Service Manual

Lexmark™ E32x

4500

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LEXMARK™

4500–E32x

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U.S.A. P/N: 12G9065

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Laser Notices

The following laser notice label may be affixed to this printer:

Laser Advisory Label

Class 1 Laser Statement Label

The laser statement label is located on the rear of the rear cover assembly.

Laser Notice

The printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for Class I (1) laser products, and elsewhere is certified as a Class I laser product conforming to the requirements of IEC 60825.

Class I laser products are not considered to be hazardous. The printer contains internally a Class IIIb (3b) laser that is nominally a 5 milliwatt gallium arsenide laser operating in the wavelength region of 770-795 nanometers. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

Laser

Der Drucker erfüllt gemäß amtlicher Bestätigung der USA die Anforderungen der Bestimmung DHHS (Department of Health and Human Services) 21 CFR Teil J für Laserprodukte der Klasse I (1). In anderen Ländern gilt der Drucker als Laserprodukt der Klasse I, der die Anforderungen der IEC (International Electrotechnical Commission) 60825 gemäß amtlicher Bestätigung erfüllt.

Laserprodukte der Klasse I gelten als unschädlich. Im Inneren des Druckers befindet sich ein Laser der Klasse IIIb (3b), bei dem es sich um einen Galliumarsenlaser mit 5 Milliwatt handelt, der Wellen der Länge 770-795 Nanometer ausstrahlt. Das Lasersystem und der Drucker sind so konzipiert, daß im Normalbetrieb, bei der Wartung durch den Benutzer oder bei ordnungsgemäßer Wartung durch den Kundendienst Laserbestrahlung, die die Klasse I übersteigen würde, Menschen keinesfalls erreicht.

Avis relatif à l’utilisation de laser

Pour les Etats-Unis : cette imprimante est certifiée conforme aux provisions DHHS 21 CFR alinéa J concernant les produits laser de Classe I (1). Pour les autres pays : cette imprimante répond aux normes IEC 60825 relatives aux produits laser de Classe I.

Les produits laser de Classe I sont considérés comme des produits non dangereux. Cette imprimante est équipée d’un laser de Classe IIIb (3b) (arséniure de gallium d’une puissance nominale de 5 milliwatts) émettant sur des longueurs d’onde comprises entre 770 et 795 nanomètres. L’imprimante et son système laser sont conçus pour impossible, dans des conditions normales d’utilisation, d’entretien par l’utilisateur ou de révision, l’exposition à des rayonnements laser supérieurs à des rayonnements de Classe I .

Avvertenze sui prodotti laser

Questa stampante è certificata negli Stati Uniti per essere conforme ai requisiti del DHHS 21 CFR Sottocapitolo J per i prodotti laser di classe 1 ed è certificata negli altri Paesi come prodotto laser di classe 1 conforme ai requisiti della norma CEI 60825.

I prodotti laser di classe non sono considerati pericolosi. La stampante contiene al suo interno un laser di classe IIIb (3b) all’arseniuro di gallio della potenza di 5mW che opera sulla lunghezza d’onda compresa tra 770 e 795 nanometri. Il sistema laser e la stampante sono stati progettati in modo tale che le persone a contatto con la stampante, durante il normale funzionamento, le operazioni di servizio o quelle di assistenza tecnica, non ricevano radiazioni laser superiori al livello della classe 1.

Avisos sobre el láser

Se certifica que, en los EE.UU., esta impresora cumple los requisitos para los productos láser de Clase I (1) establecidos en el subcapítulo J de la norma CFR 21 del DHHS (Departamento de Sanidad y Servicios) y, en los demás países, reúne todas las condiciones expuestas en la norma IEC 60825 para productos láser de Clase I (1).

Los productos láser de Clase I no se consideran peligrosos. La impresora contiene en su interior un láser de Clase IIIb (3b) de arseniuro de galio de funcionamiento nominal a 5 milivatios en una longitud de onda de 770 a 795 nanómetros. El sistema láser y la impresora están diseñados de forma que ninguna persona pueda verse afectada por ningún tipo de radiación láser superior al nivel de la Clase I durante su uso normal, el mantenimiento realizado por el usuario o cualquier otra situación de servicio técnico.

Declaração sobre Laser

A impressora está certificada nos E.U.A. em conformidade com os requisitos da regulamentação DHHS 21 CFR Subcapítulo J para a Classe I (1) de produtos laser. Em outros locais, está certificada como um produto laser da Classe I, em conformidade com os requisitos da norma IEC 60825.

Os produtos laser da Classe I não são considerados perigosos. Internamente, a impressora contém um produto laser da Classe IIIb (3b), designado laser de arseneto de potássio, de 5 milliwatts ,operando numa faixa de comprimento de onda entre 770 e 795 nanómetros. O sistema e a impressora laser foram concebidos de forma a nunca existir qualquer possiblidade de acesso humano a radiação laser superior a um nível de Classe I durante a operação normal, a manutenção feita pelo utilizador ou condições de assistência prescritas.

Laserinformatie

De printer voldoet aan de eisen die gesteld worden aan een laserprodukt van klasse I. Voor de Verenigde Staten zijn deze eisen vastgelegd in DHHS 21 CFR Subchapter J, voor andere landen in IEC 60825.

Laserprodukten van klasse I worden niet als ongevaarlijk aangemerkt. De printer is voorzien van een laser van klasse IIIb (3b), dat wil zeggen een gallium arsenide-laser van 5 milliwatt met een golflengte van 770-795 nanometer. Het lasergedeelte en de printer zijn zo ontworpen dat bij normaal gebruik, bij onderhoud of reparatie conform de voorschriften, nooit blootstelling mogelijk is aan laserstraling boven een niveau zoals voorgeschreven is voor klasse 1.

Lasermeddelelse

Printeren er godkendt som et Klasse I-laserprodukt, i overenstemmelse med kravene i IEC 60825.

Klasse I-laserprodukter betragtes ikke som farlige. Printeren indeholder internt en Klasse IIIB (3b)-laser, der nominelt er en 5 milliwatt galliumarsenid laser, som arbejder på bølgelængdeområdet 770-795 nanometer. Lasersystemet og printeren er udformet således, at mennesker aldrig udsættes for en laserstråling over Klasse I-niveau ved normal drift, brugervedligeholdelse eller obligatoriske servicebetingelser.

Huomautus laserlaitteesta

Tämä kirjoitin on Yhdysvalloissa luokan I (1) laserlaitteiden DHHS 21 CFR Subchapter J -määrityksen mukainen ja muualla luokan I laserlaitteiden IEC 60825 -määrityksen mukainen.

Luokan I laserlaitteiden ei katsota olevan vaarallisia käyttäjälle. Kirjoittimessa on sisäinen luokan IIIb (3b) 5 milliwatin galliumarsenidilaser, joka toimii aaltoalueella 770 - 795 nanometriä. Laserjärjestelmä ja kirjoitin on suunniteltu siten, että käyttäjä ei altistu luokan I määrityksiä voimakkaammalle säteilylle kirjoittimen normaalin toiminnan, käyttäjän tekemien huoltotoimien tai muiden huoltotoimien yhteydessä.

VARO! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

VARNING! Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

Laser-notis

Denna skrivare är i USA certifierad att motsvara kraven i DHHS 21 CFR, underparagraf J för laserprodukter av Klass I (1). I andra länder uppfyller skrivaren kraven för laserprodukter av Klass I enligt kraven i IEC 60825.

Laserprodukter i Klass I anses ej hälsovådliga. Skrivaren har en inbyggd laser av Klass IIIb (3b) som består av en laserenhet av gallium-arsenid på 5 milliwatt som arbetar i våglängdsområdet 770-795 nanometer. Lasersystemet och skrivaren är utformade så att det aldrig finns risk för att någon person utsätts för laserstrålning över Klass I-nivå vid normal användning, underhåll som utförs av användaren eller annan föreskriven serviceåtgärd.

Laser-melding

Skriveren er godkjent i USA etter kravene i DHHS 21 CFR, underkapittel J, for klasse I (1) laserprodukter, og er i andre land godkjent som et Klasse I-laserprodukt i samsvar med kravene i IEC 60825.

Klasse I-laserprodukter er ikke å betrakte som farlige. Skriveren inneholder internt en klasse IIIb (3b)-laser, som består av en gallium-arsenlaserenhet som avgir stråling i bølgelengdeområdet 770-795 nanometer. Lasersystemet og skriveren er utformet slik at personer aldri utsettes for laserstråling ut over klasse I-nivå under vanlig bruk, vedlikehold som utføres av brukeren, eller foreskrevne serviceoperasjoner.

Avís sobre el Làser

Segons ha estat certificat als Estats Units, aquesta impressora compleix els requisits de DHHS 21 CFR, apartat J, pels productes làser de classe I (1), i segons ha estat certificat en altres llocs, és un producte làser de classe I que compleix els requisits d'IEC 60825.

Els productes làser de classe I no es consideren perillosos. Aquesta impressora conté un làser de classe IIIb (3b) d'arseniür de gal.li, nominalment de 5 mil.liwats, i funciona a la regió de longitud d'ona de 770-795 nanòmetres. El sistema làser i la impressora han sigut concebuts de manera que mai hi hagi exposició a la radiació làser per sobre d'un nivell de classe I durant una operació normal, durant les tasques de manteniment d'usuari ni durant els serveis que satisfacin les condicions prescrites.

Japanese Laser Notice

レーザーに関するお知らせ

このプリンターは、米国ではＤＨＨＳ ２１ ＣＦＲサブチャプターＪのクラスＩ（１）の基準を満たしたレーザー製品であることが証明されています。また米国以外ではＩＥＣ ８２５の基準を満たしたクラスＩのレーザー製品であることが証明されています。

クラスＩのレーザー製品には危険性はないと考えられています。このプリンターはクラスⅢｂ（３ｂ）のレーザーを内蔵しています。このレーザーは、波長が７７０ ～ ７９５ナノメーターの範囲で、通常５ミリワットのガリウム砒化物を放射するレーザーです。このレーザーシステムとプリンターは、通常の操作、ユーザのメンテナンス、規定された修理においては、人体がクラスＩのレベル以上のレーザー放射に晒されることのないよう設計されています。

Chinese Laser Notice

注意：

本打印机被美国认证合乎 DHHS 21 CFR Subchapter I 对分类 I (1) 激光产品的标准，而在其他地区则被认证合乎 IEC 825 的标准。

分类 I 激光产品一般认为不具危险性，本打印机内部含有分类 IIIb (3b) 的激光，在操作过程中会产生 5 毫瓦含镓及砷的微量激光，其波长范围在 770-795 nm 之间。本激光系统及打印机的设计，在一般操作、使用者维护或规定内的维修情况下，不会使人体接触分类 I 以上等级的辐射。

Korean Laser Notice

본프린터는 1등급 레이저 제품들에 대한 DHHS 21 CFR Subchapter 3의 규정을 준수하고 있음을 미국에서 인증받았으며, 그외의 나라에서도 IEC 825 규정을 준수하는 1등급 레이저 제품으로서 인증을 받았습니다.

1등급 레이저 제품들은 안전한 것으로 간주됩니다. 본 프린터는 5 밀리와트 갤륨 아르세나이드 레이저로서 770-795 나노미터의 파장대에서 활동하는 Class III (3b) 레이저를 내부에 갖고 있습니다. 본 레이저 시스템과 프린터는 정상 작동 중이나 유지 보수 중 또는 규정된 서비스 상태에서 상기의 Class I 수준의 레이저 방출에 사람이 절대 접근할 수 없도록 설계되어 있습니다.

Safety Information

- This product is designed, tested and approved to meet strict global safety standards with the use of specific Lexmark components. The safety features of some parts may not always be obvious. Lexmark is not responsible for the use of other replacement parts.
- The maintenance information for this product has been prepared for use by a professional service person and is not intended to be used by others.
- There may be an increased risk of electric shock and personal injury during disassembly and servicing of this product. Professional service personnel should understand this and take necessary precautions.

Consignes de Sécurité

- Ce produit a été conçu, testé et approuvé pour respecter les normes strictes de sécurité globale lors de l'utilisation de composants Lexmark spécifiques. Les caractéristiques de sécurité de certains éléments ne sont pas toujours évidentes. Lexmark ne peut être tenu responsable de l'utilisation d'autres pièces de rechange.
- Les consignes d'entretien et de réparation de ce produit s'adressent uniquement à un personnel de maintenance qualifié.
- Le démontage et l'entretien de ce produit pouvant présenter certains risques électriques, le personnel d'entretien qualifié devra prendre toutes les précautions nécessaires.

Norme di sicurezza

- Il prodotto è stato progettato, testato e approvato in conformità a severi standard di sicurezza e per l'utilizzo con componenti Lexmark specifici. Le caratteristiche di sicurezza di alcune parti non sempre sono di immediata comprensione. Lexmark non è responsabile per l'utilizzo di parti di ricambio di altri produttori.
- Le informazioni riguardanti la manutenzione di questo prodotto sono indirizzate soltanto al personale di assistenza autorizzato.
- Durante lo smontaggio e la manutenzione di questo prodotto, il rischio di subire scosse elettriche e danni alla persona è più elevato. Il personale di assistenza autorizzato, deve, quindi, adottare le precauzioni necessarie.

Sicherheitshinweise

- Dieses Produkt und die zugehörigen Komponenten wurden entworfen und getestet, um beim Einsatz die weltweit gültigen Sicherheitsanforderungen zu erfüllen. Die sicherheitsrelevanten Funktionen der Bauteile und Optionen sind nicht immer offensichtlich. Sofern Teile eingesetzt werden, die nicht von Lexmark sind, wird von Lexmark keinerlei Verantwortung oder Haftung für dieses Produkt übernommen.
- Die Wartungsinformationen für dieses Produkt sind ausschließlich für die Verwendung durch einen Wartungsfachmann bestimmt.
- Während des Auseinandernehmens und der Wartung des Geräts besteht ein zusätzliches Risiko eines elektrischen Schlags und körperlicher Verletzung. Das zuständige Fachpersonal sollte entsprechende Vorsichtsmaßnahmen treffen.

Pautas de Seguridad

- Este producto se ha diseñado, verificado y aprobado para cumplir los más estrictos estándares de seguridad global usando los componentes específicos de Lexmark. Puede que las características de seguridad de algunas piezas no sean siempre evidentes. Lexmark no se hace responsable del uso de otras piezas de recambio.
- La información sobre el mantenimiento de este producto está dirigida exclusivamente al personal cualificado de mantenimiento.
- Existe mayor riesgo de descarga eléctrica y de daños personales durante el desmontaje y la reparación de la máquina. El personal cualificado debe ser consciente de este peligro y tomar las precauciones necesarias.

Informações de Segurança

- Este produto foi concebido, testado e aprovado para satisfazer os padrões globais de segurança na utilização de componentes específicos da Lexmark. As funções de segurança de alguns dos componentes podem não ser sempre óbvias. A Lexmark não é responsável pela utilização de outros componentes de substituição.
- As informações de segurança relativas a este produto destinam-se a profissionais destes serviços e não devem ser utilizadas por outras pessoas.
- Risco de choques eléctricos e ferimentos graves durante a desmontagem e manutenção deste produto. Os profissionais destes serviços devem estar avisados deste facto e tomar os cuidados necessários.

Informació de Seguretat

- Aquest producte està dissenyat, comprovat i aprovat per tal d'acomplir les estrictes normes de seguretat globals amb la utililització de components específics de Lexmark. Les característiques de seguretat d'algunes peces pot ser que no sempre siguin òbvies. Lexmark no es responsabilitza de l'us d'altres peces de recanvi.
- La informació pel manteniment d’aquest producte està orientada exclusivament a professionals i no està destinada a ningú que no ho sigui.
- El risc de xoc elèctric i de danys personals pot augmentar durant el procés de desmuntatge i de servei d’aquest producte. El personal professional ha d’estar-ne assabentat i prendre les mesures convenients.

안전 사항

- 본 제품에 관한 유지 보수 설명서는 전문 서비스 기술자 용으로 작성된 것이므로 비 전문가는 사용할 수 없습니다.
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安全资讯

- 本产品的维护资讯仅供专业服务人员使用，而非针对一般使用者。
- 本产品在拆卸、维修的时候，遭受电击或人员受伤的危险性会增高，专业服务人员对这点必须有所了解，并采取必要的预防措施。
- 有些零件的安全功能可能不明显。因此，所替换零件的性能一定要与原有的零件一致。

Preface

This manual contains maintenance procedures for service personnel. It is divided into the following chapters:

1. **General Information** contains a general description of the printer, general environmental, safety instructions, and the maintenance approach used to repair it.
2. **Diagnostic Information** contains an error indicator table, symptom tables, and service checks used to isolate failing field replaceable units (FRUs).
3. **Diagnostic Aids** contains tests and checks used to locate or repeat symptoms of printer problems.
4. **Repair Information** provides instructions for making printer adjustments and removing and installing FRUs.
5. **Connector Locations** uses illustrations to identify the connector locations and test points on the printer.
6. **Parts Catalog** contains illustrations and part numbers for individual FRUs.

1. General Information

The Lexmark™ E32x is a letter–quality laser page monochrome desktop printer designed to fit into space critical environments and yet not sacrifice speed or ease of use. The E32x attaches to an IBM Personal Computer or other computers compatible with the IBM Personal Computer (with 386 processor or higher) and Macintosh Computers via the USB connection.

Three printer models are available:

- The Lexmark E320 printer with 4MB of standard memory.
- The Lexmark E322 printer with 8MB of standard memory.
- The Lexmark E322n printer with standard Ethernet and 16MB of standard memory.

