



**TUCKER ELECTRONICS  
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LaserWriter Printers  
Volume I Addendum

# Service Guide

September 1993



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## Introduction

This addendum provides errata information for Volume 1 of the *Apple Service Guide for LaserWriter Printers* (published in January 1992) and includes additional information on the Personal LaserWriter LS/L and NTR printers. This addendum is divided into the following three sections:

- LaserWriter II SC/NT/NTX/IIx/IIg
- Personal LaserWriter SC/NT/NTR/LS and LS/L
- Ports & Cables

These sections correspond to tab sections in Volume 1 of the *Apple Service Guide for LaserWriter Printers*. For example, the "LaserWriter II SC/NT/NTX/IIx/IIg" section of this addendum contains corrections to the LaserWriter II SC/NT/NTX/IIx/IIg tab of Volume 1. The page number for which the corrections apply is given in parenthesis after the section title.

To get the most out of this addendum, Apple recommends that you:

- Review the errata information and update your *Apple Service Guide for LaserWriter Printers*, Volume 1 with the corrections.
- File this addendum in the back pocket of your *Apple Service Guide for LaserWriter Printers*, Volume 1 for future reference to Personal LaserWriter LS/L and NTR information.

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## LaserWriter II SC/NT/NTX/IIx/IIg

Following are updates to the LaserWriter II SC/NT/NTX/IIx/IIg section of the *Apple Service Guide for LaserWriter Printers*, Volume 1. The page numbers in the section titles correspond to the page(s) in Volume 1 where the information originally appeared.

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### Parts List (Pages 4–6)

Following is the updated parts list for the LaserWriter II SC/NT/NTX/IIx/IIg printers:

#### Bottom Case

|                         |          |
|-------------------------|----------|
| Bottom Panel .....      | 949-0152 |
| Bottom Panel Cap .....  | 949-0154 |
| Grounding Bracket ..... | 948-0132 |

#### Cassette Holder Assembly

|                                   |          |
|-----------------------------------|----------|
| Auxiliary Guide .....             | 949-0165 |
| Left Hook .....                   | 949-0159 |
| Left Lifter .....                 | 949-0163 |
| Main Body Block .....             | 949-0247 |
| Paper Pickup Gear, 19-tooth ..... | 939-0023 |
| Paper Pickup Gear, 57-tooth ..... | 939-0024 |
| Paper Sensing Arm .....           | 949-0166 |
| Right Hook .....                  | 949-0160 |
| Right Hook Guide .....            | 949-0162 |
| Right Lifter .....                | 949-0164 |

#### Cleaning Brush .....

#### Connector PCA .....

#### Controller-I/O Board, LW II NTX .....

|                               |          |
|-------------------------------|----------|
| IC, ROM, LL0, LW II NTX ..... | 342-0560 |
| IC, ROM, LL1, LW II NTX ..... | 342-0562 |
| IC, ROM, LM0, LW II NTX ..... | 342-0564 |
| IC, ROM, LM1, LW II NTX ..... | 342-0566 |
| IC, ROM, HM1, LW II NTX ..... | 342-0567 |
| IC, ROM, HM0, LW II NTX ..... | 342-0565 |
| IC, ROM, HH1, LW II NTX ..... | 342-0563 |
| IC, ROM, HH0, LW II NTX ..... | 342-0561 |

