RICOH

Priport Controller

CPIF-26

Service Manual

⚠IMPORTANT SAFETY NOTICES

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the printer and peripherals, make sure that the power cord is unplugged.

2. The wall outlet should be near the controller and easily accessible.

3. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

The controller must be installed and maintained by a customer service representative who has completed the training course on those models.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

Dispose of replaced parts in accordance with local regulations.

General Remarks

The following table shows the conversion of the model names for each manufacturer:

Model Code	Company	Model Name
C229	Ricoh	JP5000
	Gestetner	5450
	RexRotary	1560
	Nashuatec	CP450
	Savin	3350DNP
C231	Ricoh	JP1010/1030/1045/1050
	Gestetner	5306(L/b)/5000/5001
	RexRotary	1224(B)
	Nashuatec	CP306(b)
	Savin	3150DNP
C217	Ricoh	VT1730
	Gestetner	5303
	RexRotary	1220
	Nashuatec	CP303
C225	Ricoh	VT1800
	Gestetner	5304
	RexRotary	1222
	Nashuatec	CP304
	Savin	3100DNP
C226	Ricoh	VT2250/VT2240
	Gestetner	5329(L)
	RexRotary	1254(L)
	Nashuatec	CP329(L)
	Savin	3250DNP
C224	Ricoh	VT2200
	Gestetner	5327
	RexRotary	1252
	Nashuatec	CP327
	Savin	3200DNP
C216	Ricoh	VT2105
	Gestetner	5325
	RexRotary	1250
	Nashuatec	CP325
C211	Ricoh	VT2100/VT2130/VT2150
	Gestetner	5310/5315/5320
	RexRotary	1240/1241/1242
	Nashuatec	CP310/CP315

Model Code	Company	Model Name
C212	Ricoh	VT2300
	Gestetner	5330
	RexRotary	1260
	Nashuatec	CP330
C210	Ricoh	VT3500
	Gestetner	5375
	RexRotary	1280
	Nashuatec	CP375
C218	Ricoh	VT3600
	Gestetner	5380
	RexRotary	1285
	Nashuatec	CP380
C223	Ricoh	VT3800
	Gestetner	5385
	RexRotary	1290
	Nashuatec	CP385
	Savin	3300DNP
C219	Ricoh	VT2600/VT2630
	Gestetner	5360
	RexRotary	1270
	Nashuatec	CP360
C222	Ricoh	VT2400
	Gestetner	5340
	RexRotary	1255
	Nashuatec	CP340
C228	Ricoh	VT6000
	Gestetner	5390
	RexRotary	1295
	Nashuatec	CP390
	Savin	3400DNP
C214	Gestetner	5305/5330
	RexRotary	1230
	Nashuatec	CP305

Contents

1. OVERALL INFORMATION

1.1 HOST SYSTEMS

Priport Controller CPIF-26 is external box type raster image processor for PRIPORTs. By connecting the controller with PRIPORT, the computer data will be printed in as well as printing from PRIPORT's scanner. The following are the target computer hosts for this controller.

Target Host Computer Systems
- IBM PC/AT compatible PC with Windows 95 with Internet Explorer 4.01 SP1, Windows 98, or Windows NT4.0 with SP3 operating systems.
- Apple Macintosh with MAC OS 7.6.1, or later.

There are no minimum system hardware requirements, other than those imposed by the operating systems.

1.2 BASIC SPECIFICATION

Contents	Description
Configuration	External Box Type Controller Unit
Priport Models	JP5000, JP1010, JP1030, JP1045, JP1050, and VT6000
I/O Interfaces	Host • Parallel I/F (ECP Bi-directional Centronics) • LocalTalk (RS422) • 10 BaseT (RJ45) Ethernet/EtherTalk Video • RSVI Interface
Page Description Language	PostScript3® Level 3 PCL-5e (HP LaserJet 4si compatible)
Image Resolution	300 dpi, 400 dpi, 600 dpi
RAM	Standard:32MB, Maximum: 256MB (72-pin 60ns EDO SIMM, non-parity, at 5 volts with 2K maximum refresh rate) • See Section 6.5 for more explanation.
Paper Size	A3,A4,B4, B5, US Letter, US Legal, US Tabloid
Resident Fonts	• See section 1.3 Resident Font List.

Table 1.2. Basic Controller Specifications.

1.3 RESIDENT FONT LIST

1.3.1 PS3 FONTS

Albertus ‡	Coronet Regular ••
Albertus Italic ‡	Courier
Albertus Light ‡	Courier Bold
AntiqueOlive Bold §	Courier Bold Oblique
AntiqueOlive Compact §	Courier Oblique
AntiqueOlive Italic §	Eurostile **
AntiqueOlive Roman §	Eurostile Bold **
Apple Chancery ¤	Eurostile Bold Extended Two **
Arial ‡	Eurostile Extended Two **
Arial Bold Italic ‡	Geneva
Arial Bold ‡	GillSans ‡
Arial Italic ‡	GillSans Bold ‡
ITC AvanteGarde Gothic Book °	GillSans Condensed Bold ‡
ITC AvanteGarde Gothic Book Oblique °	GillSans Bold Italic ‡
AvanteGarde Gothic Demi °	GillSans Condensed ‡
AvanteGarde Gothic Demi Oblique °	GillSans Extra Bold ‡
Bodoni	GillSans Italic ‡
Bodoni Bold	GillSans Light ‡
Bodoni Bold Italic	GillSans Light Italic ‡
Bodoni Italic	Goudy
Bodoni Poster	Goudy Bold
Bodoni Poster Compressed	Goudy Bold Italic
ITC Bookman Demi °	Goudy ExtraBold
ITC Bookman Demi Italic °	Goudy Oldstyle Italic
ITC Bookman Light °	Helvetica †
ITC Bookman Light Italic °	Helvetica Bold †
Carta •	Helvetica Bold Oblique †
Chicago ¤	Helvetica Condensed †
Clarendon †	Helvetica Condensed Bold †
Clarendon Bold †	Helvetica Condensed Bold Oblique †
Clarendon Light †	Helvetica Condensed Oblique †
CooperBlack	Helvetica Narrow †
CooperBlack Italic	Helvetica Narrow Bold †
Copperplate ThirtyThree	Helvetica Narrow Bold Oblique †
Copperplate ThirtyTwo	Helvetica Narrow Oblique †

Overall Information

Helvetica Oblique †	Palatino Italic †
Hoefler Text Black ¤	Palatino Roman †
Hoefler Text Black Italic ¤	Stempel Garamond Bold †
Hoefler Text Italic ¤	Stempel Garamond Bold Italic †
Hoefler Text Ornaments ¤	Stempel Garamond Italic †
Hoefler Text ¤	Stempel Garamond Roman †
Joanna ‡	ITC Symbol °
Joanna Bold ‡	Tekton •
Joanna Bold Italic ‡	Times Bold †
Joanna Italic ‡	Times Bold Italic †
LetterGothic	Times Italic †
LetterGothic Bold	Times Roman †
LetterGothic Bold Slanted	Times New Roman Bold ‡
LetterGothic Slanted	Times New Roman Bold Italic ‡
ITC Lubalin Graph Book °	Times New Roman Italic ‡
ITC Lubalin Graph Book Oblique °	Times New Roman ‡
ITC Lubalin Graph Demi °	Universe †
ITC Lubalin Graph Demi Oblique °	Universe Bold †
Marigold *	Universe Bold Oblique †
ITC Mona Lisa Recut °	Universe Oblique †
Monaco ¤	Universe Light †
New Century Schoolbook Bold †	Universe Light Oblique †
New Century Schoolbook Bold Italic †	UniverseCondensed †
New Century Schoolbook Italic †	UniverseCondensed Bold †
New Century Schoolbook Roman †	UniverseCondensed Bold Oblique †
New York ¤	UniverseCondensed Oblique †
Optima †	UniverseExtended †
Optima Bold †	UniverseExtended Bold †
Optima Bold Italic †	UniverseExtended Bold Oblique †
Optima Italic †	UniverseExtended Oblique †
Oxford *	Wingdings Regular °°
Palatino Bold †	ITC ZapfChancery Medium Italic °
Palatino Bold Italic †	ITC ZapfDingbats °

• Registered trademark of Adobe Incorporated, ∗∗ Trademark of Nebiolo,

° Registered trademark of International Typeface Corporation, † Trademark of Linotype-Hell AG and/or its subsidiaries, § Registered trademark of Marcel Olive,

∗ Trademark of Alpha Omega Typography, ¤ Trademark of Apple Computer Inc.,

•• Registered trademark of Ludlow type Foundry, °° Trademark of Microsoft Corporation, ‡ Trademark of Monotype Corporation

1.3.2 PCL FONTS

Scalable Fonts: 35 Intellifont fonts

Albertus, Albertus Extrabold, Antique Olive, Antique Olive Italic, Antique Olive Bold, Clarendon Condensed, Coronet, Courier, Courier Italic, Courier Bold, Courier Bold Italic, Garmond Antiqua, Garamond Kursiv, Garamond Halbfett, Garamond Kursiv Halbfett, Letter Gothic, Letter Gothic Italic, Letter Gothic Bold, Marigold, CG Omega, CG Omega Italic, CG Omega Bold, CG Omega Bold Italic, CG Times, CG Times Italic, CG Times Bold, CG Times Bold Italic, Univers Medium, Univers Medium Italic, Univers Bold, Univers Bold Italic, Univers Medium Condensed, Univers Medium Condensed Italic, Univers Bold Condensed, Univers Bold Condensed Italic

Scalable Fonts: 10 TrueType fonts

Arial, Arial Italic, Arial Bold, Arial Bold Italic, Times New Roman, Times New Roman Italic, Times New Roman Bold, Times New Roman Bold Italic, Wingdings

Fixed Pitch Fonts: 1 Intellifont font

Line Printer (8.5 pt 16.67 pitch)

1.4 VIDEO INTERFACE KITS

Description	Contents
PC Controller I/F Kit Type-600	For the connection to VT6000
PC Controller I/F Kit Type-10	For the connection to JP1010, JP1030, JP1045, JP1050, and JP5000 (Asian version only) * The interface kit is originally installed for JP5000, except for the Asian version machines.

Table 1.4. Interface Kits for use with the Controller.

2. BASIC FUNCTION

2.1 BASIC CONFIGURATION

2.1.1 MAIN BOARD SPECIFICATIONS AND BLOCK DIAGRAM

Main Printed Circuit Board specifications are listed in the table below.

Description	CPIF 26 Controller
CPU	NEC VR4300 100MHz
DRAM	32MB (SIMM)
Flash ROM	8Mb on Main Board,
	1Mb Flash ROM SIMM (subject to change)

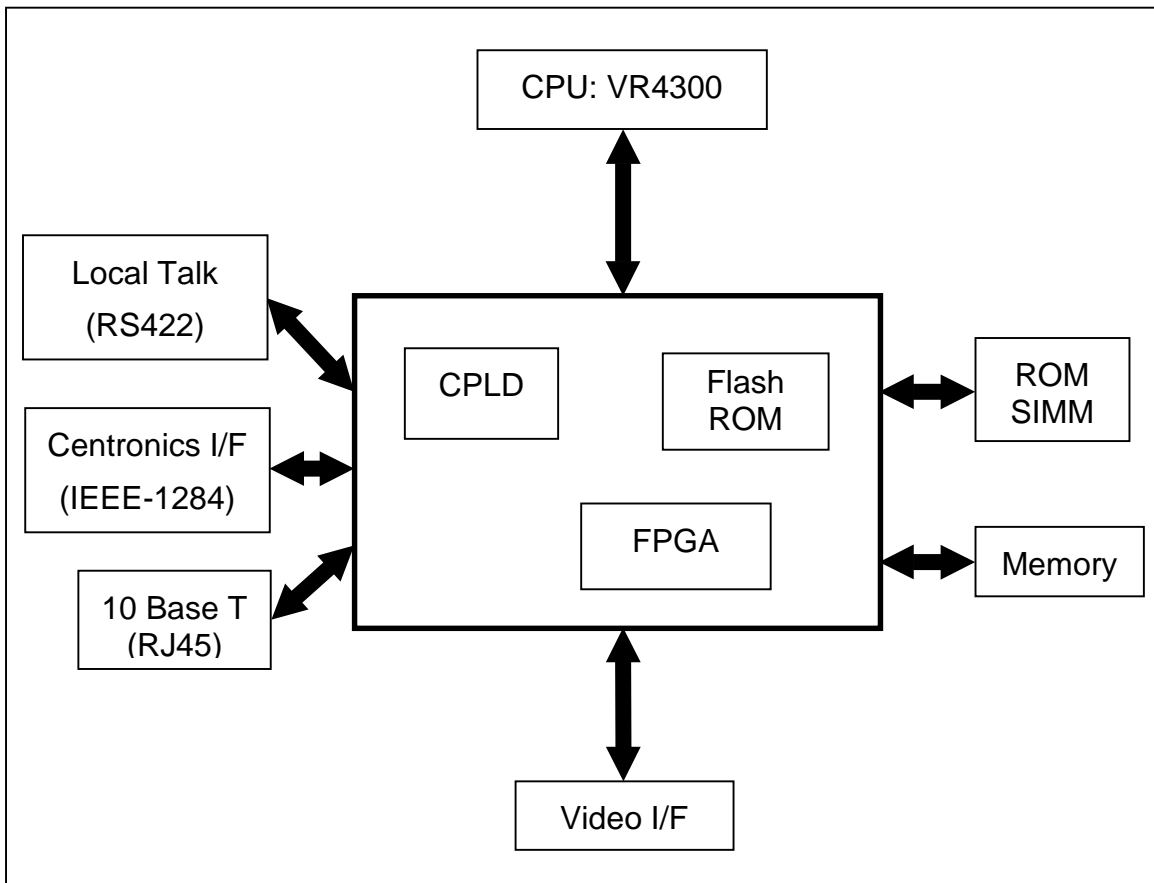**Table 2.1. Main Board Specifications.**

Block Diagram

Figure 2.1. Controller Block Diagram.

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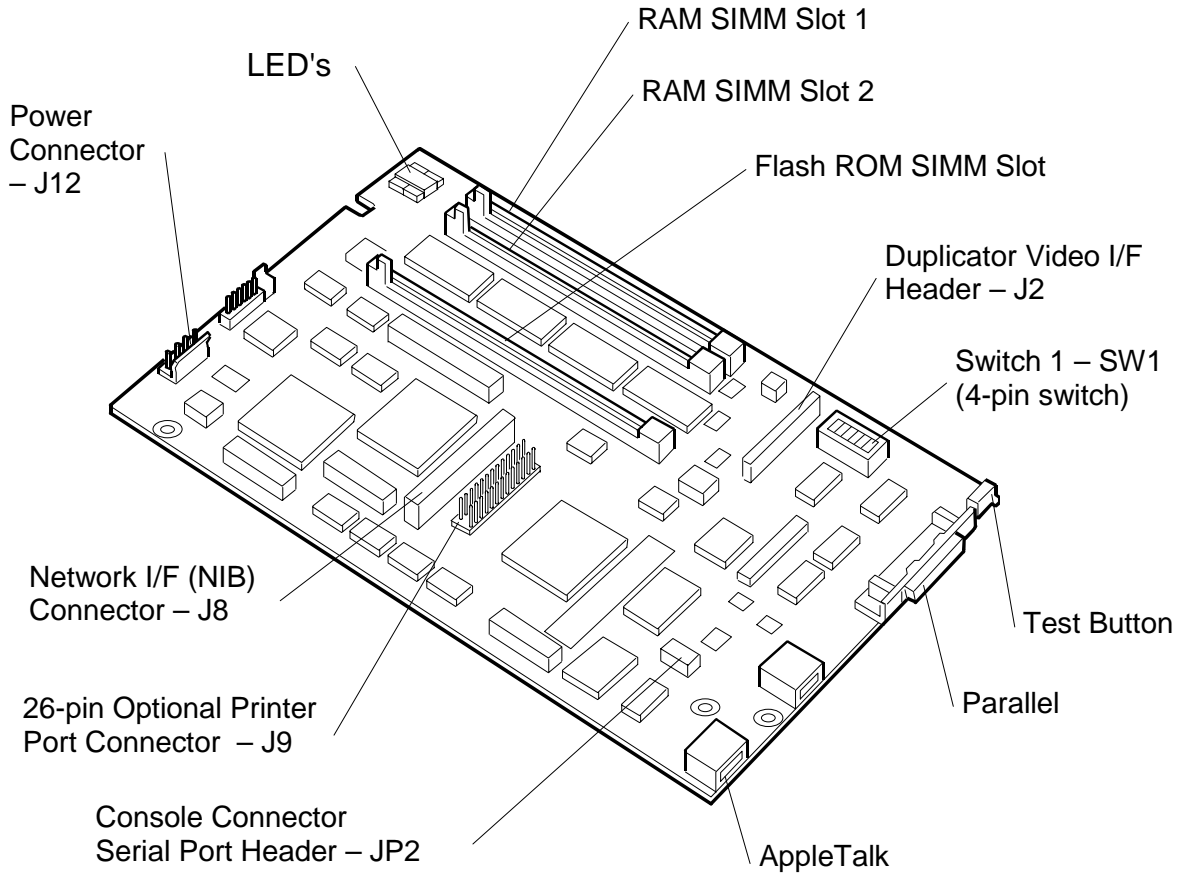
2.1.2 MAIN BOARD LAYOUT

Figure 2.1.2. Main Board Layout

2.2   SPECIFICATIONS AND CONFIGURATIONS OF I/O PORTS

The CPIF 26 Controller supports connection to a computer for printing from any of the following ports:

Parallel Port (IEEE 1284, ECP Bi-directional)
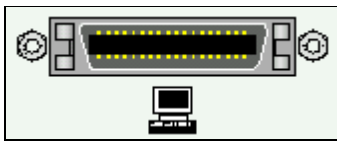
LocalTalk (Apple computers)

10-BaseT LAN Port

- Ethernet for IBM-compatible PCs (IPX and IP protocols)

- EtherTalk for Apple Macintosh PCs (AppleTalk and IP protocols)

Basic Function

2.2.1 PARALLEL MINI-CENTRONICS INPUT PORT

2.2.1.1   *Description*

The high-performance parallel input/output port on the controller utilizes the **IEEE 1284 – 1994** design, supporting hardware-enhanced, nibble-mode reverse-direction data transfer, for high-speed communication between the computer and controller. Be sure to use a cable conforming to this design standard to realize the full data speed benefit from this interface.

