PRINTER INTERFACE
PIF130
FIELD SERVICE MANUAL

1. OVERALL INFORMATION

1.1. CONTROLLER SPECIFICATIONS

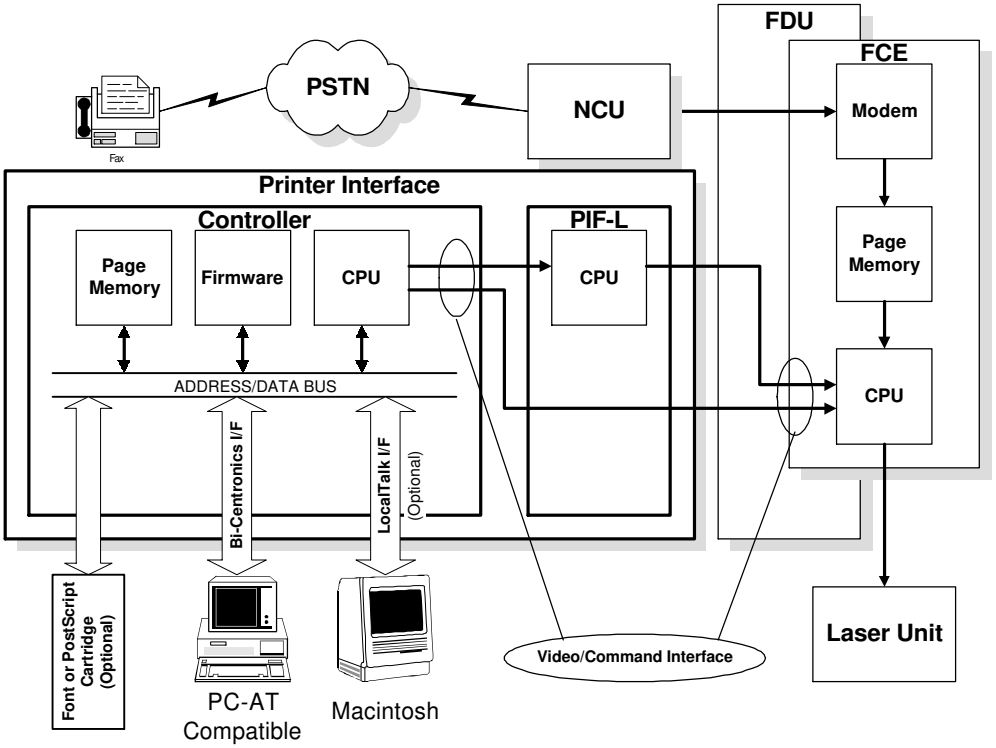
Item	Specifications
Resolution	300 x 300 dpi
RAM Capacity	1.0 MB (Standard) Upgradable to 2, 3, or 5 MB
Emulation	**Standard:** HP LaserJet 4L ™ emulation (LJ4L mode) ESC/P ® 24-pin printer emulation (LQ ® mode) ESC/P ® 9-pin printer emulation (LX ® mode) HP GL/2 ™ emulation (EPSON GL/2 ® mode) **Optional:** PostScript ™ Level 2
Resident Fonts	21 scalable fonts and 3 bitmap fonts (Refer to the Operator's Manual for additional information.)
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. The selected paper size depends on the machine's hardware specifications. Refer to the Operator's Manual for additional information.

1.3. BLOCK DIAGRAM AND DATA PATH

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



The Printer Interface Unit consists of two (2) logic boards called the Controller Board and the Interface Board (identified in the Service Manual as the PIF-L Board).

The Controller Board contains a CPU chip, ROM for the firmware, Page Memory, an optional Font or Postscript Interface Connector and two (2) Host Interface Connectors (a standard Bi-Centronic or an optional Local Talk). Refer to the Controller Board Specifications for additional information.

The PIF-L Board also contains a CPU chip which is used to emulate the commands from the Controller Board and to modify the displayed message in the display panel of the FAX machine. For example, if the FAX machine can not use Legal size paper, the CPU chip on the PIF-L board will modify the displayed message in the FAX machine to eliminate the displayed selection of the Legal size paper. If the option of the legal size paper is not displayed, the operator can not choose the legal size paper.

Data Path

The Controller's CPU chip will interpret the print data from the host computer and will write an imaginary page of data in the Page Memory on the Controller Board. After a page of print data has been stored in the Page Memory, the Controller CPU chip will transfer the page of print data to the CPU chip in the FAX machine will then pass the data directly to the Laser Unit for printing.

The interface between the CPU chips on the Controller board and the FAX machine is known as "Video Interface". The function of the Video Interface is to specify the handshaking procedure and the timing of the data transfer.

Dual Access

Since the printer resources are shared, the FAX machine was designed to perform multiple tasks.

If a FAX message is received while the machine is busy printing data from the computer, the FAX message will be received and the data will be temporary stored in the SAF memory of the FAX machine. At the completion of the computer print task, the machine will print the received FAX message that was stored in the SAF Memory.

