Service Manual

Lexmark™ C520, C522, and C524

5022-xxx

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LEXMARK™

Edition: March 24, 2006

P/N 12G9601

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Laser notices

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

レーザーに関するお知らせ

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

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

注意：

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

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

Korean Laser Notice

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

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

Safety information

- 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.

안전 사항

- 본 제품은 원래 설계 및 특정 구성품에 대한 테스트 결과로 안정성이 입증된 것입니다. 따라서 무허가 교체부품을 사용하는 경우에는 제조업체에서 안전에 대한 책임을 지지 않습니다.
- 본 제품에 관한 유지 보수 설명서는 전문 서비스 기술자 용으로 작성된 것이므로, 비 전문가는 사용할 수 없습니다.
- 본 제품을 해체하거나 정비할 경우, 전기적인 충격을 받거나 상처를 입을 위험이 커집니다. 전문 서비스 기술자는 이 사실을 숙지하고, 필요한 예방 조치를 취하도록 하십시오.
- 
  주의: 이 표시는 해당영역에서 고압전류가 흐른다는 위험표시 입니다. 시작전에 플러그를 뽑으시거나, 주의를 기울여 주시기 바랍니다.

安全信息

- 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 printer and the maintenance approach used to repair it. Special tools and test equipment are listed in this chapter, 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 printer problems.
4. **Repair information** provides instructions for making printer adjustments and removing and installing FRUs.
5. **Connector locations** uses illustrations to identify the connector locations and test points on the printer.
6. **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 C52X color laser printers deliver superior text and brilliant graphics. The following models are available.

Model name	Configuration	Machine type
Lexmark C520n	Network	5022-010
Lexmark C522n	Network	5022-210
Lexmark C524	Non-network	5022-400
Lexmark C524n	Network	5022-410
Lexmark C524dn	Non-network	5022-430

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. You may find that the removals in the Repair information chapter will help you identify parts. After you complete the repair, perform tests as needed to verify the repair.

Options and features

The following options are available. Some options are not available in every country. Contact your point of purchase for options available in your country.

- Memory options of 128MB, 256MB, and 512 SDRAM
- Flash memory options of 32MB and 64MB
- Hard disk—20GB with adapter
- Integrated network options
  - Token-ring
  - Ethernet
  - External serial adapter
  - PRESCRIBE card assembly
  - Bar code card assembly
  - Parallel interface card
  - MarkNet™ Print Servers
  - Lexmark PrintCryption™ card
  - Forms card (single-byte and Simplified Chinese)
- Media handling operations
  - 500-sheet asembly
  - Duplex—not a customer orderable part; preinstalled at the factory only on the C524dn or C524dtn
- DBCS font cards
  - Simplified Chinese
  - Traditional Chinese
  - Japanese
  - Korean

Specifications

Resolution

- 1200 x 1200 dpi
- 4800 Image Quality

Data streams

- PostScript 3 emulation
- PCL 5e and 6 emulation
- PDF v1.5 emulation

Print speed and performance print speed

Performance

Performance speed depends on:

- Interface to the host (USB, serial, parallel, network)
- Host system and application
- Page complexity and content
- Printer options installed or selected
- Available printer memory
- Media size and type
- Resolution

Memory configuration

Memory type	Models				
	C520n	C522n	C524	C524n	C524dn
Standard DRAM (MB)	128	128	64	128	128
Optional memory (MB) (100 pin DDR SDRAM unbuffered DIMMs)	128, 256, and 512 MB available				
Maximum (MB)	640	640	576	640	640
Optional flash memory	32 and 64 MB available				

Dimensions

Description	Height	Width	Depth	Weight
C520, C522n, C524, C524n, C524dn (basic printer)	19 in. (484 mm)	17.3 in. (440 mm)	16.1 in. (408 mm)	57.5 lb (26.1 kg)
C520, C522n, C524, C524n, C524dn (output bin installed)	19 in. (484 mm)	17.3 in. (440 mm)	20.2 in. (512 mm)	57.5 lb (26.1 kg)
C524dtn (printer, duplex, and 500-sheet assembly)	24 in. (610mm)	17.3 in. (440 mm)	22 in. (558 mm)	64.75 lb (29.37 kg)
500-sheet assembly only	5 in. (127 mm)	16.5 in. (420 mm)	20.4 in. (518 mm)	7.25 lb (3.29 kg)
Basic printer with 500-sheet assembly	24 in. (610mm)	17.3 in. (440 mm)	22 in. (558 mm)	64.75 lb (29.37 kg)
MPF configuration (printer with multipurpose feeder extended and output bin installed)	19 in. (484 mm)	17.3 in. (440 mm)	26.6 in. (676 mm)	57.5 lb (26.1 kg)
Primary tray configuration (printer with paper tray adjuster extended and output bin installed) A4/letter size media Legal size media	 19 in. (484 mm) 19 in. (484 mm)	 17.3 in. (440 mm) 17.3 in. (440 mm)	 20.2 in. (512 mm) 21.3 in. (540 mm)	2.1 lb (3.2 kg)
Note: A buffer of 12 in. (304.8 mm) is needed on the back of the printer.				

Power requirements

Average nominal power requirements for the base printer configuration (110 volt). Power levels are shown in watts (W). Maximum current is given in Amperes (A).

Printing states	C524, C524n, C524dn, C524dtn	C520n, C522n
Idle—average power		
Power Saver on	<18 W	<16 W
Power Saver off	105 W	105 W
Printing—average power	675 W	830 W
Basic printer	350 W	350 W
All options	375 W	350 W
Printing—maximum current		
100 V	4.5 A	4.5 A
110 V	4 A	4 A
220 V	2 A	2 A

Electrical specifications

Low voltage model

- 100 to 127 V ac at 47 to 63 Hz nominal
- 99 to 137 V ac, extreme

High voltage model

- 220 to 240 V ac at 47 to 63 Hz nominal (not available in all countries)
- 198 to 259 V ac, extreme

100 volt model

- 100 V ac at 47 to 63 Hz nominal
- 90 to 110 V ac, extreme

Notes:

- Using a 220 to 110 power converter with the 110 volt printer is not recommended.
- Using an inverter (12 V dc to 120 V ac for example) to power the printer is not recommended.
- All models are ENERGY STAR qualified.

Environment

Environment	Specifications
Operating	
Air Temperature—Product Operating	15.6 to 32.20^0 C (60 to 90.0^0 F)
Air Temperature—Product Power Off	10.0 to 43.30^0 C (50 to 110.0^0 F)
Air Relative Humidity	Relative Humidity 8 to 80%
Wet Bulb Temperature—Product Operating	22.80^0 C (73.0^0 F) Maximum
Web Bulb Temperature—Product Power Off	26.70^0 C (80.10^0 F) Maximum
Altitude	0 to 3048 meters (10,000 feet)
Atmospheric Pressure	74.6 kPa
Ambient Operating Environment	15.6 to 32.2^0 C (60 to 90^0 F) and 8% to 80% RH
Ship / Storage	
Cartridges	=<40^0 C (104^0 Fahrenheit)
Printer with Cartridges	=<40^0 C (104^0 Fahrenheit)
Printer without Cartridges	=<40^0 C (104^0 Fahrenheit)
Air Relative Humidity	Relative Humidity 8 to 80%
Altitude	10,300 meters (34,000 feet)
Web Bulb Temperature—Product Power Off	26.70^0 C (80.10^0 F) Maximum

Acoustics

All measurements are made in accordance with ISO 7779 and conform with ISO 9296.

Printer	Operating mode	1-Meter Average Bystander Sound Pressure @4800 CQ	Declared Sound Power Level @4800 CQ
C520n, C522n, C524n	Printing	51 dBA	
	Idle	34 dBA	
C524dn, C524dtn	Printing (Simplex)	51 dBA	
	Printing (Duplex)	55 dBA	
	Idle	34 dBA	

Media specifications

Paper and specialty media guidelines

Print media is paper, card stock, transparencies, labels, and envelopes. This printer provides high quality printing on a variety of print media. You must consider a number of things concerning print media before you print, including:

- Supported print media
- Selecting print media
- Storing print media
- Avoiding jams

For more details about the types of paper and specialty media your printer supports, see the *Card Stock & Label Guide* available on the Lexmark Web site at **www.lexmark.com**.

We recommend that you try a limited sample of any paper or specialty media you are considering using with the printer before purchasing large quantities.

Supported print media

The following tables provide information on standard and optional sources for both input and output trays and bins.

Media Sizes	**250 Tray**	**MPF**	**Duplexer**	**500 Tray**	**Manual Feed Slot**
A4 210 x 297 mm	✓	✓	✓	✓	✓
A5 148 x 210 mm	✓	✓	✓	✓	✓
JIS B5 182 x 257 mm	✓	✓	✓	✓	✓
Statement[1] 5.5 x 8.5 in.		✓	✓		✓
Letter 8.5 x 11 in.	✓	✓	✓	✓	✓
Folio[1] 8.5 x 13 in.	✓	✓	✓	✓	✓
Legal 8.5 x 14 in.	✓	✓	✓	✓	✓
Executive 7.25 x 10.5 in.	✓	✓	✓	✓	✓
Universal[1] (width)					
123.8 to 215.9 x 355.6 mm; 3.875 x 4.875 to 8.5 x 14 in.		✓			
152.4 to 215.9 x 355.6 mm; 3.875 x 6 to 8.5 x 14 in.		✓			✓
139.7 x 210 to 215.9 x 355.6 mm; 5.5 x 8.27 to 8.5 x 14 in.		✓	✓		✓
148 x 210 to 215.9 x 355.6 mm; 5.83 x 8.27 to 8.5 x 14 in.	✓	✓	✓	✓	✓
7$^{3/4}$ Envelope $3^{7/8}$ x $7^{1/2}$ in.		✓			✓
9 Envelope $3^{7/8}$ x $8^{7/8}$ in.		✓			✓
10 Envelope $4^{1/8}$ x $9^{1/2}$ in.		✓			✓

Media Sizes (Continued)	250 Tray	MPF	Duplexer	500 Tray	Manual Feed Slot
DL Envelope 110 x 220 mm		✓			✓
C5 Envelope 162 x 229 mm		✓			✓
B5 Envelope 176 x 250 mm		✓			✓
Other Envelope					
60.5 to 215.9 mm		✓			✓
97.4 to 215.9 mm					✓
[1] Lower feed reliability might be encountered when using non-standard media sizes.					

Media Weight				
Subsystem	**Size**	**Type**		**Weight**
Primary Tray & 500 Sheet Optional Feeder	Letter, Legal, A4	Xerographic and Bonds	Long Grain	16 to 47 lb(60 to 177 g/m^2)
			Short Grain	24 to 58 lb(90 to 218 g/m^2)
		Recycled	Long Grain	20 to 47lb (75 to 177 g/m^2)
			Short Grain	28 to 58 lb (105 to 218g/m^2)
		Card Stock (max)	Cover Long/Short	50 lb/ 65 lb (135 g/m^2 / 176 g/m^2)
			Index Long/Short	67 lb/ 90 lb (120 g/m^2 / 163 g/m^2)
			Tag Long/Short	74 lb/ 100 lb (120 g/m^2 / 163 g/m^2)
		Transparency	0.12 to 0.14 mm 4.8 to 5.4 mil	Weight: 161 to 179 g/m^2
	A5, B5, JIS-B5, Exec., Statement, Folio	Xerographic and Bonds	Long Grain	20 to 47 lb (75 to 177 g/m^2)
			Short Grain	24 to 58 lb (90 to 218 g/m^2)
Multipurpose Feeder & Manual Feed Slot	Letter, Legal, A4	Xerographic and Bonds	Long Grain	20 to 47 lb (75 to 177 g/m^2)
			Short Grain	24 to 58 lb (90 to 218 g/m^2)
		Recycled	Long Grain	20 to 47 lb (75 to 177 g/m^2)
			Short Grain	28 to 58 lb (105 to 218 g/m^2)
		Card Stock (max)	Cover Long/Short	50 lb/ 65 lb (135 g/m^2 / 176 g/m^2)
			Index Long/Short	67 lb/ 90 lb (120 g/m^2 / 163 g/m^2)
			Tag Long/Short	74 lb/ 100 lb (120 g/m^2 / 163 g/m^2)
		Labels (max)	Paper	35 lb (131 g/m^2)
			Vinyl	Not Supported

Media Weight (Continued)

Subsystem	Size	Type		Weight
		Transparency		Thickness: 0.12 to 0.13 mm Weight: 161 to 179 g/m^2
	A5, B5, JIS-B5, Exec., Statement, Folio	Xerographic and Bonds	Long Grain	20 to 47 lb (75 to 177 g/m^2)
			Short Grain	24 to 58 lb (90 to 218 g/m^2)
	Envelope	Monarch, 7 ¾, #9, #10, DL, B5, C5, C6-C5, C6, B6		16 to 28 lb (60 to 105 g/m^2)
Duplexer	A5, B5, Executive, Statement, Folio, Letter, A4 and Legal	Xerographic and Bonds	Long Grain	20 to 32 lb (75 to 120 g/m^2)
			Short Grain	24 to 32 lb (90 to 120 g/m^2)
		Recycled	Long Grain	20 to 32 lb (75 to 120 g/m^2)
			Short Grain	28 to 32 lb (105 to 120 g/m^2)

Input and output capacities

The following table outlines the input and output source capacities by media type.

Source	Media	Stack Height	Approximate reference capacity
Input			
Standard 250sheet tray[2]	Plain paper [1]	54 mm	500 sheets (75 g/m^2)
Optional 500-sheet tray[2]	Plain paper [1]	57.6 mm	500 sheets (80 g/m^2) 550 sheets (75 g/m^2)
Multipurpose feeder[2]	Plain paper	10 mm	100 sheets (75 g/m^2)
	Envelopes		10 envelopes (75 g/m^2)
	Other		Various quantities
Manual feed slot	Any media	Single sheet	1 sheet
Output			
Standard 250-sheet output bin [1, 2]	Plain Paper	35 mm	250 sheets (75 g/m^2)
	Other		Various quantities
[1] 20 lb xerographic paper at ambient environment [2] Capacity may vary and is subject to media specifications and printer operating environment. Note: Paper input is limited to below the input source indicator on the tray.			

Additional guidelines

Due to the print technology, paper designed for use with xerographic copiers should provide satisfactory print quality and feed reliability. Other types of media may be suitable. It is recommended that users test any particular brand for suitability to their applications. See the *User's Guide* for additional media specifications.

Paper

Follow the media guidelines below for successful printing:

- Rough, highly textured, limp, or pre-curled papers will result in lower print quality and more frequent paper feed failures.
- Colored papers must be able to withstand a fusing temperature of 170 degrees C (338 degrees F).
- Preprinted forms and letterheads must be able to withstand a fusing temperature of 170 degrees C (338 degrees F) and should be selected using guidelines found in the *User's Guide*. The chemical process used in preprinting may render some papers unsuitable for use with the Lexmark C52x printers.
- Unsuitable papers include multi-part forms and documents; chemically treated papers; coated, synthetic and thermal papers; A5 paper less than 80 g/m^2 (21 lb); recycled paper less than 75 g/m2 (20 lb); and preprinted papers requiring a high degree of registration.
- Recycled paper less than 80 g/m^2 (21 lb) may cause unacceptable results.

Envelopes

- All envelopes should be new, unused, and without package damage.
- Envelopes with excessive curl or twist exceeding 6 mm, those stuck together, those with bent corners or nicked edges, or those that interlock should not be used.
- Minimum weight: 60 g/m^2 (16 lb)
- The following envelopes should not be used:
  - Envelopes with windows, holes, perforations, cutouts, or deep embossing
  - Envelopes with metal clasps, string ties, or metal folding bars
  - Envelopes with exposed flap adhesive when the flap is in the closed position
  - For best results, print on new 90 g/m^2 (24 lb) sulfite or 25% cotton bond envelopes
  - Under high humidity conditions (over 60%), envelopes may seal during printing.

Transparencies

Use letter- or A4-size transparencies only.

Labels

Labels should be selected using guidelines found in the *User's Guide* or the *Cardstock and Label Guide*, and tested for acceptability.

Avoiding jams

Use appropriate print media (paper, transparencies, labels, and card stock) to help ensure trouble-free printing.

Note: Try a limited sample of any print media you are considering using with the printer before purchasing large quantities.

By selecting the appropriate print media and loading it properly, you can avoid most jams.

The following hints can help you avoid jams:

- Use only recommended print media.
- Do not overload the print media sources. Make sure the stack height does not exceed the maximum height indicated by the stack line on the labels in the sources.
- Do not load wrinkled, creased, damp, or curled print media.
- Flex, fan, and straighten print media before you load it. If jams do occur with print media, try feeding one sheet at a time through the multipurpose feeder.
- Do not use print media that you have cut or trimmed yourself.
- Do not mix print media sizes, weights, or types in the same print media source.
- Make sure the recommended print side is loaded in the source according to your simplex or duplex needs.
- Keep print media stored in an acceptable environment.
- Do not remove trays during a print job.
- Push all trays in firmly after loading them.
- Make sure the guides in the trays are properly positioned for the size of print media you have loaded. Make sure the guides are not placed too tightly against the stack of print media.

