Service Manual

Lexmark™ X422 Laser

7001–001

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Edition: April 2004

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U.S.A. P/N 12G9352

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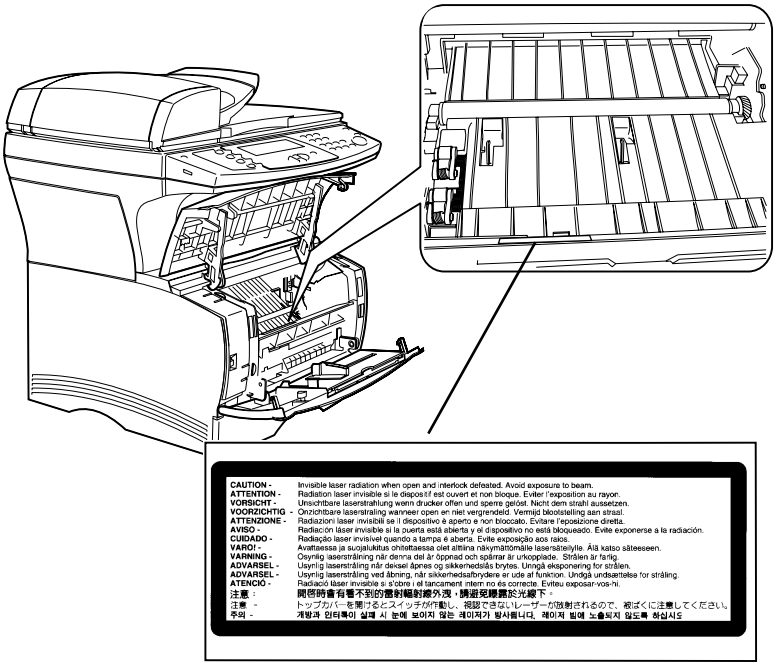
Laser notices

The following laser notice labels may be affixed to this MFP as shown:

Laser advisory label



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 60825-1.

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) 60825-1 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 60825-1 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 60825-1.

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 60825-1 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 60825-1.

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 60825-1.

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 60825-1.

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 60825-1 -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 60825-1.

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 60825-1.

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 60825-1.

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

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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.

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Safety information

- The safety of this product is based on testing and approvals of the original design and specific components. The manufacturer is not responsible for safety in the event of use of unauthorized 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.
- **CAUTION:** When you see this symbol, there is a danger from hazardous voltage in the area of the product where you are working. Unplug the product before you begin, or use caution if the product must receive power in order to perform the task.

Consignes de sécurité

- La sécurité de ce produit repose sur des tests et des agréations portant sur sa conception d'origine et sur des composants particuliers. Le fabricant n'assume aucune responsabilité concernant la sécurité en cas d'utilisation de pièces de rechange non agréées.
- 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.
- **ATTENTION :** Ce symbole indique la présence d'une tension dangereuse dans la partie du produit sur laquelle vous travaillez. Débranchez le produit avant de commencer ou faites preuve de vigilance si l'exécution de la tâche exige que le produit reste sous tension.

Norme di sicurezza

- La sicurezza del prodotto si basa sui test e sull'approvazione del progetto originale e dei componenti specifici. Il produttore non è responsabile per la sicurezza in caso di sostituzione non autorizzata delle parti.
- 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.
- **ATTENZIONE:** Questo simbolo indica la presenza di tensione pericolosa nell'area del prodotto. Scollegare il prodotto prima di iniziare o usare cautela se il prodotto deve essere alimentato per eseguire l'intervento.

Sicherheitshinweise

- Die Sicherheit dieses Produkts basiert auf Tests und Zulassungen des ursprünglichen Modells und bestimmter Bauteile. Bei Verwendung nicht genehmigter Ersatzteile wird vom Hersteller keine Verantwortung oder Haftung für die Sicherheit 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.
- **ACHTUNG:** Dieses Symbol weist auf eine gefährliche elektrische Spannung hin, die in diesem Bereich des Produkts auftreten kann. Ziehen Sie vor den Arbeiten am Gerät den Netzstecker des Geräts, bzw. arbeiten Sie mit großer Vorsicht, wenn das Produkt für die Ausführung der Arbeiten an den Strom angeschlossen sein muß.

Pautas de Seguridad

- La seguridad de este producto se basa en pruebas y aprobaciones del diseño original y componentes específicos. El fabricante no es responsable de la seguridad en caso de uso de piezas de repuesto no autorizadas.
- 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.
- **PRECAUCIÓN:** este símbolo indica que el voltaje de la parte del equipo con la que está trabajando es peligroso. Antes de empezar, desenchufe el equipo o tenga cuidado si, para trabajar con él, debe conectarlo.

Informações de Segurança

- A segurança deste produto baseia-se em testes e aprovações do modelo original e de componentes específicos. O fabricante não é responsável pela segunrança, no caso de uso de peças de substituição não autorizadas.
- 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.
- **CUIDADO:** Quando vir este símbolo, existe a possível presença de uma potencial tensão perigosa na zona do produto em que está a trabalhar. Antes de começar, desligue o produto da tomada eléctrica ou seja cuidadoso caso o produto tenha de estar ligado à corrente eléctrica para realizar a tarefa necessária.

Informació de Seguretat

- La seguretat d'aquest producte es basa en l'avaluació i aprovació del disseny original i els components específics. El fabricant no es fa responsable de les qüestions de seguretat si s'utilitzen peces de recanvi no autoritzades.
- 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.
- **PRECAUCIÓ:** aquest símbol indica que el voltatge de la part de l'equip amb la qual esteu treballant és perillós. Abans de començar, desendolleu l'equip o extremeu les precaucions si, per treballar amb l'equip, l'heu de connectar.

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- **주의:** 이 표시는 해당영역에서 고압전류가 흐 위험표시 입니다. 시작전에 플러그를 뽑으시 주의를 기울여 주시기 바랍니다.

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本产品的安全性以原来设计和特定产品的测试结果和认证为基础。万一使用未经许可的替换部件，制造商不对安全性负责。

本产品的维护信息仅供专业服务人员使用，并不打算让其他人使用。

本产品在拆卸、维修时，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。

切记：当您看到此符号时，说明在您工作的产品区域有危险电压的存在。请在开始操作前拔掉产品的电源线，或者在产品必须使用电源来执行任务时，小心从事。

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 MFP and the maintenance approach used to repair it. Special tools and test equipment are listed, as well as general environmental and safety instructions.
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 MFP problems.
4. **Repair information** provides instructions for making MFP adjustments and removing and installing FRUs.
5. **Connector locations** uses illustrations to identify the connector locations and test points on the printer.
6. **Preventive maintenance** contains the lubrication specifications and recommendations to prevent problems.
7. **Parts catalog** contains illustrations and part numbers for individual FRUs.

Definitions

Note: A note provides additional information.

Warning: A warning identifies something that might damage the product hardware or software.

CAUTION: A caution identifies something that might cause a servicer harm.

CAUTION: When you see this symbol, there is a danger from hazardous voltage in the area of the product where you are working. Unplug the product before you begin, or use caution if the product must receive power in order to perform the task.

1. General information

The Lexmark™ X422 multifunction product (MFP), with 128MB of memory standard, a USB port, an integrated Ethernet adapter, and 33.6K baud fax/modem.

This chapter provides an overview of the capabilities of the MFP and available options for each model.

Maintenance approach

The diagnostic information in this manual leads you to the correct field replaceable unit (FRU) or part. Use the error code charts, symptom index, and service checks to determine the symptom and repair the failure. See **“Diagnostic information” on page 2-1** for more information. See **“Repair information” on page 4-1** to help identify parts. After completing the repair, perform tests as needed to verify the repair.

MFP identification

Options

See **“Options” on page 7-22** for a list of options available for the MFP.

MFP features

Connectivity

Attachments	
Standard USB interface	✓
Standard Ethernet 10/100 Base–TX	✓
Fax modem	✓

Note:

✓ Indicates attachment is part of the model factory shipped configuration.

Fonts

Fonts / options	
PCL bitmapped	2
PCL outline	89
PS outline	91
PPDS bitmapped	5
PPDS outline	39

Note: There is no font card support.

Memory and user flash memory

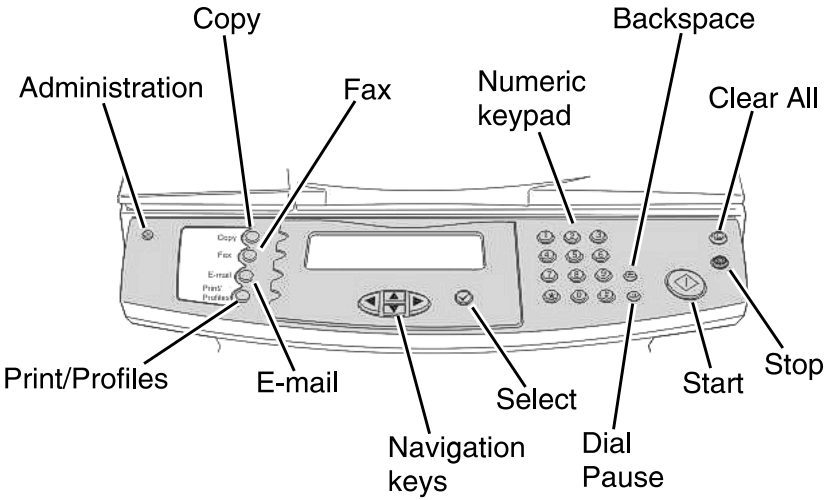
Each model has a standard amount of memory (RAM) soldered on the system card, and a certain number of 100-pin DIMM slots available for installing additional memory or user flash memory options.

Memory	
Standard memory	128MB
Standard flash memory	None
Memory options • 8MB DIMM • 16MB DIMM • 32MB DIMM • 64MB DIMM • 128MB DIMM	 ✓ ✓ ✓ ✓
Maximum # of memory DIMM	2
Maximum possible memory	384MB
Flash memory options • 16MB User flash daughter card • 32MB User flash daughter card	 ✓ ✓
Maximum # of flash daughter cards	1
Maximum possible flash memory	32MB

Note: ✓ Indicates option is supported.

Operator panel

The operator panel consists of a 240 X 64 dot matrix APA LCD and 27 buttons. Four can be illuminated (copy, fax, e-mail and print/ profiles). The display can display eight lines of text with 40 characters each.



Print area

The following print area settings are available.

Print area option	
Normal	✓
Edge to edge	✓

Print media

The following table shows the supported media, media weights and media textures which together provide optimal print quality across a variety of media.

Media	
Paper	✓
Card stock	✓
Transparency	✓
Labels	✓
Envelope	✓
Cotton paper	✓
Bond	✓
Media weights	
Heavy	✓
Normal	✓
Light	✓
Media textures	
Rough	✓
Normal	✓
Smooth	✓

Note: ✓ Indicates media is supported.

Data streams

Data streams	
PCL 6 emulation	✓
PostScript 3 emulation	✓
PPDS	✓
PDF (version 1.3)	✓

Note: ✓ Indicates data stream is supported.

- PCL 6 emulation includes the PCL 5e and PCL XL interpreters, and is fully compatible with Hewlett Packard's LaserJet 5 Family. Furthermore, the MFP PCL emulation is backward compatible with the Lexmark T 520/522/620/622 and other members of Lexmark's Optra™ family of laser printers.
- 7001–00x supports version 3010 of the Adobe definition of PostScript 3, and the interpreter is backward compatible with the Optra T 520/522/620/622 and other members of Lexmark's Optra family of laser printers.
- PPDS is backward compatible with Optra T 520/522/620/622 and Lexmark's Optra family of laser printers. The PPDS interpreter is inactive as a factory default. It must be activated using a PJL command or operator panel operation before it can be used.

Paper handling

Paper handling	
Standard	
Standard input sources: • Integrated 250–sheet tray The 250–sheet drawer supports the following sizes: A4, A5, JIS B5, folio, letter, legal, executive, and statement. • Multipurpose feeder	2 1 1
Standard output destination • 150–sheet sensing bin	1 1
Standard duplex	✓
Envelope conditioning	✓
Options	
Maximum # of optional drawers	1
Optional drawers: • 250–sheet drawer • 500–sheet drawer The 500–sheet drawer supports the following sizes: A4, JIS B5, folio, letter, legal, and executive.	 ✓ ✓
Maximum # of media input sources	3
Maximum input sheet capacity (excluding envelopes)	850

Notes:

- ✓ Indicates associated capability is supported.
- Assumes 20 lb xerographic paper.
- The user must choose between the 250–sheet and 500–sheet optional drawers when adding additional paper sources.

MFP speed

Speed	
Pages/minute in 300 dpi	22
Pages/minute in 600 dpi	22
Pages/minute in 1200 Image Quality (IQ) dpi	22
Time to first print	10 seconds

Resolution and print quality

Note:

- IET, PictureGrade™, print resolution, print darkness, and toner saver can all be set independently of each other through the data stream.
- Operator panel menus let a user independently set PictureGrade, and print resolution.
- The IET setting is implicitly selected when a particular print resolution is selected using the Quality Menu.
- Toner saver and print darkness settings are implicitly set when a particular toner darkness is selected using the Quality Menu.

Print quality setting	
Print resolution: • 300 dpi • 600 dpi • 1200 IQ dpi	 ✓ ✓ ✓
Image Enhancement Technology (IET): 2 Bits/Pel	 ✓
Toner saver	✓
Print darkness	✓
PictureGrade	✓

Note: ✓ Indicates print quality setting is supported.

RIP card specifications

Feature	
Processor	PMC Sierra RM5231A
Processor/Bus frequency	300/100 MHz
Synchronous DRAM	2–128 Mbit
NAND flash	1–64 Mbit
Processor internal bus width capability	64 Bit
RIP SRAM	0KB

Supplies

Print cartridge	Average yield	Approximate coverage
Print cartridges	6,000	5%
	12,000	5%

Scanner features

Scanner function	Capability
Optical resolution (scan direction)	600 dpi
Optical resolution (feed direction)	300/600 dpi
Scan modes • 600 scan, 300 feed (mono) • 600 scan, 600 feed (mono) • 600 scan, 300 feed (color) • 600 scan, 600 feed (color)	 16 ppm 8 ppm 10 ppm 5 ppm
Maximum ADF paper capacity	50 sheets
Maximum ADF dimensions	8.5 x 14 inches
Maximum flatbed dimensions	8.5 x 11.69 inches
ADF and flatbed paper sizes • A5 • JIS–B5 • Executive • Letter • Legal • Folio • Statement • A4 **Note:** These sizes are supported without size sensing.	ADF / Flatbed Yes / Yes Yes / Yes Yes / Yes Yes / Yes Yes / No Yes / No Yes / Yes Yes / Yes
Supported pixel depth • 1 bit (mono) • 8 bit (mono) • 24 bit (color)	Max output resolution (dpi) for setting 600 x 600 600 x 600 300 x 300

Scanner resolutions per mode:

Scanning mode	Output resolution	Optical resolution
Copy (all modes)	600 x 600	600 scan, 300 feed
Fax standard	200 x 100	600 scan, 300 feed
Fax fine	200 x 200	600 scan, 300 feed
Fax super fine	300 x 300	600 scan, 300 feed
Fax ultra fine	400 x 400	600 scan, 600 feed
Scan–to–host	75 dpi 75 x 75	600 scan, 300 feed
Scan–to–host 150 dpi	150 x 150	600 scan, 300 feed
Scan–to–host 200 dpi	200 x 200	600 scan, 300 feed
Scan–to–host 300 dpi	300 x 300	600 scan, 300 feed
Scan–to–host 400 dpi (mono only)	400 x 400	600 scan, 600 feed
Scan–to–host 600 dpi (mono only)	600 x 600	600 scan, 600 feed

Copier specifications

Function	Description
Speed	• Simplex - 22 ppm (scan once / print many) • Duplex - 12 ppm (scan once / print many)
Time to first copy (text / mixed)	• From Power Save - 45 to 80 seconds • From Stand By / Ready - 20 seconds
Copy resolution	Output resolution - 600 x 600 dpi (based on a 600 x 300 optical resolution)
Duplex input	Manual
Duplex output	Standard
Collation	Yes

Fax specifications

Function	Description
Transmission rate	Approximately 3 seconds per page
Modem	33.6 kpbs
Compression	MH, MR, MMR, Super G3
Resolution	• 200 x 100 dpi • 400 x 400 dpi
Speed dial	300 (based on 10–digit phone numbers)
Group fax	Supported by speed dial (shortcuts)
Broadcast	46 locations (based on 10 digit numbers with a maximum of 512 characters
Manual fax	Yes
Fax from PC	Supported using PS driver for both local and network attach modes

Serial number

The serial number label is on the inside front cover of the MFP.

Special tools

Long Phillips screwdriver (approximately 6–inch shank)
Slotted screwdriver
Small Phillips screwdriver

When taking voltage readings, always use the MFP frame as ground unless another ground is specified.

Acronyms

ADF	Automatic Document Feed
AFE	Analog Front End
ASIC	Application Specific Integrated Circuit
C	Charge Roll
CCD	Charge Couple Device
CCW	Counterclockwise
CW	Clockwise
DC	Direct Current
DEV	Developer Roll
DIMM	Dual Inline Memory Module
DNSFBP	Danish, Norwegian, Swedish, Finnish, Brazilian Portuguese
DPI	Dots Per Inch
DRAM	Dynamic Random Access Memory
EOLS	End Of Line Sensing
FFC	Flexible Flat Cable
FIGSD	French, Italian, German, Spanish, Dutch
FRU	Field Replaceable Unit
GND	Ground
HVPS	High Voltage Power Supply
IDE	Integrated Development Environment
IET	Image Enhancement Technology
INA	Internal Network Adapter
IQ	Image Quality
KB	Kilobyte
KBPS	Kilobits Per Second (usually as Kbps) / Kilobytes Per Second (usually as KBps)
LCD	Liquid Crystal Display
LED	Light–Emitting Diode
LSU	Laser Scanning Unit
LVPS	Low Voltage Power Supply
MFP	Multifunction Product
MH	Message Handling
MHz	Megahertz
MMR	Modified Modified Read
MPF	Multipurpose Feeder
MR	(Modem) Modem Ready
NAND	Not And (Gate)
NVRAM	Nonvolatile Random Access Memory
OPU	Operator panel Unit

PCB	Printed Circuit Board
PCL 6	Printer Command Language
PJL	Printer Job Language
POR	Power–On Reset
POST	Power–On Self Test
PPDS	Personal Printer Data Stream
PS	PostScript
PWB	Printed Wiring Board
RIP	Raster Image Processor
ROM	Read Only Memory
RS	Recommended Standard
SCU	Scanner Control Unit
SE	Systems Engineer
T	Transfer (Roll)
TAR	Toner Adder Roll
USB	Universal Serial Bus
V ac	Volts Alternating Current

2. Diagnostic information

Start

Unplug power from the MFP before connecting or disconnecting any cable, assembly, or electronic card. This is a precaution for personal safety and to prevent damage to the printer.

This chapter contains the codes and diagnostic tools to aid in providing corrective action for a malfunctioning MFP.

The status of the machine is displayed on the LCD.

Attendance and status messages

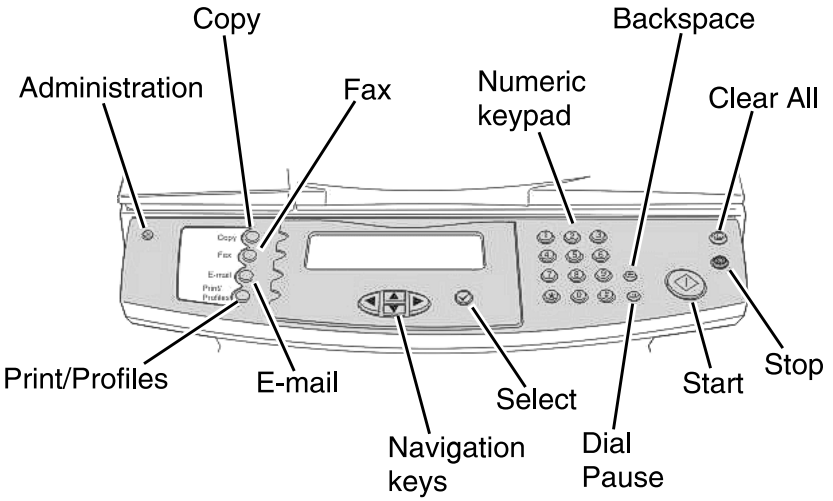
Error code	Attendance message description
	Change cartridge invalid refill
	Change <source> <new media>
	Close door or insert cartridge
	Insert Tray 1
	Invalid UAA
	Load <source> <new media>
	Load manual <new media>
	Remove standard paper bin
31	Missing or defective print cartridge, replace cartridge
32	Unsupported print cartridge, replace cartridge
34	Short paper
35	Insufficient memory to support Resource Save feature
37	Insufficient memory to collate job
	Insufficient memory for Flash Memory Defragment operation
	Insufficient memory, some Held Jobs may be lost
38	Memory full
39	Complex page, some data may not have printed
50	PPDS font error
51	Defective flash detected
52	Not enough free space in flash memory for resources
53	Unformatted flash detected
54	Standard Network Software error

Error code	Attendance message description
55	Unsupported Flash in slot <x>
	Unsupported Memory in slot <x>
56	Standard USB Port Disabled
88	Toner low
	Scanner ADF cover open
	Scanner registration successfully completed
	Scanner registration failed

Error code	Paper jam status messages
200	Paper jam, remove print cartridge to access (MFP input sensor)
201	Paper jam, remove print cartridge to access (between MFP input and exit sensor)
202	Paper jam, open rear door to access
230	Paper jam, check duplex
250	Paper jam, check MP feeder
290	Scanner jam, remove all originals from scanner
	Replace originals if restarting job

Operator panel overview

The X422 operator panel consists of a 240X64 dot matrix APA LCD and 27 buttons can be illuminated (copy, fax, e-mail and print/ profiles). The display is capable of displaying approximately eight lines of text with 40 characters each.



The operator panel may be used for:

- Determining MFP status.
- Reviewing MFP settings (See **“Configuration Menu Settings” on page 3-4** for more information.)
- Changing MFP settings (See **“Configuration Menu Settings” on page 3-4** for more information.)
- Utilizing diagnostic tools (See **“Diagnostic mode menu settings” on page 3-6** for more information.)
- Obtaining information about MFP service errors (See **“Service error codes” on page 2-13** for more information.)

Power–on self test (POST)

When you turn the MFP on, it performs a Power–On Self Test. With all the cables connected, the MFP completes POST between 15–20 seconds in the following sequence:

1. The four blue LEDs light and immediately revert to three illuminated LEDs.

   The display shows a series of dots across the screen. The MFP is performing the memory test.
2. Then, two LEDs are illuminated and the display shows the amount of installed memory and processor speed (for example, 128MB 300).
3. Next, one LED is illuminated for a moment.

   The display message is '*Performing Self Test*', the ADF is tested, the scanner calibrates, and the drive motor and the printhead motors run.

   Note:

   - If non-critical sections of NVRAM, or factory defaults ARE being restored from the configuration menu, the display message is '*RESTORING FACTORY DEFAULTS*' for a minimum of three seconds.
   - If the firmware has detected a version change, 'PERFORMING SELT TEST' is displayed for a minimum of three seconds.
   - If all NVRAM settings are being reset, 'RESETTING ALL OF NVRAM' is displayed for a minimum of three seconds.

4. The MFP cycles down, and the home screen is displayed.
   Note:

   - If errors are detected, an attendance message is displayed.
   - If the CCD is locked, a message is posted instructing the user to unlock the CCD.
   - If toner is low, a message is displayed.
   - Cartridge errors are posted if the cartridge is defective or invalid.
   - If a cover is open, a message is displayed.

If POST gets to step 2 and hangs for more than 60 seconds, remove any optional RAM from the RIP card. Restart the machine. If the problem persists, replace the RIP card.

If POST begins, but the ADF, scanner calibration, and motor test don't start, check connections on the RIP card. Replace the RIP card as necessary.

Symptom tables

Check for correct POST functions of the MFP by observing the following symptoms:

See **"Power–on self test (POST)" on page 2-5** for more information.

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 2-21**.
POST completes except one or more lights do not come on.	See the **“Operator panel service check” on page 2-32**.
None of the lights come on.	See the **“Operator panel service check” on page 2-32**.
Main motor does not come on.	See the **“Main motor service check” on page 2-30**.
Fan does not come on.	See the **“Cooling fan service check” on page 2-20**.
Fuser lamp does not come on.	See the **“Cold fuser service check” on page 2-26**.
Fuser lamp never turns off.	See the **“Hot fuser service check” on page 2-28**.
The paper feed picks and tries to feed paper.	See the **“Paper feed service checks” on page 2-33**.
LEDs on operator panel, and display fail to illuminate. Fan runs continuously.	See the **“Operator panel service check” on page 2-32**.
Scanner locked power off and Restart message appears when scanner is unlocked.	See the **“Scanner/copier service check” on page 2-47**.
ADF pick roller, or motor does not run during start up.	See the **“ADF service check” on page 2-19**.
operator panel lights function properly at POST, but the display is blank.	See the **“Operator panel service check” on page 2-32**.
Machine POSTS and enters operations mode but one or more buttons are not functioning.	See the **“Operator panel service check” on page 2-32**.

MFP symptom table

Symptom	Action
Dead machine (no power)	See the **“Dead machine service check” on page 2-22**.
Fan noisy or not working	See the **“Cooling fan service check” on page 2-20**.
Fuser parts melted	See the **“Hot fuser service check” on page 2-28**.
Fuser lamp doesn’t light	See the **“Cold fuser service check” on page 2-26**.
Toner not fused to the paper	See the **“Poor fusing of image” on page 2-44**.
Blank page	See the **“Blank Page” on page 2-39**.
Black page	See the **“Black page” on page 2-41**.
Heavy background	See the **“Heavy background” on page 2-42**.
Light print	See the **“Light print” on page 2-44**.
White or black lines or bands	See the **“White or black lines or bands” on page 2-45**.
Toner on back of page	See the **“Toner on back of page” on page 2-45**.
Paper jams	See the **“Paper feed service checks” on page 2-33**.
Main motor noisy or does not move	See the **“Main motor service check” on page 2-30**.
Paper never picks	See the **“Paper never picks” on page 2-37**.
Paper feeds continuously	See the **“Paper picks during POST and/or continuously” on page 2-35**.

Symptom	Action
Paper skew	See the **Note** regarding alignment on **page 4-57** or **“Paper feed service checks” on page 2-33**.
MFP not communicating with host	See **“Network printing service check” on page 2-31**.
Paper wrinkled or bent	See **“Paper “trees,” wrinkles, stacks poorly or curls” on page 2-38**.
Top cover will not close	See **“Cover interlock switch service check” on page 2-21**.
Operator panel button does not respond	See **“Operator panel service check” on page 2-32** or **“RIP card service check” on page 2-46**.
MFP not communicating with host over network	See **“Network printing service check” on page 2-31**.

Scanner / copier symptom table

Symptom	Action
Machine boots, but LCD posts a “Scanner Locked Power off and Restart” attendance message.	1. Check whether scanner CCD is locked. 2. Perform scanner service check. See **“Scanner/copier service check” on page 2-47** for more information.
Documents don’t feed into ADF. Scanner jam (290) error.	1. Check for dirty sensors. 2. Check the paper present sensor (using the scanner sensor test in diagnostics). Replace as necessary. 3. Check continuity of scanner – ADF motor cable. – If good, replace ADF motor. – If bad, replace ADF motor cable.
Paper feeds into ADF, but jams in the ADF. Error 290 generated.	Perform ADF service check. See **“ADF service check” on page 2-19** for more information.
ADF runs paper through, but no copy is made. Error 290 generated.	Perform ADF service check. See **“ADF service check” on page 2-19** for more information.
Scanner does not respond to scan command from attached computer.	Perform USB service check. See **“USB service check” on page 2-48** for more information.

Symptom	Action
RIP software error on startup.	1. Check the connections on all cables to the RIP card to the SCU card. 2. Check for loose connectors, bent or broken pins on the connectors. Ensure the individual wires are secure in the connector. 3. Check connector J32 on RIP card. • Pin 1 should be +5 V • Pin 4 should be +24 V • Pins 2 and 3 are ground If they pass, check continuity on the power cable connecting the RIP card to the SCU. If they fail, replace the RIP card. If the cable checks out, replace the SCU. If it fails, replace the cable.
Scanner repeatedly gives the user a “Scan Locked Power off and Restart” message when the scanner is actually unlocked.	See **“Scanner/copier service check” on page 2-47** for more information.
Scanner repeatedly reports 290 error.	See **“Scanner/copier service check” on page 2-47** for more information.

E-mail symptoms

Symptom	Action
Scanner runs, mail confirmation failure.	Perform E-mail service check. See **“E-mail service check” on page 2-23** for more information.
Weblink fails.	1. Check that the FTP server is on the network. 2. Check the FTP server IP address.

Fax symptoms

Symptom	Action
No dial tone.	1. Check that phone line is connected properly. 2. Check that the phone socket is working properly. (Test the socket with a phone.)
Machine dials a number but fails to make a connection with another fax machine.	The other fax machine may be turned off. Ask the fax recipient to check their machine.
Incoming fax has blank spaces or poor quality.	1. The sending fax machine may be faulty. 2. The sending fax machine may have a dirty document glass. 3. A noisy phone line can cause errors. 4. Check the MFP print quality by making a copy. 5. The print cartridge may be empty. Replace as necessary.
Some words on an incoming fax are stretched.	The sending fax machine had a temporary jam.
Documents are not stored in memory.	• There may not be enough memory to store the document. • The machine may display an 'Insufficient Memory' message. • Wait for current jobs to process. • Delete any print and hold jobs that are not needed. • Install more memory.
Document does not feed.	1. Make sure the document is not wrinkled and that it has been inserted correctly. 2. Check that the document is the correct size.

Service error codes

Service error codes are generally non–recoverable except in an intermittent condition when a POR of the MFP temporarily recovers from the error condition.

Error code	Description	Action
900 – RIP software error	Internal RIP software error on the system card.	Replace the system card.
902 – Engine software error	General internal engine software error on the system card.	Replace the system card.
920 – Fuser error	Fuser below temperature when printing.	Perform cold fuser service check to isolate the problem to: - Fuser lamp - Lamp cable - Complete fuser (thermistor) LVPS
921 – Fuser error	Fuser below standby temperature in idle.	
922 – Fuser error	Fuser failed to reach standby temperature.	
923 – Fuser error	Fuser too hot during printing or in idle.	Perform hot fuser service check to isolate the problem to: - Fuser lamp - Complete fuser (thermistor)
924 – Fuser error	Open circuit in thermistor path.	
925 – Fuser error	Incorrect fuser lamp installed.	
929 – Toner sensor	Indicates a problem with either the toner sensor or print cartridge.	Test the toner sensor using the "Base Sensor Test" in the diagnostic menu. • If the test fails, replace the sensor. • If the test passes, replace the cartridge.

Error code	Description	Action
931 – Printhead error	No first Hsync.	Inspect the printhead cable for continuity / connection. If the inspection passes, replace the printhead.
932 – Printhead error	Lost Hsync.	Inspect the printhead cable for continuity / connection. If the inspection passes, replace the printhead.
935 – Printhead error	Mirror motor unable to reach operating speed.	Perform voltage check on printhead connector of the RIP card. If the voltages are incorrect, replace the card. Inspect the printhead cable for continuity / connection. If the inspection passes, replace the printhead.
936 – Transport motor	Transport motor initial lock failure.	Inspect motor, cabling and main drive assembly. Replace defective parts.
937 – Transport motor	Transport motor lost lock.	
939 – RIP - engine communications	RIP processor cannot communicate with engine processor on RIP card.	Replace RIP card assembly.
940 – LVPS (Low Voltage Power Supply)	There is a failure with the zero crossing signal on the line controlling the fuser lamp.	Ensure the proper LVPS is installed.

Error code	Description	Action
941 – Image pipeline	An error was detected with the image pipeline ASIC on the RIP card.	Observe debug data of engine microcode. Replace RIP card assembly, if necessary.
942 – Scanner failure	Communication failure. RIP card cannot establish communications with the scanner card.	Inspect the RIP–SCU cable for proper connection and conductivity. If the inspection passes, replace the SCU card.
943 – Scanner failure	Carriage mechanical failure.	Check the mechanical movement of the CCD carriage. Replace the defective component.
944 – Scanner failure	Lamp failure. One or both of the lamps failed, or the CCD cable has failed.	Check the CCD cable for proper connection and connectivity. If inspection passes, replace the CCD carriage.
945 – Scanner failure	CCD failure. The CCD circuit on the CCD carriage has failed or the CCD cable has a problem.	
946 – Scanner failure	CCD calibration error.	Perform the scanner calibration process. Check the CCD cable for proper connection and connectivity. If inspection passes, replace the CCD carriage.

Error code	Description	Action
947 – Modem failure	Modem card, on the RIP card, experienced a failure.	Replace RIP card assembly.
948 – Fax storage	Flash partition too small on modem card.	
949 – Fax storage	Flash partition invalid or not available.	Reformat from the configuration menu. If the problem persists, replace the RIP card assembly.
952 – NV failure: n	NVRAM CRC error detected. "n" indicates where the error occurred.	POR the machine to clear the error. If the problem persists, replace the operator panel.
953 – NVRAM failure	NVRAM chip failure.	Replace the operator panel.
954 – NVRAM failure	NVRAM CRC failure.	
955 – Code CRC	Code ROM and NAND failed the CRC check, or NAND experienced an uncorrectable multi-bit failure.	Replace the RIP card.
956 – System board	Processor failure.	Replace the RIP card.
957 – System board	ASIC failure.	Replace the RIP card.
958 – NAND failure	Indicates the system has performed more than 100 shift and re-flash operations as a result of ECC bit corrections.	Replace the RIP card.
959 – System board	SRAM failure.	Replace the RIP card.
960 – Memory error	RAM soldered on RIP card has failed.	Replace the RIP card.
961 – Memory error	RAM in slot 1 is defective.	Replace the DIMM in slot 1.

Error code	Description	Action
962 – Memory error	RAM in slot 2 is defective.	Replace the DIMM in slot 2.
965 – Panel failure	The engine is experiencing failures sending commands to the operator panel.	Inspect the operator panel RIP cable for connectivity and continuity. If the cable passes, replace the operator panel. If the cable fails, replace the RIP card.
976 – Standard network	Unrecoverable software error in the network port.	Replace the RIP card.

Service checks

Service checks involve measuring voltages of the LVPS, HVPS, SCU, and RIP card assemblies. Continuity and resistance verifications are done on cables and components as required.

Note: When looking at the printed side of a PCB, connectors are designated with “J” followed by a number. On the SCU card, the connectors are designated with a CN followed by a number. Pin 1 is designated on the PCB by an adjacent “1” or triangle. Pin numbers index sequentially to the opposite end of the connector. See **“RIP card assembly” on page 5-10** for more information.