If the computer attempts to initiate a print task while the FAX machine is busy receiving a FAX message or printing a report, the print data from the computer will be received and stored in the Page Memory on the Controller Board. At the completion of the FAX machine task, the machine will switch the printer resources of the Controller board to the computer printing task. If the print data exceeds the Controller's memory size, the print data will be spooled in the computer (if the computer's operating system or the Application Program contains the Print Spooler Function).

The term "Spooler" is an acronym for Simultaneous Print Operation On Line. Print Spooler is a computer software program that, when the printer is busy, will intercept the print data that is on the way to the printer and will redirect it to a disk or memory. When the printer is no longer busy, the print data will then be sent to the printer. An advantage of the Print Spooler feature is that by diverting the entire print job to disk or memory and then coordinating it with the printer, frees the user from waiting until the print task is completed before moving to another task.

1.4. POWER DISTRIBUTION

The required +24 volts and the +5 volts are supplied to the Printer Interface from the FAX machine. The PIF-L board will then generate a different +5 volts for the CPU chips located on the PIF-L and Controller boards.

2. DETAILED SECTION DESCRIPTIONS

2.1. CONTROLLER

2.1.1. Bi-Centronics ™ Interface

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

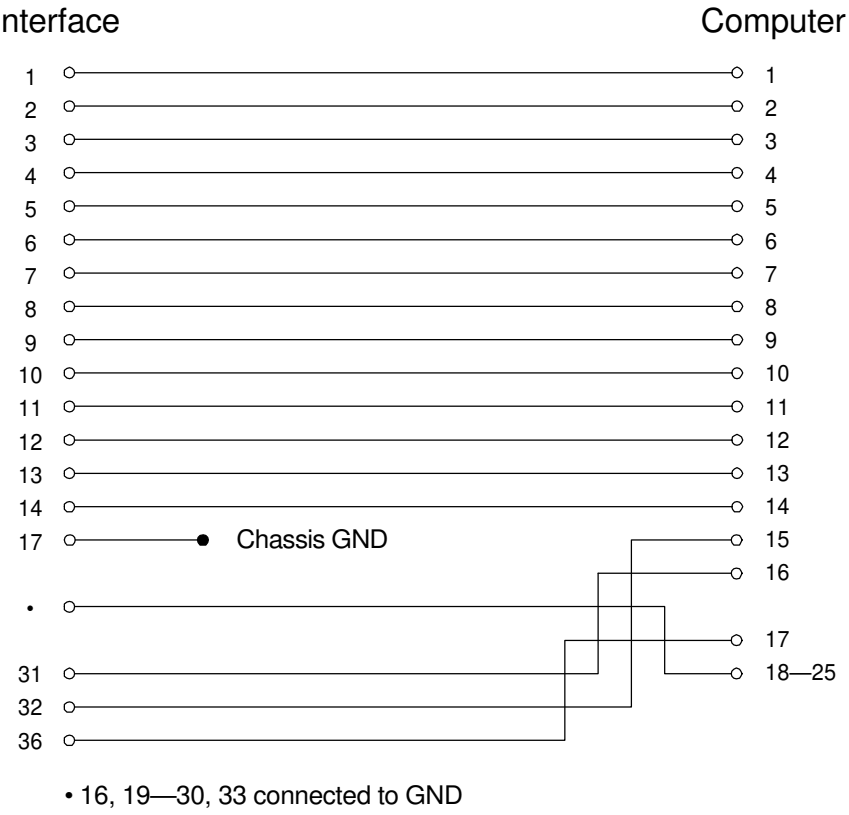
Signal Pin	Return Pin	Signal	Direction	Description
1	19	$\overline{\text{STROBE}}$	IN	The $\overline{\text{STROBE}}$ pulse for reading data. The pulse width of the signal must be at least 0.5 μs at the receiving terminal.
2 3 4 5 6 7 8 9	20 21 22 23 24 25 26 27	DATA1 DATA2 DATA3 DATA4 DATA5 DATA6 DATA7 DATA8	IN IN IN IN IN IN IN IN	The signals represent the 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. A LOW signal 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 will go 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 an automatic line feed upon receiving a CR signal. This signal is only detected 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 will be ignored.
15	—	NC	—	Not used
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 will ignore the $\overline{\text{STROBE}}$ signal.

Signal Pin	Return Pin	Signal	Direction	Description
32	—	$\overline{\text{ERROR}}$	OUT	This signal will go 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 is carried out by observing the $\overline{\text{ACKNLG}}$ or BUSY signal.
  (Data transfer to the printer interface can only be carried out after the 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 interface.
- Return denotes the twisted-pair return to be connected at signal ground level.
  For the interface wiring, use a twisted-pair cable for each signal and to complete the connection on the return side.
- The pulse width of the $\overline{\text{ACKNLG}}$ signal will vary.

