Clipboard" from the Format menu.

Keywords:

199   LisaWrite: How To Double Underline

To double underline:

1. Set the format to single-spaced paragraph.
2. Go down to the next line and type equal signs (=).
3. Select the equal signs.
4. Set the selected equal signs to both superscript and bold.
5 Change the type style to either 15 pitch, 12 pitch Elite or PS Executive.

In these type styles, the equal signs blend together, giving the appearance
of double underlining of the text in the line above.

Keywords:

When you print a LisaWrite document on 8.5 x 11 inch paper, avoid setting
the right margin past 8 inches (or past 10 inches if you're printing in
landscape mode). If you set the right margin beyond these limits,
when you attempt to print the document you'll get a dialog box stating
that "There is information outside the printable area".

If this message appears when the right margin is set to 8" or less, ignore
it: simply click OK to proceed with the printing. If the problem persists,
select "All of Document" from the Edit menu. Text located past the right
margin will then become visible. After you cut that text, the document will
print.

Copyright 1985-94, Apple Computer, Inc.
Keywords:

201   LisaWrite: Letterhead

If on the first page you want a larger top margin for a letterhead:

1. set your margins for the second page,
2. click at the beginning of the document,
3. use the RETURN key to space down the required amount.

If you don't want to do this with every document:

1. create a document
2. tear off a new document,
3. put in the required number of RETURNs at the top,
4. save and Put Away the document,
5. make a stationery pad out of the document.

From then on, when you tear off a piece of this stationery, click down near
the bottom of the document; this skips the carriage returns for the letterhead
and puts the cursor where you want to start typing.

Good Things to Know About Lisa

Keywords:

You can get rid of a page mark if it's alone on a line by pointing to the
mark with the mouse and clicking the mouse 3 times; clicking 3 times on the
page mark selects it for cutting it out or backspacing over it. If the mark
is not alone on a line, then click on the line below and backspace over the
mark. LisaWrite treats page marks just like carriage returns.

Good Things to Know About Lisa

Keywords:

With Preview Pages comes a variety of display problems (including showing the
Page ruler and printing):

-- pieces of text are displayed in the wrong place,
-- the elevator disappears,
-- text disappears,
-- you cannot print a page in a specified range,
-- LisaWrite doesn't display the document past page three.

If you are having such display problems, just avoid using Preview pages or
the page ruler. If you are having problems printing a specific page, have
that page displayed in the window before you print, or select a larger range.
If a large portion of your document is gone, remember DON'T PANIC. That
portion of your document is still there; it's just not being displayed.
Select Don't Preview Pages, then Save and Put Away the document. When you
open the document, it will come back whole.

Copyright 1984, Apple Computer, Inc
Keywords:

If you wish to remove hyphenated words from the dictionary:

 1. Select "Write Dictionary to Document" from the Spelling menu.

 2. Correct/delete the hyphenated words.

 3. Select the dictionary portion of the document.

 4. Select "Put in Dictionary".

Apple Technical Communications

Keywords:

I. LisaWrite: A6D0300

   Available from Sun Remarketing,
                 P. O. Box 4059, Logan, Utah 84321
                 801) 752-7631

     --Includes: LisaCalc, LisaDraw, LisaGraph, LisaList, LisaTerminal,
                 LisaProject and the Lisa Office System.

  1. Maximum Document Size: depends on available disk space

  2. Text Displayed:

     A. 31 lines by 86 characters: with 8 Point, 15 pitch typestyle

  3. Editing:

     A. Inserting Text: select location with the mouse and type
     B. Edit any text length:
        a. Single characters, words or paragraphs
        b. Entire documents
     C. Cut, Copy, Paste and Delete

  4. Search:

     A. Search or search and replace
     B. Global or selective
     C. Optional "Wildcards"

  5. Dictionary:

     A. Capacity:
        a. Standard dictionary: 80,000 words (not editable)
        b. Personal dictionary: depends on available memory

  6. Formatting:

     A. Margin justification: left, center, right and justify
     B. First-line margin for outdenting or indenting paragraphs
     C. Line spacing: single, line and a half, double or triple
     D. Spacing between paragraphs can be varied independently
     E. Tabs: flush left, flush right, centered or decimal
     F. Tab fill patterns: periods, dashes or underlines
     G. Headers and footers:
        a. Can be multiple lines long
        b. Can be placed anywhere on the page
        c. Optional page number
     H. Page breaks: automatic or manual
     I. "Conditional page": protects blocks of text or table from being
        broken across pages

  7. Scrolling:

     A. Next line

_____

        B. Next screenful
        C. Go directly to any part of document

   8. Special Features:

        A. Preview Function: displays the document as it will print
        B. Undo function: cancels effects of last operation
        C. Revert To Previous Version: undoes all changes made to the graph
           since it was last saved
        D. Display more than one document on the screen at the same time
        E. Split-Screen Feature: split the screen vertically or horizontally

   9. Typestyes:

        A. Variety of fonts and sizes available
        B. Bold, italic, underline or any combination of styles
        C. All styles available in subscripts and superscripts

