PRINTER INTERFACE
TYPE 100
TYPE 130

SERVICE MANUAL

July 10th, 1995

Subject to change.

Trademark Notices

Epson and Epson ESC/P are registered trademarks of Seiko Epson Corporation.
Epson LQ-2500, Epson FX-800/1000, Epson FX-86e/286e, Epson GL, Epson LQ, Epson FX, Epson LQ-1050/850, Epson LQ-500, Epson LQ-1500, EpsonFX-85, Epson FX-80, Epson GL Identity Card, Epson Roman T, and Epson Sans Serif U are are registered trademarks of Epson America Inc.
Action Laser and SelecType are trademarks and EPSON Connection is a service mark of Epson America, Inc.
EpsonScript and EPSON Talk are trademarks of Epson America Inc.
IBM and IBM PC are trademarks of International Business Machines Corporation.
HP Laser Jet, HP Laser Jet+, HP Laser Jet 500, HP Laser Jet series II, HP Laser Jet IIP, HP Laser Jet series III, HP Laser Jet IIIP, HP Laser Jet IIISi are trademarks, and Hewlett-Packard and PCL are registered trademarks of Hewlett-Packard Company.
LocalTalk, TrueType, AppleTalk, Macintosh, and LaserWriter are trademarks of Apple Computer, Inc.
Centronics is a trademark of Centronics Data Computer Corporation.
PostScript is a trademark of Adobe Systems Inc.
ITC Zapf Dingbats, ITC Avant Garde, ITC Bookman, ITC Zapf Chancery are registered trademark of International Typeface Corporation.
Bookman and Cantury Schoolbook are registered trademarks of Kingsley-ATF Type Corporation.
Bitstream is a registered trademark of Bitstream Inc.
Speedo and FaceLift are trademarks of Bitstream Inc.
CG Times is a product of AGFA Compugraphic, a division of AGFA Corporation.
Univers, Times, Helvetica Narrow and Palatino are U.S. registered trademarks of Linotype AG and its subsidiaries.
Phoenix, PhoenixPage, and Phoenix MultiGray are registered trademarks of Phoenix Technologies Ltd.
MS-DOS and Windows are registered trademarks of Microsoft Corporation.

1. OVERALL INFORMATION

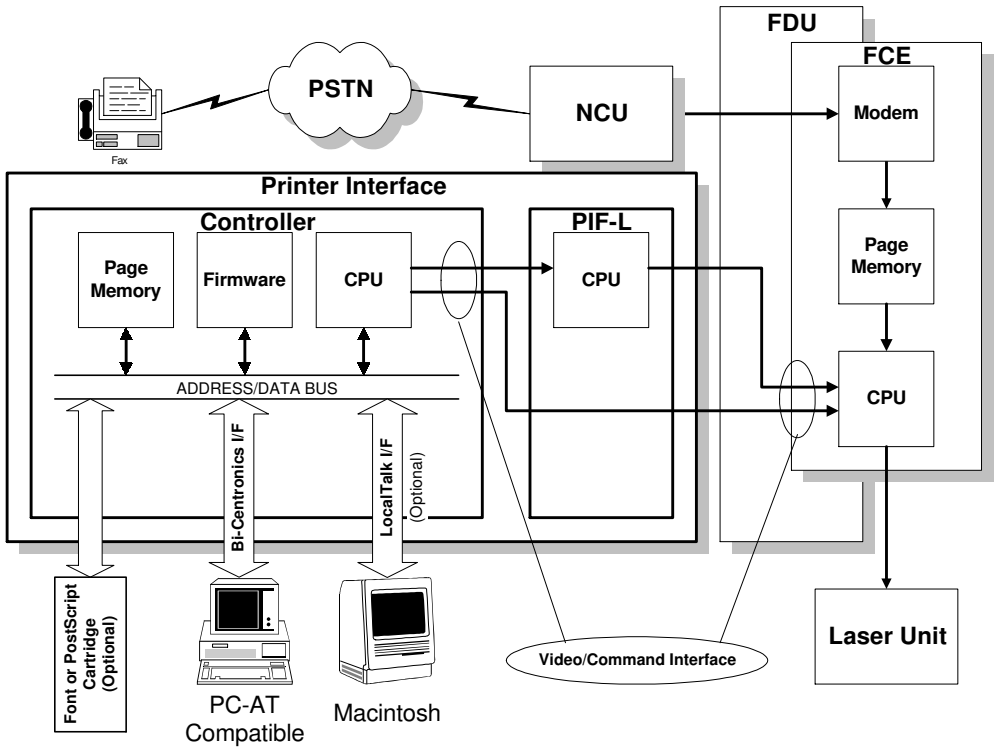
1.1. CONTROLLER SPECIFICATIONS

Item	Specifications
Resolution	300 x 300 dpi
RAM Capacity	1.0 MB (Standard) Upgradable to 2, 3, or 5 MB
Emulation	**Standard:** HP LaserJet 4L ™ emulation (LJ4L mode) ESC/P ® 24-pin printer emulation (LQ ® mode) ESC/P ® 9-pin printer emulation (LX ® mode) HP GL/2 ™ emulation (EPSON GL/2 ® mode) **Optional:** PostScript ™ Level 2
Resident Fonts	21 scalable fonts and 3 bitmap fonts (Refer to the operator's manual for more details.)
Paper Size **Note:** All the acceptable sizes must be in portrait orientation.	A4 A5 B5 LT (Letter) HLT (Half letter) LGL (Legal) GLT (Government letter) GLG (Government legal) EXE (Executive) F4 MON (Monarch) C10 (Commercial 10) DL C5 IB5 (International B5) C6
Host Interface	**Standard:** Bi-Centronics ™ parallel interface x 1 **Optional:** LocalTalk ™ Interface x 1

1.2. ENGINE SPECIFICATIONS

Item	Specifications
Resolution	300 x 300 dpi
Print Speed (Engine Speed)	Up to 10 ppm (Letter or A4)
Warm-up Time	20 seconds or less at normal temperature
Paper Size	The available paper sizes are not the same as those available with the controller. They depend on the machine's hardware specifications. Refer to the operator's manual for details.

1.3. BLOCK DIAGRAM AND DATA PATH



H144V501.wmf

The printer interface unit consists of a controller board and an interface board (PIF-L).

The controller has a CPU, a ROM for the firmware, a page memory, an optional cartridge interface, and up to two host interfaces (a standard Bi-Centronics ™ interface and an optional LocalTalk ™ interface). Refer to the controller specifications for details.

The PIF-L also has a cpu to emulate the controller commands and display text on the fax machine's hardware. For example, if the fax machine is not capable of using Legal size paper, the PIF-L modifies the display text so that the user cannot choose the Legal size paper for printing.

Data Path

The controller's CPU interprets the print data from the host computer and writes an imaginary page in the page memory. After a page of data has been stored in the memory, the controller transfers the data to the fax machine's CPU. Then, the fax machine's CPU passes the data directly to the laser unit for printing.

The interface between the controller and the fax machine is known as the "video interface". This interface specifies the data transfer timing and handshaking procedure.

Dual Access

Since the printer resources are shared for printing fax messages and computer printouts, the machine is designed to do multiple tasks at the same time.

If a fax massage is coming in while the machine's printer is busy for printing from the controller, the machine will receive the fax message into SAF memory. After printing from the controller has finished, the machine will print the fax message from the SAF memory.

If a print request is made from the host computer while the fax machine's printer is busy for fax messages or reports, the print data will be held in the page memory on the controller. After printing has finished, the machine will switch the printer resources to the controller for printing. In this case, if the print data size exceeds the controller's memory size, the print data is spooled in the host computer (if the computer's operating system or the application has a print spooler function).

1.4. POWER DISTRIBUTION

+24V and +5V are supplied to the printer interface unit from the fax machine. The PIF-L then generates an another +5V supply for its CPU and the controller.