Print area

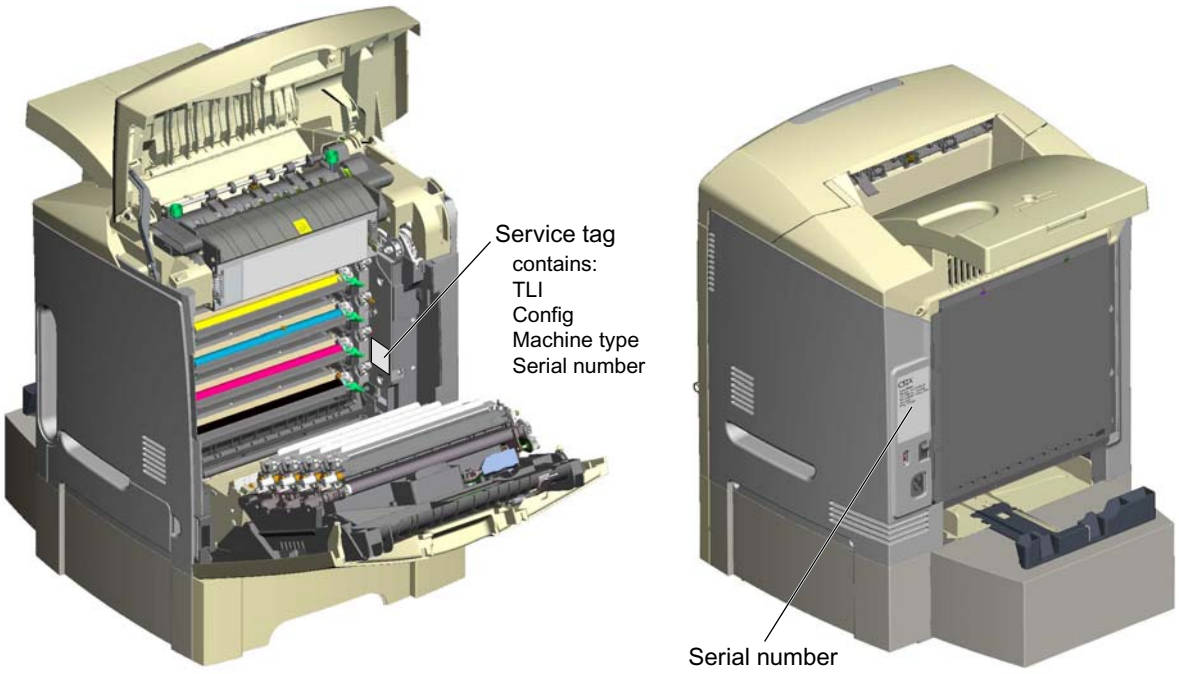
The printable area is limited to within 4.2 mm (0.167 in.) of all edges of the media. Any information placed outside this specified printable area does not print.

Tools required for service

Flat-blade screwdriver
#1 Phillips screwdriver, magnetic
#2 Phillips screwdriver, magnetic
#2 Phillips screwdriver, magnetic short-blade
Needlenose pliers
Diagonal side cutters
Spring hook
Feeler gauges
Analog or digital multimeter
Parallel wrap plug 1319128
Twinax/serial debug cable 1381963
Coax/serial debug cable 1381964

Serial number, TLI and machine type

The serial number is located on the label on the rear of the right cover and on the service tag located on the inside right frame of the printer. The service tag also contains the TLI, configuration and machine type and model information.

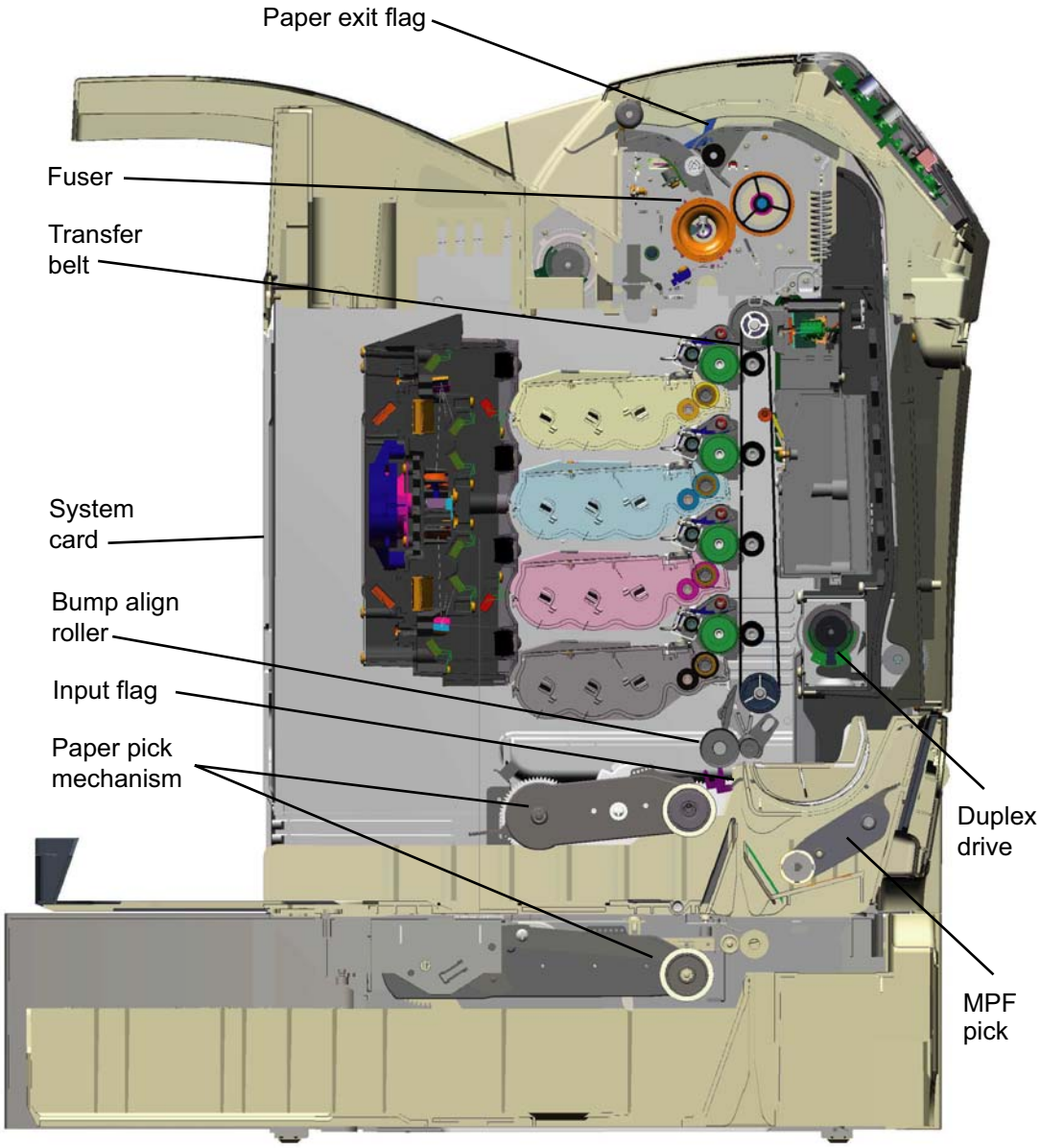


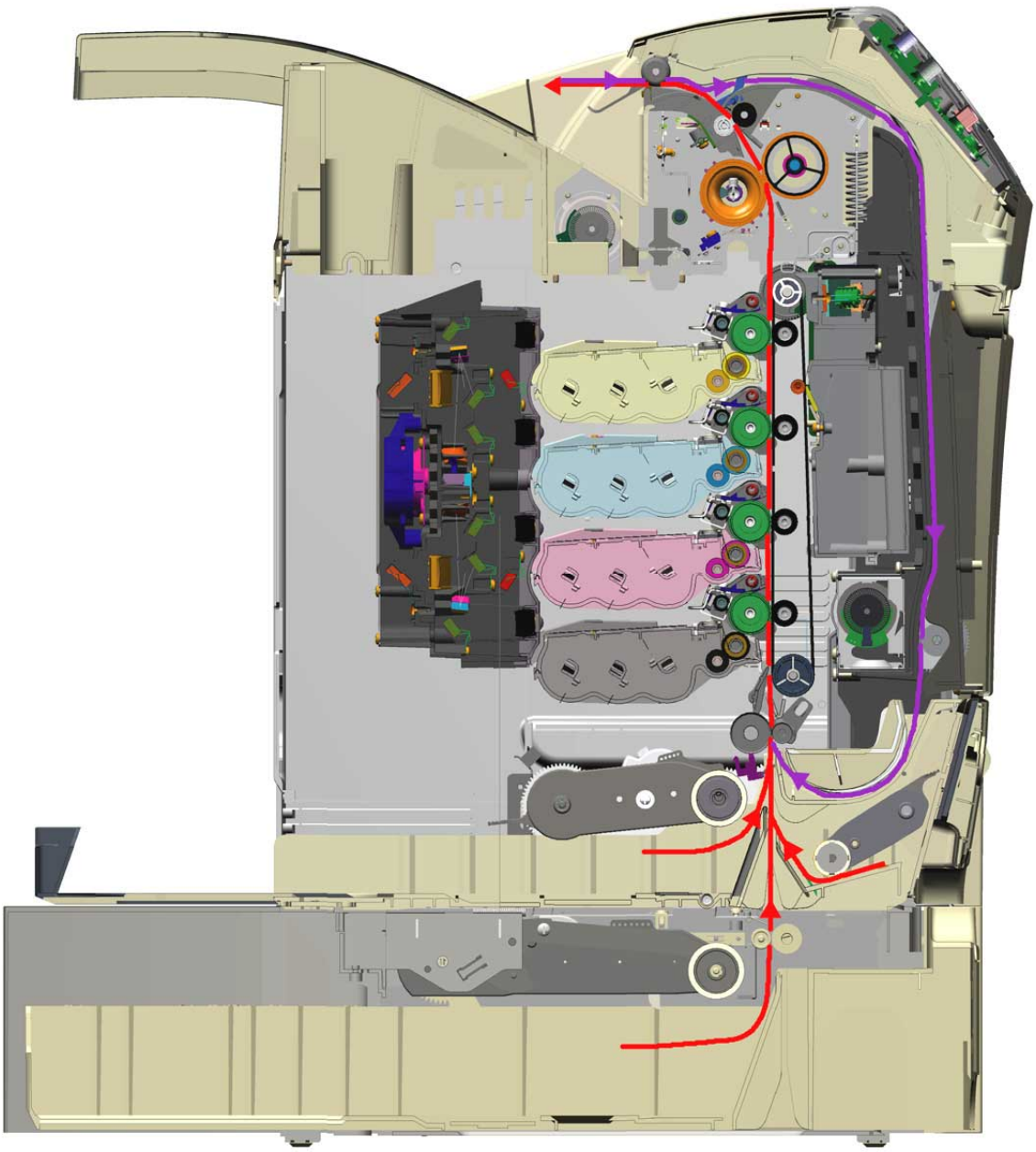
Acronyms

BLDC	Brushless DC Motor
BOR	Black Only Retract
C	Cyan
CSU	Customer Setup
DIMM	Dual Inline Memory Module
DRAM	Dynamic Random Access Memory
EDO	Enhanced Data Out
EP	Electrophotographic Process
EPROM	Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FRU	Field Replaceable Unit
GB	Gigabyte
HCIT	High-Capacity Input Tray
HCOF	High-Capacity Output Finisher
HVPS	High Volt Power Supply
ITU	Image Transfer Unit
K	Black
LASER	Light Amplification by Stimulated Emission of Radiation
LCD	Liquid Crystal Display
LED	Light-Emitting Diode
LVPS	Low Volt Power Supply
M	Magenta
MPF	Multipurpose Feeder
MROM	Masked Read Only Memory
MS	Microswitch
NVRAM	Nonvolatile Random Access Memory
OEM	Original Equipment Manufacturer
OPT	Optical Sensor
PC	Photoconductor
pel	Picture element
POR	Power-On Reset
POST	Power-On Self Test
PSD	Position Sensing Device
PWM	Pulse Width Modulation
RIP	Raster Imaging Processor
ROM	Read Only Memory
SDRAM	Synchronous Dual Random Access Memory
SIMM	Single Inline Memory Module
SRAM	Static Random Access Memory
UPR	Used Parts Return
V ac	Volts alternating current
V dc	Volts direct current
VTB	Vacuum Transport Belt
Y	Yellow

Printer theory of operation

Paper path





Main Components

System card

The system card provides the intelligence of the printer. Command and control signals originate in the system card that make print media travel possible. The system card controls the timing of the print media during the printing so the media arrives at certain positions in the print process at certain times.

Paper tray

Houses the print media.

Paper pick mechanism

Picks the print media from the paper tray. The paper pick mechanism contains the paper pick (input) sensor and the multifunction transparency sensor.

Bump aligner roll

The bump aligner roll advances the print media onto the transfer belt and corrects any media skew as it comes out of the paper trays or MPF.

Transfer belt

The function of the transfer belt unit is two fold: 1) the transfer rolls (located inside the transfer belt unit) are an integral part of the EP process and 2) the transfer belt advances the print media through the printer.

Fuser

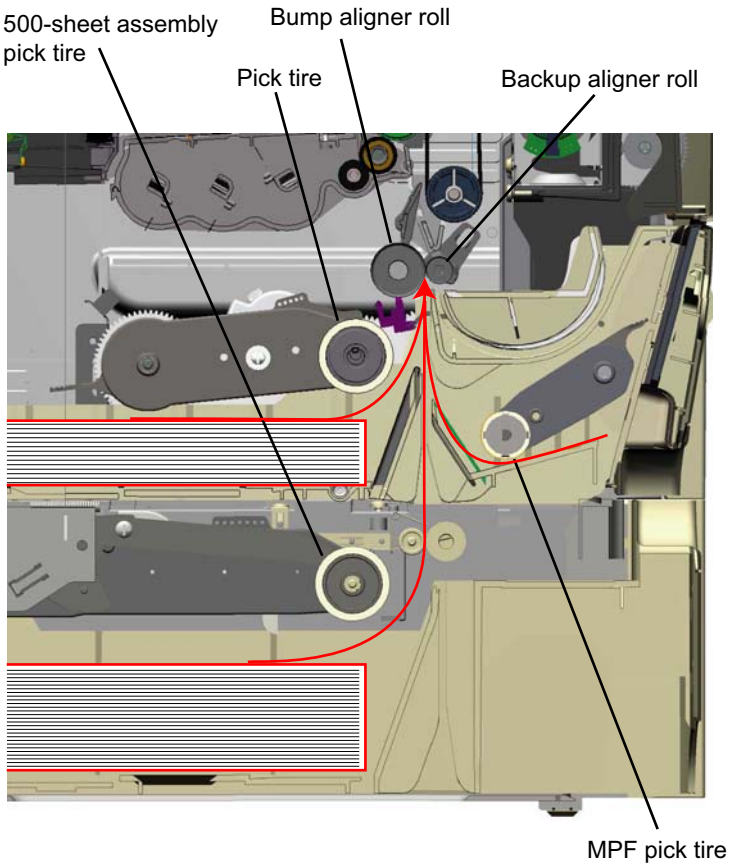
The fuser bonds toner to the print media and advances the print media through the last portion of the paper path. The paper exit sensor is also located in the fuser and a flag is present on all fusers that activates the bin full sensors on network model printers.

Duplex

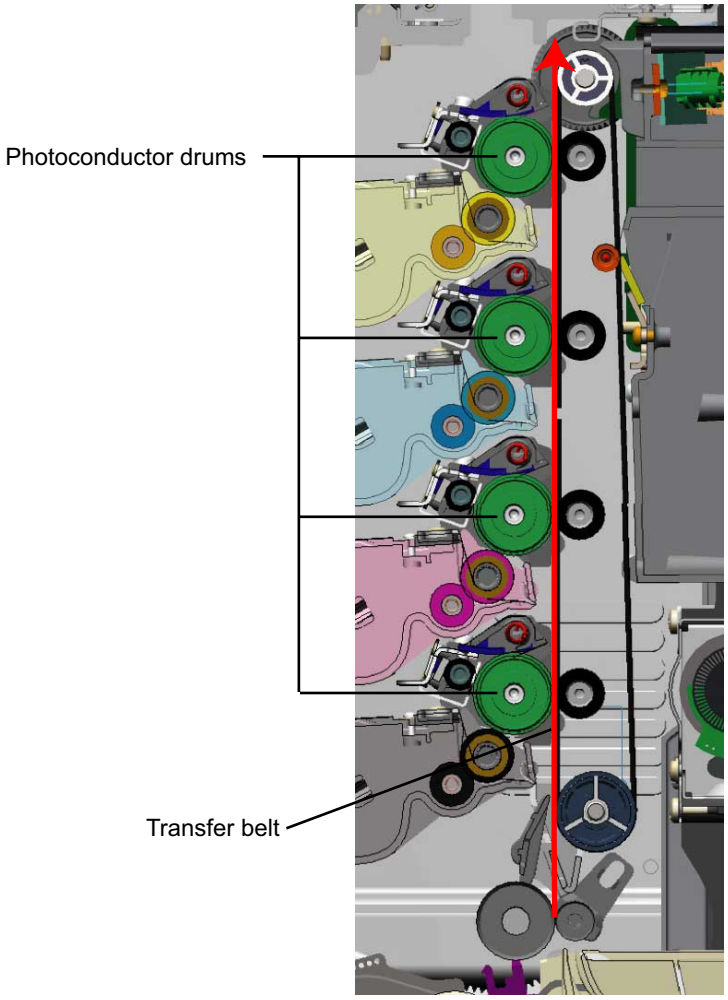
Duplex capability is present only on the C524dn or C524dtn model printers. The duplex function is built into the front access door and uses a peekaboo method for rerouting the paper down and back through the paper path for a second time. To accomplish the peakaboo method, the paper is fed partially out of the printer and is then reversed back into the printer.