  10. Printing:

        A. Maximum width:
           a. Wide Carriage Imagewriter: 14"
           b. Narrow Carriage Imagewriter: 14" in horizontal mode
        B. "What you see is what you get" fidelity
        C. Print in horizontal or vertical formats
        D. Print single or multiple copies
        E. Background printing enables you to print one or more documents
           while working on another
        F. Works with the following printers:
           a. Apple Dot Matrix Printer
           b. Apple ImageWriter: normal or wide carriage
           c. Apple Daisy Wheel Printer
           d. Canon Ink Jet Printer

  11. Documentation: Reference guide which includes a tutorial

Copyright 1985, 1992, Apple Computer, Inc.
Keywords: SPECSHT

206   LisaWrite: Tabs

Setting tabs is described in the Getting Started or Tutorial section
of the LisaWrite manual. The method described in the book is the most
trouble-free, as long as you remember two things:

1. Press the TAB key as you're entering data.

2. When you're moving a tab on the tab ruler, all the tabs to the right
   will move with it.

Keywords:

207   Macintosh XL : After Hard Disk is Swapped It Won't Boot

Article Created: 20 December 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: After swapping the hard disk assembly (Widget),
the hard disk will not boot or is not recognized as being attached to
system. But the hard disk will boot if the hard disk assembly is
removed while leaving the cables connected.

CAUSE: 1. The hard disk/micro disk assembly fits snugly into the Mac XL's
cabinet. A number of screws terminate inside the disk assembly mounting
area. These two factors make it very easy to accidently damage the grey
flat cable or the drive power cable when sliding the disk drive assembly
into the XL.

       2. A screw projects from the right of the main body of the Lisa
cabinet into the Disk Drive cavity. On some Lisas, this screw interferes
with a comfortable installation of the drive cage forcing the right rear
lip of a metal shield on the HDA down. This stresses the motherboard on
the HDA causing potentiometers on the HDA's PCB to misadjust.

CURE: 1. Replace the hard disk's grey flat cable. When reinstalling the
disk drive assembly, remove the XL's top to help you to guide the assembly
into its mounting place without damage.

       2. Cut off the offending screw and if permanent visible damage
has occurred to the PCBs, replace the HDA.

If this cure does not resolve the problem, go to the Tech Procedures
to obtain a General Troubleshooting procedure.

Copyright 1988 Apple Computer, Inc.
Keywords: hts

208   Macintosh XL and Lisa 2/10: Internal 800K disk drive

This article last reviewed: 30 September 1987

An 800K internal floppy disk drive can be installed in a Lisa 2/10 or
Macintosh XL.

The product is available from DAFAX Processing Corp.

Keywords:

This article last reviewed: 31 August 1987

1. The Macintosh XL Screen Kit alters the video display of a Macintosh XL
(Lisa 2/10 or Lisa 2) so that the video display pixels are square (as on the
Macintosh screen) as opposed to the pixel ratio on the Lisa (2 units
wide by 3 units tall). This eliminates the distortion experienced by XL
users when running Macintosh software under MacWorks XL. The video display
is changed from 720 x 364 to 608 x 431 pixels.

2. The kit contains 4 components:

1 transformer   installed in line with the yoke of the CRT (yellow and
                       green wires)

Video State ROM   P/N 341-0348   installed in location C 6 (CPU Board)
Boot ROM (High)   P/N 341-0347   installed in location D 13 (CPU Board)
Boot ROM (Low)   P/N 341-0346   installed in location D 14 (CPU Board)

3. The version of the boot ROM that is displayed in the upper left corner
of the XL while booting is 3A. On an XL the I/O ROM is still 88; on the
Lisa 2 the I/O ROM is A8.

4. A new version of Mac XL Test, P/N 077-0206 is required to run diagnostics
on a pixel modified Macintosh XL. Earlier versions of XL Test will not run
properly on a modified XL.

5. A full screen dump on a Macintosh XL still wraps the right part of the
screen around to the left side of the printer page, but due to the reduced
number of pixels horizontally, 720 vs. 608, the printing does not actually
overwrite the left side of the screen dump.

6. The pixel fix kit greatly improves the performance of Microsoft
Chart. The printed graph does not show up in unexpected locations on the
printed copy after it looked perfect on the screen of your XL.

7. Very important: Once the pixel fix kit is installed, the customer will
be unable to run Lisa software. Since the first part of the Lisa-to-Mac
migration is run under the Lisa Office System, which cannot be done on a
system that has been modified with the Screen Kit, install the pixel fix
after you use the migration utility to transfer your Lisa software to the
Macintosh environment.

Copyright 1988 Apple Computer, Inc.
Keywords:

210   Macintosh1/2 XL(Lisa 2/5) : Clobbers Other Nodes On ATalk

Article Created: 22 April 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: A Macintosh 1/2 XL (originally called
Lisa 2/5) may suffer from noise problems on its receiving lines.
This interferes with its ability to hear other network devices,
so may think it is safe to broadcast even if another node is transmitting.
This can result in collisions that clobber other node's transmissions.
The problem only happens with units that have the old I/O PCBs (the
ones with battery packs).

CAUSE: The old I/O PCB needs to be upgraded.