2.2.1.2   *IEEE 1284 Parallel Port Characteristics*

Maximum data speed: 2 MBytes/sec.
Maximum cable length: 10 meters (30 feet).
Chassis connector type: IEEE 1284 Type C (Mini-Centronics).
Design standard: IEEE 1284 – 1994.

To use this interface, the parallel port (e.g., LPT1:) on the user's computer must be configured as an *ECP* (not EPP) *Printer Port*.

For more information on the parallel port, point your Internet web browser to:
http://www.fapo.com/ieee1284.htm

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2.2.1.3   IEEE 1284 Parallel Port Pinout

Computer End 1284A Connector Pin	Signal	Controller End 1284C Connector Pin
1	nStrobe	15
18	Rtn	33
2	Data_1	6
19	Rtn	24
3	Data_2	7
19	Rtn	25
4	Data_3	8
20	Rtn	26
5	Data_4	9
20	Rtn	27
6	Data_5	10
21	Rtn	28
7	Data_6	11
2	Rtn	29
8	Data_7	12
22	Rtn	30
9	Data_8	13
22	Rtn	31
10	nAck	3
24	Rtn	21
11	Busy	1
23	Rtn	19
12	PE	5
24	Rtn	23
13	Select	2
24	Rtn	20
14	nAutoFeed	17
25	Rtn	35
15	nFault	4
23	Rtn	22
16	nInit	14
25	Rtn	32
17	nSelectIn	16
25	Rtn	34
(nc)	+5V/Host_Avail	18
(nc)	Perph_Avail	36

Table 2.2.1.3. IEEE 1284 A-to-C Connector Contact Numbering

2.2.2   LOCALTALK CONNECTION

2.2.2.1   Description

The LocalTalk interface is used by the Macintosh series of computers designed and built by Apple Computer, Inc. It is a bi-directional port and supports the AppleTalk local area network (LAN) protocol.

2.2.2.2   LocalTalk Port Characteristics

Maximum data speed: 230.4Kbs / 28.8KBytes/sec.
Maximum cable length: 300 meters (1000 feet).
Chassis connector type: 8-pin mini-DIN female.
Design standard: Apple proprietary.

For more information on AppleTalk and LocalTalk, point your Internet web browser to:
http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/55142.htm
- or -
http://www.apple.com

2.2.2.3   LocalTalk Port Pinout

Contact Number	Signal Name
1	(not connected)
2	(not connected)
3	- Data Out
4	Ground
5	- Data In
6	+ Data Out
7	(not connected)
8	+ Data In

Table 2.2.2.3. LocalTalk Connector Contact Numbering.

3. VIDEO I/F INSTALLATION PROCEDURES

3.1 VIDEO I/F KIT TYPE-600 PARTS LIST

3.1.1 COMMON ASSEMBLIES

No.	Description	Qty.
1	IC – Interface	1
2	Interface Board	1
3	Insulating sheet – 145 x 200	1
4	Interface Cable – Interface Board	1

Table 3.1.1. Common Assemblies.

3.1.2 SET FOR PART 1A

No.	Description	Qty.
5	Stud – 50mm	2
6	Spacer – 10mm	2
7	PCB Stud – 64mm	2
8	Harness Support Bracket	1
9	Philips Pan Head Screw – M3 x 35	1
10	Philips Flange Screw – M3 x 8	3
11	Philips Flange Screw – M4 x 8	3
12	Flat Cable – N810/NA33/NA3/NB2/RN925/N850	1
13	Wire Band	1
14	PCB Collar	1

Table 3.1.2. Set for Part 1A.

3.1.3 SET FOR PART 1B

No.	Description	Qty.
15	Flat Cable – NA2	1
16	Main Board Spacer	1
17	Stud – Bracket – Interface	2
18	Interface Board Bracket	1
19	Philips Screw with Flat Washer – M3 x 25	1
20	Stud – Main Board	1
21	Philips Screw with Flat Washer – M4 x 6	1
22	Philips Screw – M4 x 8	2
23	Philips Screw with Flat Washer – M3 x 6	2

Table 3.1.3. Set for Part 1B.

Installation

3.1.4 SET FOR PART 1C

No.	Description	Qty.
24	Interface Board Stud	2
25	Main Board Stud – Long	4
26	Philips Screw – M4 x 8	2
27	Philips Screw with Flat Washer – M3 x 6	4
28	Flat Cable – N865	1

Table 3.1.4. Set for Part 1C.

3.1.5 PARTS FOR 1D

No.	Description	Qty.
29	Stud – 35mm	3
30	Philips Screw with flat Washer – M3 x 6	3
31	Philips Screw – M4 x 8	2

Table 3.1.5. Set for Part 1D.

3.2   VIDEO I/F KIT TYPE-10 PARTS LIST

No.	Description	Qty.
32	Interface Board	1
33	Relay Harness	1
34	Stepped Screw – M2.6	2
35	Tapping Screw – M3 x 6	2

Table 3.2.1. Video I/F kit Type-10.

3.3 INSTALLATION PROCEDURES FOR INTERFACE KITS

NOTE: 1) The CPIF26 Controller is designed for the JP1010/1030/1045/1050, JP5000, and VT6000 models only. The installation procedures for the other models are just for reference for the other controllers.

2) Numbers in parentheses ( ) in the installation procedures correspond to the part numbers in Tables 3.1 through 3.2.
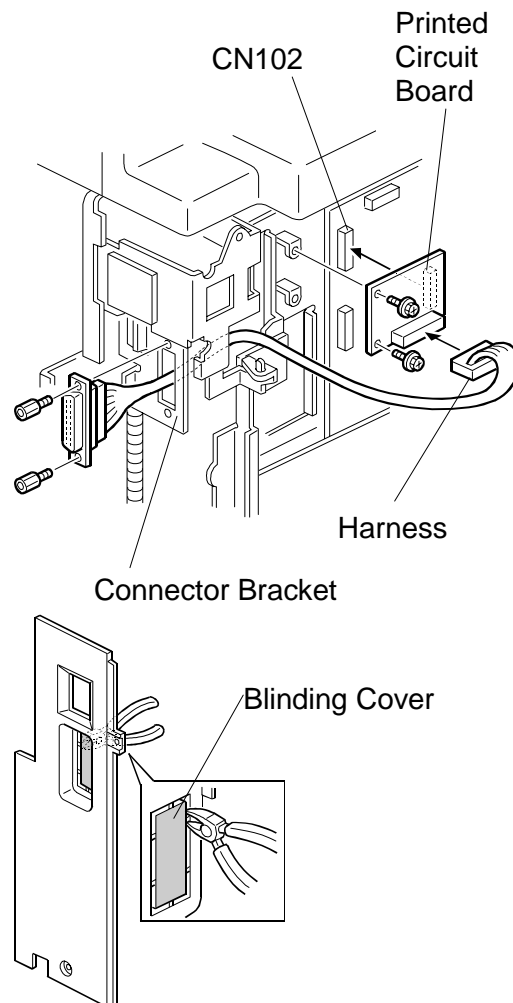
### 3.3.1 JP5000

Installation

> **NOTE:**
> The interface kit is originally installed for the JP5000, except for the Asian version machines. You must perform step 3 only to connect the controller if the kit is installed.

1. Remove the rear cover and right side panel of the Priport.

2. Mount Printed Circuit Board (32) on connector CN102 of the MPU board using two M3x6 screws (35). Mount the cable (33) on the Connector Bracket using two stepped screws (34).

3. Remove the blinding cover in the right side panel.

NOTE: If SP Mode 2-6 (PC Controller Settings) is set at "AUTO" (i.e. the default setting), the On-line key is enabled automatically when the controller and interface kit are installed.

CN102

Printed Circuit Board

Harness

Connector Bracket

Blinding Cover

3.3.2 JP1010/1030/1045/1050

Printed Circuit Board

Harness

MPU

Connector Bracket
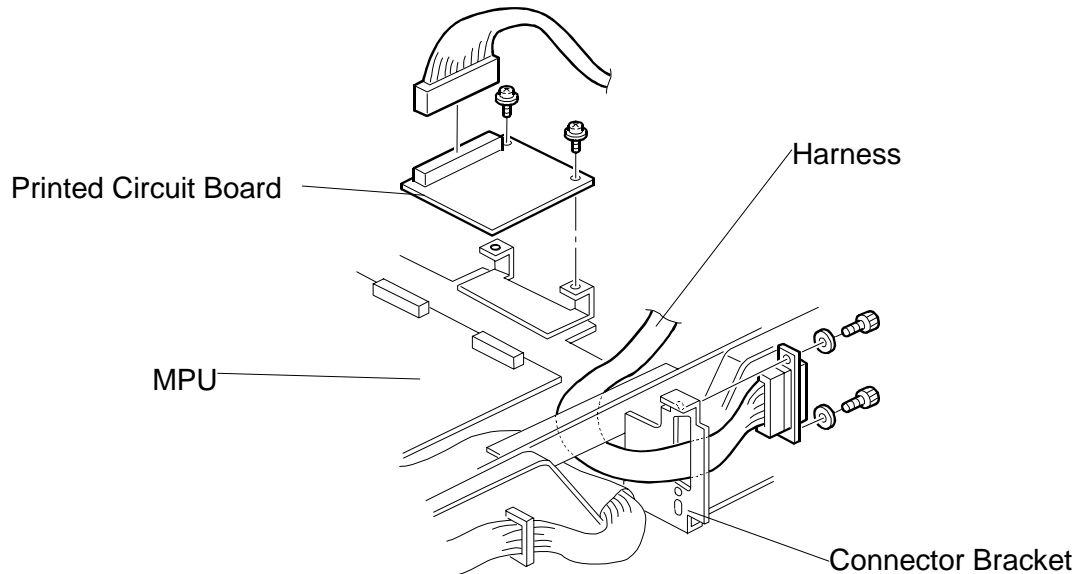
1. Turn off the main switch and unplug the power cord.

2. Remove the upper rear cover.

3. Remove the MPU cover.

4. Connect CN102 of the printed circuit board (32) to CN110 of the MPU board and secure it using two screws (35).

5. Connect the harness (33) to CN101 of the printed circuit Board, and secure it to the connector bracket using two stepped screws (34).

6. Remove the communications port cover plate (blinding cover) from the upper rear cover.

7. Reinstall the MPU cover.

8. Reinstall the upper rear cover.

NOTE: The On-line key on the operation panel is enabled automatically when the controller and interface kit are installed.
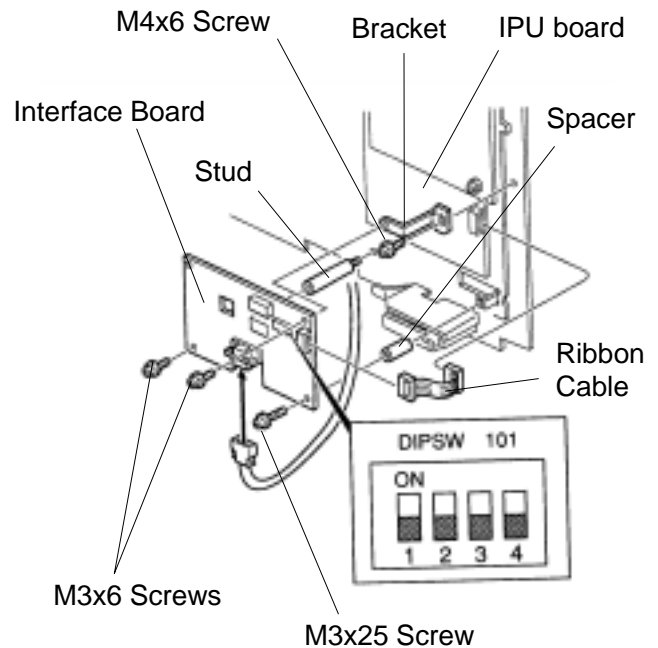
3.3.3 VT6000/3800/3600/3500/2600

1. Remove the rear cover and front side panel of the Priport.

2. Mount the Shielded Cable Interface (2).
   a) Mount a Stud (17) on the rear chassis of the Priport.
   b) Thread the Shielded Cable (4) from rear chassis to the front chassis under the Priport body.
   Note for the VT3600/3500/2600: first remove the bottom plate, then re-attach it.
   c) Attach the Shielded Cable (4) on the Stud (17) using two M4x8 Screws (26).

> **NOTE:**
> Before mounting Printed Circuit Board Interface (2), attach one end of the Ribbon Cable (12) to the IPU board ribbon cable connector.

Installation

3. Mount the Printed Circuit Board Interface (2).
   a) Mount a Stud (20) on the Priport.
   b) Mount the Bracket (18) on the chassis using a M4x6 screw and washer (21).
   c) Attach the Printed Circuit Board (2) using 2, M3x6 screws (27). Attach the bottom of the right hand side of the Printed Circuit Board to the Spacer (16) using a M3x25 screw (19).
   d) Attach the connector of the Printed Circuit Board (2) to the Shielded Cable (4).
   e) Attach free end of the Ribbon Cable (21) to the Printed Circuit
   f) Board Interface (2).

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4. Set the Printed Circuit Board interface switches.
    a) Set all switches on DIPSW 101 to OFF.

5. Re-attach the side cover panels
    of the Priport.
    a) Pop out the communication
       port cover plate from the
       lower center of the rear
       cover panel.
    b) Reinstall the rear and front
       cover panels.

Communication port cover
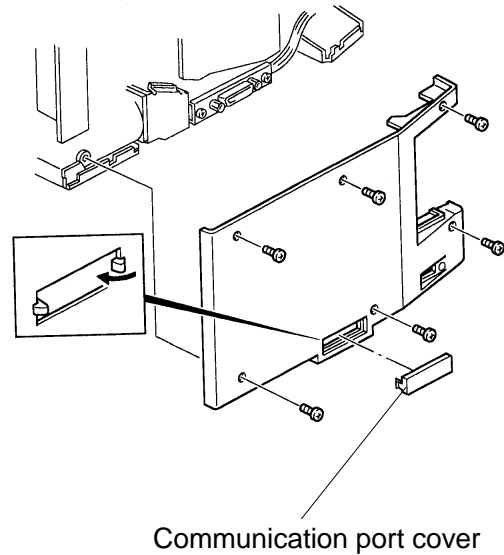
6. Connect the Priport and AC power to the Controller.
    a) Connect a Video Cable between the Priport and the Controller.
    b) Connect an AC cable to the Controller.

7. Set SP Mode 1 (for the Online Key On/Off) to ON.

3.3.4 VT2400

1. Remove the rear cover and front side panel of the Priport.

2. Mount Shielded Cable Interface (4).

3. Mount Printed Circuit Board Interface (2).
   a) Remove the three screws attaching the mainframe MPU Board to the chassis (two screws upper and lower side of CN109, and one screw lower side of the CN111).
   b) Replace the screws removed in a) above with Studs (29).
   c) Connect one side of the Ribbon Cable (12) to the connector of Mainframe MPU Board.
   d) Attach the Printed Circuit Board Interface (2) to the Studs (29) using M3x6 Screws (27).
   e) Connect the free end of the Ribbon Cable (12) to the CN102 connector of Printed Circuit Board Interface (2).
   f) Set all switches of DIPSW 101 on the Printed Circuit Board Interface (2) to OFF.

4. Pop out the communication port cover plate from the lower center of the rear cover panel. Reinstall the rear and front cover panels.

5. Set SP Mode 2-1 (Online Key On/Off) to ON.

Studs

Shielded Cable

Installation

Printed Circuit Board Interface

19
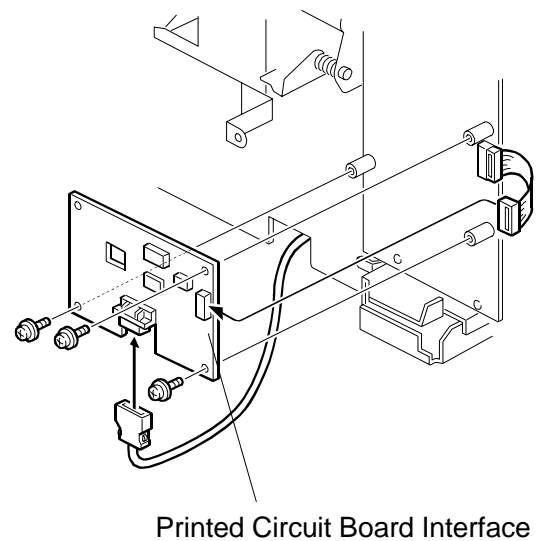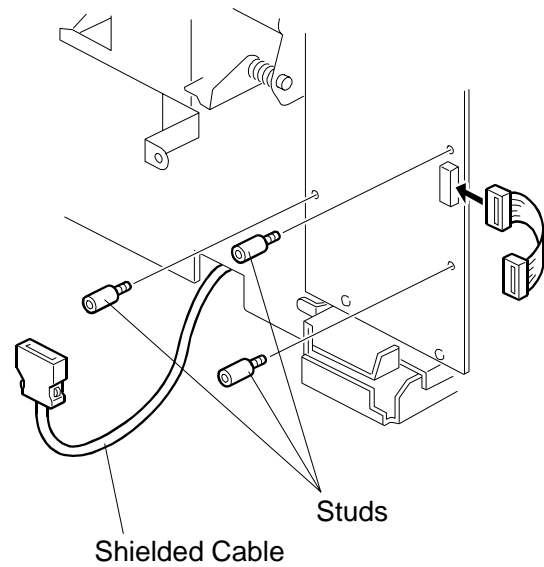
3.3.5 VT2240/VT2250

1. Remove the top cover of the Mainframe MPU Board.

2. Remove screws attached to the two studs on the top of MPU Control Board.

3. Connect the free end of the Ribbon Cable (12) to the connector marked CN110 located at the left edge of the MPU Control Board.