Print media transport

The print media is picked from the input source and fed to the bump aligner roll. The media movement is detected by a sensor located in the paper pick mechanism. It does not matter where the media comes from (Tray 1, Tray 2, or, the MPF), it will enter the EP process at the bump aligner drive. The bump aligner motor drives the bump aligner roll which feeds the paper to the transfer belt.

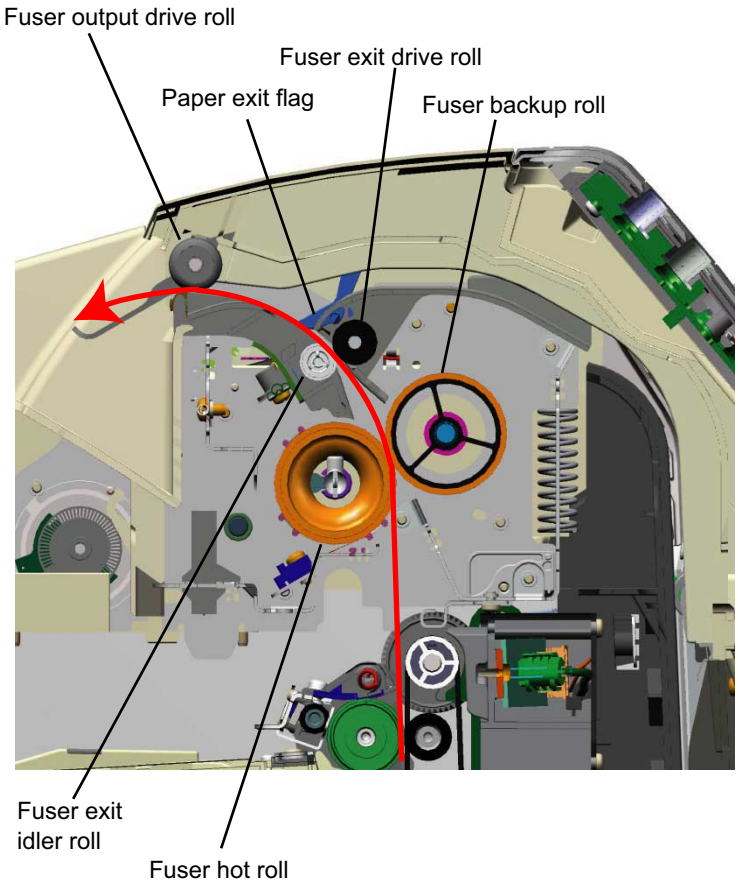


Once the paper is fed onto the transfer belt, the photoconductor drums in conjunction with the transfer belt pull the print media through the paper path.



Once the print media exits the transfer belt, it enters the fuser where heat and pressure are applied to bond the toner permanently to the media. The fuser rollers continue to turn and pull the print media through the paper path until it reaches the exit drive roll. The exit drive roll pulls the print media from the fuser rollers and delivers it

to the fuser output drive roll. Once the print media reaches the fuser output drive roll, the roller pushes the print media into the output bin.



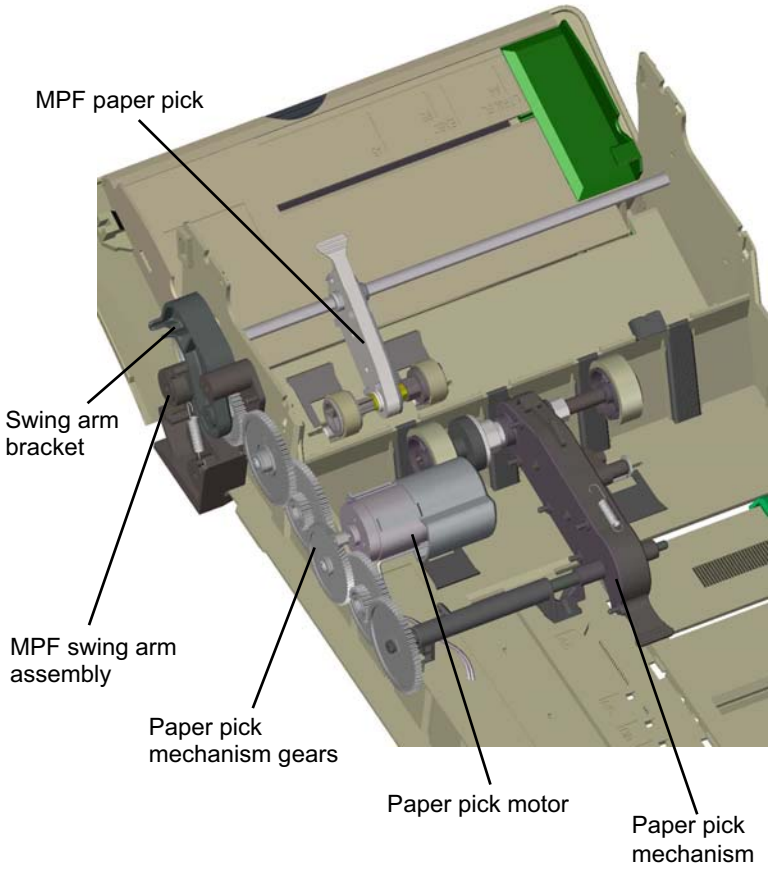
If the page is to be duplexed, the fuser output drive roll continues to pull the media until it clears the paper exit flag and then reverses the rotation of the roller in order to pull the media back into the printer duplex assembly.

The media is then routed down through the duplex path until it reaches the bump aligner roll. Once in this position, it enters the EP path for the second time.

The paper exit flag serves two purposes. When it triggers the paper exit sensor, it serves as a one-way gate for the media when it is exiting the printer to the output bin and also serves as a one-way gate when the media is entering back into the printer for a duplex print. In other words, it diverts the print media's path, directing it to either the output bin or the duplex paper path.

Mechanical drive

In order for the print media to move through the paper path, there are several drive motors that supply the mechanical power to the rollers discussed previously. The drives for these components are illustrated and discussed in the following paragraphs.



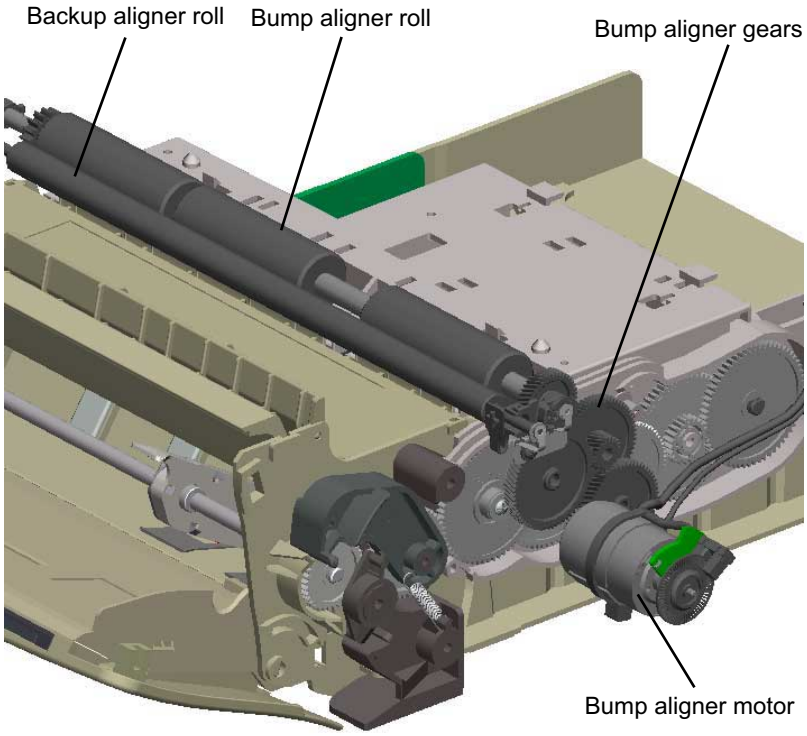
Paper tray and paper pick mechanism shown from rear with components removed for clarity.

Paper pick mechanism drive

When printing from Tray 1 or Tray 2, the paper pick motor drives the paper pick gears which causes the pick roller to turn. During an MPF print, the paper pick motor drives the swing arm assembly for the MPF and causes the MPF paper pick roller to turn.

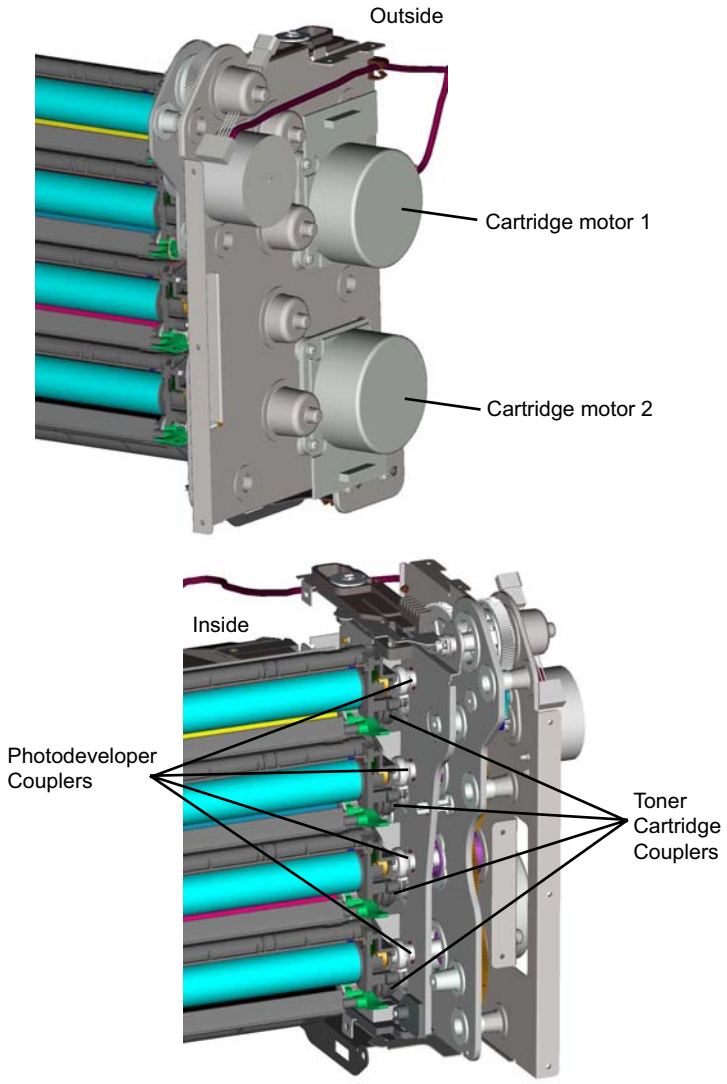
Bump aligner drive

The power to turn the bump aligner roll is supplied from the bump aligner motor. The motor drives a set of bump aligner gears which causes the bump aligner roll to turn.



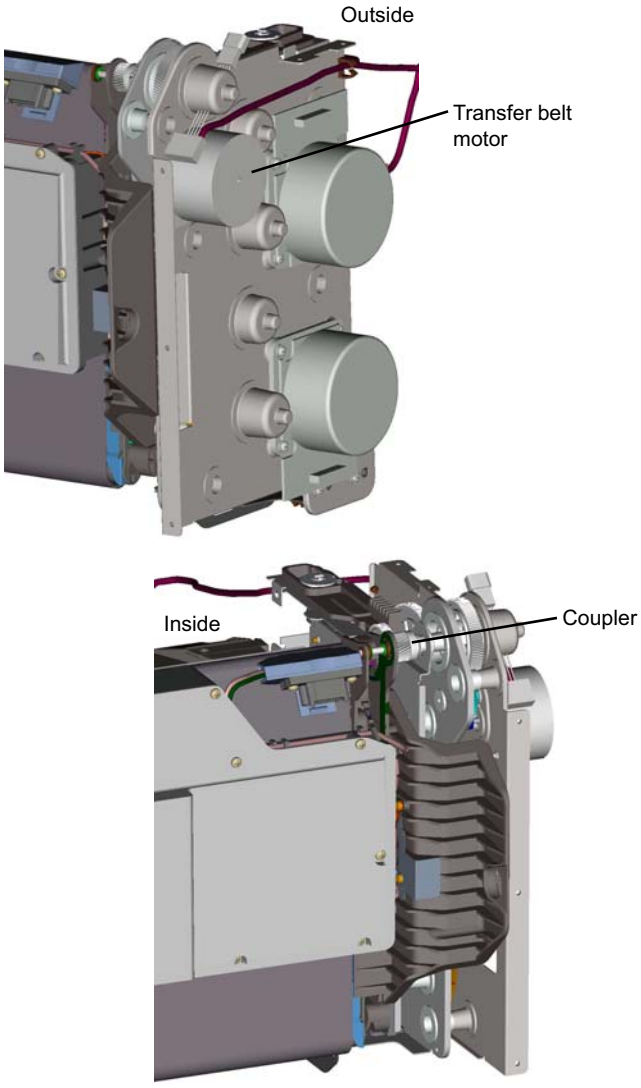
Photodeveloper unit/developer (toner) cartridge drive

The photodeveloper units (four) and toner cartridges (four) receive drive power from the EP drive assembly motors. The top cartridge motor 1 on the EP drive assembly provides drive to the top two photodeveloper units and toner cartridges (yellow and cyan). Likewise, the bottom cartridge motor 2 drives the two bottom photodeveloper units and toner cartridges. When the printer's top access door is open, the couplers for the toner cartridges and photodeveloper units disengage.



Transfer belt drive

The transfer belt unit receives drive from a motor located on the EP drive assembly. When the top access door is open, the coupler for the transfer belt disengages.

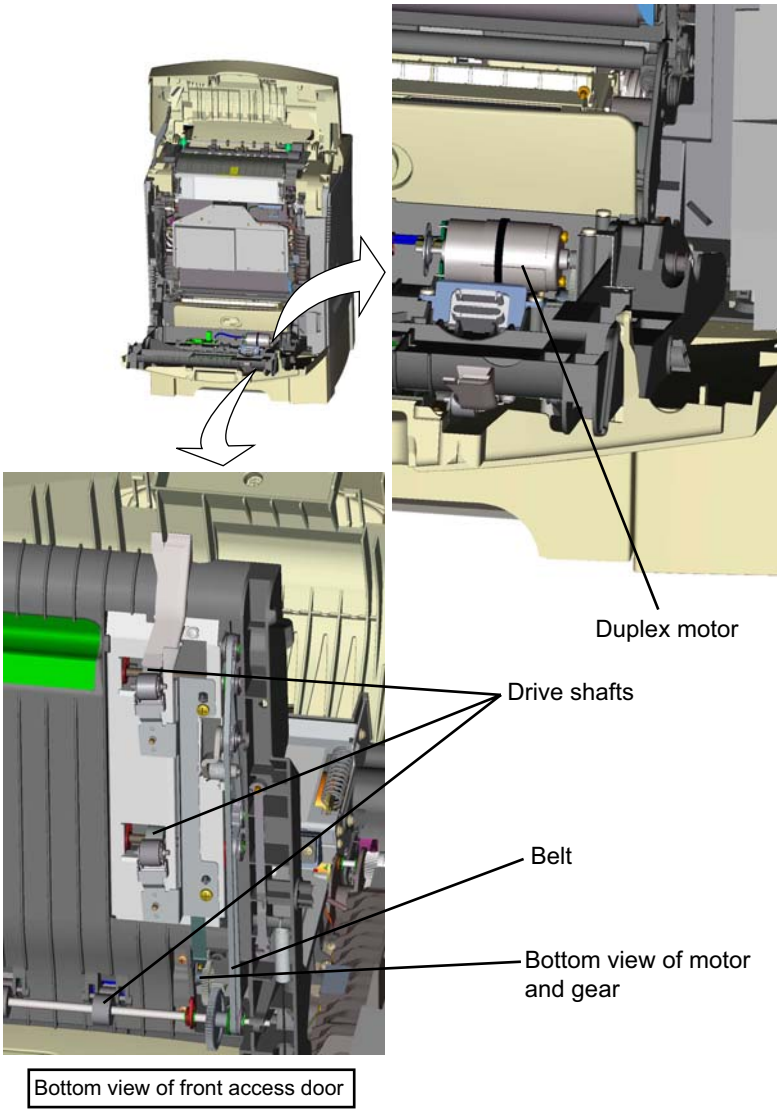


Fuser drive

The fuser drive (motor) is built into the fuser assembly and drives the fuser rollers to turn.

Duplex drive

The duplex motor is mounted on the front door assembly. Drive is provided to three drive shafts in the duplexer by a belt that is driven by the motor. The drive shafts move the print media through the duplex unit during printing.