Model Differences

	E320	**E322**	**E322n**
MT/Model	4500–001	4500–002	4500–003
Speed	16 ppm	16 ppm	16 ppm
Base Memory	4MB	8MB	16MB
PostScript Level 2 emulation	MAC compatibility	Standard	Standard
PPDS	Not available	Standard	Standard
PCL	PCL 5E	PCL 6	PCL 6

Printer Operation

Paper is held in a 150 page tray where it is picked by a center–fed D shape pick roller. The paper follows an L shape path as it moves through the printer. Images are created with toner on an OPC drum within the toner cartridge. A transfer roller then draws the toner off the OPC drum onto the paper. Once the toner is affixed to the paper by the fuser, the paper exits either the top or front of the printer.

Printer Dimensions and Clearance

The following table contains the dimensions for each printer model. This does not include packaging but does include the print cartridge that ships with the printer.

Physical Dimensions	**E320/E322/E322n**
Height	221 mm (8.7 inches)
Width	380 mm (15.0 inches)
Depth	368 mm (14.5 inches)

Operating Clearance	
Left and right sides	304.8 mm (12 inches)
Front	304.8 mm (12 inches)
Rear	508 mm (20 inches)

Options

The following options are available for the Lexmark E32x.

Note: Some options are not available in every country. Contact your point of purchase for options available in your country.

Option	E320	E322	E322n
Tray 2	Available	Available	Available
Memory	4MB, 8MB, 16MB, 32MB, 64MB	4MB, 8MB, 16MB, 32MB, 64MB	4MB, 8MB, 16MB, 32MB, 64MB
Total Possible	66MB	72MB	80MB
Flash	Not Available	1, 2, 4MB	1, 2, 4MB

Note: Standard RAM is soldered on the engine board.

Acronyms

ASF	Auto Sheet Feed
B/M	Bill of Material
CRLF	Carriage Return Line Feed
CSU	Customer Setup
DRAM	Dynamic Random Access Memory
EP	Electrophotographic Process
EPROM	Erasable, Programmable Read–Only Memory
ESD	Electrostatic Discharge
ENA	Enterprise Networking Association
FRU	Field Replaceable Unit
HVPS	High Voltage Power Supply
INIT	Initialize
IPDS	Intelligent Printer Data Stream
LASER	Light Amplification by Stimulated Emission of Radiation
LCD	Liquid Crystal Display
LED	Light–Emitting Diode
LFCR	Line Feed Carriage Return
LVPS	Low Voltage Power Supply
MROM	Masked Read Only Memory
NVRAM	Nonvolatile Random Access Memory
OEM	Original Equipment Manufacturer
OPC	Optical Photoconductor
PC	Photoconductor
PJL	Printer Job Language
POR	Power On Reset
POST	Power–On Self Test
PPDS	Personal Printer Data Stream
PSU	Power Supply Unit
RAM	Random Access Memory
ROM	Read Only Memory
SIMM	Single Inline Memory Module
SRAM	Static Random Access Memory
THM	Thermistor
UPR	Used Parts Return
USB	Universal Serial Bus
V ac	Volts alternating current
V dc	Volts direct current

2. Diagnostic Information

CAUTION: *NEVER* manually actuate or disable the top cover interlock switch and the printhead shutter actuator at the same time.

To perform some of the service checks and tests, such as troubleshooting paper feed problems, you need to actuate the top cover interlock switch with the covers open or removed and power applied to the machine. It is important for personal safety that you *DO NOT, FOR ANY REASON*, disable the printhead shutter actuator when power is on.

Remove power from the printer before you connect or disconnect any cable or electronic board or assembly for personal safety and to prevent damage to the printer.

Use the service error code, user error message, symptom table, service checks, and diagnostic aids in this chapter to determine the corrective action necessary to repair a malfunctioning printer.

The LEDs on the operator panel can indicate either a user error message or service error message. When a service error occurs, the printer stops printing and all operator panel LEDs blink in a continuous pattern, indicating a service error, until the printer is powered off. If all operator panel LEDs are blinking, go to the **“Service Error Codes” on page 2-11** for more information.

When a user error message occurs, one or more operator panel LEDs are on solid or blinking. See the **“Status Information” on page 2-3** for more information.

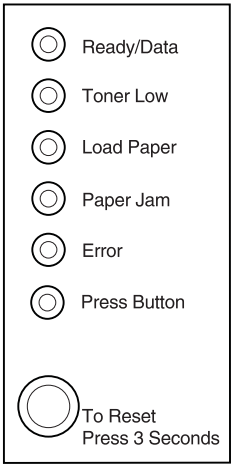
If your machine does not have a service error code and does not complete POST, go to the **“POST Symptom Table” on page 2-36**. If your machine completes POST without an error, and you have a symptom, go to the **“Printer Symptom Table” on page 2-37**. Locate your symptom and take the appropriate action.

If a service error code appears while you are working on the machine, go to the **“Service Error Codes” on page 2-11** and take the indicated action for that error.

Operator Panel

The 4500–E32x operator panel consists of six indicator LEDs and 1 button. The information provided by the six LEDs is classified into three groups:

- Status
- Attendance
- Service



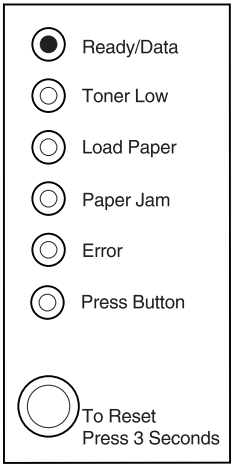
Depending on the LED sequence, briefly (approximately 1 second) push the operator panel button to restart the printer, display an error code, or activate other printer functions.

The operator panel LED table (see **page 2-3**) can be used to determine the type of message displayed based on which combination of LEDs are on or flashing.

Status Information

Ready

The printer is in a **Ready** state.



Ready indicates the printer is ready to receive and process data from the host system.

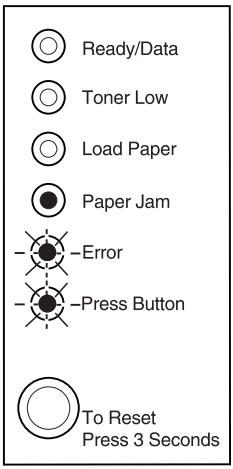
- Brief button press executes a print test.
- Long button press executes a printer reset.

Attendance Information

When attendance information is displayed, the user is required to open the printer cover and clear all paper from the paper path. The user indicates that the jam is cleared by closing the cover or by performing a brief button press.

Paper Jam

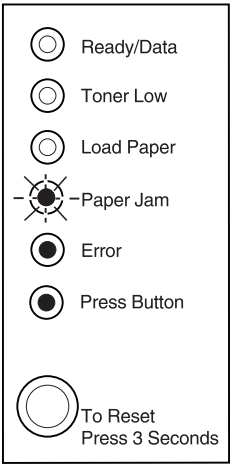
A paper jam is detected.



- Brief button press assumes the jam has been cleared. A warm–up is performed, and the print job resumes.
- Long button press is ignored.
- Open/close cover assumes the jam has been cleared. A warm–up is performed, and the job prints.

Host Interface Error

This error is generated when the printer detects an error communicating with the host computer. There are three causes of this error:



- Parallel ENA Connection Lost –

  During the printers power–on cycle, it detects that the connection to an external network adapter has been lost. Once a connection is initially established, a printer setting is modified to note that the connection exists. Then, each time the power is cycled on the printer, if the setting states a connection exists, the printer attempts to communicate with the adapter. If the adapter does not respond, this message is posted.

  This error is only detected during the power–on cycle. This means if the external network adapter connection is lost after the power–on cycle is complete, this error is not detected. The printer cannot distinguish between an adapter which is quiet, for example, not sending any data, and an adapter which has been disconnected.

- Standard Parallel Port Disabled –

  This error is generated when the host computer attempts to communicate with the printer through the standard parallel port, but the parallel port has been disabled either through the printer configuration mode, or through the MarkVision™ host utility.

- Standard USB Port Disabled –

  This error is generated when the host computer attempts to communicate with the printer through the standard USB port, but the USB port has been disabled either through the printer configuration mode, or through the MarkVision host utility.

The error recovery process for this error is:

1. If this error occurs at power–on and an ENA is attached to the printer, verify the ENA is properly connected.
2. When the printer is in the **Ready** state, press the operator panel button to print a menus settings page.
3. Under the “parallel menu”, look for the “parallel buffer” line. If this line says “disabled” and the host computer is trying to print using the parallel port, re–enable the parallel port using MarkVision or the printers configuration mode.
4. Under the “USB menu”, look for the “USB buffer” line. If this line says “disabled” and the host computer is trying to print using the USB port, re–enable the USB port using MarkVision or the printer configuration mode.

See **“Configuration Mode” on page 3-14** for information on using the printer configuration mode to enable a disabled port.

Service Information

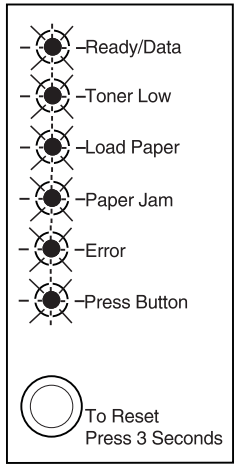
There are three levels of service code information.

- Primary service error codes
- Secondary service error codes
- Subcodes (sub set of the secondary codes)

Service information is displayed whenever the printer is in the check state, and the printer needs servicing. In general, service errors are not–recoverable. However, it may be possible to turn the printer off and back on to temporarily recover from the error condition if it is intermittent.

When a service error occurs, the printer stops printing immediately. The only recovery is to turn off the printer.

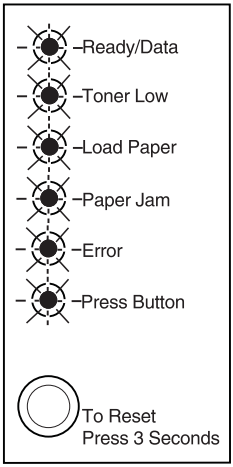
The following operator panel is an example indicating a primary service error code condition.



- Brief button press displays a service error code pattern.
- Long button press displays a service error code pattern.
- Double click button press not available.
- Open/close cover is ignored.

Primary Service Error Codes

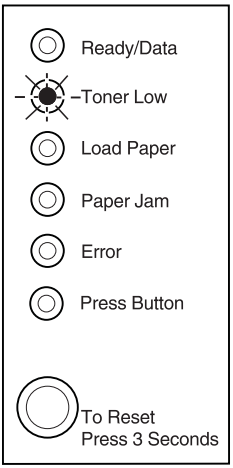
When a service error occurs the printer stops printing and all operator panel LEDs blink in a continuous pattern, indicating a service error, until the printer is turned off.



Press and release the operator panel button to display the secondary service error code.

Secondary Service Error Codes

The operator panel button has been pushed and a secondary service error has occurred indicating a fuser failure.

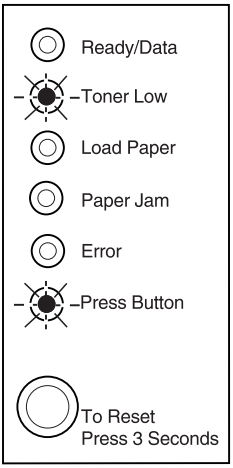


Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the button causes the LEDs to repeat in the following order:

1. Service error indication
2. Fuser service error code indication
3. Service error indication

Subcode Service Error Code

Pressing the operator panel button again, indicates a fuser failure–under temperature subcode.



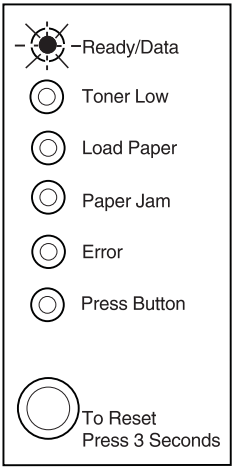
Once the subcode is displayed, if the operator panel button is pushed again, all 6 indicator LEDs blink. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. Fuser failure service error code indication
3. Fuser failure–under temperature service error subcode indication
4. Service error indication

Service Error Codes

Software Service Error Code

The operator panel button has been pushed and a secondary service error has occurred indicating a software error.



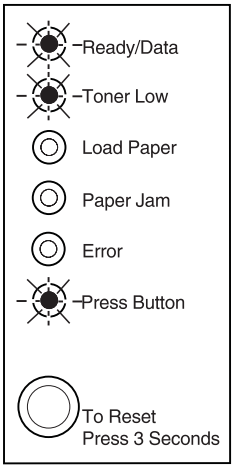
Once the error code is displayed, if the operator panel button is pushed again, the operator panel will display the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. Software service error code indication
3. Service error indication

Place the printer into the special function menu and run a print test. See **“Using the Special Function Menu” on page 2-71** for more information. If the printer does not run printer diagnostics, replace the controller board.

Fuser Failure – Over Temperature Error Code

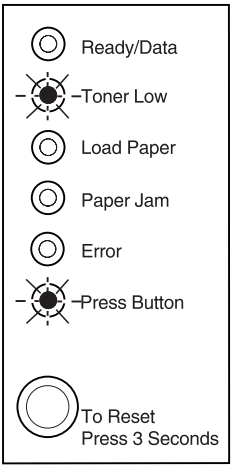
The operator panel is indicating a fuser failure – over temperature subcode.



See **“Hot Fuser Service Check” on page 2-48**, for more information.

Fuser Failure – Under Temperature Error Code

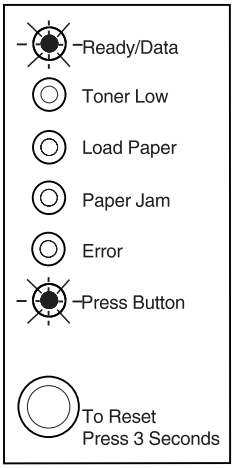
The operator panel is indicating a fuser failure – under temperature subcode.



See **“Cold Fuser Service Check” on page 2-47**, for more information.

Fuser Failure – Under Temperature Error Code – Standby

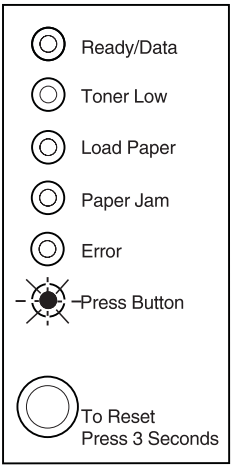
The operator panel is indicating a fuser failure – under temperature subcode.



See **“Cold Fuser Service Check” on page 2-47**, for more information.

Fuser Failure – Under Temperature Error Code – While Printing

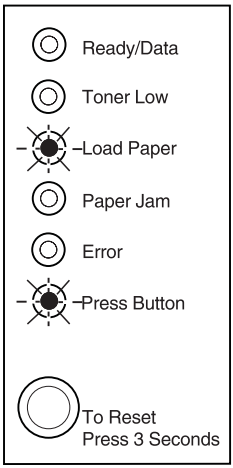
The operator panel is indicating a fuser failure – under temperature subcode.



See **“Cold Fuser Service Check” on page 2-47**, for more information.

Fuser Failure – Thermister Open Error Code

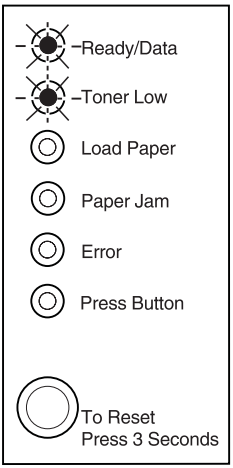
The operator panel is indicating a fuser failure – thermister open subcode.



Replace the fuser assembly.

Mirror Motor Failure Service Error Code

The operator panel button has been pushed and a mirror motor failure service error has occurred.



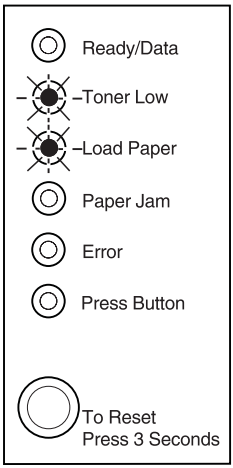
Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. Mirror motor failure service error code indication
3. Service error indication

Inspect the printhead cable and replace the assembly as necessary. If this does not correct the problem, replace the engine/LVPS board.

Optional Memory Service Error Code

The operator panel button has been pushed and a memory service error has occurred.



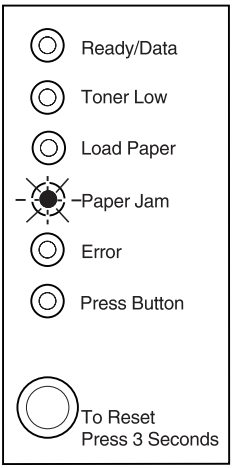
Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. Optional memory service error code indication
3. Service error indication

Replace the optional memory DIMM. If this does not correct the problem, replace the Code Overlay ROM, Flash SIMM or the controller board.

ROM Checksum Failure Service Error Code

The operator panel button has been pushed and a ROM checksum failure service error has occurred.



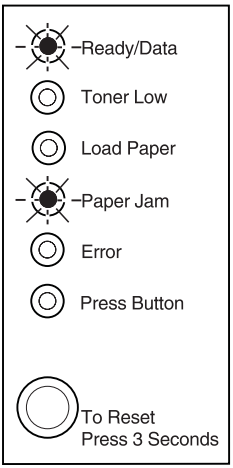
Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. ROM checksum failure service error code indication
3. Service error indication

Replace the ROM SIMM. If this does not correct the problem, replace the controller board.

Base Memory Service Error Code

The operator panel button has been pushed and a base memory service error has occurred.



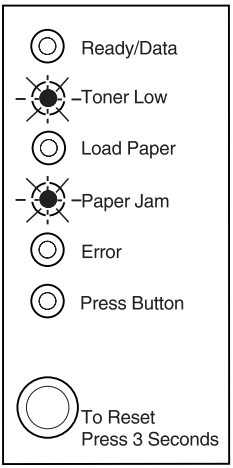
Once the error code is displayed, if the operator panel button is pushed again, the operator panel will display the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. Base memory service error code indication
3. Service error indication

Replace the controller board.