CURE: 1. Cut R38 (location 12E above the battery pack).
**   2. Cut the trace leading to pin 3 of RP4 (location 12F)**

If the above cure doesn't fix the problem, refer to the Lisa
Tech Procedures to obtain a troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.
Keywords: hts

211   MacTerminal and LisaTerminal: Line feeds after carriage returns

It is the job of the sending device to provide line feeds after carriage
returns if necessary. For example, when you're using your Macintosh to send
text to another Macintosh, you must select New Line (a Terminal Settings
option from the Settings menu); otherwise, the user on the other end will
receive all the incoming text overwritten on one line.

In LisaTerminal, set Auto New Line to "on" to SEND a line feed after a
carriage return. Auto New Line is an option in the Computer Compatibility box
located in the Setup menu.

Keywords:

212   MacWorks 3.0: Boot Problem

When booting from the hard drive using MacWorks 3.0 the following Message may
appear:

   Cannot Build the DeskTop.   Unlock the disk!   O.K.

When you click O.K. the unit shuts down.

This is the result of a system with an old I/O Rom.   Appropriate ROM versions
are Mac XL: 88, Lisa 2: A8.
Apple Technical Support

Keywords:

213   MacWorks XL: Encountering Error -96 During Hard Disk Install

If you see error -96 during the Hard Disk Install of MacWorks XL, try
to initialize the hard disk using either Lisa Workshop or Lisa 7/7
software. If that initialization fails, you must replace the hard disk
unit of the Lisa or Macintosh XL.

Keywords:

A problem with the released version of MacWorks XL can be worked around, even though the exact cause is not clear as yet.

After installing MacWorks on a hard disk dedicated only to Macintosh files, you may get the following error during the boot process: the expansion card icon appears with an X through it and a 2 inside it. There may also be the number 90 below it.

At this point, you have a choice of starting up from one of two disks: hard or floppy. The system will start up fine after you click on the hard disk icon; however, you must make this choice each time for start up. If you unplug the Macintosh XL to clear parameter memory and then reboot, it works fine, directly booting from the hard disk. But the same error message appears the next time you boot.

There are two workarounds: the first takes more time and the second takes more equipment.

First workaround:

 1. Install Lisa office system.
 2. Set preferences to boot from the hard disk.
 3. Re-install MacWorks.

Second workaround:

 1. Install a parallel card.
 2. Boot Lisa.
 3. Set Preferences to Boot from the internal hard disk.

Apple Technical Communications

Keywords:

There are several versions of MacWorks, each with a different start-up
procedure. The two later versions let you access the built-in
10-megabyte hard disk (in a Macintosh XL) or a 5- or 10-megabyte ProFile
connected to the built-in parallel port of a Lisa 2.

MacWorks: 682-0103-A

  After the Macintosh XL starts up from this original version of MacWorks,
  the system can run almost any Macintosh application residing on diskette.
  But this version cannot access a hard disk.

MacWorks: 682-0103-B

  MacWorks Revision B can access Macintosh software and files on diskette,
  as well as on a hard disk installed with the MacWorks Hard Disk Install
  program. Once you install MacWorks, you can access the hard disk by
  starting up from MacWorks XL and then inserting the System Diskette.

MacWorks XL: 682-0103-C and MacWorks: 682-0103-C

  MacWorks Revision C is not an official release and could damage documents
  and data stored on the hard disk. If you use this or earlier versions of
  MacWorks, be sure to upgrade to MacWorks XL Revision D, available from
  Sun Remarketing, P. O. Box 4059, Logan, Utah 84321.

MacWorks XL: 682-0103-D

  MacWorks XL lets you to start up from the hard disk. It also lets
  you use additional Macintosh software, such as Jazz and XL/Serve by
  Infosphere. This version supports AppleTalk and the LaserWriter.
  This version is identified by the product number on the diskettes
  and by the display "MACWORKS XL 3.0 COPYRIGHT 1985 - APPLE COMPUTER"
  that appears on the screen during startup.

  MacWorks XL enables you to start up off the hard disk directly if:

    1. You've previously used the accompanying hard disk install program
       to install MacWorks on the hard disk, and

    2. The hard disk is being used exclusively for Macintosh software.

  If the hard disk contains both Lisa and Macintosh software, you must
  first start up from MacWorks XL, but even this procedure is faster than
  with previous versions. Hold down the option key and start up the
  Macintosh XL if you want to start up with software from the microdisk
  drive.

The Hard Disk Install program that comes with MacWorks Versions B and D
lets you initialize the hard disk to either 1) run exclusively Macintosh
software, or 2) to run both Macintosh and Lisa software. To share the hard
disk with Lisa software, you must first partition the hard disk with Lisa
Office System software (selecting Share during the Lisa software install
procedure); you must then use the Hard Disk Install program to initialize
the Macintosh portion of the hard disk.