ADF service check

FRU	Action
ADF assembly SCU card	1. Open the ADF cover and check for obstructions in the paper path. 2. Check the sensors to ensure the flags move freely or dust is not blocking the sensors. If the ADF makes a copy and generates a 290 error after the last sheet is fed through the ADF, and the error only goes away after a POR, replace the ADF. • If the problem persists, replace the SCU. If the ADF starts feeding, but prints a blank page generating a 290 error, the paper may or may not feed all the way through the ADF. • POR the machine into diagnostics mode and perform a scanner sensor test on the paper present sensor and the ADF cover sensor. • If the ADF cover sensor remains in the CL setting when actuated and the paper position sensor remains in the OP setting when actuated, replace the SCU card. • If the ADF cover sensor changes to the OP setting when actuated, replace the ADF. Paper in the ADF does not feed, a blank page is run from the printer. Paper in the ADF does not feed, a 290 error is generated. Check CN5, pins 1 and 2 for +24V. • If +24V, replace the ADF motor assembly. • If not +24V, replace the SCU. ADF pick roller, and ADF motor not running during POST. Check CN5, pins 1 and 2 for +24V. • If +24V, replace the ADF motor assembly. • If not +24V, replace the SCU.

Cooling fan service check

FRU	Action
Cooling fan	Make sure the cooling fan motor cable plug is properly seated. Turn the MFP off and disconnect the cooling fan cable at the cooling fan. Turn the MFP on. Within approximately 15 seconds the RIP card assembly should apply +24V dc to the fan. See **“RIP card assembly” on page 5-10** for more information. • If voltage is present, replace the cooling fan. • If voltage is not present, disconnect the cable from the RIP card (J30) and check for continuity and shorts (connector sockets 1 and 2). – If the cable is good, see the **“RIP card service check” on page 2-46** for more information. – If the cable is damaged, replace the cable.

Cover interlock switch service check

Note: Make sure a print 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 from the interlock switch. Push the cover interlock switch to the closed position and verify continuity between the bottom and middle terminals. Open the switch and verify continuity between the bottom and top terminals. The top and middle terminals indicate discontinuity at all times. • If the switch is good, verify +5 V dc on the middle spade of the cable and ground on the top spade of the cable. • If voltage is not present, see **“RIP card service check” on page 2-46**. Replace the switch if faulty.

Dead machine service check

Perform this service check when there is no activity at power up.

FRU	Action
LVPS RIP card Main wiring harness 	Ensure the MFP is plugged in. **Note**: Check the AC line voltage. Voltage should be within the following limits: – 100 V ac - 127 V ac for the nominal - 110 V model printer – 200 V ac - 240 V ac for the nominal- 220 V model printer • If the line voltage checks out, perform the LVPS service check. See **“Low voltage power supply (LVPS) service check” on page 2-24** for more information. • If the line voltage fails, replace the LVPS. If the LVPS passes, check the continuity of the cable from CN2 on the LVPS. • If the cable checks out, replace the RIP card. • If the cable fails, replace the main harness assembly. **Note**: Before replacing the RIP card, inspect the wiring around and behind the RIP cage for signs of damaged insulation. A short can cause the device to not start.

E-mail service check

FRU	Action
	Have customer verify the e-mail settings using the MFP's built in Web server. Check X422 *User's Reference* for setting instructions. **Note**: Failure to connect to the Web server may indicate a problem with either the network or the NIC on the MFP. If the e-mail settings check out, perform the network printing service check. See **"Network printing service check" on page 2-31** for more information.

Low voltage power supply (LVPS) service check

FRU	Action
Low voltage power supply card (LVPS) (110 V and 220 V) 	Unplug the power cord and verify that the cable is correct and functioning. Replace if necessary. With the power cord unplugged, disconnect the 12–pin and 4–pin connectors from the LVPS. • On the 12–pin connector (pin 1 is closest to the HVPS), verify pins 1, 2, 7, 8, and 9 are ground. Re–plug the power cord and turn the MFP on. **CAUTION:** Be careful to not ground pins to cage while testing. • Verify pins 5 and 6 are +5 V dc. • Verify pins 10, 11 and 12 are +24 V dc. • Verify pin 1 of the 4–pin connector (also closest to the HVPS) is +5 V dc. If any one of these are incorrect, replace the LVPS.

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 MFP must be within the following limits:

- 100 V ac–127 V ac for the nominal–110 V model MFP
- 200 V ac–240 V ac for the nominal–220 V model MFP

Cold fuser service check

FRU	Action
Fuser lamp Lamp cable LVPS **Note:** Ensure the proper lamp is installed. 	Unplug the MFP and disconnect the fuser lamp cable from the LVPS card connector (CN3). See **“Low voltage power supply (LVPS)” on page 5-9** for more information. Check for continuity across the fuser lamp. (Pins 1 and 2) If there is continuity, go to step 1. If there is no continuity, go to step 2. Step 1: **Continuity** Reconnect the fuser lamp cable at CN3. Re–plug and turn the MFP on. Measure the voltage at connector CN4 on the LVPS. It should match the line voltage. • If line voltage is not present, replace the LVPS. Make sure the fuser thermistor is correctly connected to the RIP card (J29). If the problem persists, disconnect the thermistor cable from the RIP card assembly and check for +4 V to +5 V dc. See **“Locations” on page 5-1** for more information. • If the voltage is incorrect, see **“RIP card service check” on page 2-46**. Step 2: **No Continuity** Unplug the MFP and check the lamp cable for continuity. • If correct, replace the lamp. • If incorrect, replace the lamp cable.

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

FRU	Action
Fuser assembly	If the fuser lamp comes on and a fuser failure error code displays, be sure the thermistor is contacting the hot roll and the thermistor cable is firmly seated in connector J29 on the RIP card assembly. (The thermistor cable goes through the frame by way of a connector.) Check for excessive toner buildup on the surface of the thermistor. Clean as necessary. Unplug the MFP and disconnect the thermistor cable from the RIP card (J29). Measure the resistance of the thermistor. The resistance measures approximately 245K ohms when cool (approximately 40°C) and 2K–3K ohms hot. 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
Lamp Fuser assembly 	Unplug the MFP and make sure the termister is properly connected in J29 on the RIP card. Measure the resistance of the thermistor. The resistance measures approximately 245K ohms when cool (approximately 40°C) and 2K–3K ohms hot. Replace the fuser assembly as necessary.

Continuity check on HVPS/cartridge

Continuity between the HVPS and the charge roll, Dr. B (blade), TAR (toner adder roll), the developer roll, and the photoconductor (DC) can be checked as follows:

FRU	Action
HVPS Left guide assembly Cartridge contacts	1. Turn MFP off. 2. Remove the right side cover. See **“Right side cover removal” on page 4-13** for more information. 3. Remove the print cartridge. 4. Check from C on the HVPS to the bearing on the left side of the charge roll. See **“High voltage power supply (HVPS)” on page 5-8** for more information. 5. Check from the Dr. B, TAR, DEV, T, and DC (photoconductor) respectively to the corresponding pin on the right side frame where the print cartridge makes its contacts. • If any show discontinuity, remove the HVPS and check the cartridge contact assemblies (springs) for continuity and damage. • If the charge roll and the cable at C show discontinuity, replace the left guide assembly. See **“High voltage power supply (HVPS)” on page 5-8** for testing the PCB.

Main motor service check

FRU	Action
Main motor Main motor cable	Verify +24 V dc on pin 7 at J14 on the RIP card assembly. • If the voltage is correct, check the main motor cable for continuity. • If the voltages are not correct, see **“Low voltage power supply (LVPS) service check” on page 2-24** or replace the RIP card assembly. **Note**: Always check printhead alignment after replacing the RIP card assembly. See **“Printhead alignment adjustment” on page 4-2** for hardware alignment of the printhead. 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.

Network printing service check

FRU	Action
RIP card	1. Check the lights on the MFP NIC. • If the lights work, ping the IP address of the MFP. **Note:** The IP address is in the TCP/IP menu nested in the Network/USB menu in the Administrator menu. • If the lights to the NIC are not lighting up, test the MFP with a network cable that is known to work. • If the lights do not illuminate with a known good cable, replace the RIP card. • If the IP address of the MFP is 169.254.xxx.xxx and the customers network uses DHCP to assign IP addresses, have the network administrator manually assign an address to the MFP. Ping the manually assigned address. • If this fails, call tech support to see if there is a firmware update to address this issue. If the firmware does not resolve the issue, replace the RIP card.

Operator panel service check

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

Run POST and check each light for proper operation.

FRU	Action
Operator panel OPU - RIP cable RIP card	1. Check J6 on the RIP card assembly. Verify +5V on pins 1, 2, 15, 23, and 24. •If any pin does not have +5V, replace the RIP card. 2. Check the OPU-RIP cable for continuity. Replace as necessary. 3. If the RIP card and operator panel cable check out, replace the operator panel. 4. Perform operator panel test in diagnostics mode. Replace operator panel as necessary.

Paper feed service checks

Paper picks and advances approximately 4 inches

FRU	Action
Plate assembly (reference edge) Paper feed gear Drive assembly	Turn MFP off and remove the print cartridge and left side cover. With a left finger, rotate the main motor counterclockwise while using a right finger to resist gear movement in the plate assembly (reference edge) in the paper path below the cartridge. If the gear motion can be stopped while continuing to rotate the drive motor, one of the units has to be replaced. The paper feed gear is most likely the failing part. Remove the drive assembly for further inspection. Replace the faulty unit. When the plate assembly is replaced, it has to be adjusted. See **“Paper feed adjustment” on page 4-2** for more information.

Paper jam error indication during POST

FRU	Action
Stack control flags Photo sensor	If the exit sensor flag is not resting within the paper exit sensor during POST, the MFP indicates **Remove paper from standard output bin**. Perform a base sensor test to ensure the exit sensor is operating correctly. Make sure the flag is operating freely. Replace the photo sensor and/or the stack control flag as necessary.
Photo sensors (paper path)	Make sure the input paperfeed sensor is working properly. A stuck or incorrectly installed sensor causes this error. • **200 Paper Jam.** Remove print cartridge to check for paper, damaged flags, or malfunctioning sensors. • **201 Paper Jam.** Remove print cartridge to access and check under and/or inside the rear door for jammed paper. • **202 Paper Jam.** Open rear door and check for a damaged flag, malfunctioning sensor at the fuser exit, or a paper jam inside the rear door. • **250 Check MP Feeder.** Check for paper jam in the MPF or a malfunctioning MPF sensor. • **230 Paper Jam.** Check the sensor in the duplex path for a jam or a malfunction.

Paper picks during POST and/or continuously

FRU	Action
Paper feed assembly Paper feed 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 D–roll (pick roll) from rotating. Replace the paper feed 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. Replace the solenoid.

Paper picks but stops half way through the MFP

FRU	Action
Input paper feed sensor RIP card assembly	Perform base sensor test to ensure the input paper feed sensor is working properly. Check for a broken or stuck flag on the input paper feed sensor. Make sure the cable is seated on the RIP card assembly (J31). Verify +5 V dc on pins 1, 4, 7, and ground on pins 3, 6, and 9. See **"Locations" on page 5-1** for more information. • If correct, replace the input paper feed sensor. • If the voltage is not correct, replace the RIP card assembly. **Note:** Always check printhead alignment after replacing the RIP card assembly. See **"Printhead alignment adjustment" on page 4-2** for hardware alignment of the printhead.

Paper never picks

FRU	Action
Paper tray	Make sure the paper tray and paper are correctly positioned. Check the input tray for missing or broken parts. Replace the tray as necessary.
Paper feed solenoid RIP card assembly	Make sure solenoid is installed correctly and its cable is plugged into the RIP card assembly. See **“Locations” on page 5-1** for more information. • Verify approximately 40 ohms in the solenoid. If not correct, replace the solenoid. • Verify the solenoid has the spring in place and functions mechanically. If this is true and the resistance is correct, replace the RIP card assembly. **Note:** Always check printhead alignment after replacing the RIP card assembly. See **“Printhead alignment adjustment” on page 4-2** for hardware alignment of the printhead.

Paper occasionally picks or picks multiple sheets at once

FRU	Action
Paper feed roll D–roll at Tray 1 spring Paper feed assembly	Check the paper feed roll (D–roll/pick roll) for wear. Replace as necessary. Verify that the extension spring is working properly. If not, replace the spring. If the paper feed roll shaft rotates freely, replace the paper feed assembly. **Note**: We recommend that the paper feed roll be replaced when the paper feed assembly is replaced.

Paper “trees,” wrinkles, stacks poorly or curls

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

Print quality service checks

Blank Page

FRU	Action
Print cartridge	Remove the print cartridge and gently shake the assembly to evenly distribute the toner. Ensure clean electrical contacts on the right side.
Printhead Printhead cable HVPS RIP card assembly Cartridge contacts assembly	Blank pages can be caused by a defective printhead assembly, high voltage power supply, or RIP card assembly. See **“RIP card service check” on page 2-46** and verify the required voltages and proper ground at connectors J1 and J3. With the cartridge removed and the MFP off, check continuity between HVPS (DC designation on outside of card) and the PC pin inside the printer. The PC pin is directly above the transfer roll gear.

FRU	Action
(continued) Printhead Printhead cable HVPS RIP card assembly Cartridge contacts assembly	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. See **“High voltage power supply (HVPS)” on page 5-8** and verify the voltages. • If the +24 V dc and +5 V dc input voltage measurements are correct, replace the HVPS. • If the voltages are incorrect, replace the RIP card assembly. **Note**: Always check printhead alignment after replacing the RIP card assembly. See **“Printhead alignment adjustment” on page 4-2** for hardware alignment of the printhead.

Black page

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

FRU	Action
HVPS contacts	Check the contacts for contamination and correct installation. Replace as necessary.
RIP card assembly Controller card HVPS cable HVPS Left guide assembly	Ensure the HVPS to RIP card and charge roll cables are correctly installed. Check continuity of the charge roll cable from C (printed on outside HVPS) to the bushing at the right side of the charge roll. • If continuity fails, replace the left guide assembly. Check continuity from the charge roll left side bushing to the right side shaft. • If continuity fails, remove the charge roll and clean the left side shaft and bushing. See **“High voltage power supply (HVPS)” on page 5-8** and check the voltage measurements. • If the +24 V dc and +5 V dc input voltages are correct, replace the HVPS. • If the voltages are not correct, see **“RIP card service check” on page 2-46**. • Check continuity on the HVPS/ RIP card cable.

Heavy background

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

FRU	Action
Print cartridge (not a FRU)	Make sure the print cartridge is correctly installed and the high voltage contacts are clean. If the cartridge is installed correctly and the problem persists, try a new cartridge.
HVPS contacts HVPS card RIP card assembly Cartridge contacts assembly	Check the contacts for correct installation and contamination where contact is made with the print cartridge and HVPS card. Clean as necessary. If this does not correct the problem, replace the following FRUs one at a time in the order shown: • HVPS card • RIP card assembly **Note**: Always check printhead alignment after replacing the RIP card assembly. See **“Printhead alignment adjustment” on page 4-2** for hardware alignment of the printhead.

Partial blank image/white spots (no periodic pattern)

FRU	Action
Print cartridge (not a FRU)	Remove the print cartridge and gently shake the assembly to evenly distribute the toner. If the print cartridge is low, try a new one.
Fuser backup roll springs (not a FRU) Fuser assembly	Check springs at each end of the backup roller to ensure adequate and even pressure is applied to the fuser hot roll. Replace the fuser if necessary.
Paper	Make sure recommended paper is being used.

Variation in image density horizontally across page

FRU	Action
Print cartridge	The charge roll may have an unbalanced pressure against the PC drum. Check for equal forces at both ends of the charge roll. Try a new print cartridge.
Transfer (roll)/bearings Transfer assembly roll	Check the springs and bearings at both ends of the transfer roller. The bearing assemblies should support the transfer roller, applying even pressure to the PC drum. Replace both bearing assemblies if either spring shows 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 2-26**. Make sure recommended paper is being used.

Light print

FRU	Action
Print cartridge	Make sure the print cartridge is installed correctly and is not low on toner. If the problem continues, install a new print cartridge.
Transfer roller HVPS contact (transfer roller) HVPS card	Check the transfer roller for signs of toner buildup and contamination. Inspect the HVPS contact (transfer roller) for contamination. Inspect the HVPS card 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 card

White or black lines or bands

FRU	Action
Print 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 MFP especially in the developer and transfer process. Inspect the print 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 assembly	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 fuser assembly 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.

RIP card service check

FRU	Action
RIP card assembly	Check for +24 V dc from the LVPS card to the RIP card assembly. • Turn the MFP off. • Disconnect the LVPS cable from the RIP card at J28. • Turn the MFP on. Verify +24 V dc from the cable, pins 1, 2, and 10. • If voltages are not present or incorrect, see the **“Low voltage power supply (LVPS) service check” on page 2-24** for more information.
	Note: Always check printhead alignment after replacing the RIP card assembly. See **“Printhead alignment adjustment” on page 4-2** for hardware alignment of the printhead. **Note**: U.S. versus non–U.S. and the MFP configuration ID can be reset. See **“Diagnostic mode menu settings” on page 3-6** for more information.

Scanner/copier service check

FRU	Action
CCD FFC (CCD) cable assembly SCU card assembly	1. Open the flatbed cover and restart the MFP. If the CCD illuminates but does not move, check pins 2 and 5 on CN6 on the SCU card for +24V. • If it passes, replace the flatbed motor. • If it fails, replace the SCU. If the CCD lamp fails to illuminate, but the CCD moves, check the FFC cable connector on the SCU. Pins 16, 17, 21, and 22 should measure +12V. If it passes, check the cable continuity. – Continuity, replace the CCD. – No continuity, replace the cable. If the lamp illuminates and the CCD moves, perform the CCD home sensor test. See **“Diagnostic mode menu settings” on page 3-6** for more information. • If the test fails, replace the CCD.

Transfer roll service check

FRU	Action
Transfer assembly roll Transfer Bearing	Check the springs in the left and right transfer roll bearings. The bearing assemblies should support the transfer roll, applying even pressure to the PC drum. The roll should rotate evenly and smoothly. Replace both the transfer roll bearing assemblies if the springs or bearings indicate damage or lack of proper function. Inspect the transfer roll for signs of wear or damage and replace as necessary.

USB service check

FRU	Action
USB cable	1. Try a different USB cable. If changing the cable does not fix the problem, proceed with step 2. 2. With the MFP attached to the computer, run the USB view utility. • If the USB view utility indicates that the MFP is attached and communicating with the PC (bMaxPacketSize0>0), there may be a problem with the PC. • If the USB port is faulty, the utility shows the bMaxPacketSize0 at 0, and the connection status variable shows Device failed enumeration. Replace the RIP card as necessary.

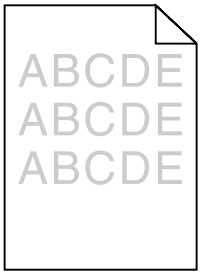
Solving print quality problems

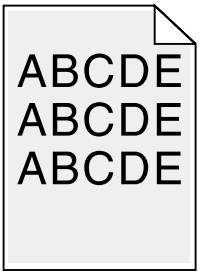
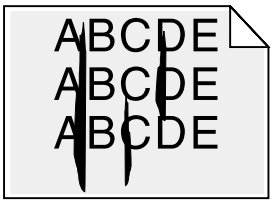
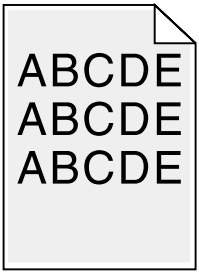
Using print quality test pages

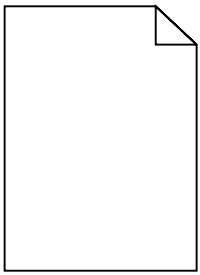
To help isolate print quality problems, like streaking, print test pages using the print quality test pages setting:

1. Enter the special function menu. See **“Entering the diagnostics menu” on page 3-1** for more information.
2. Scroll to the print tests menu item and press **Select**.
3. Scroll to the print quality test, and press **Select**.

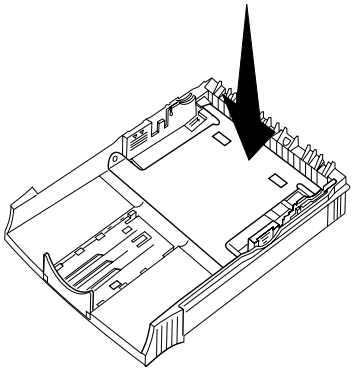
   Three pages print to help you evaluate print quality. The first page is the print quality test page, the second page is gray, and the third page is black. Once the paper exits into the output bin, the MFP returns to the print quality test menu item. Exit diagnostics to return to the **Ready** state.
4. Use the test pages to isolate problems such as print too light, toner streaks, and so on. See the Troubleshooting tables in the *User’s Reference* for solutions to these problems.
5. To return the MFP online, POR the printer.

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. • Make sure you are using recommended print media (see media types and sizes in the *User’s Reference*.) • Use MarkVision™ to define the custom type setting for media type, media texture, or media weight. • The print cartridge may be defective. Replace it.

Problem	Action
Toner smudges appear on the front or back of the page. 	• Make sure the paper is straight and unwrinkled. • Check for loose toner in the printer. • Clean the printer. • If the problem persists, replace the cartridge.
Vertical or horizontal streaks appear on the page. 	• Replace the print cartridge.
Toner smears or rubs off the page. 	• 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 MFP driver. • Change the media texture setting. You can download the latest driver from the Lexmark Web site, www.lexmark.com.
The print is getting light but the display is not indicating toner low.	• Remove the print cartridge and gently shake it from side to side to redistribute the toner. • Replace the print cartridge.

Problem	Action
The display indicates **Toner Low** attendance message.	• 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.
Faint images or repetitive spots appear on the page.	• Select a different media type or form type setting from your MFP 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 MFP off and back on. • Check the photoconductor circuit for continuity. • Check the printhead.
The operator panel lights do not come on when the MFP is turned on.	• The lights may take a few seconds to come on. • Make sure the power cord is firmly plugged in at the back of the MFP and at the electrical outlet.
The top cover does not close.	Make sure the print cartridge is positioned correctly.

Problem	Action
The MFP is on, but nothing prints.	• Make sure the print cartridge is installed properly. • Make sure the network or USB cable is firmly plugged into the connector on the back of the printer. • POR the machine, enter diagnostic mode and perform a print test to determine whether the problem is with the MFP 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, the problem is in the printer. If printing from the network, perform the network printing service check.
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 Reference*). • Make sure the paper guides are flush against the edges of the media.
The paper sticks together/MFP 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 Reference*).
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 MFP driver. • Do not overfill the tray.

Problem	Action
The paper fails to feed from the optional tray 2.	• Make sure the optional tray 2 is selected from the MFP driver. • Remove the paper from the optional tray 2 and fan the paper. • 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 Reference*).
The display indicates Tray 2 even though there is paper loaded in the optional tray 2.	• Make sure the tray is pushed all the way in. • Press **Select**.
The MFP does not print after a paper jam has been cleared.	• Press **Select** or open and close the MFP cover to restart the printer. • Make sure the print cartridge is installed properly.

Problem	Action
Unexpected characters print or characters are missing.	• Make sure you are using the correct MFP driver. • Select hex trace mode to determine what the problem is. See **“Hex Trace mode” on page 3-13** for more information. • Restore factory defaults. See **“Factory defaults” on page 3-4** for more information. • Make sure the network cable or USB cable is firmly plugged in at the back of the printer.

3. Diagnostic aids

Menu descriptions

The Configuration Menu contains menus, settings and operations. These menus are used to configure a MFP for operation. This menu is accessed via a POR sequence.

The Diagnostics Menu contains settings and operations used while manufacturing the printer. This menu is accessed via a POR sequence. See **“Configuration and Diagnostic Menu” on page 3-2** for more information.

Entering the diagnostics menu

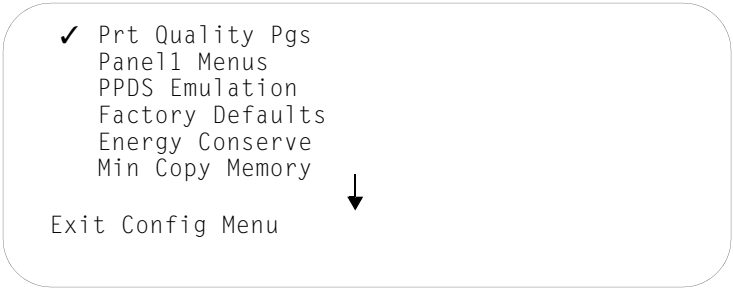
1. Press **Start**, **Stop,** and **Clear** buttons and start the MFP.
2. Hold the buttons down until “Performing Self Test” is displayed on the LCD.
3. Release the buttons, and “Registration” is displayed.

Entering the configuration menu

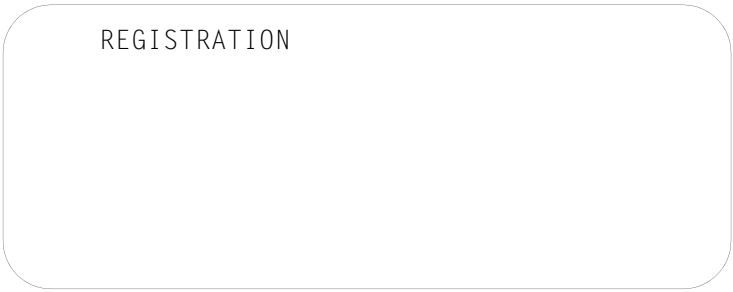
1. Press **Start** and **Stop** buttons and start the MFP.
2. Hold the buttons down until “Performing Self Test” is displayed on the LCD.
3. Release the buttons, and “Configuration Menu” is displayed.

Configuration and Diagnostic Menu

When the Configuration Menu is accessed, the following screen is displayed:



When the diagnostic menu is successfully accessed, the REGISTRATION menu appears as default.



Moving around the menus

Configuration menu

To scroll around the configuration menu, use the up and down navigation keys on the operator panel.

To select an item on the menu, scroll to the item, and press the **Select** button.

Note: A check mark to the left of the menu item indicates it is active.

After a menu item has been selected, use the right and left navigation keys to toggle between selections. To select an item, scroll to the item, and press **Select**.

To exit the configuration menu, scroll to the bottom until the Exit Configuration Menu box is highlighted with a solid black line. Press **Select**. The machine performs a POR.

Diagnostic menu

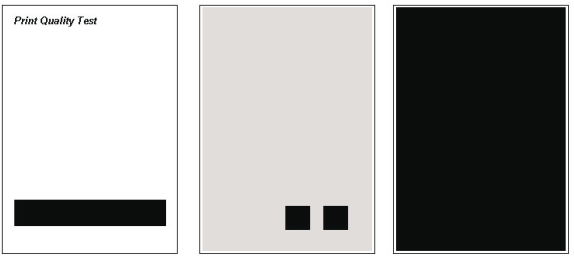
To navigate menu items in the diagnostic menu, use the left and right navigation keys on the operator panel. Press the **Select** button for the desired menu item. A submenu is presented with more choices. Use the left and right navigation keys to navigate the submenu.

To exit a submenu, press the up navigation key.

To exit diagnostics, use the up navigation key to scroll to the top level of the diagnostics menu. Use the right navigation key to scroll to EXIT DIAGNOSTICS. Press **Select**. The machine performs a POR.

Configuration Menu Settings

The Print Quality Pages menu is used to check print quality. Three test pages are presented for inspecting print quality.



Panel Menus

The Configuration menu is used to change MFP settings. It enables or disables user access to the panel menus. Disabling Panel Menus keeps users from altering settings via the operator panel. This panel is used by the administrator.

PPDS emulation

The Configuration menu activates and deactivates PPDS emulation.

Factory defaults

Sets the MFP parameters to the factory settings.

To restore factory defaults:

1. POR the machine into Configuration Mode. See **“Entering the configuration menu” on page 3-1** for more information.
2. Use the down navigation button to scroll to the RESTORE FACTORY DEFAULTS item on the menu.
3. Press **Select**. The machine performs a POR.
4. The RESTORE FACTORY DEFAULTS sets the MFP non critical parameters back to the factory settings.

   Note: Some settings are not affected: panel language, energy conserve, paper prompts, registration margins, and page count.

Energy conserve

Adjusts the settings on the power saver menu.

Minimum copy memory

Selects the minimum amount of memory to allocate for copy jobs.

Note: The memory available is always less than or equal to the amount of installed memory.

Format fax flash

Formats flash memory for fax jobs.

Paper prompts

Sets the source to feed paper for media and sizes not already assigned to input sources.

Note: Choices are: auto, multipurpose feeder, and manual paper.

- Auto mode, the source defaults to where the print job is allocated to.

  Note: Default media type & size is changed to the specific job media type & size once prompted to load media.

- Multipurpose feeder mode, the user is prompted to load media in the feeder.

  Note: Default media type & size is changed to the specific job media type & size once prompted to load media.

- Manual paper mode, the user is prompted to load media in the feeder.

Envelope prompts

Same as paper prompts, but applies only to envelopes.

Print error log

Printed error log.

Note:

- Debug and secondary 900 error codes are included in the error log report available in the Diagnostic Mode.
- Debug and secondary 900 error codes are not included in this error log printout (since the configuration mode may be accessed by an end user).

Diagnostic mode menu settings

Registration

Sets the top, bottom, left and right registration margins for the print engine. The numeric value for each setting is measured in 1/600th of an inch. The MFP registration process is described in Chapter 4. See **“Printhead registration adjustment” on page 4-4** for more information.

Print tests

Performed to verify the MFP can print from each of the installed print sources. Print Quality pages can also be printed when using this test.

Scanner tests

Includes the following tests and functions:

Calibration - Performs a baseline gray scale calibration of the CCD assembly within the scanner. This function is performed automatically upon exit of Diagnostic Mode at next POR. No insertion of paper is required as the calibration uses a white reference strip inside of the scanner housing.

Registration - Performs scanner margin adjustments for ADF and flatbed. Registration can be adjusted automatically or manually. Manual mode is somewhat difficult; automatic mode is recommended. Automatic mode finds the top and left edge of paper from a sample scan and calculates right and bottom margins settings. A special sheet of colored paper is required for successful registration of the ADF. This special media is available as a FRU as well as included with FRUs requiring registration adjustment upon replacement. The scanner registration process is described in Chapter 4. See **“Scanner registration” on page 4-5** for more information.

Feed Tests - Verifies the ADF feeds paper and measures the page length for specific paper sizes. This test is also used to scan the entire length of the flatbed.

> **Note:** By indicating paper size, paper length should be within a specific range (which is used for determining paper jams when out of range).

While performing the feed test:

- When paper is detected in the ADF, the paper is fed through the ADF for the ADF portion of the feed test.
- When paper is not detected in the ADF, the flatbed CCD carriage traverses the entire length of the flatbed repeatedly.

Pressing **Select** or **Stop** cancels the feed test.

Note: The number of pages through the flatbed and ADF that passed or failed is displayed at the end of the test.

Sensor test

Allows manual inspection of the following sensors:

- ADF paper present sensor
- ADF paper path sensor
- ADF cover open sensor
- Flatbed cover open sensor
- CCD home position sensor

ASIC test

Checks the scanner ASIC memory.

Hardware Tests

Panel test

Performs a series of LCD and button tests on the operator panel.

DRAM test

Checks the DRAM memory (both soldered down and optional DRAM).

Duplex tests

Duplex quick test

Checks that the back side duplex top margin setting is correct. A duplexed version of the quick test page is printed (the back side can be used in adjusting the duplex top margin).

Duplex top margin

Allows adjustment of the back side top margin.

Input tray test

Observes the paper path while media is fed through from various input sources.

Notes:

- The lower front door can be opened during this test to observe the paper path.
- The upper front door cannot be opened during this test as it supports the charge roll.

Base sensor tests

Checks the following sensors:

- Toner optical sensor
- Input
- Output
- Narrow media
- Upper front door open
- Tray 1 sensor (only displayed if Tray 2 option is installed)
- MP feeder paper present sensor
- Bin full sensor

To perform the base sensor test:

1. Enter diagnostics mode. See **“Entering the diagnostics menu” on page 3-1** for more information.
2. Scroll to base sensor test.
3. Press **Select**.
4. Scroll to the desired sensor for testing.
5. Press **Select**.
6. Open and close the circuit by moving the actuator for each sensor.

   Note: For the toner sensor, use a thin object (thin blade screwdriver, piece of paper) to close the sensors light path.

   When the sensor is selected from the menu, CL or OP will be the two indicators of the sensors state. A defective sensor is unable to switch between the two states.
7. After completing the test, press the up navigation button twice and use the right navigation button to scroll to the EXIT diagnostics menu item.
8. Press **Select**.
9. The machine performs a POR.

Note: If a sensor is defective, and replacing it does not fix the problem, the RIP card or SCU card could be defective. See **“RIP card service check” on page 2-46** and/or **“Scanner/copier service check” on page 2-47** for more information.

MFP Setup

Defaults

Allows the defaults set at the factory to be selected from either the U.S. set or non-U.S. set.

Print menus

Prints a diagnostic menus page.

Page count

Displays the page count which can be reset by an SE.

Perm page count

Displays the permanent page count and cannot be reset.

Configuration ID

Displays the configuration ID. Press **Select** to activate, use the left and right navigation keys to increase or decrease the numbers. When the desired number is reached, press **Select** to advance to the next digit. Repeat for each digit. After all digits are set, the machine performs a POR.

U.S.	0x000303
EMEA	0x100304

Note: The configuration ID is also in this menu.

Model name

Displays the model name.

Modem type

Setting for various modem types. There are two values that can be chosen based on the installed RIP card.

U.S. card

- USA / Canada
- Czech Republic
- Japan
- Rest of World

Non U.S. card

- Europe
- Australia
- New Zealand
- South Africa

Error log

Prints an error log that contains 900 error code information, and debugging information.

SE Menu

The X422 utilizes an SE menu used for diagnosing.

Note: DO NOT CHANGE ANY SETTINGS IN THIS MENU WITHOUT CONSULTING THE TECHNICAL SUPPORT CENTER FIRST. Changing some of the settings could render the MFP unusable.

The menu is accessed by pressing **411 while in operating mode. Menu items are accessed by pressing the menu items number.

There are four options that can be viewed in the SE menu.

1. Code Levels

   Shows the SE the firmware files installed. This can be useful in diagnosing a problem with the Support Center. The files installed are displayed as follows:
   - Base
   - Kernel
   - Engine
   - Loader
   - Network
   - Fax
2. Agency Test Menu

   Not to be altered in the field.
3. Fax Settings
   - V.34 Mode - enables or disables the use of this transmission protocol.
   - Detect end of line sensing (EOLS) - sets the EOLS sensing capability.
   - Dial Mode - enables or disables tone or pulse dialing.
   - Send Memory - sets the amount of memory that can be used when sending a fax.
   - Receive Memory - sets the amount of memory that can be set aside for receiving a fax.
   - Memory use setting - enables or disables the use of the memory settings above.
   - Print T.30 Log. - prints a log of fax transmissions. Can be used for debugging a session.

4. Modem Settings
   - Dial Timeout - used to determine the amount of time before disconnecting, if the fax on the receiving end is not functioning.
   - Transmit Level - sets the transmission signal level on the modem.
   - Receive Threshold - used to determine what is a valid transmission.

Hex Trace mode

The MFP can be set to hex trace to perform troubleshooting tasks. To enter hex trace mode:

1. Press the administration button on the operator panel.
2. When the menu appears, select the default menus item.
3. From the default menu item, select the MFP settings menu.
4. In the MFP settings menu, select **Utilities**.
5. In the Utilities menu select **Hex Trace**.
6. Hex trace is indicated on the home screen.

