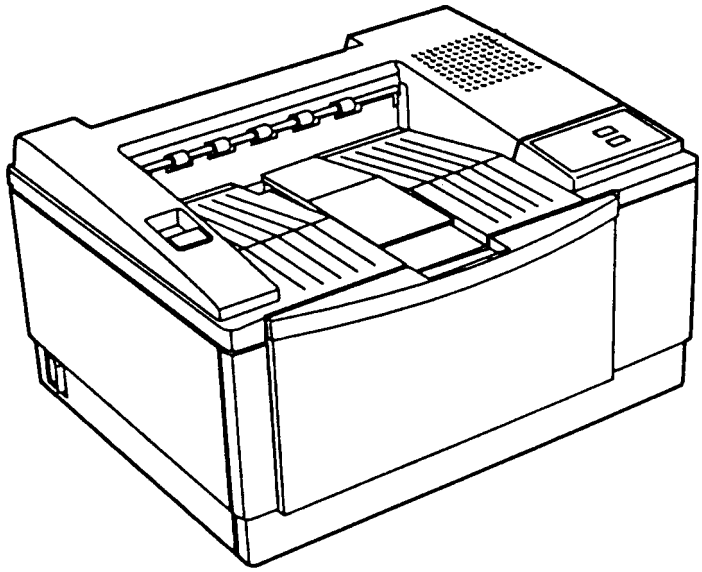
EPSON TERMINAL PRINTER

EPL-3000

ActionLaser 1300

SERVICE MANUAL



EPSON

4003564

NOTICE

The contents of this manual are subjects to change without notice.

All efforts have been made to ensure the accuracy of the contents of this manual. However, should any errors be detected, SEIKO EPSON would greatly appreciate being informed of them.

The above notwithstanding SEIKO EPSON can assume no responsibility for any errors in this manual or the consequence thereof.

Epson is registered trademark of Seiko Epson Corporation.

General Notice: Other product names used herein are for identication purposes only and maybe trademarks of their respective campanies.

SAFETY INFORMATION

This printer is a page printer which operates by means of a laser. There is no possibility of danger from the laser, provided the printer is operated according to the instructions in this manual provided.

Since radiation emitted by the laser is completely confined within protective housings, the laser beam cannot escape from the machine during any phase of user operation.

For United States Users;

[Laser Safety]

This printer is certified as a Class 1 Laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

[CDRH Regulations]

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2,1976. Compliance is mandatory for products marketed in the United States. The label shown below indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

WARNING: Use of controls, adjustments or performance of procedures other thanthosespecified in this manual may result in hazardous radiation exposure.

[Internal Laser Radiation]

Maximum Radiation Power: 3.025 X 10^{-4} (W)
Wave Length: 780 ± 20 nm

This is a Class IIIb Laser Diode Assay that has an invisible laser beam. The print head unit is NOT A FIELD SERVICE ITEM. Therefore, the print head unit should not be opened under any circumstances.

For Other Countries Users;

WARNING: Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

This is a semiconductor laser. The maximum power of the laser diode is 3.025 x 10^{4}W and the wavelength is 780 ± 20 nm.

For Denmark Users;

ADVARSEL Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

Klasse 1 laser produkt der opfylder IEC825 sikkerheds kravene.

SAFETY INFORMATION

This printer is a page printer which operates by means of a laser. There is no possibility of danger from the laser, provided the printer is operated according to the instructions in this manual provided.

Since radiation emitted by the laser is completely confined within protective housings, the laser beam cannot escape from the machine during any phase of user operation.

For United Slates Users;

[Laser Safety]

This printer is certified as a Class 1 Laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

[CDRH Regulations]

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2,1976. Compliance is mandatory for products marketed in the United States. The label shown below indicates compliance with the CDRH regulations and must be attached tolaserproducts marketed in the United States.

WARNING: Use of controls, adjustments or performanceof procedures other thanthosesoecified in this manual mav result in hazardous radiation exposure.

[Internal Laser Radiation]

Maximum Radiation Power: $3.025X\ 10^{4}$ (W)
Wave Length: 780 ± 20 nm

This is a Class IIIb Laser Diode Assay that has. an invisible laser beam. The print head unit is NOT A FIELD SERVICE ITEM. Therefore, the print head unit should not be opened under any circumstances.

For Other Countries Users;

WARNING: Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

This is a semiconductor laser. The maximum power of the laser diode is 3.025 x 10^{4}W and the wavelength is 780 ± 20 nm.

For Denmark Users;

ADVARSEL
Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion.
Undgå udsættelse for stråling.

Klasse 1 laser produkt der opfylder IEC825 sikkerheds kravene.

For Finland, Sweden Users;

VAROITUS
Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersateiylle.

VARNING
Om apparaten används på annat satt an i denna bruksanvisning specificerats, kan användaren utsättas for osynlig laserstrålning, som overskrider gränsen for laser klass 1.

For Finland, Sweden Service People

VAROITUS
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Ala katso sateeseen.

VARNING
Osynlig laserstrålning när denna del är oppnad och sparren är urkopplad. Betrakta ej strålen.

For Norway Users;

ADVARSEL
Dersom apparatet brukes på annen måte em spesifisert i denne bruksanvisning, kan brukeren utsettes for unsynlig laserstråling som overskrider grensen for laser klasse 1.

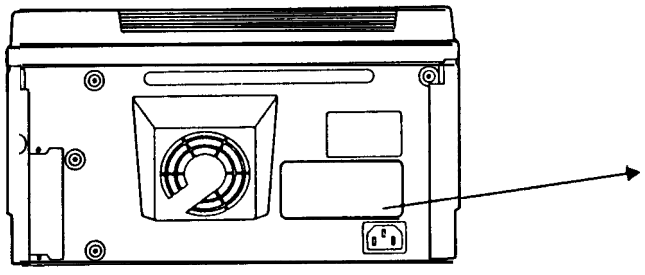
Dette er en halvleder laser. Maksimal effeckt til laserdiode er 3.025 x 10^{-4} W og bølgelengde er 780 ± 20 nm.

Laser Safety Labels

[Label on rear printer case]

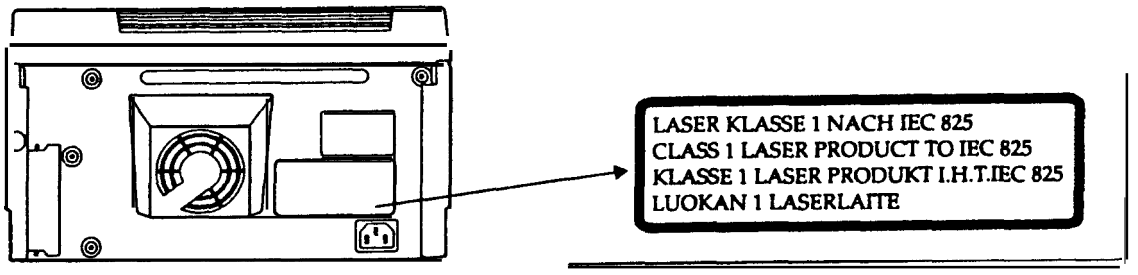
A laser safety labels is attached on the outside of the printer shown below.