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



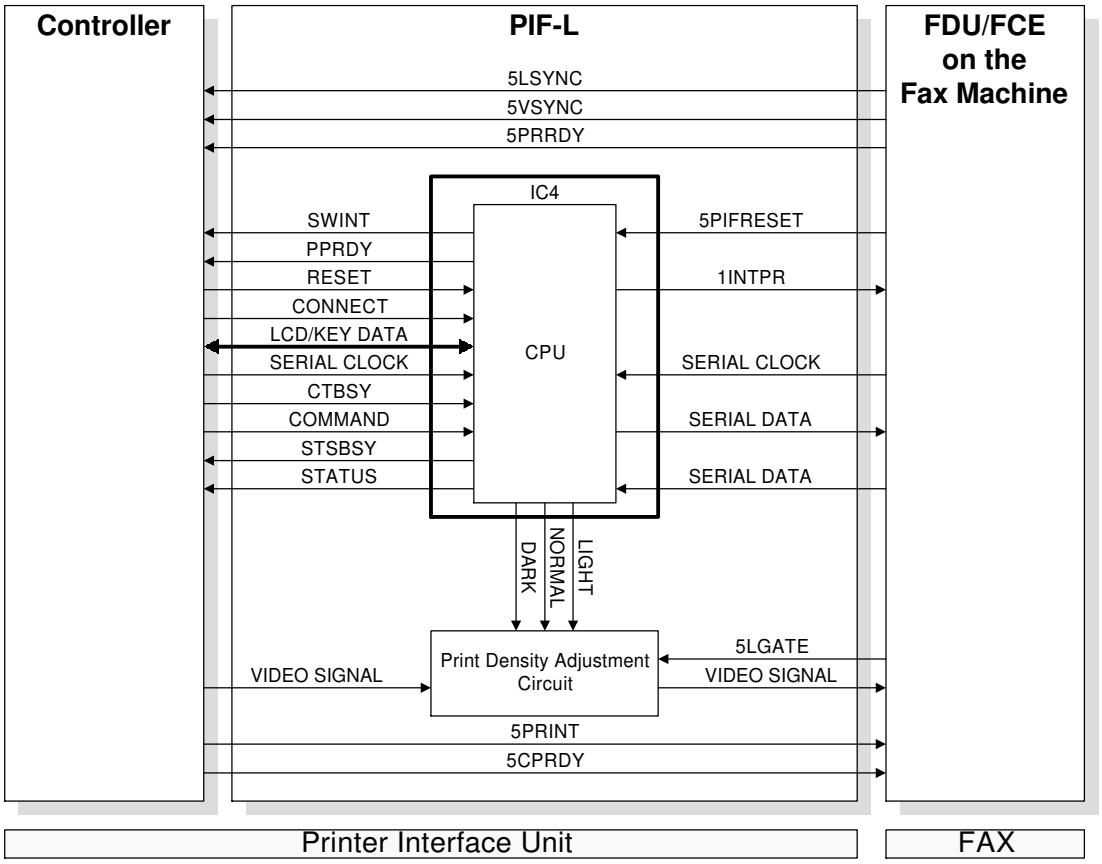
• 16, 19—30, 33 connected to GND

2.1.2. 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



The CPU on the PIF-L board acts as a interpreter (emulator) between the printer controller board and the FAX machine.

2.2.1. Command and Status Signals

The controller board will send various command signals to the FAX machine through the CPU on the PIF-L board requesting hardware status (e.g., cassette paper size, jam, toner end) and for specifying a cassette for printing. The FAX machine will respond to each command signal with a status signal.

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

2.2.2. Key/Display Emulation

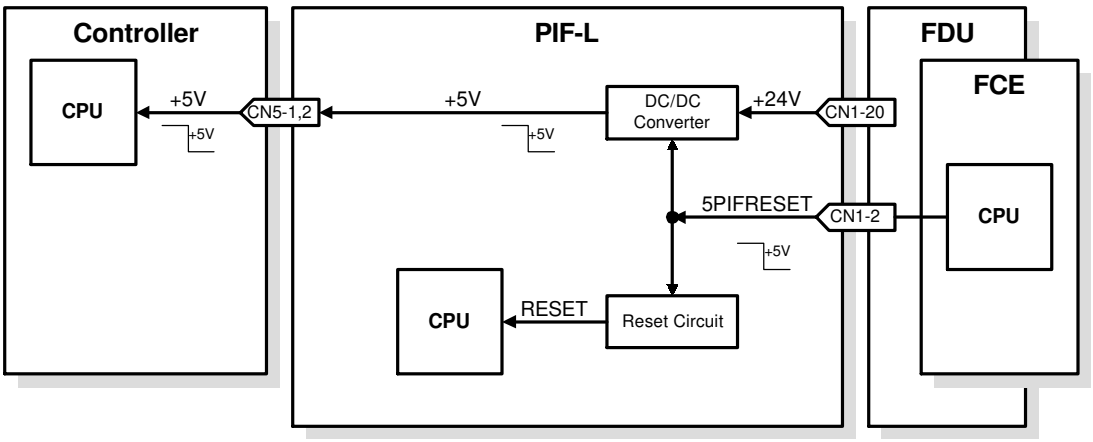
When the operator is using the printer function of the FAX machine, the FAX machine's keys and LCD panel are connected to the printer controller board. through the CPU on the PIF-L board.