To exit hex trace mode, POR the machine.

Flashing firmware

Note: Only perform firmware flashing when told to do so by Technical Support.

Flash file types - Basic packages available to flash a machine.

The packages in the files:

- Kernel - kernel for the printer.
- Page4 - applications for MFP functions
- Copy - applications for MFP copy functions
- Scan - applications for MFP scan to host functions
- Network - applications and drivers for network functions
- Fax - applications for MFP fax functions
- Engine - engine firmware
- SCU - scanner control unit firmware

DLE - applications for downloadable emulator functions (IPDS, IQ - ImageQuick™, BC - Bar Code)

Which files contain which packages:

- Fullnet.fls - kernel, page4, copy, scan, network, fax
- Updbase.fls - page4, copy, scan
- Updnet.fls - kernel, network, fax
- Updeng.fls - engine
- Updscan.fls - SCU

System shutdown for flashing or other soft resets

When a flash file is received (or other soft resets occur), the various subsystems shut down as follows:

- All pages stored in the printers memory that are queued for printing must be printed before the flash operation can begin.
- If a scanner job is active, the Scan subsystem flushes all pages from the ADF.
- If a fax is active, the Fax subsystem hangs up the phone immediately. Pages that have been acknowledged as being received will be restored from NAND flash and printed after the next POR.
- If a Scan-to-Network/Scan-to-USB operation is active, the connection is closed immediately.

Flashing sequence

Once the system has terminated all activities, previous described, the following flash sequence begins:

1. The panel will display progress as the flash data is read over one of the host interfaces.
2. After a data segment is read in, a CRC is computed. The success or failure of that CRC is posted on the panel.
   – If the CRC fails, the device automatically reboots after a few seconds.
3. Steps 1 and 2 are repeated for each segment of data in the flash file. (There are generally two.)
4. After all data is read into memory (assuming no errors have occurred), the Flash Kernel takes over control, and all other applications are no longer able to execute.
5. The Flash Kernel operates the panel in text mode to display progress as the NAND Flash is programmed.

   Note: The "DO NOT POWER OFF" message (translated) should remain intact on the bottom half of the panel.

6. Once all partitions have been programmed, the device automatically reboots.

Ways to flash the machine

Using FTP

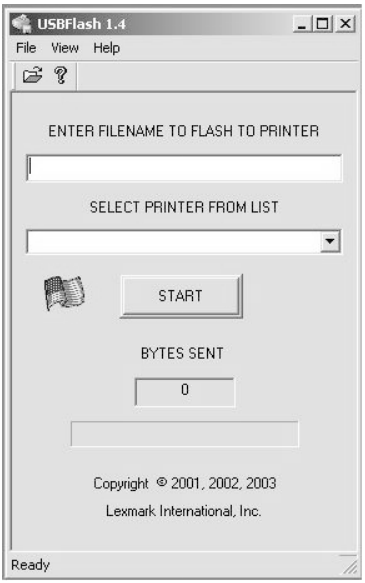
1. Boot the MFP into normal operating mode.
2. Get IP address to machine by going into the printers administration menu and selecting **TCP/IP**.
3. FTP to the MFP using a FTP client.
4. Place the first file on the machine by issuing a put command. The machine goes through the flash sequence.
5. After the machine reboots, repeat steps 2 and 3 as needed.

Using the Web server on the printer

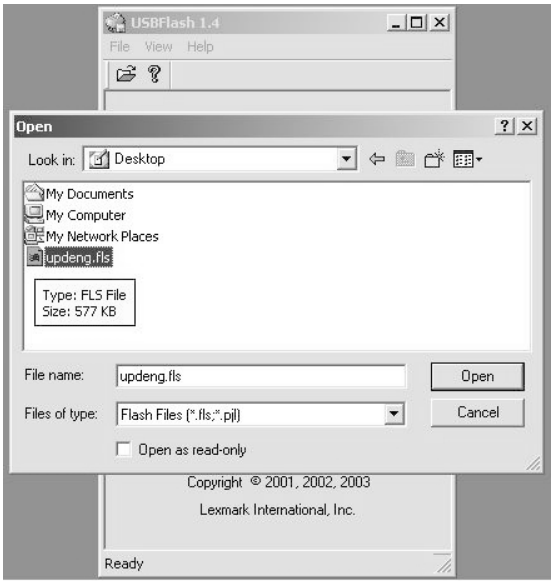
1. When the firmware files are where you can access them from a PC, open a Web browser and point it to the MFP IP address.
2. Press the configuration button on the Web page.
3. Press the update code link under other settings.
4. When the security warning pops up, press **Yes**.
5. In the Java applet that opens up, browse to the file you want to use to flash the printer.
6. Press the **Flash** button. The machine goes through the flash sequence and reboots.
7. Repeat the process as needed with other files.

USB

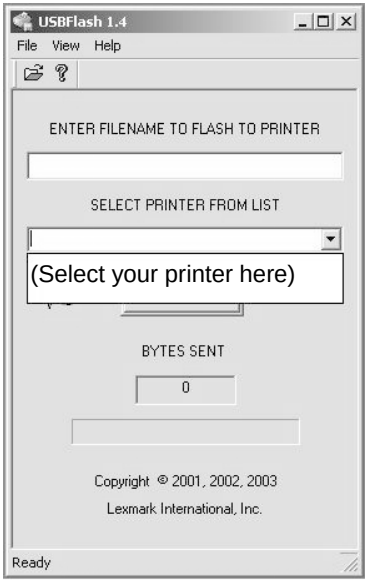
1. Open the USB Utility.



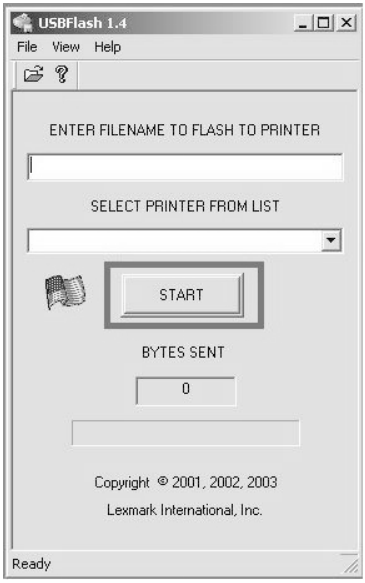
2. Browse for flash file.



3. Select the MFP from the list of printers installed on the computer. **Note**: The X422 must be installed via USB on the computer you are performing the firmware flash procedure.



4. Press **Start**.



5. Repeat the process for all the files needing to be updated.

4. Repair information

Warning: Read the following before handling electronic parts.

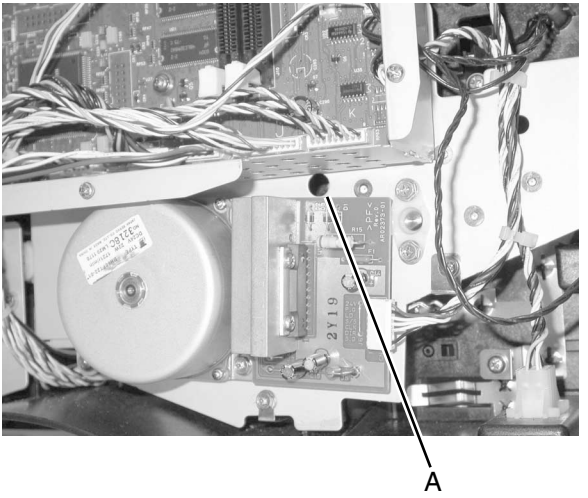
Handling ESD-sensitive parts

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 cards:

- 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 MFP 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.

Adjustments

Paper feed adjustment

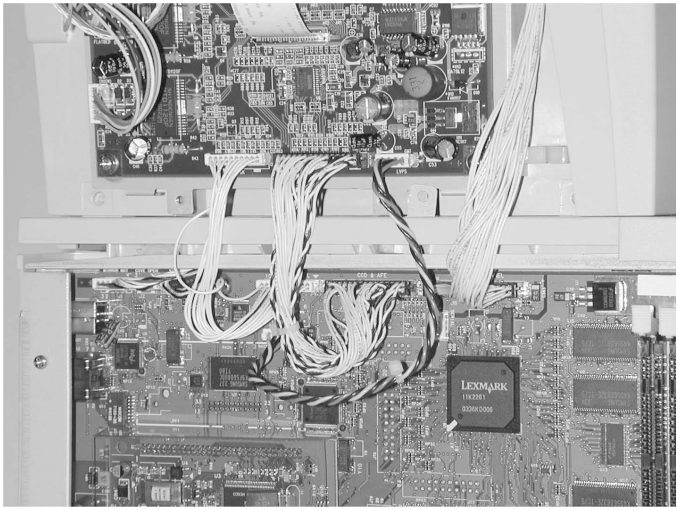


When a reference plate (reference edge) assembly is removed, it requires alignment. Use a long shank (6–inch) Phillips screwdriver to adjust the rear screw holding the assembly in place. It is accessed through the hole in the main drive assembly **[A]**, located between the RIP card cage and the main motor PCB. Adjust the screw counterclockwise which rotates paper counterclockwise in the MFP path (image clockwise) and vice versa.

Printhead alignment adjustment

Note: Whenever the printhead is removed or if a new printhead is installed, this procedure must be performed.

1. Install printhead into MFP and snug screws just enough to hold printhead to frame. Screws do not need to be tight as screws may be loosened to make printhead position adjustments.
2. Replace the top cover, and the scanner unit. Do not permanently fasten the top cover and scanner unit to the MFP frame. Replace cables as shown.



3. Power on the MFP in diagnostics mode. See **“Entering the diagnostics menu” on page 3-1** for more information.
4. Select the Registration menu and press the **Start** button to print the Quick Test pages.
5. Shutdown the printer.
6. Remove the scanner unit, and the top cover assembly. See **“Top cover assembly removal” on page 4-17** for more information. Do not remove top cover completely.
7. Inspect the Quick Test page.
   – If the alignment is satisfactory, tighten the printhead screws and proceed to next step.
   – If the alignment is not satisfactory, loosen the screws and adjust the printhead as needed. Slightly tighten the screws again and repeat steps 2 through 7.
8. Tighten the screws on the printhead.
9. Reassemble entire unit in reverse order of disassembly.

Printhead registration adjustment

1. Power on the MFP in diagnostics mode. See **“Entering the diagnostics menu” on page 3-1** for more information.
2. Select Registration by pressing the **Select** button on the operator panel.

   Registration is the default item appearing on the diagnostics menu.

   The registration screen appears. There are four items.
   - T = xxx, the setting for the top margin,
   - B = xxx, the setting for the bottom margin.
   - L = xxx, the setting for the left margin.
   - R = xxx the setting for the right margin.

   This is the sequence in which they are adjusted.
3. Starting with the top margin setting, use the left or right navigation keys to adjust the setting up or down.

   Registration is adjusted 1/600 of an inch each time the left or right navigation key is pressed.
4. When the desired setting is reached, press the **Select** button.

   Pressing **Select** advances to the next margin setting. Repeat step 3 for the bottom, left, and right margins.
5. Press the **Start** button to verify the margin settings by printing a quick test page.

   Printing a quick test page saves the new margin settings. After the quick test page is printed, the registration screen is displayed.
6. Exit diagnostics mode.

   The MFP restarts in operating mode.

Scanner calibration

Select **Calibration** from the scanner tests in the diagnostics menu. See **“Diagnostic mode menu settings” on page 3-6** for more information. After diagnostics is exited, the calibration test is performed automatically on the next MFP POR.

Perform the scanner calibration when:

- The ADF assembly, CCD, RIP card or SCU card is replaced.
- NVRAM is reset.
- The operator panel is replaced.

Scanner registration

Automatic registration

Note: Before performing scanner registration, ensure MFP registration and alignment is properly set. See **“Printhead alignment adjustment” on page 4-2** and **“Printhead registration adjustment” on page 4-4** for more information.

1. Place a white piece of paper (A4 or letter) on the flatbed.
2. Place a colored piece of paper in the ADF, making sure the edge guides are properly adjusted.

   Note: Use a light blue sheet of paper for the ADF registration. Product Assurance obtained the best results using Cascade MP Colors Blue 20 lb. paper (Boise Cascade part P1-MP-2201-BE). A moderate density blue paper should work if this paper cannot be found.
3. Select **Registration** from the scanner tests menu in the diagnostics menu.
4. Select **Auto Detect**.
5. Specify the size of the colored paper, in the ADF.
6. The machine performs a POR.
7. When the machine completes POR, the test runs, the display indicates the test is active.
8. After the registration test is complete, success or failure is indicated on the display.
9. Verify the results by running a copy of a quick test page created during MFP registration. See **“Print tests” on page 3-6** for more information.

Manual registration

Note: Manual registration should be performed only after automatic registration is performed. The primary purpose of manual registration is to fine-tune the automatic adjustments already made.

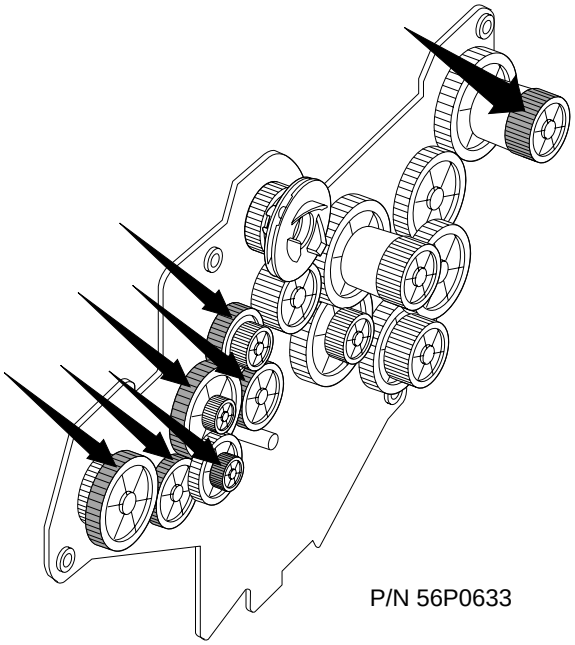
1. Select **Manual** from the scanner registration menu.
2. Scroll through the four margins and adjust the desired margin(s).

   Note: Adjust the margin by pressing the left and right navigation buttons.

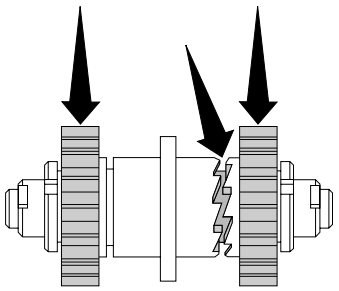
3. Press the **Select** button.
4. A scan copy of the last MFP registration must be run to verify the settings.

Lubrication

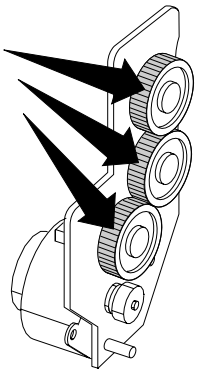
Several FRUs must be lubricated when installed. The following diagrams indicate which units and where to place the lubricant. Place a drop size or less at each location and then rotate the gears or mechanism to evenly distribute the lubricant. Use Nyogel 744 (P/N 99A0394) or IBM 23 (P/N 99A0462).



P/N 56P0633



P/N 56P0637



P/N 56P0635
P/N 56P0636

Reassembly

Ensure all cables are reconnected when reassembling the printer. The MFP may not detect a disconnected sensor in some areas without extensive running. For example, the “tray full” sensor has a connector in the left cover and has to be disconnected to remove the rear cover. The tray would have to be full for the sensor to function. The sensor is also required for duplexing.

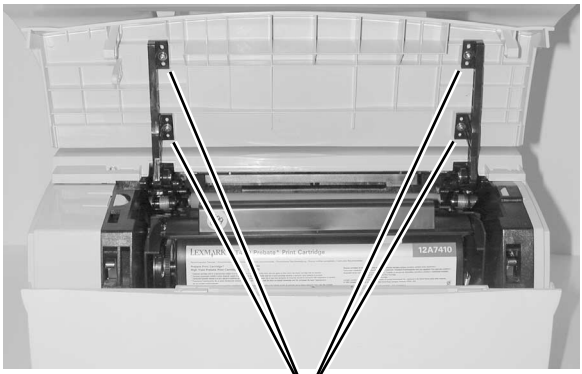
Removal procedures

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

MFP cover removals

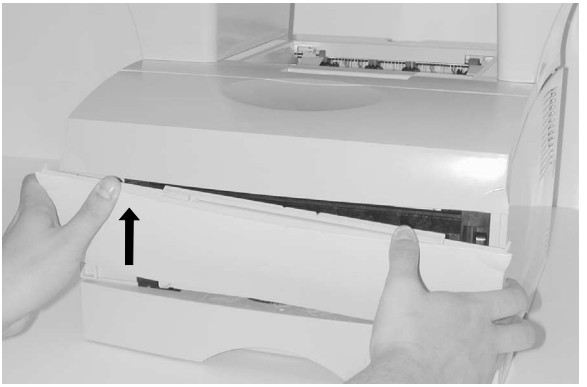
Front cover removal

1. Open the front cover.
2. Remove the four screws **[A]**.
3. Remove the front cover.



Lower front cover (multipurpose feeder cover) removal

1. Open the front cover.
2. Open the MPF front cover to where the latches are clear (about 15°).
3. Lift the left side of the cover to release it from the hinge.

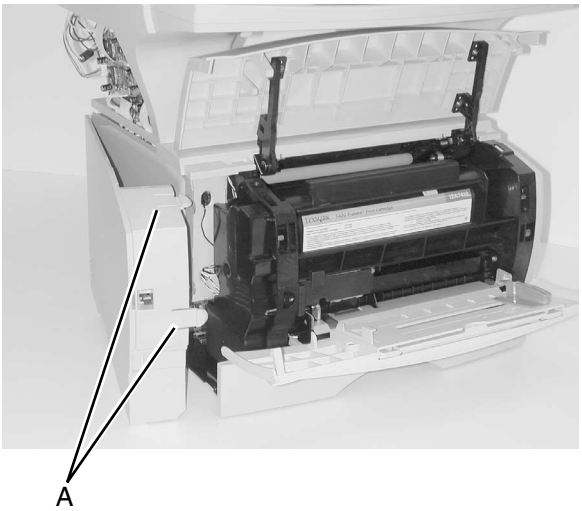


4. Remove the lower front cover.

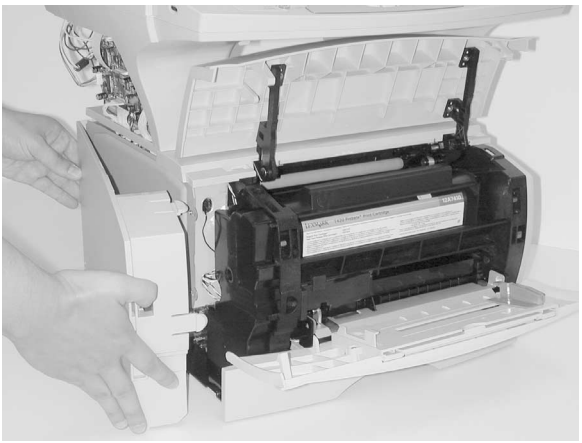
Side cover removals

Left side cover removal

1. Open the front cover and the MPF cover.
2. Disengage the two latches (located in the front and top) **[A]**.



3. Swing the left side cover away from the printer.



Note: With only the left side cover removed, the following items can also now be removed and replaced:

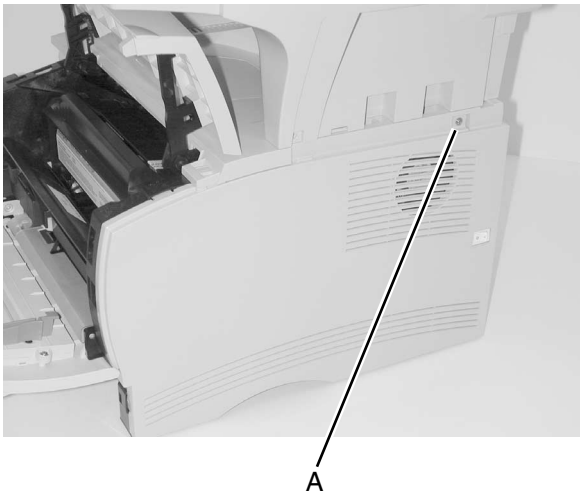
- MPF gear–see **“Multipurpose feeder (MPF)” on page 7-4** for more information.
- Toner level sensor–see **“Electronics and cables” on page 7-8** for more information.
- Motor with PWB–see **“Paper feed” on page 7-14** for more information.
- Door latches–see **“Frame” on page 7-16** for more information.
- Paper feed solenoid–see **“Electronics and cables” on page 7-8** for more information.
- RIP card cage cover–see **“Electronics and cables” on page 7-8** for more information.
  - Memory–see **“Options” on page 7-22** for more information.
  - Connector cable for second drawer option–see **“Electronics and cables” on page 7-8** for more information.
  - RIP card PCB–see **“Electronics and cables” on page 7-8** for more information.

Right side cover removal

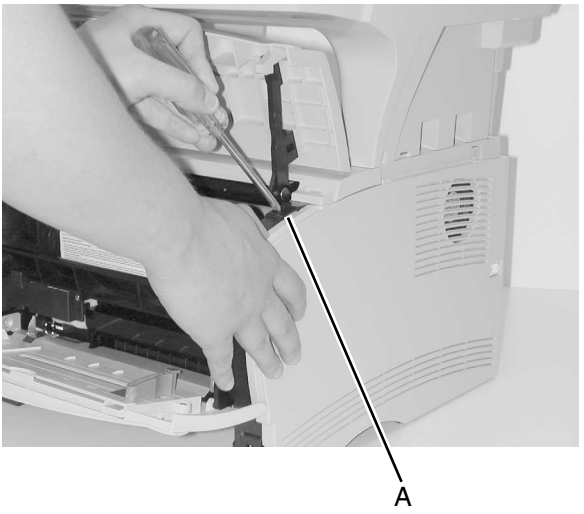
1.Remove the paper tray.

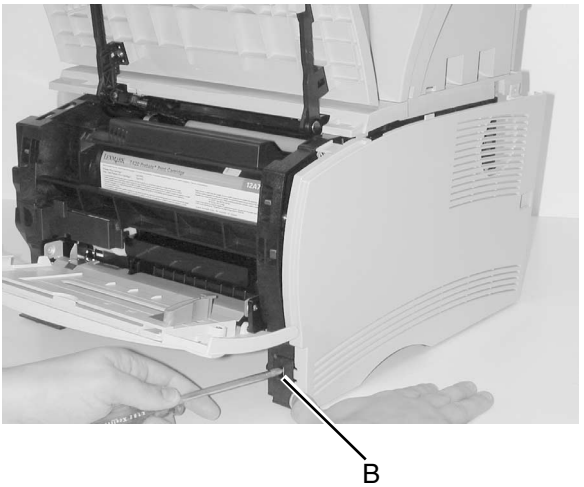
2.Remove the right scanner pedestal cover. See **“Scanner right ADF cover removal” on page 4-71** for more information.

3. Open the MPF.
4. Remove one screw **[A]**.



5. While pulling out on the top of the right side cover, use your left hand to release the two latches (top front **[A]** and lower front **[B]**).



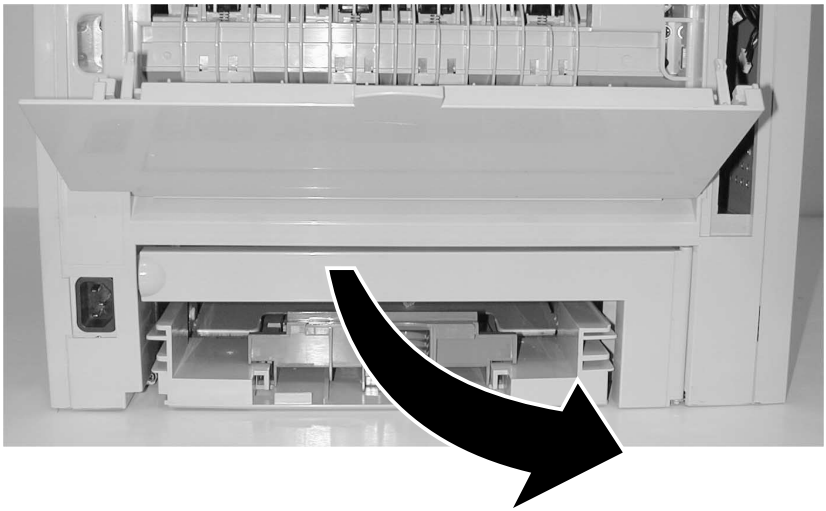


Note: The MPF door may need to be lifted slightly for the side cover to clear.

6. Release the top rear latch, if necessary.
   Swing the cover out and lift it from the base.

Rear cover removal

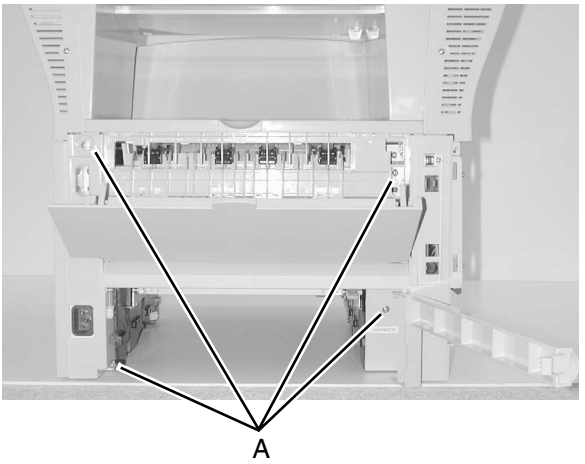
1. Remove the paper tray.
2. Remove the right side cover. See **“Right side cover removal” on page 4-13** for more information.
3. Remove the left side cover. See **“Left side cover removal” on page 4-11** for more information.
4. Open the paper tray trim.



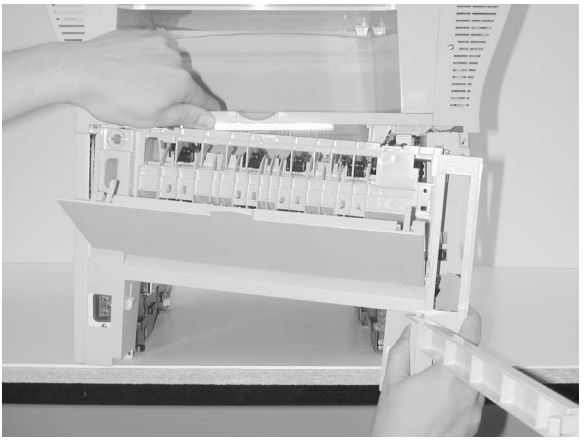
5. Open the exit tray (rear door).
6. Disconnect the sensor cable (inline connector) below the lower left corner of the RIP card.

   Note: Replug the sensor cable on reassembly. The MFP fails to detect “tray full” and won’t duplex properly without this connection.

7. Remove the four screws **[A]**.



8. For better leverage, move the machine to the edge of the table. Lift the top cover slightly with one hand while pulling out on the rear cover.



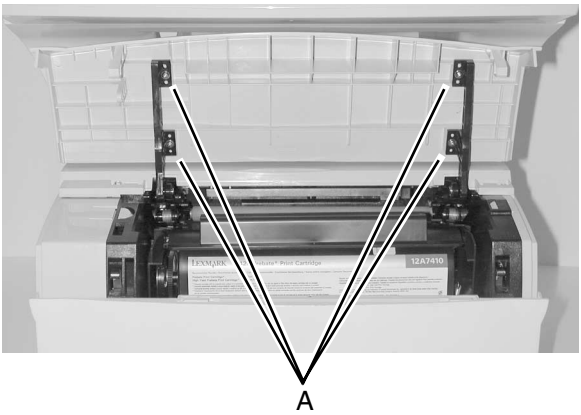
Note: When reinstalling the rear cover, be sure to position the fuser exit guide fingers such that they are not bound by the rear cover. If a bind occurs, a jam occurs.

Top cover assembly removal

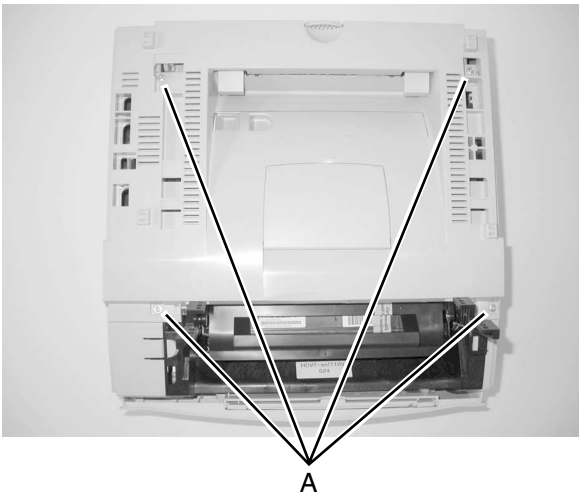
1.Remove the scanner. See **“Scanner assembly removal” on page 4-79** for more information.

2.Remove the print cartridge.

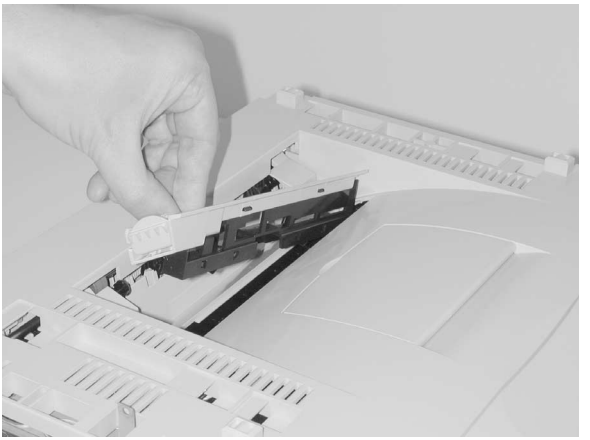
3.Remove the four (4) screws in top cover **[A]**



4. Remove the four screws.



5. Remove the duct assembly in the top cover.

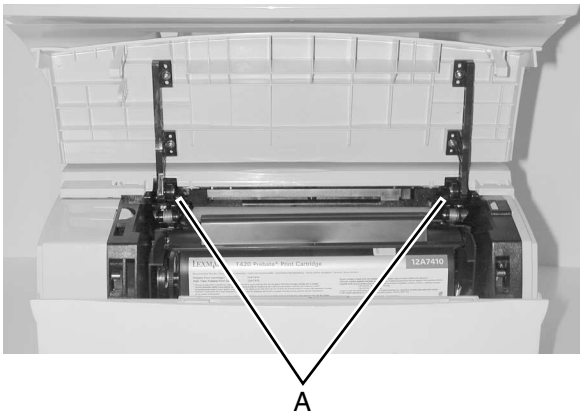


6. Carefully, lift the rear edge of the top cover to clear the exit flags and rotate the front cover hinge until the cover is in a vertical position.

To completely remove the top cover:

7.Open the front cover.

8.Remove the E–clips from both hinges that connect the charge roller and top cover **[A]**.



9. Remove the stud hinges.
10. Remove the top.

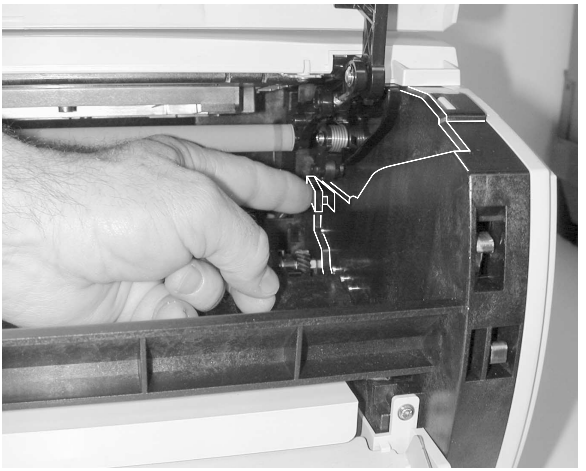
    The front cover remains attached to the top cover.

3–pin and 2–pin connectors removal

1. Remove the RIP card cage. See **“RIP card cage (with card in place) removal” on page 4-58** for more information.
2. Remove the rear cover. See **“Rear cover removal” on page 4-15** for more information.
3. Unplug the wires on both sides of the connectors.
4. Unsnap connectors and remove to the left side.

Bracket, opener shutter removal

1. Remove the HVPS. See **“HVPS card removal” on page 4-39** for more information.
2. Remove the print cartridge.
3. Unsnap the latches from the frame.



4. Remove the opener shutter bracket.

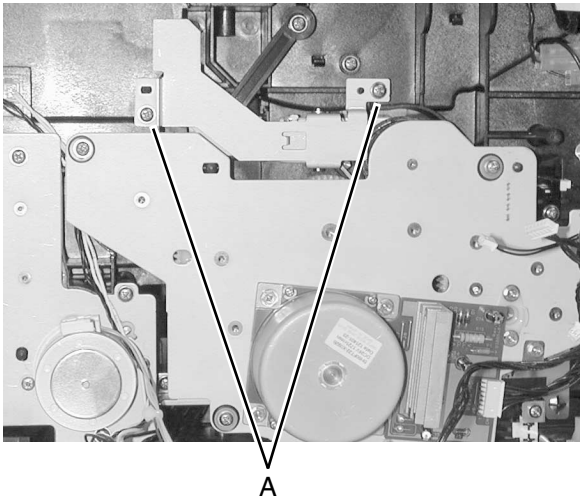
   Note: The bracket can be removed (with possible latch breakage) by wedging a screwdriver or similar tool between the bracket and the frame.

Bracket, paper detect (input sensor) removal

1. Remove the print cartridge to expose latches in the bracket. Leave the door open.
2. Remove the duplex tray assembly. See **“Duplex tray assembly removal” on page 4-29** for more information.
3. Disconnect the cable to the sensor or remove the sensor and cable together.
4. Unlatch the bracket by pushing from inside the MFP and pulling from the duplex side.

Cartridge coupling assembly removal

1. Remove the print cartridge.
2. Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information.
3. Remove the left cover. See **“Left side cover removal” on page 4-11** for more information.
4. Remove the RIP card cage. See **“RIP card cage (with card in place) removal” on page 4-58** for more information.
5. Remove the two screws **[A]**.