If you use BOTH 1) the built-in parallel port connected to a hard disk, or the built-in hard disk after it's been formatted exclusively for Macintosh software, AND 2) a Parallel Interface Card connected to a hard disk formatted for Lisa software, then you'll have to select the hard disk you want the system to start up from. The system will automatically start up from the hard disk last used, provided you haven't unplugged the system or changed the Preference settings. To start up from the other hard disk:

1. Press the On-Off button.
2. Wait for the memory board test.
3. Hold down the Apple key while pressing a number key as listed below:

        To start up from: press these keys:

        Internal hard disk: Apple 1
        Built-in parallel port: Apple 3
        Interface card:
          slot one, lower port   Apple 4
          slot one, upper port   Apple 5
          slot two, lower port   Apple 6
          slot two, upper port   Apple 7
          slot three, lower port   Apple 8
          slot three, upper port   Apple 9

Keywords:

The same boot ROMs recommended for Lisa software are fine for systems running MacWorks. In addition, square pixel ROMs are available for systems running only MacWorks XL. They are:

SYSTEM	CPU	I/O	Sq PIXELS (CPU-I/O is the same)
Lisa 2/10-Mac XL	F, H	D (88)	A3
Lisa 2	D, H	B (A8)	A3

Although MacWorks has been thoroughly tested with the earlier ROMs, consider upgrading them if a system with earlier ROMs shows illogical errors, such as locked disk errors when initializing a disk, which may occur after loading new system files.

Apple Technical Communications

Keywords:

217   ProFile: Formatting Compatibility (10/94)

Article Created: 09 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC --

For what operating systems is the Apple ProFile compatible?

DISCUSSION ---

ProFiles can be formatted for two main types of operating systems:

 1. the Lisa Operating System for the Lisa

 or

 2. ProDOS for the Apple II, and SOS for the Apple III.

ProFiles are formatted at the factory with the Apple III SOS format and
contain the Apple III System Utilities program. This format is completely
compatible with the Apple II ProDOS format, and so can be used on either the
Apple II or Apple III; additionally, these ProFiles can be used without
difficulty on the Macintosh XL (running Lisa or Macintosh software).

Once a ProFile has been formatted by Lisa software, it will not be able to
work any longer on an Apple II or III.

ProFiles don't need any special software to function with these systems other
than the respective system formatters which accompany each system's operating
system utilities, regardless of what system it was used on previously.

NOTES:

1. The Pascal ProFile Manager will not format a ProFile; the ProFile must
   already be formatted with ProDOS.

2. If you're unable to initialize a Profile for use with an Apple II or
   Apple III after it's been used with a Macintosh XL, check with a Level
   II service center: the ProFile may need reformatting.

Article Change History:
18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services
Copyright 1988-94, Apple Computer, Inc.
Keywords:

Article Created: 21 October 1991
Article Reviewed/Updated: 09 August 1995

TOPIC ---

This article lists all Macintosh cpus and which versions of System 7.1 and
later they support. It also lists current versions of required enablers.

For information on System software previous to 7.1, search the Technical
Information Library using search string "system software and 7.01."

DISCUSSION --

Use the following chart to determine which version of system software you
should be using on your Macintosh computer:

          KEY:

           ! Not supported

          OK Works with this version of system software

           * Works with this version of system software, but requires
              a Macintosh System Enabler (see below)

Begin_Table

System 7 Compatibility

Macintosh	7.5.2	7.5.1	7.5	7.1.2P	7.1.2	7.1.1	7 Pro	7.1
128K, 512K, 512Ke, and XL/Lisa	!	!	!	!	!	!	!	!
Plus	!	OK	OK	!	!	!	!	OK
SE	!	OK	OK	!	!	!	OK	OK
SE/30	!	OK	OK	!	!	!	OK	OK
Classic	!	OK	OK	!	!	!	OK	OK
Classic II	!	OK	OK	!	!	!	OK	OK
Color Classic	!	OK	OK	!	!	!	*	*
II	!	OK	OK	!	!	!	OK	OK
IIx	!	OK	OK	!	!	!	OK	OK
IIcx	!	OK	OK	!	!	!	OK	OK
IIci	!	OK	OK	!	!	!	OK	OK
IIfx	!	OK	OK	!	!	!	OK	OK
IIsi	!	OK	OK	!	!	!	OK	OK
IIvi,IIvx	!	OK	OK	!	!	!	*	*
LC	!	OK	OK	!	!	!	OK	OK
LC II	!	OK	OK	!	!	!	OK	OK
LC III	!	OK	OK	!	!	!	*	*
LC 475	!	OK	OK	!	!	!	*	*
LC 520	!	OK	OK	!	!	!	*	*
LC 550	!	OK	OK	!	!	!	*	*