2. DETAILED SECTION DESCRIPTIONS

2.1. CONTROLLER

2.1.1. Print Density Control

2.1.2. Bi-Centronics ™ Interface

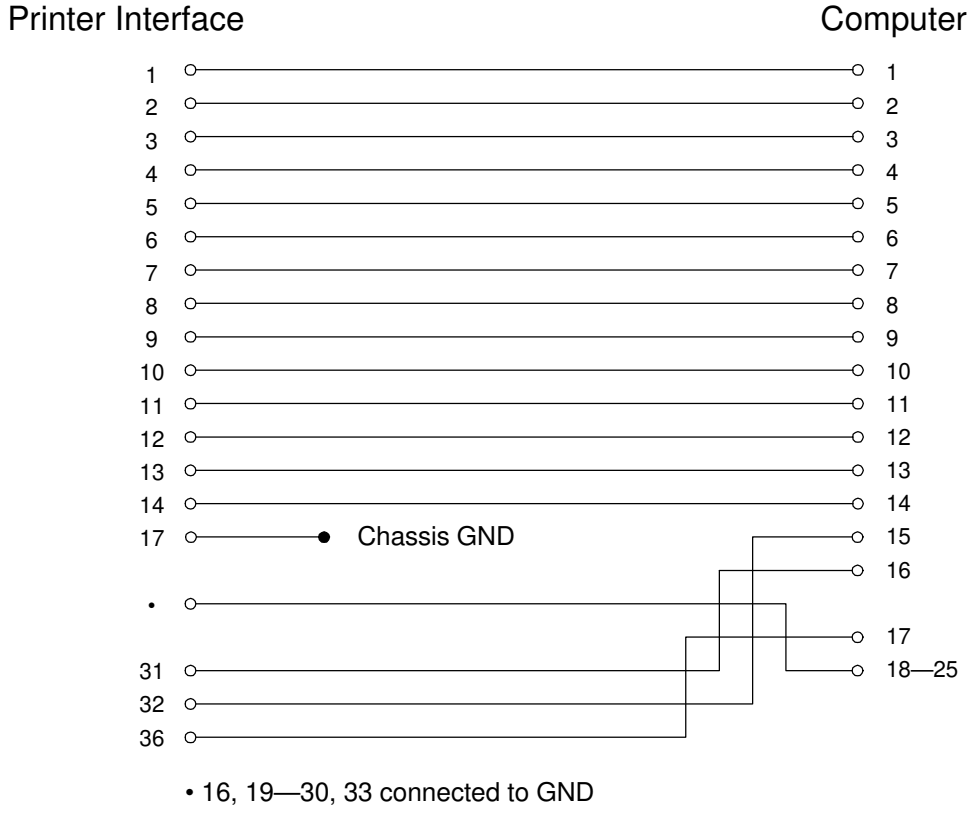
The parallel interface connector pin assignments and a description of the interface signals are shown in the table below.

Signal Pin	Return Pin	Signal	Direction	Description
1	19	$\overline{\text{STROBE}}$	IN	The $\overline{\text{STROBE}}$ pulse for reading data. The pulse width must be at least 0.5 µs at the receiving terminal.
2 3 4 5 6 7 8 9	20 21 22 23 24 25 26 27	DATA1 DATA2 DATA3 DATA4 DATA5 DATA6 DATA7 DATA8	IN IN IN IN IN IN IN IN	These signals represent parallel data bits 1 to 8. Each signal is at the HIGH level when the data is a logical 1 and LOW when it is a logical 0.
10	28	$\overline{\text{ACKNLG}}$	OUT	About a 10 µs pulse width. LOW indicates that data has been received and the printer is ready to accept more data.
11	29	BUSY	OUT	A HIGH signal indicates that the printer cannot receive data. The signal goes HIGH in the following cases: 1. During printing 2. When off line 3. During a printer-error state
12	30	PE	OUT	A HIGH signal indicates that the printer is out of paper.
13	—	SLCT	OUT	Available only for bidirectional use.
14	—	$\overline{\text{AUTO}}$	IN	Available only for bidirectional use. A LOW signal enables automatic line feed upon receiving a CR signal. This signal is detected only when the machine has just been turned on, or when the printer interface is initialized. In ESC/P ® mode, this signal effects a CR operation in accordance with the SelecType ™ setting. In HP ™ mode, this signal is always ignored.
15	—	NC	—	Not used

Signal Pin	Return Pin	Signal	Direction	Description
16	—	GND	—	Logic ground level
17	—	CHASSIS GND	—	Chassis ground, which is connected to the signal ground.
18	—	NC	—	Not used
19~30	—	GND	—	Twisted-pair return signal ground level.
31	—	INIT	IN	When this signal goes LOW, the printer controller ignores the STROBE signal.
32	—	$\overline{\text{ERROR}}$	OUT	This signal goes LOW when the printer is: 1. Out of paper 2. In an error state 3. Off line
33	—	GND	—	Same as for Pins 19~30
34	—	NC	—	Not used
35	—	+5V	—	Pulled up to +5V through a 1KΩ resistor.
36	—	$\overline{\text{SLCTIN}}$	IN	Available only for bidirectional use.

Note:
- All interface conditions are based on TTL levels. Both the rise and fall times of each signal must be less than 0.2 microseconds.
- Data transfer must be carried out by observing the $\overline{\text{ACKNLG}}$ or BUSY signal.
  (Data transfer to this printer can be carried out only after receipt of the $\overline{\text{ACKNLG}}$ signal or when the level of the BUSY signal is LOW.)
- The "Direction" column refers to the direction of signal flow as viewed from the printer.
- Return denotes the twisted-pair return to be connected at signal ground level.
  For the interface wiring, be sure to use a twisted-pair cable for each signal and to complete the connection on the return side.
- The $\overline{\text{ACKNLG}}$ pulse width varies.

To enable bidirectional parallel interface communications between the printer and computer, set the connector pin assignments as follows:



• 16, 19—30, 33 connected to GND

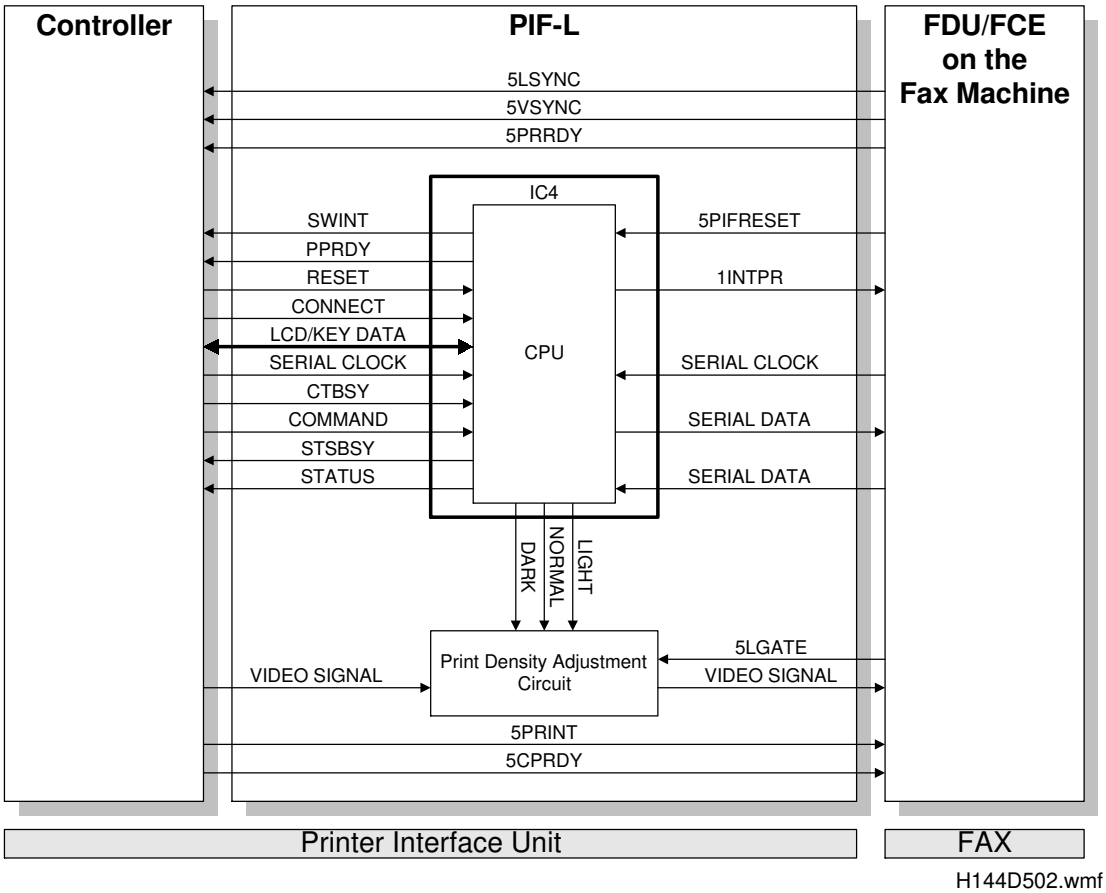
H144d501.wmf

2.1.3. LocalTalk ™ Interface (Optional)

Specifications

Compatibility	Phase 1 and phase 2
Baud rate	230.4 kbps
Topology	Parallel bus, low-resistance transformer isolated, floating ground.
Signaling standard	EIA standard RS422, balanced voltage
Signal encoding	FMO (bi-phase) space
Frame format	SDLC (Synchronous Data Link Control)
Node identification	AppleTalk ™ logical address is self-configuring; no user action required.
Cabling	AppleTalk ™ 8-pin mini DIN

2.2. PIF



H144D502.wmf

The CPU on the PIF-L works as a interpreter (emulator) between the printer controller and the fax machine.

2.2.1. Command and Status Signals

The controller sends various commands to the fax machine through the CPU on the PIF-L for requesting hardware status (e.g., cassette paper size, jam, toner end) and for specifying a cassette for printing. The fax machine responds with a status signal.

The CPU on the PIF-L emulates the commands for fax machine's hardware specifications (e.g, some models can only have one cassette).

2.2.2. Key/Display Emulation

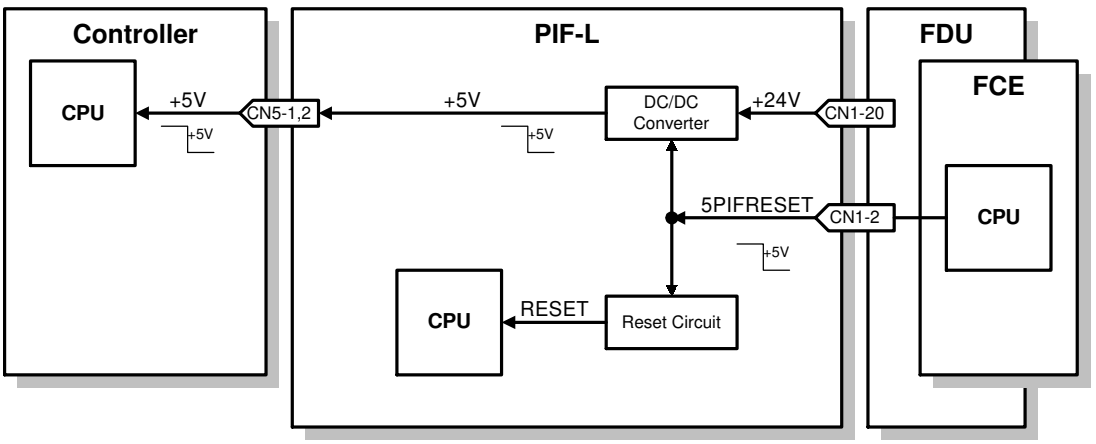
While the user is using the printer function from the fax machine, the fax machine's keys and LCD are connected to the printer controller through the CPU on the PIF-L.

Because the capabilities of the controller and the fax machine are not the same (for example, Monarch paper is available with the controller, but not with the fax machine), the PIF-L emulates the user key operations for the controller and the display texts to the fax machine, so that the user cannot select settings that the fax machine is not capable of.

2.2.3. Print Density Control

The controller is capable of print density adjustment using the Level 2 menu. Depending on the density setting sent from the controller, the PIF-L adjusts the pulse width for each pixel.

2.2.4. Printer Interface Reset



H144D504.wmf

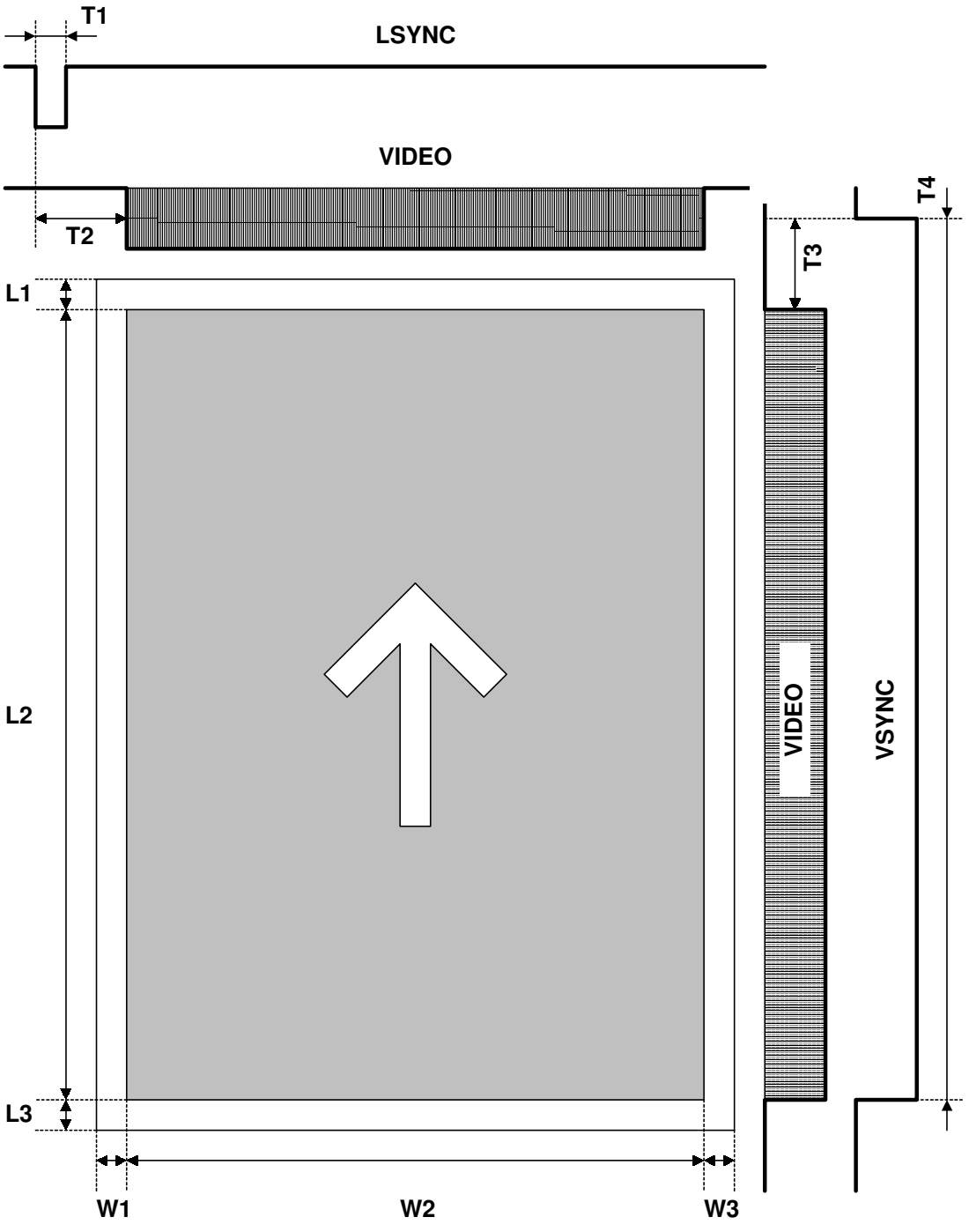
If the fax machine's CPU activates the 5PIFRESET signal, the reset circuit on the PIF-L resets the CPU on the PIF-L, and the DC/DC converter on the PIF-L shuts down the +5V supply to the Controller board.