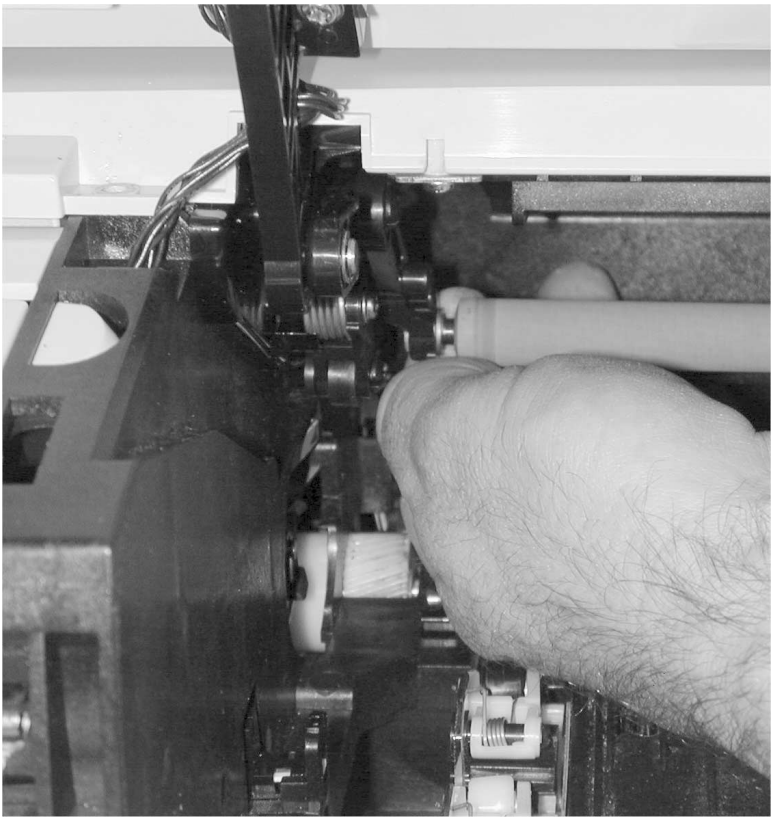


6. Remove the bracket.

   Note: The print cartridge coupling may need to be compressed during removal.

Charge roll removal

1. Open the front cover and remove the print cartridge.
2. Grasp the charge roll on the left end, and push the bearing and roll away from each other.

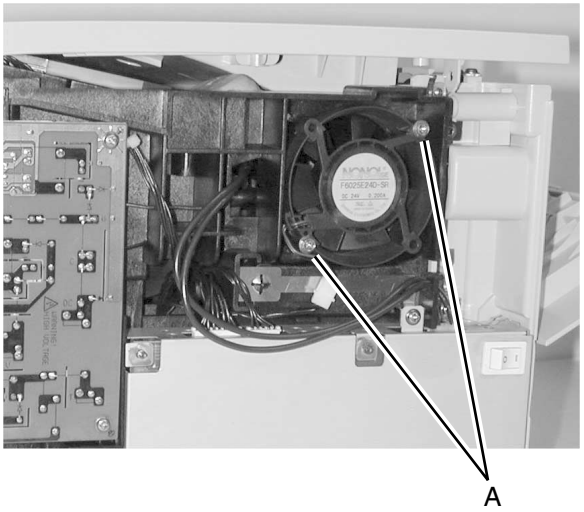


Warning: Handle the charge roll with clean dry hands and **only** at the ends.

3. After the left side is removed from the bearing, slide the roll from the right side bearing.

Cooling fan removal

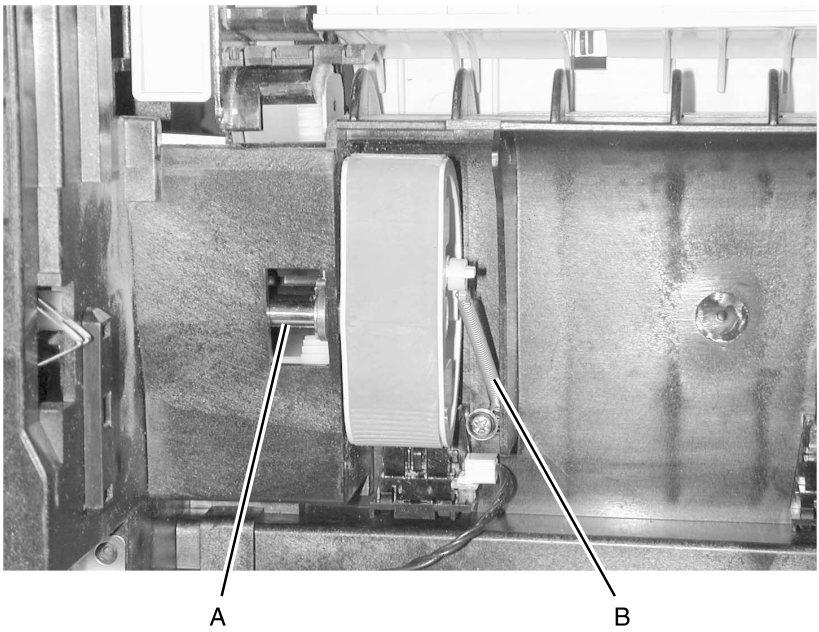
1. Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information.
2. Remove the right side cover. See **“Right side cover removal” on page 4-13** for more information.
3. Disconnect the fan cable.
4. Remove the two screws **[A]**.



5. Remove the fan.

D–roll tray 1 feed removal

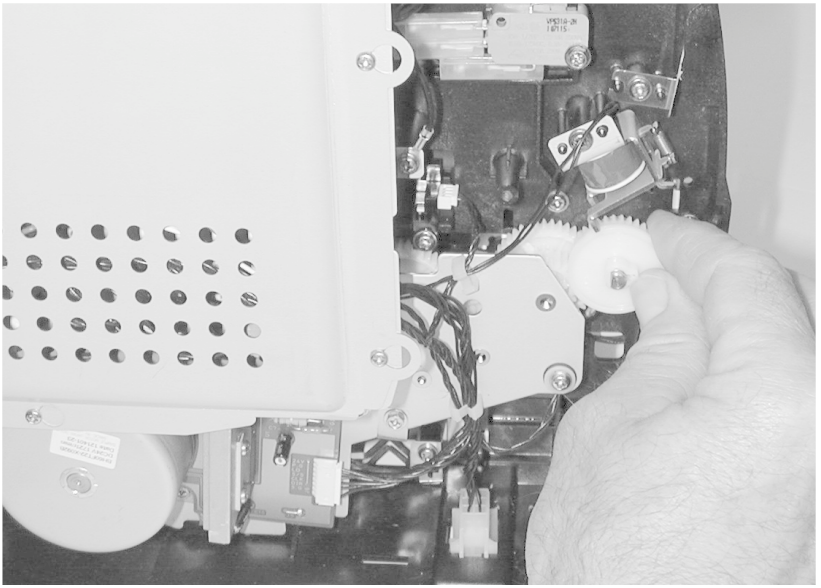
1. Remove the left cover and inner cover for the MPF gearing. See **“Left side cover removal” on page 4-11** for more information.
2. Remove the duplex tray. See **“Duplex tray assembly removal” on page 4-29** for more information.
3. Disconnect extension spring **[A]** from the D–roll.



4. Release the latch on the paper feed solenoid. It is located behind the lower right corner of the main drive assembly.
5. Rotate the main drive motor counterclockwise until the D–roll clears the adjacent rib.
6. Using a slotted screwdriver as a wedge between the D–roll and bearing wall, force the D–roll to unsnap from the shaft.
7. Slide the D–roll off the tray 1 feed shaft **[B]**.

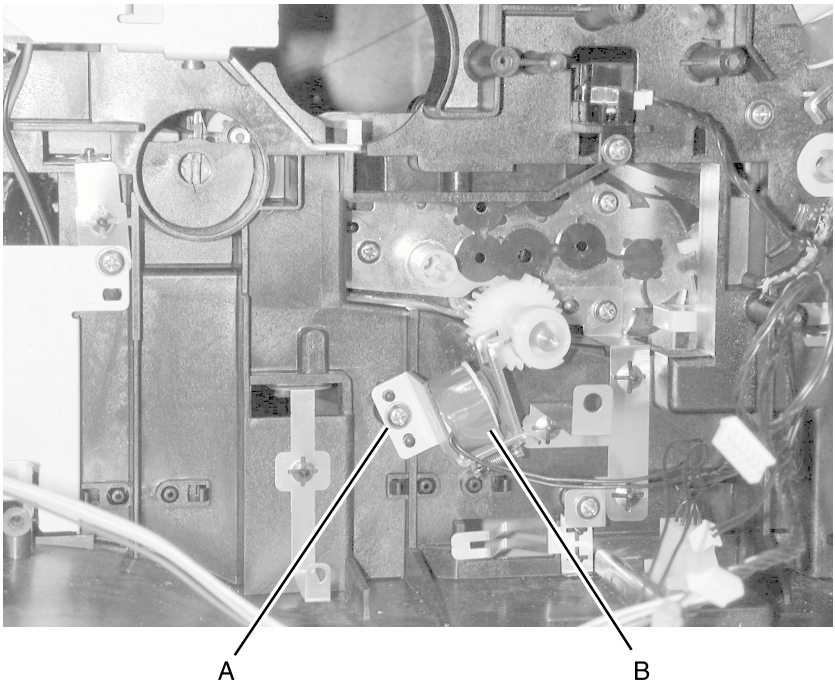
D–roll (tray 1) shaft assembly removal

1. Remove the left side cover. See **“Left side cover removal” on page 4-11** for more information.
2. Remove the inner cover.
3. Remove the MPF gear.



4. Remove the gear train assembly. See **“Main drive assembly removal” on page 4-44** for more information.

5. Remove the solenoid **[B]**.

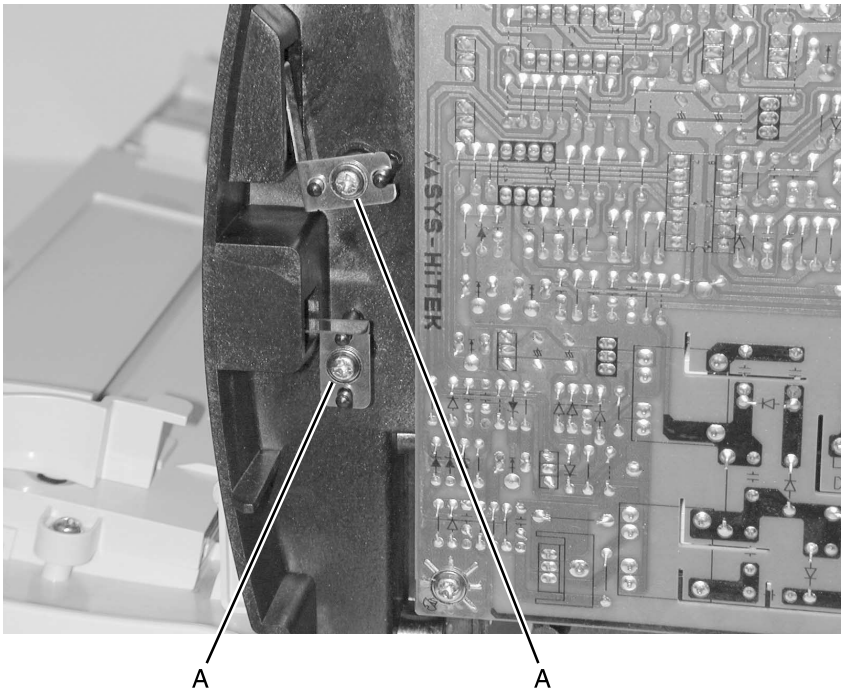


6. With the MFP on its back, remove the D–roll.

   Note: Slowly extract the shaft while facing the D–roll end. Capture the small washer and the bearing. (The bearing must be removed and reinserted through the opening adjacent to its operating location **[A]**. See **page 4-28** for more information.

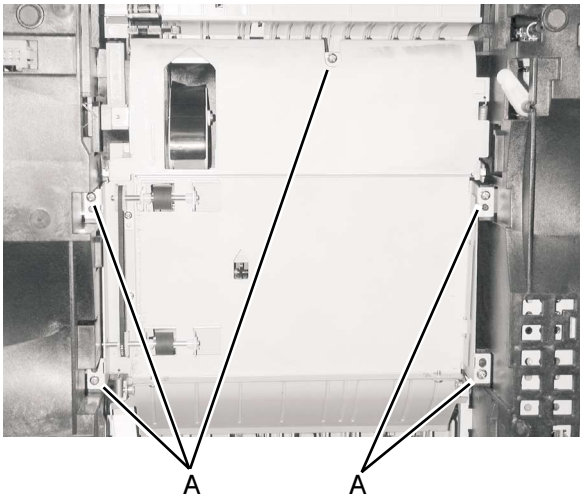
Door latches (right side) removal

1. Remove the right side cover. See **“Right side cover removal” on page 4-13** for more information.
2. Remove the two screws **[A]** and replace the latches.



Duplex tray assembly removal

1. Remove the scanner document cover.
2. Remove the paper tray.
3. Disconnect all cables on the back of the printer.
4. Tilt the MFP on its back.
5. Remove the five screws **[A]**.



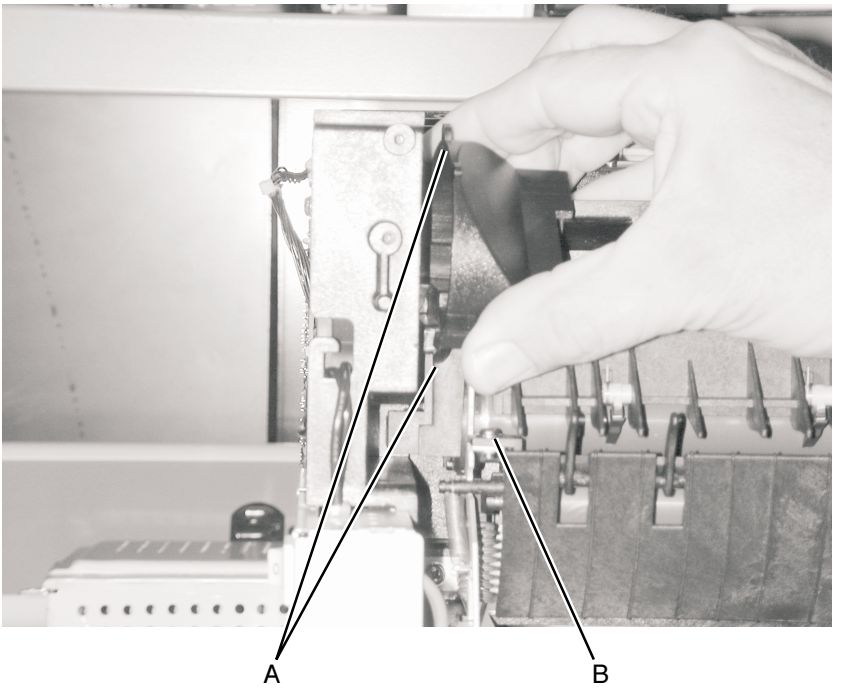
6. Work the right side loose first and disconnect the paper input sensor cable.
7. Remove the duplex assembly.

Fuser assembly, fuser paper exit guide, Fuser exit sensor, and fuser lamp removal

1.Unplug the printer.

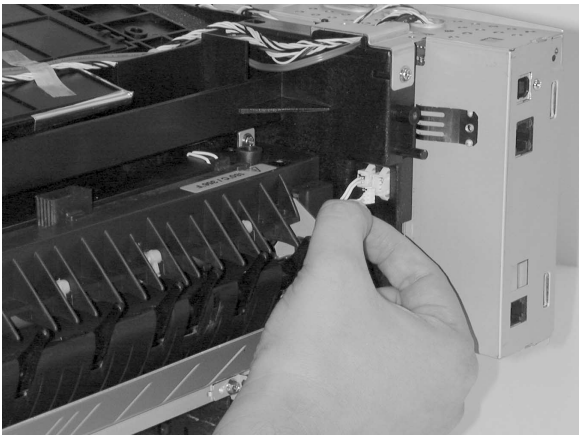
2.Remove the scanner assembly. See **“Scanner assembly removal” on page 4-79** for more information.

3. Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information.
4. Remove the rear cover. See **“Rear cover removal” on page 4-15** for more information.
5. To remove the fuser assembly, release the two latches and remove the cooling fan duct **[A]**.
6. To replace only the paper exit guide or exit sensor, remove one screw **[B]** to lift off the exit guide.
7. Disconnect the spring on the left side.
8. Swing out for clearance to replace.



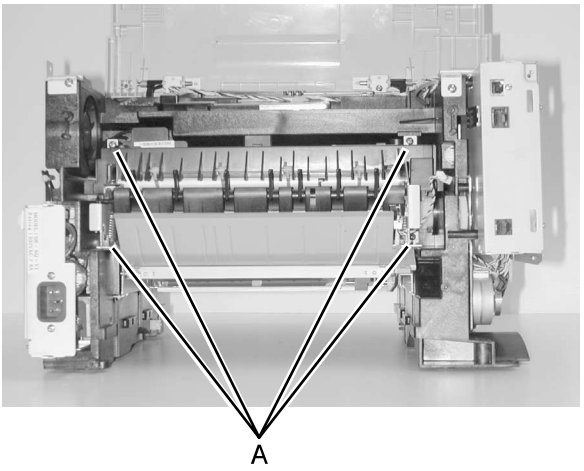
9. Unplug the exit sensor, and thermistor connector **[A]**.

   Note: It may be easier to unplug the fuser lamp once the fuser is removed.

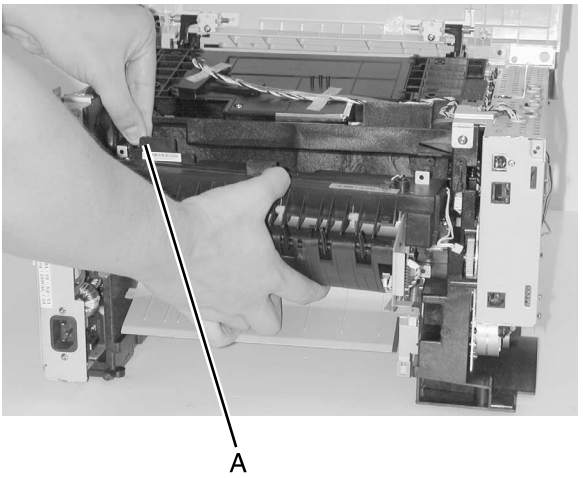


10. Remove the four screws **[A]**.

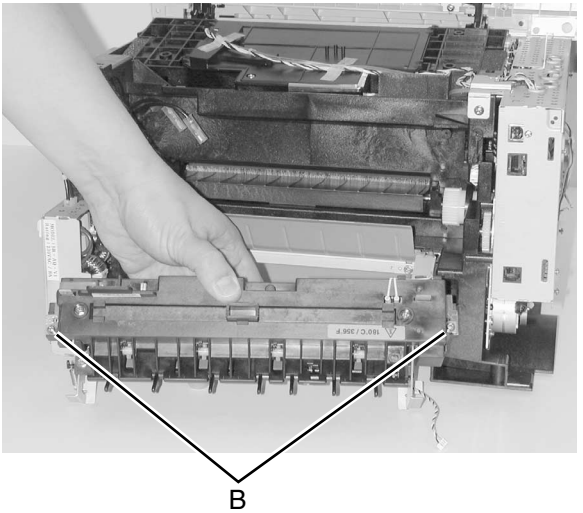
    Note: Removing the lower left screw requires a long screwdriver (approximately a 6–inch shank).



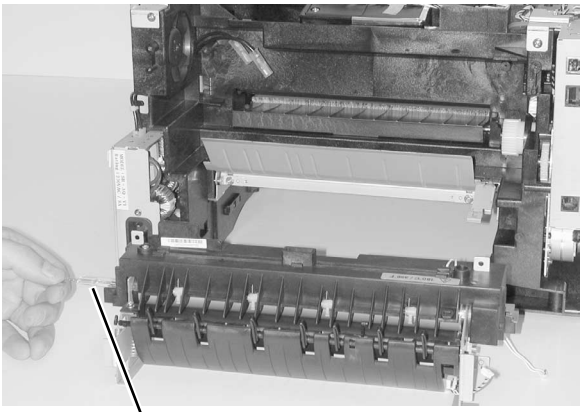
11. While pulling the exit guide down, gently start pulling the fuser towards you, unplugging the fuser lamp **[A]**.



12. To replace the fuser lamp, remove the two screws **[B]** at each end.



13. Very carefully extract the lamp **[A]** from the heater roll

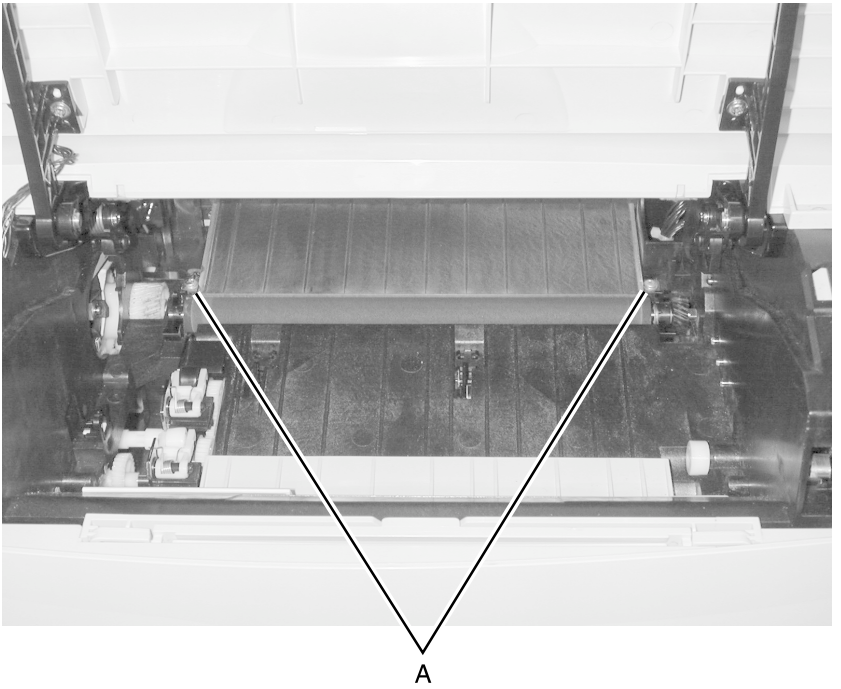


Warning: Do not touch the glass of a good lamp; it causes premature failure.

Guide removals

Entrance guide removal

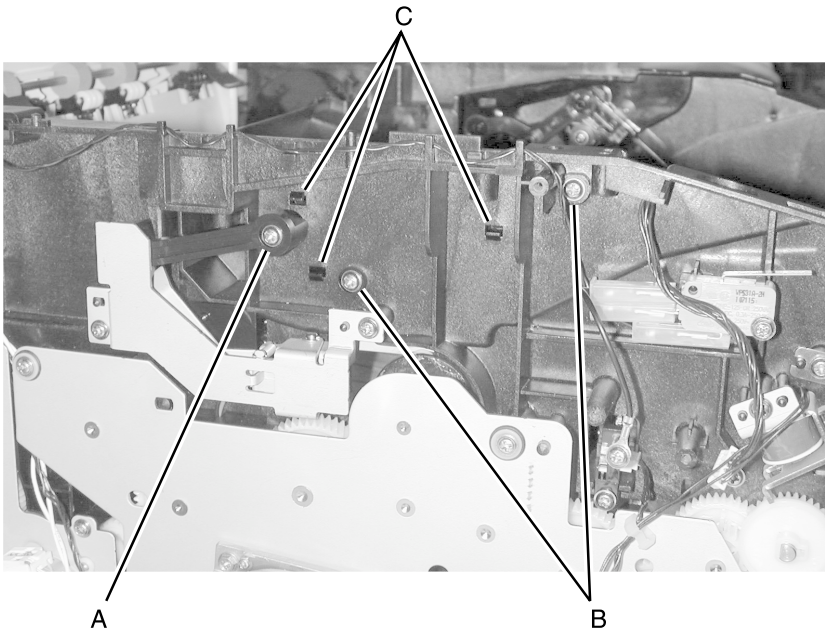
1. Remove the LSU (printhead). See **“Printhead removal” on page 4-54** for more information.
2. Remove the two screws **[A]** holding the entrance guide.



3. Remove the duplex unit. See **“Duplex tray assembly removal” on page 4-29** for more information.
4. Unsnap the two latches holding the entrance guide.
5. Remove the entrance guide.
6. Check the printhead alignment and adjust as necessary. See **“Printhead alignment adjustment” on page 4-2** for more information.

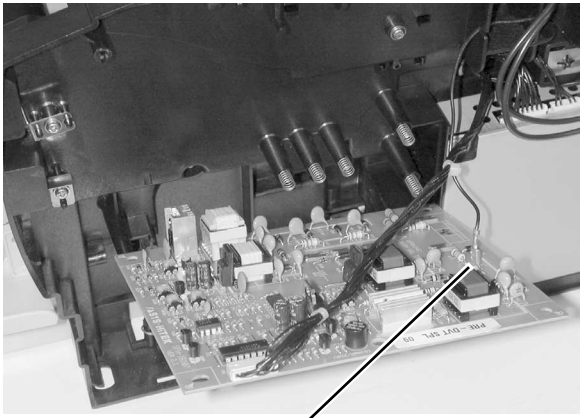
Left guide removal

1. Remove the print cartridge.
2. Remove the RIP card cage. See **“RIP card cage (with card in place) removal” on page 4-58** for more information.
3. Remove the charge roll. See **“Charge roll removal” on page 4-23** for more information.
4. Remove the three screws **[A** and **B]**, one holding the link guide bracket arm to the left guide.



5. Remove the left stud hinge on the top cover. See step 6 on **page 4-18** for more information.
6. Remove the HVPS. See **“HVPS card removal” on page 4-39** for more information.

7. Disconnect the single conductor wire (spade connector) **[A]**.



Note: Removal of the LSU (printhead) is not necessary but gives better visibility and access. Illustrations are with the LSU removed. See **“Printhead removal” on page 4-54** for more information.

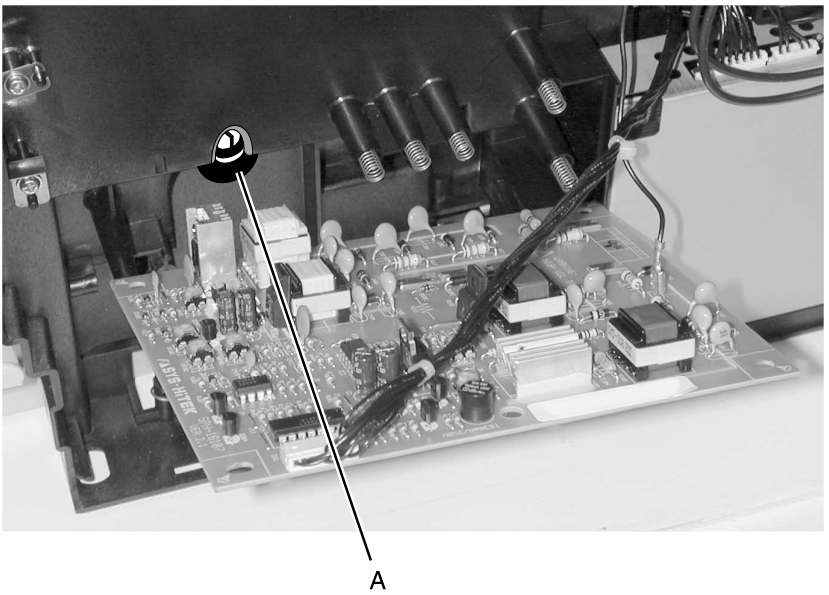
8. Remove the wire from the retainers between the printers right side and the left guide.
9. Unsnap the three latches **[C]** of the left guide while prying the assembly from the frame.
10. Remove the left guide.

Right guide removal

1. Remove the print cartridge.
2. Remove the HVPS. See **“HVPS card removal” on page 4-39** for more information.
3. Remove the charge roll. See **“Charge roll removal” on page 4-23** for more information.
4. Remove two screws in the right guide (above and behind the HVPS).
5. Remove the right stud hinge on the top cover. See **“Top cover assembly removal” on page 4-17** for more information.
6. Unsnap the three latches of the right guide.
7. Remove the right guide.

Paper guide roller removal

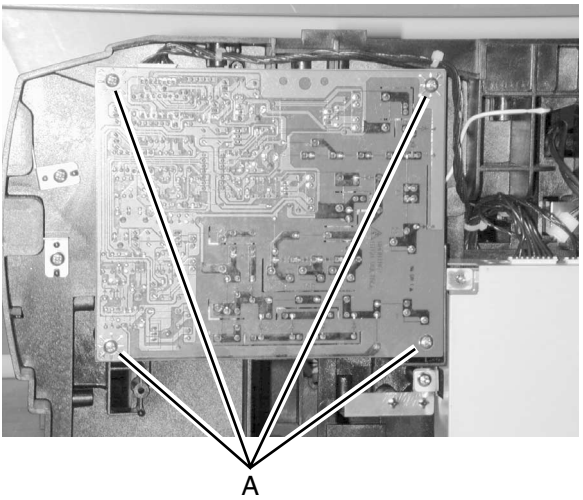
1. Remove the HVPS. See **“HVPS card removal” on page 4-39** for more information.
2. Remove the print cartridge.
3. Remove the upper body MPF assembly. See **“Upper (MPF) housing assembly (with paper flag) removal” on page 4-66** for more information.
4. Unsnap the latch, which is part of the roller hub **[A]**.



5. Remove the paper guide roller.

HVPS card removal

1. Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information.
2. Remove the right side cover. See **“Right side cover removal” on page 4-13** for more information.
3. Disconnect the HVPS cable.
4. Remove the four screws **[A]**.



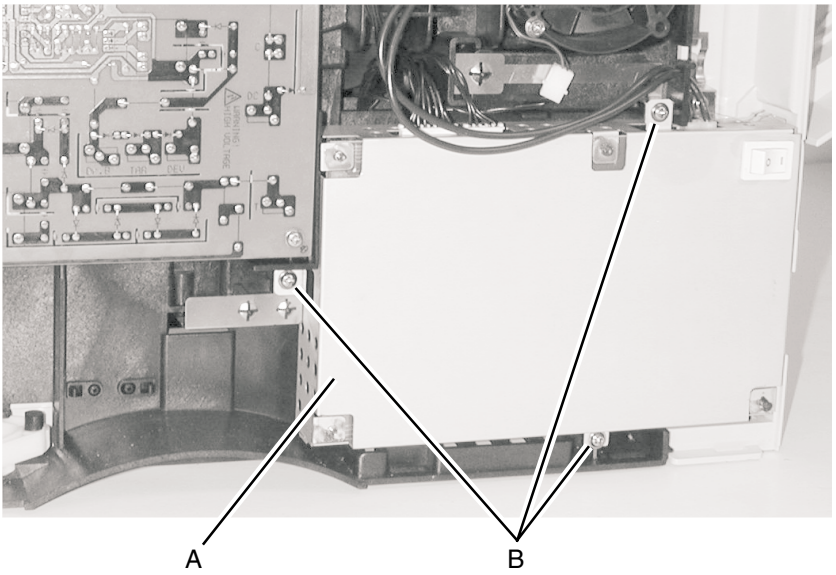
5. Disconnect the charge roll cable.
6. Remove the HVPS card.

LVPS card removal

1.Unplug the printer.

2.Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information.

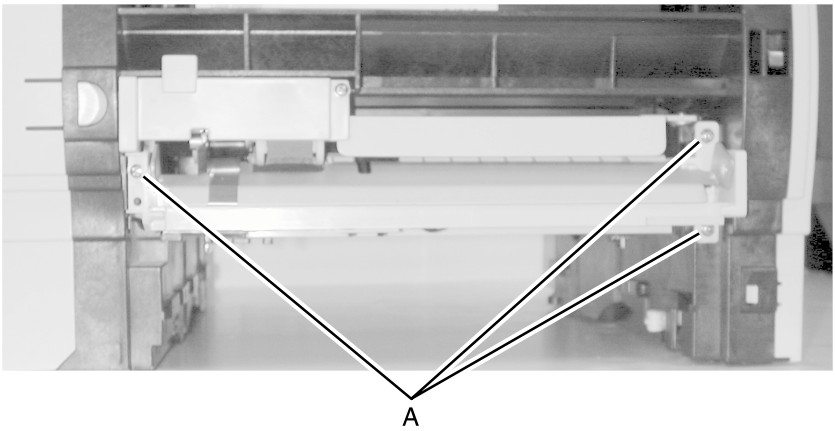
3. Remove the right side cover. See **“Right side cover removal” on page 4-13** for more information.
4. Disconnect all cables attached to the LVPS card.
5. Remove the three screws **[A]**.
6. Remove the LVPS **[B]**.



Lower (MPF) housing assembly removal

1. Remove the lower front MPF door. See **“Lower front cover (multipurpose feeder cover) removal” on page 4-10** for more information.
2. Remove the left side cover. See **“Left side cover removal” on page 4-11** for more information.
3. Loosen the six screws in the RIP card cover.

   Slide the cover toward the rear and remove.
4. Disconnect the MPF cable on the right side of the RIP card and the toner level sensor.
5. Remove the three screws **[A]** on the front of the lower body MPF assembly and gently remove the assembly.

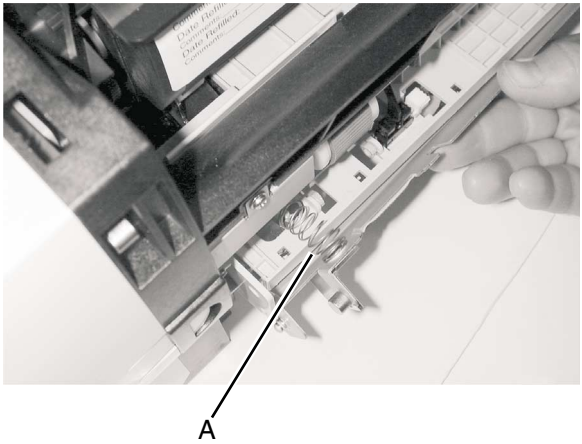


Lower (MPF) housing assembly - paper sensor removal

1. Remove the lower front (MPF) door. See **“Lower front cover (multipurpose feeder cover) removal” on page 4-10** for more information.
2. Remove the feed–roll cover, one screw.
3. At the lower–right assembly hinge, separate the metal plate from the plastic housing.

4. Support the left side with the left hand while separating the left hinge.

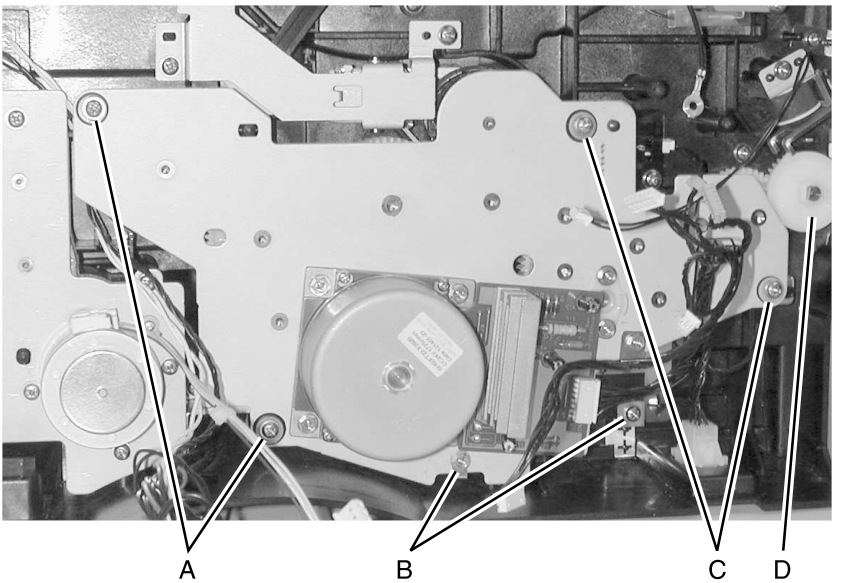
   Note: In the next step, note a loaded compression spring **[A]** on the left side and under the metal plate.