Model								
LC 575	!	OK	OK	!	!	!	*	*
LC 580	!	OK	OK	!	!	!	!	!
LC 630	!	OK	OK	*	!	!	!	!
Macintosh TV	!	OK	OK	!	!	!	*	*
Centris 610	!	OK	OK	!	!	!	*	*
Centris 650	!	OK	OK	!	!	!	*	*
Centris 660AV	!	OK	OK	!	!	!	*	*
Quadra 605	!	OK	OK	!	!	!	*	*
Quadra 610	!	OK	OK	!	!	!	*	*
Quadra 630	!	OK	OK	*	!	!	!	!
Quadra 650	!	OK	OK	!	!	!	*	*
Quadra 660AV	!	OK	OK	!	!	!	*	*
Quadra 700	!	OK	OK	!	!	!	OK	OK
Quadra 800	!	OK	OK	!	!	!	*	*
Quadra 840AV	!	OK	OK	!	!	!	*	*
Quadra 900,950	!	OK	OK	!	!	!	OK	OK
PowerMac 5200/75 LC	!	*	!	!	!	!	!	!
PowerMac 6100/60	!	OK	OK	!	*	!	!	!
PowerMac 6100/66	!	*	*	!	!	!	!	!
PowerMac 7100/66	!	OK	OK	!	*	!	!	!
PowerMac 7100/80	!	*	*	!	!	!	!	!
PowerMac 7200/75	*	!	!	!	!	!	!	!
PowerMac 7200/90	*	!	!	!	!	!	!	!
PowerMac 7500/100	*	!	!	!	!	!	!	!
PowerMac 8100/80	!	OK	OK	!	*	!	!	!
PowerMac 8100/100	!	*	*	!	!	!	!	!
PowerMac 8100/110	!	*	*	!	!	!	!	!
PowerMac 8500/120	*	!	!	!	!	!	!	!
PowerMac 9500/120	*	!	!	!	!	!	!	!
PowerMac 9500/132	*	!	!	!	!	!	!	!
Portable	!	OK	OK	!	!	!	OK	OK
PowerBook 100	!	OK	OK	!	!	!	OK	OK
PowerBook 140	!	OK	OK	!	!	!	OK	OK
PowerBook 145	!	OK	OK	!	!	!	OK	OK
PowerBook 145B	!	OK	OK	!	!	!	OK	OK
PowerBook 170	!	OK	OK	!	!	!	OK	OK
PowerBook 160	!	OK	OK	!	!	!	*	*
PowerBook 165c	!	OK	OK	!	!	!	*	*
PowerBook 180	!	OK	OK	!	!	!	*	*
PowerBook 180c	!	OK	OK	!	!	!	*	*
PowerBook Duo 210	!	OK	OK	!	!	!	*	*
PowerBook Duo 230	!	OK	OK	!	!	!	*	*
PowerBook Duo 250	!	OK	OK	!	!	!	*	*
PowerBook Duo 270c	!	OK	OK	!	!	!	*	*
PowerBook Duo 280	!	OK	OK	!	!	*	!	!
PowerBook Duo 280c	!	OK	OK	!	!	*	!	!
PowerBook 520, 520c	!	OK	OK	!	!	*	!	!
PowerBook 540, 540c	!	OK	OK	!	!	*	!	!

End_Table

System Enablers

System Enablers are required for the Macintosh models indicated below with
System 7.1 or later. Macintosh computers which require System Enablers will

_____

not operate properly with System 7.0.1 or earlier.

This chart shows the appropriate System Enabler for the indicated Macintosh computer:

Begin_Table

Macintosh Model	Enabler Name	Use Enabler only with System vers.	Current Enabler Version	Note
The Macintosh Plus, SE, SE/30, Classic, Classic II, LC, LC II, LC 580, Mac II, IIx, IIcx, IIsi, IIci, IIfx, Portable, PB 100/140/145/145B/170, Quadra 700,900 and 950 do NOT need a System Enabler.				
Color Classic	System Enabler 401	7.1	1.0.5	
IIvi	System Enabler 001	7.1	1.0.1	
IIvx	System Enabler 001	7.1	1.0.1	
LC III	System Enabler 003	7.1	1.1	
LC 475	System Enabler 065	7.1	1.2	
LC 520	System Enabler 403	7.1	1.0.2	
LC 550	System Enabler 403	7.1	1.0.2	
LC 575	System Enabler 065	7.1	1.1	
LC 630	System Enabler 405	7.1.2P	7.1.2P	
Macintosh TV	System Enabler 404	7.1	1.0	
Centris 610	System Enabler 040	7.1	1.1	
Centris 650	System Enabler 040	7.1	1.1	
Centris 660AV	System Enabler 088	7.1	1.2	
Quadra 605	System Enabler 065	7.1	1.2	
Quadra 610	System Enabler 040	7.1	1.1	
Quadra 630	System Enabler 405	7.1.2P	7.1.2P	
Quadra 650	System Enabler 040	7.1	1.1	
Quadra 660AV	System Enabler 088	7.1	1.2	
Quadra 800	System Enabler 040	7.1	1.1	
Quadra 840AV	System Enabler 088	7.1	1.2	
PowerMac 5200/75 LC	System Enabler 406	7.5.1	1.0	
PowerMac 6100/60	PowerPC Enabler	7.1.2	1.0.2	
PowerMac 6100/66	PowerPC Enabler	7.5	1.1.1	
PowerMac 7100/66	PowerPC Enabler	7.1.2	1.0.2	
PowerMac 7100/80	PowerPC Enabler	7.5	1.1.1	
PowerMac 7200/75	System Enabler 701	7.5.2	1.1	
PowerMac 7200/90	System Enabler 701	7.5.2	1.1	
PowerMac 7500/100	System Enabler 701	7.5.2	1.2	
PowerMac 8100/80	PowerPC Enabler	7.1.2	1.0.2	
PowerMac 8100/100	PowerPC Enabler	7.5	1.1.1	
PowerMac 8100/110	PowerPC Enabler	7.5	1.1.1	
PowerMac 8500/120	System Enabler 701	7.5.2	1.2	
PowerMac 9500/120	System Enabler 701	7.5.2	1.1	
PowerMac 9500/132	System Enabler 701	7.5.2	1.1	
PowerBook 150	PowerBook 150 Enabler	7.1.1	1.1	
PowerBook 160	System Enabler 131	7.1	1.0.3	A
PowerBook 165	System Enabler 131	7.1	1.0.3	A
PowerBook 165c	System Enabler 131	7.1	1.0.3	A
PowerBook 180	System Enabler 131	7.1	1.0.3	A
PowerBook 180c	System Enabler 131	7.1	1.0.3	A