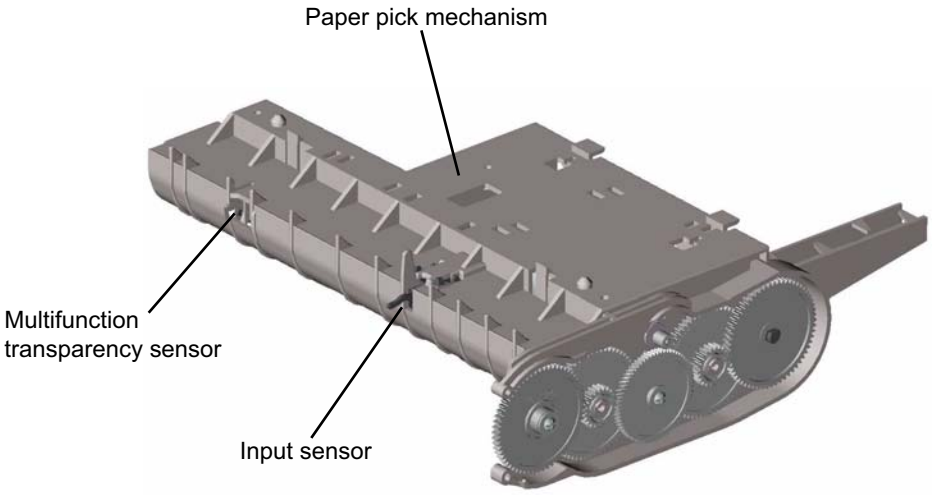


Bottom view of front access door

Paper sensing

Sensors are strategically placed in the printer to ensure that the print media is making it to specific points within a given time in the EP process. There are two paper flags; one at the bottom of the machine (paper pick) to detect input paper, including duplex second side, from all sources and one at the top (paper exit) to detect paper movement beyond the fuser. The flags are similar in design, in that a mechanical arm is moved by the media to interrupt an optical sensor; both are normally blocked when no media is present. There is also a multifunction transparency sensor that detects if: 1) tray 1 is present, 2) narrow media is being used, and 3) the media is a transparency. The sensor works for tray 1, tray 2 (500-sheet option), and the MPF.

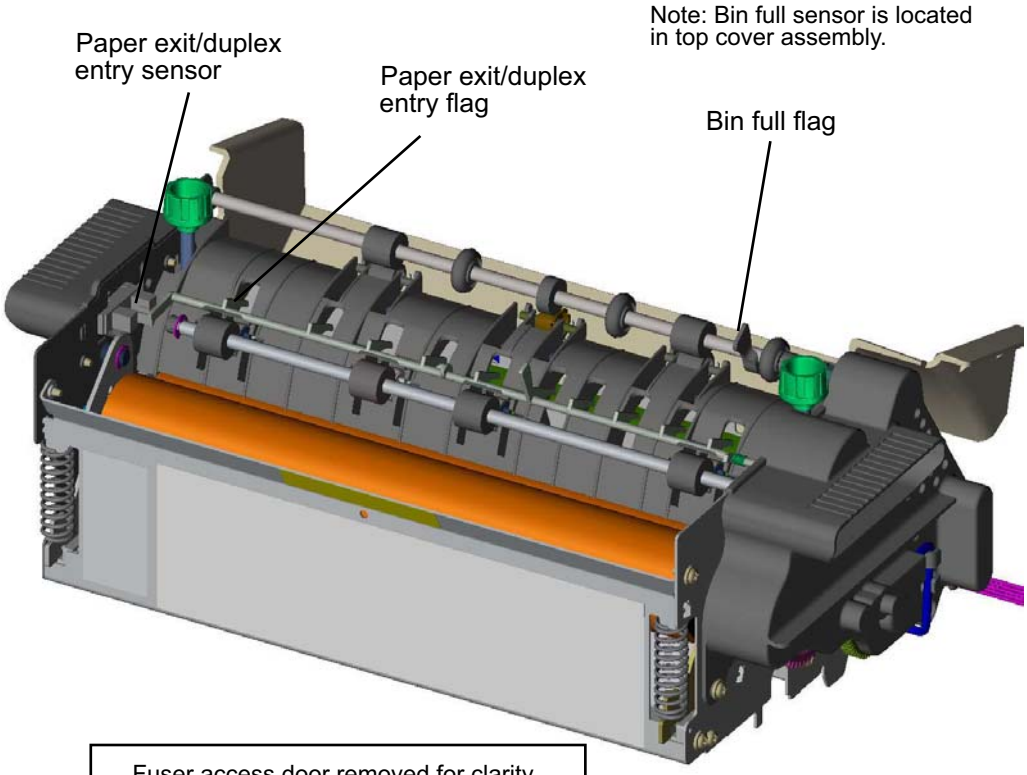
Paper pick sensor



Paper exit/duplex entry sensor and bin full flag

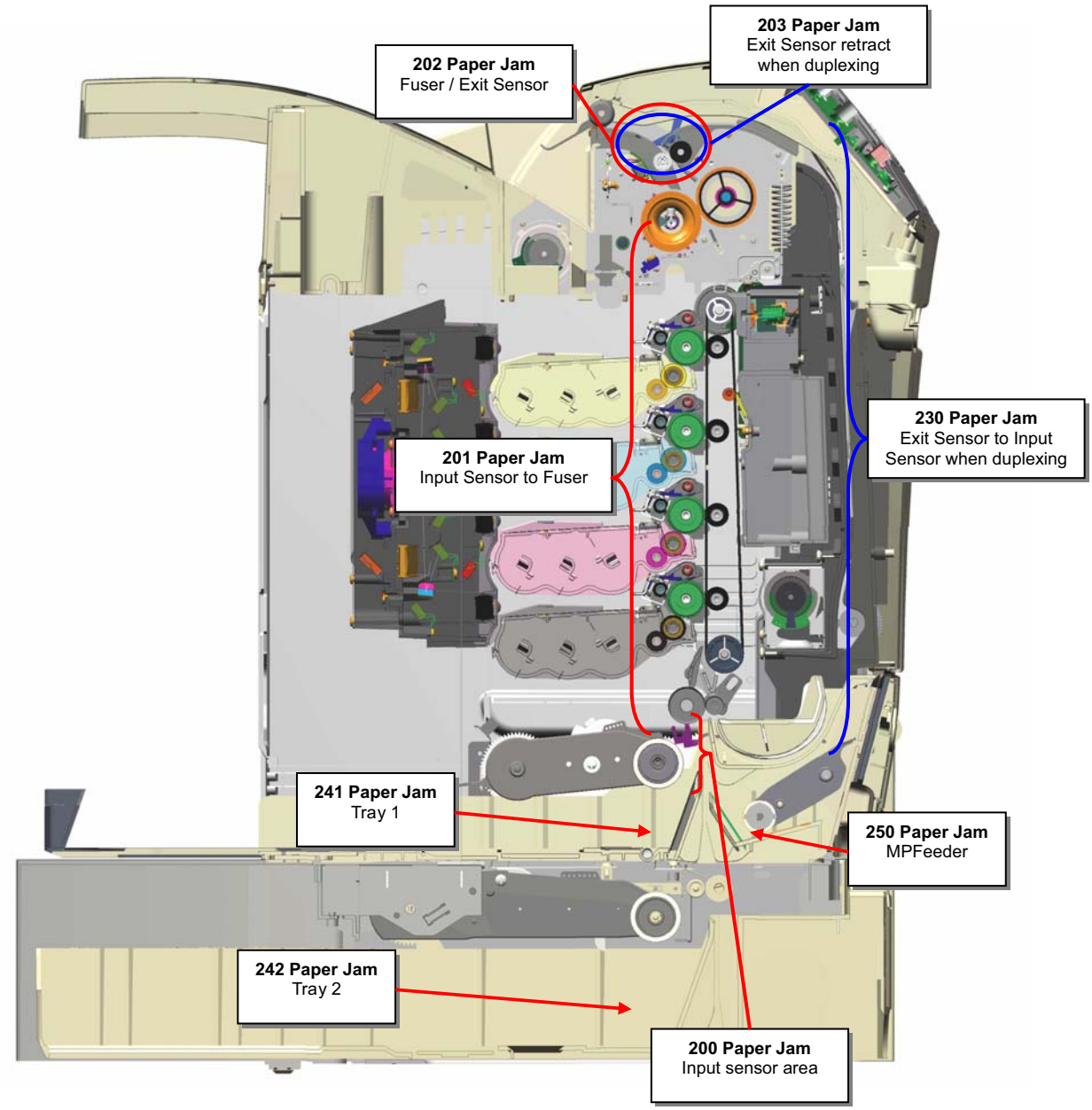
The top sensor detects movement in two directions: as the paper exits the fuser and as it is retracted from the exit tray back into the duplex path. Each sheet must be driven past the fuser exit flag and allowed to fall before being turned around and starting the duplex path. If the print media activates the paper exit flag for too long, or the print media doesn't reach the paper exit flag within a given time, a paper jam error will be posted.

There is a similar paper flag (bin full) on the output of network machines. This sensor indicates when the output bin is full. The physical flag is located in the fuser on all machines; however, the electrical sensor is not present on the non-network models. The flag should move in and out of the sensor eye with every sheet until the bin is nearly full. Once in this state, the paper flag will break the sensor eye continuously.



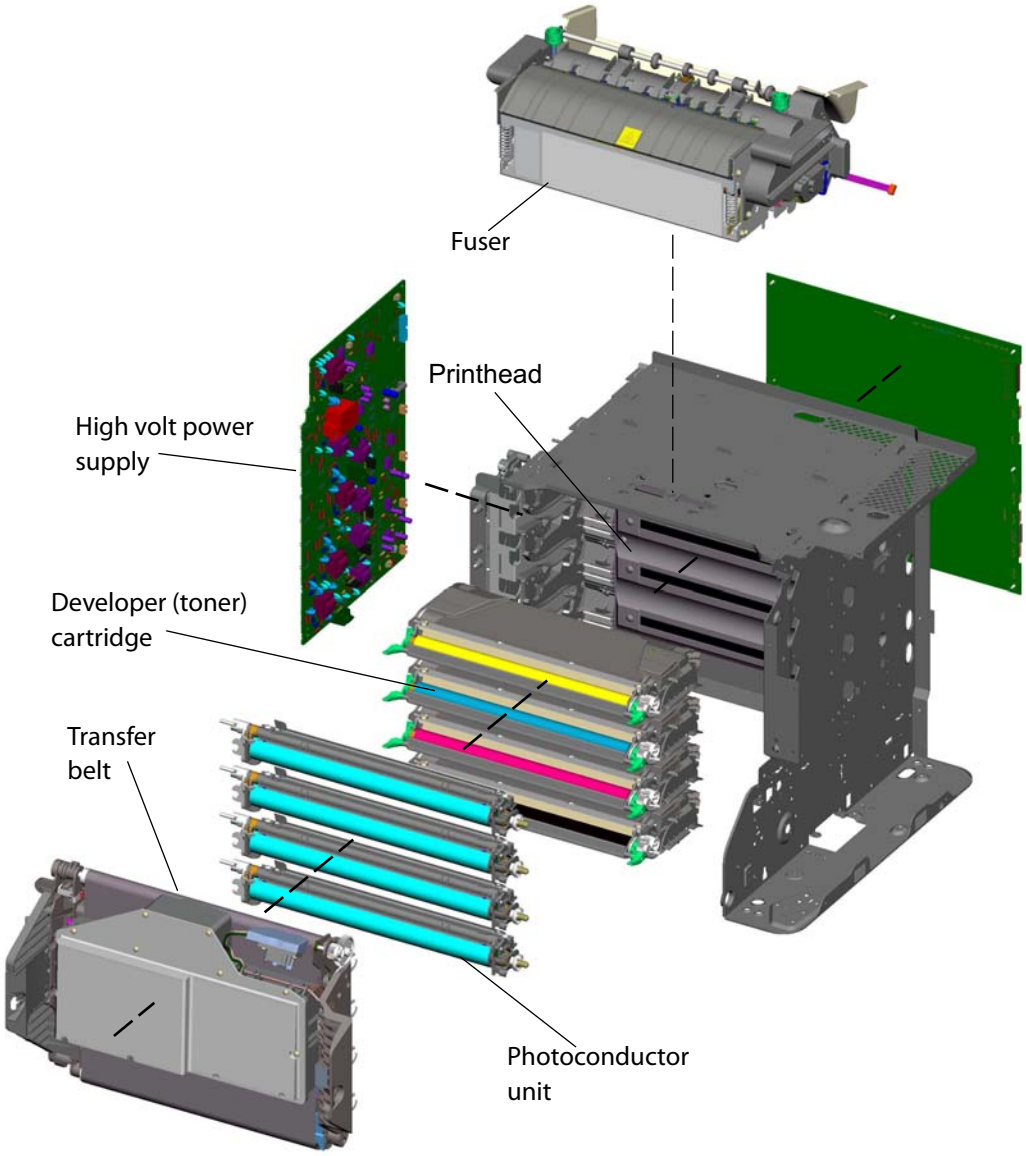
Paper Jams

The following illustration shows the location and error codes generated for specific paper jams and the corresponding locations of these jams.



Electrophotographic (EP) process

Main components



System card

The system card is the brains of the printer. During the print process, an image is sent from a computer to the system card. The raster image processor (RIP) portion of the system card converts the data into a raster image and feeds this data along with control information to the printhead.

HVPS

Provides a high volt charge to:

- The charge roll located in the photoconductor unit
- The photoconductor drum located in the photoconductor unit
- The toner adder roller (TAR) located in the toner cartridge
- The developer roll located in the toner cartridge
- The doctor blade located in the toner cartridge
- The four transfer rolls located in the transfer belt

Printhead assembly

The printhead receives control and image data from the system card (RIP). Through the use of a laser unit, the printhead irradiates the photoconductor drum with light and creates an invisible image called a latent or electrostatic image.

Photoconductor unit

The photoconductor unit consists primarily of a charge roll and the photoconductor drum. The charge roll charges the surface of the photoconductor drum to prepare it for the latent image "drawn" by the laser. Once the photoconductor drum has been written to by the laser, it is responsible for picking up toner from the cartridge developer roller and then transferring the image to the print media.

Toner cartridge

This unit consists primarily of the developer roll and the toner adder roll. The primary function of this unit is to supply charge toner to the photoconductor unit for transfer onto the print media. The toner adheres to the electrostatic image on the surface of the photoconductor drum which is then transferred to the print media.

Fuser

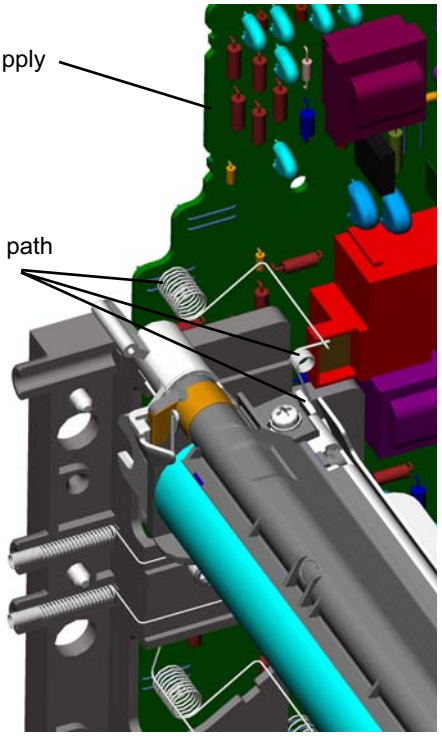
The fuser assembly uses heat and pressure to fuse the toner image onto the print media.

Charging

The primary component of the charging process is the high volt power supply. The following provides information that covers the mechanical transfer of the high voltage through a set of springs to each subcomponent of the charging process.

Photoconductor unit (charge roll)

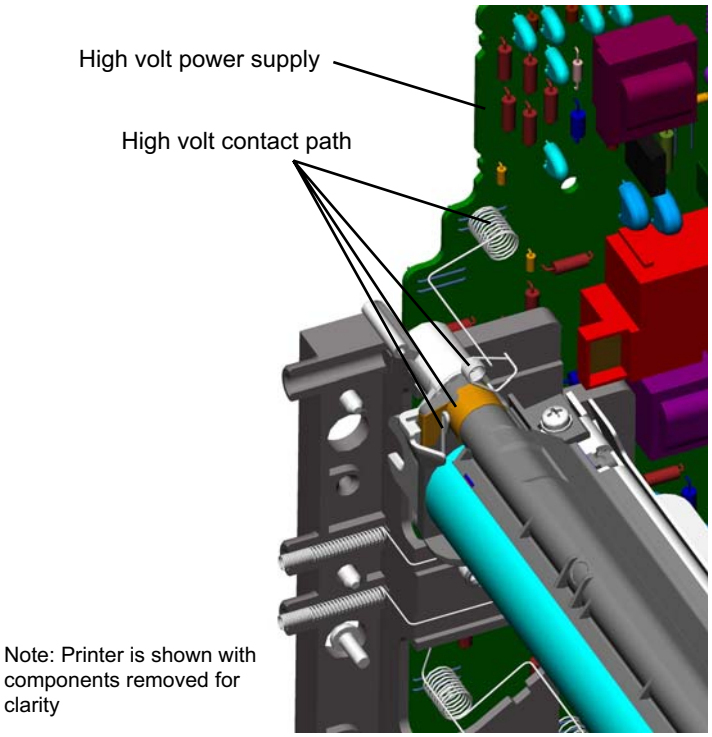
The following illustration shows the circuit path that allows high voltage current to flow from the HVPS to the charge roll contact on the photoconductor unit. It is essential that the contact springs are properly touching to provide a good flow. If not, print quality problems will occur.