For United State



This laser product conferms to the applicable requirement of 21 CFR Chapter 1, subchapter J.
SEIKO EPSON CORP.
Hirooka Office
80 Hirooka, Shiojiri-shi, Nagano-ken, JAPAN
MANUFACTURED:

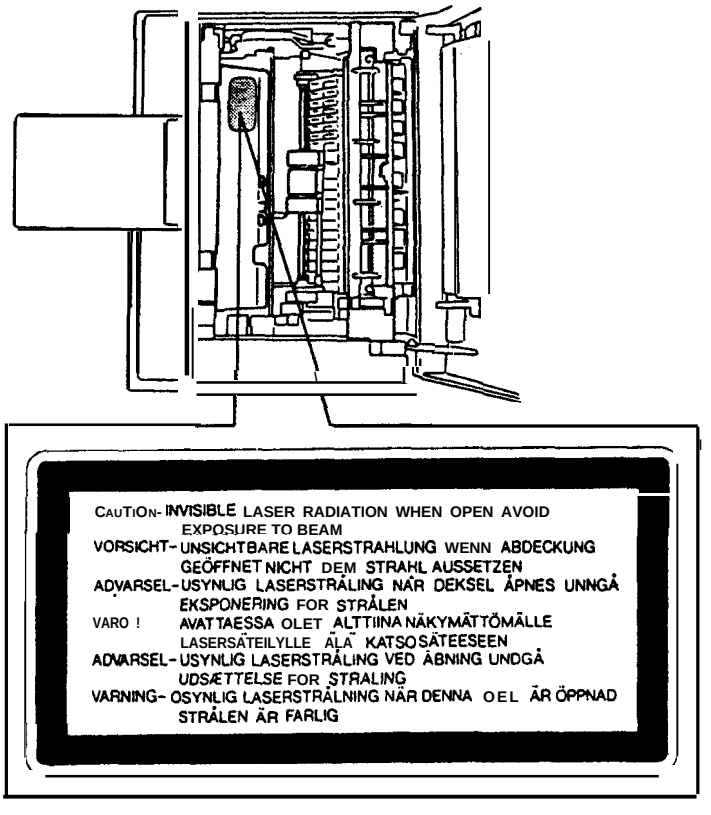
For Europa



[Label inside printer]

The following laser safety label will be attached inside the printer as shown below.

For Denmark, Finland, Swadan, and Norway



PREFACE

This manual describes functions, theory of electrical and mechanical operations, maintenance, and repair of EPL-3000/ActionLaser 1300.
The instructions and procedures included herein are intended for the experience repair technician, and attention should be given to the precautions on the preceding page. The chapters are organized as follows:

CHAPTER 1. GENERAL DESCRIPTION

Provides a general product overview, lists specifications, and illustrates the main components of the printer.

CHAPTER 2. OPERATING PRINCIPLES

Describes the theory of printer operation.

CHAPTER 3. DISASSEMBLY AND ASSEMBLY

Includes a step-by-step guide for product disassembly and assembly.

CHAPTER 4. ADJUSTMENT

Includes a step-by-step guide for adjustment.

CHAPTER 5. TROUBLESHOOTING

Provides Epson-approved techniques for adjustment.

CHAPTER 6. MAINTENANCE

Describes preventive maintenance techniques and lists lubricants and adhesives required to service the equipment.

APPENDIX

Describes connector pin assignments, circuit diagrams, circuit board component layout and exploded diagram.

The contents of this manual are subject to change without notice.

REVISION SHEET

Revision	Issue Date	Revision Page
Rev. A	July 22,1994	let issue

TABLE OF CONTENTS

Chapter 1 General Description

Table of Contents

1.1 FEATURES

The EPSON® EPL-3000 and the ActionLaser™ 1300 are non-impact page printers that combine a semi-conductor laser with electro-photographic technology. These printers are small and light, and feature high-speed, high-resolution printing. Maintenance is very easy because of various built-in diagnostic functions. The main features are:

- ❑ No ozone
- ❑ Printing speed — 4 ppm (pages per minute)
- ❑ Resolution — 300 dpi (dots per inch)
- ❑ Light weight — about 7 kg (15 lb.)
- ❑ Small footprint
- ❑ Easy maintenance
- ❑ HP® LaserJet® 4L emulation mode (PCL® 5e emulation)
- ❑ 22 built-in scalable fonts (8 Agfa® and 14 TrueType fonts)
- ❑ Resolution Improvement Technology (RITech) refines the print quality by eliminating jagged edges from images and characters.
- ❑ Two levels (35% less and 50% less) for Toner Save Mode
- ❑ Optional EPSONScript Level 2 (PostScript® compatible) SIMM module
- ❑ Optional WPS (Windows Printing System) SIMM module
- Q 1 MB standard RAM and up to 5 MB RAM with the addition of optional SIMM
- ❑ Bidirectional parallel interface
- ❑ High-speed parallel communication rate of approximately 125 KB/second
- ❑ A multi-user, multi-emulation mode (EPL-3000)
- ❑ IES (Intelligent Emulation Switch) allows switching between EPSONScript mode and PCL5e emulation mode.
- ❑ SPL (Shared Printer Language) enables switching of the printer mode by command.

Figure 1-1 shows an exterior view of the EPL-3000 and ActionLaser 1300.

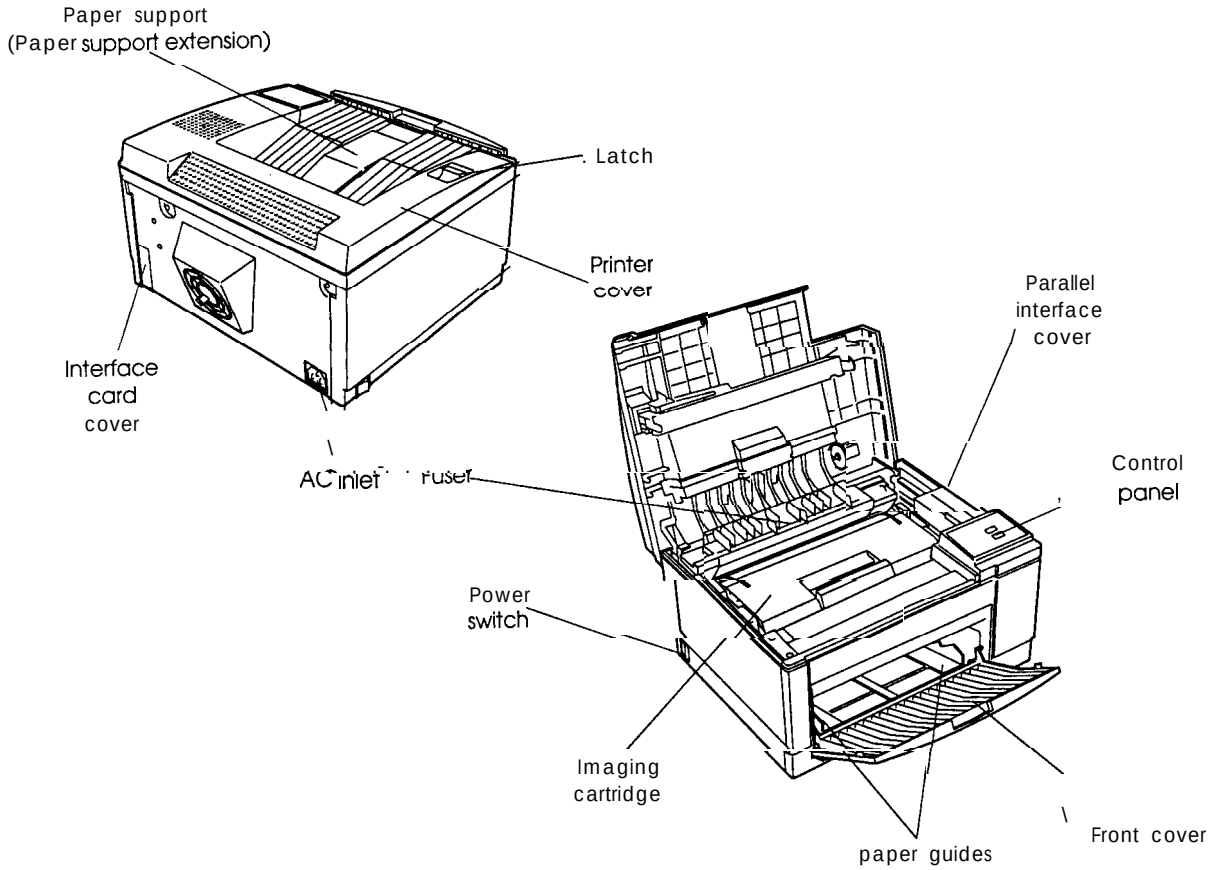


Figure 1-1. Exterior View of the EPL-3000 and ActionLaser 1300

Table 1-1 lists the optional units available for the EPL-3000 and ActionLaser 1300.