5. Rotate the metal plate until the sensor can be accessed.
6. Disconnect the cable to the sensor and remove the sensor by pushing on the latches underneath the sensor and housing.
7. Install the new sensor and reconnect the cable.
8. Reinstall the metal plate. Make sure the compression spring is in the proper location and captured at its ends.
9. Rotate the metal plate to keep the spring positioned. Reconnect the left hinge and then the right hinge.

Main drive assembly removal

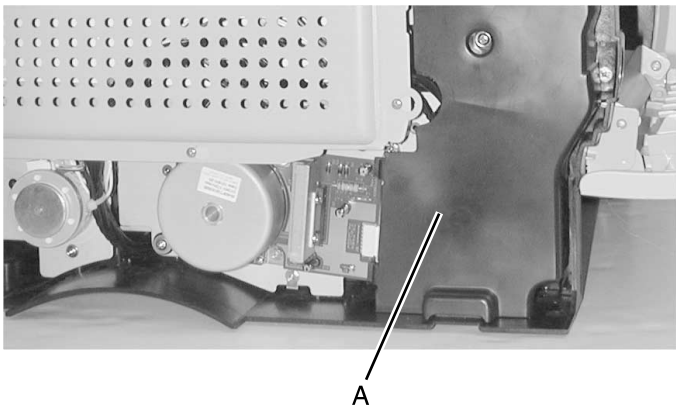
1. Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information.
2. Remove the left side cover. See **“Left side cover removal” on page 4-11** for more information.
3. Remove the RIP card cage. See **“RIP card cage (with card in place) removal” on page 4-58** for more information.
4. Remove the inner cover, one (1) screw.
5. Remove the roller MPF gear by lifting the latch in the center of the hub and sliding it out **[D]**.
6. Free the cables from the attached retainers.
7. Remove the six (6) screws in the gear train assembly **[A, B,** and **C]**.



8. Lift up gently and work the gear train assembly out.
9. Remove the paper feed drive gear.

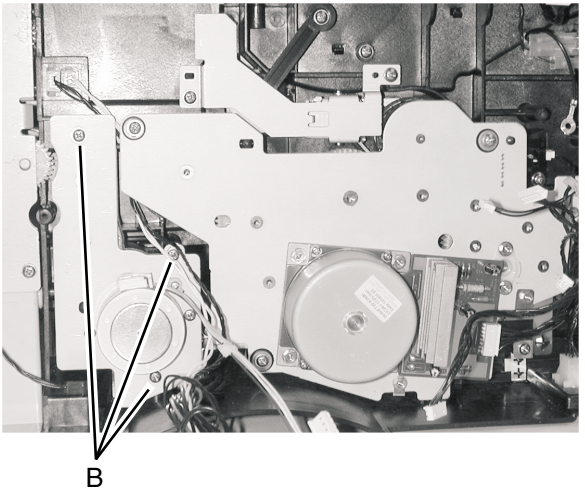
Main drive motor assembly removal

1. Remove the left side cover. See **“Side cover removals” on page 4-11** for more information.
2. Disconnect the cable to the PWB.
3. Remove the four screws holding the metal base plate to the gear train assembly.
4. Remove the motor assembly cover **[A]**.



Motor assembly (stepper) removal

1. Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information.
2. Remove the left side cover. See **“Left side cover removal” on page 4-11** for more information.
3. Remove the RIP card cage. See **“RIP card cage (with card in place) removal” on page 4-58** for more information.
4. Remove three screws **[B]**.



5. Lift the stepper motor out.

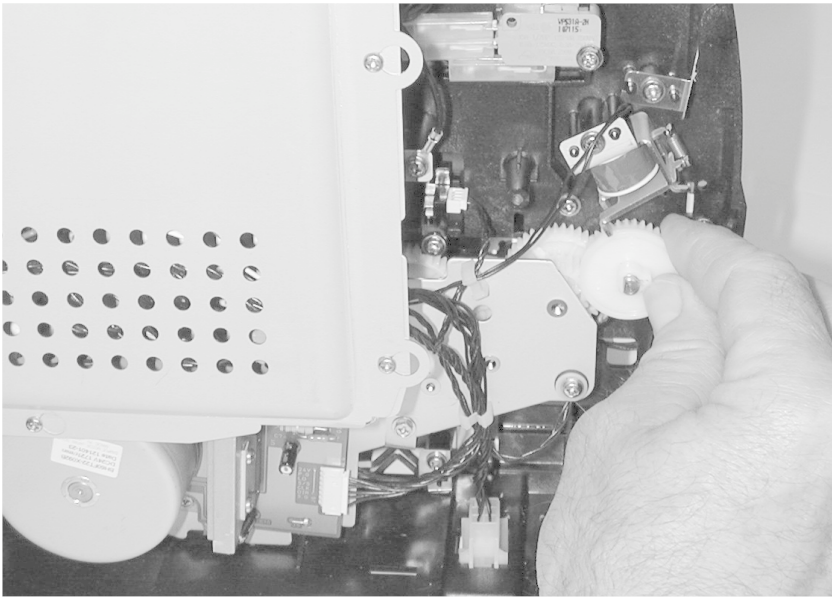
MPF roller assembly removal

1. Remove the upper body MPF assembly. See **“Upper (MPF) housing assembly (with paper flag) removal” on page 4-66** for more information.
2. Remove the MPF cover. See **“Lower front cover (multipurpose feeder cover) removal” on page 4-10** for more information.
3. Remove the left side and inner covers. See **“Left side cover removal” on page 4-11** for more information.
4. Remove the roller cover, one (1) screw. See **“Lower (MPF) housing assembly removal” on page 4-41** for more information.
5. Remove the lower body MPF assembly. See **“Lower (MPF) housing assembly removal” on page 4-41** for more information.

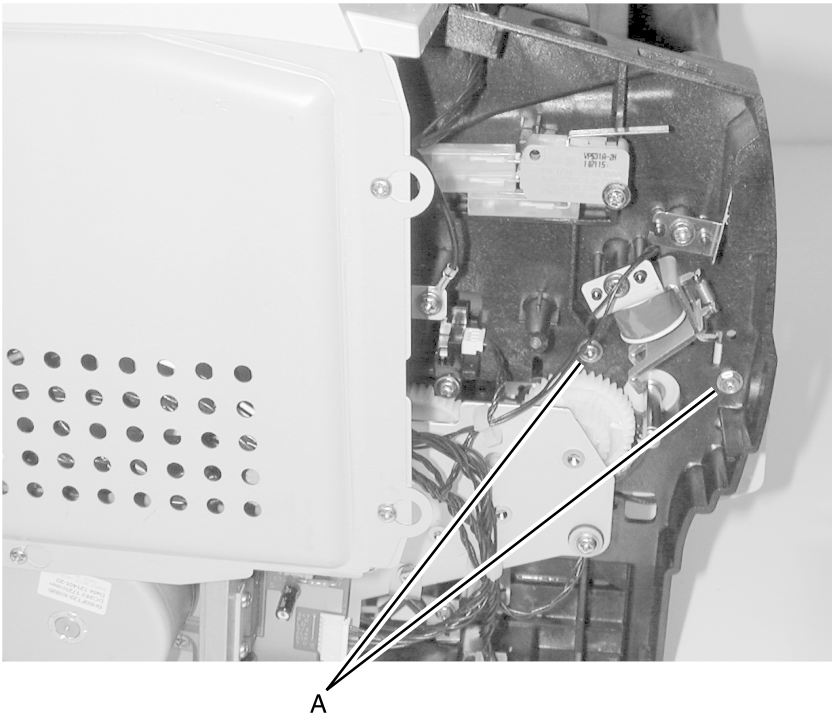
CAUTION:

- The lower body MPF assembly remains electrically connected since it is not being replaced.
- Use care with the cable.
- Rotate the unit upside down to reduce stress on the cable.

6. Remove the MPF gear using your thumbnail to release the latch and slide the gear from the shaft.



7. Remove two screws **[A]** holding the roller assembly and one screw facing the front of the printer.

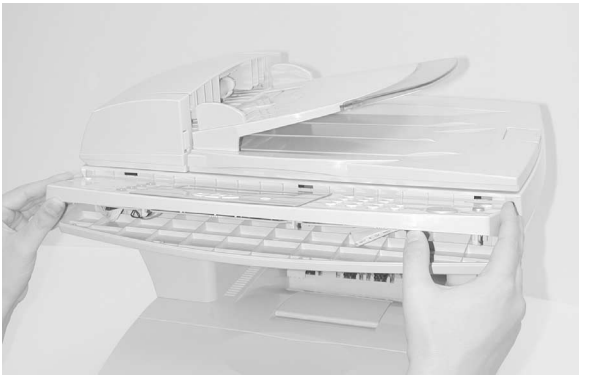


8. Remove the roller assembly.

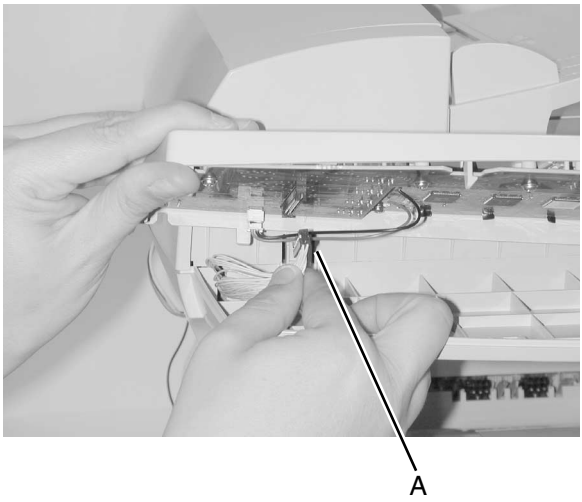
Operator panel removal

1. Release the four tabs under the SCU, below the operator panel.

2. Lift the front of the operator panel to release pivots in the rear.



3. Disconnect the OPU-RIP cable.



4. Remove the operator panel.

Note: After replacing the operator panel, the customer's settings are lost and need to be reset.

- Perform scanner calibration and registration (See **"Scanner calibration" on page 4-5** and **"MFP cover removals" on page 4-9** for more information.)
- Perform MFP registration (See **"Printhead registration adjustment" on page 4-4** for more information.)

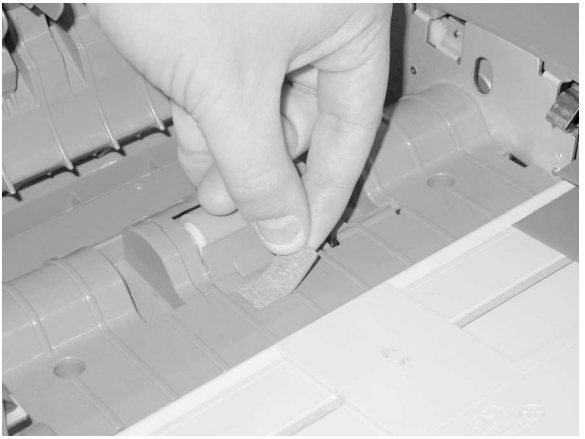
Settings affected when the operator panel is replaced.

Setting	Menu where setting is found
Paper settings	Configuration menu
Printer settings	Configuration menu
Printer registration settings	Diagnostics menu
Defaults (US/Non US)	Diagnostics menu
Page count	Diagnostics menu
Permanent page count	Diagnostics menu
Serial number	Diagnostics menu

Setting	Menu where setting is found
Configuration ID	Diagnostics menu
Modem type	Diagnostics menu
Engine settings 1-4	Diagnostics menu
Edge to edge	Diagnostics menu
Error log	Diagnostics menu
Panel menus (enabled/disabled	Configuration menu
Energy conserve	Configuration menu
Paper prompts	Configuration menu
Envelope prompts	Configuration menu
Scanner registration settings	Configuration menu

Pick pad removal

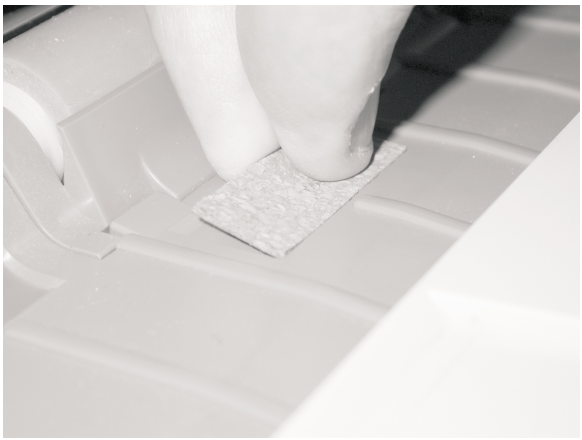
1. Open the ADF center cover.
2. Remove the ADF pick roller.
3. Peel the old pick pad off the ADF feeder assembly.



Replacement:

1. Place the long edge of the pick pad against the leading edge of the pick pad guide on the ADF feeder assembly.

2. Press the pick pad firmly into the guide.

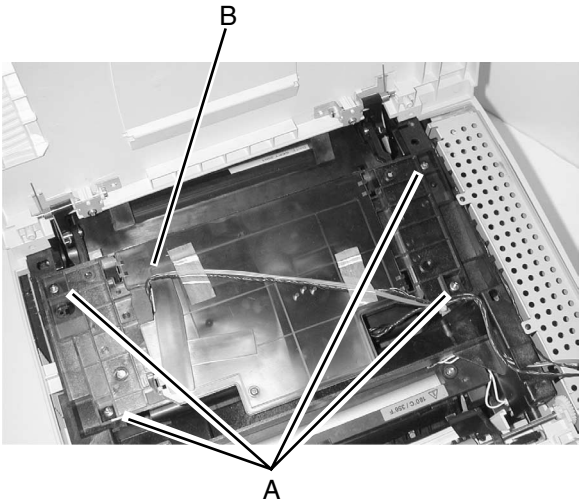


Note: To avoid jams, in the ADF, ensure the leading edge of the pick pad is pressed firmly into the guide.

3. Replace the pick roller assembly.
4. Close the ADF center cover.

Printhead removal

1. Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information**.**
2. Disconnect the printhead cable **[B]**.
3. Remove the four screws **[A]**.

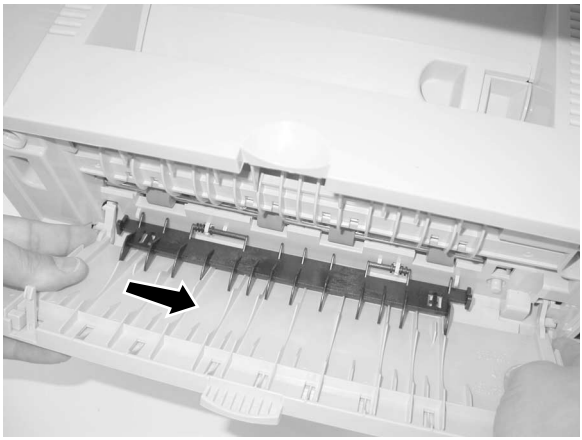


Note: Mark alignment of the printhead at the screw areas with the printhead to keep the same alignment upon reinstallation.

4. Remove the printhead.
5. Check alignment of the printhead before reinstalling the top cover. Adjust as necessary. See **“Printhead alignment adjustment” on page 4-2** for more information.

Rear exit door removal

1. Open the rear exit door.
2. Use your index finger or screwdriver to disengage the left (facing back of MFP) hinge from the rear cover. With your other hand, apply force to remove the door from the MFP.

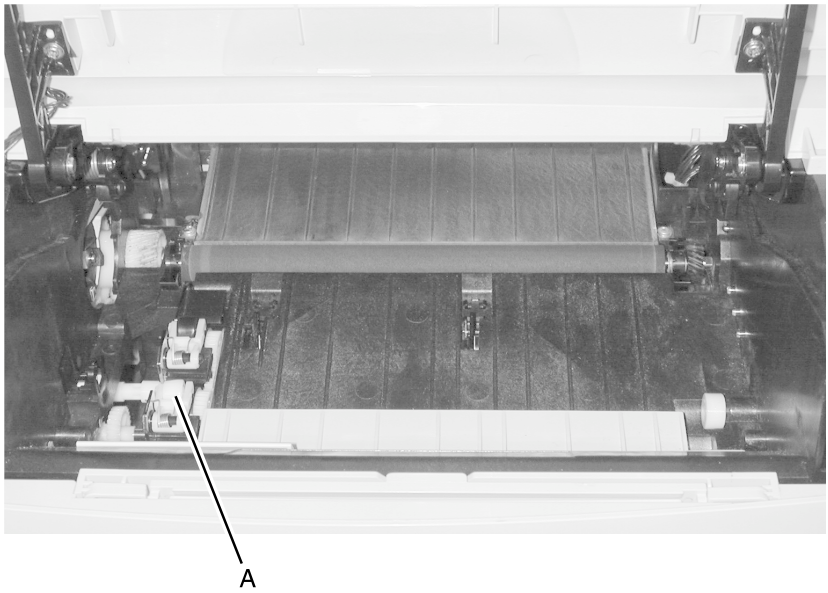


Reference plate assembly removal

1. Remove the print cartridge.
2. Remove the gear train assembly. See **“Main drive assembly removal” on page 4-44** for more information.
3. Remove the three screws located between the main gear drive and the assembly plate.
4. Remove the MPF cover. See **“Lower front cover (multipurpose feeder cover) removal” on page 4-10** for more information.
5. Remove the upper body MPF assembly. See **“Upper (MPF) housing assembly (with paper flag) removal” on page 4-66** for more information.
6. Remove the lower body MPF assembly. See **“Lower (MPF) housing assembly removal” on page 4-41** for more information.

7. Remove one screw in the cover adjacent to the assembly plate.
   Notes:

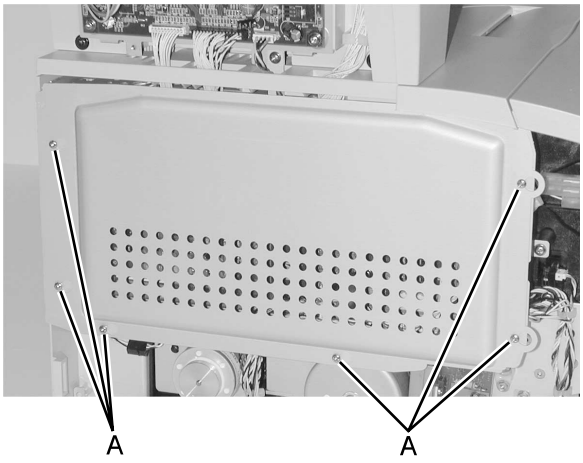
   – Remove the reference plate assembly through the front of the MFP **[A]**.



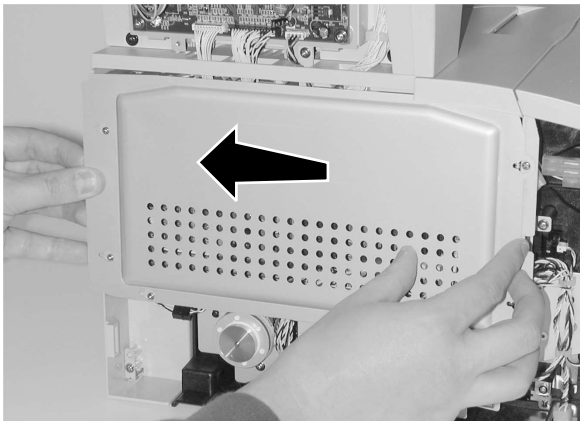
   – When a reference plate (reference edge) assembly is removed, reinstallation requires alignment. Use a long shank (6–inch) Phillips screwdriver to adjust the rear screw holding the assembly in place. It is accessed through the hole in the main drive assembly between the RIP card cage and the main motor PCB. Adjusting the screw counterclockwise rotates paper counterclockwise in the MFP path.

RIP card cage (with card in place) removal

1. Remove the left side cover. See **“Left side cover removal” on page 4-11** for more information.
2. Loosen six screws **[A]** in the controller cage.



3. Slide the cage cover off.



4. Remove the top cover. See **“Top cover assembly removal” on page 4-17** for more information.

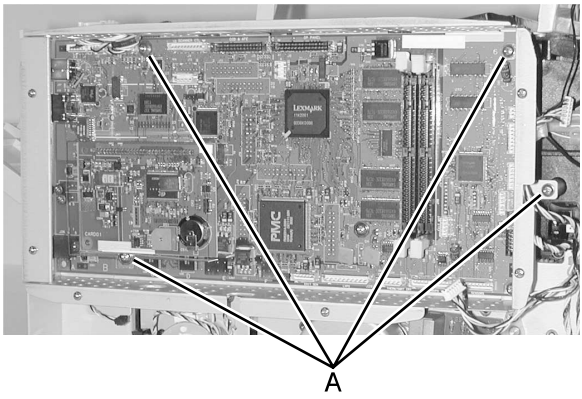
5. Remove one screw from the drive assembly cover. Lift cover to remove.

6. Disconnect all cables from the RIP card.

   Note: The duplex connector must be fed through a chimney on the card frame. Feed all cables through the cage frame.

Warning: When feeding cables through the RIP cage, take care not to strip the insulation from the cables. This could result in a short.

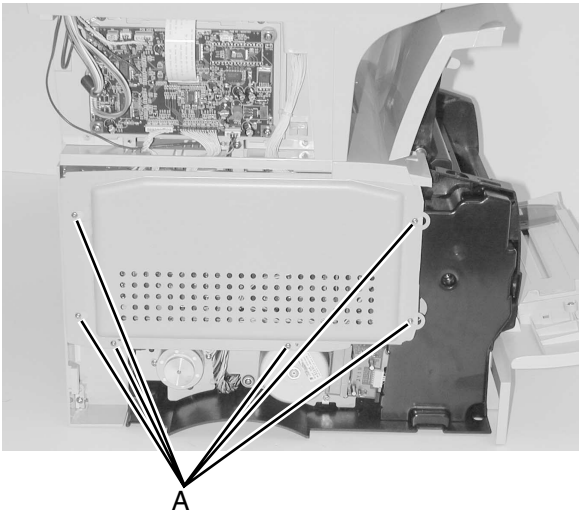
7. Remove four screws from the RIP card **[A]**.



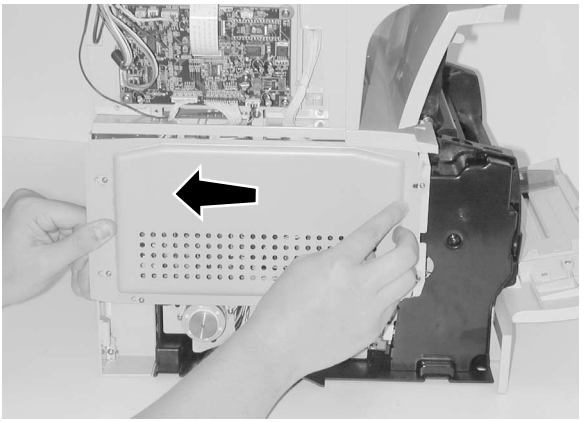
8. Gently pull the bottom of the cage out and lift up off the two posts at the top.

RIP card assembly removal

1. Remove the left side cover. See **“Left side cover removal” on page 4-11** for more information.
2. Loosen six screws [A] in the controller cage.



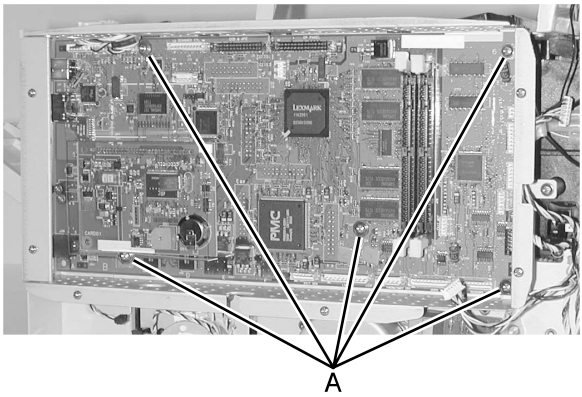
3. Slide the cage cover off.



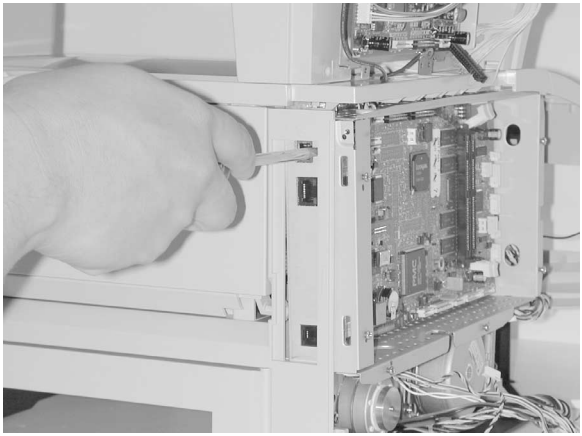
4. Disconnect all cables from the RIP card.

   Note: The duplex connector must be fed through a chimney on the card cage frame. Feed all cables through the cage frame.

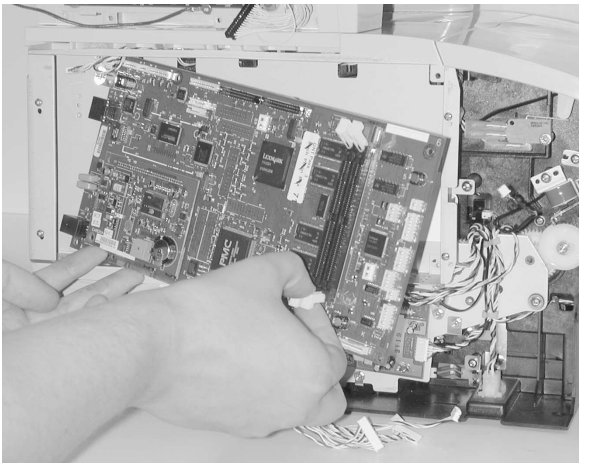
5. Remove five screws **[A]** in the RIP card.



6. Remove one screw above the USB connector.



7. Carefully, remove the RIP card.

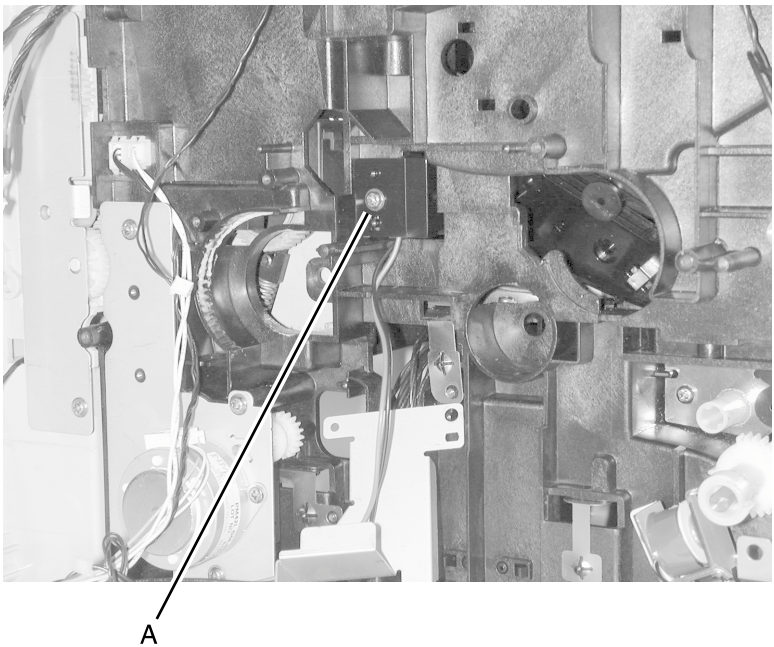


Note: Perform the printhead and scanner calibration as well as the scanner registration when replacing this part.

Setting	Menu where setting is found
Network settings	Administrative menu
General settings	Administrative menu
Copy settings	Administrative menu
Fax settings	Administrative menu
E-mail/FTP settings	Administrative menu
Security settings	Administrative menu
Set date and time settings	Administrative menu
PPDS mode	Configuration menu
Minimum copy memory	Configuration menu
ADF edge eraes value	Configuration menu
Flatbed edge erase value	Configuration menu

Smart button sensor removal

1. Remove the print cartridge.
2. Remove the gear train assembly. See **“Main drive assembly removal” on page 4-44** for more information.
3. Remove the two screws and the bracket coupling assembly.
4. For additional clearance, remove the charge roll. See **“Charge roll removal” on page 4-23** for more information.
5. Remove the screw holding the smart button sensor **[A]**.

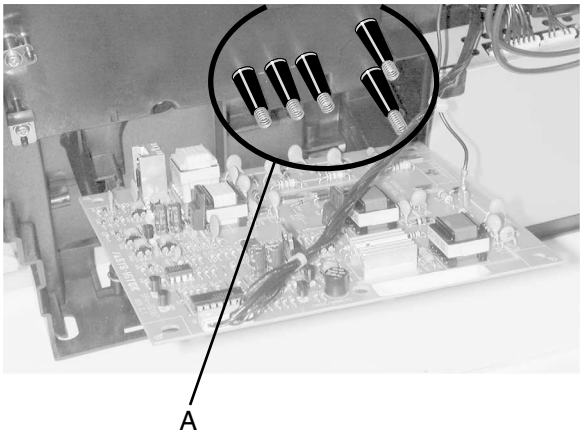


6. Remove the two screws in the cable cover retainer.
7. Remove the sensor by pushing from inside the printer.

   Note: Unplug the thermistor cable to remove the smart button sensor.

Terminal assembly removal

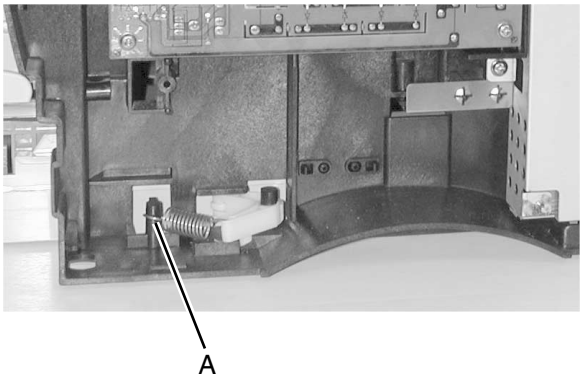
1. Remove the HVPS. See **“HVPS card removal” on page 4-39** for more information.
2. Remove the terminal assemblies **[A]**.



Note: The lower right terminal (to the transfer roll) is gold in color.

Tray damper and spring removal

1. Remove the right side cover. See **“Right side cover removal” on page 4-13** for more information.
2. Remove the tray damper spring from the MFP frame post **[A]**.

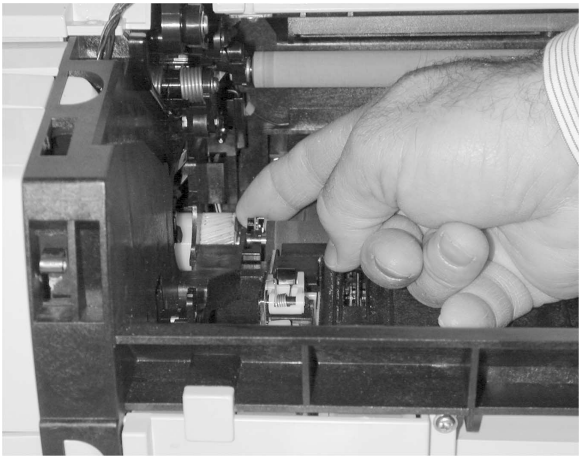


3. Rotate the lever counterclockwise as far as possible and lift out.

Transfer roll assembly and left transfer support bearing removal

Note: Do not touch the transfer roll except on the ends.

1. Remove the print cartridge.
2. Unlatch and lift the left side support bearing.



3. Unlatch and lift the right transfer support bearing.
4. Remove the transfer roll.

   Note: After reinstalling the transfer roll, use a thin screwdriver to push the copper tab on the right side fully into the slot.

Upper (MPF) housing assembly (with paper flag) removal

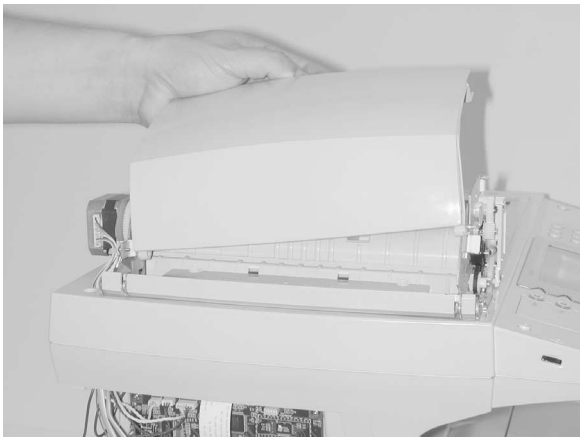
1. Open the front cover.
2. Remove two screws holding the assembly.
3. Carefully, lift the assembly out. A sensor flag is attached.

Scanner cover removals

ADF upper cover removal

1. Remove the scanner document tray. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Remove the right and left ADF covers. See **“Scanner right ADF cover removal” on page 4-71** and **“Scanner left ADF cover removal” on page 4-74** for more information.
4. Remove two screws **[A]**.

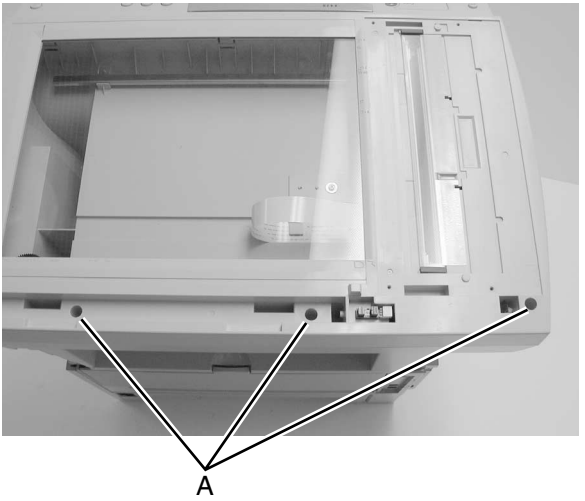
5. Lift to remove the center ADF upper cover.



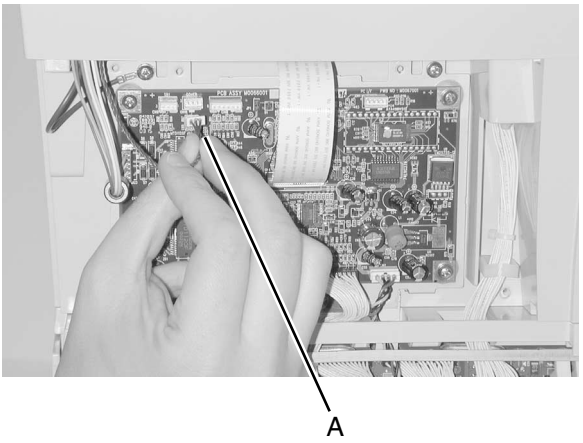
Scanner cover removal

Note: To replace the flatbed cover closed sensor, perform this removal and replace the sensor with PN 56P0645. See **“Scanner sensors” on page 5-17** for more information.

1. Remove the scanner document tray. See -**“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Remove the right and left ADF covers. See **“Scanner right ADF cover removal” on page 4-71** and **“Scanner left ADF cover removal” on page 4-74** for more information.
4. Remove the ADF.
5. Remove three screws **[A]**.