Note: Printer is shown with components removed for clarity

Photoconductor unit (photoconductor drum)

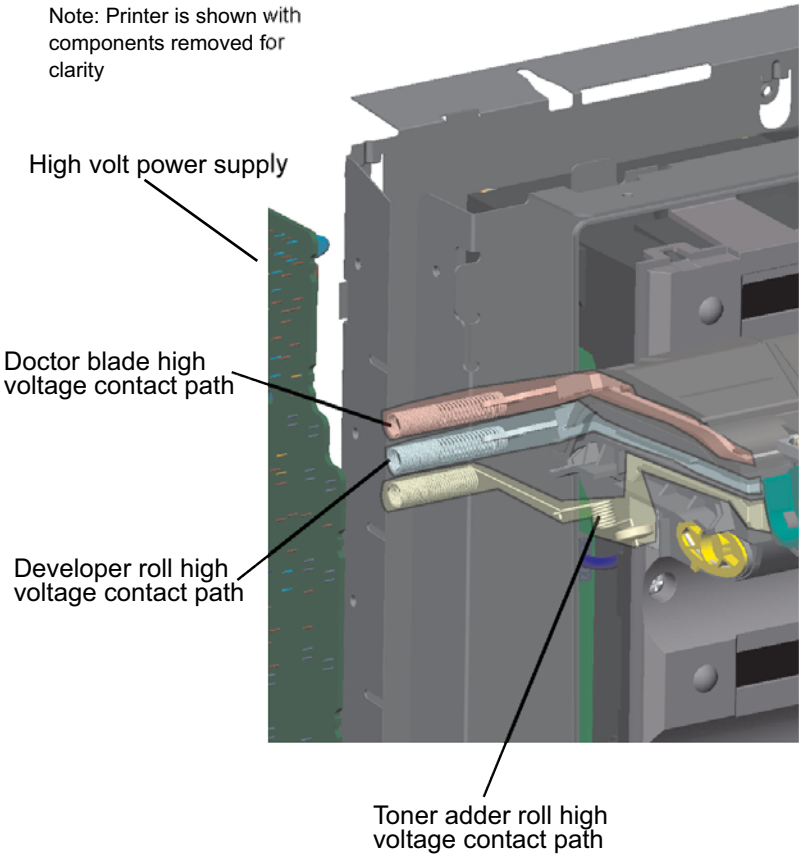
The following illustration shows the circuit path that allows high voltage current to flow from the HVPS to the photoconductor drum contact on the photoconductor unit. It is essential that the contact springs are properly touching to provide a good flow. If not, print quality problems will occur.



Note: Printer is shown with components removed for clarity

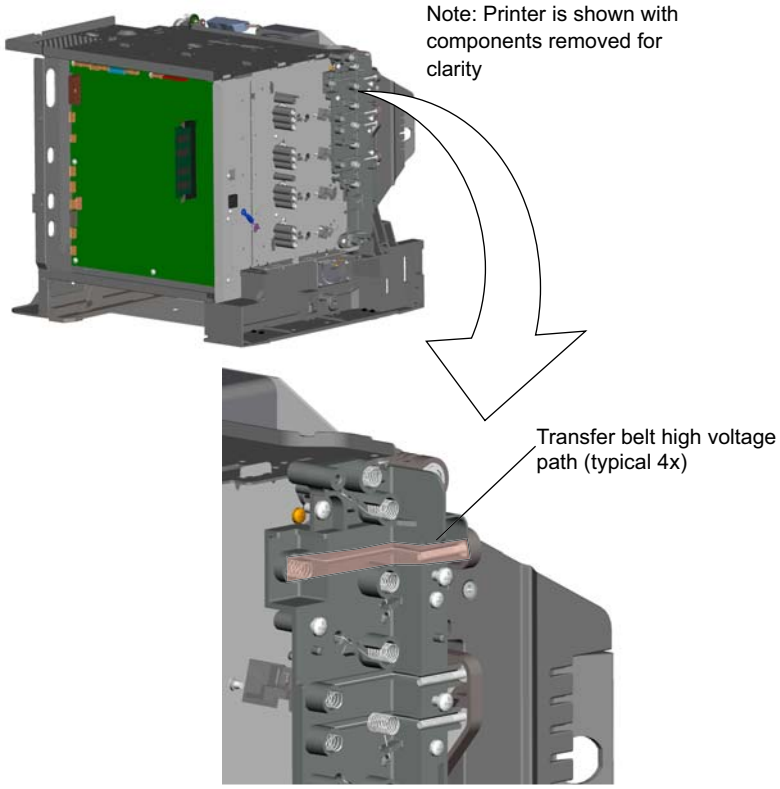
Toner cartridge

The following illustration shows the circuit path that allows high voltage current to flow from the HVPS to the toner cartridge. The toner cartridge contains three parts that are provided high voltage from the HVPS. These three parts are: the doctor blade, the developer roll, and the toner adder roll (TAR). It is essential that the contact springs are properly touching to provide a good flow. If not, print quality problems will occur.



Transfer belt

The transfer belt houses four transfer rollers that provide image transfer from the photoconductor drum to the print media. The transfer belt receives its high voltage charge through spring contacts located on the transfer contact assembly as shown in the following illustration. For simplicity sake, only one of the roller's high voltage paths is shown. This path is typical for the other three rollers as well.

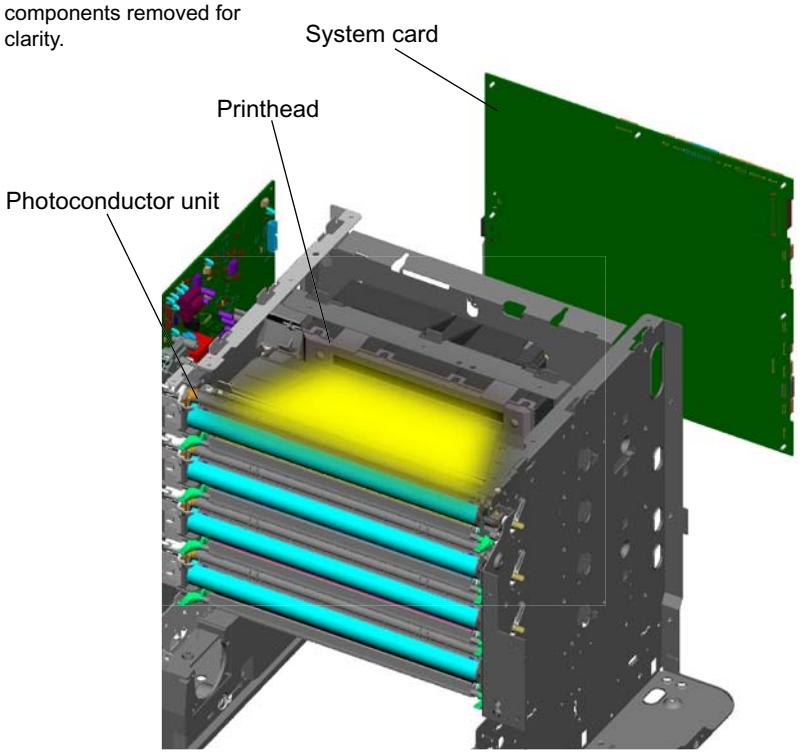


Exposing

The main components in the exposure process are the system card, the printhead and the photoconductor unit. The following illustration depicts a typical data path for a single color exposure.

Data is received from a computer into a port on the system card. The system card's RIP function converts this data into raster information which is fed to the printhead along with other control data. The data is converted by the printhead laser into light energy data that is directed to the light sensitive photoconductor unit.

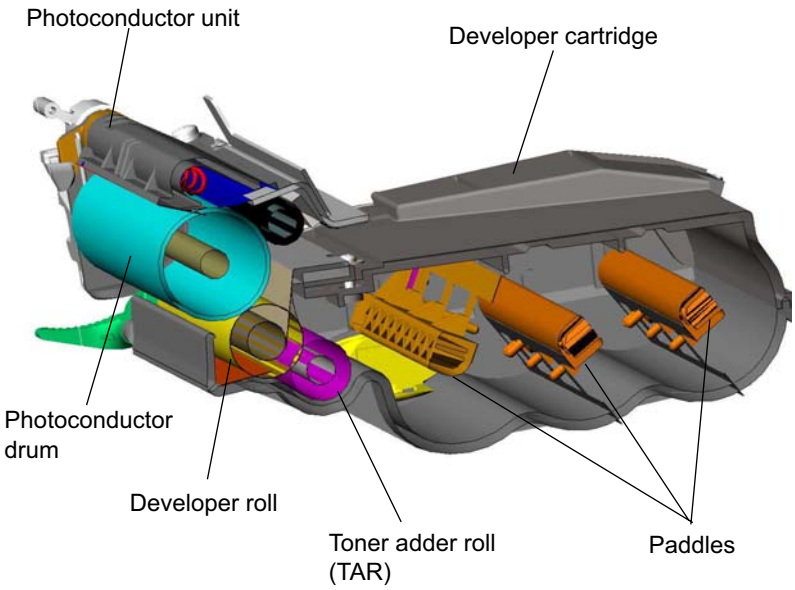
Note: Printer is shown with components removed for clarity.



Developing

The two primary components of the developing process are the photoconductor unit and the toner cartridge. The toner cartridge contains a toner adder roll, developer roll and toner. Toner is advanced toward the toner adder roll by three paddle assemblies. The advanced toner clings to the electrically charged toner adder roll. The toner on the toner adder roll is then electrically attracted to the developer roll because of the difference in electrical charge between the toner adder roll and the developer roll. The toner uniformly coats the developer roll with help from the doctor blade and is introduced to the electrostatic image on the photoconductor drum. The toner then transfers to the photoconductor drum.

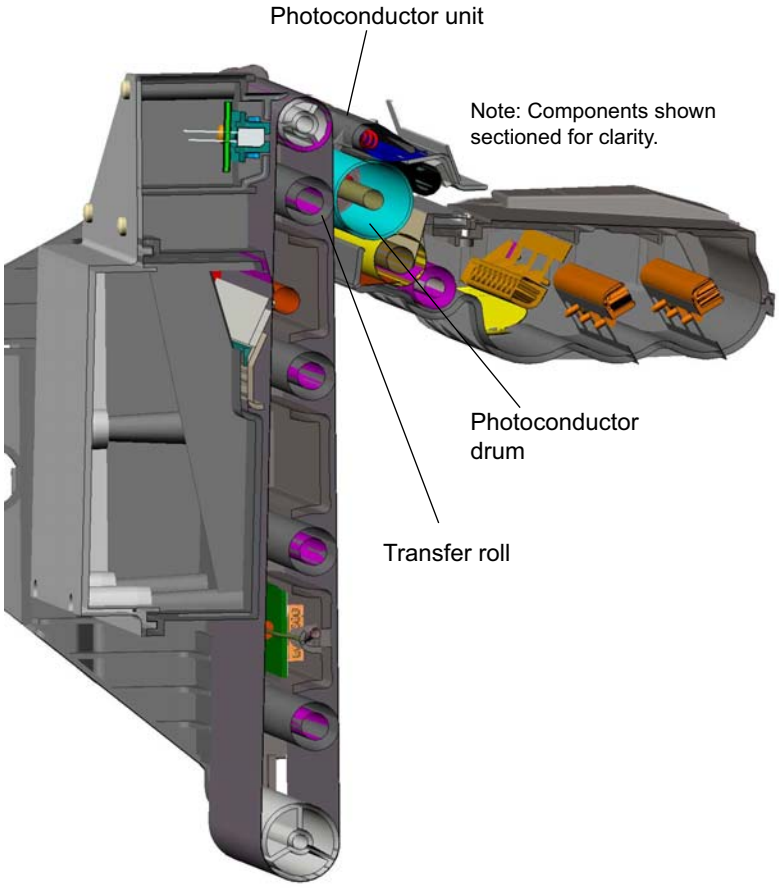
Note: Photoconductor unit and developer cartridge shown sectioned for clarity.



Transferring

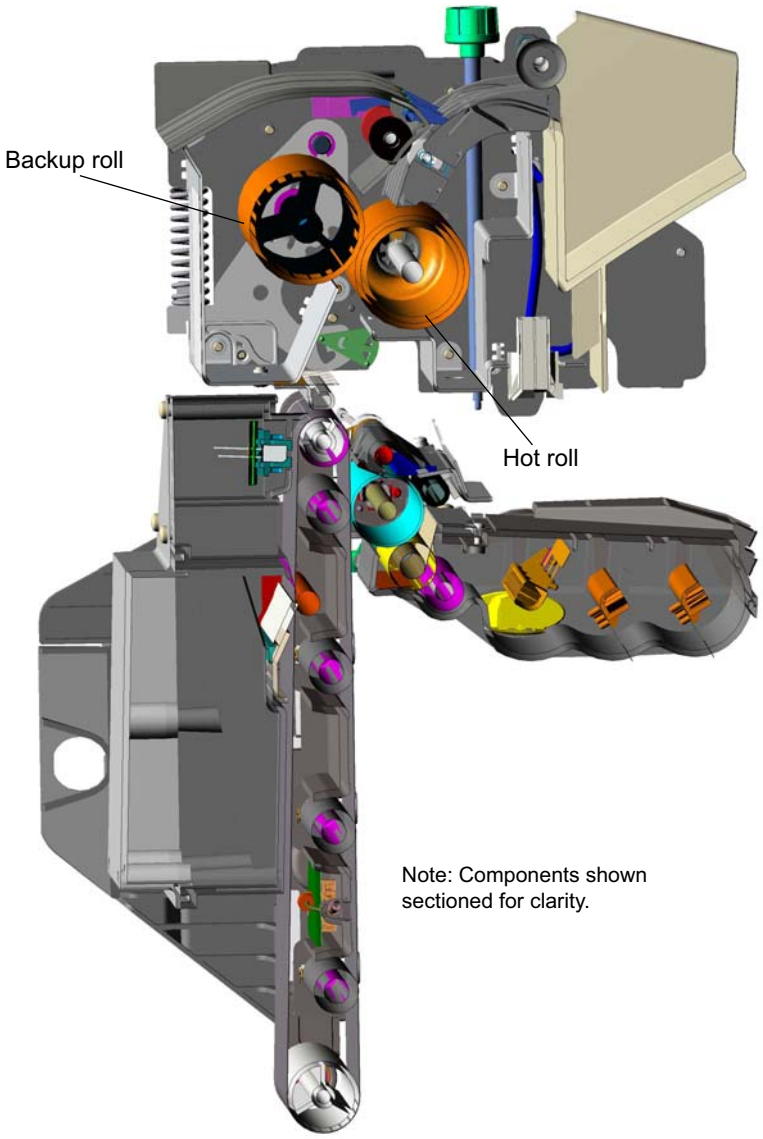
After the toner is attracted to the photoconductor drum, the image is ready for transfer onto the print media. The print media is advanced in the paper path onto the transfer belt and is carried along the belt underneath each photoconductor unit. The charged transfer roll(s) located inside the transfer belt pulls the image from the photoconductor drum to the print media. This is a direct transfer method.

The main function of the transfer belt is to provide transport for the print media. Toner is not transferred directly to the belt during the print process.



Fusing

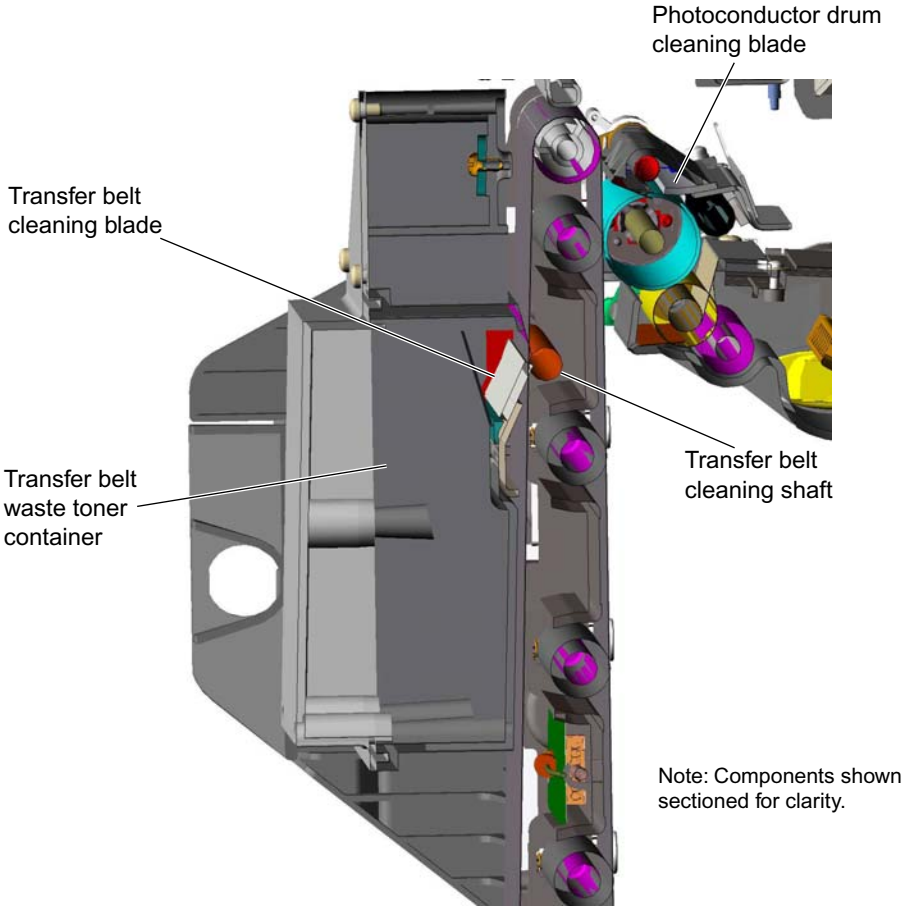
After the image has been transferred onto the print media, it is ready for fusing. The print media is transported into the fuser where the hot roll and backup roll use a combination of high heat and pressure to melt and press the toner to the media.