NVRAM Failure Service Error Code

The operator panel button has been pushed and a NVRAM failure service error has occurred.



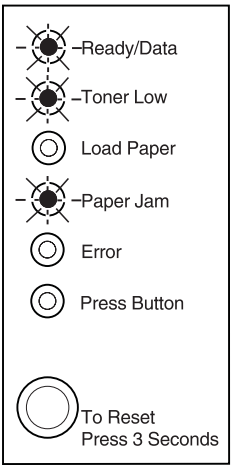
Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. NVRAM failure service error code indication
3. Service error indication

Replace the engine board.

ASIC Register Failure Service Error Code

The operator panel button has been pushed and an ASIC register failure service error has occurred.



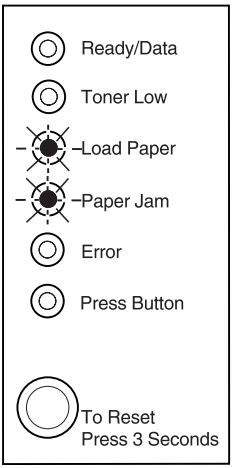
Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. ASIC register failure service error code indication
3. Service error indication

Replace the controller board.

ASIC SRAM Failure Service Error Code

The operator panel button has been pushed and an ASIC SRAM failure service error has occurred.



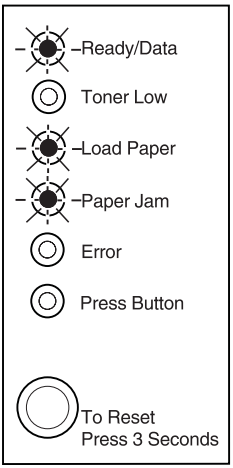
Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. ASIC SRAM failure service error code indication
3. Service error indication

Replace the controller board.

Flash Memory Failure Service Error Code

The operator panel button has been pushed and a flash memory failure service error has occurred.



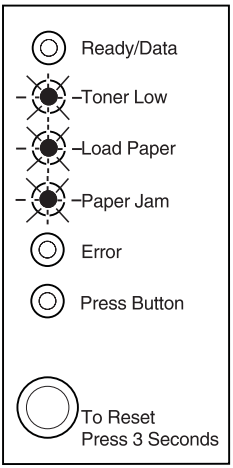
Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. Flash memory failure service error code indication
3. Service error indication

Replace the Flash memory. If this does not correct the problem, replace the controller board.

Font Checksum Failure Service Error Code

The operator panel button has been pushed and a font checksum failure service error has occurred.



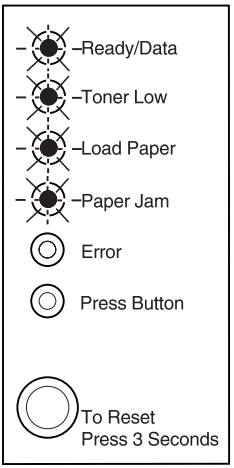
Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. Font checksum failure service error code indication
3. Service error indication

Replace the ROM SIMM. If this does not correct the problem, replace the controller board.

Engine Communication Failure Service Error Code

The operator panel button has been pushed and an engine communication failure service error has occurred.



Once the error code is displayed, if the operator panel button is pushed again, the operator panel displays the service error indication – all 6 indicator LEDs blinking. Continual pressing of the operator panel button causes the LEDs to repeat in the following order:

1. Service error indication
2. Engine communication failure service error code indication
3. Service error indication

Replace the engine board.

Error Codes/Conditions Not Detected or Reported

The printer does not detect or report the following conditions/errors:

- Incorrect manual feed
- Output bin full
- Print cartridge missing (reported as “top cover open” error)

Operator Panel LED Summary Table

Operator Panel LED	Description
	Operator panel LED is on.
	Operator panel LED is off.
	Operator panel LED is blinking.
	Operator panel LED is blinking slowly.

Error Code Table

Ready /Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
						Ready
						Demo Ready
						Offline (Remote)
						Busy

Ready /Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
						Waiting
						• Restoring Factory Defaults • Saving Settings • Resetting Printer
						Flushing Buffer
						Hex Trace
						Paper Jam
						Load Manual Paper/ Envelope
						Load Paper/ Envelope Tray 1or Tray 2
						Load Paper Tray 1 for Side 2 of Manual Duplex
						Top Cover Open

Ready /Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
◎	☼	◎	◎	◉	◎	Toner Cartridge Error
◎	◎	◎	◎	◉	◉	Printer Error
◎	◎	◎	◎	☼	◉	Flash Memory Full
◎	◎	◉	◉	◎	◎	Diagnostic Test Mode
Operator Panel LEDs When Toner Is Low						
◉	◉	◎	◎	◎	◎	Ready and Toner Low
◉	◉	◎	◎	◎	☼	Demo Ready and Toner Low
◎	◉	◎	◎	◎	◉	Offline (remote) and Toner Low
☼	◉	◎	◎	◎	◎	Busy and Toner Low
◉	◉	◎	◎	◎	◉	Waiting and Toner Low

Ready /Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
						• Restoring Factory Defaults • Saving Settings • Resetting Printer and Toner Low
						Flushing Buffer and Toner Low
						Hex Trace and Toner Low
						Paper Jam and Toner Low
						Load Manual Paper/ Envelope and Toner Low
						Load Paper/ Envelope Tray 1 and Toner Low
						Load Paper Tray 1 for Side 2 of Manual Duplex and Toner Low
						Load Paper Tray 2 and Toner Low
						Top Cover Open and Toner Low

Ready /Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
◎	☼	◎	◎	●	◎	Toner Cartridge Error
◎	●	◎	◎	●	●	Printer Error and Toner Low
◎	●	◎	◎	☼	●	Flash Memory Full and Toner Low
◎	●	●	●	◎	◎	Diagnostic Test Mode and Toner Low
Printer Error Secondary Codes						
●	●	◎	◎	●	●	Memory Full
●	◎	◎	◎	●	●	Complex Page
●	◎	●	◎	●	●	Short Paper
●	●	●	◎	●	●	Toner Low Intervention
☼	☼	◎	◎	●	●	Resolution Reduction Warning
◎	☼	◎	◎	●	●	Font Error

Ready /Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
						Resource Save Off – Deficient Memory
						Insufficient Defrag Memory
						Host Interface Error (Parallel ENA Connection Lost, Standard Parallel Port Disabled, Standard USB Port Disabled)
Service Error Codes						
For some service error codes, a second service error code is used to further describe the error. When a service error occurs, pressing the operator panel button after viewing the primary service error code displays the secondary service error code. The following table contains the secondary service error codes.						
Primary Service Error Codes						
						Service Error See **page 2-8**.
Secondary Service Error Codes						
						Software Error See **page 2-11**.

Ready /Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
◎	☼	◎	◎	◎	◎	Fuser Failure See **page 2-12**.
☼	☼	◎	◎	◎	◎	Mirror Motor Failure See **page 2-17**.
◎	☼	☼	◎	◎	◎	Optional Memory See **page 2-18**.
◎	◎	◎	☼	◎	◎	ROM Checksum See **page 2-19**.
☼	◎	◎	☼	◎	◎	Base Memory See **page 2-20**.
◎	☼	◎	☼	◎	◎	NVRAM Failure See **page 2-21**.
☼	☼	◎	☼	◎	◎	ASIC Register Failure See **page 2-22**.
◎	◎	☼	☼	◎	◎	ASIC SRAM Failure See **page 2-23**.
☼	◎	☼	☼	◎	◎	Flash Memory Failure See **page 2-24**.

Ready /Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
						Font Checksum See **page 2-25**.
						Engine Communica–tion Failure See **page 2-26**.
Fuser Service Error Subcodes						
						Fuser Failure – Over Temperature See **page 2-12**.
						Fuser Failure – Under Temperature See **page 2-13**.
						Fuser Failure – Thermister Open See **page 2-16**.

Power–On Self Test (POST)

When you turn the printer on, it performs a Power–On Self Test. Check for correct POST functioning of the base printer by observing the following:

Symptom Tables

POST Symptom Table

Symptom	Action
The main motor, cooling fan and fuser do not come on.	See the **"Cover Interlock Switch Service Check" on page 2-40**.
POST completes except one or more LEDs do not come on.	See the **"Operator Panel Service Check" on page 2-49**.
None of the LEDs come on.	See the **"Operator Panel Service Check" on page 2-49**.
Main motor does not come on.	See the **"Main Motor Service Check" on page 2-48**.
Fan does not come on.	See the **"Cooling Fan Service Check" on page 2-40**.
Fuser lamp does not come on.	See the **"Cold Fuser Service Check" on page 2-47**.
Fuser lamp never turns off.	See the **"Hot Fuser Service Check" on page 2-48**.
The paper feed picks and tries to feed paper.	See the **"Paper Feed Service Checks" on page 2-51**.

Printer Symptom Table

Symptom	Action
Dead Machine (no power)	See the **“Dead Machine Service Check” on page 2-43**.
Fan noisy or not working	See the **“Cooling Fan Service Check” on page 2-40**.
Fuser parts melted	See the **“Hot Fuser Service Check” on page 2-48**.
Fuser lamp doesn’t light	See the **“Cold Fuser Service Check” on page 2-47**.
Toner not fused to the paper	See the **“Cold Fuser Service Check” on page 2-47**.
Blank page	See the **“Blank Page” on page 2-55**.
Black page	See the **“Black Page” on page 2-56**.
Heavy background	See the **“Heavy Background” on page 2-57**.
Light print	See the **“Light Print” on page 2-59**.
White or black lines or bands	See the **“White or Black Lines or Bands” on page 2-60**.
Toner on back of page	See the **“Toner on Back of Page” on page 2-60**.
Incorrect characters print	See the **“Incorrect Characters Print” on page 2-61**.
Paper jams	See the **“Paper Feed Service Checks” on page 2-51**.
Main Motor noisy or does not move	See the **“Main Motor Service Check” on page 2-48**.
Paper never picks	See the **“Paper Never Picks” on page 2-52**.

Symptom	Action
Paper feeds continuously	See the **“Paper Picks During POST and/or Continuously” on page 2-51**.
Paper skew	See the **“Paper Feed Service Checks” on page 2-51**.
Printer not communicating with host	See the **“Parallel Port Service Check” on page 2-54**.
Paper wrinkled or bent	See the **“Paper “Trees,” Wrinkles, Stacks Poorly Or Curls” on page 2-53**.
Top cover will not close	See the **“Cover Interlock Switch Service Check” on page 2-40**.
Operator panel button does not respond	See the **“Operator Panel Button Service Check” on page 2-50**.
Operator panel LEDs do not light or very dim	See the **“Operator Panel Service Check” on page 2-49**.

Service Checks

Service checks which involve measuring voltages of the LVPS/ engine boards must be performed with the printer positioned on its back side. This provides the servicer access to the circuit boards underneath the printer while supplying necessary power to the rest of the printer.

Cooling Fan Service Check

FRU	Action
Cooling Fan	Make sure the cooling fan motor cable plug is properly seated on the engine board. Turn the printer off and disconnect the cooling fan cable on the engine board. Turn the printer on. Within approximately 3 seconds the engine board should apply +24V dc to the fan. See **“Connector Locations” on page 5-1** for more information. • If voltage is present, replace the cooling fan. • If voltage is not present, see the **“Engine Board Service Check” on page 2-41**.

Cover Interlock Switch Service Check

Note: Make sure a toner cartridge is installed and the cover closes all the way, engaging the cover open switch lever.

FRU	Action
Cover Interlock Switch	Disconnect the cover interlock cable plug from the engine board. Push the cover interlock switch to the closed position and check for continuity. See **“Connector Locations” on page 5-1** for more information. If the switch does not close, replace the switch. Check for +24V dc. If voltage is not present, see **“Engine Board Service Check” on page 2-41**.

Engine Board Service Check

FRU	Action
Engine Board	Ensure +24V dc from the LVPS board to the engine board. 1. Turn off printer. 2. Disconnect the fuser lamp cable plug from the LVPS board. See **“Connector Locations” on page 5-1** for more information. 3. Disconnect the LVPS/engine board jumper cable from the engine board. See **“Connector Locations” on page 5-1** for more information. • If voltage is correct, ensure J12–PSU is properly seated in the J12–PSU connector on the engine board. • Check for +24V dc on the cable. • If voltages are not present or incorrect, see the **“Low Voltage Power Supply (LVPS) Service Check” on page 2-44**. **Note:** With all cables connected, the printer should complete POST within approximately 12–15 seconds in the following sequence:

FRU	Action
Engine Board (continued)	1. All operator panel LEDs turn on solid. 2. All operator panel LEDs turn off. 3. LEDs then sequence on and off one at a time starting with the **Press Button** LED. After 2 complete LED sequences, the **Ready** LED turns on solid. 4. The cooling fan comes on. 5. The fuser lamp comes on. 6. The drive motor runs. 7. The printhead motor runs. 8. The printer cycles down into standby mode/ready. If the operator panel LEDs come on solid and never turn off, replace the controller board and/or controller cable. If some LEDs are on or flashing, see the **“Status Information” on page 2-3** to determine a course of action and/or replace the engine board.

Dead Machine Service Check

Note: Check the AC line voltage. The voltage should be within the following limits:

- 100 V ac – 127 V ac for the low voltage model printer
- 200 V ac – 240 V ac for the high voltage model printer

FRU	Action
Low Voltage Power Supply Fuse (LVPS)	Check the fuse on the LVPS board for continuity. • If open, replace with appropriate fuse. – If fuse opens again, see **"Low Voltage Power Supply (LVPS) Service Check" on page 2-44**. • If not open, see power switch below.
Power Switch	Turn on the printer power switch. Check for ac line voltage in the switch cable, CN1 (LVPS board), between pin 1 and ground and between pin3 and ground. • If line voltage is present, see the **"Cover Interlock Switch" on page 2-40**. • If line voltage is not present on CN1, replace the power switch or check/correct missing line voltage.

Low Voltage Power Supply (LVPS) Service Check

FRU	Action
Low Voltage Power Supply Board (LVPS)	Set meter for ac line voltage. Check for ac line voltage on CN1 between pin 1, and pin 3. • If line voltage is present, disconnect the CN3 cable plug from the LVPS board. • If the voltage is not present, see the **“Dead Machine Service Check” on page 2-43**. Use the LVPS connector table (**page 5-1**) and check for correct voltages. If voltage is not present or correct, replace the LVPS fuses and/or the LVPS board.

Fuser Service Check

When toner is partially fused to the paper, it is usually caused by low fuser temperature.

WARNING: Avoid handling the lamp as much as possible as it is easily broken. Be careful not to touch the glass housing with bare hands as skin contains acids that can weaken the glass.

The line voltage to the printer must be within the following limits:

- 100 V ac – 127 V ac for the low voltage model printer
- 200 V ac – 240 V ac for the high voltage model printer

Turn the printer off and wait a few minutes for the fuser lamp to cool. Turn the machine on and observe the lamp turning on during POST.

You can see the lamp with the left side cover and fuser wire cover removed.

FRU	Action
Fuser Lamp Lamp Cable Thermistor LVPS	Turn the printer off and disconnect the fuser lamp cable plug from the LVPS board connector CN2. Check for continuity across the fuser lamp pin 1 and pin 2. If there is continuity, go to step 1: Continuity. If there is no continuity, go to step 2: No Continuity. Step 1: **Continuity** Measure the voltage at connector CN2 on the LVPS. It should match the line voltage. • If line voltage is not present, see **“Low Voltage Power Supply (LVPS) Service Check” on page 2-44**. Make sure the fuser thermistor is correctly connected to the engine board. If the problem persists, disconnect the thermistor cable from the engine board and check for approximately +5V dc. See **“Connector Locations” on page 5-1** for more information. • If the voltage is incorrect, see **“Engine Board Service Check” on page 2-41**. Step 2: **No Continuity** Check the lamp cable for continuity. • If correct, replace the lamp. • If incorrect, replace the lamp cable.

Cold Fuser Service Check

Make sure the correct voltage lamp is installed. The voltage rating is stamped on one of the lamp contacts.

FRU	Action
Fuser Lamp Lamp Cable Thermistor LVPS	If the fuser lamp comes on and a fuser failure LED error code displays, be sure the thermistor is contacting the hot roll and the thermistor cable is firmly seated in connector CN1 on the LVPS board. Check for excessive toner buildup on the surface of the thermistor. Clean or replace as necessary. See **“Connector Locations” on page 5-1** for more information. Turn the printer off and disconnect the thermistor cable from the engine board. Measure the resistance of the thermistor. The resistance measures approximately 118K ohms when cool (approximately 40°C). Replace the fuser assembly as necessary.

Hot Fuser Service Check

Make sure the correct voltage lamp is installed. The voltage rating is stamped on one of the lamp contacts.

FRU	Action
Fuser Thermistor	Disconnect the thermistor cable from the engine board. Measure the resistance across the thermistor cable. See **“Connector Locations” on page 5-1** for more information. Replace the fuser assembly if the resistance is lower than 1k ohm or shorted.

Main Motor Service Check

FRU	Action
Engine Board Main Motor Main Motor Cable	Check the engine board for the correct voltages. See **“Connector Locations” on page 5-1** for more information. • If these voltages are correct, check the main motor cable for continuity. • If these voltages are not correct, see the **“Low Voltage Power Supply (LVPS) Service Check” on page 2-44** or replace the engine board. • If continuity exists on each wire, replace the main motor. • If continuity does not exist on one or more of the wires, replace the motor cable.

Operator Panel Service Check

Inspect the operator panel cable for damage. Make sure the cable is plugged in securely.

Run POST and check each LED for proper operation.