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 board will emulate the user key operations for the controller board and the display message to the FAX machine, so that the user cannot select settings that the FAX machine is not capable of performing.

2.2.3. Print Density Control

The controller controls the print density adjustment using the Level 2 menu. Depending on the density setting sent from the controller board, the PIF-L board will adjust the pulse width of each pixel.

2.2.4. Printer Interface Reset



If the FAX machine's CPU chip activates the 5PIFRESET signal, the reset circuit on the PIF-L board will reset its CPU, and the DC/DC converter on the will shut down the +5V supply to the Controller board.

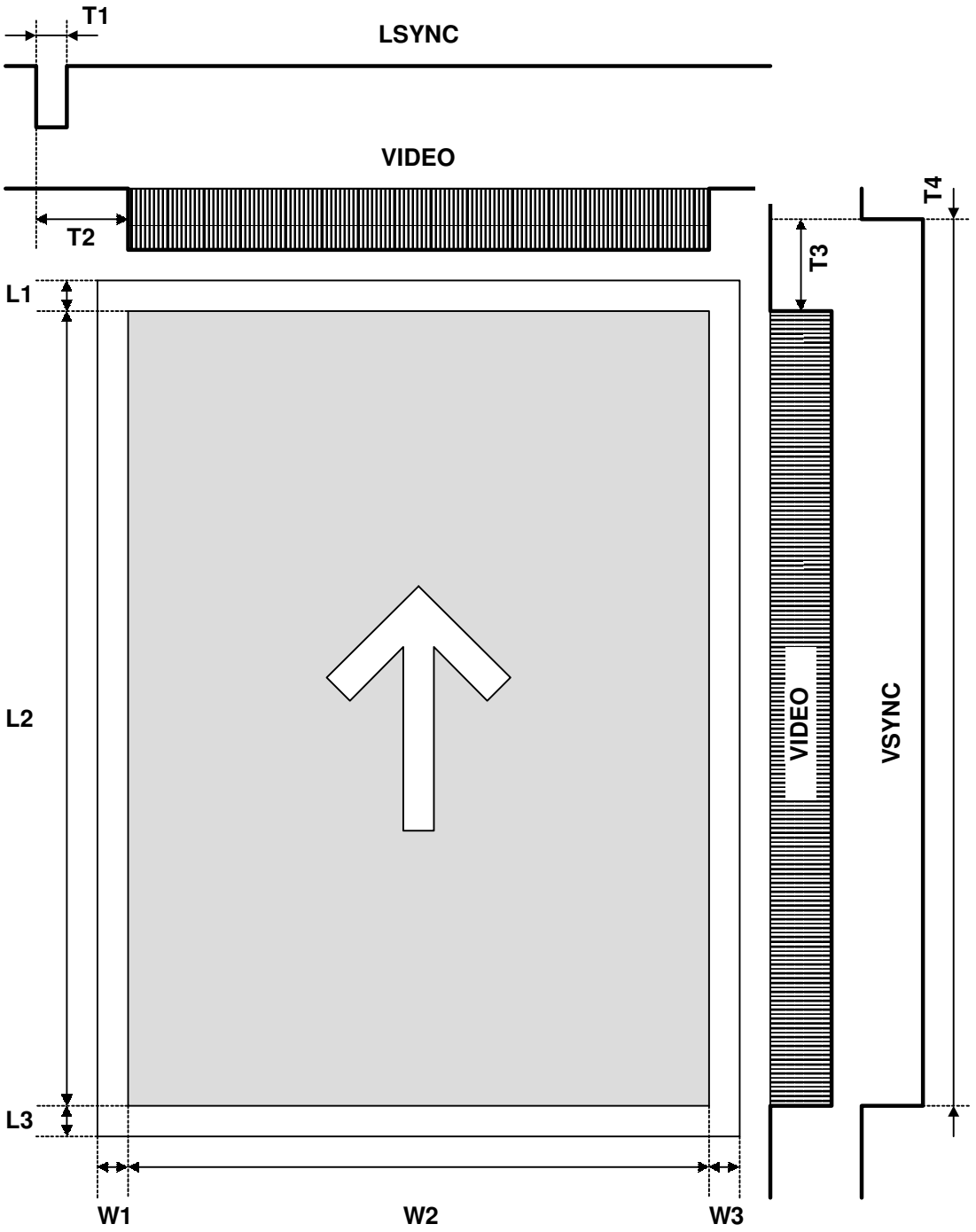
The procedure for totally resetting the printer interface is described in Section 4.

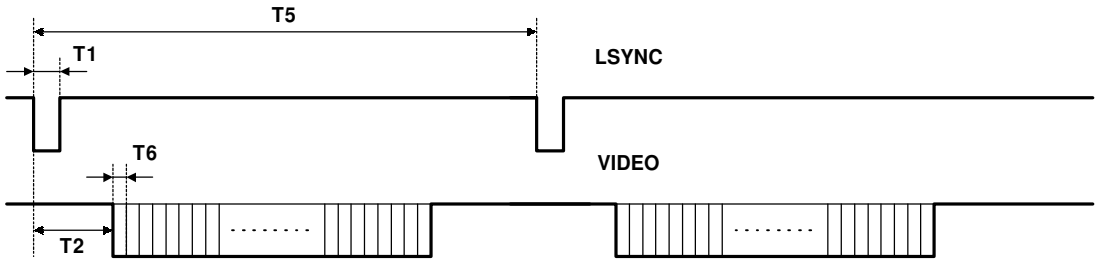
2.3. VIDEO INTERFACE

2.3.1. Overview

The video interface specifies the print timing between the printer interface and the FAX machine.