Cleaning

The transfer belt and photoconductor drum are cleaned at the end of the EP process cycle. The transfer belt surface is cleaned as it rotates past a cleaning blade and shaft located inside the transfer belt assembly. Any waste toner that is scraped off of the belt is collected in the waste toner container located next to the belt inside the transfer belt unit.

The photoconductor drum is cleaned by the cleaning blade.

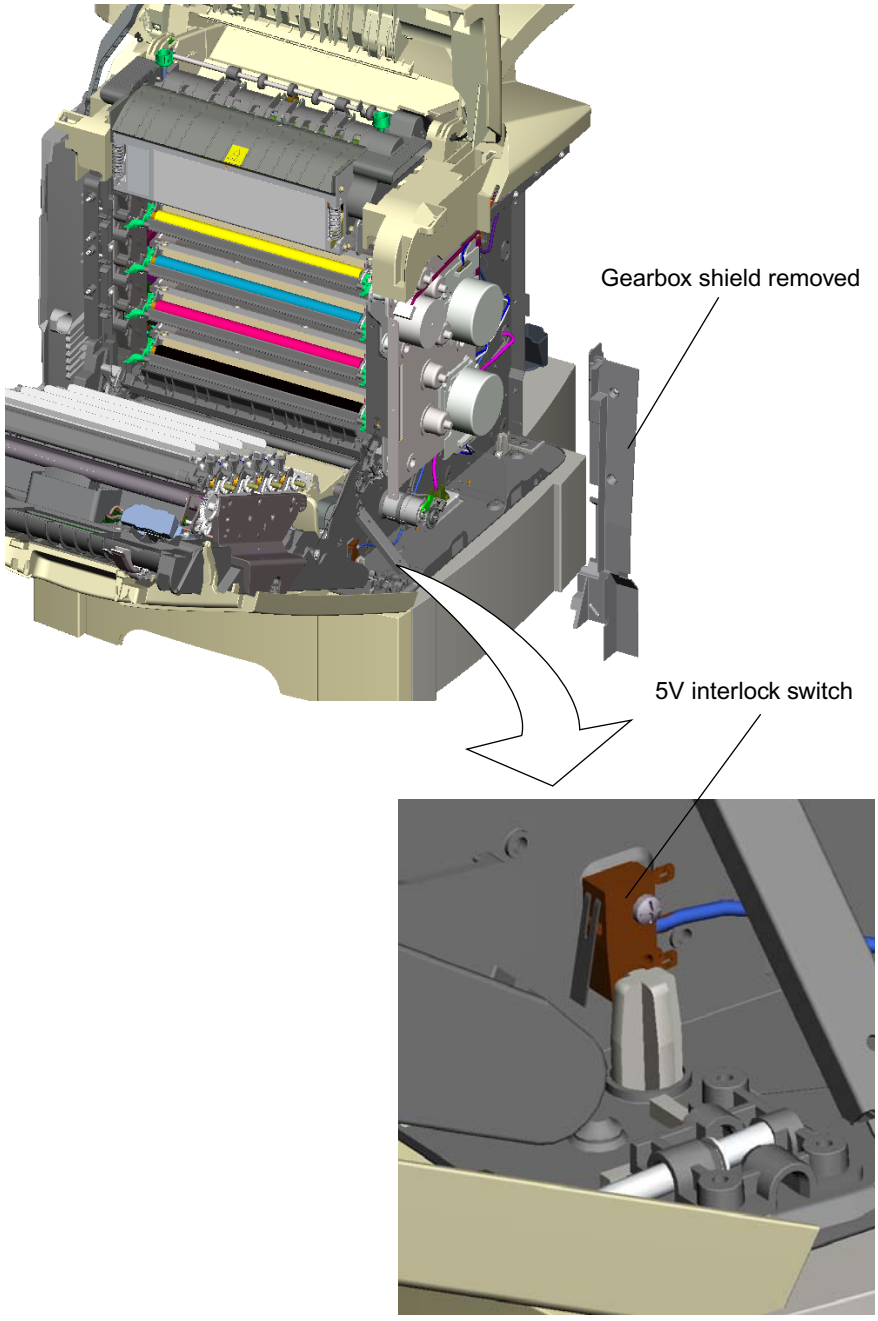


Note: Components shown sectioned for clarity.

Electrical interlock

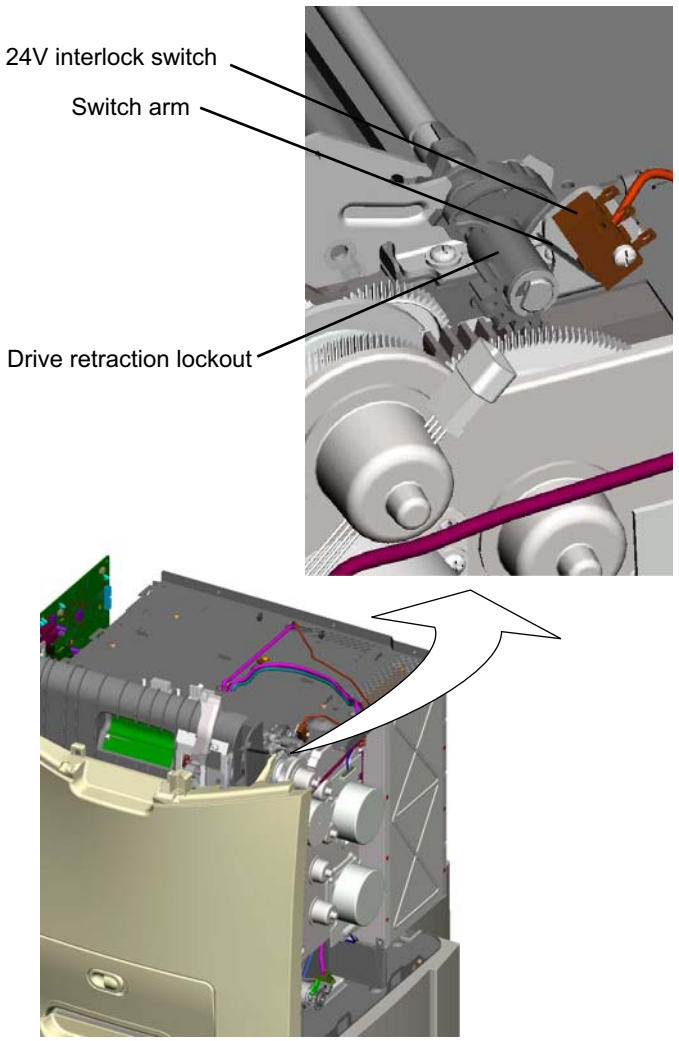
5V interlock switch

An interlock switch triggered by the front access door disables the +5 V output to the printhead which turns off the laser.



24V interlock switch

The 24 volt interlock switch is mounted to the right side of the top cover camshaft assembly. Opening the top door rotates the drive retraction lockout which opens the 24V interlock switch. When the top door is closed with the front access door also closed, the drive retraction lockout trips the switch arm which closes the 24V interlock switch.



When the 24V switch opens, the normally open side of the switch is activated which signals the system card to disable a +24 V power supply output, turning off all high voltage supplies, the bump/align motor, the duplex motor and the fuser motor for safety considerations.

2. Diagnostic information

Start

CAUTION: Remove the power cord from the printer or wall outlet before you connect or disconnect any cable or electronic card or assembly for personal safety and to prevent damage to the printer. Use the handholds on the side of the printer. Make sure your fingers are not under the printer when you lift or set the printer down.

Use the service error code, user status message, user error message, symptom table, service checks, and diagnostic aids in this chapter to determine the corrective action necessary to repair a malfunctioning printer. They will lead you to solutions or service checks, including use of various tests.

Symptom tables

If your printer completes the **"Power-on self test (POST) sequence" on page 2-4** without an error, and you have a symptom, go to **"Symptom tables" on page 2-5**. Locate your symptom, and take the appropriate action.

Service errors (1xx.xx's/9xx.xx's)

If a service error code appears while you are working on the printer, go to **"Service error codes" on page 2-6**, and take the indicated action for that error.

Service error codes are indicated by a three-digit error code followed by a period and additional numbers in the format XXX.YY. In most cases, five digits are shown.

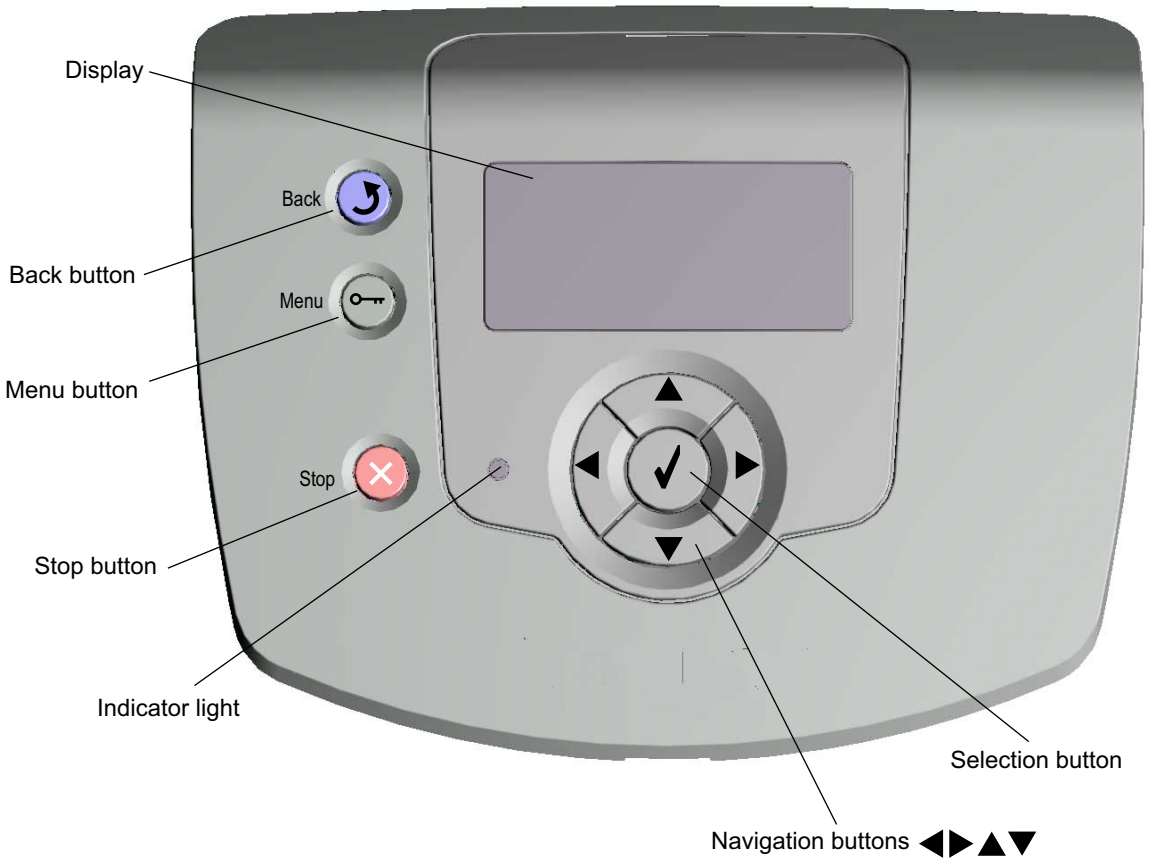
User status and attendance messages

- User status messages provide the user with information on the current status of the printer. `Ready` displays on the first line of the display unless invoked, and then `Power Saver` displays.
- User attendance messages are indicated by a two- or three-digit error code that provides the user with information that explains a problem with a print cartridge, paper jam, option, port, and so on. If a user error message displays, go to Go to **"User attendance messages" on page 2-10** and Go to **"User attendance messages—paper jams and paper handling errors (2xx.xx)" on page 2-18**.

Understanding the operator panel

The operator panel consists of these items:

- 160 x 64 pixel liquid crystal display (LCD)
- Eight buttons
- An indicator light



Indicator light

The two-toned light emitting diode called the indicator light on the operator panel gives information about the status of the printer using the colors red and green.

Indicator light status	**Indicates**
Off	Printer power is off.
Blinking green	Printer is warming up, processing data, or printing a job.
Solid green	Printer is on, but idle.
Solid red	Operator intervention is required.

Buttons

Button	Function
Note: It has a curved arrow icon.	Press to return to the previous screen. **Note:** This button is only active if appears on the top left of the screen.
Note: It has a key icon.	Press to open the administration menus. These menus are only available when the printer is in the **Ready** state.
Note: It has an X icon.	Press to stop or suspend all job activity. The functions as a stop button. If printing, pressing causes the Stop screen to appear on the display.
Navigation arrow buttons (▲, ▼, ◀, ▶)	▲, ▼ — Press these buttons to scroll up or down through menus, menu items, or settings, called menu item values, or to scroll between screens and menu values. Each press moves one item in the list or a different setting for a menu item. ◀, ▶ — Press these buttons to scroll items that wrap off of the screen. For menu items with numeric values, such as Copies, press and hold this button to scroll through the values. Release the button when the needed number appears.
Note: It has a check mark (✓) icon.	The button functions as a select button. Press this button to: • Open a menu and display the first item in the menu (called a menu item). • Open a menu item and display the default setting. • Save the displayed menu item as the new user default setting. The printer issues a Saved or Submitted Selection message and returns to the menu item. **Note:** When a new setting is saved as the user default setting, it remains in effect until new settings are saved or until factory defaults are restored. Settings chosen from the software application can also change or override the user default settings selected from the operator panel.

Power-on self test (POST) sequence

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

1. The LED turns on.
2. The operator panel turns on.
3. A partial row of pixels appears.
4. The operator panel display clears.
5. Another row of pixels appears.
6. The operator panel display clears again.
7. The operator panel displays system information. For example:

*128MB 500Mhz

8. The fuser lamp turns on. The fuser takes longer to warm up from a cold start than a warm start.
9. The operator panel LED starts blinking.
10. A clock face appears on the display.
    The following errors or messages may appear:
    - `Close Door` or `Insert Cartridge` display if the upper front cover is open or the print cartridge is missing.
    - Any cartridge errors, such as `Defective Cartridge` or `Missing Cartridge`.
11. `Ready` appears on the display.
12. The main fan turns on.
13. The main drive motor turns on.
14. The EP drive assembly drives the developer shaft located in the toner cartridge.
15. The exit rollers turn.
16. The printer calibrates.

Symptom tables

Printer symptom table

Symptom	Action
Dead printer	Go to **"Dead printer service check" on page 2-64**.
Operator panel—one or more buttons do not work.	Go to **"One or more operator panel buttons fail" on page 2-65**.
Operator panel—display is blank. Printer sounds five beeps.	Go to **"Operator panel display" on page 2-66**.
Operator panel—display is blank.	Go to **"Operator panel display" on page 2-66**.
Operator panel continuously displays all diamonds and does not complete POST.	Go to **"Operator panel display" on page 2-66**.

Print quality symptom table

Symptom	Action
Background	Go to **"Print quality—background" on page 2-68**.
Blank page	Go to **"Print quality—blank page" on page 2-69**.
Blurred or fuzzy print	Go to **"Print quality—blurred or fuzzy print" on page 2-70**.
Half-color page	Go to **"Print quality—half-color page" on page 2-70**.
Horizontal banding	Go to **"Print quality—horizontal banding" on page 2-70**.
Horizontal line	Go to **"Print quality—horizontal line" on page 2-71**.
Insufficient fusing	Go to **"Print quality—insufficient fusing" on page 2-71**.
Missing image at edge	Go to **"Print quality—missing image at edge" on page 2-71**.
Mottle (2–5mm speckles)	Go to **"Print quality—mottle (2 - 5mm speckles)" on page 2-71**.
Narrow vertical line	Go to **"Print quality—narrow vertical line" on page 2-71**.
Random marks	Go to **"Print quality—random marks" on page 2-71**.
Residual image	Go to **"Print quality—residual image" on page 2-72**.
Solid color page	Go to **"Print quality—solid color page" on page 2-72**.
Vertical banding	Go to **"Print quality—vertical banding" on page 2-73**.