FRU	Action
Operator Panel Operator Panel Cable	If more than one LED does not turn on or an individual LED stays on solid during POST, check the operator panel cable for continuity. Replace if defective. If the cable measures continuity, replace the operator panel.
Operator Panel Operator Panel Cable Controller Board	If all LEDs are dim and operate erratically during POST or all LEDs come on and stay on solid during POST, replace the following FRUs one at a time in the order shown: Controller Board Operator Panel Operator Panel Cable If none of the LEDs come on, make sure the cable is properly connected to the operator panel and the controller board. Disconnect the cable and check it for continuity. Replace if necessary. • If the cable measures continuity, check for +5V dc. See **“Connector Locations” on page 5-1** for more information. • If these voltages are not correct, replace the controller board. • If these voltages are correct, replace the operator panel.

Operator Panel Button Service Check

FRU	Action
Operator Panel Operator Panel Cable	Disconnect the operator panel from the operator panel cable. Check the continuity between J2–1 and J2–2 on the operator panel as you press the operator panel button. As the button is pressed, continuity is present. • If continuity is present, replace the operator panel cable. • If continuity is not present, replace the operator panel.

Paper Feed Service Checks

Paper Jam Error Indication During POST

FRU	Action
Exit Sensor Flag	If the exit sensor flag is not resting within the paper exit sensor during POST, the printer displays a paper jam message. Make sure the flag is operating freely and correctly installed.
Input Paper Feed Sensor	Make sure the input paperfeed sensor is working properly. A stuck or incorrectly installed sensor causes this error.

Paper Picks During POST and/or Continuously

FRU	Action
Pick Roller Clutch Solenoid	Check the pick roller clutch for wear. The solenoid interacts with the clutch controlling motion of the pick roller. If the cam surface of the pick roller clutch assembly is worn, the solenoid may not stop the pick roller from rotating. Replace the pick roller clutch assembly if necessary. Make sure the spring on the solenoid is properly installed. If the spring is improperly installed or missing, the pick roller will continuously pick paper.

Paper Picks but Stops About an Inch Down the Page

FRU	Action
Roller Guides	Check for correct position of roller guides on pick roller assembly.

Paper Picks but Stops Half Way Through the Printer

FRU	Action
Input Paper Feed Sensor Engine Board	Make sure the input paper feed sensor is working properly. Check for a broken or stuck flag on the input paper feed sensor. Check to make sure the cable is seated on the engine board. See **“Connector Locations” on page 5-1** for more information. • If correct, replace the input paper feed sensor. • If these voltages are not correct, replace the engine board.

Paper Never Picks

FRU	Action
Paper Tray	Make sure the paper tray is correctly installed. The black mylar guide sheet in the front of the tray must be positioned in the paper path just behind the pick roller assembly. This guide sheet can easily block the paper path if installed incorrectly.
Pick Roller Solenoid	Make sure solenoid is installed correctly and its cable is plugged into the engine board. See **“Connector Locations” on page 5-1** for more information. • If the voltage is present, replace the solenoid. • If the voltage is not present, see the **“Engine Board Service Check” on page 2-41**.

Paper Occasionally Picks or Picks Multiple Sheets at Once

FRU	Action
Pick Roller Assembly	Check pick roller assembly for wear. Replace as necessary.
Paper Separator Assembly	Check the friction pad on the paper separator for signs of wear. Replace as necessary.
Pick Roller Pad Assembly	Check the friction pad on the pick roller pad assembly for signs of wear. Replace as necessary.

Paper “Trees,” Wrinkles, Stacks Poorly Or Curls

FRU	Action
Fuser Assembly	This problem is most likely due to a worn transfer roller. A worn transfer roller causes the printer to run hotter than required for the media being printed. Excessive heat can cause paper treeing problems, poor stacking or curl.

Parallel Port Service Check

1. Perform a print test to make sure the printer prints correctly. See **“Ready” on page 2-3** for more information.
2. Be sure the printer cable is designed for bidirectional printing.
3. Be sure the user application is set up correctly.
4. Try enabling the parallel port pull–up resistors. See **“Parallel Mode 1” on page 3-27**. Try printing a test page after enabling resistors. If the printer still does not print, disable the resistors.
5. If the internal print test page prints correctly, the user application/printer driver is set up correctly and the correct bidirectional parallel cable is installed, yet the printer still fails to print on command from the host computer, replace the controller board.

Print Quality Service Checks

Blank Page

FRU	Action
Toner Cartridge	Remove the toner cartridge and gently shake the assembly to evenly distribute the toner.
Printhead Printhead Cable HVPS Engine/LVPS Board	Blank pages can be caused by a defective printhead assembly, high voltage power supply or engine/LVPS board. See **“HVPS – High Voltage Power Supply Board” on page 5-7** and check the voltage measurements. If the voltages are correct, check the printhead cable for continuity. • If the cable measures continuity, replace the printhead. • If the cable does not measure continuity, replace the cable. If the voltage measurements are not correct, replace the HVPS. If the problem still exists, replace the engine/LVPS board.

Black Page

Note: Incorrect laser exposure or incorrect charging of the photoconductor causes an all black page.

FRU	Action
HVPS Contacts	Check the contacts for contamination and correct installation. Replace as necessary.
Engine/LVPS Board Controller Board HVPS Cable HVPS	Make sure the HVPS to engine/LVPS cable is correctly installed. See **“HVPS – High Voltage Power Supply Board” on page 5-7** and check the voltage measurements. • If the voltages are correct, check the HVPS to engine/LVPS cable for continuity. • If the cable does not measure continuity, replace the cable. • If the cable measures continuity, replace the HVPS. • If the voltages are not correct, see **“Low Voltage Power Supply (LVPS) Service Check” on page 2-44** and **“Engine Board Service Check” on page 2-41**.

Heavy Background

Poor development or poorly charged toner particles cause excessive background. This is more noticeable as the toner cartridge nears end of life.

FRU	Action
Toner Cartridge	Make sure the toner cartridge is correctly installed and the high voltage contacts are clean. If the cartridge is installed correctly, try a new cartridge.
HVPS Contacts HVPS Board Engine Board	Check the contacts for correct installation and contamination where contact is made with the toner cartridge and HVPS Board. Clean as necessary. If this does not correct the problem, replace the following FRUs one at a time in the order shown: HVPS Board Engine Board

Partial Blank Image/White Spots (no periodic pattern)

FRU	Action
Toner Cartridge	Remove the toner cartridge and gently shake the assembly to evenly distribute the toner. If toner cartridge is low, try a new one.
Fuser Backup Roller Springs	Check left and right backup roller springs and backup roller to ensure adequate even pressure is applied to the fuser hot roll.
Paper	Make sure recommended paper is being used.

Variation in Image Density Horizontally Across Page

FRU	Action
Toner Cartridge	The charge roll in the toner cartridge may have an unbalanced pressure against the PC drum. Try a new toner cartridge.
Transfer Roller Bearing Assembly Transfer Roller	Check the springs in the left and right transfer roller bearings. The bearing assemblies should support the transfer roller, applying even pressure to the PC drum. Replace either or both transfer roller bearing assemblies if the springs show signs of damage or fatigue. Inspect the transfer roller for signs of wear or damage and replace as necessary.

Poor Fusing of Image

FRU	Action
Fuser Lamp	The fuser may not be operating at the proper temperature to fuse the toner to the paper. See **“Cold Fuser Service Check” on page 2-47**.
Paper	Make sure recommended paper is being used.

Light Print

FRU	Action
Toner Cartridge	Make sure the toner cartridge is installed correctly and is not low on toner. If the problem continues, install a new toner cartridge.
Transfer Roller HVPS Contact (Transfer Roller) HVPS Board	Check the transfer roller for signs of toner buildup and contamination. Inspect the HVPS contact (transfer roller) for contamination. Inspect the HVPS board for contamination where it meets the HVPS contacts. If all components appear free of contamination, replace the following FRUs one at a time in the order shown: Transfer Roller HVPS Contact (Transfer Roller) HVPS Board

White or Black Lines or Bands

FRU	Action
Toner Cartridge Paper Feed Drive Gears	Banding appears as light or dark horizontal lines on a uniformly gray page or on a page with a large area of graphics. Banding is primarily due to a variation in the speed of the paper as it feeds through the printer especially in the developer and transfer process. Inspect the toner cartridge and paper feed components, especially the drive gears, for signs of wear, debris, binds, or damage.

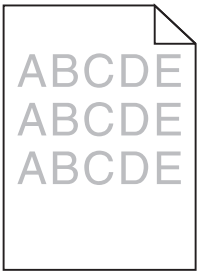
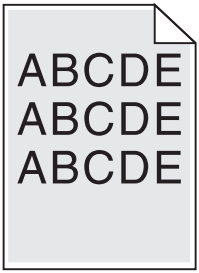
Toner on Back of Page

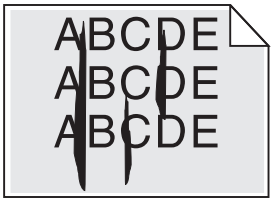
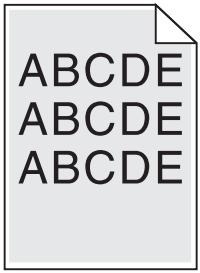
FRU	Action
Print Cartridge	Inspect the overall paper path for signs of spilled toner. Gently clean the contaminated areas with a soft cloth or compressed air.
Fuser Hot Roll Backup Roller	The fuser hot roll can cause toner on the back of the paper if toner is building up on the hot roll. This buildup may transfer to the backup roller, later transferring to the back of the paper. Inspect the hot roll and backup roller for signs of contamination and replace as necessary.
Transfer Roller	A transfer roller contaminated with toner can cause toner to transfer to the back of printed pages. Inspect the transfer roller for contamination and replace as necessary.

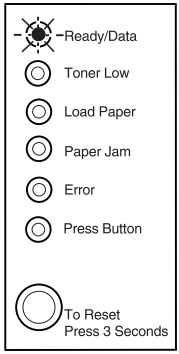
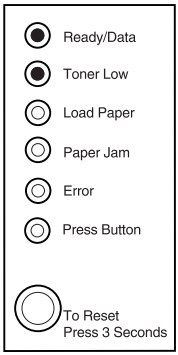
Incorrect Characters Print

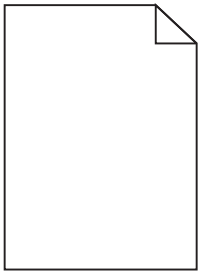
Make sure the correct printer driver software is installed. Incorrect software can cause incorrect characters to print and the image may not fit the page.

Solving Print Quality Problems

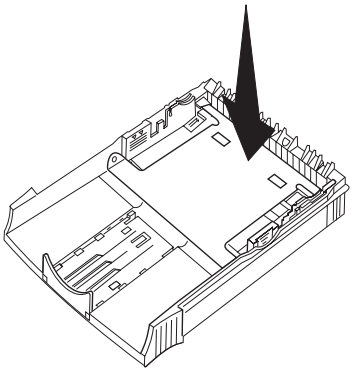
Problem	Action
Light or blurred characters. 	The print cartridge may be getting low on toner: • Remove the print cartridge. • Shake it from side to side to redistribute the toner. • Reinstall it. • Run engine clean cycle to remove any toner that may have accumulated. See **“Execute Engine Clean Cycle” on page 3-13** for more information. • Make sure you are using recommended print media (see media types and sizes in the *User’s Guide*.) • Use MarkVision to define the custom type setting for media type, media texture, or media weight. • The print cartridge may be defective. Replace it.
Toner smudges appear on the front or back of the page. 	• Run engine clean cycle to remove any toner that may have accumulated. See **“Execute Engine Clean Cycle” on page 3-13** for more information. • Make sure the paper is straight and unwrinkled. • Replace the print cartridge.

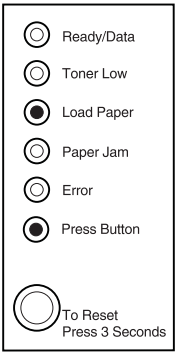
Problem	Action
Vertical or horizontal streaks appear on the page.  	• Run engine clean cycle to remove any toner that may have accumulated. See **“Execute Engine Clean Cycle” on page 3-13** for more information. • Replace the print cartridge.
Toner smears or rubs off the page.  	• Run engine clean cycle to remove any toner that may have accumulated. See **“Execute Engine Clean Cycle” on page 3-13** for more information. • Try a different kind of paper. Paper designed for copiers gives the best quality. • If you are printing on special media, such as, card stock or labels, be sure you select the correct paper type in the printer driver. • Change the media texture setting. If the setting is not in your driver, you can download the Lexmark E320/E322 setup utility from the Lexmark Web site, www.lexmark.com.

Problem	Action
The print is getting light but the **Toner Low** LED is not on. 	• The **Toner Low** LED does not come on if the standard 1,500 page print cartridge is installed. • Remove the print cartridge and gently shake it from side to side to redistribute the toner. • Replace the print cartridge.
The **Toner Low** LED is on. 	• Remove the print cartridge and gently shake it from side to side to redistribute the toner. • Replace the print cartridge.
Solid black areas on transparencies or paper contains white streaks.	• Choose a different fill pattern in your software application. • Try a different type of paper. Paper designed for copiers gives the best quality. • Remove the print cartridge and gently shake it from side to side to redistribute the toner. • Replace the print cartridge.

Problem	Action
Faint images or repetitive spots appear on the page.	• Select a different media type or form type setting from your printer driver. • Try a different type of paper. Paper designed for copiers gives the best quality. • Replace the print cartridge.
Pages are blank. 	• The print cartridge may be out of toner or defective. Replace the cartridge. • You may have a software error. Try turning the printer off and back on.
The printer has missing or damaged parts.	Contact the place where you bought your printer.
The operator panel LEDs do not come on when the printer is turned on.	• The LEDs may take a few seconds to come on. • Make sure the power cord is firmly plugged in at the back of the printer and at the electrical outlet.
The top cover does not close.	Make sure the print cartridge is positioned correctly.

Problem	Action
The printer is on, but nothing prints.	• Make sure the print cartridge is installed properly. • Make sure the parallel or USB cable is firmly plugged into the connector on the back of the printer. • Press the operator panel button with a brief button press to print a test page to determine whether the problem is with the printer or the computer. – If you can print a test page, the problem is in the computer or the software application. – If you cannot print a test page, call for service.
Toner Low LED is on and printing stops.	If you are using a 3K or 6K print cartridge and the **Toner Low** alarm is set to on, the printer stops printing until you replace the print cartridge. – Download the Lexmark E320/E322 Setup Utility from the Lexmark Web site, www.lexmark.com to change the **Toner Low** alarm.
The media skews or buckles.	• Don't overfill Tray 1 or the optional Tray 2 (see media capacities in the media types and sizes table in the *User's Guide*). • Make sure the paper guides are flush against the edges of the media.
The paper sticks together/printer feeds multiple sheets of paper.	• Remove the paper from Tray 1 or the optional Tray 2 and fan the paper. • Don't overfill Tray 1 or the optional Tray 2 (see media capacities in the media types and sizes chart in the *User's Guide*).

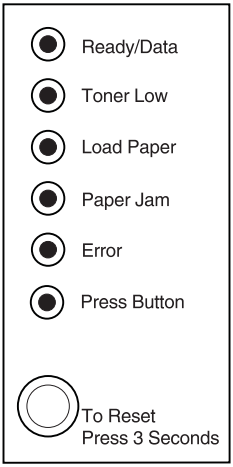
Problem	Action
The paper fails to feed from Tray 1.	• Remove the paper from Tray 1 and fan the paper. • Make sure Tray 1 is selected from the printer driver. • Do not overfill the tray.
The paper fails to feed from the optional Tray 2.	• Make sure the optional Tray 2 is selected from the printer driver. • Make sure the tray is pushed all the way in. • Make sure the metal plate is pressed down before inserting it into the printer.  **Note:** Once the tray is inserted, the metal plate springs up so the paper can feed into the printer. • Make sure the paper does not exceed the stack height indicator. • Make sure the paper is under both corner bucklers (see loading paper in the *User's Guide*). • Remove the paper from the optional Tray 2 and fan the paper.

Problem	Action
The **Load Paper** LED is on even though there is paper loaded in the optional Tray 2. 	Make sure the tray is pushed all the way in.
The printer does not print after a paper jam has been cleared.	• Push the operator panel button or open and close the printer cover to restart the printer. • Make sure the print cartridge is installed properly.
Unexpected characters print or characters are missing.	• Make sure you are using the correct printer driver. • Select hex trace mode to determine what the problem is. • Restore factory defaults. • Make sure the parallel cable or USB cable is firmly plugged in at the back of the printer.
Jobs are not printing and the **Error** LED is on solid.	• Make sure the print cartridge is installed properly. • Make sure the printer top cover is closed.
While in PostScript Level 2 emulation, the printer is flushing data (**Ready/Data** and **Error** LEDs are blinking).	• Make sure you are using the correct PostScript driver. • The Lexmark E320 does not support PostScript emulation. • The printer doesn't have enough memory to print the job. Install more memory.

Problem	Action
You want to use manual duplex but cannot find it on your printer.	Your printer driver may not support manual duplex. Go to the Lexmark Web site, www.lexmark.com to download the latest printer driver.
While using manual duplex, the printer gets a paper jam.	A paper jam interrupts the duplex process. As a result, the information on the page that jammed is lost. • Cancel your print job and press the operator panel with a long button press (approximately 3 seconds) to reset the printer. • Resend your print job.

Resetting User Defaults

When formatting problems occur or unexpected characters print, try resetting the printer default settings to your user defaults. Press and hold the operator panel button until all the LEDs come on.

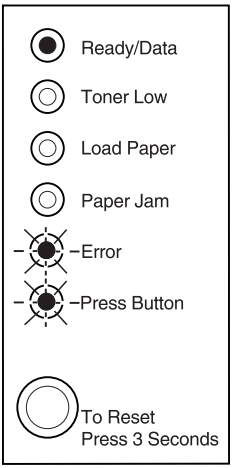


Using the Special Function Menu

Printer settings for solving print quality problems are in the special function menu: restore factory defaults, Hex Trace, print quality test pages, and advanced troubleshooting mode.