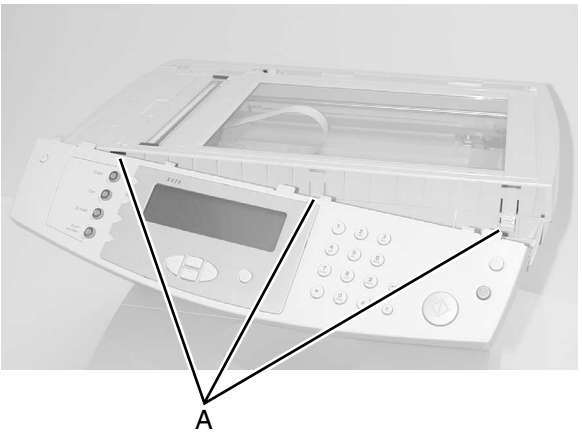


6. Disconnect the document cover closed sensor connector.

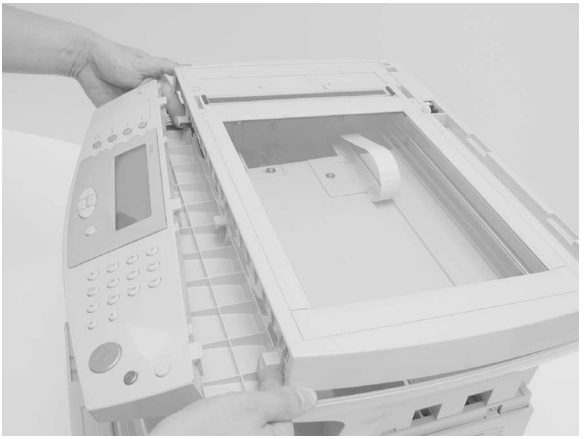


7. With the operator panel removed. See **“Operator panel removal” on page 4-50** for more information.

   Set off operator panel to expose the three tabs in the scanner cover **[A]**.



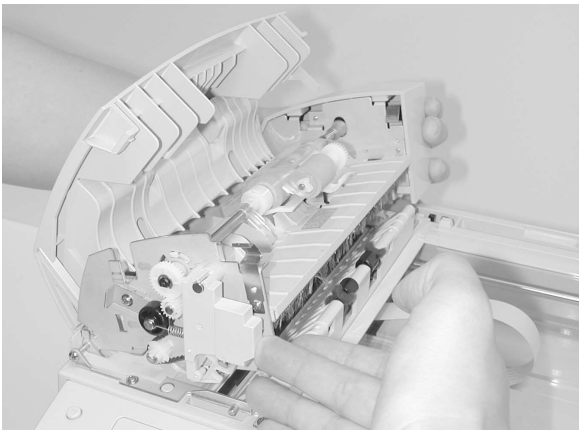
8. Release the three tabs.



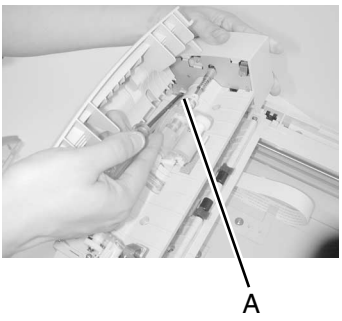
9. Lift the scanner cover, and thread cable through chimney to remove.

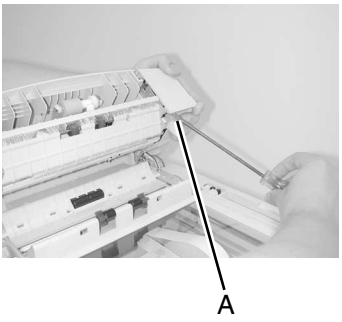
Scanner right ADF cover removal

1. Remove the scanner document tray. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Lift tab to release the ADF and pivot up to see under the left cover.

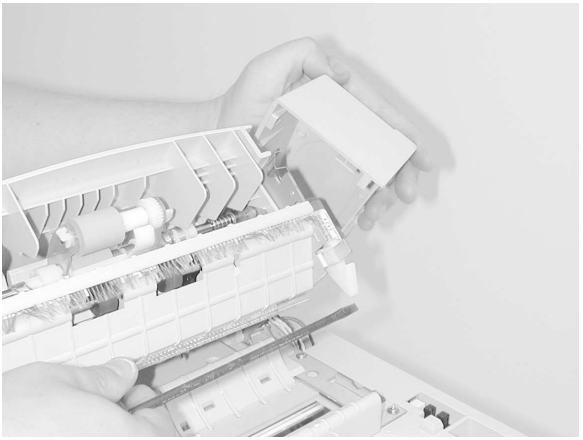


4. Use a screwdriver to release 2 tabs **[A]**.



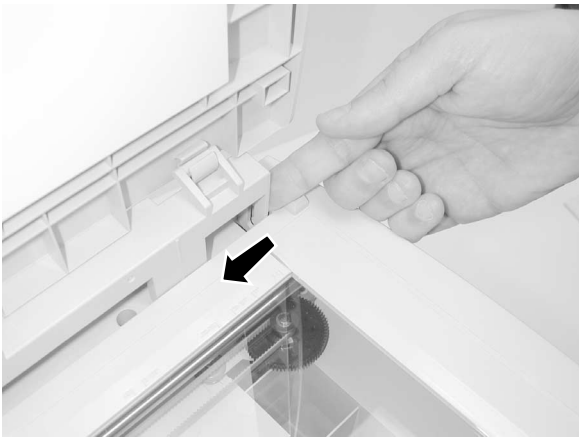


5. Remove the right ADF cover.

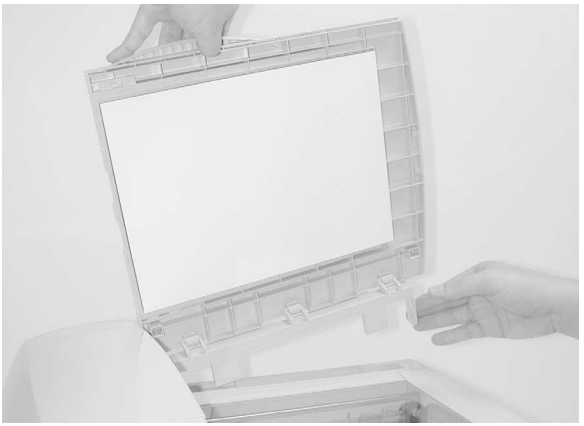


Flatbed cover removal

1. Remove the scanner document tray. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Lift the flatbed cover to a vertical position.
3. Lift to extend the hinges, push to release the tab.

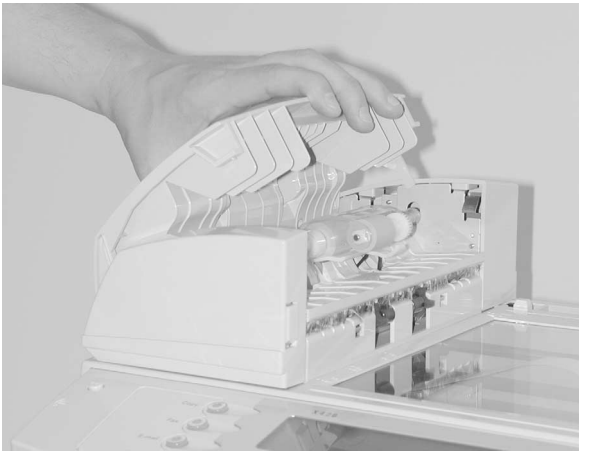


4. Remove the flatbed cover.

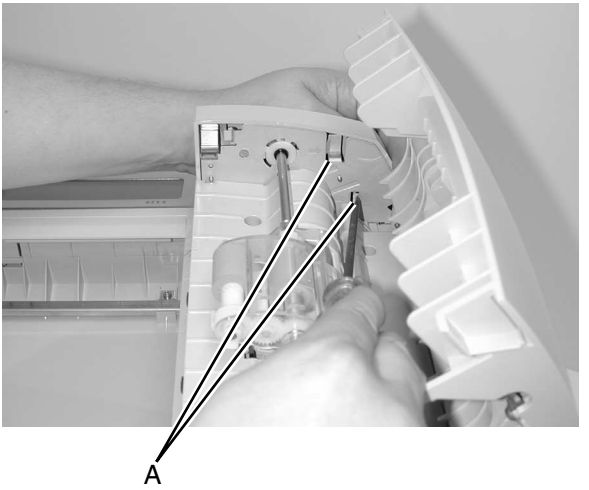


Scanner left ADF cover removal

1. Remove the document tray assembly. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Lift the ADF cover to a vertical position.



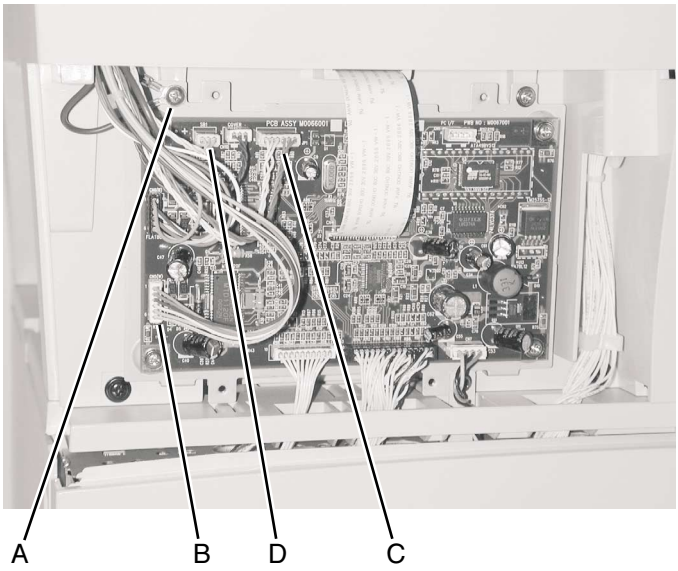
4. Push with a screwdriver to release two tabs **[A]**.



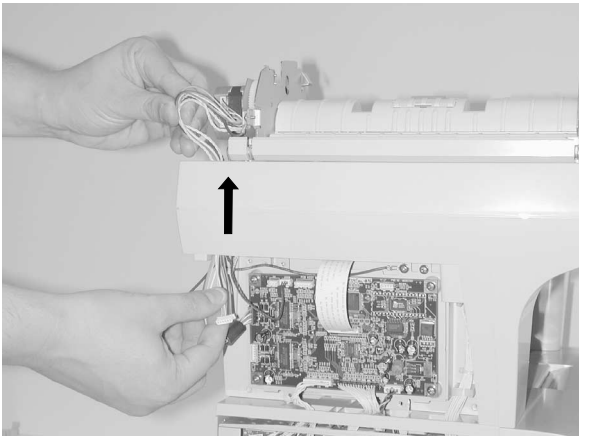
5. Remove the left ADF cover.

Scanner ADF removal

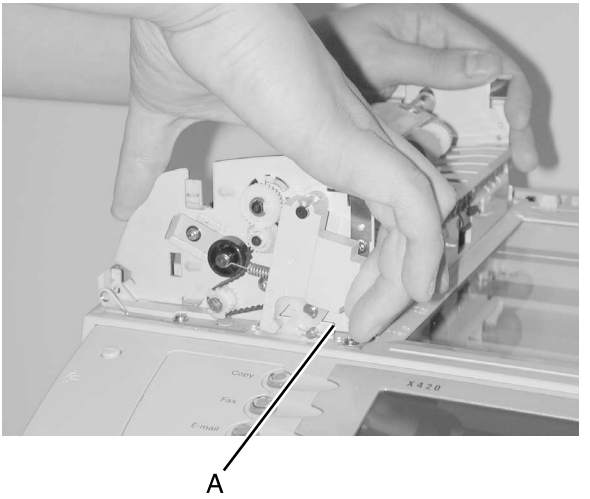
1. Remove the document tray assembly. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Remove the right, left, and upper ADF covers. See **“Scanner right ADF cover removal” on page 4-71**, **“Scanner left ADF cover removal” on page 4-74**, and **“ADF upper cover removal” on page 4-67** for more information.
4. Remove the left scanner cover.
5. Remove the ground screw in the SCU card **[A]**.
6. Remove the following connectors on the SCU:
   - ADF motor wiring harness (CN5) **[B]**
   - ADF cover (CN8) **[C]**
   - Paper position (SB1) **[D]**



7. Feed cables/connectors up through scanner unit.



8. Push the ADF **[A]** button to release the unit.



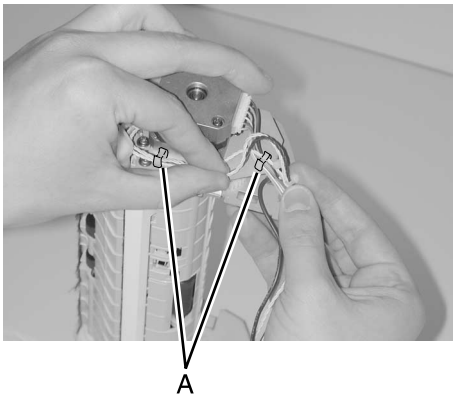
9. Lift the ADF to remove.

Note: Perform the scanner calibration and scanner registration procedures after replacing this part.

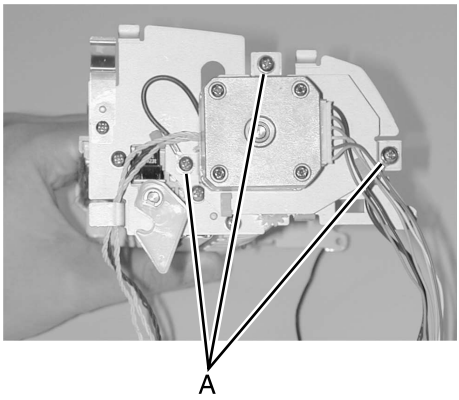
Scanner ADF motor removal

Note: This removal describes the removal of PN 56P2537 which is part of PN 56P2252.

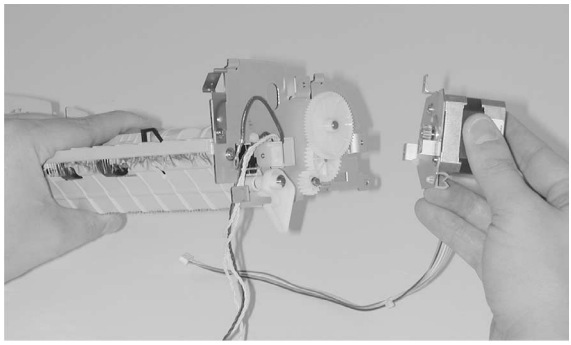
1. Remove the ADF assembly from the MFP.
2. Route the cables through the guides [A] so they clear the ADF feeder assembly.



3. Remove the three screws [A] that fasten the ADF motor assembly to the ADF feeder assembly.

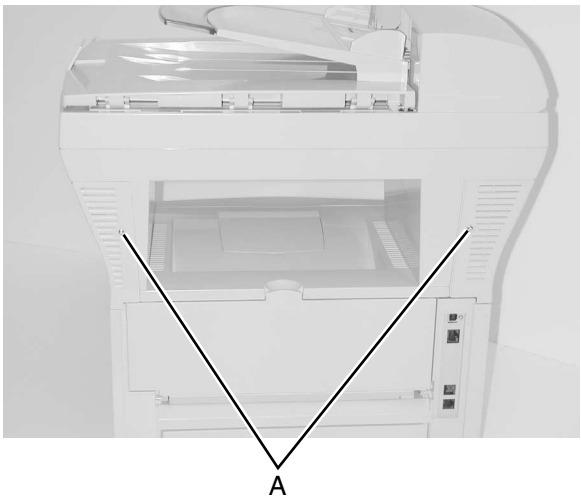


4. Carefully remove the ADF motor assembly from the ADF feder assembly. Ensure the gears on the ADF assembly remain in the uint.

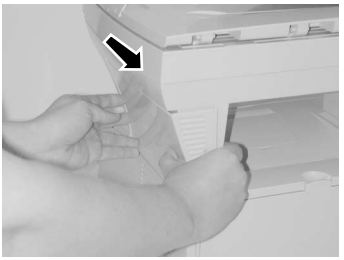


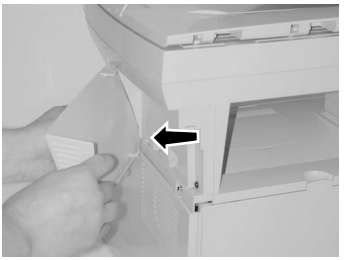
Scanner assembly removal

1. Remove two screws on the back of the scanner **[A]**.

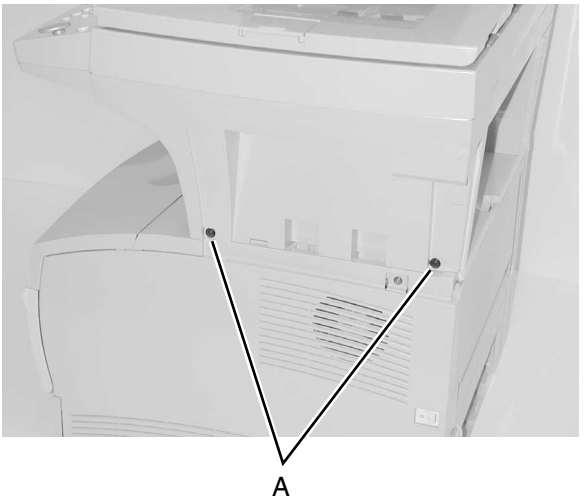


2. From the rear of the scanner, slide the right scanner cover to the rear to remove.





3. Remove two screws in the scanner base **[A]**.

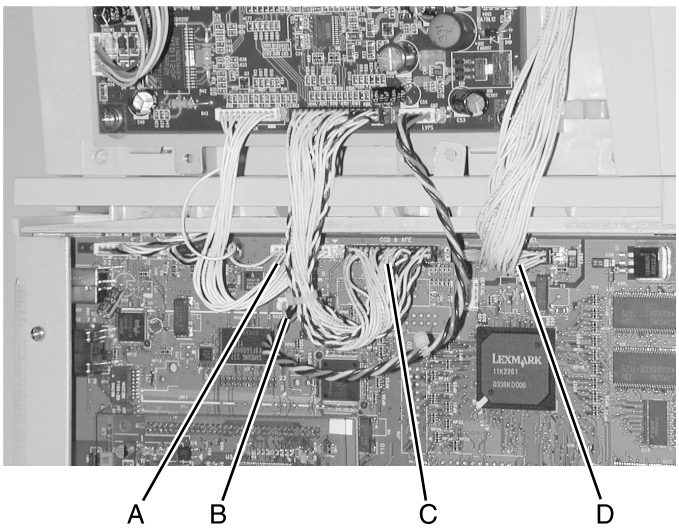


4. From the rear of the scanner, slide the left scanner cover to the rear and remove.

5. Remove two screws in the scanner base **[A]**.

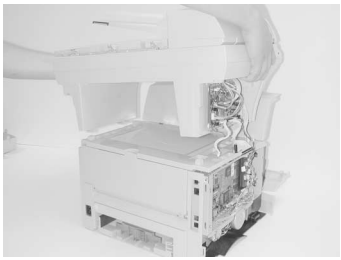
6. Remove MFP left side cover. See **“Left side cover removal” on page 4-11** for more information.
7. Remove the MFP RIP card cage cover. See **“RIP card cage (with card in place) removal” on page 4-58** for more information.
8. Disconnect the following cables from the RIP card.

- SCU RIP harness **[A]**
- SCU power **[B]**
- SCU AFE **[C]**
- OPU-RIP cable **[D]**



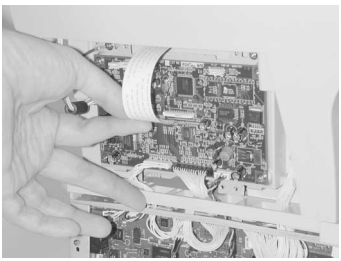
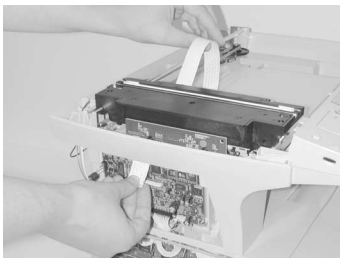
Warning: When feeding cables through the RIP cage, take care not to strip the insulation from the cables. This could result in a short.

9. Route the disconnected cables from the RIP card through the chimneys to clear the printer.
10. From the rear of the machine, slide the scanner assembly forward and lift assembly off the printer.

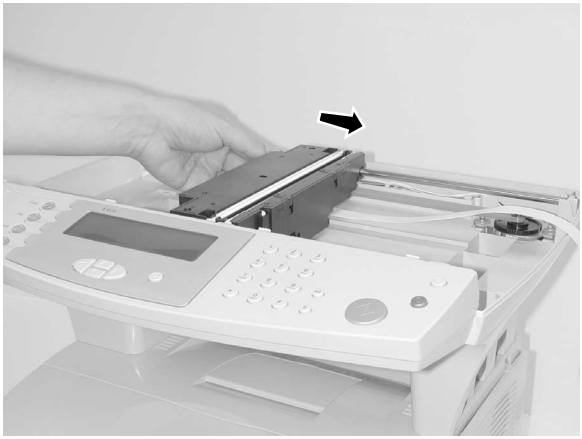


Scanner CCD carriage removal

1. Remove the document tray assembly. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Remove the right and left ADF covers. See **“Scanner right ADF cover removal” on page 4-71** and **“Scanner left ADF cover removal” on page 4-74** for more information.
4. Remove the ADF. See **“Scanner ADF removal” on page 4-75** for more information.
5. Remove the R2 and R1 idler. See **“Scanner R2 idler removal” on page 4-94** and **“Scanner R1 idler removal” on page 4-92** for more information.
6. Remove the scanner cover. See **“Scanner cover removal” on page 4-68** for more information.
7. Disconnect the CCD-SCU ribbon cable from the SCU board, and route the cable up through the scanner.

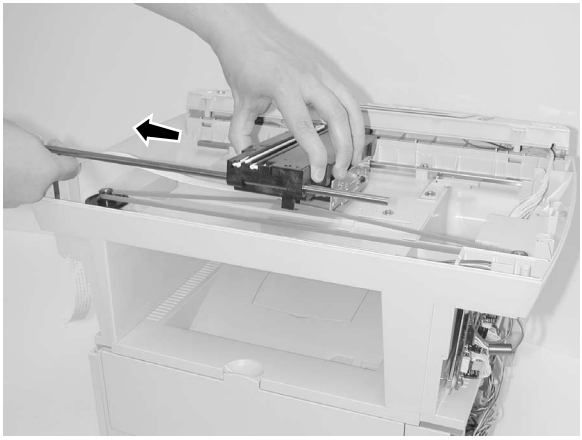



8. Push the CCD carriage to the center of the scanner.



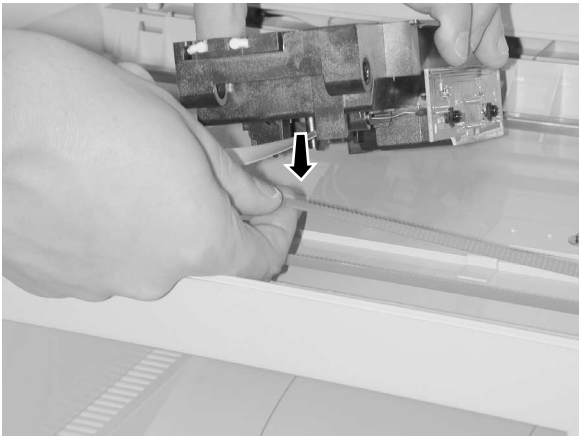
Warning: Do not touch the two lamps on top of the unit. This could shorten the life of the lamps.

9. Lift the guide rod and remove it from the CCD carriage.



10. Pull timing belt off CCD.

11. Pull and slide the CCD off the timing belt.

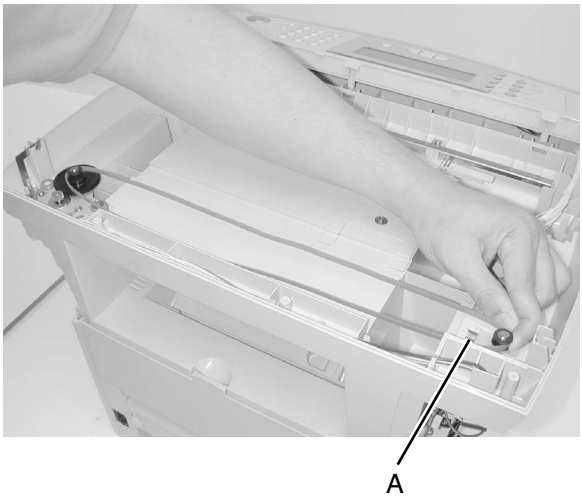


12. Remove the CCD carriage.

Scanner CCD timing belt removal

1. Remove the document tray assembly. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Remove the right and left ADF covers. See **“Scanner right ADF cover removal” on page 4-71** and **“Scanner left ADF cover removal” on page 4-74** for more information.
4. Remove the ADF. See **“Scanner ADF removal” on page 4-75** for more information.
5. Remove the R2 and R1 idler. See **“Scanner R2 idler removal” on page 4-94** and **“Scanner R1 idler removal” on page 4-92** for more information.

6. Compress the spring on the idler roller **[A]**

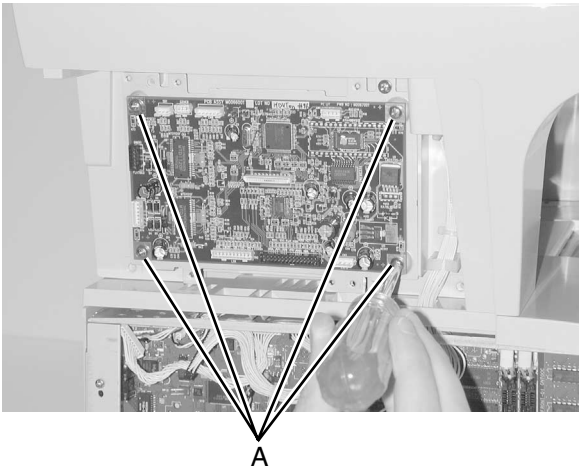


7. Lift the timing belt off the gears to remove.

Scanner control unit card removal

Note: When replacing the SCU, make sure that the ADF motor wiring harness is connected to CN5 on the SCU card and that the flatbed motor wiring harness is connected to CN6. If they are connected to the wrong connectors, the LCD on the operator panel displays “Scanner locked, release lock under scanner”.

1. Remove the left scanner base cover.
2. Disconnect all cables.
3. Remove four screws **[A]**.



4. Remove the SCU card.

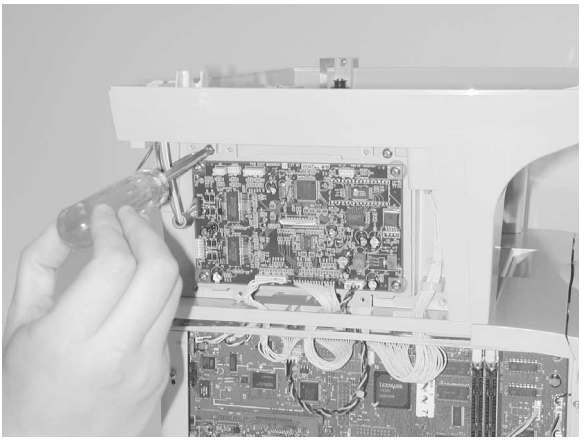
Note: Perform the scanner calibration and scanner registration procedures after replacing this part.

Scanner document tray assembly

1. Pull the document tray to the right to release.
2. Lift the document tray to remove.

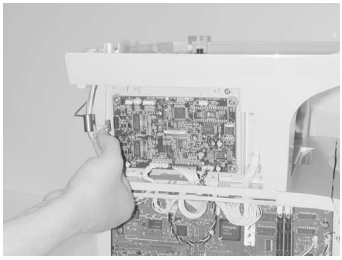
Scanner flatbed motor assembly removal

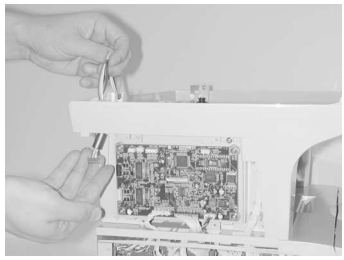
1. Remove the scanner document tray. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the scanner document cover. See **“Scanner cover removal” on page 4-68** for more information.
3. Remove the right and left ADF covers. See **“Scanner right ADF cover removal” on page 4-71** and **“Scanner left ADF cover removal” on page 4-74** for more information.
4. Remove the ADF. See **“Scanner ADF removal” on page 4-75** for more information.
5. Remove the R2 and R1 idler. See **“Scanner R2 idler removal” on page 4-94** and **“Scanner R1 idler removal” on page 4-92** for more information.
6. Remove the scanner cover. See **“Scanner cover removal” on page 4-68** for more information.
7. Remove the CCD and CCD belt. See **“Scanner CCD carriage removal” on page 4-82** and **“Scanner CCD timing belt removal” on page 4-84** for more information.
8. Remove the flatbed ground screw.



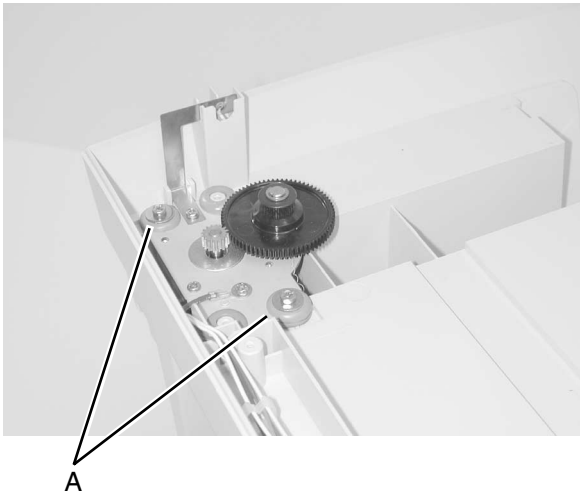
9. Disconnect the flatbed motor.

10. Route the cables up through the flatbed.





11. Remove two screws **[A]**.



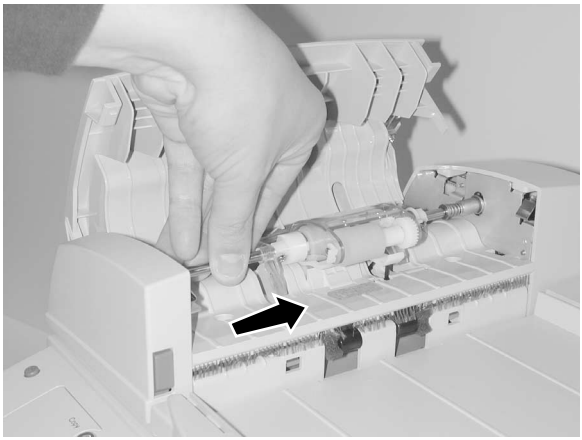
12. Lift to remove the flatbed motor.

13. Remove copper ground plate.

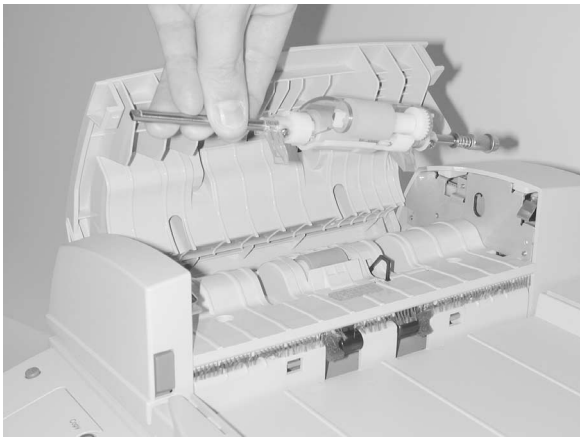
Note: This plate needs to be attached to the new flatbed motor.

Scanner ADF pick roller assembly removal

1. Open ADF upper cover.
2. Hold the left connecting shaft on the ADF pick roller assembly.
3. Push the assembly toward the right side of the ADF until the shaft is clear.

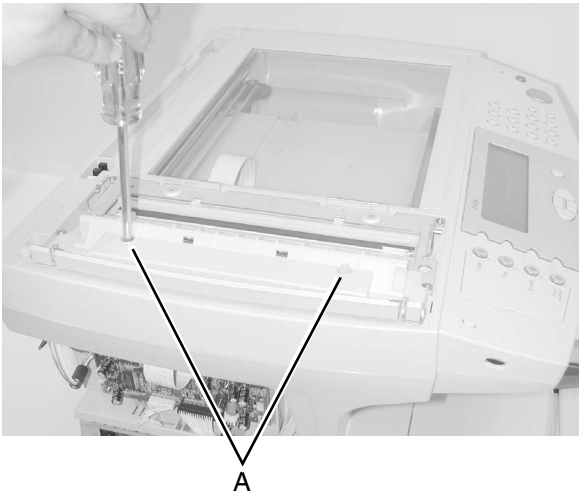


4. Lift and remove.



Scanner R1 idler removal

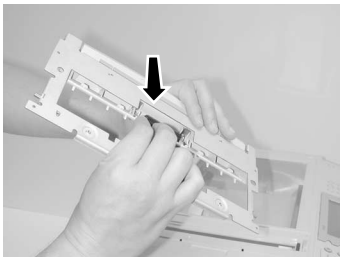
1. Remove the scanner document tray. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Remove the right and left ADF covers. See **“Scanner right ADF cover removal” on page 4-71** and **“Scanner left ADF cover removal” on page 4-74** for more information.
4. Remove the ADF. See **“Scanner ADF removal” on page 4-75** for more information.
5. Remove the R2 idler. See **“Scanner R2 idler removal” on page 4-94** for more information.
6. Remove four screws in the idler bracket.

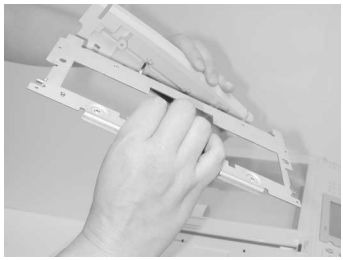


7. Remove two screws.

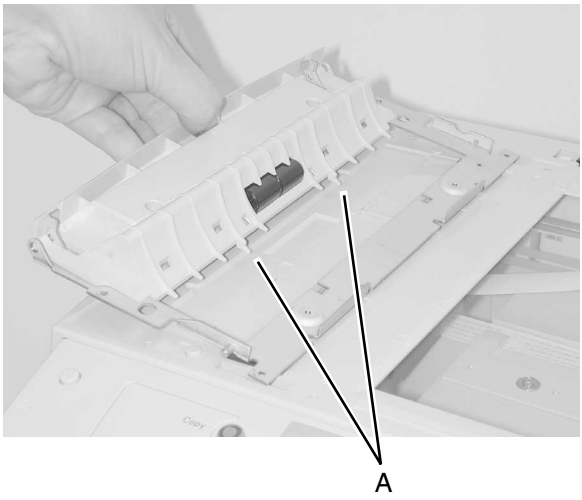
8. Pull idler and bracket away from scanner and remove.