Table 1-1. Options for EPL-3000 and ActionLaser 1300

Cat. No.	Description	Note	MachineType	
			EPL-3000	ActionLaser 1300
C83212*	EPSONScript Level 2 SIMM Module	Supports EPSONScript Level 2 mode (PostScript Level 2 compatible) fonts and commands	Yes	Yes
C83213*	AWPS SIMM Module	Supports AtWork Printing System	Yes	Yes
—	Bitmap Local Language Font ROM Chip	Supports bitmap local language fonts	Yes	No
—	Scalable Local Language Font ROM Chip	Supports scalable local language fonts	Yes	No
—	Thai Font ROM Chip	Supports Thai fonts	Yes	No
3051020	Imaging cartridge	Toner cartridge	Yes	Yea
C82305*/ C82306*	Serial interface card	—	Yes	No
C82307*/ 282308X	32 KB serial interface card	—	Yes	No
C82310*/ 28231 1X	32 KB parallel interface card	—	Yes	No
C82312*	LocalTalk card	—	Yes	No
C82314*	COAX interface card	—	Yes	No
C82315*	TWINAX interface card	—	Yes	No

Notes:

1. These printers can use only one optional ROM SIMM module.
2. The EPL-3000 can useonlyoneoptional ROM chip.
3. The ActionLaser 1300 has not optional Type-B interface card slot.

1.2 SPECIFICATIONS

This section provides statistical data for the EPL-3000 and ActionLaser 1300.

1.2.1 Basic Specifications

Printing method: Laser beam scanning and dry electro-photography

Resolution: 300 dpi

Printing speed: 4 ppm (letter/A4)

First printing time (A4/LT): Less than30 seconds

Warm-up time: Less than 40 seconds
(at rated current and 23'C (73 °F) temperature)

Paper supply: See Table 1-2.

Table 1-2. Paper Feed Methods

Paper Supply		Capacity (20 lb. (70g/m2) paper)	Paper Size	Usage Thickness (Ream Weight)
Standard built-in paper tray	Auto feed	150	A5, B5, A4, LT, GLT, EXE, LG, GLG, F4, HLT	16 to 24 lb. (60 to 90 g/m^2)
		5 to 10	Monarch, DL, C5, C6, IB5 Commercial-10	Envelopes made of 16 to 24 lb. (60 to 90 g/m^2) paper
	Manual feed	1	Any size feedable (Note 2)	16 to 42 lb. (60 to 157 g/m^2)

Notes:

1. The weight in pounds (lb.) is determined by how much 500 sheets cut to 17 x 22 inches would weigh; 1 g/m^2 = 0.2659763 lb.
2. Paper size range: width 3.0 to 8.5 inches (76.2 to 216 mm)
   length 5.0 to 14.0 inches (127 to 356 mm)

Paper types: See Table 1-3.

Table 1-3. Paper Types

Standard paper	Xerox® 4024 DP paper 20 lb. (75 g/m^2)
Normal paper	Regular photocopier paper Bond paper Recycled paper 16 to 24 lb. (60 to 90 g/m^2)
Special paper	Card stock (90 to 157 g/m^2) Envelopes Labels Letterhead Transparency (OHP) sheets Colored paper

Usability of special paper: See Table 1-4.

Table 1-4. Usability of Special Paper

Input	output	OHP	Envelopes	Labels	Card Stock	Letterhead
Standard built-in paper tray	Face down	P	P	P	P	R

R: Reliable feeding and good image quality.
P: Possible, but better avoided.
N: Not supported.

Paper feed alignment and direction: Center alignment for all sizes
Paper ejection: Face down
Output tray capacity: 50 sheets (standard paper)
Printable area (standard paper): See Figure 1-2.

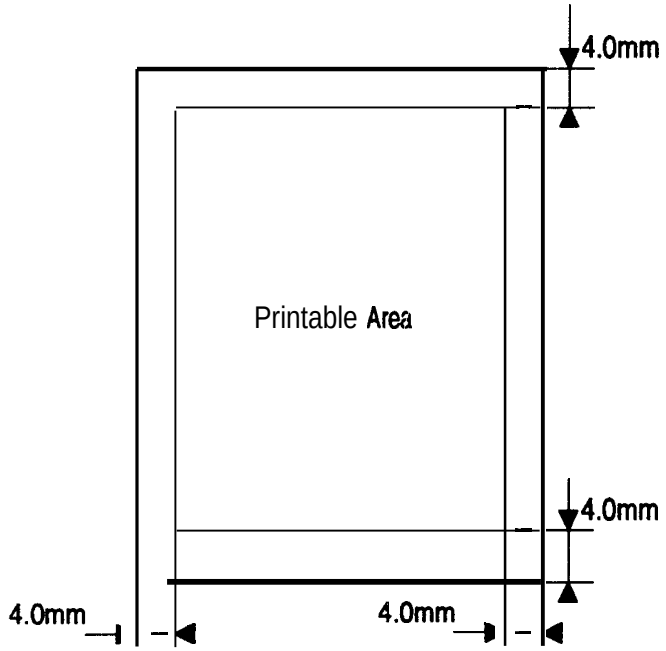


Figure 1-2. Printable Area

Note: The actual printable area depends on the printer mode.

Noise: Less than 30 dB(A) (standby)
Less than 47 dB(A) (operating)
Ozone density: Less than 0.01 ppm
Toxicity: No toxicity exists in organic photo conductor (OPC), toner, or plastic materials

1.2.2 Electrical Specifications

Table 1-5. Electrical Specifications

Description	100 V Version	200 V Version
Rated voltage	100-120 VAC	220-240 VAC
Input voltage range	90-132 VAC	198-264 VAC
Rated frequency range	50-60 Hz	
Input frequency range	47-63 Hz	
Power consumption	Less than 350 W	Less than 450 W
Power consumption while in standby mode	Less than 15 W	

1.2.3 Reliability Specifications

MPBF (Mean Prints Between Failures): Over 17,000 sheets

Note: MPBF indicates the average number of pages printed before the occurrence of a problem requiring replacement or service.

MTBF (Mean Time Between Failures):	3000 power-on hours (POH)
Jam rate:	1 out of 2,000 sheets or less (excluding multiple-sheet feeding)
Feed failure:	1 out of 2,000 sheets or less (excluding multiple-sheet feeding)
Multiple paper feeds:	1 out of 500 sheets or less
Paper curl height:	30 mm (1.2 inches) or less
Leading edge bending (1 cm or more):	1 out of 1,000 sheets
MTTR (Mean Time To Repair):	30 minutes or less
Durability:	5 years or 100,0000 sheets

1.2.4 Environmental Conditions for Operation (Including Imaging Cartridge)

Temperature:	10 to 35° c (50 to 95° F)
Humidity:	15 to 85% RH
Altitude:	2,500 m (8,200 feet) or lower
Horizontal placement:	The printer should be installed on a level plane.
Illuminance:	3,000 IUX or less (must not be exposed to direct sunlight)
Surrounding space:	The printer should have at least 100 mm of clearance on its sides and rear.