4. Position the MPU Control Board and Printed Circuit Board Interface (2) on the Studs.

5. Attach the Printed Circuit Board Interface (2) to the MPU Control Board, taking care to align the left edge with the locking spacers.

CN110

Screw

MPU Control Board

Locking Spacers
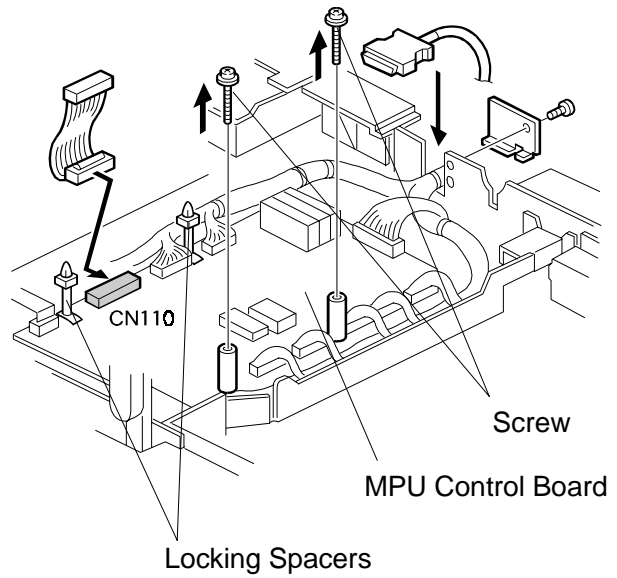
6. Attach the right side edge of the Printed Circuit Board (2) to the mounting Studs on the MPU Control Board using three M3x6 screws.

7. Connect the free end of the Ribbon Cable (12) to the connector marked CN102 on the Printed Circuit Board Interface (2).

8. Attach the Shielded Cable to the Printed Circuit Board Interface (2).

Printed Circuit Board Interface

Shielded Cable

CN102

CN101

Screws M3x6
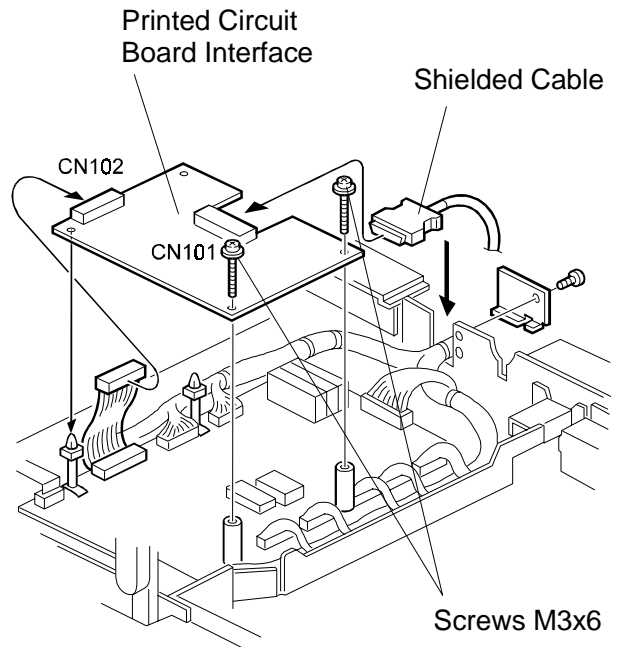
9. Remove the rear cover panel of the Priport.

10. Remove the Plate attached to the channel for the Main Harness in the rear upper of the Chassis.

11. Route the Shielded Cable (4) along side the Main Harness.

12. Re-attach the Plate.

13. Mount the Studs (24) on the rear chassis of the Priport.

14. Mount the Bracket end of the Shielded Cable (4) onto the Studs (24) using two M4x8 screws (26).

15. Tie the Shielded Cable (4) to Main Harness using the Tie Band (13).

16. Pop out the communication port cover plate from the lower center of the rear cover panel.

17. Reinstall the rear cover panel of the Priport.

18. Set all switches on DIPSW 101 of the Printed Circuit Board Interface (2) to OFF.

19. Re-install the top cover of the Priport.

20. Set SP Mode 1 (Online Key On/Off) to ON.

Plate

Tie Band

Installation

Studs

Bracket

21
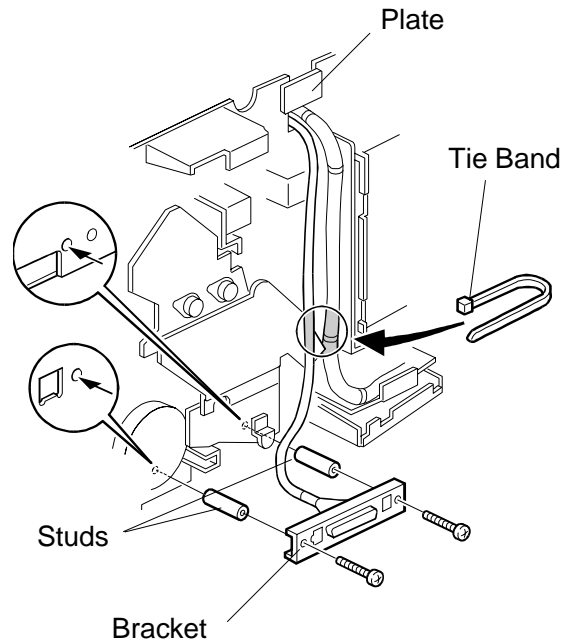
3.3.6 VT2200

1. Remove the rear and front covers
    of the Priport.

2. Mount Shielded Cable Interface (4).
    a) Mount two Studs (24) on the rear
       chassis of the Priport.
    b) Remove bottom plate of the
       Priport.
    c) Thread the Shielded Cable (4)
       from the rear chassis to the front
       chassis under the Priport body.
    d) Reinstall the bottom plate.
    e) Mount the Bracket of the
       Shielded Cable (4) on the Studs
       (8) using two Phillips Screws
       M4x8 (26).

Stud

Flat Cable
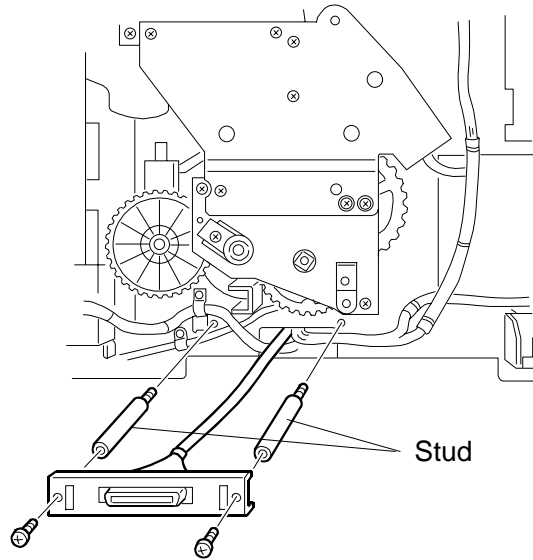
3. Mount Printed Circuit Board
    Interface (2).
    a) Mount four Studs (25) on the
       front chassis of the Priport.
    b) Connect the Ribbon Cable (12)
       to the MPU board of the Priport.
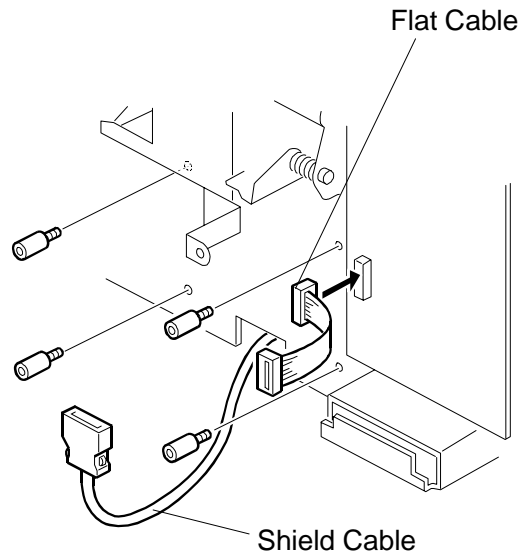
Shield Cable

c) Attach the Printed Circuit Board Interface (2) to the Studs (25) using four M3x25 Screws (20).

d) Connect the free end of the Ribbon Cable (27) to CN102 of the Printed Circuit Board Interface (2).

e) Connect the Shielded Cable (4) to CN101 of the Printed Circuit Board Interface (2).

f) Set all switches on DIPSW 101 of the Printed Circuit Board Interface (2) to OFF.

g) Set DIPSW 103-8 of the Mainframe MPU Board (Online On/Off) to ON.

Installation

Printed Circuit Board

4. Pop out the communication port cover plate from the lower center of the rear cover panel.

5. Reinstall the rear and front cover panels of the Priport.
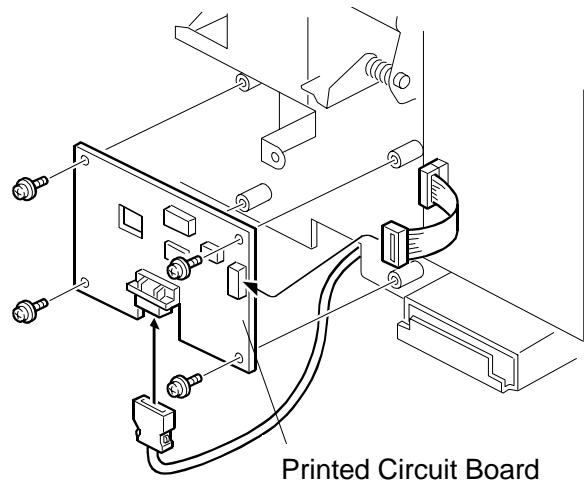
3.3.7 VT1730/1800

1. Remove the rear and front covers of the Priport.

2. Mount Shielded Cable (4).
   a) Mount two Studs (5) with Washers (6) on the rear chassis of the Priport.
   b) Remove the cover panel under the paper feed table.
   c) Thread the Shielded Cable (4) from the rear chassis to the front chassis under the Priport body.
   d) Reinstall the cover panel under the paper feed table.
   e) Mount the Bracket of the Shielded Cable (4) onto the Studs (5) using Phillips M4x8 screws (26).
   f) Mount the Bracket (8) to the bracket of the front chassis using Phillips M4x6 screws (21).
   g) Tie the Shielded Cable (4) to the Bracket (21) using Tie Band.

Washer

Studs

Shielded Cable

Bracket
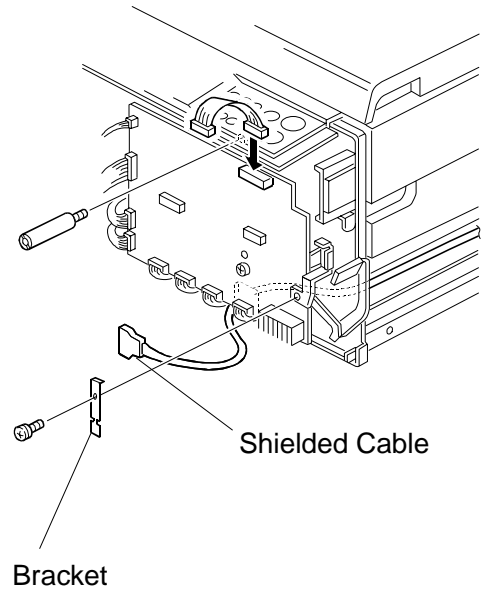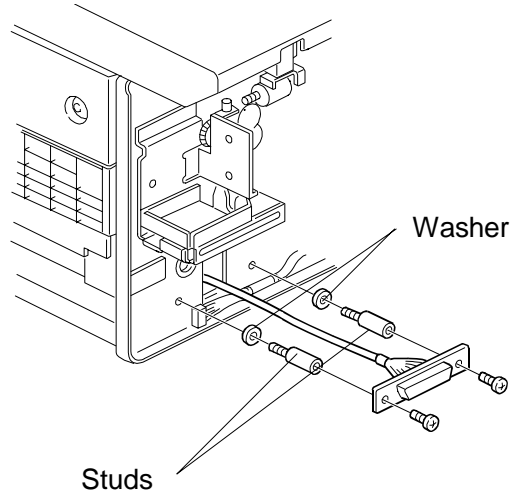
3. Mount the Printed Circuit Board Interface (2).
   a) Mount a Stud (7) on the front chassis of the Priport.
   b) Remove the left screw securing DIP 103 to the Mainframe MPU.
   c) Connect the Ribbon Cable (12) to the MPU Board.
   d) Attach Colored Spacer (14) to the lower left corner of the Printed Circuit Board Interface (2) using one Phillips M3x35 screw (9).
   e) Mount the Printed Circuit Board Interface (2) using three Phillips Screws with Flat Washers (Black) M3x6 (30).
   f) Connect the free end of the Ribbon Cable (12) to CN102 of the Printed Circuit Board Interface (2).
   g) Connect the Shielded Cable (4) to CN101 of the Printed Circuit Board Interface (2).
   h) Set all switched of DIPSW 101 of the Printed Circuit Board Interface (2) to OFF.

Flat Cable

Colored Spacer

Printed Circuit Board

Phillips Screw M3x35
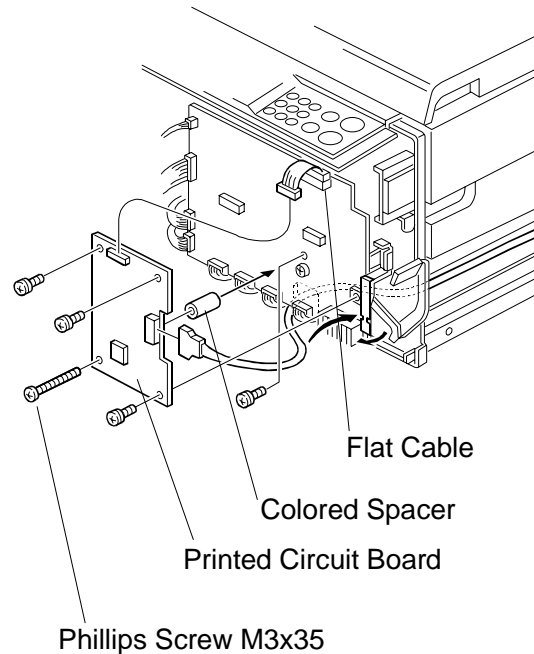
Installation

NOTE: The On-line key on the operation panel is enabled automatically when the interface board is connected to the MPU at power on.

4. OPERATION VERIFICATION

Operation verification of the Controller consists of using the Controller with a computer and a PRIPORT to verify that all I/O ports function properly.

Performing a successful operational verification provides a high degree of confidence that the controller and PRIPORT to which it is attached are operating normally.

4.1 TOOLS

The following items are needed to perform an operational verification of the Controller. Items marked with (*) are included in the Service Kit (see Section 5.1.2).
1) A PRIPORT.
2) A PRIPORT-to-Controller cable (*).
3) A PC with a LAN card installed running Windows 95 with IE4.01 SP1, or Windows 98. The PC must be set up to communicate via IPX/SPX and TCP/IP protocols, and have the following programs installed:
   a) Controller utility software and drivers[1],
   b) Proper Priport printer drivers[1],
   c) IPX Redirector software[1]
4) A MAC running OS 7.6.1 or later operating system.
5) The Installation CD (*).
6) A mini-centronics computer-to-Controller cable (*).
7) A cross-connect LAN cable (*).
8) An AppleTalk cable (*).

[1] included on the Installation or Service CDs. (See Section 5.1.2 for the Service CDs.)

Operation Verification

4.2 TESTS

Verification of correct operation of all ports and status lights verifies that the Controller is operating normally.

4.2.1 PRELIMINARY VERIFICATION OF PRIPORT AND VIDEO INTERFACE OPERATION

1) Verify that the following parts are properly connected:
   a) I/F Board to the Priport Main Board (IPU Board),
   b) Shielded Cable to the I/F Board,
   c) All other parts of the I/F Kit.
2) Turn the Priport on and, while it is offline (i.e., Online OFF is selected), verify that,
   a) It can produce a good master from a scanned original, and
   b) It can print from the master made of the scanned original.
3) Enable the "Online Mode" while the Priport is in the SP-MODE, and verify that the
   a) The Online LED illuminates when the Online Key is pressed, and
   b) No error is displayed on LCD of Priport. If so, recover from the error.

4.2.2 PROCEDURE TO VERIFY CONTROLLER POWER ON SEQUENCE AND PRIPORT INTERFACE

1) If not previously done, perform operation verification procedure 4.2.1.
2) Properly attach a video cable such as that supplied in the Service Kit (see Section 5.1.2) between the Controller and Priport.
3) Power on the Priport.
4) Put the Priport ONLINE.
5) Set the Priport ready for master making and printing.
6) Wait while the Controller conducts its turn-on self-diagnostic test (takes about thirty seconds.)
7) Check the Controller LED status lights:
   a) The left red and right yellow lights flash alternately when the power-on self-diagnostic test is in progress.
   b) The Controller is ready for printing when the self-diagnostic test is finished and the left light is green (the right light is dark).
   NOTE: A solid green left status light with the right status light off verifies correct Controller power on process.

8) When the Controller is ready for printing, put paper into the Priport input tray and set Auto Cycle ON.
9) Press the Diagnostic Test Page button on the back of the controller. The left green light will start to flash slowly, indicating the controller is in the process of creating a Diagnostic Test Page.
10) Master making should begin when the right right light starts to flash slowly.
11) Printing should begin when the left green and right green lights flash alternately.
   NOTE: A correctly generated/printed Diagnostic Test Page verifies correct operation of the Controller's digital duplicator port.

