



Apple Service
Technical Procedures
Lisa/Macintosh XL

Lisa Level I
Technical Procedures
#072-0085

Copyright 1983 by Apple Computer, Inc.

Revision: October 1984

LISA TECHNICAL PROCEDURES MANUAL

Volume Table of Contents

June 1986

Lisa 1.0	
--Table of Contents	8/83
--Take-Apart	7/83
--Setup	7/83
--Video Take-Apart	7/83
(except pages 3.9, 3.10)	12/83
--Video Take-Apart Chart	no date
--Video Adjustments	8/83
--Diagnostics	7/83
(except page 5.3)	01/85
--Troubleshooting	8/83
(except pages 6.1, 6.4, 6.7, 6.8, 6.12, 6.13, 6.24, 6.30-6.32)	4/84
(except pages 6.6, 6.15, 6.19-6.22, 6.26, 6.33-6.41, 6.45, 6.46, 6.48, 6.50, 6.52)	1/84
Lisa 2/Macintosh XL	
--Table of Contents	6/86
--General Information	6/86
--Take-Apart	12/83
--HDA Packaging for Shipment	3/85
--Video Take-Apart	2/84
(except pages 3.1, 3.8-3.11, 3.17, 3.18)	5/86
--Video Adjustments	2/84
(except page 4.12)	5/86
--Diagnostics	9/85
(except pages 5.1, 5.2, 5.3)	5/86
(except page 5.2.1)	6/86
--Troubleshooting	4/86
(except pages 6.5, 6.6, 6.7, 6.18)	6/86
(except pages 6.9, 6.19, 6.32)	5/86
Upgrade and Retrofit	
--Table of Contents	8/85
--Lisa 2/5 Inventory Upgrade Instructions	1/84
--Lisa 2 Upgrade	2/84
--Lisa 2/10 Upgrade	4/84
(except page 7)	10/84
--Macintosh XL Screen Modification Kit	8/85
(except pages 4.1, 4.2, 4.3)	10/85
(except pages 4.13)	9/85
Illustrated Parts Lists	
--Table of Contents	4/85
--Lisa 1.0 Illustrated Parts	4/85
(except pages 1.3, 1.14, 1.16)	6/85
--Lisa 2 Illustrated Parts	4/85
(except pages 2.3, 2.5, 2.20)	6/85
(except pages 2.7, 2.8, 2.17, 2.18, 2.21)	7/85
(except page 2.22)	4/86
--Macintosh XL Illustrated Parts	4/85
(except pages 3.3, 3.5, 3.20)	6/85
(except pages 3.7-3.10, 3.17, 3.18, 3.21)	7/85
(except page 3.22)	4/86



SERVICE AND SUPPORT NOTICE

THE FOLLOWING TECHNICAL PROCEDURE UPDATES ARE INCLUDED IN THE
MAY LISA/MACINTOSH XL TECHNICAL PROCEDURES MAILING

LISA/MACINTOSH XL TECHNICAL PROCEDURES MANUAL

Lisa 2/Macintosh XL

Video Take-Apart - We have added modified system information to the CRT and Video Board replacements sections. Remove and replace procedures for the Screen Kit Transformer have been added.

Video Adjustments - we have added a reference on where to find procedures for height and width adjustments on modified systems.

Diagnostics - added screen kit and ROM configuration information.

Troubleshooting - The Lisa Lite Adaptor has had a name change to the Lisa Drive Adaptor Card. We have identified the most current diagnostic diskettes and when and how to use them. Information was also added to "How to Repair a Crashed Disk".



SERVICE AND SUPPORT NOTICE

THE FOLLOWING TECHNICAL PROCEDURE UPDATES ARE INCLUDED IN THE
JUNE LISA/MACINTOSH XL TECHNICAL PROCEDURES MAILING

LISA/MACINTOSH XL TECHNICAL PROCEDURES MANUAL

Lisa 2/Macintosh XL

General Information - A new tab and section has been added to the Lisa 2/Macintosh XL section. This section includes information on system configurations for the Lisa 2, 2/5 and the XL (2/10), as well as the Modified Lisa 2/5 and Modified Macintosh XL. It contains peripheral configurations for printers and some basic troubleshooting and diagnostic tips. At the end of the section you will find some useful information on different types of error codes and their definitions.

Diagnostics & Troubleshooting - Some minor corrections have been made to these section.

LISA TECHNICAL PROCEDURES

TABLE OF CONTENTS

Section 1: Take-Apart

Introduction.....	1.3
Replacing the Disk Drives.....	1.4
Removing a Diskette from a Malfunctioning Disk Drive...	1.5
The Glare Filter.....	1.6
The Mouse.....	1.7
The Keyboard.....	1.7
Replacing a CPU Board: Transferring the Video State Machine ROM.....	1.8
Packing Instructions.....	1.9

Section 2: Setup

Introduction.....	2.3
Material Requirements.....	2.3
A. Unboxing the Lisa.....	2.5
B. Installing the Pull-out Reference Cards.....	2.5
C. Checking the Battery Switch.....	2.6
D. Installing the Lisa Accessories.....	2.7
E. Installing the ProFile.....	2.8
F. Installing the Office System Software.....	2.9
G. Pulling the Icons in Order.....	2.13
H. Installing an Apple Daisy Wheel Printer.....	2.17
I. Installing an Apple Dot matrix Printer.....	2.18
J. Setting Preferences.....	2.19
K. Setting the Clock.....	2.20
L. Testing the System: Printing a Document.....	2.20
M. Before You leave: Getting the User Started.....	2.21
Appendix 1: Replacing a Single Tool on the ProFile.....	2.22
Appendix 2: Setup Checklist.....	2.23

©Apple Computer, Inc., 1985, 1986, 1987.