To enter the special function menu:

1. Turn off the printer.
2. Open the top cover.
3. Turn the printer back on.
4. When the **Error** LED comes on, indicating the top cover is open, press and release the operator panel button twice quickly (double-button press).
5. When the **Error** LED and **Press Button** LED blink, close the cover.

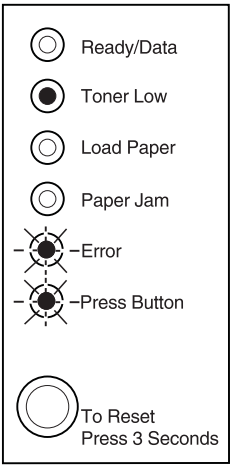


The special function menu is activated.

Restoring Factory Defaults

Sometimes resetting the printer to the original factory default settings solves formatting problems.

1. Enter the special function menu. See **“Using the Special Function Menu” on page 2-71** for more information.
2. Press and release the operator panel button twice quickly (double-button press) until the **Toner Low** LED comes on and the two bottom LEDs blink.



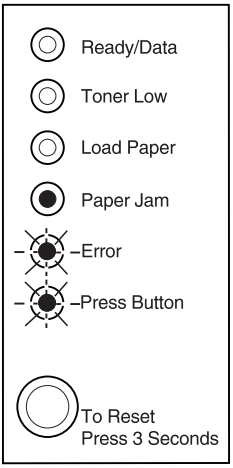
3. Press the operator panel with a long button press (hold until all the LEDs come on) to reset the printer to the original factory defaults.

Once the settings are returned to the factory default values, the printer returns to the **Ready** state.

Using Hex Trace Mode

When unexpected characters print or characters are missing, use Hex Trace to help you determine if there is a problem with the language interpreter or the cable. Hex Trace isolates printing problems by telling you what information your printer is receiving.

1. Enter the special function menu. See **“Using the Special Function Menu” on page 2-71** for more information.
2. Press and release the operator panel button twice quickly (double-button press) three times until the **Paper Jam** LED comes on and the two bottom LEDs blink.



3. Press the operator panel button with a long button press (hold until all the LEDs come on) to select the Hex Trace setting.
4. Press the operator panel button with another long button press to initiate Hex Trace.

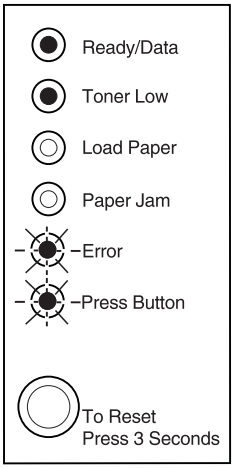
Data sent to the printer is printed out in hexadecimal and character representation to help isolate the source of the problem.

To exit Hex Trace mode, turn off the printer or press the operator panel with a long button press.

Using Print Quality Test Pages

To help isolate print quality problems, like streaking, print test pages using the print quality test pages setting:

1. Enter the special function menu. See **“Using the Special Function Menu” on page 2-71** for more information.
2. Press and release the operator panel button twice quickly (double-button press) four times until the **Ready/Data** and **Toner Low** LED come on and the bottom two LEDs blink.



3. Press the operator panel button with a long button press (hold until all the LEDs come on) to initiate Print Quality Test Pages.

   Three pages print to help you evaluate print quality. The first page has registration marks, the second page is gray, and the third page is black. Once the paper exits into the output bin, the printer returns to the **Ready** state.
4. Use the test pages to isolate problems such as print is too light, toner streaks, and so on. See the Troubleshooting tables for solutions to these problems.
5. To exit print quality test pages, press the operator panel button with a long button press (hold until all the LEDs come on).

Advanced Troubleshooting Mode

Refer to “Advanced Troubleshooting” in the *User’s Guide* for information about advanced troubleshooting mode settings.

3. Diagnostic Aids

Start

This chapter describes procedures you can use to identify printer failures and verify that repairs have corrected the problem.

Performing Self Test

At power–up, each LED turns on and off in reverse sequence, starting with **Press Button** and ending with **Ready**. Each LED remains on for approximately one second, but no more than approximately two seconds. This cycling repeats as needed during the execution of the self test. The printer performs the cycle at least once. Additional cycles can be interrupted at any point in the cycle indicating the self test is complete.

Information Priority

The priority for displaying information on the operator panel is:

- Service information
- Top cover open
- All other information in the order of occurrence

Printer Operation Modes

The printer supports six distinct modes of operation. Each of the following operations may only be performed if the printer is in the correct operation mode.

The six modes are:

- Normal printing
- Demo printing
- Diagnostics test
- Special function menu
- Configuration mode
- Hex trace

The mode entry table lists steps to enter and exit each mode. See **“Printer Modes Summary Table” on page 3-3** for details.

Printer Modes Summary Table

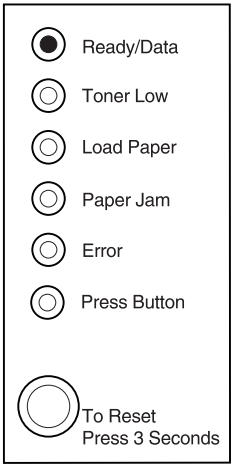
Mode	Method of Entry	Method of Exit
Normal Printing	NVRAM power–on default flag set to normal **AND** Turn on printer with cover closed. **OR** Print engine cleaning cycle page from special function menu. **OR** Operator panel reset from hex trace. **OR** Print quality test page from special function menu. **OR** Reset defaults from special function menu.	Turn off printer and follow instructions for method of entry.

Mode	Method of Entry	Method of Exit
Demo Printing	NVRAM power–on default flag set to Demo **AND** Turn on printer with cover closed. **OR** Print engine cleaning cycle page from special function menu. **OR** Operator panel reset from hex trace. **OR** Print quality test page from special function menu. **OR** Reset defaults from special function menu.	Turn off printer and follow instructions for method of entry.
Diagnostics Menu	Turn on printer while pressing the button with the top cover open. Once the printer posts the top cover open indication, close the top cover.	Turn off printer and follow instructions for method of entry.

Mode	Method of Entry	Method of Exit
Special Function Menu	Turn on printer with the top cover open. Once the printer posts the top cover open indiction, double press the button. When the lights start flashing, close the cover.	Execute the engine clean cycle, hex trace, print quality test pages, reset defaults or toggle demo mode function.
Configuration	Enter the special function menu mode and then select the enter configuration mode option.	Turn printer off and follow instructions for “method of entry” to enter desired mode.
Hex Trace	Enter the special function menu mode and then select the enter hex trace mode option.	Turn printer off.

Normal Printing Mode

1. Turn the printer on.
2. Verify the operator panel **Ready** LED is on.

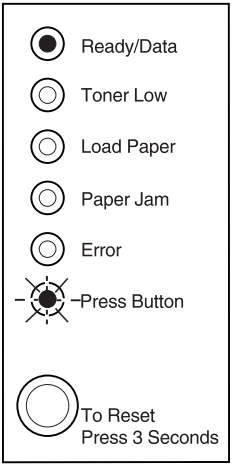


The printer is ready for normal operation.

Demo Printing Mode

This printer setting indicates whether or not demo mode is active. When demo mode is set to on, demo mode is entered each time the printer is turned on.

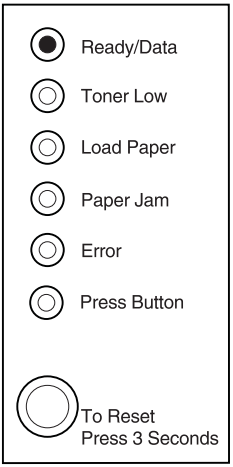
The printer posts the **Busy** indication on the operator panel. **Busy** is posted until the demo print job completes or until some asynchronous event occurs, for example, reset or intervention. When the demo job completes, the printer posts demo ready and remains in demo mode waiting for the initiation of another demo job.



This is demo mode with the **Press Button** LED flashing.

Printing Menu Settings Page

A user can invoke the print test page function only under normal printing mode in the **Ready** state.



Briefly press the **Reset button.**

The menus page contains the following information:

Listing of all printer settings contained in the operator panel menus, and their default values.

Printer information such as serial number, page count, installed RAM, engine code level, RIP code level, and font information.

Note: The menus page is printed in the language specified by the display language printer setting.

Diagnostic Tests Mode

The diagnostic tests mode causes the printers internal tests to be performed. If any of the diagnostic tests fail, a service indication is posted. You can determine which test failed by accessing the service code associated with the service error. The secondary service code is displayed by performing a button press while the service indication is posted on the operator panel.

If the printer completes all its diagnostic tests successfully, **Toner Low** LED blinks. To exit diagnostics, turn off the printer.

While running diagnostics, the printer performs the following memory tests:

- Standard memory test
- Optional memory test

When the printer enters Normal or Demo modes, the total amount of installed memory detected during the POST sequence is compared with an NVRAM value representing the printer total installed memory.

- If the amount of detected memory matches the value stored in NVRAM, the printer doesn't perform a Memory Test during POST sequence into Normal or Demo modes.
- If the amount of detected memory does not match the NVRAM value representing total installed memory, the printer assumes the user has changed the printers memory configuration by adding or removing optional memory.

To verify the new memory configuration, the printer performs a full Memory Test and then updates the NVRAM value representing the total installed memory.

Note: The printer always performs a complete Memory Test when executing the Diagnostics Test.

Entering Diagnostic Tests Mode

Perform the following steps to enter diagnostics test mode:

1. Turn the printer off.
2. Open the printer cover.
3. Press and hold the operator panel button.
4. Turn the printer on.
5. When the cover open error is indicated on the operator panel (**Error** LED on), release the button.
6. Close the cover.

The printer automatically runs the diagnostics test.

- If the tests pass, the **Toner Low** LED blinks.
- If a test fails, a service indication is displayed.

Once the diagnostics test is complete, a one page Quick Test can be printed by briefly pressing the operator panel button.

Special Function Menu

The special function menu lets the following functions be executed from the operator panel:

- Execute engine cleaning cycle
- Reset defaults
- Enter configuration mode
- Enter hex trace
- Print diagnostics/print quality test page
- Set demo mode active/inactive

Entering Special Function Menu

1. Turn the printer off.
2. Open the printer cover.
3. Turn the printer on.
4. When the cover open error is indicated on the operator panel, (**Error** LED on), double press the button.
5. When the **Error** and **Press Button** LEDs start flashing, close the cover.

   The special function menu is now active.

Special Function Menu LED Summary Table

Ready/ Data	Toner Low	Load Paper	Paper Jam	Error	Press Button	Condition
						Execute engine clean cycle
						Reset defaults
						Enter config mode
						Enter hex trace
						Three print quality test pages
						Toggle demo mode

- Single button press–not used.
- Long button press–executes the current menu selection. When the selection is executed, the panel LEDs change the state to indicate the function is executed.
- Double button press–moves to next selection in the menu (for example, from engine clean cycle to reset defaults to enter config mode…).

Execute Engine Clean Cycle

The execute engine clean cycle function prints one blank page in a special cleaning mode. Prior to executing the engine cleaning cycle, place one sheet of paper into the automatic paper feed slot. The cleaning mode helps eliminate small specs of toner present in the background when printing.

See the Special Function Menu (**page 3-11**) and this action:

> Perform a long button press until all LEDs are on solid. The printer feeds one sheet of paper.

Once the engine cleaning cycle pages are printed, the printer enters either normal printing or demo printing modes based on the NVRAM power–on default flag.

Reset Defaults

The operator panel reset operation is available when the printer is operating in its normal mode, demo mode, or hex trace mode, and when the operator panel indicates a printer state which permits the operator panel reset operation. For example, when the printer posts the paper jam indication, operator panel reset is not a permitted operation as long as the printer is in the paper jam state. On the other hand, when the printer posts the **Busy** indication, an operator panel reset is permitted.

Configuration Mode

The configuration mode allows the setting of certain printer functions through the operator panel that cannot be modified using the data stream.

The following settings may be modified or selected in configuration mode:

- Parallel Port Settings
  - Enable port
  - NPA mode
  - Protocol
  - Mode 1
  - Mode 2
  - Strobe adjust
- USB Settings
  - Enable port
  - NPA mode
- PPDS Activated
- Auto LFCR/CRLF

  Auto line feed after a carrier return, auto carrier return after a line feed, and PPDS activated settings may be modified using PJL. However, modifications of these settings are typically required by non PC users, so the Lexmark E32x utilities may not be used to modify these settings.

Operator panel definitions while in configuration mode:

Action	Definition
Double click button press	Moves through the configuration mode menu items.
Brief button press	Moves through the displayed menu item value list.
Long button press	Selects and saves the value displayed for the menu item. To indicate to the user a setting has been saved, the printer displays the saving setting indication.

Entering Configuration Mode

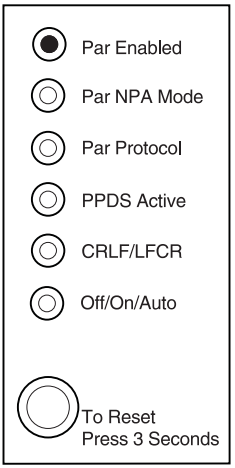
Enter configuration mode by selecting the Enter Config Mode option on the special function menu.

The printer is in configuration mode when the **Ready/Data** LED comes on, and the **Toner Low**, **Load Paper**, **Paper Jam**, **Error** LEDs are off. **Press Button** indicates the **Par Enabled** setting.

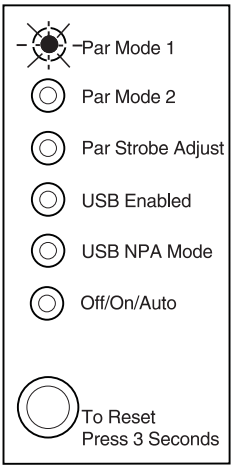
To exit configuration mode, turn off the printer.

Once the printer enters configuration mode, replace the words on the panel overlay with one of the following overlays.

Solid LEDs



Blinking LEDs



For the solid LEDs, the lit **Par Enabled** (**Ready**) LED means the panel is presently showing the value for the menu item **Parallel Port Enabled**. The off/on/auto (**Press Button**) LED displays the value of the current setting: off, on, or auto. (For this example, **Parallel Port Enabled** is off.) The value list for the menu item **Parallel Enabled** is off, on, and auto.

Brief button presses cause the printer to cycle through the various values within the value list for the menu item displayed. For **Parallel Enabled** – a brief button press causes the off/on/auto (**Press Button**) LED to light.

Another brief press causes the off/on/auto (**Press Button**) LED to blink.

Subsequent brief button presses cause the printer to cycle through the valid values for the displayed menu item. When the setting you want is displayed on the off/on/auto (**Press Button**) LED, a long button press saves the displayed value. The printer indicates a setting is being saved by displaying all LEDs on solid.

The following table shows which printer mode must be active for each operation.

Operation	**Mode**
Print Buffer	Normal
Operator Panel Reset	Normal, demo, and hex trace
Print Test Page	Normal
Print Font Samples	Normal
Print Directory	Normal
Format Flash	Normal
Set Demo Mode Active/Inactive	Special function menu
Print Demo	Demo
Diagnostic Tests	Diagnostic mode
Print Quality Test Page/Registration Adjustment	Normal and special function menu
Factory Defaults	Normal and special function menu
Hex Trace	Special function menu
Execute Engine Cleaning Cycle	Special function menu
Parallel–Enable Port	Configuration **“Parallel Port” on page 3-23**.

Operation	Mode
Parallel–NPA Mode	Configuration **“Parallel NPA Mode” on page 3-24**.
Parallel–Protocol	Configuration **“Parallel Protocol” on page 3-26**.
Parallel–Mode 1	Configuration **“Parallel Mode 1” on page 3-27**.
Parallel–Mode 2	Configuration **“Parallel Mode 2” on page 3-28**.
Parallel–Strobe Adjust	Configuration **“Parallel Strobe” on page 3-29**.
Activate/Deactivate PPDS	Configuration **“Data Streams” on page 3-30**.
Auto CRLF/LFCR	Configuration **“Carriage Return Line Feed/Line Feed Carriage Return (CRLF/LFCR)” on page 3-32**.
USB–Enable Port	Configuration **“USB Port” on page 3-34**.
USB–NPA Mode	Configuration **“USB NPA Mode” on page 3-36**.

Printer Buffer

The print buffer operation is only available while the printer is operating in its normal mode and when the operator panel indicates the printer is waiting.

Operator Panel Reset

Perform a long button press–for example, press and hold the button until the printer posts the resetting printer indication (resetting printer is indicated when all the lights on the operator panel are on).

Print Font Samples

The print font samples operation is not accessible through the operator panel. Two PJL commands exist which allow the user to obtain samples of the stored fonts.

Print Directory

Print directory is not supported by the operator panel. It is supported by issuing a PJL command.

Format Flash

Format flash is not supported by the operator panel. It is supported by issuing a PJL command.

Set Demo Mode Active/Inactive

The power–on default for the printer may be switched between normal and demo by activating/deactivating demo mode toggle.

Go to the Special Function Menu (see **page 3-11**) and perform the following:

1. Select Toggle Demo mode by double pressing the operator panel button until the **Ready** and **Load Paper** LEDs are on.
2. Perform a long button press until all LEDs are on solid.

Print Registration Adjustment

- Adjust the left margin until the registration box illustrated on the diagnostics test page is centered on the page.
- Adjust the top margin until the registration lines located at the bottom of the diamonds at the bottom of the page fall on the bottom edge of the page.

These settings may be modified by issuing PJL DEFAULT commands when the printer is in normal mode. The PJL variables used to describe registration are LLEFTMARGINOFFSET and LTOPMARGINOFFSET.