The procedure for totally resetting the printer interface is described in chapter 4.

2.3. VIDEO INTERFACE

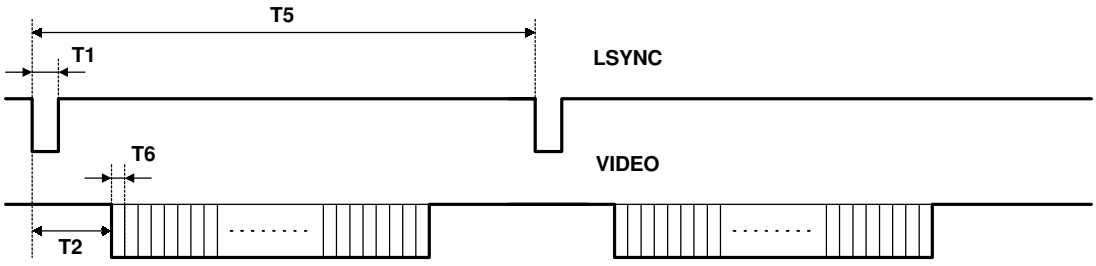
2.3.1. Overview

The video interface specified between the printer interface and the fax machine controls print timing.



H144D503.wmf

2.3.2. Main Scan Direction



H144D506.wmf

The LSYNC signal goes low for T1 before the printer interface sends each line of print data. Then, the printer interface sends video data T2 after the falling edge of LSYNC was detected.

Parameter	Setting
T1	2.36 µs
T2	9.44 µs
T5	1.253 ms
T6	295 ns

The left margin (W1) and the right margin (W2) are both 4 mm.

2.3.3. Sub Scan Direction

The VSYNC signal goes low for T3 before the printer interface sends each page of print data. Then, the printer interface sends video data T4 after the falling edge of VSYNC was detected.

Parameter	Setting
T3	22.55 ms
T4	depends on paper length

The top margin (L1) and the bottom margin (L2) are both 4 mm.

3. INSTALLATION

⚠ CAUTION

Before installing the printer interface unit and its options, do the following:

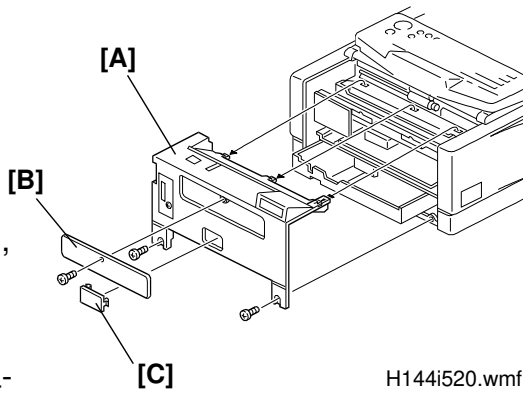
1. **Print out all the messages stored in the memory.**
2. **Print out the list of user-programmed items and the system parameter list.**
3. **Turn off the main switch and disconnect the power plug.**

3.1. PRINTER INTERFACE UNIT

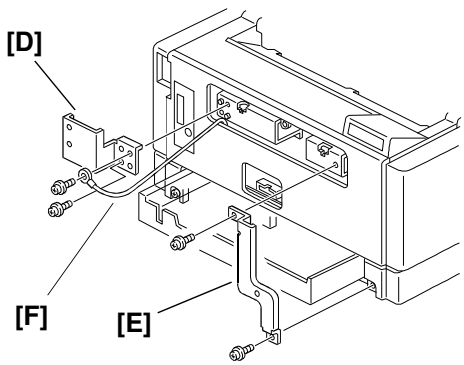
3.1.1. Type 100

Models: H516, H526 and H527

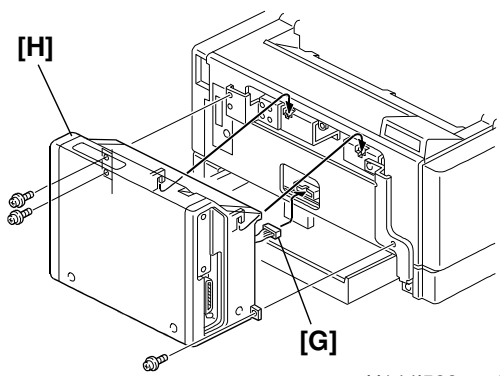
1. Remove the rear cover [A] (2 screws), and two small covers [B] (1 screw) and [C].
2. Put the rear cover [A] back on the machine (1 screw at the lower left corner), and install two brackets [D] (2 screws) and [E] (2 screws - one of these secures the rear cover as well, and a ground wire [F]).
3. Connect the harness [G] to the FDU through the lower window in the rear cover, hook the Printer Interface Unit [H] onto the brackets [D] and [E], then secure the unit [H] (3 screws).
4. Connect a parallel printer cable to the Printer Interface Unit.
5. Plug in the machine and turn on the main switch.
6. Check whether the On Line indicator on the operation panel is lit. If not, check the harness connection from the Printer Interface Unit to the FDU.



H144i520.wmf



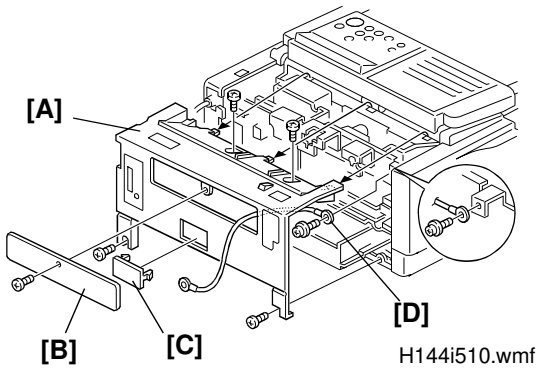
H144i521.wmf



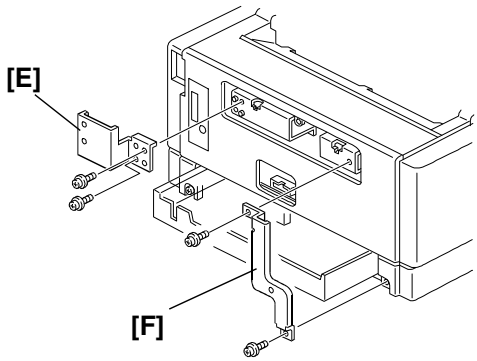
H144i522.wmf

Model: H515

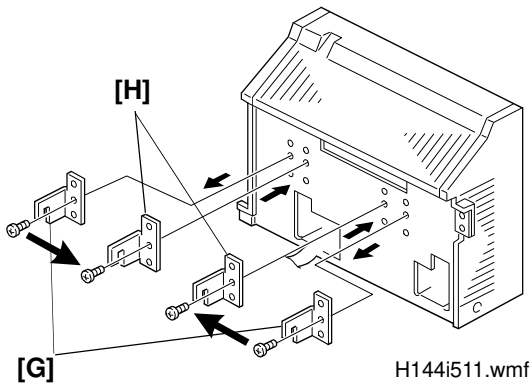
1. Remove the rear cover [A] (2 screws), and two small covers [B] (1 screw) and [C].
2. Attach the grounding wire [D] (1 screw) to the machine and put back the rear cover [A] (1 screw at the lower left corner).
3. Install two brackets [E] (2 screws) and [F] (2 screws - one of these secures the rear cover as well).
4. Remove the hooks [G] (1 screw each) from the unit and install the hooks for H515 model [H] (1 screw each). The hooks for H515 model are included, but screws are not. Use the screws that originally secured the hooks.
5. Connect the harness [I] to the FDU through the lower window in the rear cover and secure the grounding wire [J] to the Printer Interface Unit [K]. Then, hook the Printer Interface Unit onto the brackets [G] and [H].
6. Secure the unit [K] (3 screws) to the machine.
7. Connect a parallel printer cable to the Printer Interface Unit.
8. Plug in the machine and turn on the main switch.
9. Check whether the On Line indicator on the operation panel is lit. If not, check the harness connection from the Printer Interface Unit to the FDU.