1.2.5 Environmental Conditions for Storage and Transportation (Excluding Imaging Cartridge)

Temperature:	O to 35° C (32 to 95° F) over full storage term -20 to 55° C (-4 to 131° F) under extreme conditions (Extremes are allowable for up to 1/30 of full storage term) Temperature variation must be 10″ C (18° F)/hour or less
Humidity:	30 to 85% RH over full storage term 10 to 95% RH under extreme conditions (Extremes are allowable for up to 1/30 of full storage term)
Drop test:	Clear to JIS Z0200-1987 Level 1
Vibration:	Vibration frequency 5 to 100 Hz and 100 to 5 Hz Acceleration 1 G Acceleration direction 3 direction
Resistance to atmospheric pressure:	More than 613 hPa
Storage term:	24 months (following date of manufacture)

1.2.6 Applicable Standards

Safety Standards

120 VAC model:	UL 1950, CSA 22.2 No.950 Deviation 3
220/240 VAC model:	EN 60950 (IEC950), NEMKO (IEC950), SETI (IEC950), SEMKO (IEC950), DEMKO (IEC950)

Safety Regulations (Laser radiation)

120 VAC model:	FDA (NCDRH) Class 1
220/240 VAC model:	VDE 0837 (Laser Class 1)(IEC825), SETI (IEC825), SEMKO (IEC825), DEMKO (IEC825)

EMI

120 VAC model:	FCC Part 15 Subpart B Class B
220/240 VAC model:	Vfg 243 (VDE 0878 Part 3,30) EN55022 class B (CISPR Pub.22 class B)

Others

Toner:	No effect on human health (OSHA-TSCA, EINECS)
OPC:	No effect on human health (OSHA)
Ozone:	Less than 0.01 mmp other UL478 (5th edition)
Materials:	SWISS Environmental Law (No CdS must be contained)

1.2.7 Consumable (Imaging Cartridge) Specifications

Life:	3,000 pages (unit included with printer) 4,500 pages (optional consumable)

Note: Consumable life is based on continuous printing mode with A4/letter paper at a 5% image ratio (black/white ratio). The life varies, depending on the printing mode (continuous or intermittent) and/or the image ratio.

Environmental Conditions for Storage and Transportation

Temperature:	Oto300 C (32to860 F) over full storage term –20 to40'C (-4 to 104 "F) under extreme conditions (Extremes are allowable for up to 1/.30 of full storage term) Temperature variations must be10"C (18 °F)/hour or less.
Humidity:	30 to 85% RH over full storage term 10 to 95% RH under extreme conditions (Extremes are allowable for up to 1/30 of full storage term)
Drop test:	Height 76 cm (30.4 inches)
Vibration:	Same as printer
Resistance to atmospheric pressure:	More than 740 hPa
Storage term:	18 months (following date of manufacture)

1.2.8 Physical Specifications

Dimensions (W x D x H):	376 x 311 x 216 mm (14.8 x 12.3x 8.5 inches) 376 x 444 x 218 mm (14.8 x 17.5x 8.9 inches) (paper tray set)
Weight:	Approximately 7 Kg (15.5 lb.) (including consumable, excluding all options)

1.2.9 Software Specifications

Built-in modes: HP LaserJet 4L emulation (PCL5e)

Optional modes: EPSONScript Level 2 (PostScript Level 2 emulation) mode
AWPS (AtWork Printing System) mode

Auxiliary software: Hex dump
Status sheet
Font sample
Fact sheet
RITech test sheet

Built-in fonts: See Table 1-6

Table 1-6. Built-in Fonts

Resident Fonts		Applicable Mode
		HP LJ4L
Bitmap fonts		
Line Printer	16.66 cpi (Portrait)	S
Courier	10 cpi (Portrait)	S
Courier Bold	10 cpi (Portrait)	S
Courier	12 cpi (Portrait)	S
Courier Bold	12 cpi (Portrait)	S
Scalable fonts		
Dutch™ 801	Roman SWC	S
Dutch 801	Bold SWC	S
Dutch 801	Italic SWC	S
Dutch 801	Bold Italic SWC	S
Swiss™ 742	SWC	S
Swiss 742	Bold SWC	S
Swiss 742	Medium Italic SWC	S
Swiss 742	Bold Italic SWC	S
Swiss 721	Roman SWM	S
Swiss 721	Bold SWM	S
Swiss 721	Oblique SWM	S
Swiss 721	Bold Oblique SWM	S
Dutch 801	Roman SWM	S
Dutch 801	Bold SWM	S
Dutch 801	Italic SWM	S
Dutch 801	Bold Italic SWM	S
Symbol Set	SWA	S
More WingBats	SWM	S
Courier	SWC	S
Courier	Bold SWC	S
Courier	Italic SWC	S
Courier	Bold Italic SWC	S

S: Supported, NS: Not Supported

Note: The built-in fonts for this printer are not same as the fonts for the HP LaserJet 4L.

Font Symbol Sets

HP LaserJet 4L Mode (bitmap fonts): 26 **symbol sets**

Roman-8	**Norweg1**	Roman Extension
French	HP German	Italian
JIS ASCII	ECM941	**Swedis2**
ANSI ASCII	**Norweg2**	UK
French2	German	HP Spanish
Legal	Chinese	Spanish
IRV	Swedish	Portuguese
IBM® Portuguese	IBM Spanish	IBM- US
IBM-DN	**PcMultilingual**	

HP LaserJet 4L Mode (scalable fonts): 34 symbol sets

Roman-8	**Norweg1**	Italian
ECM94-1	**Swedis2**	ANSI ASCII
UK	**French2**	German
Legal	8859-2 **ISO**	Spanish
PsMath	8859-9 **ISO**	WiTurkish
MsPublishing	VeMath	DeskTop
Math-8	**WiE.Europe**	**PcTk437**
Windows	**PsText**	IBM-US
IBM-DN	McText T	**PcMultilingual**
VeInternational	VeUS	PiFont
PcE.Europe	**SymbolT**	WiAnsi
Wingdings		

1.3 INTERFACE SPECIFICATIONS

The EPL-3000 is equipped with the following external interfaces:

- Parallel interface
- Optional Type-B interface

The ActionLaser 1300 is equipped with the following external interface:

- Parallel interface

1.3.1 Parallel Interface

The parallel interface has two modes as follows:

- Compatibility mode (same as parallel interface of Epson's current page printer)
- Reverse mode

1.3.1.1 Compatibility Mode of Parallel Interface

System:	$\overline{\text{STROBE}}$ synchronization, 8-bit parallel data transfer
Handshaking:	BUSY and $\overline{\text{ACKNLG}}$ signals
Connector type:	P90-25027-1 (Amphenol) receptacle
Applicable plug:	57-30360 (Amphenol or equivalent)
Transfer speed:	Approximately 125,(XN bytes/second (maximum)
Signal timing:	See Figure 1-3.
Signal description:	See Table 1-7.