4.2.3 PROCEDURE TO VERIFY THE CONTROLLER'S PARALLEL AND LAN PORTS

Operation Verification

1) If not previously done, perform operation verification procedures 4.2.1 and 4.2.2.
2) Connect a mini-centronics cable such as that supplied in Service Kit (see Section 5.1.2) between the PC and the Controller.
3) If not previously done, install the Controller software and drivers onto the PC. Make sure to install the printer drivers specific to the digital duplicator (Priport) model with which you are working. Make sure the port to which the printer is attached is LPT1:.
4) Select either the PCL or PS3 printer driver for the Priport and print the Windows Test Page from the Printer Properties of the printer driver:
   a) Put paper into the input tray of the Priport and set Auto Cycle on,
   b) In the Printers Folder, right-click on the Priport printer driver, select Properties, then locate and click on Print Test Page,
   NOTE: A correct printout of the Windows Test Page verifies correct operation of the Controller's parallel port.
5) If not previously done, install the IPX Redirector program onto the PC (located on the Installation or Service CDs: see Section 5.1.2 for the Service CDs).
6) Connect a cross-connect LAN cable such as that supplied in the Service Kit (see Section 5.1.2) between the PC and the Controller.

7) Select either the PCL or PS3 printer driver for the Priport and print the Windows Test Page from the Printer Properties of the printer driver, this time using the LAN port:
   a) In the Printers Folder, right-click on the Priport printer driver, select Properties, then click on Details.
   b) Under 'Print to the following port:', select the LAN port belonging to the Controller as identified by **(OTS Ethernet option)**, and click **Apply**.
   c) Click on the **General** tab, then locate and click on **Print Test Page**,

   NOTE: A correct printout of the Windows Test Page verifies correct operation of the Controller's LAN port.

4.2.4 PROCEDURE TO VERIFY THE CONTROLLER'S LOCALTALK PORT

1) If not previously done, perform operation verification procedures 4.2.1, 4.2.2, and 4.2.3.
2) Connect an AppleTalk cable such as that supplied in the Service Kit (see Section 5.1.2) between the MAC and the Controller.
3) If not previously done, install the Controller software and drivers onto the MAC. Make sure to install the printer drivers specific to the digital duplicator (Priport) model with which you are working.
4) Select a graphic or text file and print it to the Controller/Priport.

NOTE: A correct printout of the graphic or text file verifies correct operation of the Controller's AppleTalk port.

5. TROUBLESHOOTING

5.1 BASIC STEPS FOR TROUBLESHOOTING

5.1.1 CATEGORIZING PROBLEMS

When a problem is reported, it should be categorized according to the data or information collected from the customer regarding its occurrence. This data falls into three categories:

1) the steps required to generate the problem,

2) the conditions under which the problem occurs, and

3) the frequency of occurrence.

The process of categorization should proceed as follows:

```
Problem──┬── Hardware ──┬── Malfunction of Priport ──┬── Mainframe
         │              │                            └── I/F Board
         │              │
         │              ├── Malfunction of Controller ──┬── Mainframe
         │              │                               └── Memory
         │              │
         │              └── Limitation of the Hardware
         │
         └── Software ──┬── Controller Software Bug ──┬── Driver
                        │                             └── Firmware
                        │
                        └── Limitation of the Controller
```
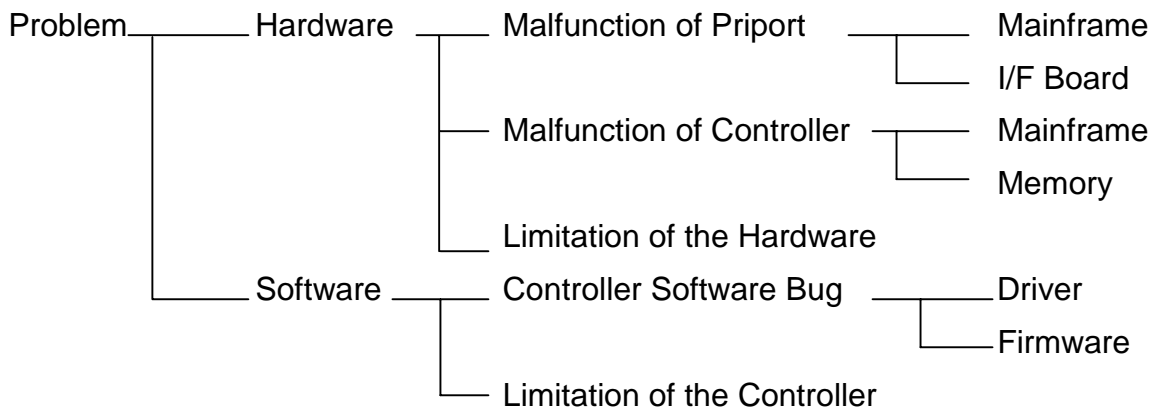
Trouble-shooting

5.1.2 EQUIPMENT NECESSARY FOR TROUBLESHOOTING

The following items are needed, as well as a working Priport and Win95/98 computer.

> **NOTE:** The following items are available as the Service Kit. Refer to section 7 for the part number.

1) Cables for operational verification of the controller.
   a) 1, PRIPORT-to-controller video cable.
   b) 1, computer-to-controller parallel cable.
   c) 1, 5 meter AppleTalk cable.
   d) 1, 5 meter normal LAN "patch" cable.

2) Set of all Installation CDROMs (all mfr Installation CDs and one Companion CD) allowing setup of any PRIPORT and any controller model number.

3) Cables for service/firmware updates.
   a) 1, serial ribbon cable: 10pin header to DB9F.
   b) 1, 3 meter extension serial cable, DB9M to DB9F.
   c) 1, 5 meter cross-over LAN cable for peer-to-peer connection without a hub

4) Special software or tools for troubleshooting or updates.
   a) 1, CDROM containing LAN Tools and service software.

5.1.3 INFORMATION NECESSARY FOR TROUBLESHOOTING

The following information should be collected before troubleshooting begins:
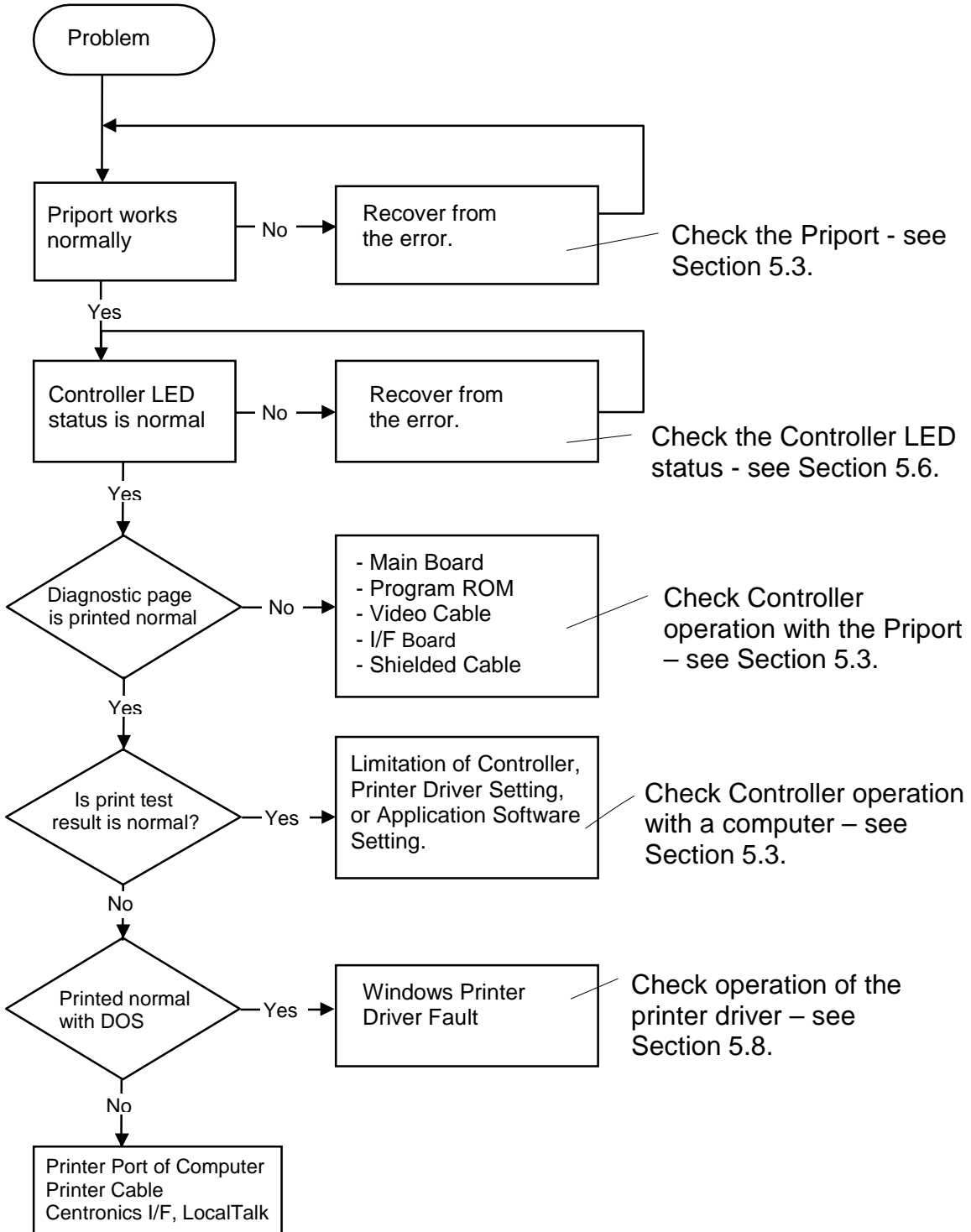- A Diagnostic Test Page from the controller,
- The name and version of the printer driver,
- A print sample showing the problem,
- The printer settings of the computer, and
- The name and version of the application software that generated the page.

5.2 TROUBLESHOOTING FLOW

5.2.1 TROUBLESHOOTING FLOWCHART

```
                    ┌──────────────┐
                   (    Problem     )
                    └──────┬───────┘
                           │
           ┌───────────────┼────────────────────────┐
           │               ▼                         │
           │    ┌──────────────────┐   No  ┌──────────────────┐
           │    │ Priport works    ├──────►│ Recover from     │     Check the Priport - see
           │    │ normally         │       │ the error.       │     Section 5.3.
           │    └────────┬─────────┘       └──────────────────┘
           │          Yes│
           │             ▼
           │    ┌──────────────────┐   No  ┌──────────────────┐
           │    │ Controller LED   ├──────►│ Recover from     │     Check the Controller LED
           │    │ status is normal │       │ the error.       │     status - see Section 5.6.
           │    └────────┬─────────┘       └──────────────────┘
           │          Yes│
           │             ▼
           │       ◇──────────────◇  No   ┌──────────────────┐
           │      ╱ Diagnostic page ╲─────►│ - Main Board     │     Check Controller
           │      ╲ is printed normal╱     │ - Program ROM    │     operation with the Priport
           │       ◇──────────────◇        │ - Video Cable    │     – see Section 5.3.
           │          Yes│                  │ - I/F Board      │
           │             ▼                  │ - Shielded Cable │
           │       ◇──────────────◇        └──────────────────┘
           │      ╱ Is print test   ╲ Yes  ┌──────────────────┐
           │      ╲ result is normal?╱─────►│ Limitation of    │     Check Controller operation
           │       ◇──────────────◇        │ Controller,      │     with a computer – see
           │          No │                  │ Printer Driver   │     Section 5.3.
           │             ▼                  │ Setting, or      │
           │                                │ Application      │
           │                                │ Software Setting.│
           │                                └──────────────────┘
           │       ◇──────────────◇        ┌──────────────────┐
           │      ╱ Printed normal  ╲ Yes  │ Windows Printer  │     Check operation of the
           │      ╲ with DOS         ╱─────►│ Driver Fault     │     printer driver – see
           │       ◇──────────────◇        └──────────────────┘     Section 5.8.
           │          No │
           │             ▼
           │    ┌──────────────────────┐
           │    │ Printer Port of       │
           └────│ Computer              │
                │ Printer Cable         │
                │ Centronics I/F,       │
                │ LocalTalk             │
                └──────────────────────┘
```

Trouble-shooting

5.3 PRIPORT/CONTROLLER FAILURE IDENTIFICATION

For each of the following failure modes, see the corresponding operation verification procedure to assist with the troubleshooting process:

Apparent Failure Mode	Operation Verification Procedure
Priport operation *without the Controller.*	Section 4.2.1
Priport/Controller operation *without a computer.*	Section 4.2.2
Priport/Controller operation *with a computer.*	For operation with a PC: Section 4.2.3. For operation with a MAC: Section 4.2.4.

Use the operation verification procedure indicated to help identify in which component the problem lies.

5.4 SUBASSEMBLY TROUBLESHOOTING

Once you have positively identified a problem with the Controller, it will be necessary to troubleshoot the problem to the assembly level, and replace the faulty assembly.

5.4.1 IDENTIFYING THE FAULTY ASSEMBLY

A problem or fault must be traced to one of the subassemblies of the Controller. As a general rule, it is best to check the subassemblies in order according to their respective expected failure rates, keeping in mind the failure symptoms. Therefore it is generally recommended that the boards be checked in the following order:
1) the PSU board,
2) one or more of the boards that plugs into the Main Board, or
3) the Main Board itself.

IMPORTANT: The procedures to identify in which component the problem lies may be used to verify the operation of the indicated subassembly.   If operation of any particular subassembly cannot be verified, replace the entire subassembly – do not attempt component-level repair.

Trouble-shooting

5.5 NIB FIRMWARE AND MEMORY UPGRADE TROUBLESHOOTING

To solve any problems when updating NIB firmware, refer to sections 6.4.2.3 "Miscellaneous Support Procedures to the NIB Firmware Update" and 6.4.2.4 "NIB Firmware Update FAQs".

For the memory upgrade, refer to sections 6.5.2 "Testing a Memory upgrade" and 6.5.3 "Troubleshooting a Memory Upgrade".

5.6 LED STATUS LIGHT SEQUENCE AND CONDITIONS

5.6.1 EVENT: POWER ON

Status	Contents	Check Point
All LEDs are off.	No power supply.	• No AC power, AC cord not properly connected, or power supply failure in the Controller.
Yellow and red LEDs are flashing alternately.	Self-diagnostic test before ready.	• If this occurs for more than 60 seconds and network board (NIB) lights are also flashing yellow and green, check to see if NIB jumper OP2 is set to OFF instead of FACT.
Left-green LED is on.	Ready.	_____
Left-green LED is flashing.	Controller is processing data.	• Check to see if there is a print job in the print queue of the network server, the print manager, or the print spooler in computer.
Left-green LED is on and right-green LED is flashing.	Master making.	• Check to see if there is a print job in the print queue of the network server, the print manager, or the print spooler in computer. • Check to see if the Diagnostic Test Page button is stuck.
Left-green and right-green LEDs are flashing alternately.	Printing.	• Check to see that the PRIPORT is making copies.
Left-green and right-green LEDs are flashing simultaneously.	Proof printing.	_____

Trouble-shooting

Status	Contents	Check Point
Yellow LED is flashing.	No response from the PRIPORT.	• Check that the PRIPORT is turned on. • Check that the Controller is properly connected to the PRIPORT with the provided cable. • Check that the switches on DIPSW 101 of the Type600 Interface board are all set to the OFF position. • Check that the PRIPORT is On-Line (i.e., ON-LINE enabled). • Check that the PRIPORT Interface Card inside the Controller is properly connected to the Main Board at J2 through the ribbon cable.
Red and yellow LEDs are flashing simultaneously.	PRIPORT Error.	• Check for an error message display on the PRIPORT control panel. • Check that the Controller is properly connected to the PRIPORT.

Status	Contents	Check Point
The Red LED is flashing, or is on longer than 30 seconds, or the Red and Yellow LED's stay flashing alternately for greater than one minute.	Controller Error.	• Check that the Flash ROM SIMM inside the Controller is inserted properly into its socket. • Check to see that only a single RAM SIMM is installed into slot 1 nearest the edge of the Main Board. • Check that the dip switches of SW1 on the Main Board are set to defaults: 1 and 2 ON, 3 and 4 OFF. • Check that the NIB has jumper OP2 set OFF (not set to FACT). • Check that JP3 on the Main Board has jumpers 1-2 and 3-4 set to boot the on-board ROM.

Trouble-shooting

5.6.2 EVENT: PUSH THE DIAGNOSTIC TEST PAGE BUTTON

Status	Contents	Check Point
Left-green LED is flashing.	Data Processing.	———
Left-green LED is on and right-green LED is flashing.	Master making.	———
Left-green and right -green LEDs are flashing alternately.	Printing.	———
Left-green and right-green LEDs are flashing simultaneously.	Proof printing.	———
Yellow LED is flashing.	No response from the PRIPORT.	• Check to see that the PRIPORT is turned on. • Check to see that the Controller is properly connected to the PRIPORT. • Check to see that the switches on DIPSW 101 are all set to the OFF position. • Turn the PRIPORT on first, then turn on the Controller. • Check to see that the PRIPORT is Online. • Check to see that the PRIPORT Card inside the Controller is properly connected to the Main Board at J2 through the ribbon cable.
Red and yellow LEDs are flashing simultaneously.	PRIPORT Error.	• Check for an error message on the PRIPORT. • Check to make sure the Controller is properly connected to the PRIPORT.

5.6.3 EVENT: SEND A PRINT JOB

Status	Contents	Check Point
Left-green LED is on.	Ready.	• Check to see that the computer is connected Properly to the controller.
Left-green LED is flashing.	Controller is processing data.	————
Left-green LED is on and right-green LED is flashing.	Master making.	————
Left-green and right -green LEDs are flashing alternately.	Printing.	• Verify that the PRIPORT is printing copies.
Left-green and right-green LEDs are flashing simultaneously.	Proof printing.	• Press Print on the PRIPORT to continue printing the requested number of copies.
Yellow LED is flashing.	No response from the PRIPORT.	• Check to make sure the PRIPORT is powered on. • Check to see that the Controller is properly connected to the PRIPORT. • Check to see that the switched of DIPSW 101 are all in the OFF position. • Turn the PRIPORT on first, then on the Controller. • Check to make sure the Program ROM or RAM SIMM sick inside the Controller is inserted properly into its connector.