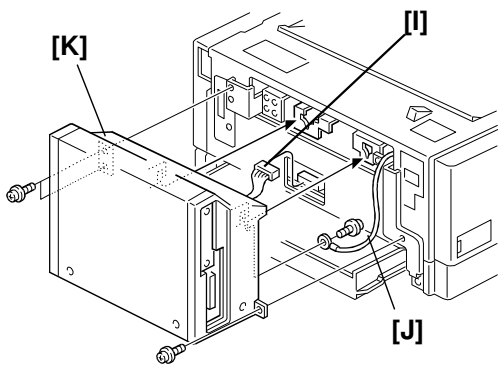
H144i510.wmf



H144i513.wmf



H144i511.wmf

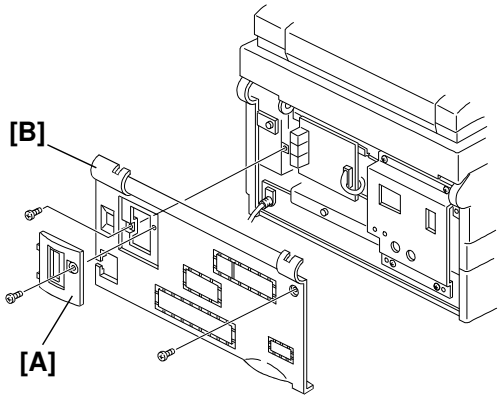


H144i512.wmf

3.1.2. Type 130

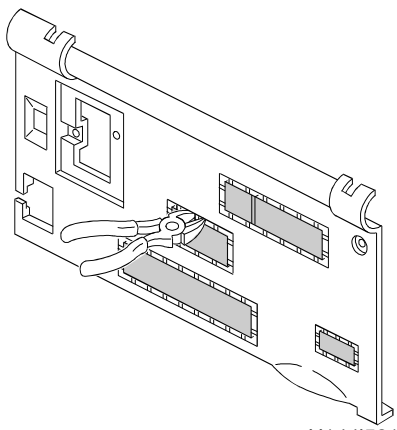
Model: H521

1. Remove the NCU cover [A] (1 screw) and left cover [B] (2 screws).



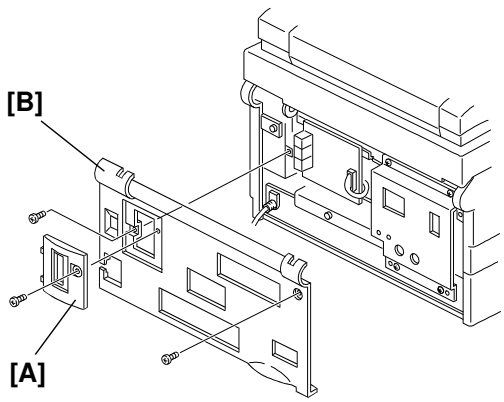
H144i530.wmf

2. Cut the shaded parts off the left cover.



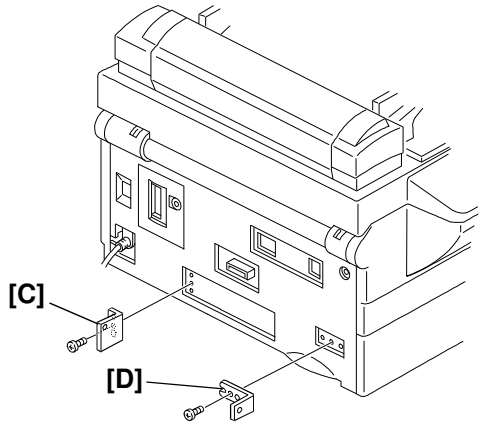
H144i531.wmf

3. Put back the left cover [B] (2 screws) and the NCU cover [A] (1 screw).



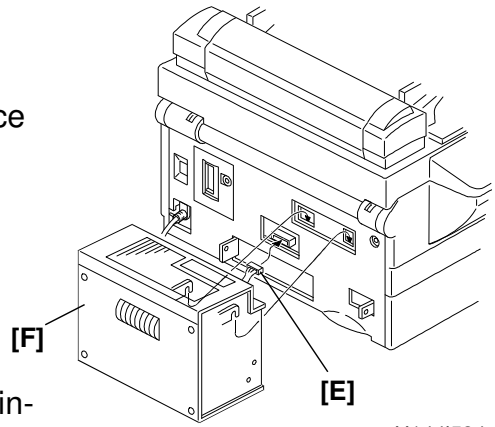
H144i533.wmf

4. Install two brackets [C] and [D] (1 screw each).



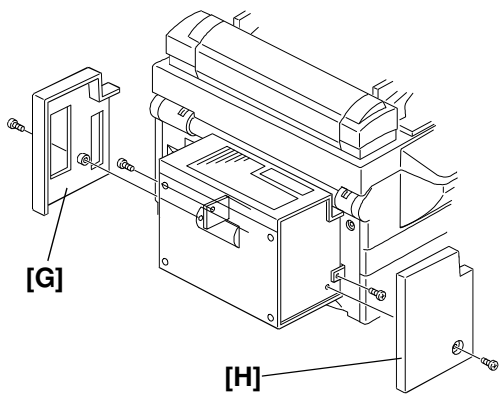
H144i532.wmf

5. Remove the side covers [G] and [H]. Then connect the harness [E] to the FDU, and hook up the printer interface unit [F] to the machine.



H144i534.wmf

6. Secure the unit with two screws and install the side covers [G] and [H].
7. Connect a parallel printer cable to the Printer Interface Unit.
8. Plug in the machine and turn on the main switch.
9. Check whether the On Line indicator on the operation panel is lit. if not, check the harness connection from the Printer Interface Unit to the FDU.
10. Print out a test page from the computer which is connected to the machine.



H144i535.wmf

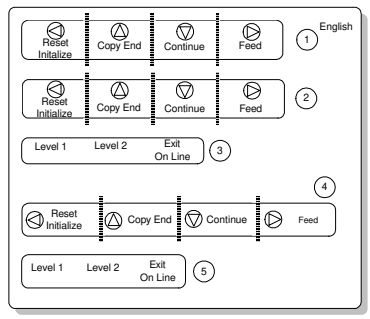
3.1.3. Operation Panel Decals

All Models

Place decals (Fig. 1) on the Operation Panel as shown (Fig. 2-4).

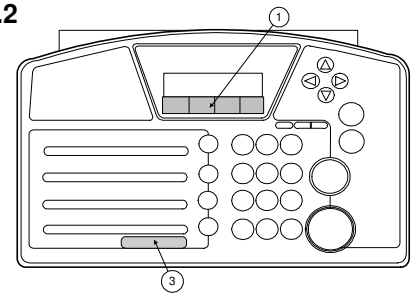
Models H516, H526, and H527: Fig. 2.
Model H515: Fig. 3.
Model H521: Fig. 4.