No part of this document may be reproduced in any form without the written permission of Apple Computer, Inc.

Macintosh is a trademark of Apple Computer, Inc.
Apple, Lisa, and the Apple logo are registered trademarks of Apple Computer, Inc.

Section 3: Video Take-apart

Safety Precautions.....	3.2
Discharging the CRT.....	3.5
Removing the CRT.....	3.9
Installing the CRT.....	3.10
Removing the Video Board.....	3.11
Replacing the Video Board.....	3.11
Removing the Flyback Transformer.....	3.13
Replacing The Flyback Transformer.....	3.13
Removing the Disk Drive Cable Assenbly.....	3.14
Locating the Power-Supply-to-Card-Cage Assembly.....	3.15
Disposing of the Cathode-Ray Tube (CRT).....	3.16

Section 4: Video Adjustments

Introduction.....	4.3
Tools and Equipment Needed.....	4.3
Accessing the Video Assembly and the Test Patterns.....	4.4
Summary: Problems and Corrections.....	4.5
Horizontal Phase Adjustment.....	4.7
Brightness and Contrast Adjustments.....	4.8
Calling up the Video Grid Pattern.....	4.9
Yoke Adjustment.....	4.10
Height, Width, Vertical Linearity Trimpots and Centering Rings.....	4.11
Magnet Adjustments.....	4.12
Finishing Up.....	4.13

Section 5: Diagnostics

Interpreting the Boot ROM.....	5.3
Using LisaTest.....	5.3
Setting Diagnostic Controls.....	5.4
Running a Complete System Check.....	5.4
Running Individual Tests.....	5.4
Brief Descriptions of Tests.....	5.5


```

Proportional print. . ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
                    1234567890!@#%&^*()-_+=[]{};:,.<>/?
PICA (80). . ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
              1234567890!@#%&^*()-_+=[]{};:,.<>/?
ELITE (96). . ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
              1234567890!@#%&^*()-_+=[]{};:,.<>/?
Compressed. . ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
              1234567890!@#%&^*()-_+=[]{};:,.<>/?
SPECIAL (120). . ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
                 1234567890!@#%&^*()-_+=[]{};:,.<>/?
SPECIAL (72). . ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
                1234567890!@#%&^*()-_+=[]{};:,.<>/?
SPECIAL (144). . ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
                 1234567890!@#%&^*()-_+=[]{};:,.<>/?

```

...Double width.

```

Proportional print. ABCDEFGHIJKLMNOPQRSTUVWXYZab#
PICA (80). . ABCDEFGHIJKLMNOPQRSTUVWXYZa.#
ELITE (96). . ABCDEFGHIJKLMNOPQRSTUVWXYZabcde f#
Compressed. . ABCDEFGHIJKLMNOPQRSTUVWXYZabcde fghi jk lmnopqrstuvwxy#
SPECIAL (120). . ABCDEFGHIJKLMNOPQR#
SPECIAL (72). . ABCDEFGHIJKLMNOPQRSTUVWXYZabcde fghi jk lmnopq#
SPECIAL (144). . ABCDEFGHIJKLMNOPQRSTUVWXYZ#

```

Proportional print with dots between characters set.

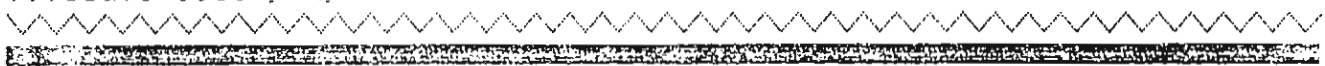
```

6 123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`
   abcdefghijklmnopqrstuvw xyz{ }~
5 123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`
   abcdefghijklmnopqrstuvw xyz{ }~
4 123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`
   abcdefghijklmnopqrstuvw xyz{ }~
3 123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`
   abcdefghijklmnopqrstuvw xyz{ }~
2 123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`
   abcdefghijklmnopqrstuvw xyz{ }~
1 123456789:;<=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`
   abcdefghijklmnopqrstuvw xyz{ }~

```

Bit image graphics test.

...Scale IIII



Bit Mapped Characters



Proportional #1 Bit Mapped Characters

PICA (80) Bit Mapped Characters

ELITE (96) Bit Mapped Characters

Compressed Bit Mapped Characters

SPECIAL (120) Bit Mapped Characters

SPECIAL (72) Bit Mapped Characters

Proportional #2 Bit Mapped Characters

Down-loaded character set test.

...Standard character set.

```

! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P
Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~

```

...Down-loaded character set, 1-to-8 bits.

```

! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P
Q R S T U V W X Y Z [ \ ] ^ _ ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~

```