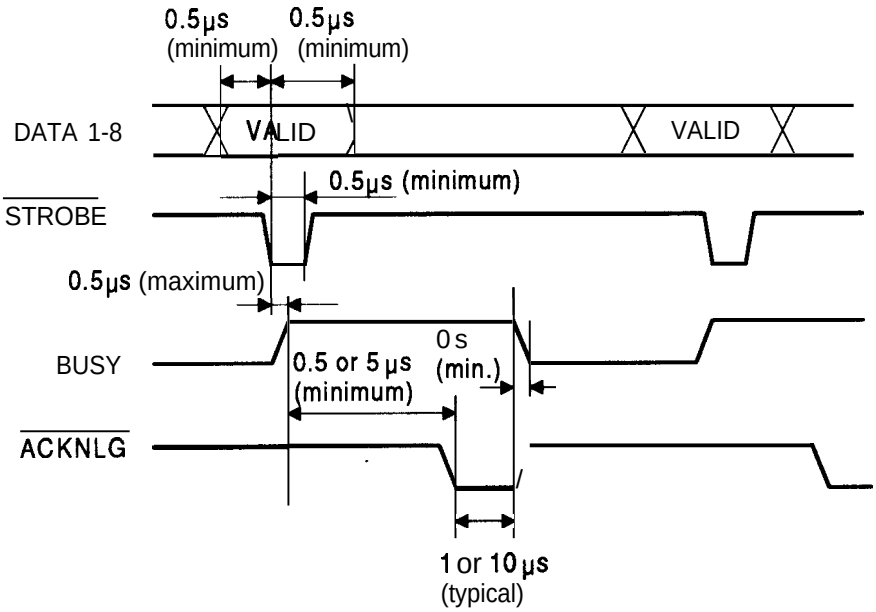


Figure 1-3. Compatibility Mode Signal Timing

Table 1-7. Parallel Interface Pin Assignment

Pin No.	Signal Name	I/O	Description
1	STROBE	IN	STROBE is a strobe pulse used to read data from the host computer. The pulse width must be more than 0.5 µsec. Normally it is HIGH, and data is latched at the trailing edge of this signal.
2-9	DATA 1-8	IN	DATA 1 to 8 are parallel data bits. When the signal is HIGH, the data bit is 1, and when it is LOW, the data bit is O. The most significant bit (MSB) is DATA8. The signal state must be maintained for 0.5 @cc. on either side of the STROBE signal active edge.
10	ACKNLG	OUT	ACKNLG is an acknowledge pulse with an approximate width of 1 or 10P. This signal goes LOW when the data reception is completed, which indicates that the printer can accept new data. Timing with the BUSY signal is specified through SelecType.
11	BUSY	OUT	The BUSY signal informs the host computer of the printer state. When the signal is HIGH, the printer cannot accept data.
12	PE	OUT	The PE signal indicates paper empty for the standard tray selected through SelecType or command, or for the optional paper cassette. Paper empty is indicated by HIGH.
13	SLCT	OUT	Use in reverse mode.
14	AUTO-FEED	IN	Not used.
15	NC	·	Not used.
16	GND		Logic ground level.
17	CHASSIS GND	-	Connected to the printer chassis. The printer chassis GND and the signal GND are connected to each other.
18	NC	·	Not connected.
19"30	GND	·	Ground level for the twisted pair return signal.
31	INIT	IN	The STROBE signal is ignored when this signal is LOW.
32	ERROR	OUT	This level goes LOW when the printer is: . out of paper . in paper jam state . in error state • off line
33	GND	·	Same as for pins19 to 30.
34	NC	·	Not used.
35	+5		Pulled up to +5V through 1.0 KΩ resistance.
36	SLCT IN	·	Use the reverse mode.

1.3.1.2 Reverse Mode

The reverse mode for the EPL-3000/ActionLaser 1300 supports IEEE-P1284 nibble mode and WPS reverse mode. This section describes the nibble mode. This printer can run in reverse mode, in which the printer can inform the computer of its status by EJL and PJL commands.

System: IEEE-P1284 nibble mode

Connector type: P90-25027-1 (Amphenol) receptacle

Applicable plug: 57-30360 (Amphenol or equivalent)

Signal description: See Table 1-8.

Table 1-8. Parallel Interface Pin Assignment

Pin No.	Signal Name	I/o	Description
1	$\overline{\text{STROBE}}$	IN	HostClk: This signal is a strobe pulse used to read extension request values from the host computer during negotiation.
2-9	DATA 1-8	IN	The signals are data bits of extension request values during negotiation. This printer supports the following values: 0000 0100: Request Device ID (by nibble mode transmission) 0000 0000: Request nibble mode
10	$\overline{\text{ACKNLG}}$	OUT	PtrClk: Printer data sending clock.
11	BUSY	OUT	PtrBusy: Printer sending data bits 3 and 7 during data transfer to host computer.
12	PE	OUT	AckDataReq: Printer sending data bits 2 and 6 during data transfer to host computer.
13	SLCT	OUT	Xflag: Printer sending data bits 2 and 6 during data transfer to host computer.
14	$\overline{\text{AUTO-FEED}}$	IN	HostBusy: This signal informs the printer of the host computer state. When the signal is HIGH, the host computer cannot accept data.
15	NC		Not used.
16	GND		Logic ground level.
17	CHASSIS GND	-	Connected to the printer chassis. The printer chassis GND and the signal GND are connected to each other.
18	NC		Not connected.
19-30	GND		Ground level for the twisted pair return signal.
31	INIT	IN	nInit: High level fixed
32	$\overline{\text{ERROR}}$	OUT	nDataAvail: Printer sending data bits O and 4 during data transfer to host computer.
33	GND		Same as for pins19 to 30.
34	NC		Not used.
35	+5		Pulled up to +5V through 1.0 KΩ resistance.
36	$\overline{\text{SLCT IN}}$	IN	1284Active: If this signal is set to HIGH, this printer active P1284 (reverse mode).

Figure 1-4 shows the parallel interface state switch diagram.