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PowerBook Duo 210      PowerBook Duo Enabler      7.1       2.0          B
PowerBook Duo 230      PowerBook Duo Enabler      7.1       2.0          B
PowerBook Duo 250      PowerBook Duo Enabler      7.1       2.0          B
PowerBook Duo 270c     PowerBook Duo Enabler      7.1       2.0
PowerBook Duo 280      PowerBook Duo Enabler      7.1.1     2.0
PowerBook Duo 280c     PowerBook Duo Enabler      7.1.1     2.0
PowerBook 500 Series   PowerBook 500 Series       7.1.1     1.0.2
                       Enabler 1.0
```

```
--------- Performa Computers --------------
```

The Performa 200, 400, 405, 410, 430, 580, 640 and 6110-series do NOT require an Enabler.

```
Performa 450           System Enabler 308         7.1P6     1.0
Performa 460-467       System Enabler 308         7.1P6     1.0
Performa 475-476       System Enabler 364         7.1P6     1.1
Performa 550, 560      System Enabler 332         7.1P6     1.1
Performa 575-578       System Enabler 364         7.1P6     1.1
Performa 600           System Enabler 304         7.1P6     1.0.1
Performa 630-638       System Enabler 405         7.1.2P    7.1.2P
```

End_Table

Note:

A - System Enabler 131 replaces System Enabler 111 and System Enabler 121
B - Express Modem users should also install the Duo Battery Patch
   (Extension).

Article Change History:
09 Aug 1995 - Reformatted for readibilty.
08 Aug 1995 - Added new Power Macintosh computer enablers.
28 Jun 1995 - Broke out operating systems previous to 7.1.

Keywords: review,ktable,sys7,sys75,kcompat

Article Created: 28 June 1995
Article Reviewed/Updated: 07 July 1995

TOPIC ---

This article lists all Macintosh computers that can run system software
previous to System 7.1.

For information on System software after 7.0.1, search the TIL using search
string "system and enabler and matrix" to locate "System Software: 7.1 and
Later Enabler Matrix"

DISCUSSION --

Use the following chart to determine which version of system software you
@L should be using on your Macintosh computer:

          KEY:

            ! Not supported

           OK Works with this version of system software

Macintosh	7.0.1	7.0	6.0.8	6.0.7	6.0.5	6.0.4	6.0.3	6.0.2
128K*	!	!	!	!	!	!	!	!
512K*	!	!	!	!	!	!	!	!
512Ke*	!	!	!	!	!	!	!	!
XL/Lisa*	!	!	!	!	!	!	!	!
Plus	OK	OK	OK	OK	OK	OK	OK	OK
SE	OK	OK	OK	OK	OK	OK	OK	OK
SE/30	OK	OK	OK	OK	OK	OK	OK	OK
Classic	OK	OK	OK	OK	!	!	!	!
Classic II	OK	!	!	!	!	!	!	!
Portable	OK	OK	OK	OK	OK	OK	!	!
II	OK	OK	OK	OK	OK	OK	OK	OK
IIx	OK	OK	OK	OK	OK	OK	OK	OK
IIcx	OK	OK	OK	OK	OK	OK	OK	!
IIci	OK	OK	OK	OK	OK	OK	!	!
IIfx	OK	OK	OK	OK	OK	!	!	!
IIsi	OK	OK	OK	OK	!	!	!	!
LC	OK	OK	OK	OK	!	!	!	!
LC II	OK	OK	OK	!	!	!	!	!
Quadra 700	OK	!	!	!	!	!	!	!
Quadra 900,950	OK	!	!	!	!	!	!	!
PowerBook 100	OK	!	!	!	!	!	!	!
PowerBook 140,	OK	!	!	!	!	!	!	!
145,145B,170								

All the systems not listed above require System 7.1 or later. Use search
string "system and enabler and matrix" to locate "System Software: 7.1 and
Later Enabler Matrix" for more information.

*Note: These early Macintosh computers will not operate with System 6, use
system 3.2 instead.

Article Change History:
07 Jul 1995 - Clarified information on later operating systems.

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Keywords: cnfg,supt,sys7,kcompat

If you have questions about Unix and what software is available for that operating system, contact:

    Santa Cruz Operations
    500 Chestnut St.
    Santa Cruz, CA 95060
    (408) 425-7222

        --OR--

    Unipress Software
    1164 Raritan Ave.
    Highland Park, NJ 08904
    (201) 985-8000

Good Things to Know About Lisa

Keywords:

When you open a document with a Lisa application, there must be enough
disk space to retain the original document while you work - in the event
you later choose "revert to previous version." Even more disk space is
required to enable you to use "undo." This is why you may see the
message "Not enough room to open file" when you try to read a Lisa 2.0
document stored on diskette by Lisa 7/7. If this happens, move the
document to the hard disk, where you are likely to have more free storage
space. You should then be able to work on your document with no problems.

Keywords:

222   Using LisaTerminal in the Background

Sometimes large documents take several minutes to transmit from the Lisa to
the host computer, so you may set aside the LisaTerminal document to work on
another document. In this other document, avoid using the options Cut, Paste,
Copy from the edit menu. Until the paste has been completed, you run the risk
of aborting the transmission.

Apple Technical Communications

Keywords:

223   Using U.S. Apple Equipment Internationally (1/95)

 Article Created: 21 September 1984
 Article Reviewed/Updated: 03 January 1995

 TOPIC ---

This article outlines which U.S. Apple products, when used away from their
native power sources, either need transformers or are "universal" to operate.