#### Controller-I/O Board, LW II NTX (Rev 3) .....

|                                                            |          |
|------------------------------------------------------------|----------|
| IC, ROM, LL0, LW II NTX.....                               | 341-0711 |
| IC, ROM, LL1, LW II NTX.....                               | 341-0713 |
| IC, ROM, LM0, LW II NTX.....                               | 341-0715 |
| IC, ROM, LM1, LW II NTX.....                               | 341-0717 |
| IC, ROM, HM1, LW II NTX.....                               | 341-0718 |
| IC, ROM, HM0, LW II NTX.....                               | 341-0716 |
| IC, ROM, HH1, LW II NTX.....                               | 341-0714 |
| IC, ROM, HH0, LW II NTX.....                               | 341-0712 |
| Controller-I/O Board, LW II NT.....                        | 661-0438 |
| IC, ROM, L0, LW II NT.....                                 | 342-0545 |
| IC, ROM, L1, LW II NT.....                                 | 342-0547 |
| IC, ROM, L2, LW II NT.....                                 | 342-0549 |
| IC, ROM, L3, LW II NT.....                                 | 342-0551 |
| IC, ROM, H0, LW II NT.....                                 | 342-0546 |
| IC, ROM, H1, LW II NT.....                                 | 342-0548 |
| IC, ROM, H2, LW II NT.....                                 | 342-0550 |
| IC, ROM, H3, LW II NT.....                                 | 342-0552 |
| Controller-I/O Board, LW IIf (shipped w/o SIMMs).....      | 661-0776 |
| Assy, LW IIf Controller-I/O Board Bracket.....             | 076-0418 |
| IC, ROM, UU, LW IIf and IIfg, Rev 1.0.....                 | 076-0863 |
| IC, ROM, UM, LW IIf and IIfg, Rev 1.0.....                 | 076-0862 |
| IC, ROM, LM, LW IIf and IIfg, Rev 1.0.....                 | 076-0861 |
| IC, ROM, LL, LW IIf and IIfg, Rev 1.0.....                 | 076-0860 |
| SIMM, 256K, 80ns.....                                      | 661-0519 |
| Controller-I/O Board, LW IIfg (shipped w/o SIMMs).....     | 661-0775 |
| Assy, LW IIfg Controller-I/O Board Bracket.....            | 076-0417 |
| IC, ROM, UU, LW IIf and IIfg, Rev 1.0.....                 | 076-0863 |
| IC, ROM, UM, LW IIf and IIfg, Rev 1.0.....                 | 076-0862 |
| IC, ROM, LM, LW IIf and IIfg, Rev 1.0.....                 | 076-0861 |
| IC, ROM, LL, LW IIf and IIfg, Rev 1.0.....                 | 076-0860 |
| SIMM, 1 MB, 80 ns.....                                     | 661-0520 |
| SIMM, 256K, 80 ns.....                                     | 661-0519 |
| Controller-I/O Board, LW II SC.....                        | 661-0428 |
| Controller-I/O Board, ROM Kit, LW IIf and IIfg, Rev 2.0... | 076-0452 |
| IC, ROM, UU, LW IIf and IIfg, Rev 2.0.....                 | 922-0524 |
| IC, ROM, UM, LW IIf and IIfg, Rev 2.0.....                 | 922-0525 |



|                                            |          |
|--------------------------------------------|----------|
| IC, ROM, LM, LW IIf and IIg, Rev 2.0 ..... | 922-0513 |
| IC, ROM, LL, LW IIf and IIg, Rev 2.0.....  | 922-0512 |
| DC Controller PCA.....                     | 661-0426 |
| DC Power Supply, 110/115 V.....            | 661-0424 |
| DC Power Supply, 220/240 V.....            | 661-0442 |
| Fuse, 125 V 6.3 .....                      | 941-0005 |
| Fuse, Medium Time Lag 3.15 A, 250 V.....   | 740-0061 |
| Delivery Assembly .....                    | 971-0023 |
| Distribution PCA .....                     | 971-0028 |
| External Panels                            |          |
| Front Panel .....                          | 949-0219 |
| Lower-Right Panel.....                     | 949-0003 |
| Rear Panel.....                            | 949-0218 |
| Status Panel .....                         | 971-0005 |
| Upper Panel .....                          | 949-0144 |
| Upper-Front Panel.....                     | 949-0148 |
| Upper-Right Panel.....                     | 949-0004 |
| Fan, Lower .....                           | 959-0021 |
| Fan, Upper .....                           | 959-0022 |
| Feeder Assembly .....                      | 971-0018 |
| Fuser Assembly, 110/115 V .....            | 661-0440 |
| Fuser Assembly, 220/240 V .....            | 661-0444 |
| Delivery Sensing Lever .....               | 949-0186 |
| Fuser Heater, 100 V, 620 W.....            | 938-0003 |
| Fuser Heater, 220 V, 570 W.....            | 938-0004 |
| Fuser Roller Cleaner.....                  | 970-0049 |
| Paper Fuser Guide.....                     | 949-0240 |
| High-Voltage Power Supply .....            | 661-0425 |
| Laser/Scanner Assembly.....                | 661-0423 |
| Main Motor Assembly .....                  | 971-0014 |
| Ozone Filter .....                         | 961-0003 |
| Ozone Filter (for Case with Door).....     | 961-0007 |
| Ozone Filter Case with Door.....           | 971-0038 |
| Paper Feed Drive Assembly.....             | 971-0015 |
| Paper Feed Roller Assembly.....            | 971-0017 |
| Power Supply Block, 110/115 V.....         | 661-0427 |