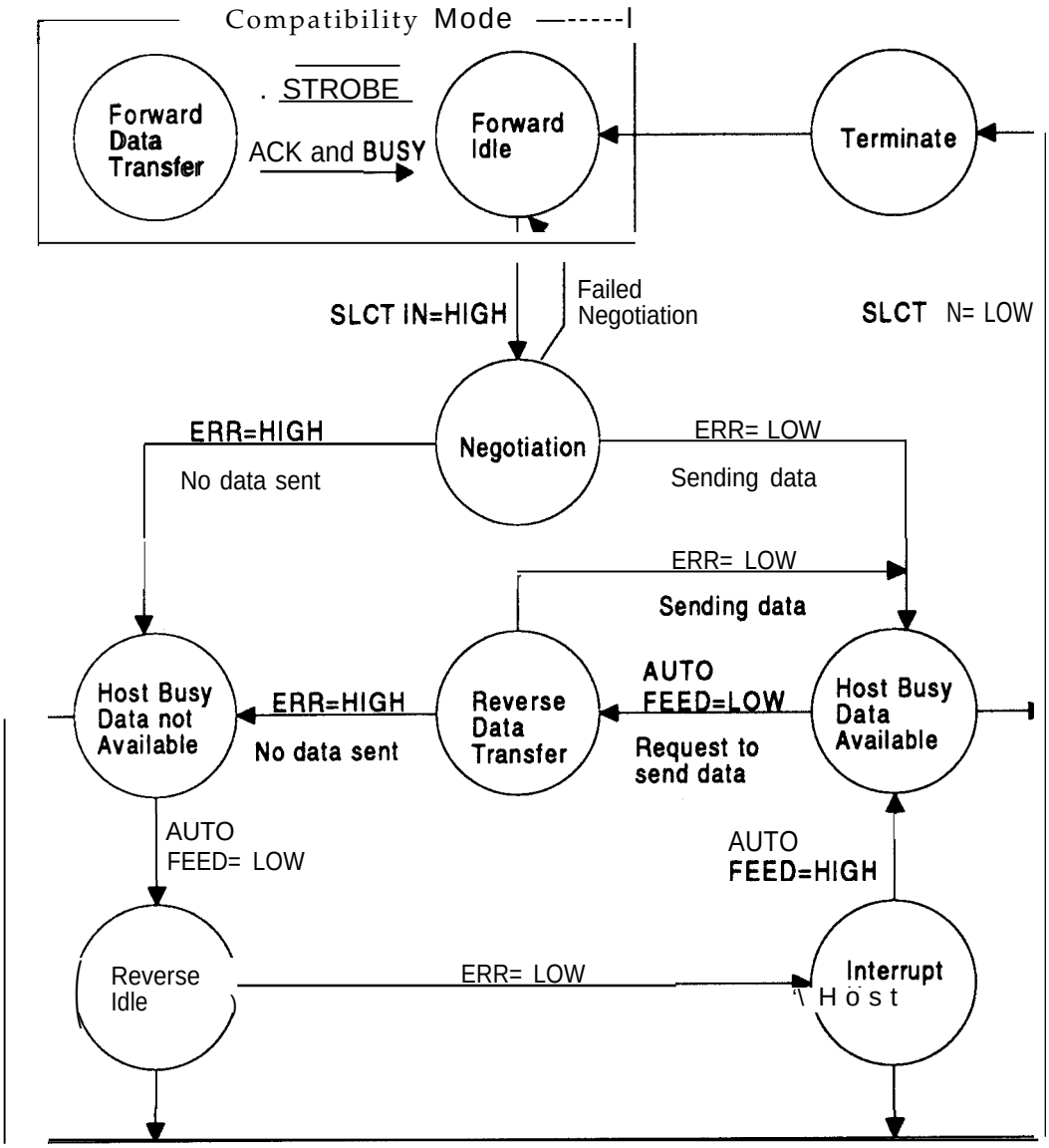


Figure 1-4. Parallel Interface State Switch Diagram

Figure 1-5 shows the negotiation timing chart.

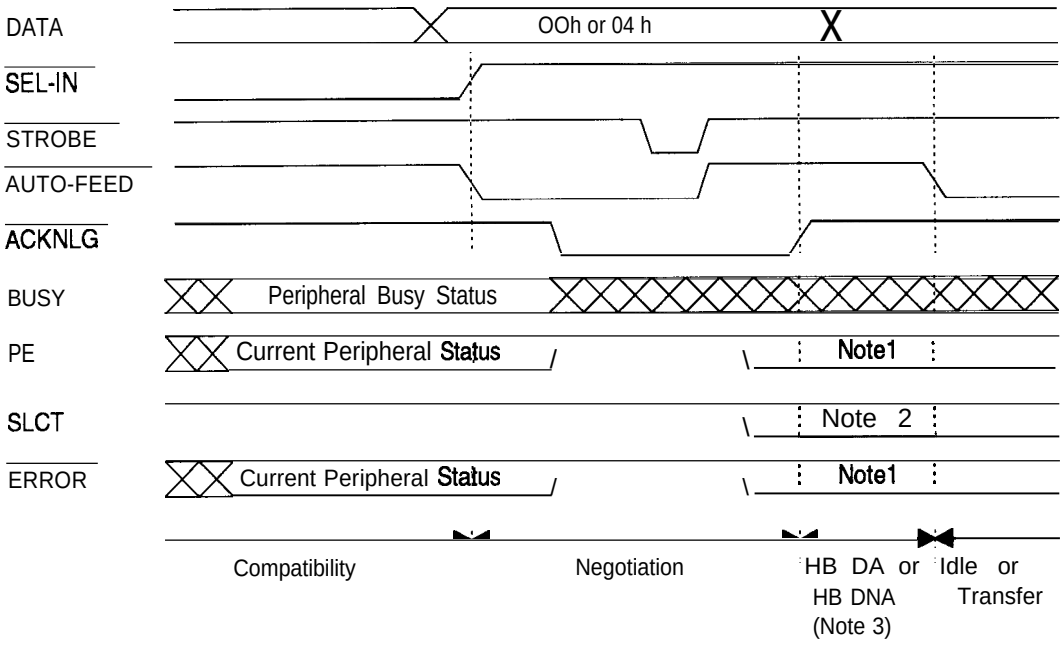


Figure 1-5. Negotiation Timing Chart

Note 1: The signal is set to HIGH when not sending data.
The signal is set to LOW when sending data.

Note 2: The signal is set to HIGH if the extension request value is 04h.

Note 3: HB DA: Host Busy Data Available
HB DNA: Host Busy Data Not Available

Figure 1-6 shows the data transfer timing chart.

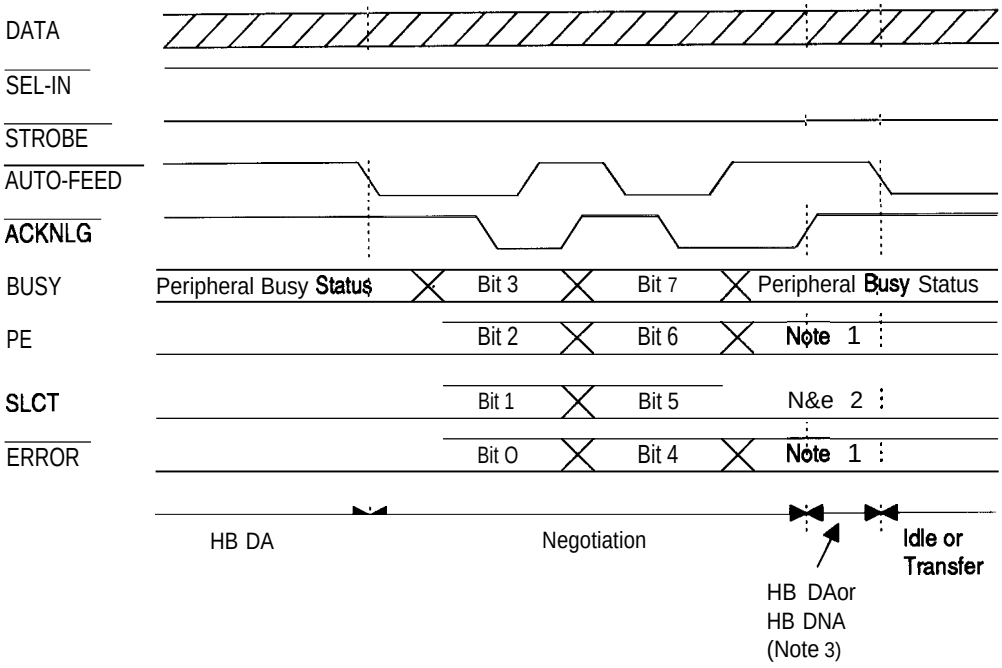


Figure 1-6. Data Transfer Timing Chart

Note 1: The signal is set to HIGH when not sending data.
The signal is set to LOW when sending data.

Note2: The signal is set to HIGH if the extension request value is 04h.

Note3: HB DA: Host Busy Data Available
HB DNA: Host Busy Data Not Available

Figure 1-7 shows the termination timing chart.