Fig.1



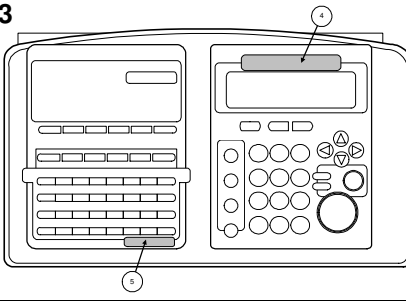
h144i550.wmf

Fig.2



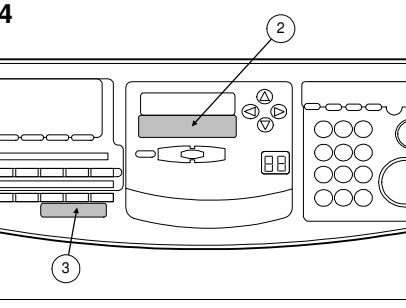
h144i551.wmf

Fig.3



h144i552.wmf

Fig.4

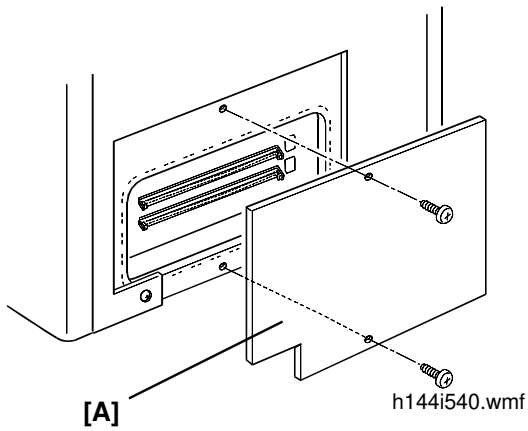


h144i553.wmf

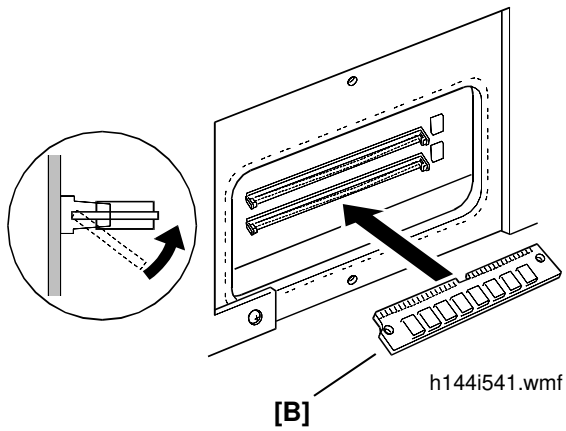
3.2. SIMM MEMORY

Note: The SIMM memory is not included in the kit.

3.2.1. Type 100



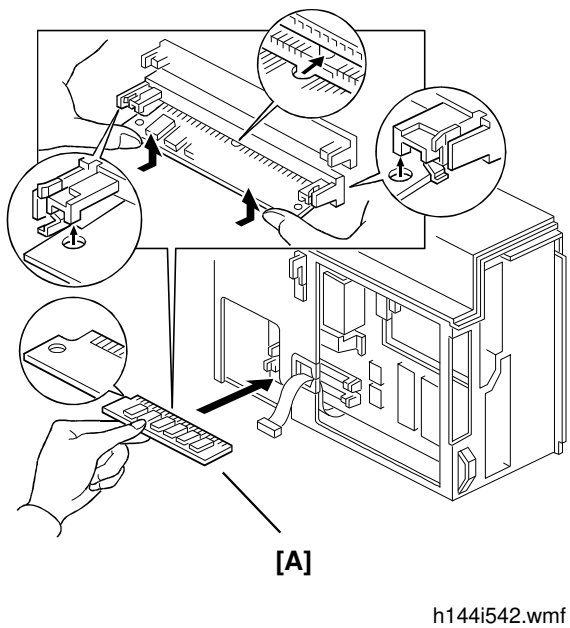
1. Remove the cover [A] (2 screws).
2. Install a SIMM memory [B] to the RAM SLOT (lower slot).
3. Put back the cover [A] (2 screws).
4. Turn on the machine, and enter printer mode.
5. Print the status sheet. The “Installed Memory” should have increased to the SIMM memory capacity added plus 1 Mbyte. If the “Installed Memory” is still 1 Mbyte or an error is indicated while in printer mode, check if the SIMM is correctly installed or not.



3.2.2. Type 130

Do the following procedure before installing the printer interface unit in the machine.

1. Install SIMM memory [A] to the RAM SLOT (lower slot) as shown in the diagram.
2. Follow steps 6 to 10 in section 3.1.2.
3. Print the status sheet. The “Installed Memory” should have increased to the SIMM memory capacity added plus 1 Mbyte. If the “Installed Memory” is still 1 Mbyte or an error is indicated while in printer mode, check if the SIMM is correctly installed or not.



3.2.3. SIMM Requirements

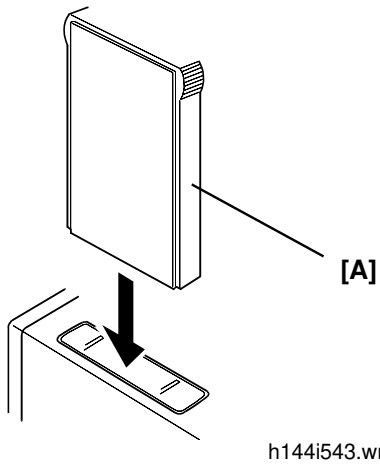
1. Number of pins	32
2. Access speed	70 ns or faster
3. Capacity	1, 2 or 4 MB
4. Parity	Don't care

3.3. OTHER OPTIONS (User Installable Items)

3.3.1. PostScript ™ Cartridge

Install the cartridge [A] as shown in the diagram.

Note: At least 2 MB of memory is required to use the PostScript ™ emulation.

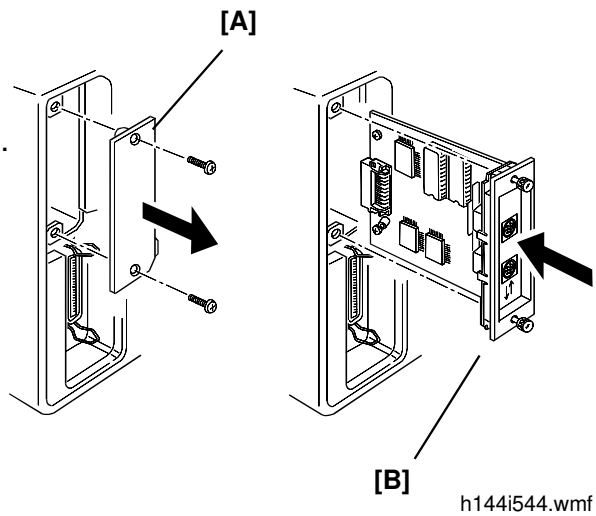


h144i543.wmf

3.3.2. LocalTalk ™ Interface

1. Remove the cover [A] (2 screws).
2. Install the interface board [B] as shown in the diagram (2 screws).

Notes:
- The optional PostScript ™ cartridge is required for printing from Macintosh ™ computers.
- At least 2 MB of memory is required to use the LocalTalk ™ interface and the PostScript ™ emulation.



h144i544.wmf

3.4. CONNECTING UP THE PRINTER INTERFACE UNIT

3.4.1. Parallel Interface

A Bi-Centronics ™ parallel cable is required to connect the unit to a host PC. Refer to section 2.1 for the interface specifications and cable pin assignments.

3.4.2. LocalTalk ™ Interface

Connect a LocalTalk ™ cable from a Macintosh ™ PC to the LocalTalk ™ port on the interface card.

Notes:
- The optional PostScript ™ cartridge is required to print from a Macintosh ™ PC.
- 2 MB or more of memory is required to use the LocalTalk ™ interface and the PostScript ™ cartridge.

3.5. TESTING THE CONNECTIONS

3.5.1. Printer Interface to Fax Connection

1. Turn on the machine. All LEDs dedicated for the printer interface option should light at power on.
2. Enter the printer function (e.g. function 36 for H516 models; refer to the user's manual for details).
3. Print the status sheet from the SelecType SM Level 1 menu. If the status sheet is not printed, check the harness connection between the printer interface and the fax mechine.
4. Press the On Line key to exit SelecType SM mode.

3.5.2. DOS ® Based Computers

Important
It is not recommended for servise technicians to operate the customer's computer, to avoid any damage to the customer's data files.
The following procedures are explained only for testing purpose.