Service error codes

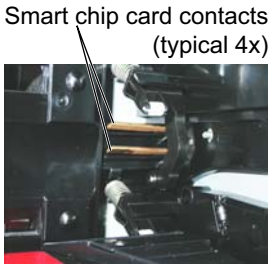
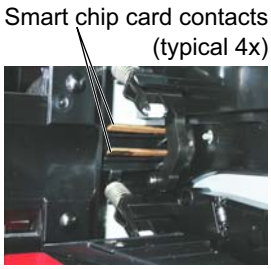
Error code	Sub code	Display Text	Description	Action
110	xx	Mirror Motor	A mirror motor error has occurred.	POR the printer. Go to **"110.xx—Mirror motor service check" on page 2-26** if the message still appears.
111	xx	Printhead Error	An error has occurred in the cyan channel of the printhead.	POR the printer. Go to **"111.xx—Printhead error service check" on page 2-26** if the message still appears.
112	xx	Printhead Error	An error has occurred in the magenta channel of the printhead.	POR the printer. Go to **"112.xx—Printhead error service check" on page 2-27** if the message still appears.
113	xx	Printhead Error	An error has occurred in the yellow channel of the printhead.	POR the printer. Go to **"113.xx—Printhead error service check" on page 2-28** if the message still appears.
114	01	Printhead Error	An error has occurred in the black channel of the printhead.	POR the printer. Go to **"114.xx—Printhead error service check" on page 2-29** if the message still appears.
120	01-02 08-10 13-15	Fuser Error	An error has occurred in the fuser.	Remove and reseat the fuser. POR the printer. Go to **"120.01/02/08-10/13-15—Fuser error service check" on page 2-30** if the error message still appears.
120	03	Fuser Error	An error has occurred in the fuser.	Remove and reseat the fuser. POR the printer. Go to **"120.03—Fuser error service check" on page 2-32** if the error message still appears.
120	04-07	Fuser Error	An error has occurred in the fuser.	Remove and reseat the fuser. POR the printer. Go to **"120.04-07—Fuser error service check" on page 2-32** if the error message still appears.
140	01 03-08	Autocomp Motor Error	Tray 1 motor has failed.	POR the printer. Go to **"140.01/03-08—Autocomp (tray 1) motor error service check" on page 2-34** if the message reappears.
140	02	Autocomp Motor Error	Tray 1 motor has failed.	POR the printer. Go to **"140.02—Autocomp (tray 1) motor error service check" on page 2-34** if the message reappears.
142	xx	Motor Error	Fuser motor has failed.	POR the printer. Go to **"142.xx—Motor (fuser) error service check" on page 2-34** if the message reappears.
143	09-11 15 17-18 20-25	Motor Error	EP Drive assembly cartridge 1 motor has failed.	POR the printer. Go to **"143.09-11/15/17-18/20-25—Motor (EP drive asm top cartridge) error service check" on page 2-35** if the message reappears.
143	12-14 16	Motor Error	EP Drive assembly cartridge 1 (top) motor has failed.	POR the printer. Go to **"143.12-14/16—Motor (EP drive asm top cartridge) error service check" on page 2-36** if the message reappears.
144	09-11 15 17-18 20-25	Motor Error	EP Drive assembly cartridge 2 (bottom) motor has failed.	POR the printer. Go to **"144.09-11/15/17-18/20-25—Motor (EP drive asm bottom cartridge) error service check" on page 2-36** if the message reappears.

Error code	Sub code	Display Text	Description	Action
144	12-14 16	Motor Error	EP Drive assembly cartridge 2 (bottom) motor has failed.	POR the printer. Go to **"144.12-14/16—Motor (EP drive asm bottom cartridge) error service check" on page 2-37** if the message reappears.
145	xx	Motor Error	Bump aligner motor has failed.	POR the printer. Go to **"145.xx—Motor (bump aligner) error service check" on page 2-37** if the message reappears.
146	xx	Motor Error	Duplex motor has failed.	POR the printer. Go to **"146.xx—Motor (duplex) error service check" on page 2-38** if the message reappears.
147	xx	Motor Error	Tray 2 motor has failed.	POR the printer. Go to **"147.xx/149.xx—Motor (500-sheet option tray2 motor) error service check" on page 2-39** if the message reappears.
148	xx	Motor Error	MPF motor has failed.	POR the printer. Go to **"148.xx—MPF motor error service check" on page 2-40** if the message reappears.
149	xx	Motor Error	Tray 2 motor has failed.	POR the printer. Go to **"147.xx/149.xx—Motor (500-sheet option tray2 motor) error service check" on page 2-39** if the message reappears.
902	xx	Engine Software Error	These errors indicate an unrecoverable system software error.	POR the printer. If error persists, replace the system card. Go to **"System card removal" on page 4-47**.
903	xx	Engine Software Error	These errors indicate an unrecoverable system software error.	POR the printer. If error persists, replace the system card. Go to **"System card removal" on page 4-47**.
904	xx	Interface Violation by RIP	These errors indicate an unrecoverable system software error.	POR the printer. If error persists, replace the system card. Go to **"System card removal" on page 4-47**.
905	xx	Engine Software Error	These errors indicate an unrecoverable system software error.	POR the printer. If error persists, replace the system card. Go to **"System card removal" on page 4-47**.
906	xx	RIP Interface Driver Error	These errors indicate an unrecoverable system software error.	POR the printer. If error persists, replace the system card. Go to **"System card removal" on page 4-47**.
907	xx	Engine Software Error	These errors indicate an unrecoverable system software error.	POR the printer. If error persists, replace the system card. Go to **"System card removal" on page 4-47**.
910	01	Engine Error	System card failure	POR the printer. Go to **"910.01—Engine error service check" on page 2-40** if the message reappears.
920	01	POST Error	Bump align motor not connected	Go to **"920.01—POST (power on self test) error service check" on page 2-41**.
920	02	POST Error	Tray 1 motor not connected	Go to **"920.02—POST (power on self test) error service check" on page 2-41**.
920	03	POST Error	Transfer belt not connected	Go to **"920.03—POST (power on self test) error service check" on page 2-42**.
920	04	POST Error	Fuser motor not connected	Go to **"920.04—POST (power on self test) error service check" on page 2-42**.

Error code	Sub code	Display Text	Description	Action
920	05	POST Error	Printhead motor not connected	Go to **"920.05—POST (power on self test) error service check" on page 2-43**.
920	06	POST Error	Input sensor not connected	Go to **"920.06—POST (power on self test) error service check" on page 2-44**.
920	07	POST Error	Narrow media sensor not connected	Go to **"920.07—POST (power on self test) error service check" on page 2-44**.
920	08	POST Error	Exit sensor not connected	Go to **"920.08—POST (power on self test) error service check" on page 2-45**.
920	09-12	POST Error	One toner sensor not connected	Go to **"920.09-12—POST (power on self test) error service check" on page 2-46**.
920	13	POST Error	Cartridge motor 1 (top) not connected	Go to **"920.13—POST (power on self test) error service check" on page 2-48**.
920	14	POST Error	Cartridge motor 2 (bottom) not connected	Go to **"920.14—POST (power on self test) error service check" on page 2-49**.
920	15	POST Error	Bad transfer belt NVRAM data	Go to **"920.15—POST (power on self test) error service check" on page 2-50**.
920	16	POST Error	Bad printhead NVRAM data	Go to **"920.16—POST (power on self test) error service check" on page 2-50**.
920	17	POST Error	Output bin cable not connected	Go to **"920.17—POST (power on self test) error service check" on page 2-51**.
920	18	POST Error	Tray 2 has failed.	Go to **"920.18—POST (power on self test) error service check" on page 2-51**.
920	19	POST Error	Stepper motor not connected.	Go to **"920.19—POST (power on self test) error service check" on page 2-52**.
925	01	Fan Error	Fan has stalled.	POR the printer. Go to **"925.01—Fan error service check" on page 2-52** if the message reappears.
945	00	Transfer Roll	Yellow transfer roll has failed.	POR the printer. Go to **"945.00, 946.00, 947.01—Transfer roll (yellow) error service check" on page 2-53** if the message reappears.
945	01	Transfer Roll	Cyan transfer roll has failed.	POR the printer. Go to **"945.01, 946.01, 947.02—Transfer roll (cyan) error service check" on page 2-55** if the message reappears.
945	02	Transfer Roll	Magenta transfer roll has failed.	POR the printer. Go to **"945.02, 946.02, 947.03—Transfer roll (magenta) error service check" on page 2-57** if the message reappears.
945	03	Transfer Roll	Black transfer roll has failed.	POR the printer. Go to **"945.03, 946.03, 947.04—Transfer roll (black) error service check" on page 2-59** if the message reappears.
946	00	Transfer Roll	Yellow transfer roll has failed.	POR the printer. Go to **"945.00, 946.00, 947.01—Transfer roll (yellow) error service check" on page 2-53** if the message reappears.

Error code	Sub code	Display Text	Description	Action
946	01	Transfer Roll	Cyan transfer roll has failed.	POR the printer. Go to **"945.01, 946.01, 947.02—Transfer roll (cyan) error service check" on page 2-55** if the message reappears.
946	02	Transfer Roll	Magenta transfer roll has failed.	POR the printer. Go to **"945.02, 946.02, 947.03—Transfer roll (magenta) error service check" on page 2-57** if the message reappears.
946	03	Transfer Roll	Black transfer roll has failed.	POR the printer. Go to **"945.03, 946.03, 947.04—Transfer roll (black) error service check" on page 2-59** if the message reappears.
947	01	Transfer Roll	Yellow transfer roll has failed.	POR the printer. Go to **"945.00, 946.00, 947.01—Transfer roll (yellow) error service check" on page 2-53** if the message reappears.
947	02	Transfer Roll	Cyan transfer roll has failed.	POR the printer. Go to **"945.01, 946.01, 947.02—Transfer roll (cyan) error service check" on page 2-55** if the message reappears.
947	03	Transfer Roll	Magenta transfer roll has failed.	POR the printer. Go to **"945.02, 946.02, 947.03—Transfer roll (magenta) error service check" on page 2-57** if the message reappears.
947	04	Transfer Roll	Black transfer roll has failed.	POR the printer. Go to **"945.03, 946.03, 947.04—Transfer roll (black) error service check" on page 2-59** if the message reappears.
950	00-29	NVRAM Mismatch	Mismatch between operator panel assembly NVRAM and smart chip card NVRAM.	POR the printer. Go to **"950.00 through 950.29 EPROM mismatch failure" on page 2-61** if the message reappears.
950	30-60	NVRAM Mismatch	Mismatch between system card NVRAM and smart chip card NVRAM.	POR the printer. Go to **"950.30 through 950.60 EPROM mismatch failure" on page 2-62** if the message reappears.
951	xx	NVRAM Failure	System card NVRAM failure	POR the printer. Replace system card if message reappears. Go to **"System card removal" on page 4-47**.
952	xx	NV Failure:n	CRC error has occurred. This is recoverable.	Perform POR to clear the error.
953	xx	NVRAM Failure	Operator panel assembly NVRAM.	POR the printer. Replace operator panel assembly if message reappears. Go to **"Operator panel assembly removal" on page 4-22**.
954	xx	NVRAM Failure	Smart chip card NVRAM failure.	POR the printer. Replace smart chip card if message reappears. Go to **"Smart chip card removal" on page 4-51**.
956	xx	System card	Processor failure on system card (board)	POR the printer. Replace system card if message reappears. Go to **"System card removal" on page 4-47**.
990	xx	Option Error	Tray 2 failure	Replace 500-sheet assembly.

User attendance messages

Error code	Sub code	Primary message	Action
31	xx	Defective Print Cartridge	• Reseat specified toner cartridge. • Inspect smart chip card contacts for damage/contamination. If damaged, contact next level of service.  • Inspect toner cartridge contacts for damage/contamination. Replace toner cartridge if defective. • Inspect JSBTN1 cable connection. Properly connect the cable if not connected properly. Replace cable if damaged. Go to **"Smart chip card removal" on page 4-51** to gain access to replace cable. • Replace smart chip card. Go to **"Smart chip card removal" on page 4-51**. • If problem still exists, replace system card. Go to **"System card removal" on page 4-47**.
32	xx	Unsupported Print Cartridge	• Check to see if cartridge is a supported cartridge. If so, reseat specified toner cartridge. • Inspect smart chip card contacts for damage/contamination. If damaged, contact next level of service.  • Inspect toner cartridge contacts for damage/contamination. Replace toner cartridge if defective. • Inspect JSBTN1 cable connection. Properly connect the cable if not connected properly. Replace cable if damaged. Go to **"Smart chip card removal" on page 4-51** to gain access to replace cable. • Replace smart chip card. Go to **"Smart chip card removal" on page 4-51**. • If problem still exists, replace system card. Go to **"System card removal" on page 4-47**.

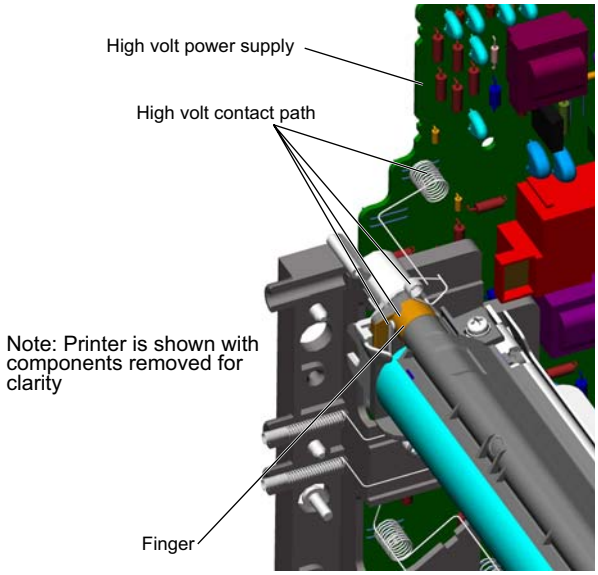
Error code	Sub code	Primary message	Action
34	xx	Short Paper	• Press ▼ until ✓ **Continue** appears, and then press ✓ to clear the message and continue printing. The printer does not automatically reprint the page that prompted the message. • Check tray length and width guides to ensure media is properly fitted. • Make sure the print job is requesting the correct size of media. • Adjust the Paper Size setting for the media size being used. If MP Feeder Size is set to Universal, make sure the media is large enough for the formatted data. • Cancel the current job. Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. • If problem still exists, replace system card. Go to **"System card removal" on page 4-47**.
34	xx	Incorrect Media	• Load the appropriate media in the selected source. • Press ▼ until ✓ **Continue** appears, and then press ✓ to clear the message and print the job using a different paper source. • POR printer to recalibrate transparency sensor. • Ensure transparency sensor is mounted correctly in paper pick mechanism. If not, snap into place. • Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. • If problem still exists, replace system card. Go to **"System card removal" on page 4-47**.
35	xx	Insufficient memory to support Resource Save feature	• Press ▼ until ✓ **Continue** appears, and then press ✓ to disable Resource Save and continue printing. • To enable Resource Save after receiving this message: - Make sure the link buffers are set to Auto, then exit the menus to activate the link buffer changes. - When **Ready** is displayed, enable Resource Save. • Install additional memory. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
37	xx	Insufficient memory to collate job	• Press ▼ until ✓ **Continue** appears, and then press ✓ to print the portion of the job already stored and begin collating the rest of the job. • Cancel the current job. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
37	xx	Insufficient memory for Flash Memory Defragment operation	• Press ▼ until ✓ **Continue** appears, and then press ✓ to stop the defragment operation and continue printing. • Delete fonts, macros, and other data in printer memory. • Install additional printer memory. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
37	xx	Insufficient memory, some held jobs were deleted	• The printer deleted some held jobs in order to process current jobs. • Press ▼ until ✓ **Continue** appears, and then press ✓ to clear the message. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.

Error code	Sub code	Primary message	Action
37	xx	Insufficient memory, some held jobs were lost	• The printer was unable to restore some or all of the confidential or held jobs on the hard disk. • Press ▼ until √**Continue** appears, and then press ✓ to clear the message. • If this message occurs again, replace the hard drive. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
38	xx	Memory Full	• Press ▼ until √**Continue** appears, and then press ✓ to clear the message and continue printing. The job may not print correctly. • Cancel the current job. • Install additional printer memory. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
50	xx	PPDS font error	• Press ▼ until √**Continue** appears, and then press ✓ to clear the message and continue printing. The job may not print correctly. • Cancel the current job. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
51	xx	Defective flash detected	• Press ▼ until √**Continue** appears, and then press ✓ to clear the message and continue printing. • Install different flash memory before downloading any resources to flash. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
52	xx	Not enough free space in flash memory for resources	• Press ▼ until √**Continue** appears, and then press ✓ to clear the message and continue printing. Downloaded fonts and macros not previously stored in flash memory are deleted. • Delete fonts, macros, and other data stored in flash memory. • Install a larger capacity flash memory card. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
53	xx	Unformatted flash detected	• Press ▼ until √**Continue** appears, and then press ✓ to clear the message and continue printing. • Format the flash memory before storing any resources on it. If the error message remains, replace the flash memory. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
54	xx	Serial option <x> error	• Make sure the serial link is set up correctly, and the appropriate cable is in use. • Make sure the serial interface parameters (protocol, baud, parity, and data bits) are set correctly on the printer and host computer. • Press ▼ until √**Continue** appears, and then press ✓ to clear the message and continue printing. The job may not print correctly. • POR the printer. If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
54	xx	Network <x> software error	• Press ▼ until √**Continue** appears, and then press ✓ to clear the message and continue printing. The job may not print correctly. • Program new firmware for the network interface. • POR the printer. If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.