---

|                                             |          |
|---------------------------------------------|----------|
| Power Supply Block, 220/240 V.....          | 661-0443 |
| Release Button .....                        | 949-0142 |
| Shutter Assembly .....                      | 971-0016 |
| Status Panel Cable.....                     | 936-0041 |
| Transfer Corona Assembly.....               | 971-0026 |
| Transfer Guide Assembly .....               | 971-0019 |
| Upper Main Body                             |          |
| Auxiliary Tray .....                        | 949-0146 |
| Copy Tray .....                             | 949-0147 |
| Delivery Assembly.....                      | 971-0023 |
| Heater Cover.....                           | 949-0143 |
| Main Tray .....                             | 949-0145 |
| Mirror Assembly.....                        | 971-0007 |
| Paper Deflector.....                        | 971-0006 |
| Preconditioning Assembly Arm .....          | 949-0184 |
| Preconditioning Exposure Lamp Assembly..... | 971-0025 |
| Static Charge Eliminator.....               | 970-0046 |
| Upper Panel.....                            | 949-0144 |
| Upper Front Panel .....                     | 949-0148 |

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### **Controller-I/O Board Identification (Page 9)**

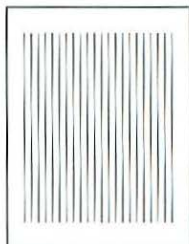
The LaserWriter IIf and IIg controller-I/O boards are labeled incorrectly on page 9 of Volume 1. The top figure is labeled as the IIg board, but it is actually the IIf board. The bottom figure is labeled as the IIf board, but is actually the IIg board.



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## Test Pages (Page 13)

The LaserWriter II engine self-test page (also referred to as a service test page) prints as a series of black vertical lines, as shown in Figure 1 below.



**Figure 1 LaserWriter II Engine Self-Test Page**

**Note** If you are printing test pages with the printer cover removed, guard against bright light reaching the photosensitive drum. Excessive light can affect the quality of the prints.

---

## IIg/g Diagnostic Chart (Page 15)

Replace the introductory paragraph and diagnostic chart on page 15 with the following paragraph and updated chart:

To use the LaserWriter IIg or IIg status LEDs for diagnostic purposes, set the rotary switch on the back of the printer to 4 and connect the LaserWriter II Test Connector to the DB-25 serial port. (If you don't have a Test Connector, jumper pins 4 and 22 on the DB-25 connector.)

Switch on the printer and observe the status LEDs. If an error condition exists, replace the component indicated.

**Note** There is no LED diagnostic available for the LaserWriter II NT/NTX/NTR printers.

| Status LEDs                                                                       |                                                                                   |                                                                                   |                                                                                   | Error Condition/Action                       |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------|
|  |  |  |  |                                              |
| off                                                                               | on                                                                                | flash                                                                             | flash                                                                             | Diagnostic executing.                        |
| flash                                                                             | flash                                                                             | flash                                                                             | flash                                                                             | No error.                                    |
| on                                                                                | on                                                                                | flash                                                                             | flash                                                                             | Fuser assembly.<br>Refer to Table D          |
| on                                                                                | off                                                                               | flash                                                                             | flash                                                                             | Laser/scanner assembly.<br>Refer to Table K. |
| off                                                                               | off                                                                               | flash                                                                             | flash                                                                             | Laser/scanner assembly.<br>Refer to Table K. |
| off                                                                               | on                                                                                | off                                                                               | off                                                                               | Replace ROM #1.                              |
| off                                                                               | on                                                                                | off                                                                               | on                                                                                | Replace ROM #2.                              |
| off                                                                               | on                                                                                | on                                                                                | off                                                                               | Replace ROM #3.                              |
| off                                                                               | on                                                                                | on                                                                                | on                                                                                | Replace ROM #4.                              |
| on                                                                                | off                                                                               | off                                                                               | off                                                                               | Replace SIMM #1.                             |
| on                                                                                | off                                                                               | off                                                                               | on                                                                                | Replace SIMM #2.                             |
| on                                                                                | off                                                                               | on                                                                                | off                                                                               | Replace SIMM #3.                             |
| on                                                                                | off                                                                               | on                                                                                | on                                                                                | Replace SIMM #4.                             |
| on                                                                                | on                                                                                | off                                                                               | off                                                                               | Replace SIMM #5.                             |
| on                                                                                | on                                                                                | off                                                                               | on                                                                                | Replace SIMM #6.                             |
| on                                                                                | on                                                                                | on                                                                                | off                                                                               | Replace SIMM #7.                             |
| on                                                                                | on                                                                                | on                                                                                | on                                                                                | Replace SIMM #8.                             |