2.3.2. Main Scan Direction





The LSYNC signal will go low for T1 time before the printer interface sends each line of print data. Then, the printer interface will send the 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 set at 4 mm.

2.3.3. Sub Scan Direction

The VSYNC signal will go low for T3 time before the printer interface sends each page of print data. Then, the printer interface will send the video data (T4) after the falling edge of VSYNC was detected.

Parameter	Setting
T3	22.55 ms
T4	varies with paper length

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

3. INSTALLATION

⚠ CAUTION

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

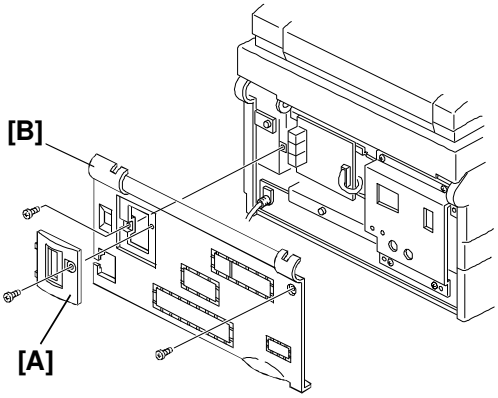
1. **Print out all the messages stored in the memory.**
2. **Print out the list of user-programmed items and the system parameter list.**
3. **Turn off the main switch and disconnect the power plug.**

3.1. PRINTER INTERFACE UNIT

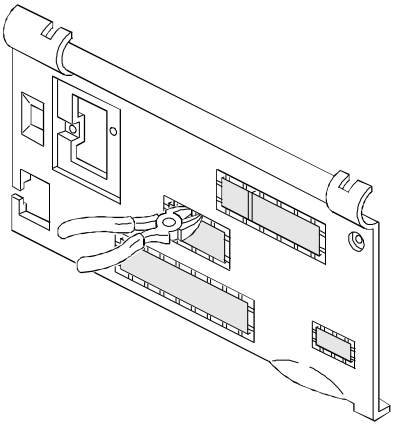
3.1.1. Type 130

Model: MV310

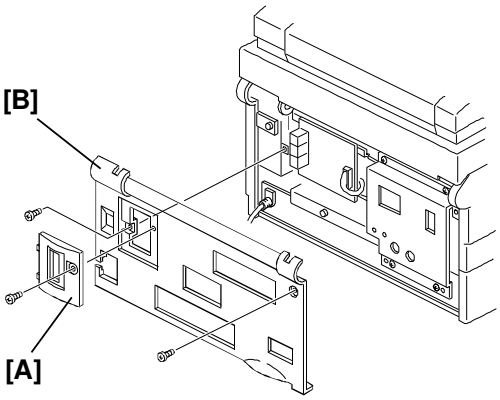
1. Remove the NCU cover [A] (1 screw) and left cover [B] (2 screws).



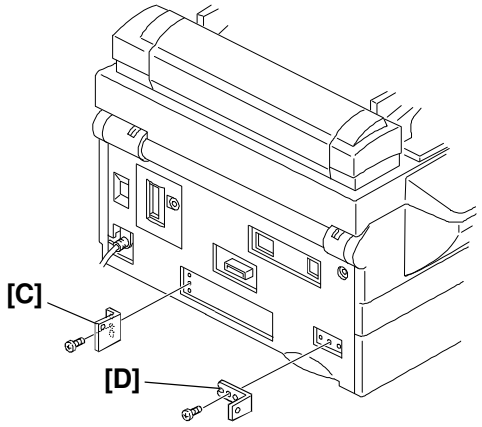
2. Cut and remove the shaded parts (3) off the left cover.



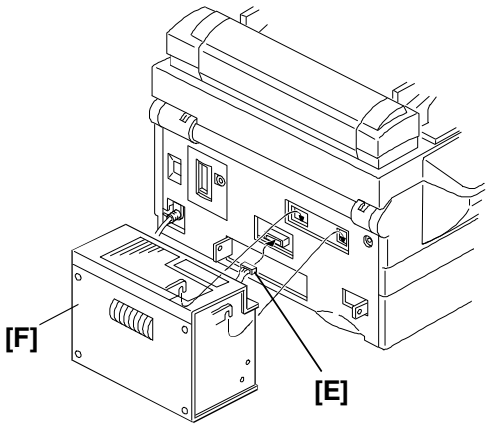
3. Re-install the left cover [B] (2 screws) and the NCU cover [A] (1 screw).