Factory Defaults

When the printer is initialized, the printer environment returns to default settings.

There are of two types of default settings:

- Fixed default settings

  Fixed default settings cannot be modified from their factory set values.

- Variable default settings

  Variable default settings can be altered from their factory set values. Factory set values are never erased and may be restored at a later time.

Restoring Factory Defaults

Restoring factory defaults returns the printer settings to the original factory settings.

Go to the Special Function Menu (see **page 3-11**) and perform the following:

1. Select Reset Defaults mode by double pressing the operator panel button until the **Toner Low** LED is on.
2. Perform a long button press until all LEDs are on solid.

The printer is reset to factory defaults.

Enter Hex Trace Mode

When the printer is in hex trace mode, it prints a hexadecimal and a character representation of a print job. The printer does not recognize any print controls or commands in this mode. A hex trace printout can be used to help isolate the cause of print problems. This is done by checking the control codes embedded within a print job.

Go to the Special Function Menu (see **page 3-11**) and perform the following:

1. Select Enter Hex Trace mode by double pressing the operator panel button until the **Paper Jam** LED is on.
2. Perform a long button press until all LEDs are on solid.

The printer is reset to factory defaults.

Hex trace mode can be exited by turning off the printer, or by pressing and holding the operator panel button to reset the printer.

Print Quality Test Pages

Go to the Special Function Menu (see **page 3-11**) and perform the following:

1. Select Three Print Quality Test Pages mode by double pressing the operator panel button until the **Ready/Data and Toner Low** LEDs are on.
2. Perform a long button press until all LEDs are on solid.

When a test page is printed from the Special Function Menu:

- The first diagnostic test page illustrates print registration marks which aid the user during the print registration adjustment process.

  In addition, the first diagnostic test page also includes the current value of some user default settings.

  Note: The diagnostics test page is printed in English only.

- The second page is gray.
- The third page is black.

Notes:

  – Both pages are used by service and manufacturing to evaluate print quality.
  – Both diagnostic test pages can be printed from the print quality test pages function.

Once the print quality test pages are printed, the printer enters either normal printing or demo printing modes based on the NVRAM power–on default flag.

Parallel Port

Parallel Port lets the user enable or disable the parallel port. If the port is not being used, disabling it frees allocated memory to be used to process print jobs.

Note: Parallel port options are not available to change in some network models.

Perform the following steps to change the Parallel Port setting:

1. Enter the configuration mode. See **"Configuration Mode" on page 3-14** for more information.

   The Parallel Port (**Ready**) LED comes on solid. The current Parallel Port setting is indicated by the Off/On/Auto (**Press Button**) LED. When the LED is off, the parallel port is disabled. When the LED is blinking, the parallel port is enabled.
2. Perform a brief button press to select the Parallel Port setting.
3. Perform a long button press. All LEDs blink once, indicating the setting is saved.
4. Exit the configuration mode by turning the printer power off.

Off/On/Auto	Setting Value
	Parallel port is disabled. The printer doesn't receive data from the parallel port.
	Parallel port is enabled with a fixed buffer size. The buffer size is set from a utility such as MarkVision. **Note**: This LED state is only displayed if the current value for the Parallel Port Enabled setting is a fixed value. The user can't set the value by pressing the button to cycle from the off value to the on value, that is, the button press cycles from off to auto.
	Parallel port is enabled with an automatic buffer size. The printer determines the buffer size based on available memory and other printer settings.

Parallel NPA Mode

Parallel NPA mode allows two way communication between the host computer and the printer.

Perform the following steps to change the Parallel NPA setting:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press. This moves to the Parallel NPA item on the configuration menu. The Parallel NPA (**Data**) LED comes on solid.
3. The current Parallel NPA setting is indicated by the Off/On/Auto (**Press Button**) LED.
   - When the LED is on solid, all data received by the printer must be in NPA packets. Any non-packet data is rejected as bad packets.
   - When the LED is off, the printer is not performing any NPA processing.
   - When the LED is blinking, the printer examines incoming data and decides whether it is receiving NPA packets.
4. Perform a brief button press to select the Parallel NPA setting.
5. Perform a long button press. All LEDs blink once, indicating the setting is saved.
6. Exit the configuration mode by turning the printer power off.

Off/On/Auto	Setting Value
	The parallel port does not search for NPA data within the received data.
	The parallel port requires that data sent to the printer be in NPA format.
	The parallel port searches for optional NPA data within the received data.

Parallel Protocol

The printer supports two parallel protocol settings: Standard and Fastbytes. When the protocol is set to Standard, information is received at a normal transmission rate. When the protocol is set to Fastbytes, information is received at a much faster transmission rate provided the host computer supports the Fastbytes mode.

Perform the following steps to change the Parallel Protocol setting:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press two times. This moves to the Parallel Protocol item on the configuration menu. The Parallel Protocol (**Load Paper**) LED comes on solid.
3. The current Parallel Protocol setting is indicated by the Off/On/Auto (**Press Button**) LED. When the LED is off, the Parallel Protocol is set to Standard. When the LED is on, the Parallel Protocol is set to Fastbytes. Perform a brief button press to select the Parallel Protocol setting.
4. Perform a long button press. All LEDs blink once, indicating the setting is saved.
5. Exit the configuration mode by turning the printer power off.

Off/On/Auto	Setting Value
◎	Parallel port uses Standard protocol.
●	Parallel port uses Fastbytes protocol.

Parallel Mode 1

Parallel Mode 1 controls whether or not resistors are enabled on the parallel post signals. The default is to not have the resistors enabled, however, this function is useful because some IBM clone personal computers have open collector outputs on their parallel port signals.

Perform the following steps to change the Parallel Mode 1 setting:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press five times. This moves to the Parallel Mode 1 item on the configuration menu. The Parallel Mode 1 (**Ready**) LED is blinking.
3. The current Parallel Mode 1 setting is indicated by the Off/On/Auto (**Press Button**) LED. When the LED is off, the Parallel Mode 1 is set to off. When the LED is on, the Parallel Mode 1 is set to on. Perform a brief button press to select the Parallel Mode 1 setting.
4. Perform a long button press. All LEDs blink once, indicating the setting is saved.
5. Exit the configuration mode by turning the printer power off.

Off/On/Auto	Setting Value
◎	Parallel mode 1 is set to off (resistors enabled).
◉	Parallel mode 1 is set to on (resistors disabled).

Parallel Mode 2

Parallel Mode 2 controls whether or not the parallel port data is sampled on the leading or trailing edge of strobe. The default is to sample on the leading edge of strobe, however, some IBM clone personal computers assumes that a printer will sample on the trailing edge.

Perform the following steps to change the Parallel Mode 2 setting:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press six times. This moves to the Parallel Mode 2 item on the configuration menu. The Parallel Mode 2 (**Data**) LED is blinking.
3. The current Parallel Mode 2 setting is indicated by the Off/On/Auto (**Press Button**) LED. When the LED is off, the Parallel Mode 2 is set to sample on trailing edge. When the LED is on, the Parallel Mode 2 is set to sample on leading edge. Perform a brief button press to select the Parallel Mode 2 setting.
4. Perform a long button press. All LEDs blink once, indicating the setting is saved.
5. Exit the configuration mode by turning the printer power off.

Off/On/Auto	Setting Value
◎	Parallel mode 2 is set to off.
◉	Parallel mode 2 is set to on.

Parallel Strobe

This setting lets the user adjust the factory setting for the amount of time strobe is sampled to determine that valid data is available on the parallel port. Each increment of the strobe adjust value means the strobe is sampled 50ns longer.

Perform the following steps to change the Parallel Strobe Adjust:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press seven times. This moves to the Parallel Strobe item on the configuration menu. The Parallel Strobe (**Load Paper**) LED is blinking.
3. The current Parallel Strobe setting is indicated by the Off/On/Auto (**Press Button**) LED. When the LED is off, the Parallel Strobe is set to normal. When the LED is on, the Parallel Strobe is set to +1. When the LED is blinking, the Parallel Strobe is set to +2. Perform a brief button press to select the Parallel Strobe setting.
4. Perform a long button press. All LEDs blink once, indicating the setting is saved.
5. Exit the configuration mode by turning the printer power off.

Off/On/Auto	Setting Value
	Parallel strobe adjust is set to normal.
	Parallel strobe adjust is set to +1.
	Parallel strobe adjust is set to +2.

Data Streams

Data Stream Specifications

Data Streams	E320	E322	E322n
PostScript Level 2 emulation	MAC compatibility	Standard	Standard
PPDS	Not Available	Standard	Standard

To access the PPDS data stream, the PPDS setting must be set to active. When PPDS is active, the default Printer Language is changed to PPDS and the default PCL and PostScript SmartSwitch settings are changed to off.

Perform the following steps to change the PPDS setting:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press three times. This moves to the PPDS item on the configuration menu. The PPDS (**Paper Jam**) LED comes on solid.
3. The current PPDS setting is indicated by the Off/On/Auto (**Press Button**) LED. When the LED is off, the PPDS is set to inactive. When the LED is on, the PPDS is set to active. Perform a brief button press to select the PPDS setting.
4. Perform a long button press. All LEDs blink once, indicating the setting is saved.
5. Exit the configuration mode by turning the printer power off.

PPDS Active/Inactive

If PPDS is active, the following user default printer settings are changed:

- PCL and PS SmartSwitch settings for each port are turned off.
- Printer Language is changed to PPDS emulation.

If PPDS is inactive, the following user default printer settings are changed:

- PCL and PS SmartSwitch settings for each port are turned on.
- Printer Language is changed to PCL 5 emulation.

Note: PPDS can be activated using the PJL LPPDS command.

Off/On/Auto	Setting Value
◎	PPDS is inactive.
◉	PPDS is active.

Carriage Return Line Feed/Line Feed Carriage Return (CRLF/LFCR)

This function controls whether or not the printer automatically performs a carriage return after a line feed control command and whether or not the printer automatically performs a line feed after a carriage return control command.

Perform the following steps to change the CRLF/LFCR setting:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press four times. This moves to the CRLF/LFCR item on the configuration menu. The CRLF/LFCR (**Error**) LED comes on solid.
3. The current CRLF/LFCR setting is indicated by the Off/On/Auto (**Press Button**) LED.
   - When the LED is off, Auto CR after LF is off and Auto LF after CR is off.
   - When the LED is on, Auto CR after LF is on and Auto LF after CR is off.
   - When the LED is blinking, Auto CR after LF is off and Auto LF after CR is on.
4. Perform a brief button press to select the CRLF/LFCR setting.
5. Perform a long button press. All LEDs blink once, indicating the setting is saved.
6. Exit the configuration mode by turning the printer power off.

Auto CRLF/LFCR

Off/On/Auto	Setting Value
	Auto CR after LF = off and Auto LF after CR = off.
	Auto CR after LF is on and Auto LF after CR is off.
	Auto CR after LF is off and Auto LF after CR is on.

Note: Auto CR after LF = on and auto LF after CR = on can only be set through PJL. The printers configuration mode only allows the user to set one or the other to on, or both to off. If configuration mode is entered and both settings are set to on, the initial value displayed shows both values off.

USB Port

This menu item lets the user enable or disable the USB port. If the port is not being used, disabling it frees allocated memory to be used to process print jobs.

Perform the following steps to change the USB Port setting:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press eight times. This moves to the USB Port item on the configuration menu. The USB Port (**Paper Jam**) LED is blinking.
3. The current USB Port setting is indicated by the Off/On/Auto (**Press Button**) LED. When the LED is off, the USB Port is disabled. When the LED is blinking, the USB Port is enabled. Perform a brief button press to select a different USB Port setting.
4. Perform a long button press. All LEDs blink once, indicating the setting is saved.
5. Exit the configuration mode by turning the printer power off.

Off/On/Auto	Setting Value
	USB port is disabled. The printer doesn't receive data from the USB port.
	USB port is enabled with a fixed buffer size. The buffer size is set from a utility such as MarkVision. **Note**: This LED state is only displayed if the current value for the USB Port Enabled setting is a fixed value. The user can't set the value by pressing the button to cycle from the off value to the on value, that is, the button press cycles from off to auto.
	USB port is enabled with an automatic buffer size. The printer determines the buffer size based on available memory and other printer settings.

USB NPA Mode

USB NPA mode allows for two way communication between the host computer and the printer.

Perform the following steps to change the USB NPA setting:

1. Enter the configuration mode. See **“Configuration Mode” on page 3-14** for more information.
2. Perform a double click button press nine times. This moves to the USB NPA mode item on the configuration menu. The USB NPA (**Error**) LED is blinking.
3. The current USB NPA setting is indicated by the Off/On/Auto (**Press Button**) LED.
   - When the LED is off, the USB port does not search for NPA data within the received data.
   - When the LED is blinking, the USB port searches for optional NPA data within the received data.
   - When the LED is on solid, the USB port requires that data sent to the printer be in NPA format.
4. Perform a brief button press to select a different USB NPA setting.
5. Perform a long button press. All LEDs blink once, indicating the setting is saved.
6. Exit the configuration mode by turning the printer power off.

Off/On/Auto	Setting Value
	USB port does not search for NPA data within the received data.
	USB port requires that data sent to the printer be in NPA format.
	USB port searches for optional NPA data within the received data.

Interface Cables

The printer requires a properly grounded and shielded parallel interface cable. The following cables are supported.

Part Number	Port	Cable Description
1329605	Standard Parallel	Lexmark 3 meter (10 ft.) IEEE 1284 compliant A connector (host) to B connector (printer) cable.
1427498	Standard Parallel	Lexmark 6 meter (20 ft.) IEEE 1284 compliant a connector (host) to B connector (printer) cable.

4. Repair Information

WARNING: Read the following before handling electronic parts.

Handling ESD-Sensitive Parts

Many electronic products use parts that are known to be sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive parts, follow the instructions below in addition to all the usual precautions, such as turning off power before removing logic boards:

- Keep the ESD-sensitive part in its original shipping container (a special “ESD bag”) until you are ready to install the part into the printer.
- Make the least-possible movements with your body to prevent an increase of static electricity from clothing fibers, carpets, and furniture.
- Put the ESD wrist strap on your wrist. Connect the wrist band to the system ground point. This discharges any static electricity in your body to the printer.
- Hold the ESD-sensitive part by its edge connector shroud (cover); do not touch its pins. If you are removing a pluggable module, use the correct tool.
- Do not place the ESD-sensitive part on the printer cover or on a metal table; if you need to put down the ESD-sensitive part for any reason, first put it into its special bag.
- Machine covers and metal tables are electrical grounds. They increase the risk of damage because they make a discharge path from your body through the ESD-sensitive part. (Large metal objects can be discharge paths without being grounded.)
- Prevent ESD-sensitive parts from being accidentally touched by other personnel. Install machine covers when you are not working on the machine, and do not put unprotected ESD-sensitive parts on a table.
- If possible, keep all ESD-sensitive parts in a grounded metal cabinet (case).
- Be extra careful in working with ESD-sensitive parts when cold-weather heating is used because low humidity increases static electricity.

Removal Procedures

Be sure to unplug the power cord whenever you are working on the printer with one of the covers removed. Be sure to remove the print cartridge before you perform removal procedures.

Cover Removals

Access Cover

1. Open the front access cover.
2. Press the center of the access cover down to release the side pivot points.
3. Remove the access cover.

Front Cover

1. Open the front cover.
2. Remove the two plastic clips from the front cover support arm hinges.

Note: Support and ease the charge roll assembly into a resting position when disengaging the front cover support arm hinges.

3. Disengage the front cover support arm hinges from the charge roll assembly.
4. Release the front cover from its pivot points.

Note: Lay the front cover to one side as the operator panel cable is attached to the controller board. See **“Right Side Cover” on page 4-3** and **“Controller Board Cage Removal” on page 4-4** for more information.

Top Cover

1. Open the front cover.
2. Remove the two top cover screws.
3. Remove the top cover.

Right Side Cover

1. Open the front cover. See **“Front Cover” on page 4-2** for more information.
2. Press the two right side cover finger tabs while releasing the center tab.
3. Remove the right side cover.

Left Side Cover

1. Open the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove the top cover. See **“Top Cover” on page 4-2** for more information.
3. Remove the left side cover screw.
4. Release the left side cover tabs (2).
5. Remove the left side cover.

Auto Sheet Feed (ASF) Assembly Removal

1. Open the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove the top cover. See **“Top Cover” on page 4-2** for more information.
3. Remove the left side cover. See **“Left Side Cover” on page 4-3** for more information.
4. Remove the right side cover. See **“Right Side Cover” on page 4-3** for more information.
5. Remove the two lower ASF screws.
6. Tilt or swing the lower rear auto sheet feed cover away from the printer and remove.
7. Remove the two upper ASF screws.
8. Remove the ground strap screw.
9. Tilt or swing the top of the ASF away from the printer to disengage the elongated hinge pivots.
10. Remove the auto sheet feed.

Printhead Assembly Removal

1. Open the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove the top cover. See **“Top Cover” on page 4-2** for more information.
3. Remove the four top screws from the printhead mounting plate.

   Note: There are two screws on each end of the printhead plate used to fasten the plate to the printer left and right side frame.

4. Remove the printhead plate ground strap screw.
5. Remove the controller cage screw from the printhead mounting plate.
6. Disconnect the printhead cables.
7. Remove the three printhead screws.
8. Remove the printhead.

Controller Board Removal

1. Open the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove the right side cover. See **“Right Side Cover” on page 4-3** for more information.
3. Remove the controller board cover screw.
4. Disconnect cables from the controller board.
5. Remove the two parallel cable screws.
6. Remove the four controller board screws.
7. Remove the controller board.

Controller Board Cage Removal

1. Open the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove the right side cover. See **“Right Side Cover” on page 4-3** for more information.
3. Remove the controller board. See **“Controller Board Removal” on page 4-4** for more information.
4. Remove the three screws holding the controller board cage to the printer side frame and remove cage from the frame.