---

## Troubleshooting – Functional Check (Page 17)

The following note pertains to the troubleshooting flowchart on page 17:

**Note** If you notice print quality problems on the startup test page that are *definitely* not present on the engine self-test page, you most likely have a faulty I/O board. If the print quality problems occur on both the user test page and engine self-test page, this points to a problem with the print engine.





---

### **Table M5 – Stained Print/Repetitive Defects (Page 43)**

Replace Step 5 with the following:

|    |                             |     |                          |
|----|-----------------------------|-----|--------------------------|
| 5. | Is the pickup roller dirty? | Yes | Clean the pickup roller. |
|----|-----------------------------|-----|--------------------------|

### **Table M14 – Faulty Registration (Page 47)**

Replace Step 3 with the following:

|    |                                               |     |                                     |
|----|-----------------------------------------------|-----|-------------------------------------|
| 3. | Is the pickup roller dirty, worn, or damaged? | Yes | Clean or replace the pickup roller. |
|----|-----------------------------------------------|-----|-------------------------------------|

### **Table M19 – Foggy Print (Page 49)**

Replace Step 4 with the following:

|    |                             |     |                          |
|----|-----------------------------|-----|--------------------------|
| 4. | Is the pickup roller dirty? | Yes | Clean the pickup roller. |
|----|-----------------------------|-----|--------------------------|

### **Table M20 – Horizontal Banding (Page 49)**

Replace Step 4 with the following:

|    |                             |     |                          |
|----|-----------------------------|-----|--------------------------|
| 4. | Is the pickup roller dirty? | Yes | Clean the pickup roller. |
|----|-----------------------------|-----|--------------------------|



---

**Table N2 – Jams in Pickup/Transfer Area (Page 52)**

Replace Step 6 with the following:

|    |                                               |     |                                     |
|----|-----------------------------------------------|-----|-------------------------------------|
| 6. | Is the pickup roller dirty, worn, or damaged? | Yes | Clean or replace the pickup roller. |
|----|-----------------------------------------------|-----|-------------------------------------|

Replace Step 9 with the following:

|    |                                                                                                                                                                                                                     |    |                                |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------|
| 9. | Connect the multimeter to DC controller PCA pins J213-4 (CPUD) and J213-6 (GND). Perform an engine self-test. Does the voltage change from 0 VDC to about +5 VDC two seconds after the main motor starts to rotate? | No | Replace the DC controller PCA. |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------|

**Table N4 – Jams in Fuser/Delivery Area (Page 53)**

Replace Steps 6 and 7 with the following three steps:

|    |                                                                                                                                                                                                                                                                                                                                   |     |                                                                             |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------|
| 6. | Remove the left contact cap from the fuser assembly. Switch on the printer. Connect the multimeter between pins J331-6 and J331-7 on the solder side of the fuser PCA (the two pins closest to the hinge end of the printer). Does the voltage change from +5 VDC to 0 VDC as you move the delivery sensing lever back and forth? | Yes | Verify that the cabling is intact. If it is, replace the DC controller PCA. |
| 7. | Is the fuser assembly defective?                                                                                                                                                                                                                                                                                                  | Yes | Replace the fuser assembly.                                                 |
| 8. | Are the delivery rollers worn or damaged?                                                                                                                                                                                                                                                                                         | Yes | Replace the delivery rollers, or replace the fuser assembly.                |

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## Personal LaserWriter SC/NT/NTR/LS and LS/L

Following are updates to the Personal LaserWriter SC/NT/LS section of the *Apple Service Guide for LaserWriter Printers*, Volume 1. The page numbers in the section titles correspond to the page(s) in Volume 1 where the information originally appeared.