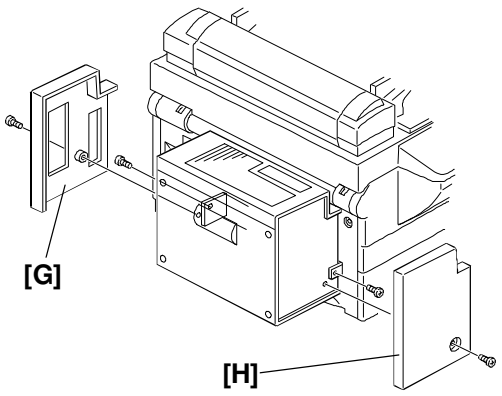
4. Install two brackets [C] and [D] (1 screw each).



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.



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. Confirm that 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.



3.1.2. Operation Panel Decals

All Models

Refer to the illustration in figure 1 to identify each numbered decal.

Adhere the decal labels numbered 2 and 3 onto the operation panel as illustrated on figure 2.

Fig.1

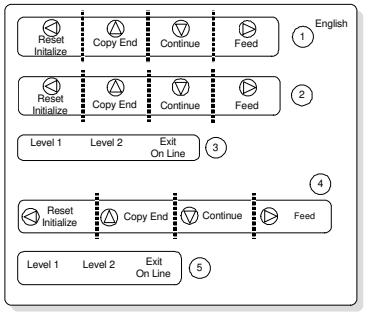
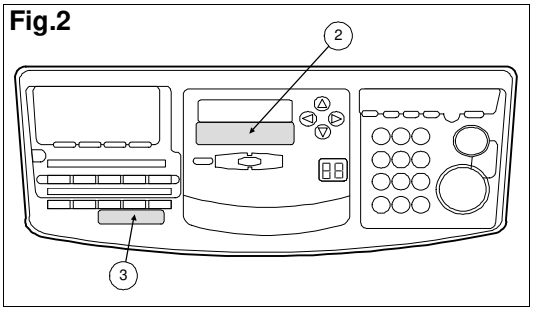


Fig.2



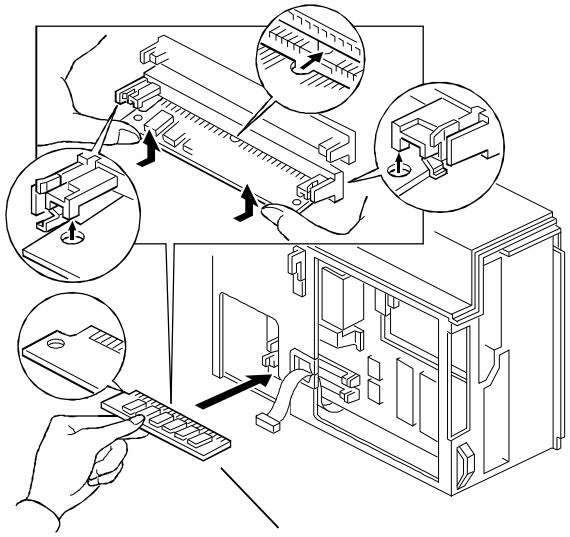
3.2. SIMM MEMORY

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

3.2.1. Type 130

Perform 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.
3. Print the status sheet. The "Installed Memory" should have increased to the new SIMM memory capacity plus 1 Mbyte. If the "Installed Memory" is still 1 Mbyte or an error is indicated while in printer mode, ensure that the SIMM was correctly installed. Refer to the Operators Manual, page 4.



3.2.2. SIMM Requirements

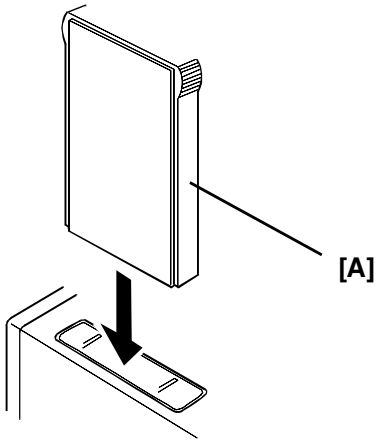
1. Number of pins	72
2. Access speed	70 ns or faster
3. Capacity	1, 2 or 4 MB
4. Parity	N/A

3.3. OTHER OPTIONS (User Installable Items)

3.3.1. PostScript ™ Cartridge

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

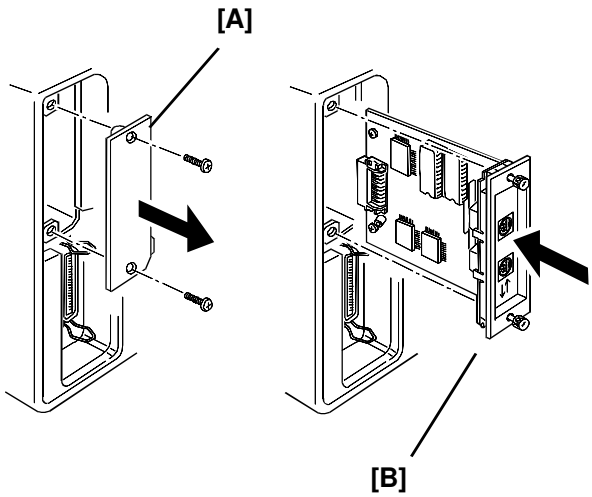
Note: A minimum of 2 MB of memory is required to use the PostScript ™ emulation.