Trouble-
shooting

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Status	Contents	Check Point
Red and yellow LEDs are flashing simultaneously.	PRIPORT Error.	• Check for an error message on the PRIPORT. • Check to make sure the Controller is properly connected to the PRIPORT.

5.7 DIAGNOSTIC TEST PAGE CONTENTS

Configuration and Settings:

Model Number:	CPIF26	Installed RAM:	32MB	Duplicator resolution	400 DPI
Model Brand	Ricoh	Standard Ports:	Parallel AT	Video I/F Version	4.0
Locale Setting	Europe	Additional Port:	Network	Default Paper Size:	A4
PostScript Version:	3010.106	Ethernet Address:	00:40:af:79:XX.XX	AutoCycle:	ON
Post Script ROM Ver:	911000842	IP Address	0.0.0.0	PCL Symbol Set:	PC-8
Flash ROM Version:	17.099.022	Ethertalk Name:	Controller	RAM Font Cache	0MB
Controller Serial No.	AU4YYMMXXXX	IPX Printer Name	OTS_ZZZZZZZ	RAM Disk Size	384KB
CPU Board Serial No.	Yyyyyy	Network Serial No.	ZZZZZZZ		

Explanation of variables in fields above:

Controller Serial No.:   AU4   YYMM   XXXX

                          Prefix   Production Year and Month   Serial Number

CPU Board Serial No.:   Y   yyyyy

                          Board Revision Level   Serial Number

Network Serial No.:   ZZZZZZ

                          SN# assigned at OEM vendor (saved in NIB NVRAM)

IPX Printer Name: OTS_   ZZZZZZ

                          Prefix   Network Serial Number (saved in NIB NVRAM)

Trouble-shooting

NOTE: The contents of "Configuration and Settings" shown above is subject to change.

5.8 CHECKING PRINTER DRIVER OPERATION

If the Windows Test Page does not print, or doesn't look right, check printer driver operation using the following steps.

1) Select the Details tab in the Properties Menu of the Printer Driver,
2) Change Port connection to "File :",
3) Click on the Apply button, select the General Tab and click on the Print Test Page button,
4) Set the file name (e.g., "test"), set the disk/directory location, and save the file,
5) Click 'YES' when the message pops up asking whether the test page printed correctly,
6) Open an MSDOS session (Start-Programs-MSDOS Prompt).
7) Check that the Priport and Controller are ready for printing, then execute the following command at the MS DOS Prompt.

<div align="center">copy /b test.prn lpt1 ↵</div>

NOTE: a) Always input "/b" after "copy".
   b) The above example is if the file name saved in the step d) is "test.prn".
   c) If the controller is connected to the second port of the computer, replace "lpt1" with "lpt2."

8) Input "exit ↵"and exit from MS DOS prompt.
9) If the image is printed correctly, reset the printer driver to print to the printer port by doing the following:
   a) select the Details tab in Properties Menu of the Printer Driver
   b) change the Port back to the original setting (e.g., LPT1: or LPT2:),
   c) click Apply.
   Failure to do this will result in subsequent print jobs using this printer driver will be sent to a file on the hard drive instead of the printer.

If the image did not print correctly, there is a problem with the printer driver – it may be corrupt or out-of-date. Delete the printer driver and replace with a version from the Installation CD. Then repeat this process.

5.9 COLLECTING INFORMATION FOR A PROBLEM REPORT

The Problem Report should include the following items:

- A Diagnostic Test Page printed by the Controller.
- The name of computer manufacturer, and the model.
- The type of CPU, CPU speed and number of megabytes of RAM in the computer.
- The model name and number of the PRIPORT.
- The name and version of the printer driver being used.
- The port to which the Printer Driver is connected (i.e., LPT1:, IPX, etc.).
- The EPROM version of the PC Controller I/F Kit Printed Circuit Board (for the JP series, the serial number of the Priport).
- The color and flashing pattern of both the Controller status lights at time the problem is observed.
- The name and version of the application software (i.e., Microsoft Word 97, Adobe PageMaker, etc.).
- The paper size and orientation selected in the application software's Print menu.
- A sample printout showing the problem.

Trouble-shooting

6. DISASSEMBLY / ASSEMBLY

6.1 REQUIRED TOOLS AND PRECAUTIONS

- Anti-static wrist strap.

- #1 Phillips screwdriver.

- #2 Phillips screwdriver.

- 3/16" thin-wall nut driver or wrench.

DANGER

The Controller's power supply becomes hazardous with the chassis opened. It exposes you to severe electrical shock if you do not disconnect the power cord before opening.

CAUTION

The electronic components in this unit can be damaged by static discharge. Please ensure that you are properly grounded before touching any portion of the electronics. Also, touch the chassis with your finger before connecting test cables, setting switches or reattaching components.

**Disassembly
/Assembly**

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6.2 DISASSEMBLY PROCEDURES

6.2.1 PREPARATION

1. Identify a static-safe area for storage of the electronic components to be removed.

2. Disconnect the power cable.

6.2.2 REMOVING THE TOP COVER AND FRONT PANEL BEZEL

1. Turn the Controller over and lay it on its back.

2. Use the #1 Phillips screwdriver to remove the four 4-40 x ¼ " screws in the feet to unfasten the lid. Set the screws and feet aside for later re-assembly.

3. With the bottom facing you and the front facing up, grab both sides of the controller and press the back against your knee. Gently slide the top cover down off the back of the chassis.

4. Slide top cover away from front plastic bezel.

5. Remove the front plastic bezel by pressing in on one of the latch tabs

**NOTE: Use caution not to break the latch tabs.**
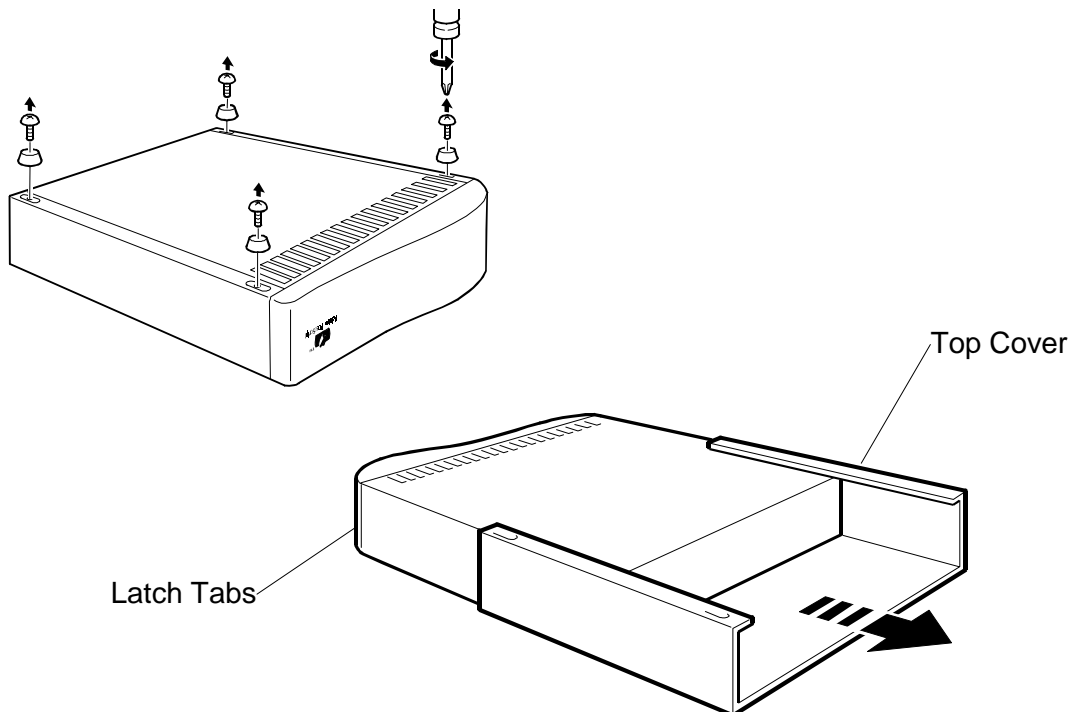
6.2.3 REMOVING THE PRIPORT INTERFACE.

1. Remove the top cover (see Section 6.2.2).

2. Remove the two 4-40 x ¼" x 4-40 jack screws (hex-shaped mounting studs) securing the digital duplicator port DB25 connector to the chassis rear panel, using the 3/16" nut driver or wrench.

3. Gently lift the interface card back to clear the upper lip on the chassis rear panel, and rotate it to a vertical position.

4. Disconnect the ribbon cable at the end of the card connecting it to the Main Board, and set the card aside in the static-free area.

### 6.2.4 REMOVING THE NETWORK BOARD OR OPTION CARD.

1. Remove the top cover (see Section 6.2.2).

2. Remove the two 4-40 x ¼ " screws securing the faceplate of the network board (NIB) or the option (Local Printer Port) card to the chassis rear panel, using the #1 Philips screwdriver.

3. Gently lift the card back to clear the upper lip on the chassis rear panel, and rotate it to a vertical position.

4. Disconnect the ribbon cable at the end of the card connecting it to the Main Board, and set it aside in the static-free area.

Network Board — Flat Cable — Interface Port
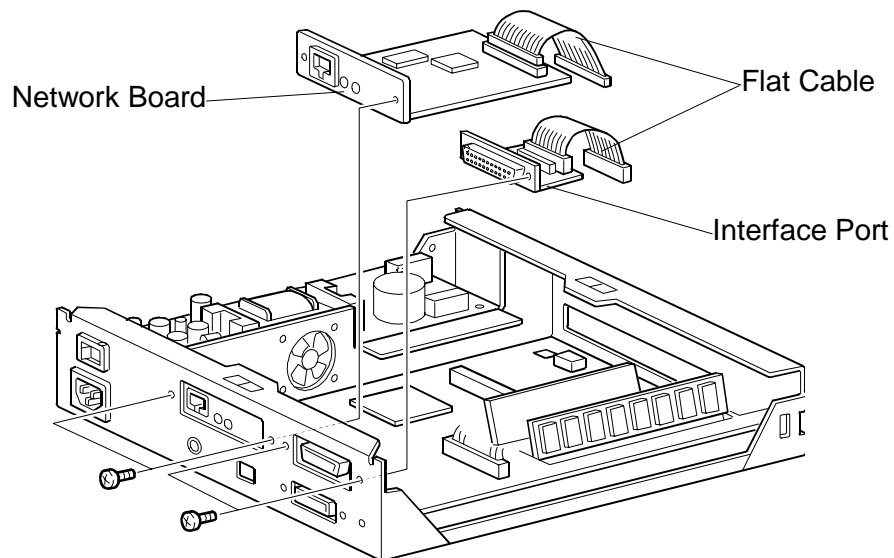
Disassembly /Assembly

6.2.5 REMOVING THE CENTRONICS PORT AND MAIN BOARD.

1. Remove the top cover (see Section 6.2.2).

2. Remove the PRIPORT interface card (see Section 6.2.3).

3. Remove the network board (NIB) or option (Local Printer Port) card (see Section 6.2.4).

4. Remove the digital duplicator port and NIB or option card ribbon cables and set them aside with the top cover screws.

5. Remove the RAM and the Flash ROM SIMM sticks from the Main Board, and place them in the static-safe area - see Section 6.4 for instructions on removing SIMM's from their respective carriers.

6. Remove the two M2.6 x 6 screws securing the mini-Centronics connector of the Main Board to the chassis rear panel, using the #1 Philips screwdriver. **IMPORTANT!** – do not lose these screws, as they are an odd size.

7. Remove three 6-32 x 7/16" screws attaching the Main Board to the chassis, using the #2 Philips screwdriver.

8. Slide the Main Board slightly forward through the front slot.
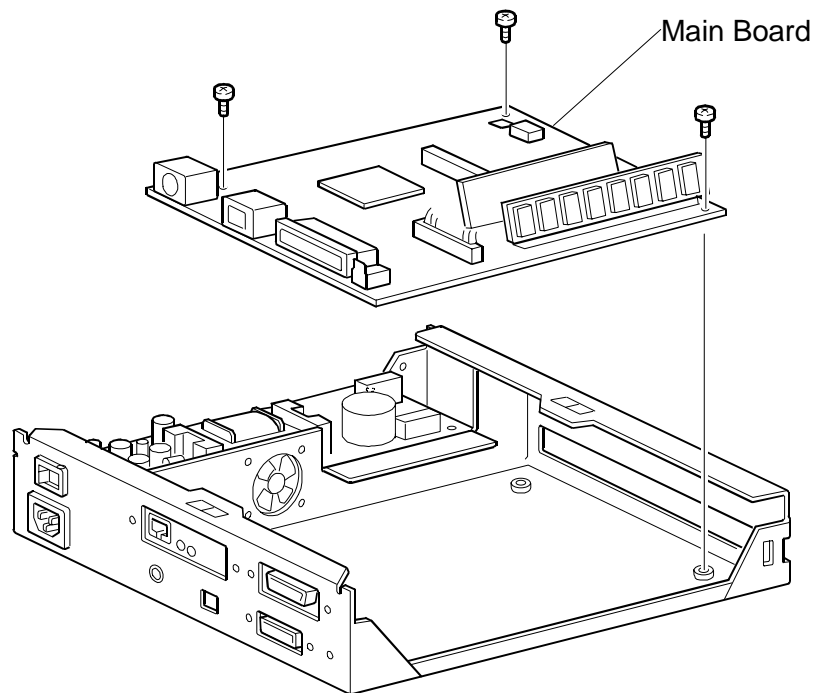

Main Board

9. Lift the rear (connector end) of the board up and back

10. Disconnect the power harness at J2.

11. Lift the Main Board out, clear of the chassis, and place it into the static-safe area.

6.2.6 REMOVING THE PSU

1. Remove the top cover (see Section 6.2.2).

2. Disconnect the AC power, Main Board, and fan cable assembles from their respective headers on the PSU.

3. Note that the PSU is secured to the chassis with four 6-32 x ¼" screws.

    IMPORTANT! – note that the 6-32 x ¼ screw going into the mounting stud nearest the ground stud DOES NOT have an integral lock washer, as do the other three screws. *The lock washer for this screw is an internal-tooth version and resides under the circuit board, between the board and the mounting stud.* This is done to satisfy UL safety requirements and must be re-assembled in the same fashion.

4. Remove the three 6-32 x ¼" screws with external-tooth locking washers and the plain 6-32 x ¼ screw attaching the PSU to the chassis, using the #2 Philips screwdriver.

5. Lift up the PSU board and recover the 6-32 internal-tooth lock washer described in 4 above. It may be stuck to the bottom of the PSU circuit board, or sitting on top of the mounting stud.

6. Lift the PSU Board out of the chassis, and place in the static-free area.

Disassembly /Assembly

Location of UL
grounding screw

PSU Board
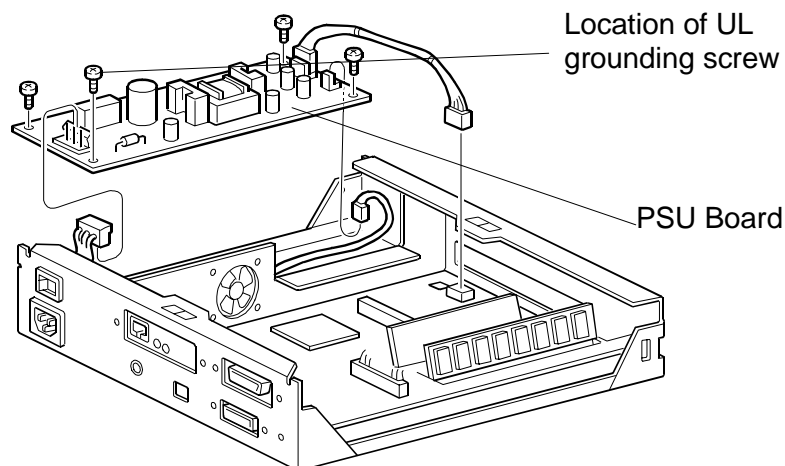
6.2.7 REPLACING THE AIR CIRCULATION FAN

1. Remove the top cover (see Section 6.2.2).

2. Remove the PSU (see Section 6.2.6).

3. Remove four 4-40 x ¾" screws securing the fan to chassis center divider.

4. Remove the fan and connecting cable.

5. Install the new fan and cable, using the four screws removed in 3 above.

6. Reinstall the PSU (see Section 6.3.2).

7. Reinstall the top cover (see Section 6.3.5).

Fan

PSU
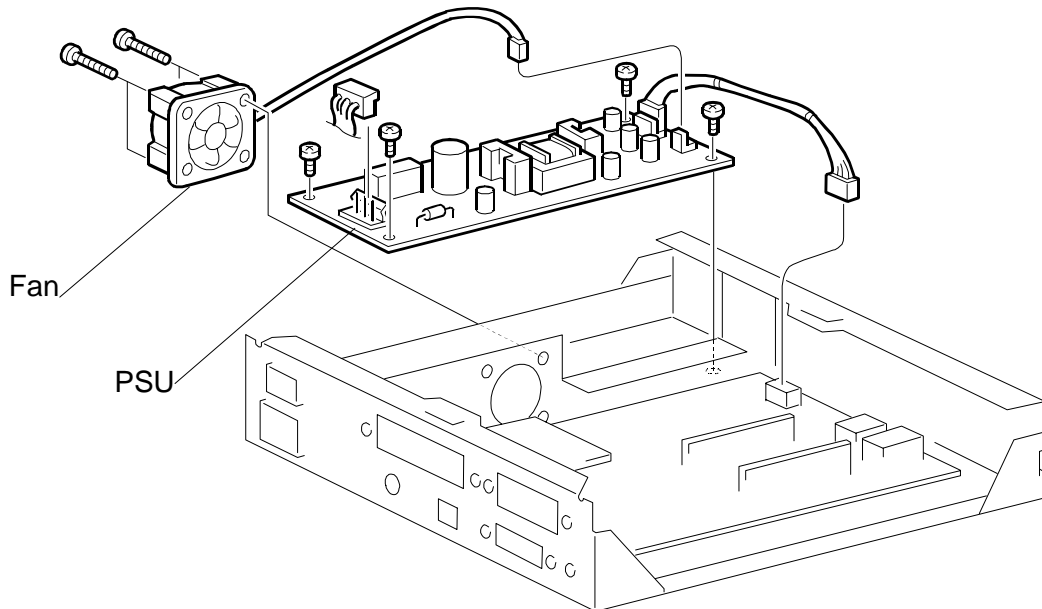
6.3 ASSEMBLY PROCEDURES

Assembly procedures are essentially the reverse of disassembly.