Also included in this section is new information on the Personal LaserWriter NTR and LS/L printers that was not previously included in the Volume 1 manual. The Personal LaserWriter SC, NT, NTR, LS, and LS/L all use the same print engine.

The Personal LaserWriter LS/L is a cost-reduced version of the LS but is sold and packaged under the same LS name. Parts are not necessarily interchangeable between the two models. You can distinguish between the LS and LS/L printers as follows:

- **LS**—The power switch is on the left rear of the printer; the rear cover has an opening for an I/O board bracket and displays the family number M2000.
- **LS/L**—The power switch is on the right rear of the printer; the rear cover is solid plastic and displays the family number M2002.

The Personal LaserWriter NTR is a high-performance, networkable PostScript printer that can print documents 3 to 5 times faster than the Personal LaserWriter NT. It features RS-232 and RS-422 (LocalTalk) serial ports and a 36-pin Centronics parallel port.

Unless specified otherwise in this addendum, the Personal LaserWriter LS information in Volume 1 also applies to the LS/L printer and the Personal LaserWriter NT information in Volume 1 also applies to the NTR printer.

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## Exploded View (Page 3)

The part referred to as the Fuser AC Connector Cable on the exploded view drawing is labeled incorrectly. The correct name for this part is the Fuser PCB Assembly.

---

## Parts List (Pages 4–5)

### Cassette Feeder Assembly

|                                    |          |
|------------------------------------|----------|
| Bottom Left Cover .....            | 949-0284 |
| Bottom Right Cover .....           | 949-0285 |
| Cassette Feeder PCB Assembly ..... | 982-0035 |
| Cassette Stop .....                | 949-0274 |

|                            |          |
|----------------------------|----------|
| Controller PCB, LS/L ..... | 661-0669 |
|----------------------------|----------|

### Covers

|                                   |          |
|-----------------------------------|----------|
| Bottom Cover, Platinum, LS* ..... | 949-0313 |
| Front Cover .....                 | 949-0293 |
| LED Cover .....                   | 949-0294 |
| Left Cover .....                  | 949-0281 |
| Rear Cover .....                  | 949-0280 |
| Top Cover .....                   | 949-0283 |

|                             |          |
|-----------------------------|----------|
| DC Controller PCB, LS ..... | 661-0650 |
|-----------------------------|----------|

|                                          |          |
|------------------------------------------|----------|
| DC Controller PCB, NT, SC, and NTR ..... | 661-0567 |
|------------------------------------------|----------|

|                                                                |          |
|----------------------------------------------------------------|----------|
| DC Controller PCB Mounting Plate, NT, SC,<br>NTR, and LS ..... | 948-0138 |
|----------------------------------------------------------------|----------|

|                 |          |
|-----------------|----------|
| Deflector ..... | 971-0048 |
|-----------------|----------|

|                                                              |          |
|--------------------------------------------------------------|----------|
| Density-Adjusting PCB Assembly, NT, SC,<br>NTR, and LS ..... | 982-0039 |
|--------------------------------------------------------------|----------|

|                             |          |
|-----------------------------|----------|
| DRAM, 256K x 4, 80 ns ..... | 334-0114 |
|-----------------------------|----------|

|                      |          |
|----------------------|----------|
| Drive Assembly ..... | 890-0608 |
|----------------------|----------|

|                           |          |
|---------------------------|----------|
| Drum Drive Assembly ..... | 890-0609 |
|---------------------------|----------|

\*Some Personal LaserWriter LS printers have a solid bottom cover and some have a hollow center or “picture frame” bottom cover. Use the solid bottom cover, part number 949-0313, to replace either version of the bottom cover. The solid bottom cover fits all Personal LaserWriter LS printers; the “picture frame” version does not.