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.
- A mimimum of 2 MB of memory is required to use the LocalTalk ™ interface and the PostScript ™ emulation.



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. Refer to the Operator's Manuual, page 3.
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 machine. Refer to the Operator's Manual, page 4.
4. Press the On Line key to exit SelecType SM mode.

3.5.2. DOS ® Based Computers

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

1. Checking the Printer Cable Connection

1. Ensure that the printer cable is properly connected.
2. Turn on the machine, then turn on the computer.
3. Ensure that the printer interface is on line.
4. After DOS ® is initialized, type the following at the C:\> prompt:
   ```
   AUTOEXEC.BAT
   ```
   The computer displays the following:
   ```
   NAME OF LIST DEVICE (PRN);
   ```
   Type the following:
   ```
   LPT1
   ```
   The autoexec.bat file will be printed from the fax machine.

If nothing is printed, ensure that the proper printer cable was used and connected securely to both the computer and the printer interface. Refer to the Operators Manual, page 6.

2. Printer Driver for DOS ® Applications

Printer drivers for DOS ® applications are not provided 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.

Since each application program differs in its setup procedure, there is no standard method to select the printer driver. Refer to the application software manual for the proper procedure to select the printer driver.

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
To avoid any damage to the customer’s data files, it is not recommended that the service technicians operate the customer’s computer,
The following procedures are explained for testing purpose only.

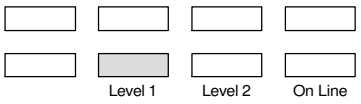
1. Install the printer driver as explained in the Operator’s Manual of the PS cartridge.
2. Ensure that the “LocalTalk" ™ is selected in the control panel.
3. Choose “Printer I/F T130” as an active printer in the Chooser.
4. Open an document for a test print. Choose the paper size, orientation (and options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

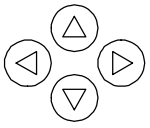
4. SERVICE TABLES AND PROCEDURES

4.1. USER LEVEL FUNCTIONS

4.1.1. Level 1 Menus

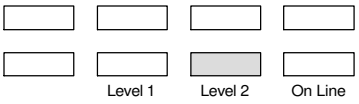
To access Level 1 menus, press the Level 1 key (the third Quick dial key from the bottom right).
To exit from the Level 1 menus, press On Line (the last Quick dial key).
Refer to the Operator's Manual for details about the menus.

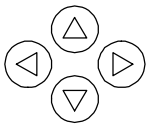




4.1.2. Level 2 Menus

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.





4.1.3. Dump Mode

1. Ensure 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. Refer to the Operator's Manual, page 3.
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 return to step 1.
4. Start the application on the host computer and print a document. All the print data will be printed in hexadecimal.
5. Turn off the dump mode by either turning off the machine or by INITIALIZE the printer controller. Refer to section 4.1.4.

4.1.4. Controller Reset and Initialize

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

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

   INITIALIZE - Resets the controller to the power-on default settings. The received data will be cleared.

4.1.5. Factory Reset

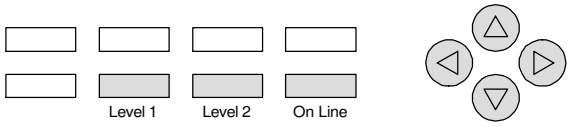
1. Ensure that the machine is not out of paper, and the machine is turned off.
2. Turn on the machine, then immediately enter the printer mode. Refer to the Operator’s Manual, page 3.
3. If the message “RAM CHECK x.x MB” is still displayed, hold down the Left Arrow key until “FACTORY RESET” is displayed. All the controller settings will be returned to the factory settings.
   If the controller had finished the RAM check, turn off the machine and return to step 1.

4.2. SERVICE LEVEL FUNCTIONS

4.2.1. Printer Interface Reset

The controller and the PIF boards 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, page 3)
2. Press the following keys simultaneously.
   - All the arrow keys
   - On Line
   - Level 1
   - Level 2



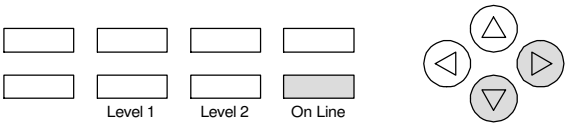
4.2.2. Counter Reset

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

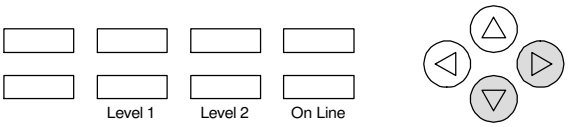
To reset this counter to zero, Perform the following procedure.

1. Reset the printer interface as described in section 4.1.5.
2. While the controller is checking memory, press the following keys simutaneously.
   - Right arrow
   - Down arrow
   - On Line

   The Message "STARTUP ERROR" will appear on the display.