In the following context, using a product "internationally" means using it in
a country with electrical power different from that of the country of
manufacture. In determining whether a particular product can be used
internationally, there are three classes, depending on whether a product
accepts a range in voltage, frequency or both:

1) Universal.
   These products can be used internationally out of the box. Some of
   Apple's products are self-configuring devices or "universal" within a
   certain range. They can accept a range in both voltage and frequency,
   and only require a plug adapter for the specific locale.

   Example: The Quadra 800 accepts 100-240 volts, 47-63 Hz.

2) Frequency Independent.
   These products can be used internationally with a voltage transformer.
   Generally they are geared for U.S. 120 volt power, but are flexible as
   to the frequency they accept (for example, 47-63 Hz), and are known as
   "frequency independent." These products need a stepdown isolation
   transformer to adapt the voltage, and will handle the different
   frequency on their own.

   Examples:
   The U.S. Performa 200 accepts 120 volts, 47-63 Hz.

   Performa Displays use a switching power supply which works independent
   of the input frequency. The European input frequency standard of 50 hz
   will not adversely affect these monitors. You can use the Performa
   Displays overseas with a voltage converter (isolation transformer.)

3) Frequency Dependent.
   These products generally cannot be used internationally. These are
   products that can work only within a narrow range in frequency; they are
   "frequency dependent." Transformers only transform voltage, so if the
   product requires a certain frequency, there's no practical way to
   convert both voltage and frequency.

@L   These products can ONLY be used internationally in countries with the
     same frequency as the country for which the product was manufactured.
     Further, a voltage transformer will be required if the destination
     country has a voltage different from the home country.

   Example:
   The U.S. Apple Color OneScanner accepts 108-132 volts, 58-62 Hz.

 NOTE: Computers with power outlets for peripherals do not condition the
 voltage as it passes through. So, for example, a monitor requiring

120v-60Hz power could not be used in a 220v-50Hz environment even if the computer from which it gets its power is able to accept the local power.

This article also includes transportation, service, repair, and warranty tips.

Contents
----
1) Universal Devices
2) Voltage-dependent Devices
3) Frequency-dependent Devices
4) Voltage/Frequency-dependent Devices
5) Service and Repair Tips
6) Traveling Tips

DISCUSSION --

1) UNIVERSAL DEVICES

The majority of Apple products manufactured after the Macintosh SE are self-configuring or "universal" between 100v and 240v, 50-60Hz. To use them in countries within the range, a plug adapter should be all that is needed. Note that some Apple products have a voltage selector to select between 110 or 220 volts.

To verify if a specific product is universal, check the FCC ID label for the voltage requirements or the Tech Info Library article titled "Electrical Specifications of Apple Hardware".

2) VOLTAGE-DEPENDENT DEVICES

The Apple products listed below are designed to operate at a line voltage ranging from 107V to 137V at 50 or 60Hz (cycles per second). If the destination country uses a line voltage of 220v, and the product only accepts 120v, you'll need a 220v to 110v stepdown isolation transformer. This type of transformer is the only one known to give a clean signal. Although converters are available in the U.S., there are reports that these devices have damaged some Apple products.

The transformer's wattage should be 150% of the total wattage of the system (computer, monitor, hard disk, printer, and so on). For example, if the system pulls 250 watts of power, use a transformer rated for a minimum of 375 watts. A 500-watt unit should be sufficient for an entire Apple system (CPU, monitor, and printer). The unit must have a third prong for a grounded outlet. Electrical shock to you or damage to the hardware may occur if the units are not grounded.

Non-universal Apple power supplies function correctly with voltages between 107V and 132V. If line voltage fluctuates outside these specifications, you'll need to use a power conditioner to ensure uninterrupted operation of your Apple equipment. Operating without the conditioner will probably not result in damage to the hardware, although the voltage fluctuation may cause your system to crash. In such an event, you'll lose any data in memory and may even lose data stored on the disk.

Voltage-Dependent Computers

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```
   Apple II, II Plus, IIc Plus
   Apple IIGS (The Control Panel has a 50Hz setting.)
   Lisa, Macintosh XL, Macintosh, Macintosh 512K, Macintosh Plus, Macintosh
   Classic, Macintosh Classic II, Performa 200.
```