---

|                                       |          |
|---------------------------------------|----------|
| End Plate, LS .....                   | 949-0328 |
| End Plate, NT, SC, and NTR .....      | 949-0139 |
| Face-Down Delivery Assembly .....     | 971-0043 |
| Face-Up Cover Assembly .....          | 949-0276 |
| Face-Up Delivery Drive Assembly ..... | 971-0049 |
| Face-Up Tray Assembly .....           | 922-0200 |
| Face-Up Tray (A) .....                | 949-0289 |
| Face-Up Tray (B) .....                | 949-0288 |
| Face-Up Tray (C) .....                | 949-0287 |
| Left Tray Lock .....                  | 949-0265 |
| Right Tray Lock .....                 | 949-0266 |
| Fan .....                             | 720-0513 |
| Fan and Sensor PCB, LS/L .....        | 981-0030 |
| Feeder Assembly .....                 | 971-0044 |
| Front Access Door .....               | 949-0295 |
| Fuser AC Connector Cable .....        | 569-0049 |
| Fuser Assembly, 110/115 V .....       | 661-0568 |
| Fuser Assembly, 220/240 V .....       | 661-0575 |
| Fuser PCB Assembly .....              | 982-0045 |
| High-Voltage Contact Assembly .....   | 890-8608 |
| High-Voltage Power Supply PCB .....   | 661-0573 |
| I/O Board Bracket, LS .....           | 949-0314 |
| I/O Board, NT .....                   | 661-0565 |
| RAM SIMM, 1 MB .....                  | 661-0520 |
| ROM SIMM, 1 MB (location J2) .....    | 661-0570 |
| ROM SIMM, 256K (location J3) .....    | 661-0602 |
| I/O Board, NTR .....                  | 661-0725 |
| ROM Upgrade Kit, 4.0 .....            | 076-0685 |
| I/O Board, SC .....                   | 661-0566 |
| SIMM, 256K .....                      | 661-0402 |
| I/O Shield, LS .....                  | 949-0326 |
| I/O Shield, NT and SC                 |          |
| I/O Board Rail .....                  | 949-0292 |
| Lower I/O Shield .....                | 949-0268 |
| Upper I/O Shield .....                | 949-0267 |
| Interconnect PCB, NT and SC .....     | 982-0048 |

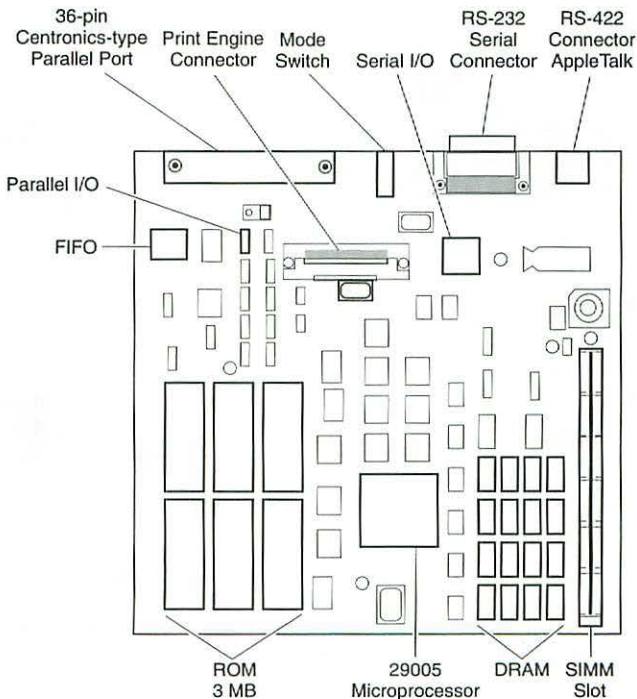
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|                                                  |          |
|--------------------------------------------------|----------|
| Laser Assembly .....                             | 661-0571 |
| Lens Assembly .....                              | 971-0041 |
| Main Motor (Stepping DC Motor) .....             | 890-0426 |
| Multipurpose Cable Assembly .....                | 890-8605 |
| Multipurpose Tray, 50 sheet .....                | 949-0279 |
| Multipurpose Tray, 70 sheet .....                | 949-0341 |
| Paper Support Plate, LS .....                    | 949-0332 |
| Paper Support Plate, NT and SC .....             | 949-0273 |
| PCB Duct Plate, LS/L .....                       | 948-0155 |
| PCB Mounting Plate, LS/L .....                   | 948-0048 |
| PCB Shield, LS/L .....                           | 949-0379 |
| Photo Interrupter .....                          | 353-7816 |
| Pickup Roller Assembly .....                     | 971-0045 |
| Power Supply Unit, LS, 110/115 V .....           | 661-0636 |
| Power Supply Unit, LS, 220/240 V .....           | 661-0637 |
| Power Supply Unit, LS/L, 110/115 V .....         | 661-0668 |
| Power Supply Unit, LS/L, 220/240 V .....         | 661-0667 |
| Power Supply Unit, NT and SC, 110/115 V .....    | 661-0569 |
| Power Supply Unit, NT and SC, 220/240 V .....    | 661-0574 |
| Rod Assembly .....                               | 971-0046 |
| Scanner Assembly .....                           | 661-0572 |
| Scanner Cover .....                              | 971-0040 |
| Sensor Mounting Plate .....                      | 890-1200 |
| Separation Pad .....                             | 870-0295 |
| Serial I/O Board, LS .....                       | 661-0631 |
| Stackability Guide, NT and SC .....              | 949-0261 |
| Transfer Roller .....                            | 870-0103 |
| Transfer Roller Mount Assembly, Left Side .....  | 890-8603 |
| Transfer Roller Mount Assembly, Right Side ..... | 890-0607 |