3. Press the right arrow and down arrow keys simultaneously.



4. Enter the Level 2 menu and confirm that the counter has been reset to zero. Refer to the Operators Mamual, page 17 and 18.

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. Refer to the service manual for the procedure.

4.3. BIT SWITCHES

The system bit switch 14 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 will force the fax machine to wait until the end of printer interface output before printing an incoming fax message. A shorter setting will allow the fax machine to print an 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 will release 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
MV310	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. The On Line and Data LEDs light at power up ?	Replace the FAX machine's FCE or FDU board.	Go to step 2.
2. Is the cable from the printer 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. 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 board.	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 section 4.2.1. Does the machine still show a SERVICE REQ. code ?	Replace the controller board.	The problem has been solved.

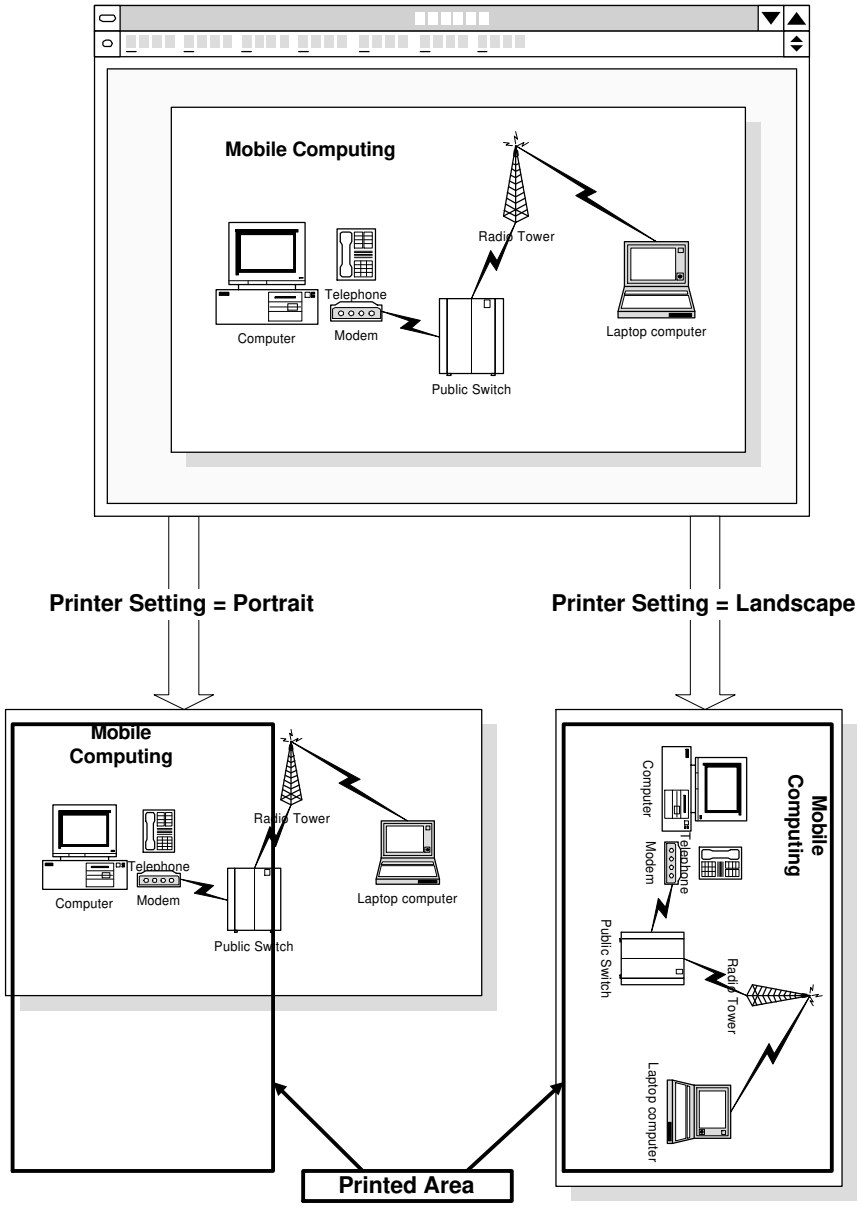
Symptom: “RAM ERROR” is displayed while in printer mode.		
Check	**Action if Yes**	**Action if No**
1. The error message appear after installing an optional SIMM memory ?	Go to step 2.	Reset the printer interface unit as explained in section 4.2.1, then go to step 3.
2. Is the SIMM memory installed correctly ?	Replace the SIMM memory.	Reinstall the SIMM memory.
3. Does the message appear again while in printer mode ?	Replace the controller board 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. The 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 section 4.2.1, then go to step 2.
2. Does the message appear again while in the printer mode ?	Replace the controller board.	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. The Check Display LED blink ?	Enter printer mode, and check the display. Go to step 2.	Remove and reseat the cassette.
2. “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 the 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. Remove and reseat the cassette. 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 section 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. 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.



Example: Print orientation error.

Symptom: Printed data appears as strange characters.		
Check	**Action if All**	**Action if Partial**
1. All of the data appear as strange characters ? 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 CARTRIDGE 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.