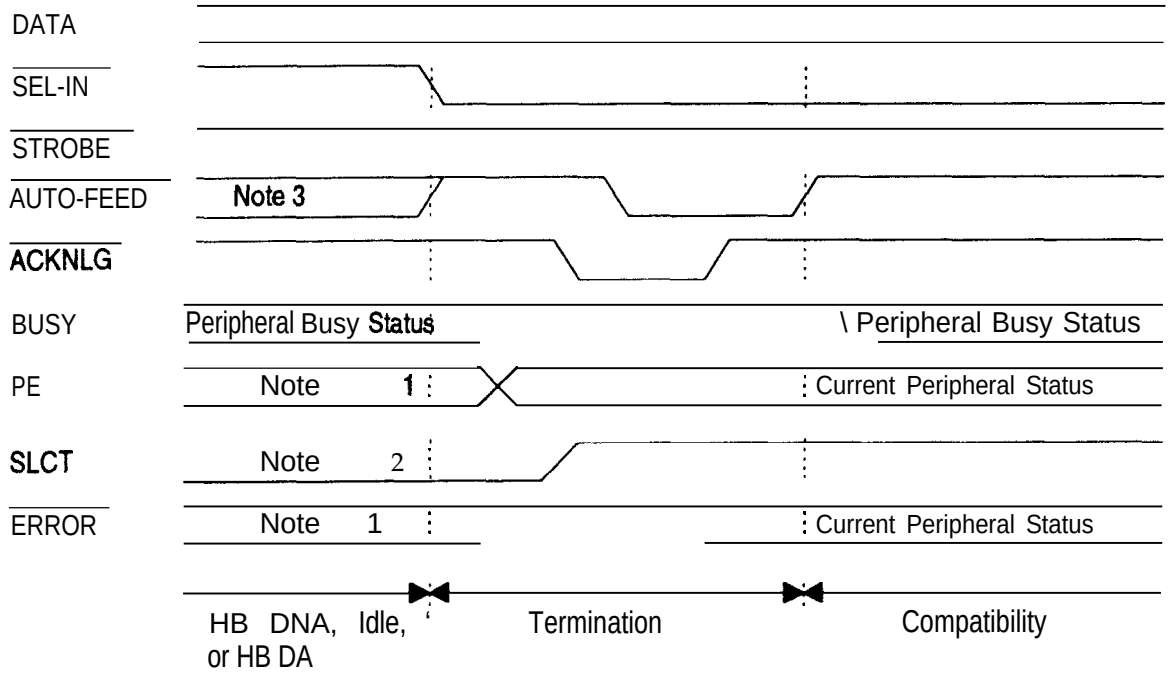


Figure 1-7. Termination Timing Chart

Note 1: The signal is HIGH when HB DNA.
The signal is LOW when HB DA.

Note 2: The signal is set to HIGH if the extension request value is 04h.

Note3: Idle= LOW

Figure 1-8 shows the interrupt timing chart.

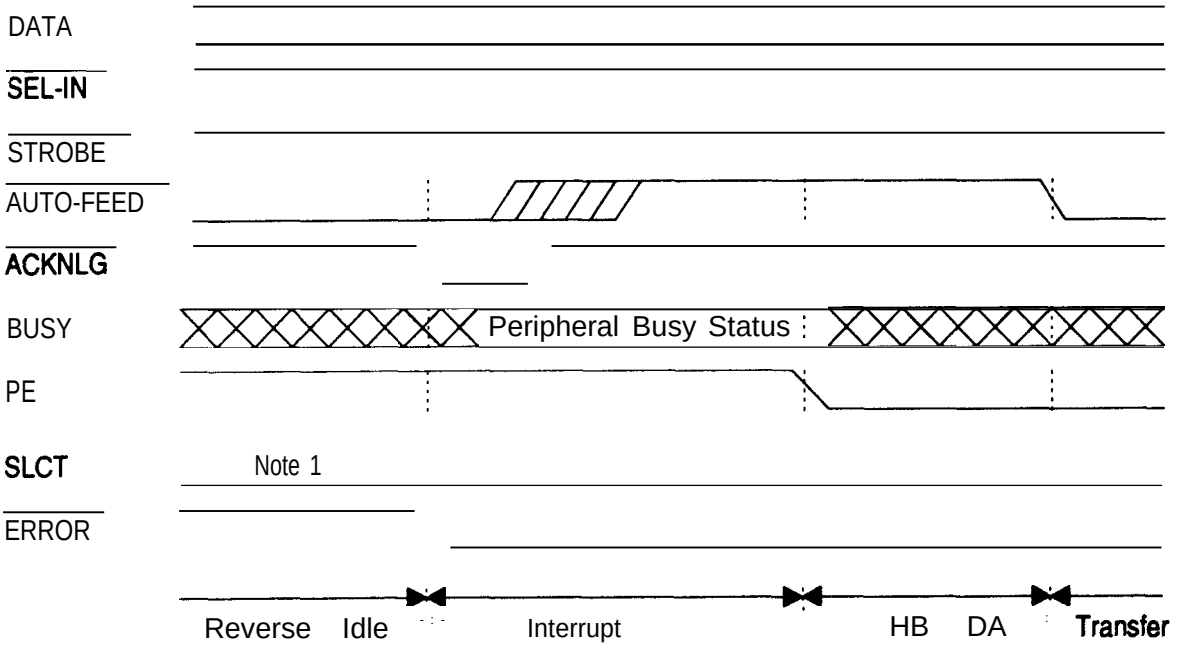


Figure 1-8. Interrupt Timing Chart

Note 1: The signal is set to HIGH if the extension request value is 04h.

1.3.2 Optional Interface C82305*/C82306* (EPL-3000 only)

Type:	RS-232C or current loop	
Synchronization:	Asynchronous start-stop system	
	Start bit:	1 bit
	Stop bit:	1 bit
	Data length:	7 or 8 bits
	Parity:	Odd, even, or none
Protocol:	X-ON/X-OFF (cannot be combined with DTR control)	
	DTR control (cannot be combined with X-ON/X-OFF)	
Transfer speed:	300,600,1200,1800,2400, 4800,9600, or 19200 bps	
Error handling:	Overrun error:	Processed as missing data and replaced by "*"
	Parity error:	Replaced by "*"
	Framing error:	Replaced by "*"
	Breaking character:	Ignored

Handshaking

When the vacant area for data in the input buffer drops to 256 bytes, the printer outputs an X-OFF code or sets the DTR signal level to LOW, indicating that the printer cannot receive more data. Once the vacant area for data in the buffer recovers to 512 bytes, the printer outputs an X-ON code or sets the DTR signal level to HIGH, indicating that the printer is again ready to receive data.

1.4 OPERATING INSTRUCTIONS

This section describes the functions performed through the control panel, *such* as test print, hexadecimal dump, and panel setting functions.

1.4.1 Control Panel

The printer control panel gives you easy control over most common printer operations. The panel consists of indicator lights and buttons.

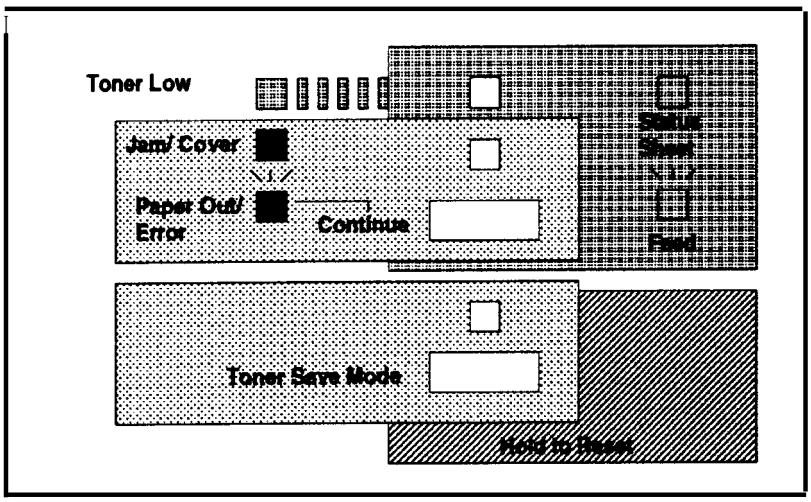


Figure 1-9. Control Panel

Indicator lights

■ Data

Off:	Power off
Slow flashing:	Received data is stored in the printer but has not been printed.
Quick flashing:	The printer is receiving or processing data.
on:	There is no printable data remaining in the printer.
Orange color:	Toner low

■ Jam/Cover

on:	Paper jam or cover open
Slow flashing:	Paper out or feed jam
Quick flashing:	Warning (Refer to "Message Display" section)

■ Toner Save Mode

on:	Toner Save Mode selected
Off:	Toner Save Mode not selected
Flashing	The panel is being reset

Buttons

■ Status Sheet

Warning Measures	When the Jam/Cover light is quickly flashing, press this button to clear a warning.
Feed	When the Data light is slowly flashing, press this button to print out data in the printer's memory.
Continue	When the Jam/Cover light is slowly flashing, press this button to starts printing.
Status Sheet Printing	When the Data light is on, press and hold this button until the Data light begins quickly flashing. A status sheet will them print.