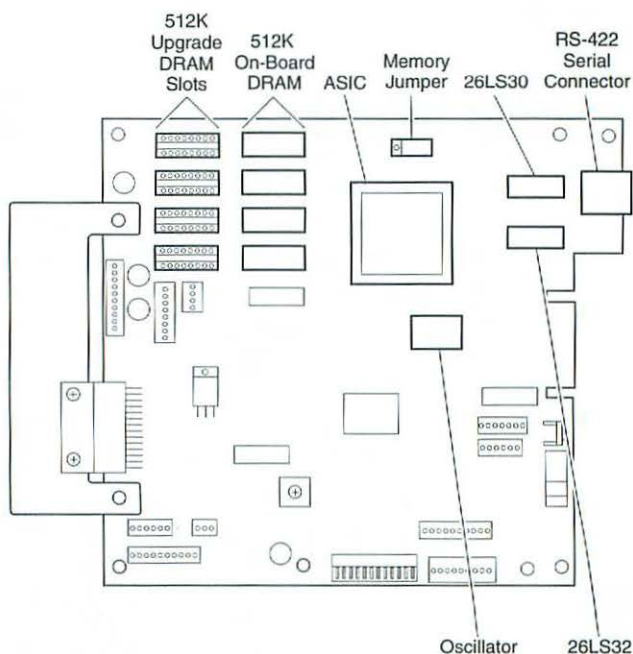
## I/O Board Identification (Page 8)

Figure 2 shows the I/O board for the Personal LaserWriter NTR printer.



**Figure 2 I/O Board for the Personal LaserWriter NTR**

Figure 3 shows the serial controller board for the Personal LaserWriter LS/L printer.



**Figure 3 Serial Controller Board for the Personal LaserWriter LS/L**



---

## **I/O Board Specifications (Page 9)**

The following chart shows the I/O board specifications for the Personal LaserWriter NTR and LS/L printers.

| <b>I/O Board Specifications</b> |                                                                                                                                                                                                                     |                          |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
|                                 | <b>NTR</b>                                                                                                                                                                                                          | <b>LS/L</b>              |
| <b>Processor</b>                | N/A                                                                                                                                                                                                                 | N/A                      |
| <b>ROM</b>                      | 3 MB                                                                                                                                                                                                                | N/A                      |
| <b>RAM</b>                      | 3 MB, expandable to 4 MB                                                                                                                                                                                            | 512K, expandable to 1 MB |
| <b>Interfaces</b>               | LocalTalk, RS-232, RS-422, Centronics parallel                                                                                                                                                                      | RS-422                   |
| <b>Printing Protocols</b>       | PostScript, HP LaserJet Plus, and a subset of Diablo 630                                                                                                                                                            | QuickDraw                |
| <b>Built-in Fonts</b>           | Courier, Gothic, Helvetica, Helvetica Narrow, IBM PC Graphics Extended Character Set (ECS), ITC Avant Garde, ITC Bookman, ITC Zapf Chancery, ITC Zapf Dingbats, New Century Schoolbook, Palatino, Symbol, and Times | N/A                      |

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## **Test Prints (Page 12)**

To initiate a service test print from the LS/L printer, first remove the test button cover on the rear panel of the printer. You can then access the test button through the opening in the rear panel.