6.3.1 INSTALLING THE PSU

1. Place the chassis on a flat, stable surface.

2. Place the special grounding 6-32 internal-tooth lock washer on the PSU mounting stud nearest the chassis ground stud.

3. Orient the PSU board so that the fuse is located towards the back panel of the chassis.

4. Gently place the PSU board on the chassis mounting studs, aligning the four mounting holes with the holes in the studs, being careful not to knock the special grounding lock washer off of its position

5. Place the 6-32 x ¼" screw without an integral lock washer through the mounting hole of the PSU nearest the ground stud. DO NOT TIGHTEN at this time.

6. Place the three 6-32 x ¼" screws with integral lock washers in the other three PSU mounting holes.

7. Tighten all four mounting screws using the #2 Phillips screwdriver.

8. Inspect the UL grounding screw of the PSU to make sure the lock washer underneath the board is securely in the proper position.

9. Attach the fan connector to header TB3, the Main Board connector to header TB2, and AC connector to header TB1 on the PSU.

6.3.2 INSTALLING THE MAIN BOARD

1. Orient the Main Board so that the two status LEDs are at the left-front section of the chassis (from the perspective of someone looking at the front of the chassis).

2. Feed the front (status LED) edge of the Main Board through the slot in the front chassis just enough so that the rear of the board clears the lip on the rear chassis, allowing placement of the board onto the chassis mounting studs.

3. Position the board back toward the rear of the chassis such that the Diagnostic Test Page switch and the mini-centronics connector each go through their respective access holes.

4. Place three 6-32 x 7/16" screws into the three chassis mounting studs to locate the board into position. DO NOT TIGHTEN at this time.

Disassembly /Assembly

5. Place two M2.6 x 6 screws on the holes that secure the mini-centronics connector to the rear panel and tighten using the #1 Phillips screwdriver. **IMPORTANT!** – do not substitute a different size screw (e.g., M2.5 x 6) for the originals. Use only the proper screws for this connector.

6. Tighten the three 6-32 x 7/16" screws that secure the Main Board to the chassis mounting studs using the #2 Phillips screwdriver.

7. Attach the PSU connector to the header J12.

Procedures 6.3.3 through 6.3.5 assume that the PSU and Main Board have already been installed in the chassis – see Sections 6.3.1 and 6.3.2.

6.3.3 INSTALLING THE PRIPORT INTERFACE CARD

1. Position the DB25 connector (J1) of the card through the rear chassis slot, aligning the threaded mounting holes with those in the rear chassis.

2. Attach the DB25 connector (J1) to the rear chassis using two 4-40 x ¼" x 4-40 jack screws (hex-shaped mounting studs), with the 3/16 nut driver or wrench.

3. Attach the ribbon cable from J2 on the card to the DUPLICATOR header J2 on the Main Board.

6.3.4 INSTALLING THE NIB OR OPTION CARD

1. Position the faceplate of the card into the rear chassis slot, aligning the screw holes with those in the rear chassis.

2. Attach the faceplate to the rear chassis using the two 4-40 x ¼ mounting screws, with the #1 Phillips screwdriver.

3. Attach the ribbon cable to the card, then to the proper connector on the Main Board (NIB connects to J8, Option to J9), taking care to not twist the ribbon cable.

6.3.5 INSTALLING THE TOP COVER AND FRONT PANEL BEZEL OF THE CONTROLLER

1. Carefully re-attach the front bezel, taking care to not break the locking tabs.

2. Slide the cover back onto the chassis from the back of the Controller.

3. Gently use a small flat-blade screwdriver to pry the cover front lip slightly up to clear the lip of the front chassis frame.

4. Using both hands, grab the sides and press the front against your knee or torso. Be careful to not damage or scratch the front bezel if it is attached. Repeat this process until there is no gap between the lid and the front bezel. If completed correctly, the front bezel should be snug against the front chassis panel and the top cover, and will not rattle.

5. Turn the unit over and lay it on its back.

6. Attach four rubber feet with concentric 4-40 x ¼" screws through the top cover holes to the four threaded mounting holes on the bottom of the chassis, with the #1 Phillips screwdriver.

Disassembly /Assembly

6.4   UPGRADING CONTROLLER FIRMWARE

6.4.1 MAIN BOARD FIRMWARE UPDATE INSTRUCTIONS

Two (2) ROM images for CPIF26 can be updated:

1) The Adobe firmware (resides in an on-board FLASH ROM chip on the Main Board).

2) The CPIF26 firmware (resides on a SIMM connected to the Main Board).

The instructions below describe the procedures to perform either or both or these updates.

6.4.1.1   *Materials and Files*

Obtain and have ready to use the following materials and equipment. All items marked with a (*) are included in the Controller Service Kit (see Section 5.1.2).

6.4.1.1.1   *Hardware*

- An **RS-232 ribbon cable adapter** (*) with a DB9F connector on one end and a 10-pin header on the other.
- A **2 meter or longer RS-232 extension serial cable** (*) with a male DB9 connector on one end and a female DB9 connector on the other.
- An **IEEE 1284 Bi-directional mini-centronics cable** (*) that attaches between your PC and the Controller unit.
- A **PC with an IEEE 1284 Bi-directional interface port and an available serial port running the Windows 95 with IE4.01 SP1, or Windows 98 operating system.**
- A **PRIPORT-to-controller video cable** (*).
- A **PRIPORT**.

6.4.1.1.2   *Software*

- The **ROM image file** must be downloaded from your local support area, the Elesys web site, or the Service CDs (see Section 5.1.2 for the Service CDs), unZIPp'd if necessary, and stored in a local directory on your computer:
- The **parallel port download utility** (*) must be downloaded from the Service CDs into *the same working directory on your local PC where you stored the ROM images*. The PC DOS IEEE 1284 centronics download utility physically downloads the ROM image into the CPIF26 Flash ROMs:
- As a reference, view or print "*2.1.2 Main Board Layout Diagram*" to locate connectors and jumpers.

6.4.1.2   Prepare the Controller and computer.

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DANGER

The Controller's power supply becomes hazardous with the chassis opened. It exposes you to severe electrical shock if you do not disconnect the power cord before opening.

</div>

<div style="border:1px solid black">

CAUTION

The electronic components in this unit can be damaged by static discharge. Please ensure that you are properly grounded before touching any portion of the electronics. Also, touch the chassis with your finger before connecting test cables, setting switches or reattaching components.

</div>

Prepare the controller for the ROM update process by doing the following:

1. Turn off and unplug the power to the CPIF 26 unit. Remove all other cables from the back panel.
2. Remove the top cover and front bezel using the procedure outlined in Section 6.2.2.
3. Remove the network board (NIB) or option (Local Printer Port) card using the procedure outlined in Section 6.2.4.
4. Locate the Serial Port header JP2 towards the rear of the main board. Attach the header end of the RS-232 ribbon cable to JP2. Make sure pin 1 (with a red stripe or marked on the cable) is towards the front of the Controller.
5. Attach the DB9 end of the cable to one end of the extension RS232 serial cable. Attach the other end of the extension cable to the available serial COM port on your computer.
6. On the computer, start an MSDOS session and get into the working directory where you downloaded the ROM image and centdown files.

Disassembly /Assembly

7. Configure or setup either the standard Windows Hyperterminal or a substitute on your PC:
   - Press Start\Programs\Accessaries\Communications\Hyperterminal
   - Choose "connect direct to COM1" or "COM2" as appropriate
   - Set to 9600-8-N-1
   - Locate DIP switch SW1 under PRIPORT interface adapter board.
   - Set SW 8 ON (SW 4 on Production boards) to enter monitor mode.
   - Connect a parallel cable to unit. **IMPORTANT**: Make sure no other devices (e.g., ZIP drives) are connected to the parallel port.

DANGER

To complete this process, you must reattach the power cable and operate the unit with an exposed power supply. Use caution to avoid touching any part of the power supply, as it contains exposed high voltages capable of causing a lethal electrical shock.

   - Re-connect the power cord to the controller and turn it on.
   - In Hyperterm, press Enter a few times
   - If you've set the baud rate correctly, you should get a single ">" prompt:
     r4300>

6.4.1.3   *CPIF26 Firmware SIMM Flash ROM update procedure*

To update the CPIF26 SIMM flash ROM:
- Press ENTER to get the single prompt:
    r4300>
- Type "z" and ENTER.
- Now you get a double ">>" prompt:
    r4300>>
- Type "boot cent" .
- A message appears indicating it is waiting for the centronics port.
- Click on the MSDOS window and type:
  centdown eleXXX.rom (where "eleXXX.rom" should be replaced by the actual file name for the version of the CPIF26 ROM you are downloading).
- Go to the Hyperterm window and answer "Y".
- Click on the DOS window again to activate it.
- The download commences automatically. The monitor will first indicate it is erasing Bank 1, the SIMM flash ROM. Then it will count up by percentage complete. (The selection of which bank to download into is done automatically for you.)
- When finished, it will show the CPU registry and say "buss error" - ignore this error, since it is a normal part of the download process.

If you are updating only the CPIF26 Flash ROM, skip to section 6.4.1.5.

- Cycle power on the Controller.

Disassembly /Assembly

6.4.1.4   *Adobe Flash ROM update*

To update in the Adobe on-board flash ROM:
- Press ENTER to find the single prompt:
    r4300>
- Type "z" and ENTER.
- Now you get a double prompt:
    r4300>>
- Type "boot cent" .
- A message appears indicating it's waiting on the centronics port.
- Now in a DOS window, type:
  centdown adobe.rom (where "adobe.rom" should be replaced by the actual file name for the new version of the Adobe ROM).
- Go to the Hyperterm window and answer "Y".
- Click on the DOS window again to activate it.
- The download automatically. The monitor will first indicate it is erasing Bank 0, which is the on-board flash ROM. Then it will count up by percentage complete. (The selection of which bank to download into is done automatically for you.)
- When finished, it will show the CPU registry and say "buss error" - ignore this error, since it is a normal part of the download process.
- Cycle power to get the single prompt again.

6.4.1.5   Reset to factory default NVRAM settings.

- Set SW 7 (SW 3 on Production boards) to ON (SW 1-4 are OFF, SW 5-8 are all ON;
  SW 1-4 are all ON on Production boards)
- Type: z
- Then type: boot ps
- Monitor output should say it is resetting factory defaults.
- Set SW 7 to OFF (SW 3 on Production boards)
- Cycle power and you'll get the single prompt again.
- Type: z
- Then type: boot ps
- It should say, among other things:
  Flash ROM [SIMM] Version: 17.09X.XXX
  Copyright 1998 Elesys, Inc. All rights reserved.

6.4.1.6   Check that the update procedure(s) worked.

- Set SW 8 to OFF on Beta main boards (SW 4 on Production main boards) to enable autobooting again.
- Power down the unit and disconnect the serial and parallel cables - leave power and PRIPORT cables connected.
- Reinstall the network board (NIB) or option (Local Printer Port) card using the procedure outlined in Section 6.3.4.
- Power on the unit again and print the Diagnostic Test Page by pressing the test button on the back. Verify that the new firmware revision has been updated as shown on the bottom of the Diagnostic Test Page.
- Proceed with the next section when you are satisfied that the Controller is operating properly.

6.4.1.7   Finish up.

- Disconnect the power and PRIPORT cables from the Controller.
- Replace the cover and front bezel (see Section 6.3.5).

Disassembly /Assembly

6.4.2 NIB (<u>N</u>ETWORK <u>I</u>NTERFACE <u>B</u>OARD) FIRMWARE UPDATE INSTRUCTIONS.

The NIB firmware inside the CPIF 26 is contained in a flash ROM located on the board. . It is updated using a ROM image file with a special FTP download utility. These instructions describe how to perform an update of this ROM.

6.4.2.1 *Materials Required To Perform the NIB Firmware Update*

Obtain and have ready to use the following materials and equipment. All items marked with a (*) come in the Controller Service Kit (see Section 5.1.2).

6.4.2.1.1 *Hardware*

- A **cross-connect LAN cable** (*) of sufficient length to connect the computer to the controller.
- A **PC with a 10Base-T LAN card installed, running Windows 95 (with IE4.01 SP1) or Windows 98 operating systems, and known/demonstrated ability to communicate to another computer via the IPX/SPX <u>and</u> TCP/IP protocols.**

6.4.2.1.2 *Additional Recommended Hardware*

- A **PRIPORT-to-controller video cable** (*).
- A **PRIPORT**.

6.4.2.1.3 Software

- The **ROM image file** must be downloaded from your local support entity, the Elesys web site, or the Service CDs (see Section 5.1.2 for the Service CDs), unZIP'd if necessary, and stored in a local directory on the computer being used to update the controller.
- The **FTP download utility** (*) must be installed to your computer the Service CD. The FTP Download utility is a Windows 95/98 program that physically downloads the ROM image into the NIB Flash ROM. Simply unzip file to a temporary directory on the computer and double-click on SETUP.EXE to install the program on the computer being used to update the controller.
- The **MAP LAN utility** (*) must be installed to your computer from the Service or Installation CDs (see Section 5.1.2 for the Service CDs). The utility is located in the following directory:

[CDROM drive letter]:\WIN\LAN Tools\MAP

The MAP utility is a Windows 95/98 program that 'discovers' the NIB in the Controller and allows you to query and manipulate setup values using a standard web browser, such as Netscape or Internet Explorer. Simply double-click on Setup.exe to install the MAP utility on the computer being used to update the controller:

- A **standard web browser** must be installed on the computer. Any version of Netscape or Internet Explorer (i.e., the version that ships with Windows) will be adequate. Make sure the web browser is setup to connect to the Internet direct via a LAN, and NOT through a proxy server.

6.4.2.1.4 Other

- The NIB access password from the customer, if it has been changed from the default value of **sysadm**.

Disassembly /Assembly

6.4.2.2   NIB Flash ROM Update Procedure.

1. Connect the LAN card in the computer to the NIB in the Controller using the cross-connect LAN cable.
2. If you have a PRIPORT available,
   a) Connect the Controller to the PRIPORT using a standard controller-to-PRIPORT video cable,
   b) Power on the PRIPORT,
   c) Put the PRIPORT ONLINE, and enable Auto Cycle.
3. Power on the Controller.
4. Wait 3 minutes for the Controller to warm up.
5. Obtain the current NIB firmware revision number – see Section 6.4.2.3.
6. Confirm that the current NIB firmware revision is different from that of the ROM image you wish to install.
7. Obtain the TCP/IP address of the Controller – see Section 6.4.2.3.
8. Start the **FTP Download** program.
9. Click on **File** and select **Download…**
10. Enter or use the browse option to select the ROM image filename, and click on **OK**.
11. Enter the IP address obtained in 7 above.
12. Enter the NIB password.
13. When the download process is complete, cycle power on the controller.
14. Obtain the current NIB firmware revision number – see Section 6.4.2.3.
15. Verify that the version number of the firmware has been changed to the new version corresponding to that of the ROM image file. This confirms a successful firmware update.
16. If you entered any TCP/IP parameters (IP Address, Subnet Mask, or Default Gateway) into the unit, return these parameters to their original values.

The NIB firmware update procedure has now been completed.

6.4.2.3 Miscellaneous Support Procedures to the NIB Firmware Update

6.4.2.3.1 Generating a NIB Status Page printout on the PRIPORT.
- Start the MAP utility,
- After identification of the controller, click on the IPX/SPX HTML link,
- Click on *Network Configuration*,
- Click on Configure Status Page under **Others**,
- Put a dot in the **PostScript** circle,
- Enter the NIB password,
- Generate the status page clicking on the **Generate Now** button,
- Close the web browser.
- The items of interest are:
  1) the NIB firmware revision (**Version** in the upper right-hand corner of the page).
  2) the IP Address (**Protocol Address** under TCP/IP Network Information section).

6.4.2.3.2 Obtaining the current NIB ROM version using MAP and a web browser.
- Start the MAP utility,
- After identification of the controller, click on the IPX/SPX HTML link,
- Click on *Network Configuration*,
- Click on Unit Info at the bottom of the page,
- Write down the **ROM Version** number,
- Close the web browser.

6.4.2.3.3 Obtaining the current Controller TCP/IP address.
- On the NIB Status Page printout, circle or otherwise note the **Protocol Address** under the **TCP/IP Network Information** section. If the TCP/IP Protocol Address is **Not Configured**, you will need to configure the TCP/IP settings – see Section 6.4.2.3.4.
  -- OR --
- Use the MAP utility and web browser to read the IP address:
  - Start the MAP utility,
  - After identification of the controller, click on the IPX/SPX HTML link,
  - Click on *Network Configuration*,
  - Click on Setup TCP/IP,
  - Copy down the **IP Address** in the form of xxx.xxx.xxx.xxx to a piece of paper.
  - Close the web browser.

Disassembly /Assembly

6.4.2.3.4   *Setting an IP address using MAP and a web browser.*

- Start the MAP utility,
- After identification of the controller, click on the IPX/SPX HTML link,
- Click on *Network Configuration*,
- Click on Setup TCP/IP,
- Enter an **IP Address** of **90.0.0.200**,
- Enter a **Subnet Mask** of **255.255.255.0**,
- Enter a **Default Gateway** of **1.1.1.1**,
- Leave all other settings as they were,
- Enter the NIB password,
- Click on the **Accept Settings** button,
- Wait for one of several events to occur:
  1) the PRIPORT generates a new NIB Status Page showing the TCP/IP information just entered,
  2) the Controller returns an "**Update Successful**" HTML page,
  3) 3 minutes passes.
- Close the web browser (ignore any 'timed out' messages),
- Cycle the power on the Controller,
- Wait 3 minutes before proceeding.