High Voltage Power Supply (HVPS) Removal

1. Open the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove the top cover. See **“Top Cover” on page 4-2** for more information.
3. Remove the left side cover. See **“Left Side Cover” on page 4-3** for more information.
4. Remove the four HVPS board screws.
5. Disconnect connector from the HVPS board.
6. Remove the HVPS board.

Note: Use care with compression springs as they can fall out.

Cooling Fan Removal

1. Open the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove the top cover. See **“Top Cover” on page 4-2** for more information.
3. Remove the left side cover. See **“Left Side Cover” on page 4-3** for more information.
4. Remove two cooling fan screws.
5. Remove the toner cartridge.
6. Tilt the printer carefully to the rear so it is resting on the ASF.
7. Remove the four bottom cover screws.
8. Disconnect the cooling fan cable from the engine card.
9. Remove the cooling fan.

Low Voltage Power Supply (LVPS) Removal

1. Remove the toner cartridge.
2. Tilt the printer carefully to the rear so it is resting on the ASF.
3. Remove the four bottom cover screws.
4. Disconnect the cables.
5. Remove four LVPS board screws.

Engine Board Removal

1. Remove the toner cartridge.
2. Tilt the printer carefully to the rear so it is resting on the ASF.
3. Remove the four bottom cover screws.
4. Disconnect the cables.
5. Remove the four engine board screws.
6. Remove the engine board.

Charge Roll Assembly Removal

1. Remove the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove the top cover. See **“Top Cover” on page 4-2** for more information.
3. Remove the left side cover. See **“Left Side Cover” on page 4-3** for more information.
4. Remove two cooling fan screws.
5. Remove the toner cartridge.
6. Remove controller board cage. See **“Controller Board Cage Removal” on page 4-4** for more information.
7. Remove the two fuser top cover screws.
8. Remove fuser top cover.
9. Remove left and right charge roll assembly brackets.

Note: When reinstalling charge roll assembly brackets, ensure brass spring is on the left and silver spring is on the right.

10. Remove charge roll assembly.

Fuser Assembly Removal

1. Tilt the printer carefully to the rear so it is resting on the ASF.
2. Remove the four bottom cover screws.
3. Disconnect J7 (THM) from engine card.
4. Reattach bottom cover and set printer upright.
5. Remove charge roll assembly. See **“Charge Roll Assembly Removal” on page 4-6** for more information.
6. Remove the two fuser mounting screws.
7. Disconnect the fuser wires.
8. Release the tabs on each end of fuser assembly and lift out.

Transfer Roll Removal

1. Open the front cover and remove the toner cartridge. See **“Front Cover” on page 4-2** for more information.
2. Release the transfer roll left and right bearing.
3. Remove the transfer roll.

Paper Feed Clutch Solenoid Removal

1. Remove the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove top cover. See **“Top Cover” on page 4-2** for more information.
3. Remove rear auto sheet feed cover. See **“Auto Sheet Feed (ASF) Assembly Removal” on page 4-3** for more information.
4. Remove right side cover. See **“Right Side Cover” on page 4-3** for more information.
5. Remove controller board cage. See **“Controller Board Cage Removal” on page 4-4** for more information.
6. Disconnect the printer motor cable.
7. Remove optional Tray 2 connector from bracket.
8. Remove the four main drive gear assembly screws.
9. Remove the main drive gear assembly with drive motor from printer.
10. Depress paper feed solenoid locking tab and slide paper feed solenoid off D–roll assembly shaft.
11. Remove the toner cartridge.
12. Tilt the printer carefully to the rear so it is resting on the ASF.
13. Remove the four bottom cover screws.
14. Disconnect paper feed clutch solenoid cable from engine card.
15. Remove the paper feed clutch solenoid.

D Roll Removal

1. Remove the front cover. See **“Front Cover” on page 4-2** for more information.
2. Remove top cover. See **“Top Cover” on page 4-2** for more information.
3. Remove rear auto sheet feed cover. See **“Auto Sheet Feed (ASF) Assembly Removal” on page 4-3** for more information.
4. Remove right side cover. See **“Right Side Cover” on page 4-3** for more information.
5. Remove controller board cage. See **“Controller Board Cage Removal” on page 4-4** for more information.
6. Disconnect the printer motor cable.
7. Remove optional Tray 2 connector from bracket.
8. Remove the four main drive gear assembly screws.
9. Remove the main drive gear assembly with drive motor from printer.
10. Depress paper feed solenoid locking tab and slide paper feed solenoid off D–roll assembly shaft.
11. Remove the HVPS board. See **“High Voltage Power Supply (HVPS) Removal” on page 4-5** for more information.
12. Rotate the D–roll shaft retaining clips to loosen.
13. Remove the D–roll assembly.

5. Connector Locations

LVPS – Low Voltage Power Supply Board

Connector	Pin No.	Signal
CN1	1	AC H
	2	AC N
CN2	1	Heater On
	2	AC N
CN3	1	Ground
	2	+5 V dc
	3	+5 V dc
	4	Ground
	5	+24 V dc
	6	+24 V dc
	7	Ground
	8	Ground
	9	Heater On
	10	Heater On Sub

Engine Board

Connector	Pin No.	Signal
J1 HVPS	1	Developer PWM
	2	Ground
	3	Charge
	4	+24 V dc
	5	Transfer PWM
	6	Transfer Enable
	7	Not Used
	8	Transfer Servo
J2 Input/Exit Sensor	1	Ground
	2	Input Sensor
	3	LED Drive
	4	Ground
	5	Exit Sensor
	6	LED Drive
J3 Cartridge Chip	1	Cartridge Data
	2	Ground
J4 Fan Control	1	+24 V dc
	2	Fan Control
J5 Main Motor	1	+24 V dc
	2	Ground
	3	Motor Enable
	4	Ground
	5	Motor Signal

Connector	Pin No.	Signal
J6 Toner Sensor	1	Ground
	2	Toner Signal
	3	LED Drive
J7 Thermistor	1	Thermistor Data
	2	Ground
J8 Not Used	1	
	2	
J9 Cover Open Switch	1	+24 V dc
	2	Interlock Switch
J10 Paper Pick Solenoid	1	+24 V dc
	2	Solenoid Control

Connector	Pin No.	Signal
J11 RIP, Printhead, and Mirror Motor	1	Printhead CLK
	2	RIP reset
	3	Ready
	4	Ground
	5	Start
	6	Engine notify
	7	Ground
	8	RIP Present
	9	+24 V dc
	10	SCL
	11	Sample and Hold
	12	Ground
	13	Printhead Enable
	14	SDA
	15	Ground
	16	+5 V dc
	17	LSU power
	18	Ground
	19	Ground
	20	LSYNC
	21	HSYNC
	22	Ground
	23	Not Used
	24	Sample and Hold

Connector	Pin No.	Signal
J12 PSU	1	+5 V dc
	2	Ground
	3	Interlock Switch
	4	Interlock Switch
	5	Ground
	6	Ground
	7	Fuser Control
	8	Hot Roll Power
J13 Option Tray	1	Transmit
	2	Receive
	3	Tray Detect
	4	+5 V dc
	5	Ground
	6	+24 V dc

RIP Controller

Connector	Pin No.	Signal
J2 LED Op Panel	1	Ground
	2	FPIRQ
	3	LED CLK
	4	LED Data
	5	+5 V dc
	6	Ground
J3 Video	1	Video
	2	Ground
J7 RIP to Engine	1	Engine POR
	2	Ground
	3	Notify
	4	RIP Present
	5	SCL
	6	Ground
	7	DSA
	8	HSYNC
	9	Ground
	10	VSYNC
	11	Ground
	12	Laser On
J8 Power	1	+5 V dc
	2	Ground

HVPS – High Voltage Power Supply Board

Connector	Pin No.	Signal
CN1 HVPS	1	Developer PWM
	2	Ground
	3	Charge
	4	+24 V dc
	5	Transfer PWM
	6	Transfer Enable
	7	Not Used
	8	Transfer Servo

Option Card

Connector	Pin No.	Signal
CN4 to Engine Card	1	RX
	2	TX
	3	COM1
	4	+5 V dc
	5	COM1
	6	+24 V dc
CN5 to Motor	1	STP_A
	2	STP_Na
	3	STP_B
	4	STP_nB
CN6 to Solenoid	1	SOl
	2	FB_SOL
CN7 to PIC_JIG (Flash Down Load)	1	PGM_RESET
	2	+5 V dc
	3	COM1
	4	PGM_DATA
	5	PGM_CLK

6. Preventive Maintenance

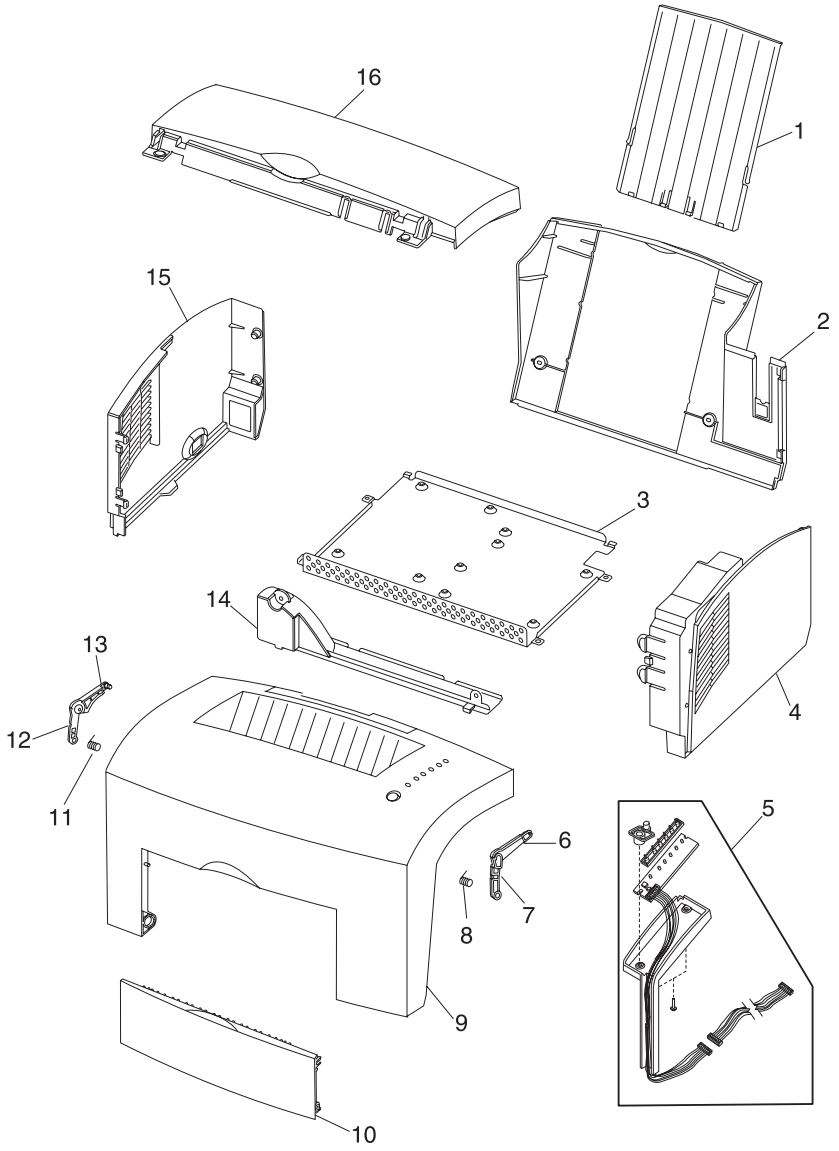
The Optra E32x does not require preventive maintenance.

7. Parts Catalog

How to Use this Parts Catalog

- SIMILAR ASSEMBLIES: If two assemblies contain a majority of identical parts, they are shown on the same list. Common parts are shown by one index number. Parts peculiar to one or the other of the assemblies are listed separately and identified by description.
- AR: (As Required) in the Units column indicates that the quantity is not the same for all machines.
- NS: (Not Shown) in the Asm-Index column indicates that the part is procurable but is not pictured in the illustration.
- PP: (Parts Packet) in the parts description column indicates the part is contained in a parts packet.

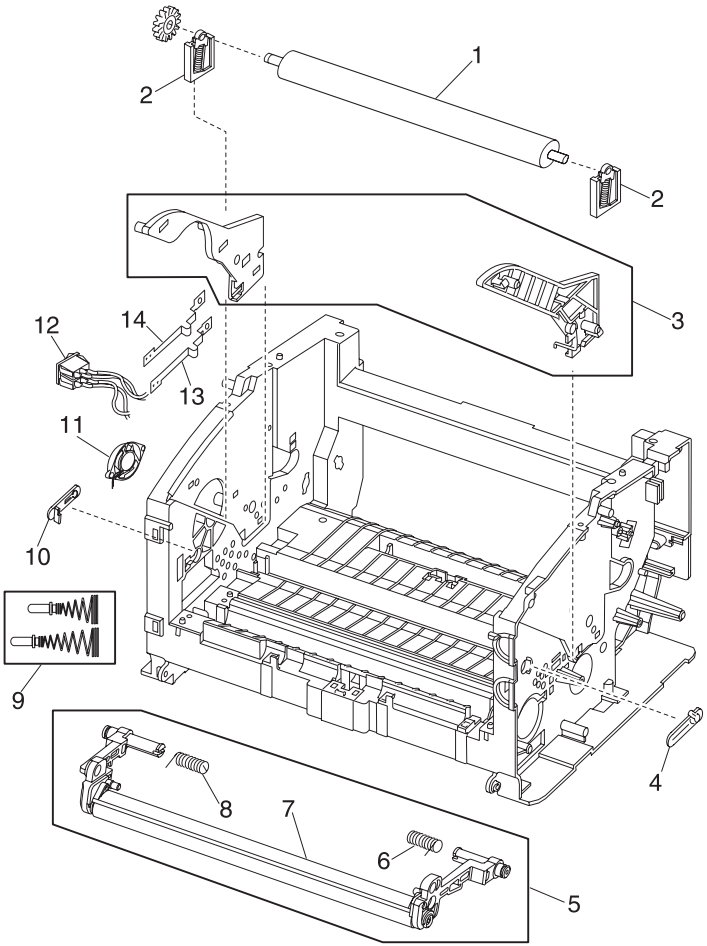
Assembly 1: Covers



Assembly 1: Covers

Asm-Index	Part Number	Units	Description
1–1	12G4456	1	Assembly, Tray Extension
2	12G4455	1	Assembly, Cover, Rear
3	12G4458	1	Cover, Bottom
4	12G4453	1	Cover, Right Side
5	12G4457	1	Assembly, Operator Panel
6	12G4466	1	Hinge, Right Rear
7	12G4468	1	Hinge, Right Front
8	12G4535	1	Spring, Front Cover Right
9	12G4543	1	Cover, Front–Model E320
9	12G4542	1	Cover, Front–Model E322
10	12G4450	1	Cover, Access
11	12G4536	1	Spring, Front Cover Left
12	12G4469	1	Hinge, Left Front
13	12G4467	1	Hinge, Left Rear
14	12G4459	1	Duct, Cooling
15	12G4451	1	Cover, Left Side
16	12G4452	1	Cover, Top

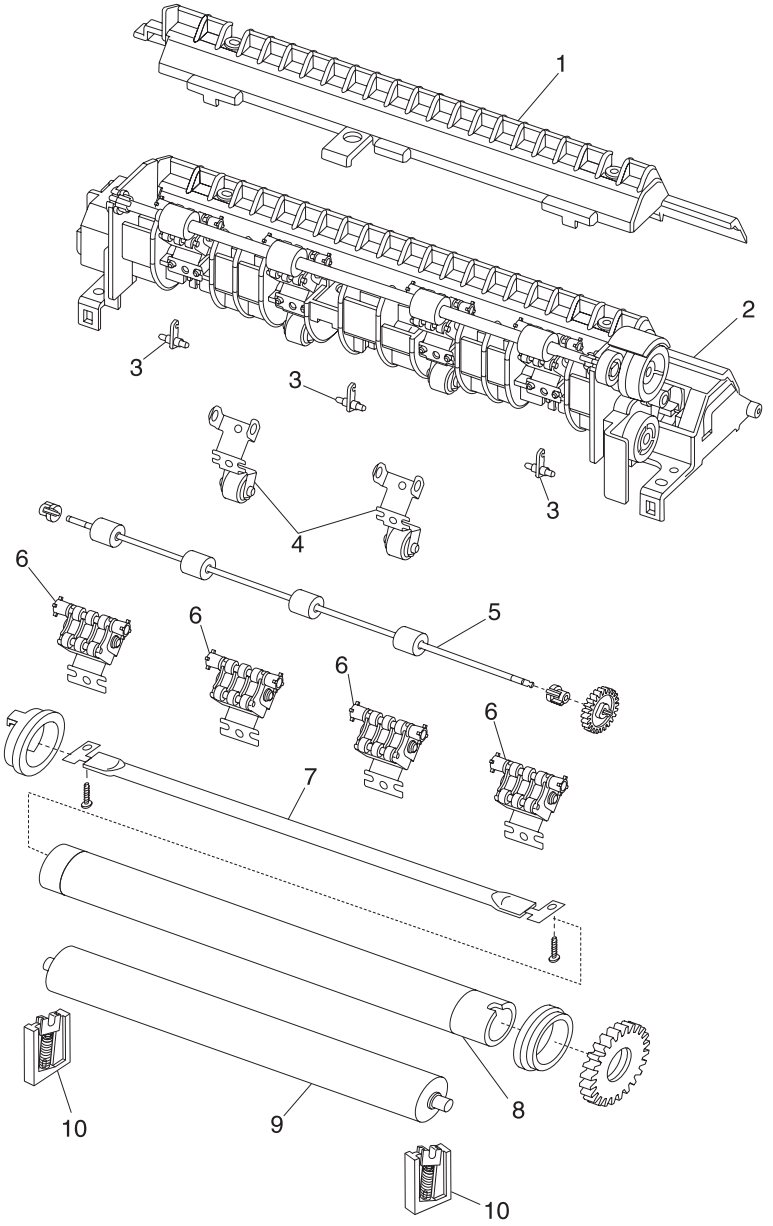
Assembly 2: Frame



Assembly 2: Frame

Asm-Index	Part Number	Units	Description
2–1	12G4470	1	Roll, Transfer
2	12G4471	1	Bearing, Transfer
3	12G4473	1	B/M, Rail
4	12G4534	1	Bracket, Right
5	12G4465	1	Assembly, Charge Roll
6	12G4464	1	Spring, Charge Roll Right
7	12G4462	1	Roll, Charge
8	12G4463	1	Spring, Charge Roll Left
9	12G4510	1	Spring, HVPS Contact
10	12G4533	1	Bracket, Left
11	12G4460	1	Fan, Cooling
12	12G4461	1	Switch Assembly, Power
13	12G4511	1	Strap, Contact
14	12G4512	1	Strap, Contact