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## Troubleshooting Tables (Pages 24–47)

Following are updates to the troubleshooting tables for the Personal LaserWriter series of printers.

### Table G–Laser/Scanner Malfunction (Page 31)

When you perform Steps 2 and 3 in this table, switch on the printer before measuring the voltage.

### Table H–Print Quality Problems (Page 32)

Figure 4 below provides a better illustration of the Faulty Registration print quality problem.



**Bad Registration**  
See Table H12

**Figure 4 Bad Registration**

The following information should be added to the Print Quality Troubleshooting section:

**Note** If you are troubleshooting a Personal LaserWriter NT that only prints on the top half of the page and leaves the bottom half of the page blank, replace the fuser bulb or the fuser assembly. If you are troubleshooting a Personal LaserWriter NTR with this problem, upgrade the ROMs to version 4.0.

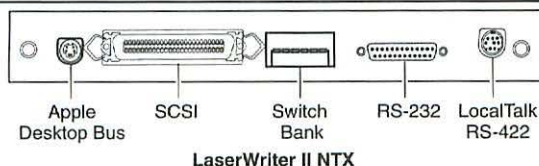
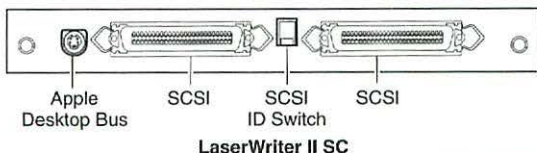
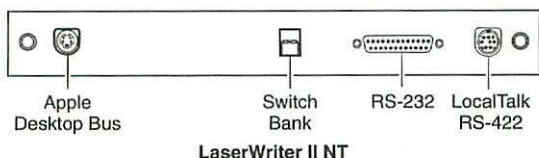
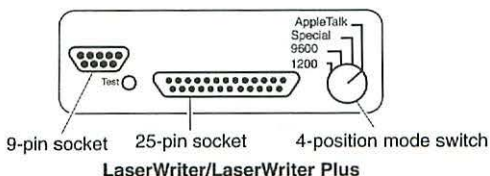
---

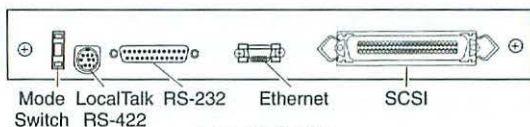
## Ports & Cables

Following are updates to the Ports & Cables section of Volume 1. The page numbers in the section headers correspond to the page(s) in Volume 1 where the information originally appeared.

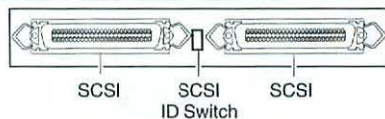
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### External Connectors (Page 3)

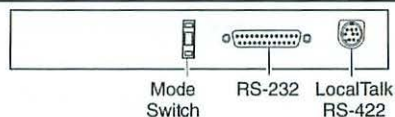




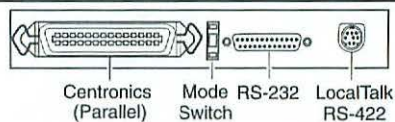
**LaserWriter IIg**



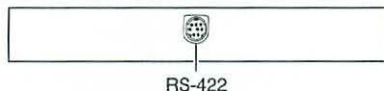
**Personal LaserWriter SC**



**Personal LaserWriter NT**



**Personal LaserWriter NTR**



**Personal LaserWriter LS**



**Personal LaserWriter LS/L**

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## **External Connectors—Pinouts (Page 6)**

The following correction is for the Personal LaserWriter SC, LaserWriter II SC, NTX, IIx, and IIg—SCSI Port table on page 6 of Volume 1:

The signal description listed for pin 38 should read Term Power (not +5 Volts).

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