9. Pull R1 idler down to release tabs on the underside of the bracket. Slide out to remove.



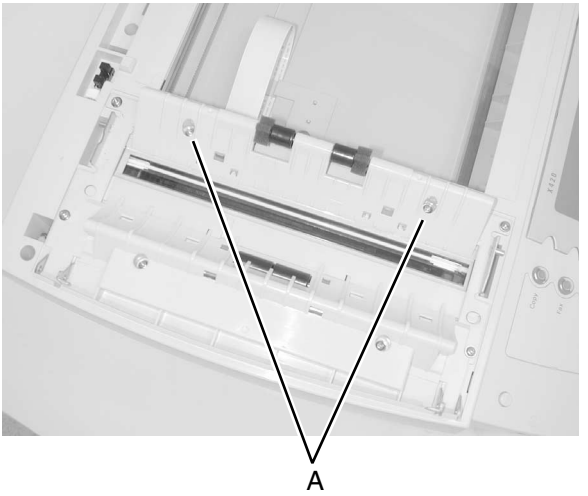


Note: Reinstall: with R1 idler in bracket ensure the two teeth **[A]** are inserted in notches.

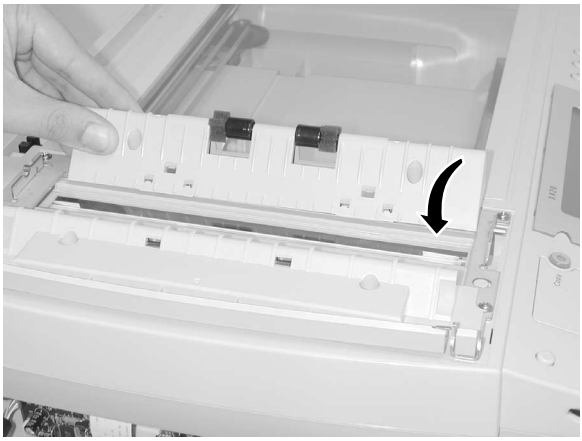


Scanner R2 idler removal

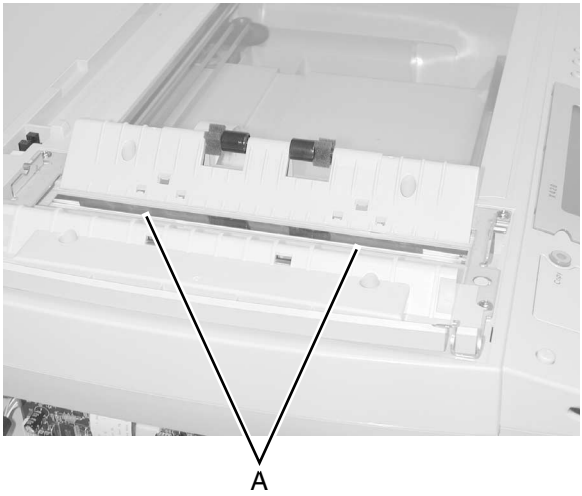
1. Remove the scanner document tray. See **“Scanner document tray assembly” on page 4-87** for more information.
2. Remove the flatbed cover. See **“Flatbed cover removal” on page 4-73** for more information.
3. Remove the right and left ADF covers. See**“Scanner right ADF cover removal” on page 4-71** and **“Scanner left ADF cover removal” on page 4-74** for more information.
4. Remove the ADF. See **“Scanner ADF removal” on page 4-75** for more information.
5. Remove two screws.



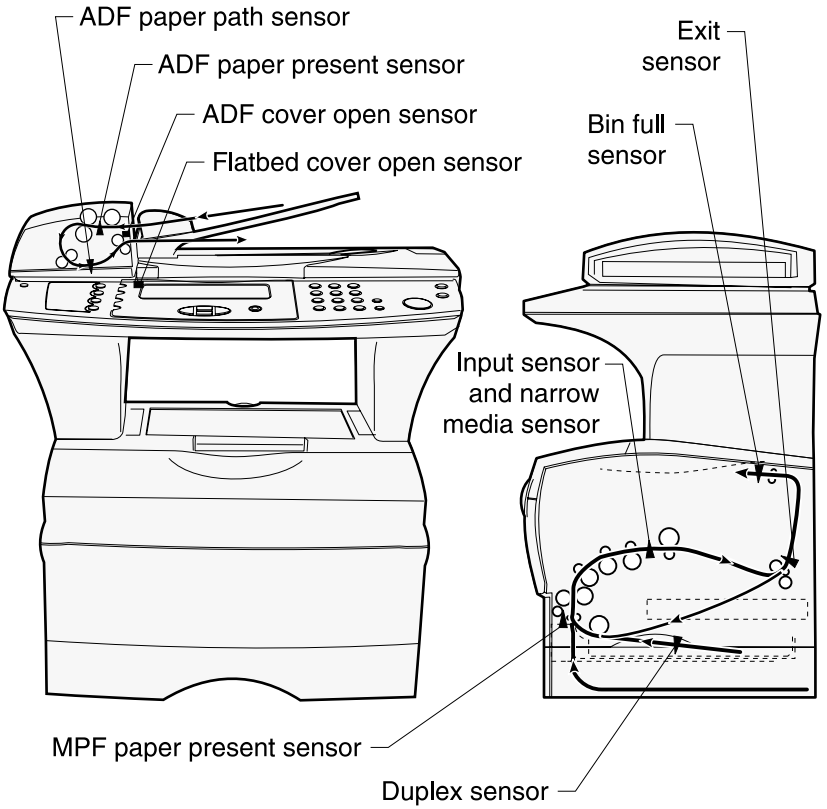
6. Tilt the idler inward and lift to remove.



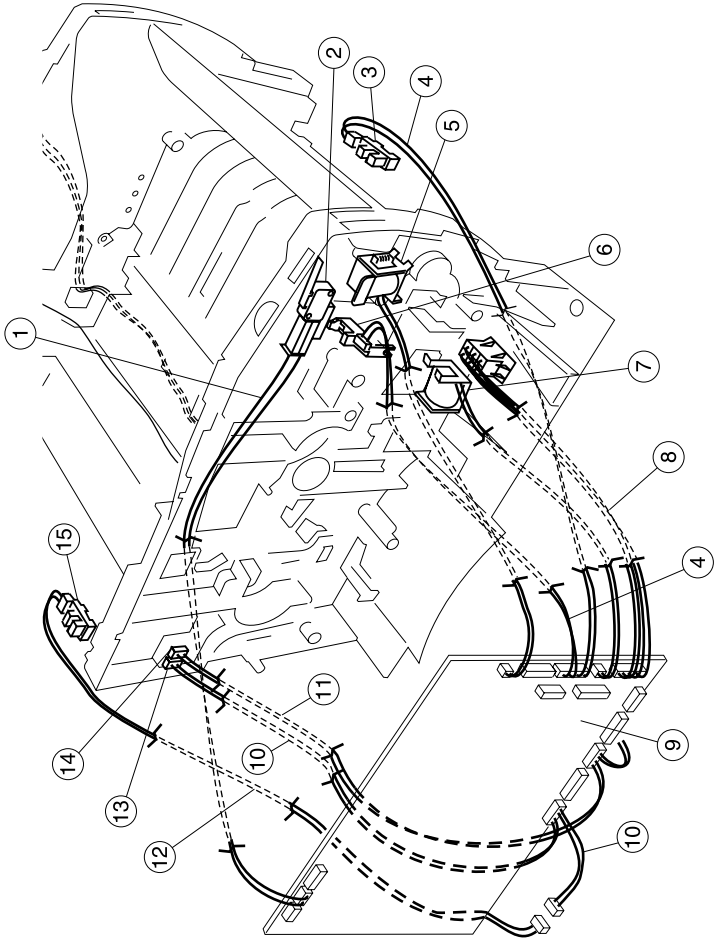
Note: Reinstall: ensure extended edge of the R2 idler **[A]** is slipped under the scanner glass.



5. Locations

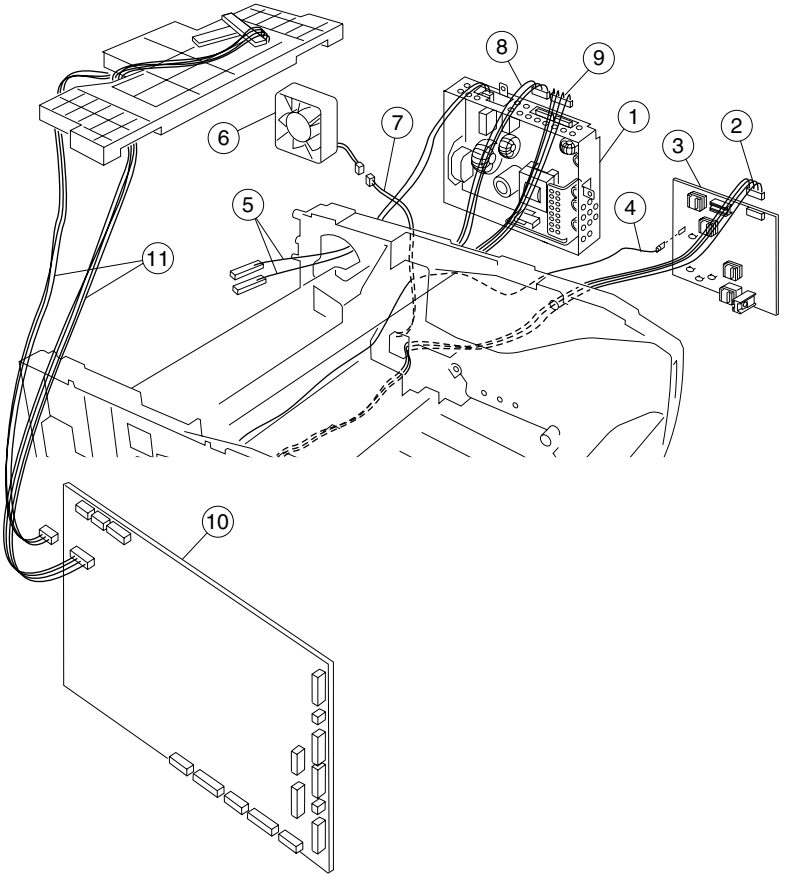

ADF paper path sensor
ADF paper present sensor
ADF cover open sensor
Flatbed cover open sensor
Exit sensor
Bin full sensor
Input sensor and narrow media sensor
MPF paper present sensor
Duplex sensor

Cables



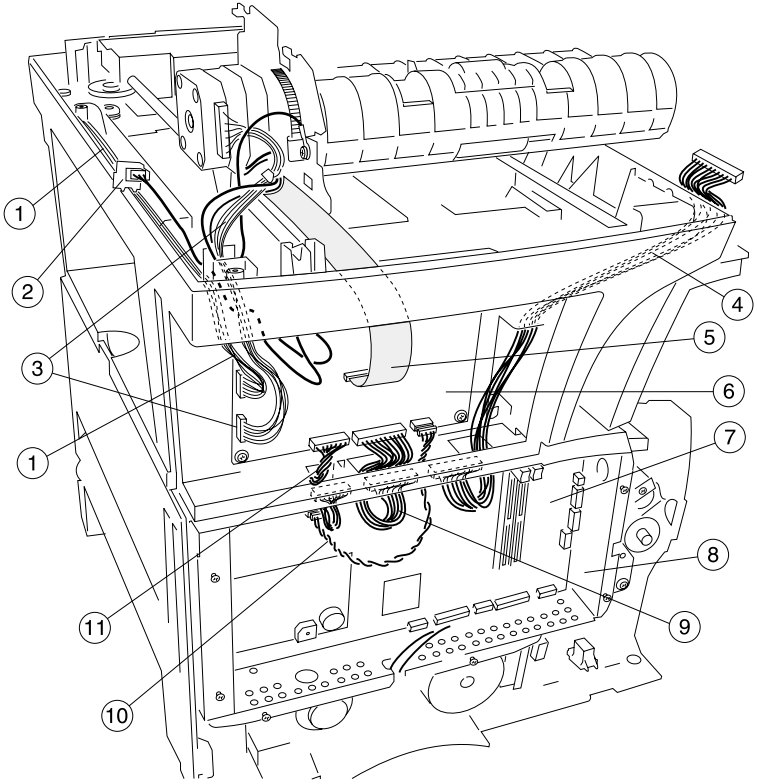
Reference	Description
1	Cable Assembly, Cover Switch
2	Switch, Interlock Cover
3 and 4	Sensor and Cable included with P/N 56P0611
5 and 7	Solenoid, Paper Feed
6	Sensor, Toner Level
8	Cable Assembly, Drawer
9	Card Assembly, RIP
10	Cable Assembly, 3–pin Connector
11	Cable Assembly, 2–pin Connector
12	Sensor Cable, Output Full
13	Connector, 3–pin
14	Connector, 2–Pin
15	Sensor, Output Full

Cables (continued)



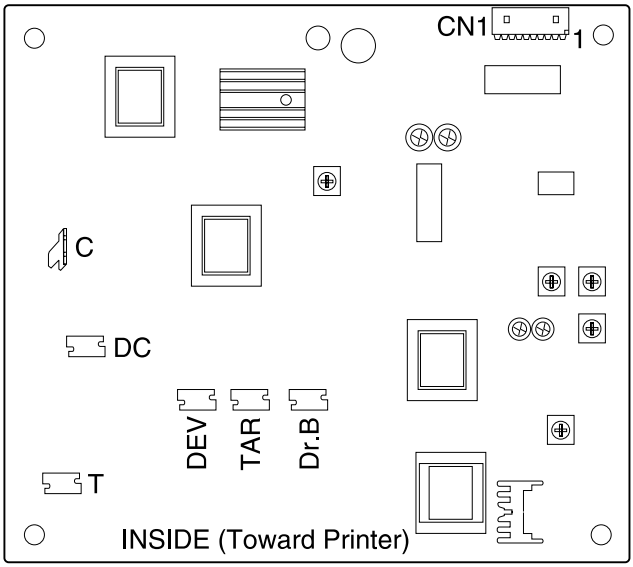
Reference	Description
1	Power Supply, 110 V
1	Power Supply, 220 V
2, 7, 8, 9	Cable Assembly, Main Harness Locations: 2. HVPS 7. Fan 8. LVPS Power 9. LVPS Control NS Paper–In, Duplex
3	Fuser PS, High Volt
4	Guide Assembly, Left
5	Cable Assembly, LVPS to Fuser
6	Fan, Cooling
10	Card Assembly, Network RIP, modem
11	Cable Assembly, Printhead

Scanner cables



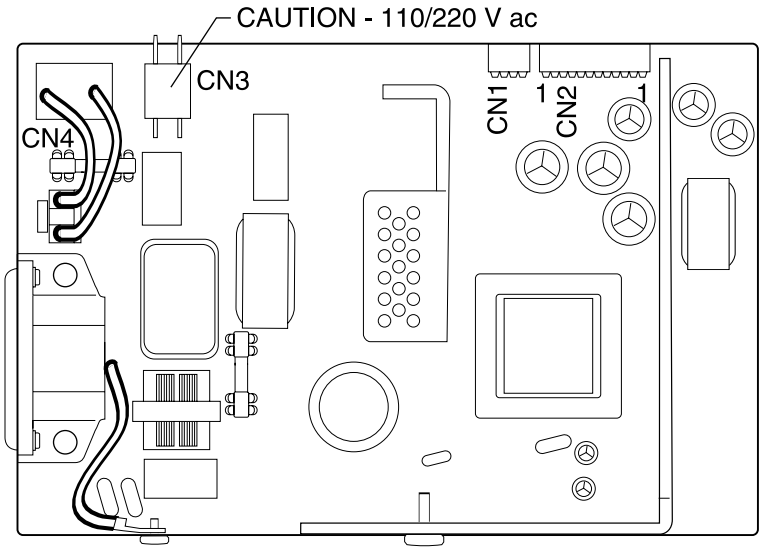
Reference	Description
1	Cable assembly, SCU-flatbed motor
2	Sensor, photo
3	Cable assembly, SCU-ADF motor
4	Cable assembly, OPU-RIP
5	Cable assembly, SCU-CCD
6	Card, SCU
7	Card, RIP-NA (resistive)
7	Card, RIP-EU (reactive)
8	Cage, card
9	Cable assembly, SCU AFE-RIP
10	Cable assembly, power SCU-RIP
11	Cable assembly, SCU-RIP

High voltage power supply (HVPS)



Function name	Name on card	# of pins	Pin #	Signal
To RIP	J16–CN1	8	2 4 7	Gnd. +24 V dc +5 V dc
Charge roll	C	Terminal	1	

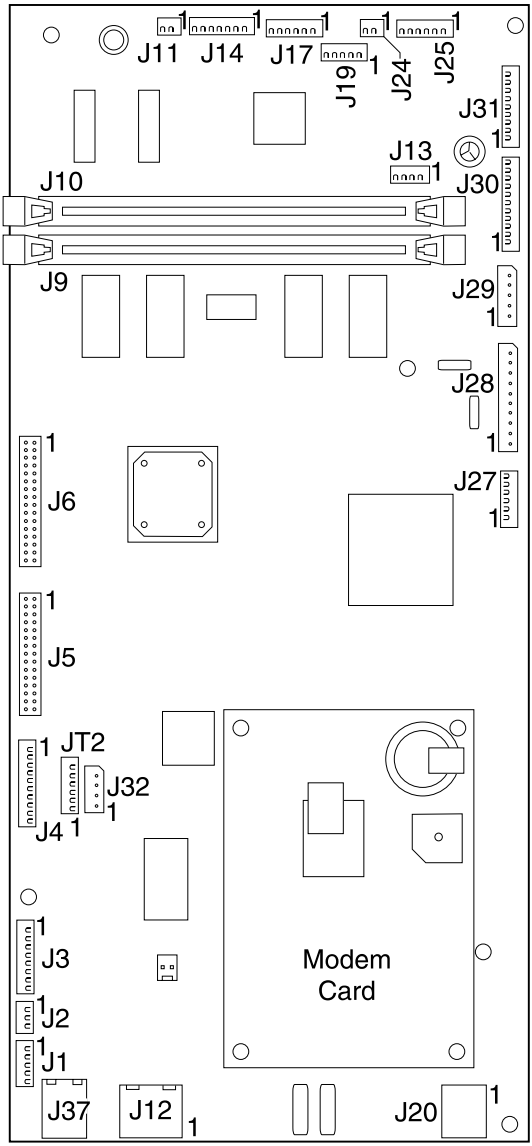
Low voltage power supply (LVPS)



Function name	Name on card	# of pins	Pin #	Signal
Control	CN1	4	1	Ground
To RIP Card	CN2	12	1,2,3,7,8, 9 4,5,6 10,11,12	Ground +5V +24V
Heater	CN3	2	1-2	110/220 V ac
On/Off Switch	CN4	2	1-2	110/220 V ac

RIP card assembly

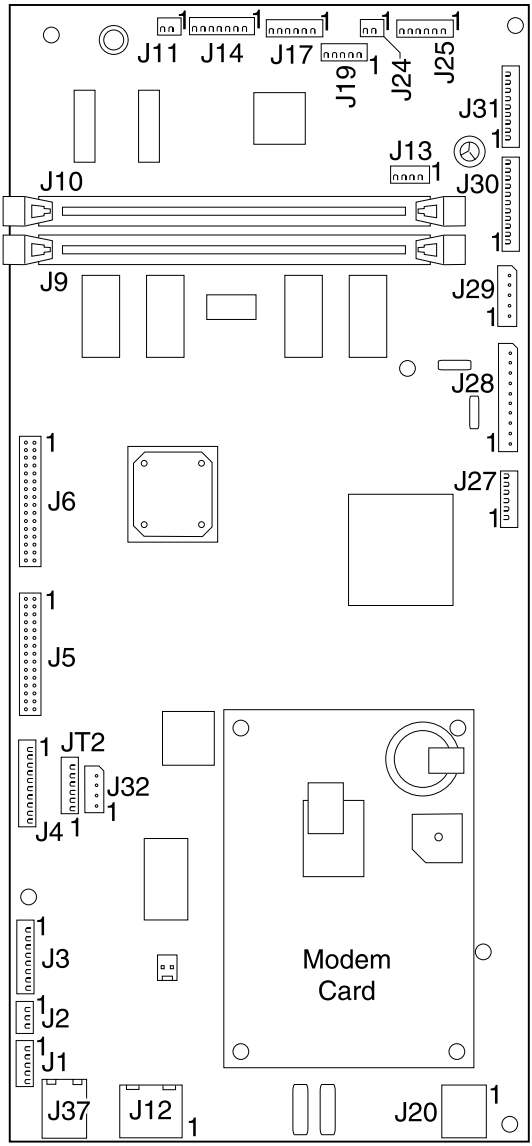
Note: Pin number 1 is designated on the printed circuit card by either a white triangle, a number 1, or both. The pin numbers follow chronologically to the oppos



Function name	Name on card	# of pins	Pin #	Signal
Mirror motor	J1–MMTR	5	4 5	Gnd. +24 V
Cover open	J2–CO	3	1 2 3	+5 V closed +5 V Gnd.
LSU	J3–LSU	8	1, 5, 7 6	Gnd. +5 V closed
10 pin scanner control	J4	10	3, 6, 9, 10,	Gnd.
30 pin SCU AFE	J5	30	29, 30	Gnd.
Operator panel	J6	32	1, 2, 15, 23, 24 6, 10, 16, 21, 22, 23, 31, 32	+5 V Gnd.
MPF solenoid	J11	2		
Network connector	J12F			
Exit motor	J13	4		
Main motor	J14	7	7 1, 6	+24 V Gnd.
MPF toner	J17	6	1, 4 3, 6	+5 V Gnd.
LVPS control	J19	5	5	Gnd.
Modem	J20			
FD solenoid	J24	2		

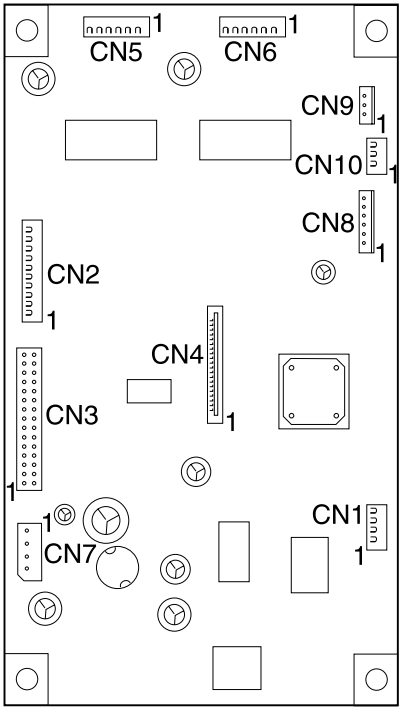
RIP card assembly (continued)

Note: Pin number 1 is designated on the printed circuit card by either a white triangle, a number 1, or both. The pin numbers follow chronologically to the oppos



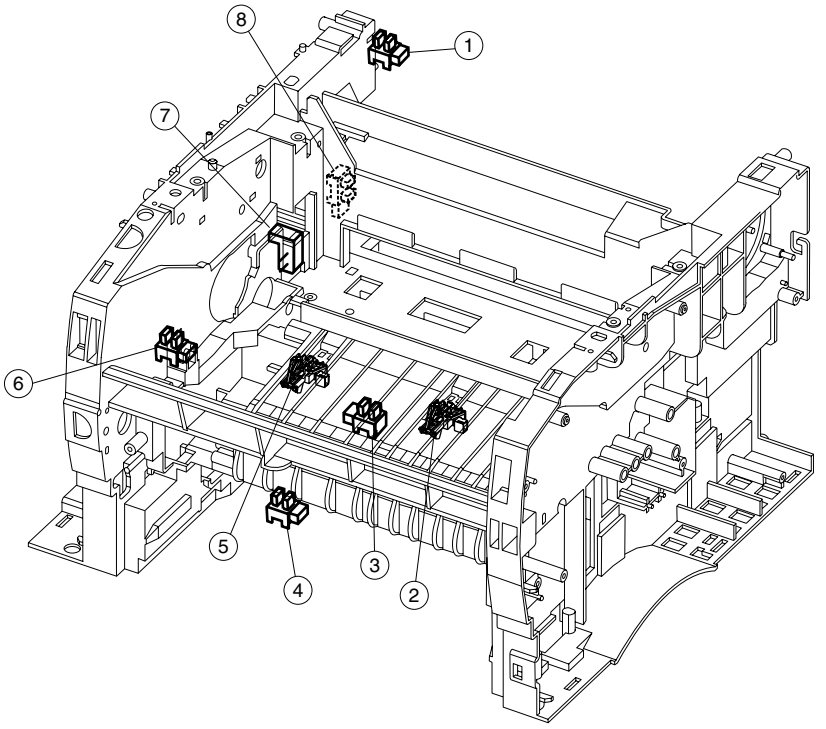
Function name	Name on card	# of pins	Pin #	Signal
Tray 2	J25	6	6 4 5	+24 V +5 V Gnd.
Exit, rear cover sensors	J27	6	1, 4 3, 6	+5 V Gnd.
LVPS DC power	J28	10	1, 2, 10 3, 4, 9 5, 7	+24 V Gnd. +5 V
Thermistor, smart IC	J29	5	2, 5	Gnd.
HVPS, fan, fan ground	J30	11	10 7 5	+5 V +24 V Gnd.
Paper input, narrow media, duplex	J31	9	1, 4, 7 3, 6, 9	+5 V Gnd.
Power to SCU	J32	4	1 2, 3 4	+5 V Gnd. +24 V
USB	J37		G1, G2 1	Gnd. USB power

SCU connectors



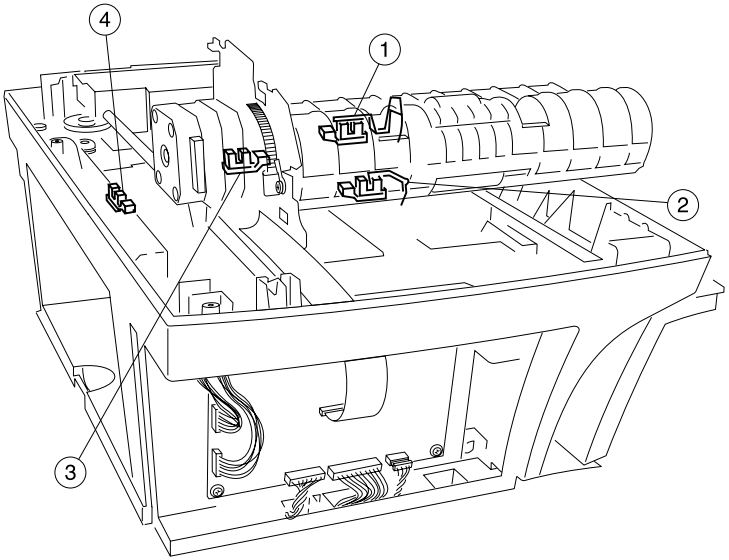
Function name	Name on card	# of pins	Pin #	Signal
Scanner Control	CN2	10		From RIP
SCU - AFE	CN3	30		
CCD	CN4	22	16, 17 2, 22	+12 V Ribbon cable connector
ADF connect or	CN5	6	1, 2	+24V
Flat Bed Motor	CN6	6	2, 5	+24V
Power from RIP	CN7	4	1 4	+5V +24V
Sensors in ADF (Cover Closed and Paper Position)	CN8	6		
SB 1 (Paper Present Sensor)	CN9	3		
Flatbed Cover Open	CN10	3		

Sensors



Reference	Description
1	Paper Path Exit Flag
2	Paper Path below Cartridge
3	Paper Path Duplex
4	Paper Path MPF
5	Paper Path below Cartridge
6	Sensor, Toner Level
7	Sensor, Smart Button
8	Sensor, Fuser Exit

Scanner sensors



Reference	Description
1	Paper present sensor
2	Paper position sensor
3	ADF cover closed sensor
4	Flatbed cover closed sensor

Note: Sensors 1-3 are only available as part of the ADF assembly.

6. Preventive maintenance

This chapter describes procedures for MFP preventive maintenance. Following these recommendations can help prevent problems and maintain optimum performance.

Lubrication specifications

Lubricate only when parts are replaced or as needed, not on a scheduled basis. Use of lubricants other than those specified can cause premature failure. Some unauthorized lubricants may chemically attack polycarbonate parts. Use IBM no. 10 oil, P/N 1280443 (approved equivalents: Mobil DTE27, Shell Tellus 100, Fuchs Renolin MR30), IBM no. 23 grease (approved equivalent: Shell Darina 1), and grease, P/N 99A0394 to lubricate appropriate areas of the printer.

Safety inspection guide

This inspection guide aids you in identifying unsafe conditions.

If any unsafe conditions exist, find out how serious the hazard could be and if you can continue before you correct the hazard.

Check the following items:

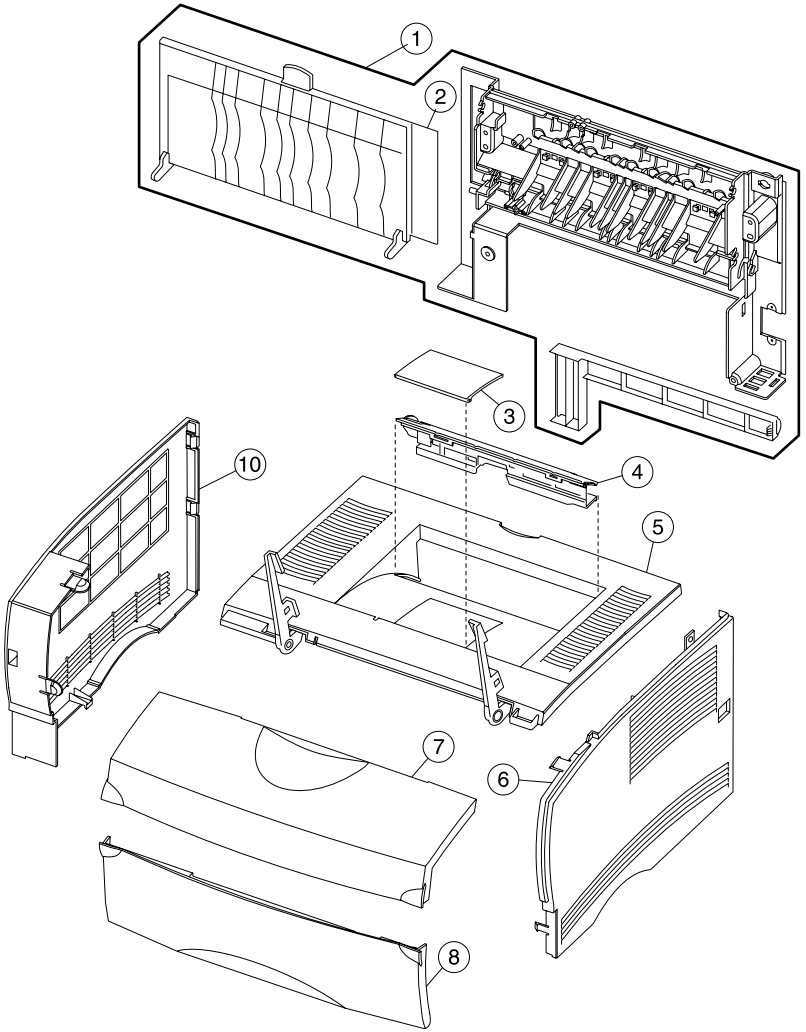
- Damaged, missing, or altered parts, especially in the area of the on/off switch and the power supply.
- Damaged, missing, or altered covers, especially in the area of the top cover and the power supply cover.
- Possible safety exposure from any non–Lexmark attachments.

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.