6.4.2.4 NIB Firmware Update FAQs

Q1   *Can I use a standard LAN connection between my computer and the Controller to perform the update instead of the cross-connect cable?*

A1   Probably - the answer depends upon the configuration of your LAN. The cross-connect cable ensures a 'clean' LAN connection between the NIB and the computer. Although every effort has been made to prevent potential conflicts through proper design of the utilities, a server on the LAN could interfere with the operation of MAP, the FTP Download program, the NIB, or some combination of the above. A cross-connect cable eliminates a lot of variables and allows for a quick and easy way to perform the update.

Q2   *Can I use some other utility on my PC besides MAP and a web browser to set an IP address in the Controller?*

A2   Yes, you can use the BootP program supplied on the Installation CD. Instructions for how to use the BootP program are located in the section entitled *BootP Lite in a Windows environment* in Chapter 4 of the Controller User's Guide. The program has the advantage of allowing you to set the IP address without knowing the NIB password. However, you must know the NIB's network hardware address, so you may find it more complicated to use. In addition, it will not allow you access to the NIB to print a status page.

Q3   *How do I check to see if my computer is set up to communicate via the IPX/SPX and TCP/IP protocols?*

A3   For instructions on checking for the IPX/SPX compatibility, see *Connecting to a Peer-to-Peer Ethernet Network* in Chapter 2 of the Controller User's Guide. TCP/IP is very similar, but has some additional variables that may need to be set. There is nothing fancy about either installation to support this procedure – basically, the LAN card in the computer just needs to be bound to these two protocols. If in doubt, see your System Administrator for details on setting up your computer.

Q4   *Can I do the procedure without a PRIPORT?*

A4   The PRIPORT is used in this procedure only to print a NIB Status Page. You will be able to communicate with the Controller, perform the update, and verify that the new Controller firmware revision has been installed using just the required software. However, you will not be able to verify any other aspects of Controller/PRIPORT operation. In addition, the NIB Status Page provides a convenient method for keeping track of all changes made to NIB setup.

Disassembly /Assembly

Q5   *What do I do if the MAP utility returns a screen saying, "No network printers found on network."?*

A5   This error will occur if one or more of the following conditions exists:

1) *The MAP utility was initiated before the 3-minute warm-up period of the Controller had completed.* To fix this, simply restart MAP after the controller has been on at least 3 minutes.

2) *There is a problem with the hardware connection between the NIB in the Controller and that of the PC.* This condition can be virtually eliminated if you are using the cross-connect LAN cable supplied with the Service Kit (see Section 5.1.2). Otherwise, you will have to check that a path exists between the Controller, the network drop(s), and the PC.

3) *There is a problem in the IPX/SPX or TCP/IP support in the PC.* This must be corrected in the PC – see Q2/A2 above.

4) *The NIB in the Controller has had its IPX/SPX and TCP/IP support disabled.* This condition has the most remote possibility of occurrence. Nevertheless, it can happen, and can only be remedied by resetting the NIB using the hardware jumpers on the card itself. A detailed procedure for doing this is may be found toward the end of Chapter 4 of the <u>Controller User's Guide</u> for the CPIF 26. It will also force resetting of all other NIB parameters, including the IP Address, back to factory default values (thus, you will have to set those up again before proceeding).

Q6   *What do I do if the NIB will not accept the password I enter?*

A6   Try the default password **sysadm**. If that does not work, you have two choices:

1) Obtain the correct password from the customer.

2) Reset the NIB using the detailed procedure found toward the end of Chapter 4 of the <u>Controller User's Guide</u> for the CPIF 26. Performing this procedure will allow the NIB to respond to the default **sysadm** password. It will also force resetting of all other NIB parameters, including the IP Address, back to factory default values (thus, you will have to set those up again before proceeding).

6.4.3 HARDWARE PROCEDURE TO RESET THE NIB TO FACTORY DEFAULT VALUES.

This procedure is also covered in the Chapter 4 of the <u>Controller User's Guide</u>.

DANGER

The Controller's power supply becomes hazardous with the chassis opened. It exposes you to severe electrical shock if you do not disconnect the power cord before opening.

CAUTION

<u>*The electronic components in this unit can be damaged by static discharge*</u>*. Please ensure that you are properly grounded before touching any portion of the electronics. Also, touch the chassis with your finger before connecting test cables, setting switches or reattaching components.*

---

1) Remove all cables attached to the controller
2) Remove the top cover – see Section 6.2.2.
3) <u>Identify but do not remove</u> the board – see Section 6.2.3.
4) Locate the Reset Jumper **OP2** on the board (NIB). It is located in the row of jumpers near the UTP port.
5) Move jumper **OP2** to the **ON** position, so that the jumper covers the center pin and the pin nearest the jumper designator.
6) Temporarily replace the top cover on the controller using at least one screw to keep it in place.
7) Plug in the power cord to the controller – <u>DO NOT connect it to the network at this time</u>.
8) Power on the controller.
9) The NIB status lights will blink as it performs its diagnostic tests – the green LED blinks three times, then you will see an alternating green/amber light sequence. *When you see the alternating green/amber light sequence, power off the controller*.
10) Remove the power cord from the controller, then the top cover.
11) Move the Reset Jumper **OP2** back to its **OFF** position, so the jumper covers the center pin and the pin nearest the **OFF** designation.
12) Re-install the top cover (see Section 6.3.5), the power and LAN cords, and re-connect to the PRIPORT.

This completes the NIB hardware reset procedure.

Disassembly /Assembly

6.5 UPGRADING CONTROLLER RAM

This procedure is also covered in the Appendix B of the <u>Controller Reference Manual</u>.

CAUTION

<u>The electronic components in this unit can be damaged by static discharge</u>. Please ensure that you are properly grounded before touching any portion of the electronics. Also, touch the chassis with your finger before connecting test cables, setting switches or reattaching components.

6.5.1 MEMORY (SIMM) BOARD INSTALLATION

6.5.1.1   *General guidelines for installing memory in the controller.*

1) The controller must have at least the minimum/standard amount of memory installed, as specified under the Printer Features section of the <u>Controller User's Guide,</u> in order to function correctly.
2) The controller must have a SIMM board installed in slot 1.

6.5.1.2   *Outline for Memory Upgrades*

1) Remove any existing/already installed SIMMs.
2) Install existing and new SIMMs per the SIMM-slot placement rules.

6.5.1.3   SIMM-slot placement rules.

6.5.1.3.1   Case 1: After removing any existing SIMM(s), a total of one SIMM is to be installed.

This situation would occur if, for example, you were to replace a partially- or non-functioning SIMM with a new one. In this situation, simply *substitute a new SIMM for the existing one, using only slot 1*. The new SIMM must meet or exceed the minimum memory requirements for your controller. For the sake of future upgrade compatibility, if the new SIMM is of the single-sided configuration (see Figure 6.5.1.3.5-1), it should have a PD (Presence Detect) jumper installed.

6.5.1.3.2   Case 2: After removing any existing SIMM(s), two SIMMs are to be installed, at least one of which is a double-sided SIMM (see Figure 6.5.1.3.5-2).

In this configuration, the double-sided SIMM board must be installed into slot 1. This is regardless of respective memory sizes of the SIMM boards – *the double-sided board always goes into slot 1*. If both SIMMs are double-sided, it does not matter which one goes into which slot.

6.5.1.3.3   Case 3: After removing any existing SIMM(s), two single-sided SIMMs are to be installed (see Figure 6.5.1.3.5-1).

This configuration could occur if, for example, you wanted to simply add a second SIMM to the controller's factory-shipped configuration. In this case, *the single-sided SIMM to be installed into slot 2 must have a PD jumper installed*.

6.5.1.3.4   Unsupported Memory Configurations

Memory configurations not listed under the rules above are not supported, or will not yield the correct amount of memory for the controller. This includes any combination of boards which:

1) Does not yield the minimum amount of memory needed by the controller.
2) Utilizes 1 or 2 Mbyte SIMMs.
3) Utilizes a single-sided SIMM in slot 2 that does not have a PD jumper installed.

If you believe your memory configuration is supported, but it is not yielding the correct amount of memory, see the Section 6.5.3 on *Troubleshooting a Memory Upgrade*.

Disassembly /Assembly

6.5.1.3.5 SIMM PD Jumpers

Figure 6.5.1.3.5-1 shows an example of a single-sided SIMM board with a PD jumper installed. The jumper, shown in the second (PD2) position, may be in any of the four possible positions shown in the diagram.
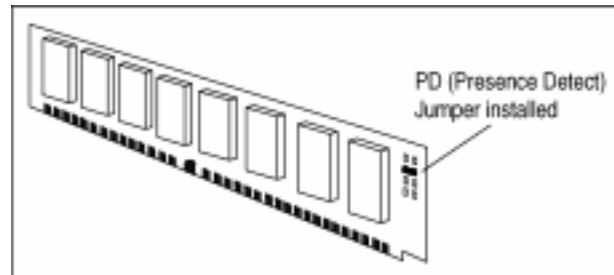

Figure 6.5.1.3.5-1. Example of a single-sided SIMM with one PD jumper installed.

Figure 6.5.1.3.5-2 shows an example of a double-sided SIMM board, where the memory chips are attached to both sides of the SIMM board.
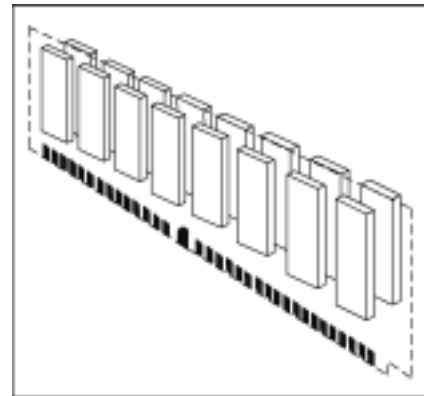

Figure 6.5.1.3.5-2. Example of a double-sided SIMM.

All memory boards used in upgrading the memory configuration of the controller must adhere to the JEDEC standards for 72-pin (72-pin 60ns EDO SIMM, non-parity, at 5 volts with 2K maximum refresh rate). Single-sided *SIMMs placed in slot 2 must have at least one of the Presence Detect jumpers in place: PD1, PD2, PD3, or PD4.*

For more information, locate JEDEC Standard No. 21-C. A copy may be obtained by searching the following web site: http://www.jedec.org.

6.5.1.3.6   RAM Upgrade Configuration Table

Table 6.5.1.3.6 is provided as a guide when upgrading memory.
It is recommended that memory be upgraded only in the configurations shown.

Total Controller Memory	Slot 1	Slot 2
8 MBytes	8 MByte SIMM ^{ds}	(empty)
12 MBytes	8 MByte SIMM ^{ds}	4 MByte SIMM
16 MBytes	8 MByte SIMM ^{ds}	8 MByte SIMM ^{ds}
16 MBytes	16 MByte SIMM	(empty)
20 MBytes	16 MByte SIMM	4 MByte SIMM ^{ssj}
24 MBytes	8 MByte SIMM ^{ds}	16 MByte SIMM
32 MBytes	16 MByte SIMM	16 MByte SIMM ^{ssj}
32 MBytes	32 MByte SIMM	(empty)
36 MBytes	32 MByte SIMM ^{ds}	4 MByte SIMM
40 MBytes	32 MByte SIMM ^{ds}	8 MByte SIMM ^{ds}
40 MBytes	8 MByte SIMM ^{ds}	32 MByte SIMM ^{ds}
48 MBytes	32 MByte SIMM ^{ds}	16 MByte SIMM
64 MBytes	32 MByte SIMM ^{ds}	32 MByte SIMM ^{ds}
64 MBytes	64 MByte SIMM	(empty)
68 MBytes	64 MByte SIMM	4 MByte SIMM ^{ssj}
68 MBytes	4 MByte SIMM	64 MByte SIMM ^{ssj}
72 MBytes	8 MByte SIMM ^{ds}	64 MByte SIMM
80 MBytes	16 MByte SIMM	64 MByte SIMM ^{ssj}
96 MBytes	32 MByte SIMM ^{ds}	64 MByte SIMM
128 MBytes	64 MByte SIMM	64 MByte SIMM ^{ssj}
128 MBytes	128 MByte SIMM ^{ds}	(empty)
132 MBytes	128 MByte SIMM ^{ds}	4 MByte SIMM
136 MBytes	128 MByte SIMM ^{ds}	8 MByte SIMM
144 MBytes	128 MByte SIMM ^{ds}	16 MByte SIMM
160 MBytes	128 MByte SIMM ^{ds}	32 MByte SIMM ^{ds}
196 MBytes	128 MByte SIMM ^{ds}	64 MByte SIMM
256 MBytes	128 MByte SIMM ^{ds}	128 MByte SIMM ^{ds}

NOTES:

ds –   Typically, the configuration of this SIMM is <u>double-sided</u>.

ssj –   In single-sided configuration, this SIMM *must* have the PD jumper installed for the memory upgrade to function correctly.

Table 6.5.1.3.6. Supported memory configurations.

6.5.1.4   Protecting SIMM Boards   SIMM-slot placement rules.

SIMM boards can be easily damaged by small amounts of static electricity. To remove any static electricity from your body:

- Touch the surface of the antistatic package before removing the board from its package. When handling the board, frequently touch bare metal on the printer or the antistatic bag or wear an antistatic wrist strap.

- Avoid moving about the work area to prevent generating static electricity.

- Handle the board carefully at all times. Avoid flexing it or touching its components.

When removing a board from the antistatic package, avoid touching the metal traces on the SIMM board through handling only by the edges.

6.5.1.5   Installing SIMM Boards   SIMM-slot placement rules.

The following section describes procedures to remove the controller's top cover and insert a SIMM board.

6.5.1.5.1   Accessing the SIMM Slots.

1. Remove the top cover of the controller - see Section 6.2.2.
2. Locate the memory SIMM memory slots. Note the location of slot 1. If only one SIMM is present, it is always located in slot 1.
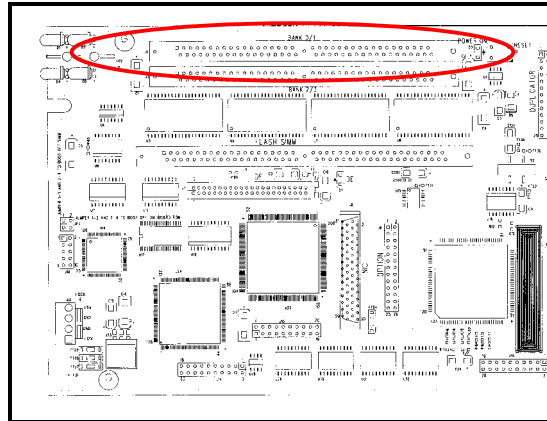

Figure 6.5.1.5.1 Locating SIMM slot 1.

6.5.1.5.2 Removing currently installed SIMMs.

Always begin SIMM removal with slot 1. Refer to Section 6.5.1.3, *SIMM-slot placement rules*, for information as to which type of SIMM is installed into which slot.

1. Locate the metal locking tabs holding the SIMM in place on either side of the board slot.
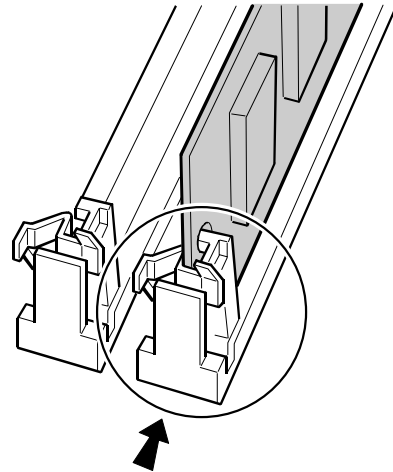

Figure 6.5.1.5.2-1. Locate the SIMM locking tabs.

2. *Gently* push down on the metal locking tabs while rotating the board toward the back of the slot - shown as rotating down and to the left in Figure 6.5.1.5.2-2 - until it clears the metal tabs. As it may take two hands to hold down the metal locking tabs on both sides of the board simultaneously, you may want to call for another person to assist you in this process.

Figure 6.5.1.5.2-2. Removing an existing SIMM board.

Disassembly /Assembly

3. Remove the existing SIMM and place into an antistatic bag.

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6.5.1.5.3   *Installing SIMMs.*

For configurations where two SIMMs are to be installed, always begin installation with slot 2. Refer to Section 6.5.1.3, *SIMM-slot placement rules*, for information as to which type of SIMM is installed into which slot.

1. Remove the new SIMM from its antistatic package. Hold the board with your forefingers on the side edges and your thumbs against the back edge, as shown in Figure 6.5.1.5.3-1. Turn the board so the notch on one end is on the bottom and the metal teeth face toward the slot.
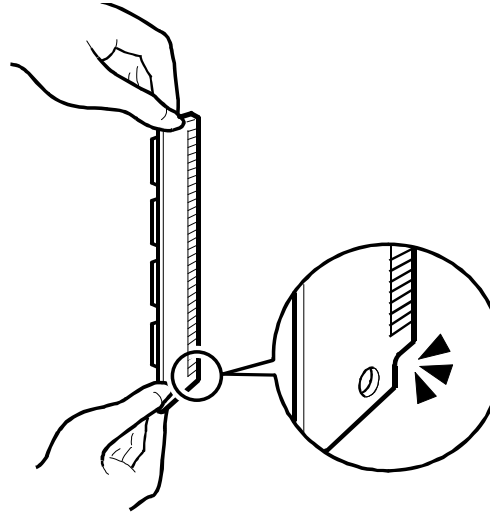

Figure 6.5.1.5.3-1. Positioning the SIMM.