Voltage-Dependent Printers
```
  StyleWriter & StyleWriter II
  ImageWriter II INTERNATIONAL
     (Note: The international ImageWriter II is voltage/frequency
      independent.  Parts are available through service providers to
      convert domestic (U.S.) ImageWriter II printers to international
      power supplies.)

  U.S./Japan: 110/115VAC, 50/60Hz (+/-2Hz):
     LaserWriter II
     Personal LaserWriter SC and  NT
     Personal LaserWriter LS
     Apple LaserWriter Select 300 & 310
     Personal LaserWriter NTR

  U.S./Japan: 90-126VAC, 50/60Hz (+/-2Hz):
     LaserWriter IIf and IIg
```

Voltage-Dependent Hard Disk Drives
```
  ProFile
```

Voltage-Dependent Monitors
```
  Monitor II, Monitor IIc, Monitor III
     (These work with NTSC composite video only; screen may flicker at
      50Hz.)
  Macintosh 21-Inch Color Display
  Apple Basic Color Monitor
  Macintosh Performa Display
  Macintosh Performa Plus Display
```

Other Voltage-Dependent Devices
```
  AppleFax Modem (Japan: 100VAC +/-10%, 50/60Hz)
```

3) FREQUENCY-DEPENDENT DEVICES
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```
If the country uses a line frequency other than 60Hz, then all AC-powered
devices attached to your computer system (monitors, printers, plotters, hard
disks, and so on) must be "frequency independent." That is, they must be
able to operate on a line frequency of either 50 and 60Hz. Most products
made by Apple are frequency independent EXCEPT those listed below.

Frequency-Dependent Computers
```
  Apple IIe, IIc, III, III Plus
     (Video output is compatible with NTSC standard only.)
```

Frequency-Dependent Printers
```
  Use 60Hz only. Damage may occur with a 50Hz source:
     LaserWriter
     Scribe
     Apple Color Plotter
     Apple Color Printer
     Domestic (U.S.) ImageWriter II and LQ
        (Note: The international ImageWriter II is voltage/frequency
         independent (50/60Hz). Parts are available through service
```

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            providers to convert domestic (U.S.) ImageWriter II printers to
            international power supplies.)

    Use 50 to 60 Hz (Using these printers on a 50Hz source can noticeably
    affect spacing between characters):
        Daisy Wheel
        Dot Matrix
        ImageWriter

    Europe/Australia: 220-240VAC 50Hz (+/-2Hz) ONLY):
        LaserWriter II
        Personal LaserWriter SC and NT
        Personal LaserWriter LS
        Apple LaserWriter Select 300 & 310
        Personal LaserWriter NTR

    Europe/Australia: 198-264VAC 50Hz (+/-2Hz) ONLY:
        LaserWriter IIf and IIg

    U.S./Japan: 90-110VAC, 58/62Hz, 103.5-126VAC, 58/62Hz; Europe/Australia:
    194-265VAC, 48/52 Hz:
        LaserWriter Pro 600 and 630

Other Frequency-Dependent Devices
    AppleFax Modem (U.S./Canada: 120VAC +/-10%, 60Hz)
    Apple Scanner (120VAC +/-10%, 58-62Hz)
    Apple OneScanner (120VAC +/-10%, 58-62Hz)
    Apple Color OneScanner (120VAC +/-10%, 58-62Hz)

4) SERVICE AND REPAIR TIPS

As of April 5, 1993, an Apple warranty is valid in any country in which Apple
sells products. A defective unit may be returned to any Authorized Apple
Service Provider worldwide for service under warranty.

There are advantages to buying the products where they'll be used. Although
mouse devices, external drives, digital boards, and similar modules are the
same as distributed in the U.S., the software and keyboards are different for
each country. Further, having the entire workstation dependent on a single
transformer is risky. If it fails and passes native current through to
voltage and/or frequency dependent products, serious damage will result.

If you intend to take your Apple product with you, it is advisable that you
buy and use the product well before your departure. Heavy use often turns up
any problems that would have come up at more inconvenient times while
traveling.

5) TRAVELING TIPS

When traveling with a computer in the U.S. or overseas, protect it from
shock, heat, moisture, radiation, and theft. Special hard-shell shipping
cases are advertised for most Apple systems and these protect the machines
from environmental abuse. They often do not look like computer cases, and as
such usually escape the notice of thieves.

X-rays and other magnetic radiation associated with X-ray machines are only a
potential danger; there have been no reports of ROM damage and only isolated

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reports of software media damage from these causes. Some ports X-ray all
luggage; if the risk in losing software is too high, plan your travel
logistics after you find out which ports will hand-check the computer.

Article Change History:
03 Jan 1995 - Reviewed for technical accuracy, revised formatting.
27 Jul 1994 - Removed listings of systems, referred to FCC ID label and
              Tech Info Library article on Electrical Specifications.
18 Jul 1994 - Added Macintosh 630 family, PowerBook 150.

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Keywords: review

--- End of Chapter ---