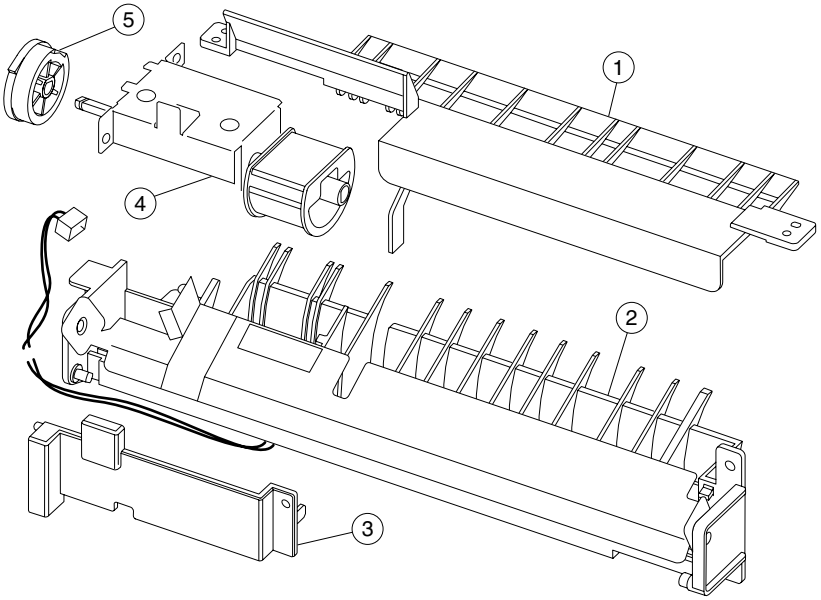
Assembly 1: Covers



Assembly 1: Covers

Asm-Index	Part Numbers	Units	Description
1–1	56P2508	1	Cover assembly, rear
2	56P0607	1	Door assembly, rear exit
3	56P0680	1	Flap, paper holder
4	56P0603	1	Cover assembly, duct
5	56P2258	1	Cover assembly, top
6	56P2257	1	Cover assembly, right
7	56P2265	1	Cover assembly, front with display (with logo)
8	56P0610	1	Cover assembly, MPF door
10	56P0600	1	Cover assembly, left

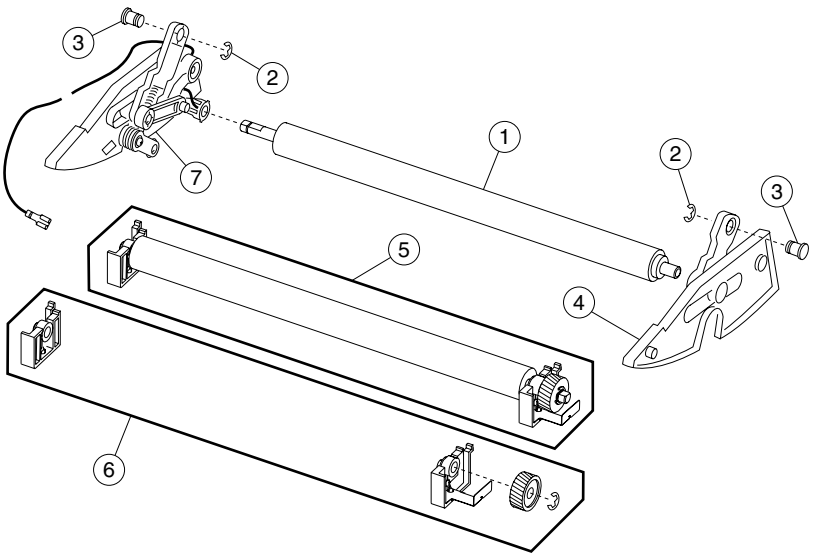
Assembly 2: Multipurpose feeder (MPF)



Assembly 2: Multipurpose feeder (MPF)

Asm-Index	Part Numbers	Units	Description
2–1	56P0612	1	Housing assembly, upper (MPF)
2	56P0611	1	Housing assembly, lower (MPF)
3	56P0615	1	Cap, MPF paper feed cover
4	56P2181	1	Assembly, roller (MPF)
5	56P0614	1	Gear, MPF paper pick

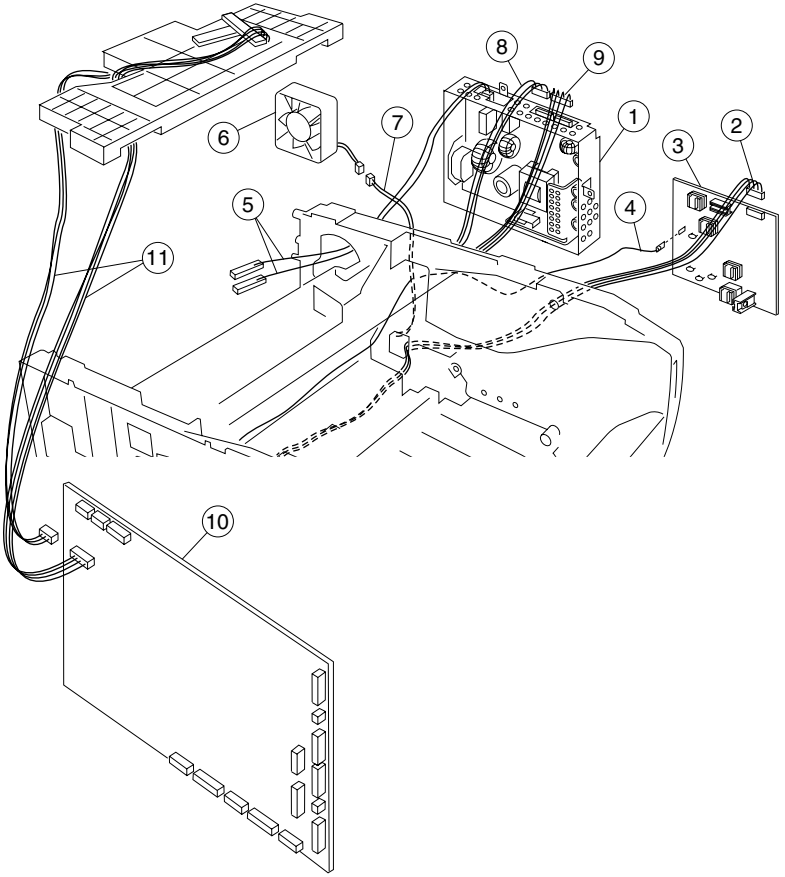
Assembly 3: Charging



Assembly 3: Charging

Asm-Index	Part Numbers	Units	Description
3–1	56P0640	1	Roll, charge
2	56P0668	1	Parts pack, (screws and E–rings)
3	56P0669	1	Hinge, pivot (quantity 2)
4	56P0642	1	Guide assembly, right
5	56P0643	1	Assembly, transfer roll
6	56P0644	1	Bearings, transfer roll
7	56P0641	1	Guide assembly, left

Assembly 4: Electronics and cables

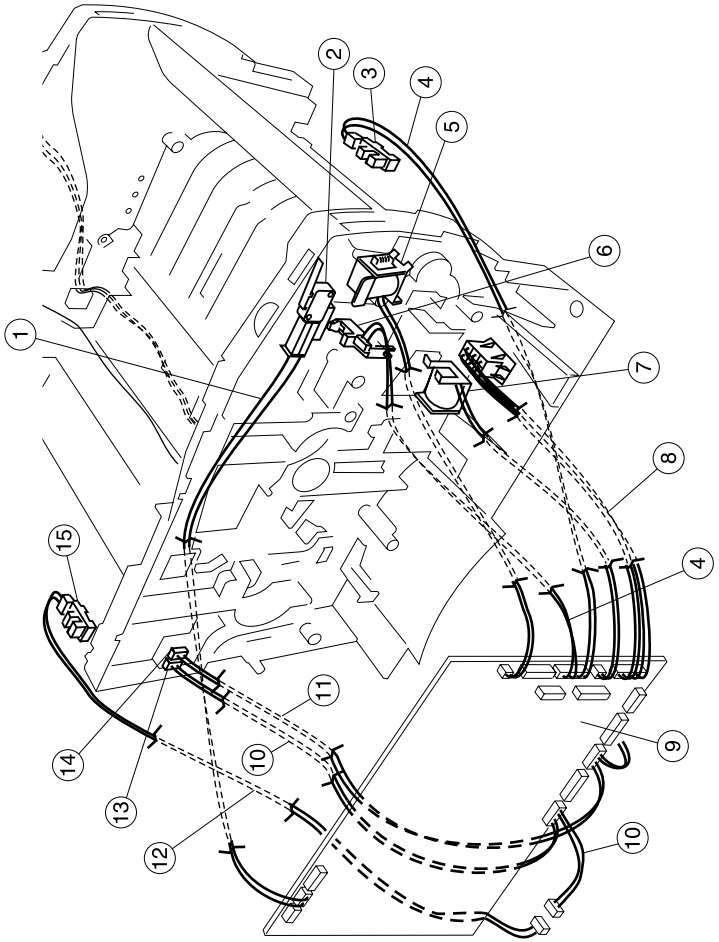


Assembly 4: Electronics and cables

Asm-Index	Part Numbers	Units	Description
4–1	56P2285	1	Power supply, 110 V
1	56P2284	1	Power supply, 220 V
2, 7, 8, 9	56P2273	1	Cable assembly, main harness Locations: 2. HVPS 7. Fan 8. LVPS Power 9. LVPS Control NS Paper–In, Duplex
3	56P0628	1	PS, high volt
4	56P0641	1	Guide assembly, left
5	56P0650	1	Cable assembly, LVPS to fuser
6	56P0630	1	Fan, cooling
10	56P2281	1	Card assembly, RIP (resistive)
10	56P2282	1	Card assembly, RIP (reactive)
11	56P0622	1	Cable assembly, printhead

Reactive	Australia, Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Russia, Senegal, south Africa, Spain, Sweden, Switzerland, Turkey, UK
Resistive	US, Argentina, Brazil (HV), Brazil (LV), Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Equador, Guam, Guatemala, Honduras, Hong Kong, Malaysia, Mexico, Nicaragua, Panama, Paraguay, Peru, Poland, Puerto Rico, Singapore, Venezuela, Virgin Islands

Assembly 4 (cont.): Electronics and cables



Assembly 4 (cont.): Electronics and cables

Asm-Index	Part Numbers	Units	Description
1	56P0624	1	Cable assembly, cover switch
2	56P0625	1	Switch, interlock cover
3 and 4			Sensor and Cable included with P/N 56P0611 (lower MPF housing)
5 and 7	56P0616	2	Solenoid, paper feed
6	56P0653	1	Sensor, toner level
8	56P0631	1	Cable assembly, drawer
9	56P2281	1	Card assembly, RIP (resistive) (See **page 7-9** for more information.))
9	56P2282	1	Card assembly, network RIP (reactive) (See **page 7-9** for more information.)
10	56P0664	1	Cable assembly, output full (and fuser exit)
11	56P0652	1	Sensor, smart button
12	56P0682	1	Sensor cable, output full
13	56P0665	1	Connector, 3–pin
14	56P0666	1	Connector, 2–pin
15	56P0645	1	Sensor, photo
NS	56P0649	1	Cable assembly, fuser exit
NS	56P0620	1	Cable assembly, motor

Assembly 4 (cont.): Electronics and cables

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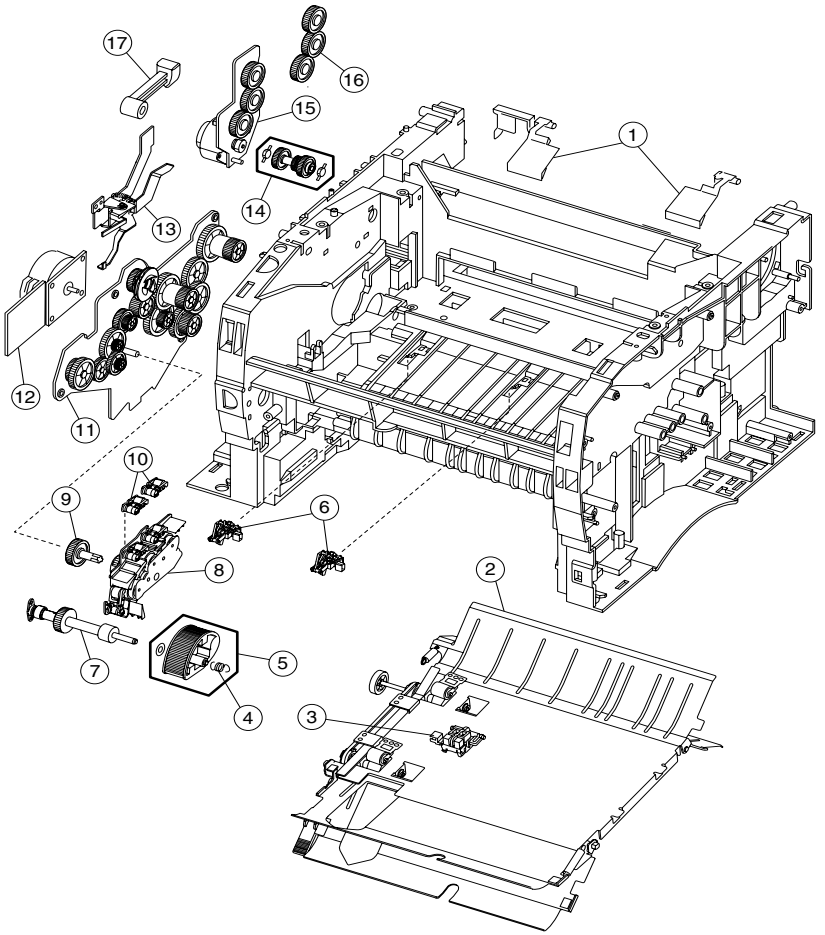
Assembly 4 (cont.): Electronics and cables

Asm-Index	Part Numbers	Units	Description
NS	70G0478	1	Power cord, Bolivia, Canada, Caribbean Countries, Columbia, Costa Rica, Dominican Republic, Equador, El Salvador, Guatemala, Honduras, Japan, Mexico, Nicaragua, Peru, Panama, Puerto Rico, Saudi Arabia, Taiwan, The Virgin Islands, Venezuela, US, AP–LV
NS	1339528	1	Power cord, Bahrein, Cyprus, Iraq, Ireland, Kuwait, Oman, Qatar, UAE, UK, Yemen, (HV)
NS	1339529	1	Power cord, Austria, Belgium, Bosnia, Bulgaria, Catalan, Czech, Croatia, Egypt, Albania (Euro English and other East), Finland, France, Germany, Greece, Hungary, Iceland, Iran, Italy, Jordan, Lebanon, Macedonia, Netherlands, Norway, Paraguay, Poland, Portugal, Romania, Russia, and CIS, Slovak Countries, Slovenia, Spain, Sweden, Syria, Turkey, Yugoslavia (Serbia and Montenegro)(HV)
NS	1339530	1	Power cord, Israel (HV)
NS	1339531	1	Power cord, Switzerland (HV)
NS	1339532	1	Power cord, Libya, Pakistan, South Africa (HV)
NS	1339533	1	Power cord, Chile, Uruguay (HV)
NS	1339534	1	Power cord, Denmark (HV)
NS	43H5545	1	Power cord, PR China (HV)
NS	1339548	1	Power cord, Brazil (LV)
NS	11D0330	1	Power cord, Argentina
NS	1339520	1	Power cord, U.S. (HV) RPQ

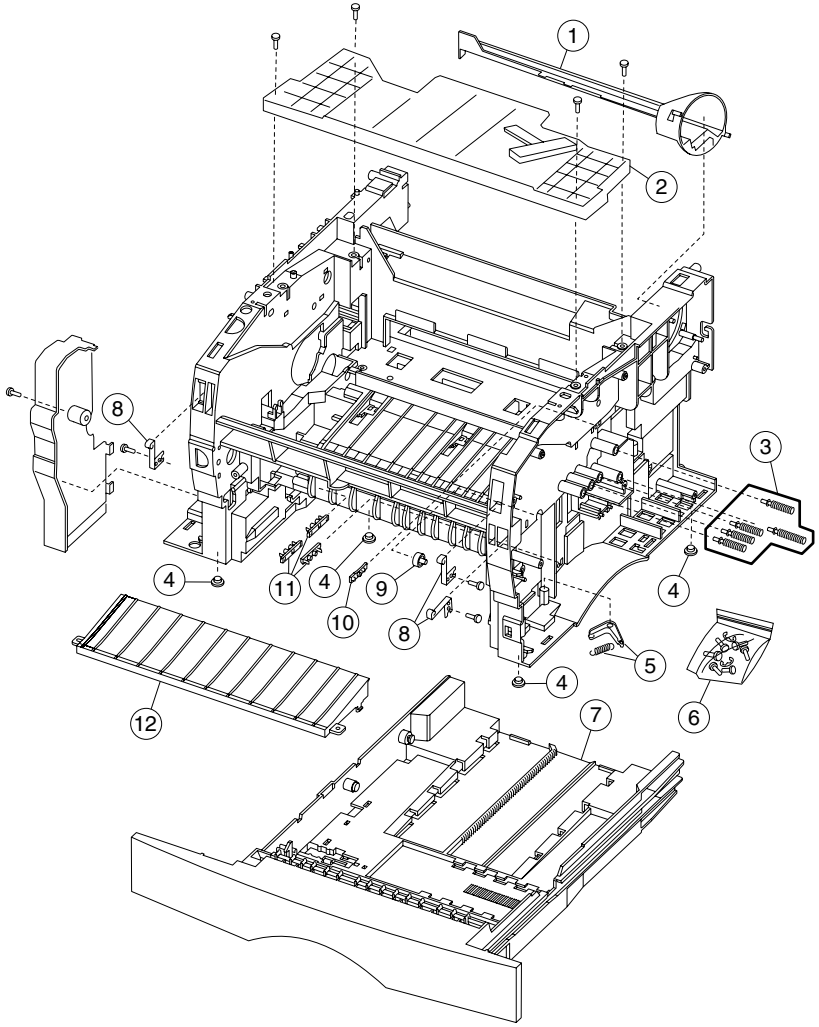
Assembly 5: Paper feed



Assembly 5: Paper feed

Asm-Index	Part Numbers	Units	Description
5–1	56P0677	1	Flags, stack control
2	56P0651	1	Assembly, duplex
3	56P0645	1	Sensor, photo
4	56P0618	1	Spring, D–roll
5	56P0656	1	Roll, paper feed
6	56P0655	1	Bracket, paper sensor
7	56P0657	1	Assembly, paper feed
8	56P0654	1	Plate assembly
9	56P0634	1	Gear, paper feed
10	56P0693	1	Roller asm., reference backup (top front and rear)
11*	56P0633	1	Assembly, drive
12	56P0632	1	Motor assembly, main drive
13	56P0638	1	Coupling, cartridge
14*	56P0637	1	Drive, ratchet
15*	56P0635	1	Assembly, motor
16*	56P0636	1	Gears, spur
17	56P0639	1	Guide, link

Assembly 6: Frame

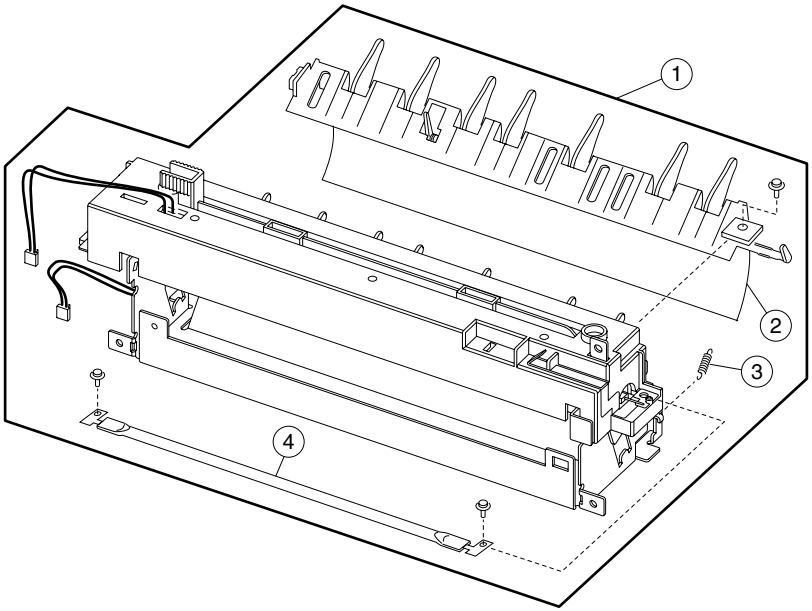


Assembly 6: Frame

Asm-Index	Part Numbers	Units	Description
6–1	56P0606	1	Duct, air
2	56P0623	1	Assembly, printhead
3	56P0629	1	Assembly, cartridge contacts (quantity 5)
4	56P0662	1	Feet, base
5	56P0661	1	Damper, tray
6	56P0668	1	Parts pack, (screws and E–rings)
7	56P0609	1	Assembly, tray 1
8	56P0667	1	Latch, door (3 latches)
9	56P0660	1	Roller, paper guide
10	56P0659	1	Bracket, shutter
11	56P0672	1	Bracket, body–tray
12	56P0658	1	Guide, entrance

* Order a lubricant to use with these gears, P/N 99A0394, (FRU, Nyogel 744). See **page 4-6** for more information.

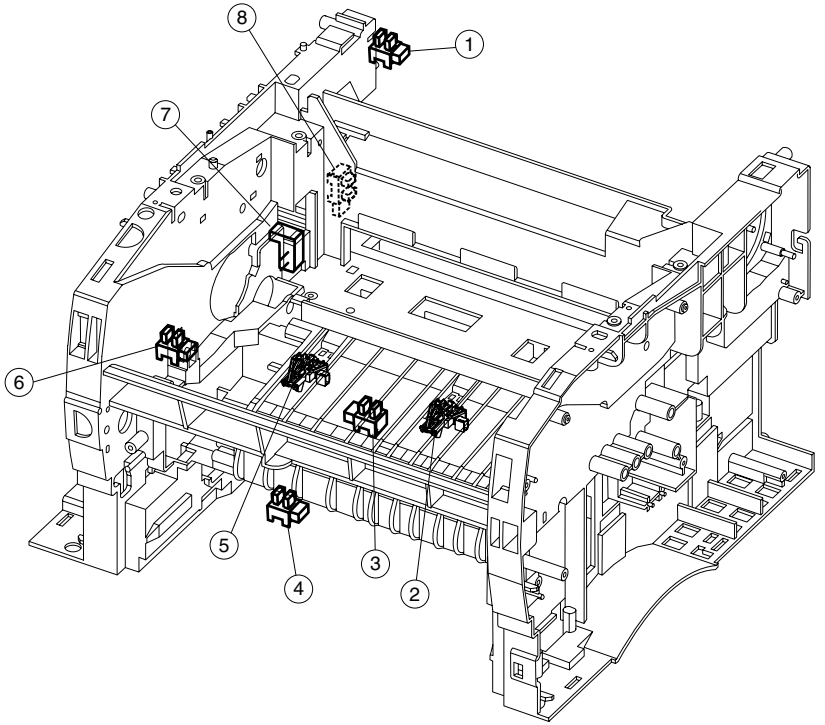
Assembly 7: Fuser



Assembly 7: Fuser

Asm-Index	Part Numbers	Units	Description
7–1	56P0648	1	Assembly, fuser (110 V)
1	56P0671	1	Assembly, fuser (220 V)
2	56P0673	1	Fuser assembly, paper guide
3	56P0676	1	Spring, fuser exit
4	56P0646	1	Lamp, fuser (110 V)
4	56P0647	1	Lamp, fuser (220 V)

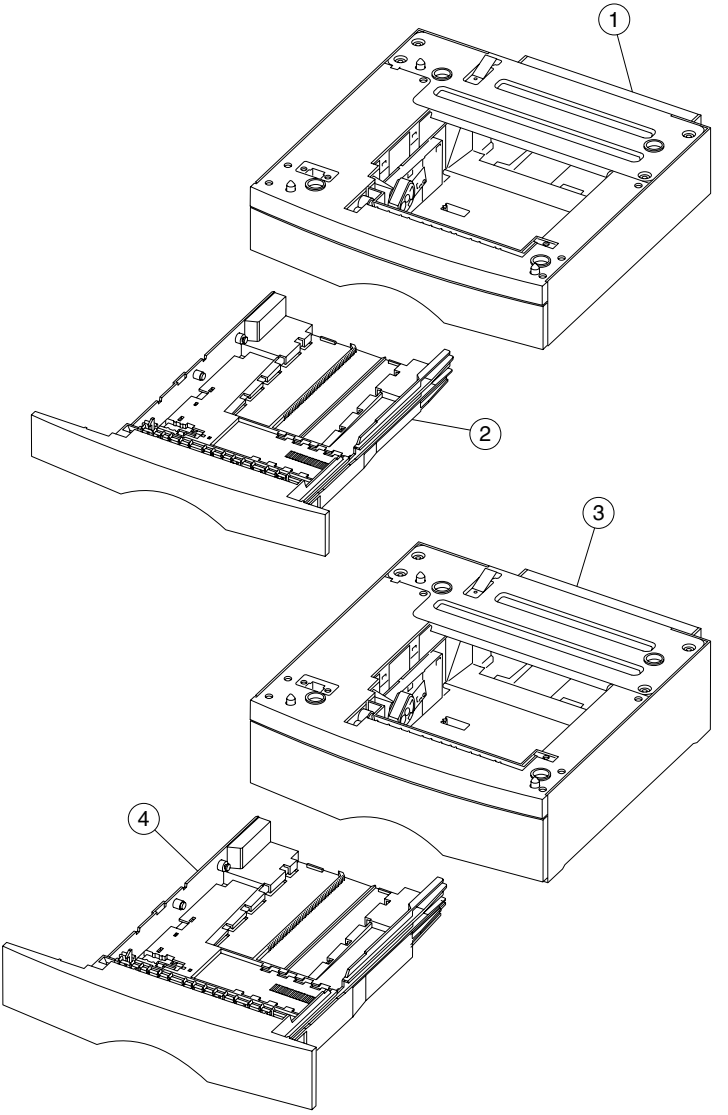
Assembly 8: Sensors



Assembly 8: Sensors and locations

Asm-Index	Part Numbers	Units	Description
8 1–5, 8	56P0645	1	Sensor, photo Locations: 1. Paper path exit flag 2. Narrow media 3. Paper path duplex 4. Paper path MPF 5. Paper path below cartridge 8. Fuser exit sensor
2, 5	56P0655	1	Bracket, paper sensor
6	56P0653	1	Sensor, toner level
7	56P0652	1	Sensor, smart button

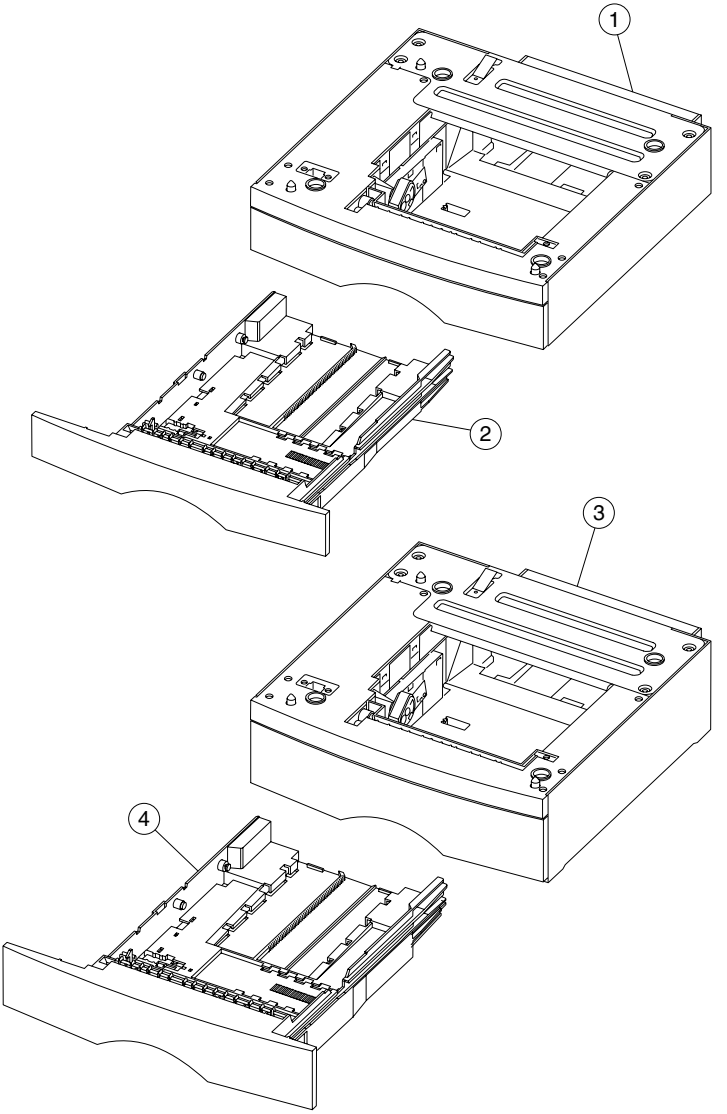
Assembly 9: Options



Assembly 9: Options

Asm-Index	Part Numbers	Units	Description
9–1	56P0674	1	Drawer assembly, 250–sheet
2	56P0609	1	Tray, 250–sheet
2	56P0681	1	Tray, 250–sheet label
3	56P0675	1	Drawer assembly, 500–sheet
4	56P0678	1	Tray, 500–sheet
NS	56P0694	1	DIMM, 4MB SDRAM
NS	56P0695	1	DIMM, 8MB SDRAM
NS	56P0696	1	DIMM, 16MB SDRAM
NS	56P0697	1	DIMM, 32MB SDRAM
NS	56P0698	1	DIMM, 64MB SDRAM
NS	56P0699	1	DIMM, 128MB SDRAM
NS	99A1757	1	DIMM, 2MB flash
NS	99A1758	1	DIMM, 4MB flash
NS	99A1759	1	DIMM, 8MB flash
NS	99A1774	1	DIMM, 16MB flash
NS	56P1418	1	DIMM, 32MB flash
NS	99A1683	1	DIMM, Optra Forms™ 2MB flash
NS	99A1684	1	DIMM, Optra Forms 4MB flash
NS	99A1685	1	DIMM, Optra Forms 8MB flash
NS	99A1686	1	DIMM, Optra Forms 16MB flash
NS	56P1427	1	DIMM, Optra Forms 32MB flash
NS	56P1248	1	DIMM, Japanese 8MB font
NS	56P1250	1	DIMM, Simplified Chinese font
NS	56P1251	1	DIMM, Traditional Chinese font
NS	56P2231	1	DIMM, Korean font
NS	12G9833	1	MarkNet™ X2011e Ethernet 10/100 BaseTX

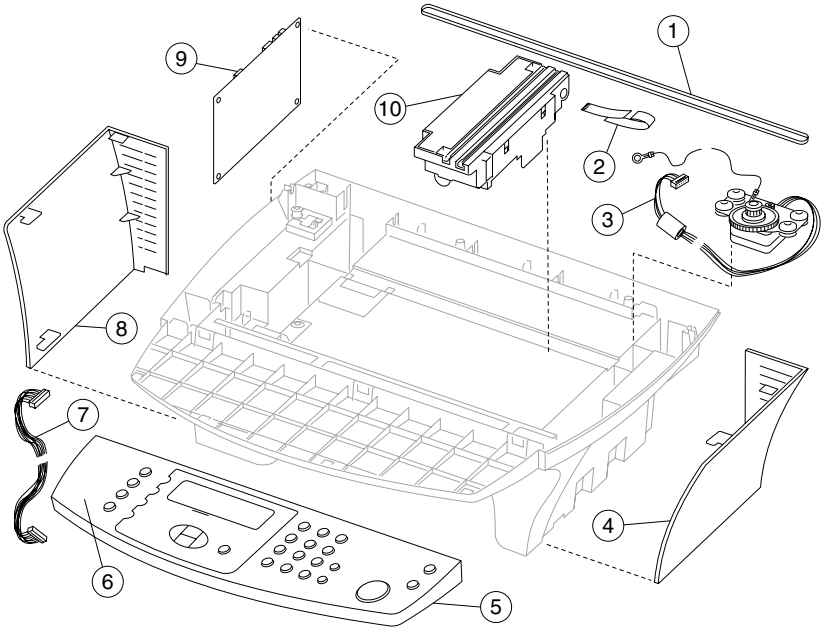
Assembly 9 (cont.): Options



Assembly 9 (cont.): Options

Asm-Index	Part Numbers	Units	Description
NS	12G9832	1	MarkNet X2012e Ethernet 10/100 BaseTX/10Base2
NS	12G9831	1	MarkNet X2031e Ethernet 10/100 BaseTX
NS	12G9830	1	MarkNet X2030t Token–Ring
NS	99A0545	1	Adapter, external serial
NS	1329605	1	Cable, high–speed bidirectional parallel (10 ft)
NS	1427498	1	Cable, high–speed bidirectional parallel (20 ft)
NS	12A2405	1	Cable, USB 2–meter
NS	1038693	1	Cable, serial (50 ft)
NS	7370971	1	Kit, field relocation

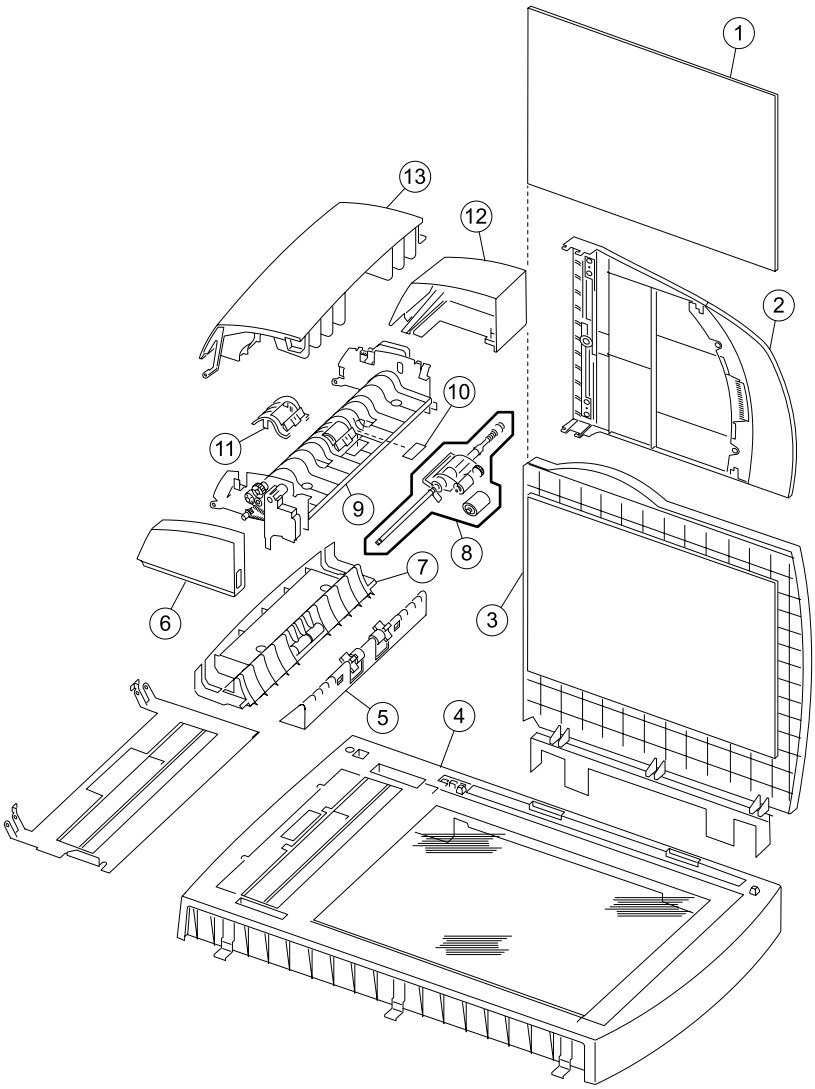
Assembly 10: Scanner base



Assembly 10: Scanner base

Asm-Index	Part Numbers	Units	Description
10-1	56P2269	1	Belt, timing
2	56P2278	1	Cable, CCD-SCU
3	56P2272	1	Motor assembly, flatbed with cable
4	56P2267	1	Cover, right scanner
5	56P2261	1	Panel, operator
6	56P2286	1	Overlay, operator panel (FIGSD)
6	56P2287	1	Overlay, operator panel (DNSFBP)
7	56P2276	1	Cable, OPU-RIP
8	56P2268	1	Cover, left scanner
9	56P2271	1	Card, SCU
10	56P2270	1	Carriage, CCD

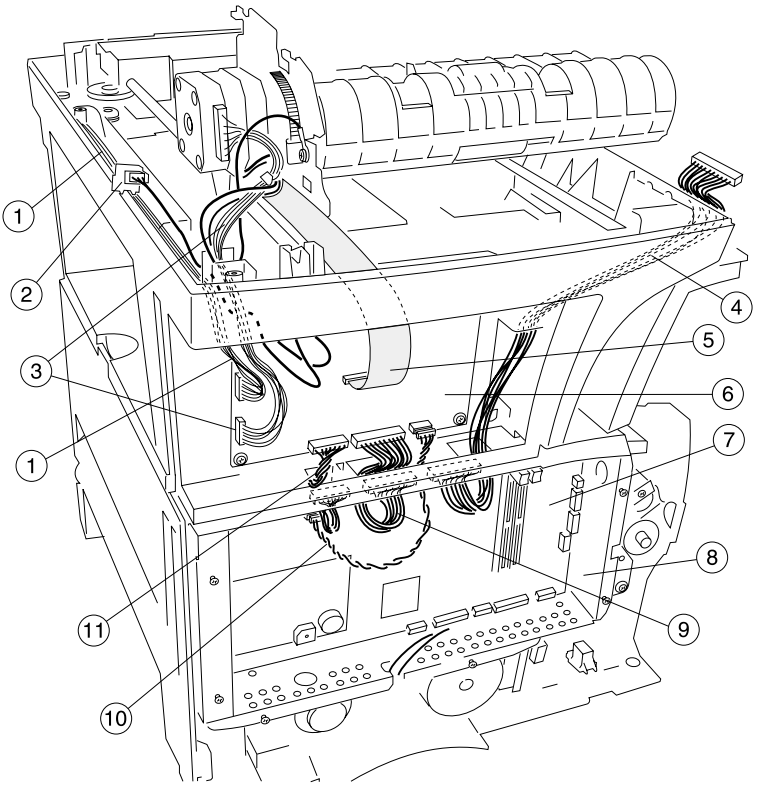
Assembly 11: Scanner top



Assembly 11: Scanner top

Asm-Index	Part Numbers	Units	Description
11-1	56P2266	1	Cushion, scan cover
2	56P2263	1	Tray assembly, document
3	56P2264	1	Cover, flatbed
4	56P2262	1	Cover, scanner
5	56P2251	1	Idler, R2
6	56P2260	1	Cover, ADF left
7	56P2250	1	Idler, R1
8	56P2649	1	Roller kit, ADF pick and separator
9	56P2252	1	Feeder assembly, auto document
10	56P2255	1	Pad, pick
11	56P2254	1	Cover, separator
12	56P2259	1	Cover, ADF right
13	56P2256	1	Cover, ADF upper

Assembly 12: Scanner cables



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