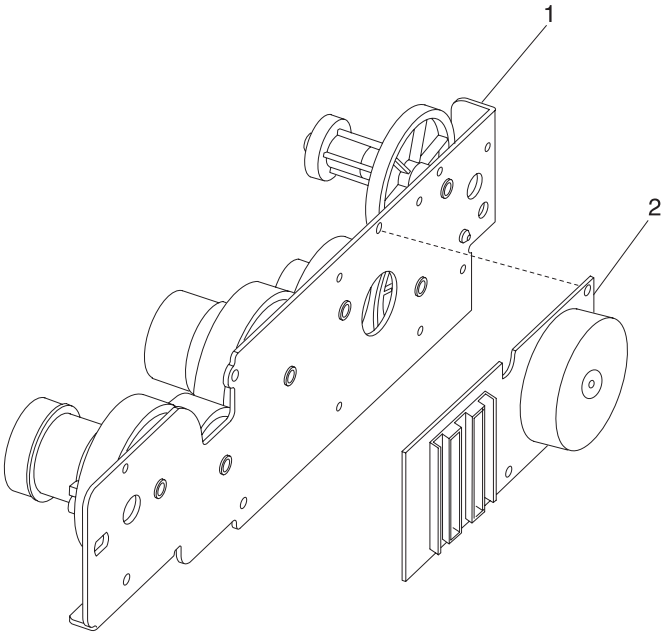
Assembly 3: Fuser



Assembly 3: Fuser

Asm-Index	Part Number	Units	Description
3–1	12G4488	1	Cover, Fuser
2	12G4484	1	Fuser Assembly, 110 V
2	12G4486	1	Fuser Assembly, 220 V
3	12G4495	3	Pawl, Detack
4	12G4492	2	Roller, Exit, Idler
5	12G4493	1	Roller, Exit, Redrive
6	12G4496	4	Roll Assembly, Idler
7	12G4485	1	Lamp, Fuser, 110 V
7	12G4487	1	Lamp, Fuser, 220 V
8	12G4491	1	Roll, Fuser, Hot
9	12G4494	1	Roll, Fuser, Backup
10	12G4489	2	Bearing, Backup Roll

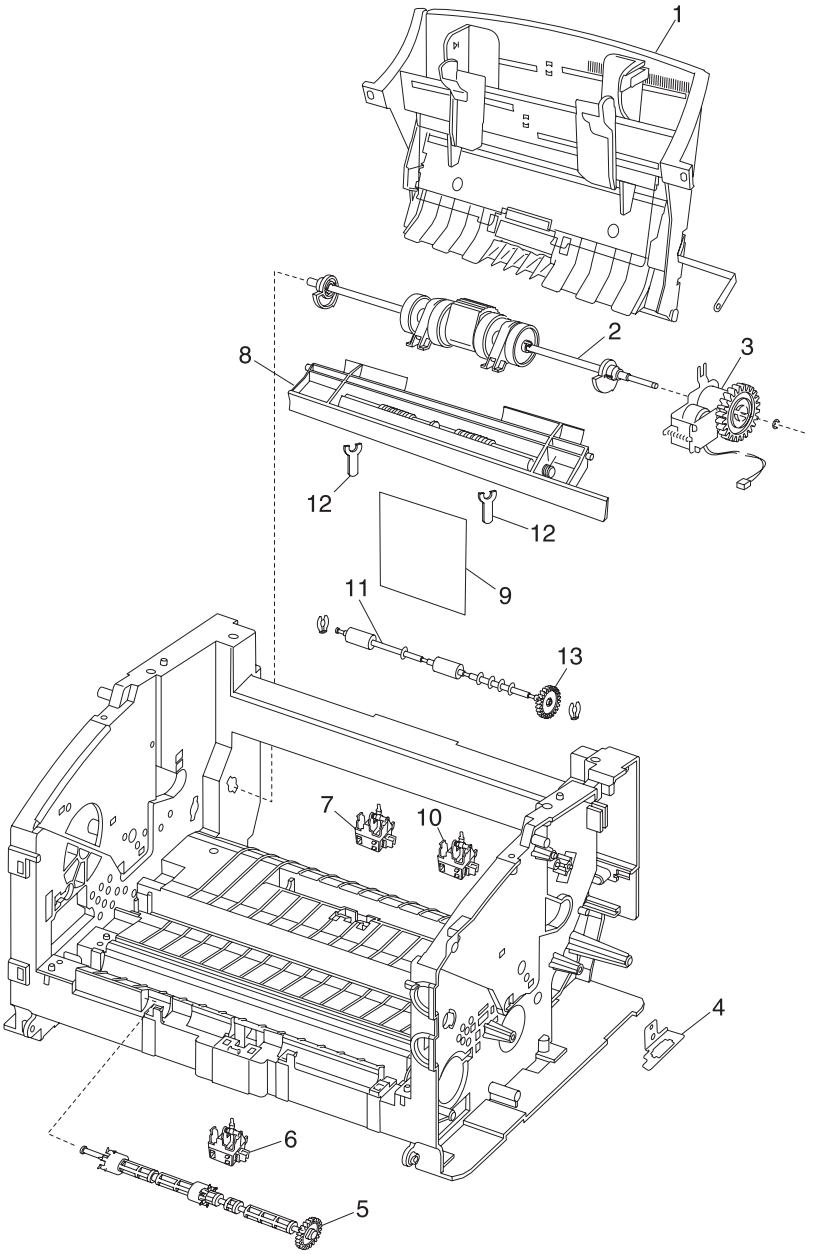
Assembly 4: Main Drive



Assembly 4: Main Drive

Asm-Index	Part Number	Units	Description
4–1	12G4500	1	Gear Assembly, Drive
2	12G4499	1	Motor, Drive

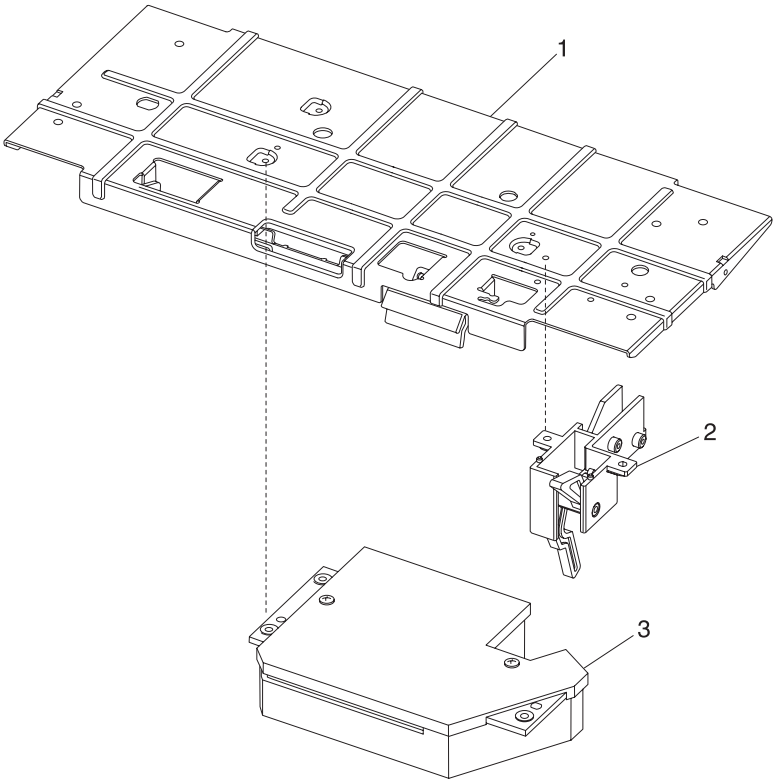
Assembly 5: Paper Feed



Assembly 5: Paper Feed

Asm-Index	Part Number	Units	Description
5–1	12G4481	1	Assembly, Sheet Feed
2	12G4483	1	Assembly, D–Roll
3	12G4541	1	Clutch Assembly, Paper Feed
4	12G4482	1	Bracket, Tray 2 Connector
5	12G4490	1	Roll, Paper Feed
6	12G4476	1	Sensor, Exit
7	12G4475	1	Sensor, Registration
8	12G4474	1	Roll Assembly, Registration
9	12G4480	1	Strip, D–Roll
10	12G4477	1	Sensor, Cartridge
11	12G4538	1	Roller, Lower Registration
12	12G4539	2	Bushing, Registration Roller
13	12G4540	1	Gear, Registration Roller

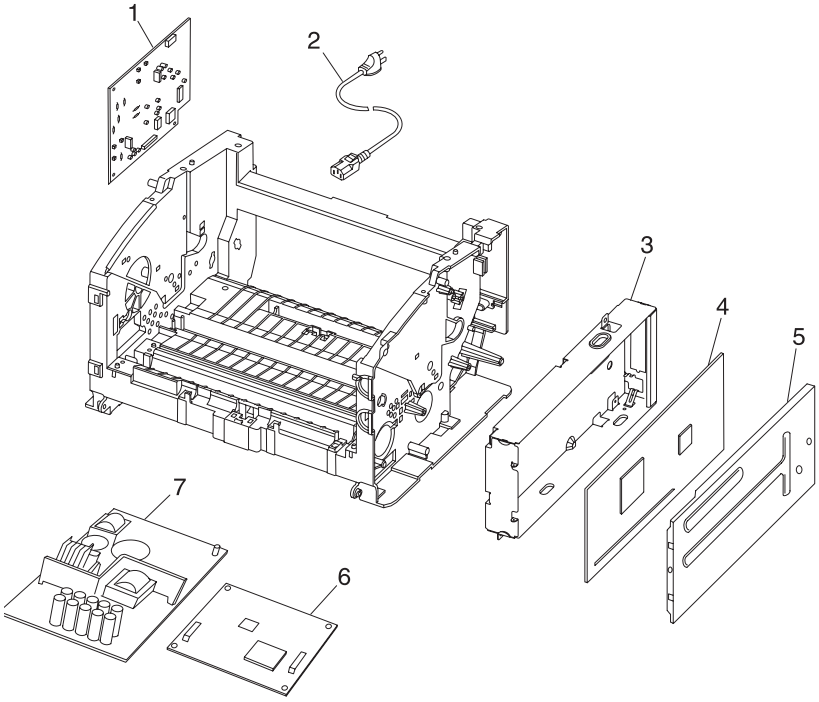
Assembly 6: Printhead



Assembly 6: Printhead

Asm-Index	Part Number	Units	Description
6–1	12G4498	1	Plate, Printhead
2	12G4472	1	Interlock, Cover
3	12G4497	1	Assembly, Printhead

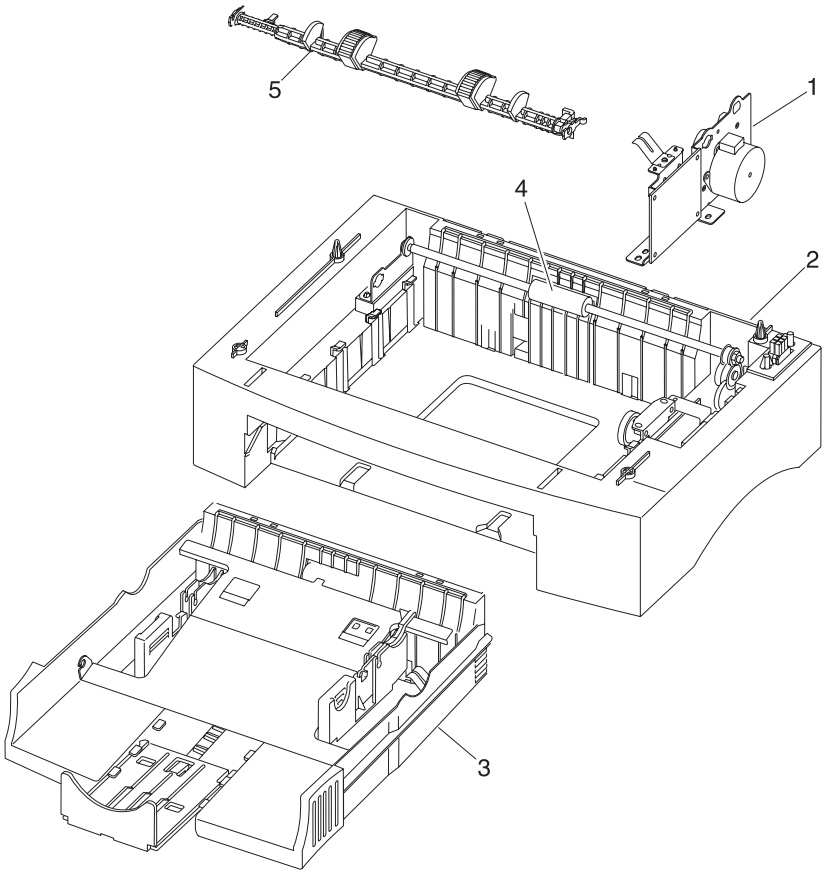
Assembly 7: Electronics



Assembly 7: Electronics

Asm-Index	Part Number	Units	Description
7–1	12G4509	1	Card, HVPS
2	1339526	1	Power Cord, U.S., Canada, Brazil, Bolivia, Peru, Mexico, Saudi Arabia, Columbia, Costa Rica, Dominican Republic, Equador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Venezuela (HV)
2	1339528	1	Power Cord, UK, Ireland, Iceland, Kuwait, Bahrein, Qatar, Oman, Pakistan, Yemen, Iraq, Libya, Cyprus
2	1339529	1	Power Cord, Paraguay, Austria, Belgium, France, Netherlands, Crech, Slovak Countries, Greece, Hungary, Finland, Norway, Sweden, Germany, Lebanon, Syria, Egypt, Jordan, Iran, Bosnia, Bulgaria, Croatia, Slovenia, Macedonia, Yugoslavia, Romania, South Africa, Poland, Russia, Turkey, Spain, Catalan, Portugal
2	1339530	1	Power Cord, Israel
2	1339531	1	Power Cord, Switzerland
2	1339532	1	Power Cord, South Africa
2	1339533	1	Power Cord, Chile, Uruguay, Italy
2	1339534	1	Power Cord, Denmark
3	12G4504	1	Cage, Controller
4	12G4501	1	Card, Controller E320
4	12G4502	1	Card, Controller E322
4	12G4503	1	Card, Controller E322n
5	12G4505	1	Cover, Cage
6	12G4506	1	Card, Engine
7	12G4507	1	Card, LVPS 110
7	12G4508	1	Card, LVPS 220

Assembly 8: Options



Assembly 8: Options

Asm-Index	Part Number	Units	Description
8–1	12G4516	1	Board, Motor, Tray 2
2	12G4514	1	Base Assembly, Tray 2
3	12G4513	1	Drawer, Tray 2
4	12G4515	1	Kit Assembly, Feed Roller
5	12G4532	1	D–Roll, Feed, Tray 2
NS	99A1752	1	4MB SDRAM DIMM
NS	99A1753	1	8MB SDRAM DIMM
NS	99A1754	1	16MB SDRAM DIMM
NS	99A1755	1	32MB SDRAM DIMM
NS	99A1756	1	64MB SDRAM DIMM
NS	99A0521	1	1MB Flash SIMM (4500-003 only)
NS	99A0522	1	2MB Flash SIMM (4500-003 only)
NS	99A0523	1	4MB Flash SIMM (4500-003 only)
NS	44H0067	1	Imagequick™ Card
NS	11K3800	1	Bar Code Card
NS	5K00205	1	IPDS & SCS/TN Card
NS	11K3850	1	PRESCRIBE Card

Assembly 9: Cables (no illustration)

Assembly 9: Cables

Asm-Index	Part Number	Units	Description
NS	12G4517	1	Cable, HVPS–J1
NS	12G4518	1	Cable, Input/Exit Sensor–J2
NS	12G4519	1	Cable, Smart–J3
NS	12G4520	1	Cable, Motor–J5
NS	12G4521	1	Cable, Toner Sensor–J6
NS	12G4522	1	Cable, RIP–J11
NS	12G4523	1	Cable, Option–J13
NS	12G4524	1	Cable, Fuser Lamp
NS	12G4525	1	Cable, Ground Wire
NS	12G4526	1	Cable, Option
NS	12G4527	1	Cable, Cover Open Switch–J9
NS	12G4528	1	Cable, AC Receptacle
NS	12G4545	1	Cable, PSU-J12

Assembly 10: Miscellaneous (no illustration)

Assembly 10: Miscellaneous

Asm-Index	Part Number	Units	Description
NS	12G4529	1	Ring, CS
NS	12G4530	1	Clamp, Mini
NS	12G4531	1	Parts Pack, Screws
NS	12G4544	1	Kit, Repack

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Part Numbers