1. Checking the Printer Cable Connection

1. Make sure that the printer cable is properly connected.
2. Turn on the machine, then turn on the computer.
3. Make sure that the printer interface is on line.
4. After DOS ® has started, type the following at the C:\> prompt:
   ```
   PRINT CONFIG.SYS
   ```
   The computer displays the following:
   ```
   NAME OF LIST DEVICE (PRN);
   ```
   Then, type the following:
   ```
   LPT1
   ```
   The config.sys file will be printed from the fax machine.

If nothing is printed, make sure that the proper printer cable is used and connected securely to both the computer and the printer interface.

2. Printer Driver for DOS ® Applications

Because printer drivers for DOS ® applications do not come with the printer interface unit, select one of the following printers in the order of preference listed below.

- EPL-5200+ ®
- EPL-3000 ®
- EPL-5200 ®
- EPL-9000®
- HP LaserJet 4L ™
- HP LaserJet 4 ™
- HP LaserJet IIISi ™
- HP LaserJet III/IIIP/IIID ™

If an emulation other than HP ™ PCL5E is required, select EPSON GL/2 ®, LQ ®, or FX ® emulation mode. However, the emulation setting of the printer interface should be changed from the default (HP LaserJet 4L ™), if one of these is selected.

3. Printer Driver for Microsoft Windows ®

1. Insert the Windows ® driver disk in the A-drive (or B-drive).
2. Choose “Run” in the “File” menu of the Program Manager, then type the following:
   `A:\INSTALL (OR B:\INSTALL)`
3. Follow the instructions which appear on the computer screen.
4. After the driver installation is finished, set up the driver referring to the Operator’s Manual.

3.5.3. Apple Macintosh ™ Computers

Important
It is not recommended for servise technicians to operate the customer’s computer, to avoid any damage to the customer’s data files.
The following procedures are explained only for testing purpose.

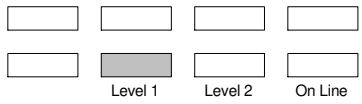
1. Install the printer driver as explained in PS cartridge’s the operator’s manual.
2. Make sure that the “LocalTalk" ™ is selected in the control panel.
3. Choose either “Printer I/F T100“ or “Printer I/F T130” as an active printer in the Chooser.
4. Open an document for a test print. Choose a paper size, orientation (and options if necessary) in the PageSetup.
5. Choose Print from the file menu.

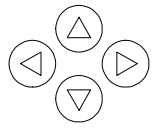
4. SERVICE TABLES AND PROCEDURES

4.1. USER LEVEL FUNCTIONS

4.1.1. Level 1 Menus

To access Level 1 menus, press the Level 1 key (the third Quick dial key from the bottom right).
To exit from the Level 1 menus, press On Line (the last Quick dial key).
Refer to the operator's manual for details about the menus.

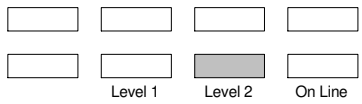


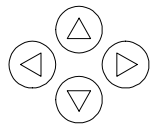


h144m501.wmf

4.1.2. Level 2 Menus

To access Level 2 menus, press the Level 2 key (the second Quick dial key from the bottom right).
To exit from the Level 2 menus, press On Line (the last Quick dial key).
Refer to the operator's manual for details about the menus.





h144m502.wmf

4.1.3. Dump Mode

1. Make sure that the machine is not out of paper, and the machine is turned off.
2. Turn on the machine, then immediately enter the printer mode.
3. If "`RAM CHECK x.x MB`" is still displayed, hold down the Level 2 key until "`READY P:DUMP`" is displayed. If the controller has finished RAM check, turn off the machine and go back to step 1.
4. Start the application on the host computer and print a document. All the print data will be printed in hexadecimal dump.
5. Turn off the dump mode either by turning off the machine or by INITIALIZE the printer controller.

4.1.4. Controller Reset and Initialize

1. Enter the printer mode.
2. Hold down the left arrow key until “RESET” appears, or keep holding down the key until “INITIALIZE” appears on the display.

   RESET - This resets the controller to the previously saved settings, cancels the print job now in progress, and clear all the received data in the controller’s memory.

   INITIALIZE - This resets the controller to the power-on default settings. The received data may be cleared.

4.1.5. Factory Reset

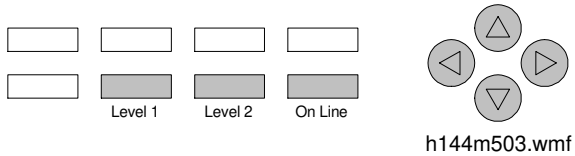
1. Make sure that the the machine is not out of paper, and the machine is turned off.
2. Turn on the machine, then immediately enter the printer mode.
3. If “RAM CHECK x.x MB” is still displayed, hold down the Left Arrow key until “FACTORY RESET” is displayed. All the controller settings return to teh factory settings.
   If the controller has finished RAM check, turn off the machine and go back to step 1.

4.2. SERVICE LEVEL FUNCTIONS

4.2.1. Printer Interface Reset

The controller and the PIF can be reset using the following procedure, without turning off the machine’s main power.

1. Enter the printer function. (Refer to the operator’s manual for the function number. This number is different for each model.)
2. Press the following keys at the same time.
   - All the arrow keys
   - On Line
   - Level 1
   - Level 2



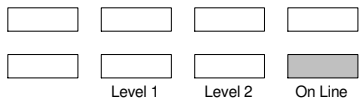
h144m503.wmf

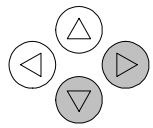
4.2.2. Counter Reset

The controller has its own print counter, which is independent from the fax machine's print counter. The counter value can be checked using the Level 2 menu.

To reset this counter to zero, use the following procedure.

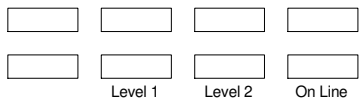
1. Reset the printer interface as described above.
2. While the controller is checking memory, press the following keys at the same time.
   - Right arrow
   - Down arrow
   - On Line

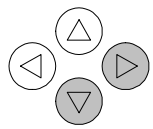
   

   h144m504.wmf

   "STARTUP ERROR" should appear on the display.
3. Press the right arrow and down arrow keys simultaneously.

   h144m505.wmf
4. Enter the Level 2 menu and confirm that the counter has been reset to zero.

Note that this procedure does not reset the printer interface output counter (PRN) of the fax machine. Reset this counter manually by rewriting the RAM addresses for this counter.

4.3. BIT SWITCHES

This bit switch is dedicated to printer interface operations.

System Switch 14		
No	**FUNCTION**	**COMMENTS**
0 to 7	Wait time between pages in printer mode (with an optional printer interface unit)	05 to 64 (H) (5 to 100s) - This setting determines the machine's wait time between pages in printer mode. A longer setting forces the fax machine to wait until the end of printer interface output before printing any incoming fax message. A shorter setting allows the fax machine to print incoming fax messages while printing from a computer. If the controller takes more than the specfied time to process a page of data from the host computer, the fax machine releases the printer resources for fax output.

4.4. RAM ADDRESSES

Printer interface output counter (PRN)

Model	Millions and ten thousands digits	Thousands and hundreds digits	Unit and tens digits
H516	800166 (H)	800165 (H)	800164 (H)
H521	800166 (H)	800165 (H)	800164 (H)
H515	4801D2 (H)	4801D1 (H)	4801D0 (H)
H526	800166 (H)	800165 (H)	800164 (H)
H527	800166 (H)	800165 (H)	800164 (H)

5. TROUBLESHOOTING

5.1. HARDWARE ERRORS

Symptom: The machine does not go into printer mode.		
Check	**Action if Yes**	**Action if No**
1. Do the On Line and Data LEDs light at power up ?	Replace the fax machine's FCE or FDU.	Go to step 2.
2. Is the cable from the priter interface connected to the fax machine's FDU correctly ?	Replace the cable.	Fix the cable connection.