2. Hold the SIMM board at a 30-degree angle to the slot and push the edge of the board evenly and firmly into the slot, as shown in Figure 6.5.1.5.3-2.
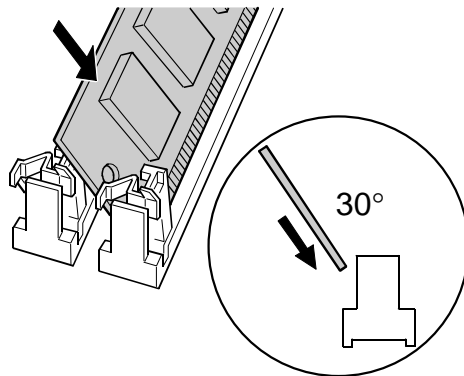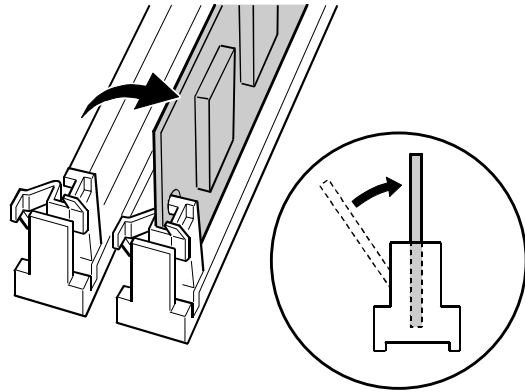

Figure 6.5.1.5.3-2. Seating the SIMM board in the socket.

3. Rotate the board to the right until the board 'clicks' into the metal locking tabs, securing the board in place - see Figure 6.5.1.5.3-3.

4. *Gently* rock the SIMM back and forth. If it is seated correctly, it will not lift away from the slot. If it lifts up, you have not pushed it firmly enough into the slot, and you must try installing again.

Figure 6.5.1.5.3-3. Securing the SIMM board in the socket.

5. If another SIMM is to be installed (i.e., slot 1), simply repeat these installation steps.

6.5.1.5.4 *Finishing up.*

1. Replace the top cover – See Section 6.3.5.

2. Connect the Controller to a PRIPORT.

3. Power on the PRIPORT.

4. Plug in the power cord and switch the Controller ON.

Disassembly /Assembly

6.5.2 TESTING A MEMORY UPGRADE

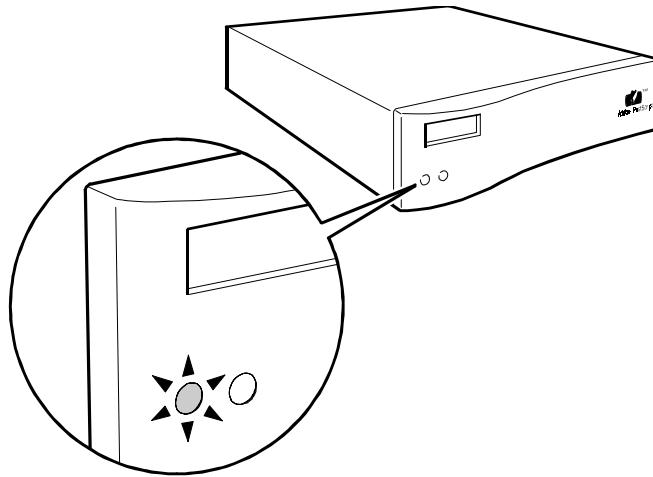The simplest way to test a memory upgrade performed on the controller is to do the following:

Figure 6.5.2-1. 'Ready to Print' status light condition.

1) Check status lights on the controller front panel. After performing a power-on self check, the controller should show the status light condition for "Ready to print", as shown in Figure 6.5.2-1. (See Section 5.6, *LED Status Light Sequence and Conditions*, for a complete listing as to what conditions are indicated by the status lights, and how to interpret them.)

2) Print a Diagnostic Test Page and note the area on the report which states the amount of memory available to the printer, as shown in Figure 6.5.2-2.

Figure 6.5.2-2. Using the Diagnostic Test Page to verify correct memory installation.

Printing this page verifies that the;
a) Controller is able to communicate with the PRIPORT,
b) memory installation was done correctly,
c) amount of memory you installed is what you expected, and
d) memory is functioning correctly.

If the test page does not indicate the correct amount of memory, or there is some other problem, proceed with the Section 6.5.3).

6.5.3 TROUBLESHOOTING A MEMORY UPGRADE

A memory upgrade/installation can fail for several reasons:
1) In a two-memory-board installation, a single-sided memory card has been installed into slot 1 that does not have a PD jumper.
2) A memory board is not seated properly when installed.
3) Memory is installed correctly but is of insufficient size.
4) One or both of the memory boards has failed.

Check the following tables for the symptom you are experiencing to identify a course of action.

Symptom	*Most Probable Causes*	*What to do*
The **Diagnostic Test Page** indicates that the controller is recognizing memory, but it is not of the expected size.	1) The SIMM installed in slot 1 is not a *double-sided memory card*.	Procure a SIMM that is double-sided and install into slot 1.
	2) The SIMM installed in slot 2 is not seated properly	Properly re-install the SIMM in slot 2.
	3) The installed SIMM(s) has (have) a memory size that is *actually* smaller than it's specification.	a) Check to make sure the board part numbers are correct for the SIMM size. If not, obtain and install the correct ones for the desired memory size. b) The SIMM could have a fault in which it only reports part (for example, one-half) of the memory for which it is rated. In this case, the board must be returned to the vendor for replacement.

**Table 6.5.3-1. Troubleshooting – Incorrect Diagnostic Test Page.**

Symptom	*Most Probable Causes*	*What to do*
The controller status lights indicate a controller unit failure.	1) The SIMM in slot 1 is not seated correctly.	Properly re-install the SIMM in slot 1.
	2) The SIMM in slot 1 is at fault.	If you have a SIMM in slot 2 and it has a memory size sufficiently large for the standard memory requirements of your controller, try installing it in the slot 1 position. If the controller responds positively to this, you probably have a faulty SIMM, which must be returned to the vendor for replacement.
	3) Total memory being reported is less than the standard memory configuration for your controller.	a) The combination of SIMMs yields a size under the standard memory configuration for your controller. You must install the minimum amount of memory so the controller will function. b) SIMMs in either slot do not report the correct amount of memory available to the controller. Try swapping the SIMMs from slot 1 to 2 to see if the controller will give a 'ready to print' status. If it will not, and you are sure the SIMMs are of the correct size, they are probably defective and must be returned to the vendor for replacement.

Disassembly /Assembly

**Table 6.5.3-2. Troubleshooting - status light problem.**

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7. PARTS LIST

7.1 CPIF-26
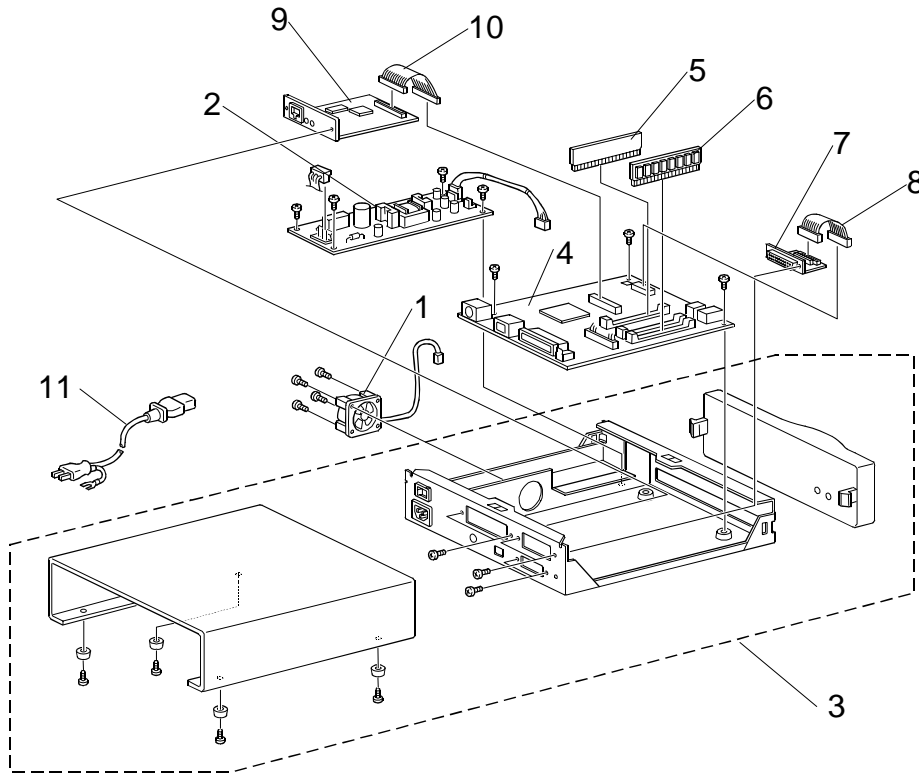
Index No.	Part No.	Description	Q'ty Per Assembly
1	C919 0010	C02001 Fan Ass'y	1
2	C919 0020	C02002 PSU Ass'y	1
3	C919 0050	C02011 Metal Chassis Ass'y (including the main switch and harness, etc.)	1
4	C919 0060	M02015 Main Board Ass'y - RMA	1
5	C919 0070	M02016 Flash ROM SIMM – Unprogrammed	1
6	C919 0080	M02017 32MB SIMM	1
6	C919 0090	M02018 64MB SIMM	1
6	C919 0100	M02019 128MB SIMM	1
7	C919 0110	T02007 Output Board	1
8	C919 0120	T00008 26-pin Ribbon Cable	1
9	C919 0130	T02014 Network Board Ass'y - RMA	1
10	C919 0140	T02015 Network Ribbon Cable	1
11	C919 0030	C00003 U.S. Power Cord	1
11	C919 0040	C00004 Euro Power Cord	1

Parts List

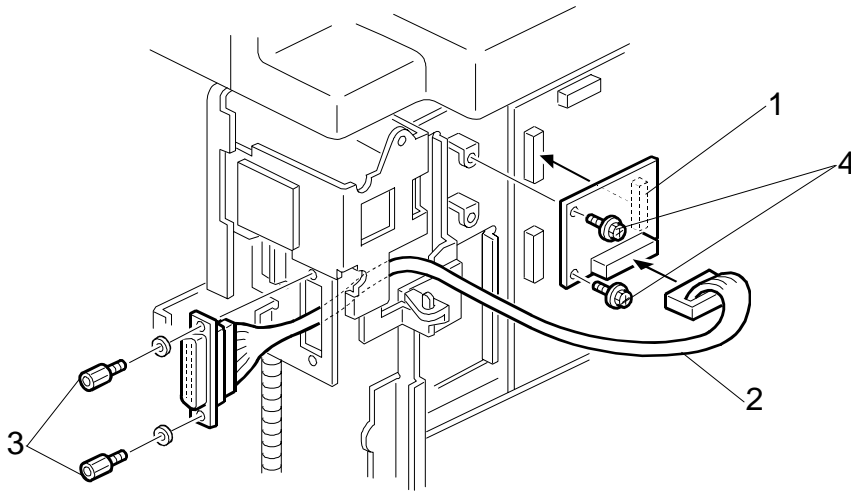| Index No.	Part No.	Description	Q'ty Per Assembly
-	C919 0150	T02016 Parallel Cable	1
-	C919 0160	I30003 Video Interface Cable	1
-	C919 0170	GR0022 CD-ROM	1
-	C919 0180	T02017 2GB HDD	1
-	C919 0190	T02018 HDD Ribbon Cable	1
-	C919 0200	U02001 Serial Ribbon Cable - 10 pin to DB9F (included in the service kit #C219-9501)	1
-	C919 9501	U02002 Controller Service Kit (For details, refer to section 5.1.2.)	1

7.2 PC CONTROLLER I/F KIT TYPE-600
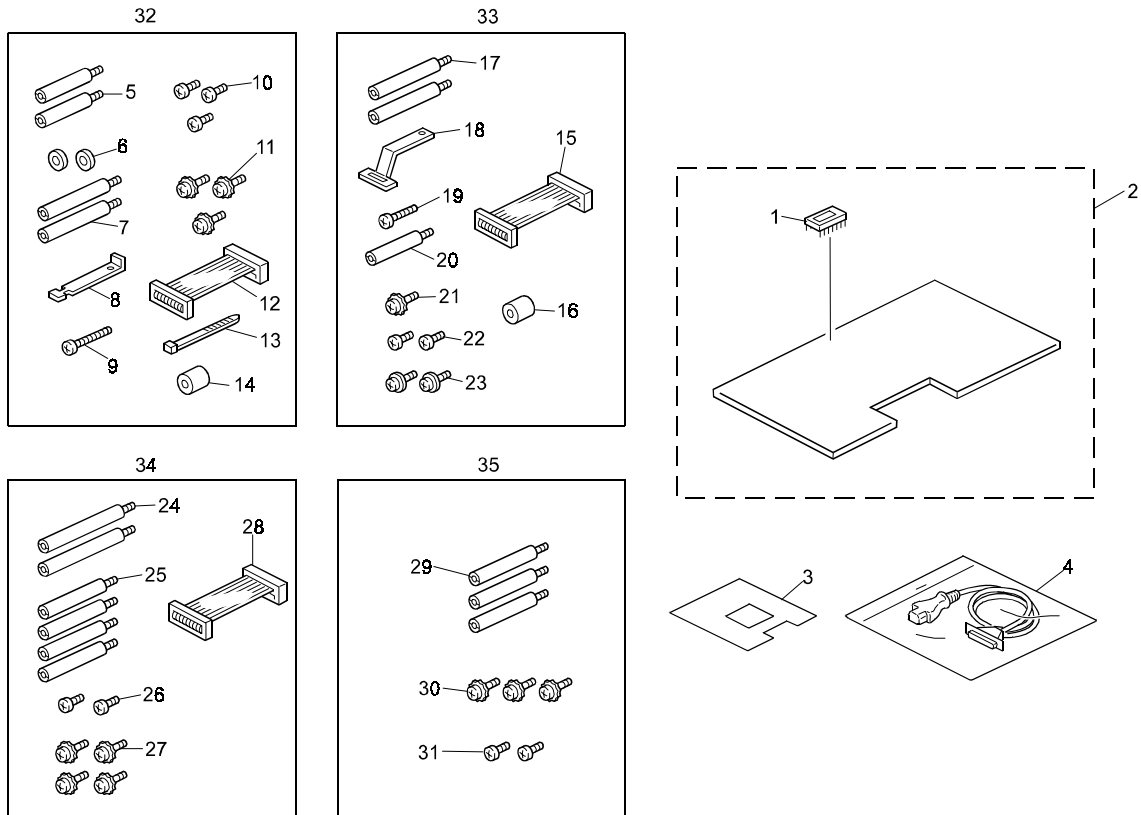
Index No.	Part No.	Description	Q'ty Per Assembly
1	C544 1016	IC – Interface	1
2	C544 1010	Interface Board	1
3	C544 2105	Insulating sheet – 145 x 200	1
4	C544 1520	Interface Cable – Interface Board	1
5	C544 2116	Stud – 50mm	2
6	0807 3083	Spacer – 10mm	2
7	C544 2110	PCB Stud – 64mm	2
8	C544 2112	Harness Support Bracket	1
9	0313 0350B	Philips Pan Head Screw – M3 x 35	1
10	0960 3008W	Philips Flange Screw – M3 x 8	3
11	0960 4008W	Philips Flange Screw – M4 x 8	3
12	C544 1600	Flat Cable – N810/NA33/NA3/NB2/RN925/N850	1
13	1105 0042	Wire Band	1
14	C544 2111	PCB Collar	1
15	C544 1602	Flat Cable – NA2	1

Index No.	Part No.	Description	Q'ty Per Assembly
16	C203 2031	Main Board Spacer	1
17	C531 5300	Stud – Bracket – Interface	2
18	C531 5310	Interface Board Bracket	1
19	0951 3025Z	Philips Screw with Flat Washer – M3 x 25	1
20	C209 8500	Stud – Main Board	1
21	0951 4006Z	Philips Screw with Flat Washer – M4 x 6	1
22	0314 0080Z	Philips Screw – M4 x 8	2
23	0951 3006Z	Philips Screw with Flat Washer – M3 x 6	2
24	R326 5302	Interface Board Stud	2
25	C200 2596	Main Board Stud – Long	4
26	0314 0080Z	Philips Screw – M4 x 8	2
27	0951 3006Z	Philips Screw with Flat Washer – M3 x 6	4
28	C544 1601	Flat Cable – N865	1
29	C544 2120	Stud – 35mm	3
30	0951 3006Z	Philips Screw with flat Washer – M3 x 6	3
31	0314 0080Z	Philips Screw – M4 x 8	2
32	C544 2320	Set for Part 1A	1
33	C544 2000	Set for Part 1B	1
34	C544 2050	Set for Part 1C	1
35	C544 2330	Set for Part 1D	1

7.3 PC CONTROLLER I/F KIT TYPE-10

JP5000

JP1010/1030/1045/1050
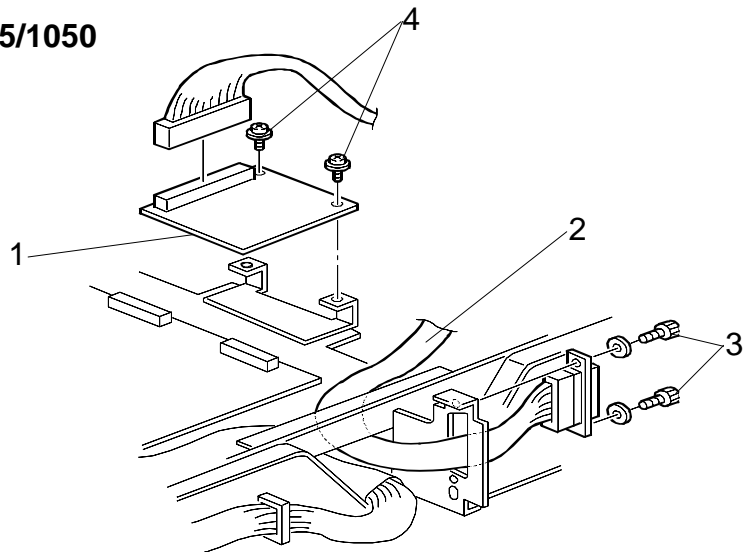
Index No.	Part No.	Description	Q'ty Per Assembly
1	C580 1011	Interface Board	1
2	C580 1500	Relay Harness	1
3	C580 1550	Stepped Screw – M2.6	2
4	0451 3006B	Tapping Screw – M3 x 6	2

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