■ Toner Save Mode

Toner Save Mode	Press this button to turn the Toner Save Mode light on (Toner Save Mode selected) or off (Toner Save Mode not selected), or to reset Toner Save Mode.
Reset	Press and hold down this button until the Toner Save Mode light begins flashing.

■ Toner Counter Reset (Toner Save Mode+ Status Sheet)

Toner Counter Reset	To reset the toner counter, press and hold down the Toner Save Mode and Status Sheet buttons until the Data light turns green and then flashes orange.

1.4.2 Service Mode

This printer has three service modes as follows:

■ Hexadecimal Dump
■ Factory Reset
■ EEPROM Format (EEPROM reset)

1.4.2.1 Hexadecimal Dump Mode

The hexadecimal dump mode is a useful tool for troubleshooting data control problems. To enter hexadecimal dump mode, turn on the printer while holding down the Toner Save Mode button until Data light comes on.

1.4.2.2 Factory Reset Mode

This mode resets all settings except the printer name and total printing counter. To enter factory reset mode, turn on the printer while holding down the Toner Save Mode button until only the Toner Save Mode light is on.

1.4.2.3 EEPROM Format Mode

EEPROM format operations are required only when the main controller board or EEPROM is replaced. These operations are specified in the documentation accompanying these components.

EEPROM format functions (printer name, default paper size (A4 or letter), toner counter, total printing counter, and other settings) are all stored in memory.

Defaults for the EEPROM format functions can be written to EEPROM as follows:

Turn on the printer while holding down the Status Sheet and Toner Save Mode buttons until only the Data light is flashing.

Note: The printer name (EPL-3000 or ActionLaser 1300) and default paper size (A4 or letter) are selected by jumper J3 for the main controller board when this operation is performed.

1.4.3 Message Display

This printer displays two types of messages on the indicator lights: status and error, and service call error.

1.4.3.1 Status and Error Messages

If any of the following status and errors conditions occur, they will be displayed on the indicator lights. The error must be cleared immediately using the measures shown in the following table.

Table 1-9. Status and Error Messages

Indicator Light Display			Status	Measures
Data	Jam/ Cover	Toner Save Mode		
—	—	F.	Resetting	—
—	ON	—	Paper jam or cover open	If paper jams, open the cover and remove the jammed paper. Then close the cover.
—	Q.F.	—	Warning **An error follows.**	Press the Status Sheet **button. If you need an error statement, print a status sheet. The status sheet is the printed error statement.**
			Insufficient Memory There is not enough memory to print or download data.	**Erase** downloaded data or add optional memory.
			Print Overrun Engine speed faster than print image processing. If the printer has unused memory, it automatically recovers.	If the printer cannot **automatically** recover, change the PAGE PROTECT setting by with the PJL **command** (utility software).
			Image Optimum **The printer** uses a lower print quality.	**Erase downloaded data or add optional memory.**
			Paper Size Mismatch The printing paper size is different from the paper size chosen.	Change the paper and print again.
			EEPROM Error The **EEPROM** cannot memorize the new settings.	Try again
			Soft Error/CPU Error Controller error	**Service** call
—	S.F.	—	Paper empty or feed jam	**Insert** or clear the paper **and** then press the Status Sheet button.

Table 1-9. Status and Error Messages (Continued)

Indicator Light Display			Status	Measures
Data	Jam/ Cover	Toner Save Mode		
OR	—	—	Toner low	Prepare the new imaging cartridge
Q.F.	OFF	—	Data received or data processing	—
S.F.	—	—	Data held	—
ON	—	—	Data not held	—
—	—	ON	Toner Save Mode	—
—	—	OFF	No Toner Save Mode	—
OFF	OFF	OFF	No power	—

F.: Flashing, S.F.: Slow Flashing, Q.F.: Quick Flashing, OR.: Orange light

1.4.3.2 Service Call Error

This printer automatically checks the operating conditions of each component. If any abnormality is detected, the printer displays an error message on the control panel.

While the printer detects a service call error, it continuously repeats the following display:

All lights on → All lights off → Error code display → All lights off

Table 1-10. Service Call Error

Indicator Light Display			Error
Data	Jam/ Cover	Toner Save Mode	
ON	OFF	OFF	Fusing unit error
OFF	ON	OFF	Laser light error
OFF	OFF	ON	Scanner motor error
ON	ON	OFF	Fan motor error
ON	OFF	ON	EEPROM format error
OFF	ON	ON	RAM error
OFF	OFF	OFF	ROM error

1.4.4 Printer Sharing

This section describes printer sharing- It is possible to allocate each mode to parallel and optional interfaces. The entire **memory will be allocated to the channels that are used. The interface that** receives the data first will print first.

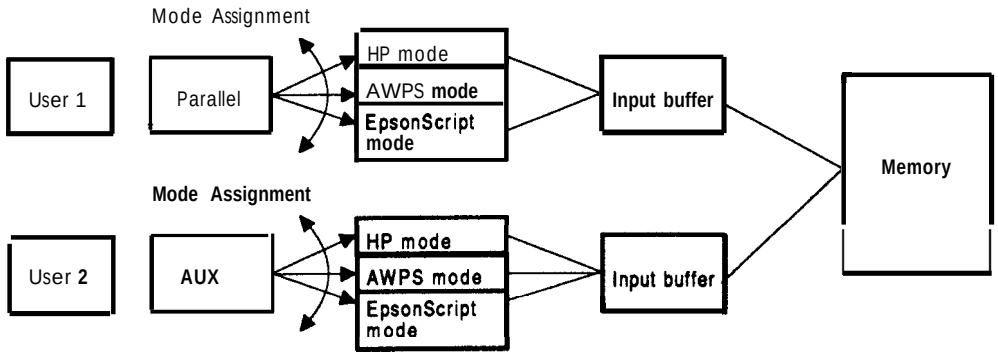


Figure 1-10. Auto Sense Mode

Input Buffer

The input buffer size is automatically adjustable from a minimum of 1/1000 of all memory to a maximum of 1/5 of all memory. If the input buffer is full, this printer expands the input buffer by 1/1000 of all memory per one step.

When the user connects the host computers parallel interface and optional interface, the input buffer size for the interface not processing data is a maximum of 1/100 of all memory.

Note: While EPSONScript Level 2 is used, this printer sets the input buffer.

1.4.5 Emulation Mode Switch Function

This section describes the emulation mode switch function.

1.4.5.1 Emulation Switch by SPL

The two types of emulation switch functions described below are available on this printer. Together they are referred to as SPL (Shared Printer Language).

EJL: EPSON Job Language

This is EPSON's original language system. It is able to skip among various destinations, as shown in Figure 1-11.

PJL: Printer Job Language

This is HP's original language, which is available with the LaserJet III Si printer.
It is able to skip among various destinations, as shown in Figure 1-11. The precise specifications for this language are based on the HP LaserJet III Si.

The figure below shows three types of mode switching.

Neither EJL nor PJL switches the mode directly. They first exit the current mode and return to EJL or PJL. Then they enter another mode.

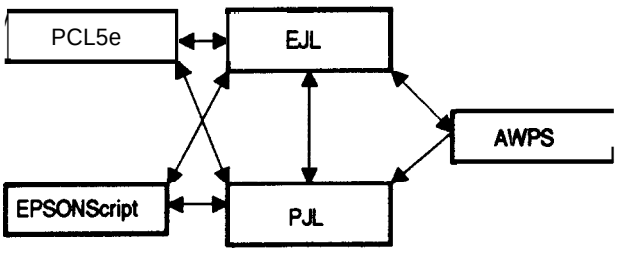


Figure 1-11. Emulation Switch by SPL