Symptom: "SERVICE REQ. Exxxx" is displayed while in printer mode.		
Check	**Action if Yes**	**Action if No**
1. Does the fax machine display SERVICE CODE x-xx ? (Refer to the table below for details.)	There is a hardware error inside the machine. Follow the troubleshooting procedure as described in the fax machine's service manual.	Reset the printer interface unit as explained in secton 4.2.1, then go to step 2.
2. Is the SERVICE REQ. code still displayed while in printer mode ?	Replace the controller.	The problem has been solved.

Error Code	**Error Condition**
E0003	Fusing unit error
E0004	Main motor error
E0006	Polygonal mirror motor error
E0009	Laser diode error
E0014	Comminication error between the controller and the fax machine.

Symptom: "SERVICE REQ. Cxxxx" is displayed while in printer mode.		
Check	**Action if Yes**	**Action if No**
1. Reset the printer interface unit as explained in chapter 4.2.1. Does the machine still show a SERVICE REQ. code ?	Replace the controller.	The problem has been solved.

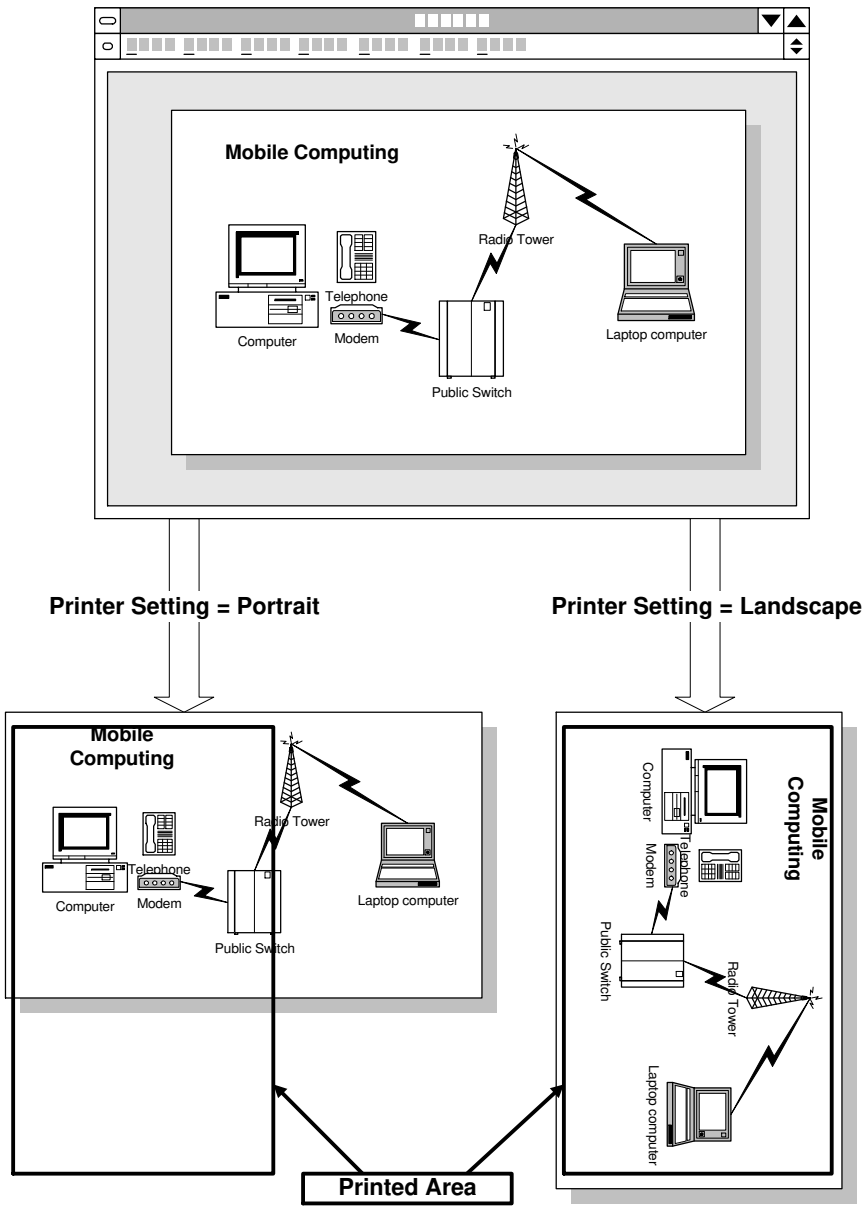
Symptom: "RAM ERROR" is displayed while in printer mode.		
Check	**Action if Yes**	**Action if No**
1. Does this error message appear after installing an optional SIMM memory ?	Go to step 2.	Reset the printer interface unit as explained in chapter 4.2.1, then go to step 3.
2. Is the SIMM memory installed correctly ?	Replace the SIMM memory.	Reinstall the SIMM memory.
3. Does the message appear again while in printer mode ?	Replace the controller or the SIMM memory.	The problem has been solved.

Symptom: "STARTUP ERROR" is displayed while in printer mode.		
Check	**Action if Yes**	**Action if No**
1. Does this error message appear after resetting the printer interface ?	The error message should be "STARTUP ERROR >A4 (paper size)". This is not a problem. Press > (right arrow key) to go back to standby mode.	Reset the printer interface unit as explained in chapter 4.2.1, then go to step 2.
2. Does the message appear again while in printer mode ?	Replace the controller.	The problem has been solved.

5.2. SETUP MISTAKES

Symptom: Nothing is printed after the controller receives the data.		
Check	**Action if Yes**	**Action if No**
1. Does the Check Display LED blink ?	Enter printer mode, and check the display. Go to step 2.	Pull out the cassette and put it back.
2. Is “PAPER SET AUTO xx” displayed ?	The paper size requested does not match the paper size in the cassette. Replace the paper with the size requested by the machine, or press the right arrow key (Feed) to print on the current paper. **Tip:** If AUTO CONT. is enabled in the Level 2 menu, the data will be printed on paper, even if the paper size does not match with the paper size of the document to be printed.	Go to step 3.
3. Is “MANUAL FEED” displayed ?	The controller is set for bypass feed mode. Press the right arrow key (Feed) to print each page. Disable MANUAL FEED in the Level 2 menu, if bypass feeder is not being used.	Reset the printer interface by one of the following methods, and print the document again. Try each method in the order given. 1. Pull out the cassette and put it back. 2. Press the left arrow key until “RESET” is displayed. 3. Press the left arrow key until “INITIALIZE” is displayed. 4. Reset the printer interface as explained in chapter 4.2.1. 5. Turn off the machine and turn it back on.

Symptom: The printed image does not fit on the paper.		
Check	**Action if Yes**	**Action if No**
1. Do the paper size and orientation settings of the application, printer driver, and the printer controller agree ?	Adjust the paper position in the cassette or in the bypass feed slot. If the problem remains, adjust the fax machine's print registration settings.	Change any incorrect settings as shown below.



H144T501.wmf

Example: Print orientation error.

Symptom: Printed data appears as strange characters.		
Check	**Action if All**	**Action if Partial**
1. Do all the data appear as strange characters ? Do some of the symbols appear strange ?	The controller's emulation setting does not match the printer driver. Change the emulation setting or the printer driver to match each other.	The wrong symbol set is selected. Choose an appropriate symbol set in the Level 1 menu.

Symptom: PostScript TM is not available even if an optional PostScript TM cartridge is installed.		
Check	**Action if Yes**	**Action if No**
1. Is OPT set to CAR-TRIDGE in the Level 2 menu ?	If the cartridge is correctly installed, replace the cartridge.	Change the OPT setting to CARTRIDGE.

5.3. PRINT QUALITY

Check if the Toner Save Mode is selected in the printer driver's setup, and/or if Print Image Density is set at Dark or Light. Change any unsuitable settings or refer to the Troubleshooting section in the fax machine's service manual.