Error code	Sub code	Primary message	Action
55	xx	Unsupported option in slot <x>	• Turn the printer off. • Unplug the power cord from the wall outlet. • Remove the unsupported option. • Connect the power cord to a properly grounded outlet. • Turn the printer on. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
56	xx	Parallel port <x> disabled Standard parallel port disabled	• Press ▼ until √ **Continue** appears, and then press ✓ to clear the message. The printer discards any data received through the parallel port. • Make sure the Parallel Buffer menu item is not set to **Disabled**. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
56	xx	Serial port <x> disabled	• Press ▼ until √ **Continue** appears, and then press ✓ to clear the message. The printer discards any data received through the serial port. • Make sure the Serial Buffer menu item is not set to **Disabled**. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
56	xx	Standard USB port disabled	• Press ▼ until √ **Continue** appears, and then press ✓ to clear the message. The printer discards any data received through the USB port. • Make sure the USB Buffer menu item is not set to **Disabled**. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
58	xx	Too many flash options installed	• Turn off and unplug the printer. • Remove the excess flash memory. • Plug in the printer, and turn it on. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
58	xx	Too many trays attached	The C520 does not support the 500-sheet assembly. • Turn off and unplug the printer. • Remove the 500-sheet paper tray assembly. • Plug in the printer, and turn it on. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
61	xx	Remove defective disk	• Press ▼ until √ **Continue** appears, and then press ✓ to clear the message and continue printing. • Install a different hard disk before performing any operations that require a hard disk. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
62	xx	Disk full	• Press ▼ until √ **Continue** appears, and then press ✓ to clear the message and continue processing. Any information not previously stored on the hard disk is deleted. • Delete fonts, macros, and other data stored on the hard disk. • Install a larger hard disk. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.

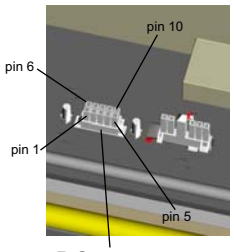
Error code	Sub code	Primary message	Action
63	xx	Unformatted disk	• Press ▼ until √Continue appears, and then press ✓ to clear the message and continue printing. • Format the disk. • If the error message remains, replace the hard disk. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
64	xx	Unsupported disk format	• Press ▼ until √Continue appears, and then press ✓ to clear the message and continue printing. • Format the disk. • If the error message remains, replace the hard disk. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
80	xx	Fuser life warning	• Press ▼ until √Continue appears, and then press ✓ to clear the message and continue printing. • Order a replacement fuser. When print quality is reduced, install the new fuser using the instruction sheet that comes with the replacement fuser. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
80	xx	Replace fuser	• Replace the fuser. • If this does not fix the problem, replace system card. Go to **"System card removal" on page 4-47**.
82		Waste toner box nearly full	• Press ▼ until √Continue appears, and then press ✓ to clear the message and continue printing. • If printing continues, order a replacement waste toner box immediately. • If problem persists, open front access door and check bump aligner shaft for binding. Clear binding if possible. If not possible, contact next level of service.
82		Replace waste toner box	• Replace the waste toner box using the instruction sheet that comes with the replacement waste toner box. • Ensure that there is not interference between the waste toner box and printer. • If replacing waste toner box does not fix the problem, open front access door and check bump aligner shaft for binding. Clear binding if possible. If not possible, contact next level of service. • If the waste toner box replacement and bump aligner binding fix does not solve the problem, replace system card. Go to **"System card removal" on page 4-47**.
82		Waste toner box missing	• Insert the waste toner box. • Inspect top cover camshaft assembly for proper operation. When top access cover is closed, printer should mechanically interlock. • Check JBUMP1 connection/cable connected to system card for defects and proper connection. If cable wiring or cable connection is defective, replace bump aligner motor. Go to **"Bump aligner motor removal" on page 4-45**. Replace system card, if JBUMP1 connector is damaged on system card. Go to **"System card removal" on page 4-47**. • Check bump aligner shaft and mechanical system for binds. • Replace bump aligner motor. Go to **"Bump aligner motor removal" on page 4-45**. • If problem persists, replace system card. Go to **"System card removal" on page 4-47**.

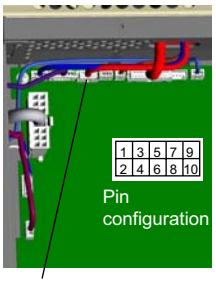
Error code	Sub code	Primary message	Action
83		Transfer belt missing	• Insert the transfer belt. • Check connector JTRANS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRANS1 cable is damaged, replace front door assembly. Go to **"Front door assembly removal" on page 4-32** for a non-duplex printer. Go to **"Duplex front door assembly removal" on page 4-34** for a duplex printer. • Replace transfer belt assembly. Go to **"Transfer belt removal" on page 4-15**. • If problem persists, replace system card. Go to **"System card removal" on page 4-47**.
83		Transfer belt life warning	• Press ▼ until ✓ `Continue` appears, and then press ✓ to clear the message and continue printing. • Order a replacement transfer belt. When print quality is reduced, install the new transfer belt using the instruction sheet that comes with the replacement transfer belt. • If problem persists, replace system card. Go to **"System card removal" on page 4-47**.
83		Replace transfer belt	• Replace the transfer belt using the instruction sheet that comes with the replacement transfer belt. Go to **"Transfer belt removal" on page 4-15**. • If problem persists, replace system card. Go to **"System card removal" on page 4-47**.
84		<color> PC Unit life warning	• Press ▼ until ✓ `Ignore` appears, and then press ✓ to clear the message and continue printing. • Order the specified photoconductor unit. When print quality is reduced, install the new specified photoconductor unit using the instruction sheet that comes with the replacement specified photoconductor unit. • If problem persists, replace system card. Go to **"System card removal" on page 4-47**.
84		Replace <color> PC Unit	• Replace the specified photoconductor unit using the instruction sheet that comes with the replacement specified photoconductor unit. • If problem persists, replace system card. Go to **"System card removal" on page 4-47**.

Error code	Sub code	Primary message	Action
84		<color> PC Unit missing	• Scroll down the operator panel to see if the printer is showing that all four of the pc units are missing. If so, check the HVPS cable between the system card and HVPS. Ensure that the cable is not plugged in backwards on the HVPS. • Insert or reinstall the specified photoconductor unit and see if problem clears. Go to **"Photoconductor unit removal" on page 4-14**. • Check high volt contacts, especially the "finger" on the specified photoconductor unit.  • If contacts are good, replace HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. • If problem persists, replace system card. Go to **"System card removal" on page 4-47**.

<table>
<tr><th>Error code</th><th>Sub code</th><th>Primary message</th><th>Action</th></tr>
<tr><td>87</td><td></td><td>Fuser missing</td><td>

Install fuser. Replace fuser if problem persists.
If problem continues, turn the printer off and remove the rear cover. Check connector JFUSER1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. If connector is damaged on system card, replace system card. Go to “System card removal” on page 4-47. If fuser cable is damaged, replace cable.
Check for the following continuity between DC auto-connect and FUSER1.



DC auto-connect


JFUSER1
<table>
<tr><th>DC auto-connect</th><th>JFUSER1</th></tr>
<tr><td>pin 3</td><td>pin 3</td></tr>
<tr><td>pin 4</td><td>pin 4</td></tr>
<tr><td>pin 6</td><td>pin 6</td></tr>
<tr><td>pin 7</td><td>pin 7</td></tr>
<tr><td>pin 8</td><td>pin 8</td></tr>
<tr><td>pin 9</td><td>pin 9</td></tr>
<tr><td>pin 10</td><td>pin 10</td></tr>
</table>

If continuity is not present, replace fuser cable. If problem persists after replacing cable, replace system card. Go to “System card removal” on page 4-47.

</td></tr>
<tr><td>88</td><td></td><td><color> Cartridge low</td><td>

Replace specified toner cartridge.
Press ▼ until ✓ Continue appears, and then press ✓ to clear the message and continue printing.
If message does not clear, replace smart chip card. Go to “Smart chip card removal” on page 4-51.
If problem persists, replace system card. Go to “System card removal” on page 4-47.

</td></tr>
<tr><td>88</td><td></td><td>Replace <color> cartridge</td><td>

Replace specified toner cartridge.
Press ▼ until ✓ Continue appears, and then press ✓ to clear the message and continue printing.
If message does not clear, replace smart chip card. Go to “Smart chip card removal” on page 4-51.
If problem persists, replace system card. Go to “System card removal” on page 4-47.

</td></tr>
</table>

User attendance messages—paper jams and paper handling errors (2xx.xx)

When the printer jams, the appropriate jam message will be displayed on the printer operator panel.

Error code	Sub codes	Description	Possible causes	Action
200	01	Input sensor flag is made when printer tries to print from an idle state.	• Paper jam leaving page over sensor • Defective input sensor • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • If clearing a paper jam does not fix the problem, go to **"Input sensor service check" on page 2-63**.
200	11	Input sensor continues to be made after the page should have passed beyond the input sensor flag.	• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • Paper tray failure • Paper pick mechanism	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • Properly set media restaints in paper tray. • Check the pick arm rolls (tires) and replace if worn. • Replace the paper tray. • Replace the paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
200	16	Input sensor flag is made when printer powers up or covers are closed.	• Paper jam leaving page over sensor • Defective input sensor • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • If clearing a paper jam does not fix the problem, go to **"Input sensor service check" on page 2-63**.
200	21	Bump aligner motor stalled.	• Faulty cable/connector • 24V interlock switch not working correctly • Faulty bump align motor • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • If clearing a paper jam does not fix the problem, go to **"145.xx—Motor (bump aligner) error service check" on page 2-37**.
200	22	Pick (tray 1) motor stalled.	• Faulty cable/connector • Faulty pick motor • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • If clearing a paper jam does not fix the problem, go to **"140.01/03-08—Autocomp (tray 1) motor error service check" on page 2-34**.

Error code	Sub codes	Description	Possible causes	Action
200	25	Input sensor flag is made when tray 1 is installed.	• Improper placement of paper in tray 1 • Damaged input sensor flag or input sensor • Faulty system card	• Fan media and stack flat in tray or MPF. • Properly set media restaints in paper tray. • If clearing a paper jam does not fix the problem, go to **"Input sensor service check" on page 2-63**.
201	06	Paper is jammed between the input sensor and the exit sensor.	• Damaged paper exit sensor or paper exit sensor flag • Damaged fuser autoconnect • Faulty fuser DC cable connection • Faulty fuser • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
201	07	Exit sensor flag is made before leading edge of paper reaches exit sensor flag.	• Damaged paper exit sensor or paper exit sensor flag • Damaged fuser autoconnect • Faulty fuser DC cable connection • Faulty fuser • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
201	08	Exit sensor is never made when leading edge of paper has moved far enough to engage exit sensor flag.	• Paper wrapped in fuser • Damaged paper exit sensor or paper exit sensor flag • Damaged fuser autoconnect • Faulty fuser DC cable connection • Faulty fuser • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
201	10	Input sensor flag broke before trailing edge of paper made it to the input sensor flag.	• Paper jam leaving page over sensor • Defective input sensor • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • If clearing a paper jam does not fix the problem, go to **"Input sensor service check" on page 2-63**.
201	21	Cartridge motor 1 (top) or cartridge motor 2 (bottom) has stalled.	• Faulty cable/connector • Faulty cartridge motor • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • If clearing a paper jam does not fix the problem, go to **"143.12-14/16—Motor (EP drive asm top cartridge) error service check" on page 2-36** and then **"144.12-14/16—Motor (EP drive asm bottom cartridge) error service check" on page 2-37** if necessary.

Error code	Sub codes	Description	Possible causes	Action
201	23	Special case.	• System card code failure	• POR the printer. Replace system card if message reappears. Go to **"System card removal" on page 4-47**. • If replacing system card does not fix the problem, contact the next level of support.
202	02	Exit sensor flag is made when printer tries to print from an idle state.	• Damaged paper exit sensor or paper exit sensor flag • Damaged fuser autoconnect • Faulty fuser DC cable connection • Faulty fuser • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
202	12	Exit sensor flag broke before trailing edge of paper made it to the exit sensor flag.	• Damaged paper exit sensor or paper exit sensor flag • Faulty fuser • Faulty system card	• The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
202	13	Exit sensor continues to be made after the page should have passed beyond the exit sensor flag.	• Damaged paper exit sensor or paper exit sensor flag • Faulty fuser • Faulty system card • Faulty output bin flag	• Check output bin flag on fuser for proper operation. Ensure that paper is not hanging on the flag. • The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
202	17	Exit sensor flag is made when printer powers up or covers are closed.	• Damaged paper exit sensor or paper exit sensor flag • Damaged fuser autoconnect • Faulty fuser DC cable connection • Faulty fuser • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
202	21	Fuser motor stalled.	• Faulty cable/connector • Faulty fuser motor • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • If clearing a paper jam does not fix the problem, go to **"142.xx—Motor (fuser) error service check" on page 2-34**.
202	24	A 201.08 jam occurred and was not cleared.	• Failure to clear previous jam before trying to continue print job	• This error is generated as a protection for possible paper wrap in the fuser. Ensure that the fuser is checked for paper jams. If the jam is cleared, and the error does not go away, go to **"Exit sensor service check" on page 2-63**.

Error code	Sub codes	Description	Possible causes	Action
203	09	During retract, exit sensor is never made when leading edge of duplex print paper has moved far enough in duplex path.	• Damaged paper exit sensor or paper exit sensor flag • Damaged fuser autoconnect • Faulty fuser DC cable connection • Faulty fuser • Faulty system card	• Check for anything in the paper path that might cause the paper to jam. • The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
203	14	During retract, exit sensor flag broke before trailing edge of duplex page made it to the exit sensor flag.	• Damaged paper exit sensor or paper exit sensor flag • Faulty fuser • Faulty system card	• The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
203	15	Exit sensor continues to be made after the page should have passed beyond the exit sensor flag during duplex printing.	• Damaged paper exit sensor or paper exit sensor flag • Obstructed duplex • Faulty fuser • Faulty system card	• Check duplex paper path for damage that would obstruct the print. If damage is found, replace duplex front door assembly. Go to **"Duplex front door assembly removal" on page 4-34**. • The fuser exit sensor may not be functioning properly. Go to **"Exit sensor service check" on page 2-63**.
230	03	Input sensor is never made during the duplex print.	• Obstructed duplex path • Defective input sensor • Faulty system card	• Check for anything in the duplex paper path that might cause the paper to jam. This includes the paper guides in tray 1. • If clearing a paper jam does not fix the problem, go to **"Input sensor service check" on page 2-63**.
230	04	Input sensor is made while previous page is still in aligner during a duplex print.	• Defective input sensor • Faulty system card	• If clearing a paper jam does not fix the problem, go to **"Input sensor service check" on page 2-63**.
230	05	During duplex printing, input sensor flag is not made.	• Obstructed duplex path • Defective input sensor • Faulty system card	• Check for anything in the duplex paper path that might cause the paper to jam. This includes the paper guides in tray 1. • If clearing a paper jam does not fix the problem, go to **"Input sensor service check" on page 2-63**.
230	21	Duplex motor stalled.	• Obstructed duplex path • Defective duplex motor • Faulty system card	• Check for anything in the duplex paper path that might cause the paper to jam. This includes the paper guides in tray 1. • If clearing a paper jam does not fix the problem, go to **"146.xx—Motor (duplex) error service check" on page 2-38**.

Error code	Sub codes	Description	Possible causes	Action
241	03	Input sensor flag is not made when it should be.	• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • Paper tray failure • Paper pick mechanism failure	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • Properly set media restaints in paper tray. • Check the pick arm rolls (tires) and replace if worn. • Replace the paper tray. • Replace the paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
241	04	Input sensor is made while previous page is still in aligner.	• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • Paper tray failure • Paper pick mechanism	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • Properly set media restaints in paper tray. • Check the pick arm rolls (tires) and replace if worn. • Replace the paper tray. • Replace the paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
241	05		• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • Paper tray failure • Paper pick mechanism failure • System card	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • Properly set media restaints in paper tray. • Check the pick arm rolls (tires) and replace if worn. • Replace the paper tray. • If the previous actions do not fix the problem, go to **"140.01/03-08—Autocomp (tray 1) motor error service check" on page 2-34**.
241	20	Transparency sensor is blocked.	• Transparency sensor • Paper tray failure • Paper pick mechanism failure • System card	• Replace the paper tray. • If the previous action does not fix the problem, go to **"910.01—Engine error service check" on page 2-40**.

Error code	Sub codes	Description	Possible causes	Action
241	21	Tray 1 motor stalled.	• Incorrect paper loading • Paper pick mechanism failure • System card	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • If the previous actions do not fix the problem, go to **"148.xx—MPF motor error service check" on page 2-40**.
242	03		• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • 500-sheet assembly failure • Paper pick mechanism	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in 500-sheet tray (tray 2). • Properly set media restaints in tray 2. • Check the pick arm rolls (tires) and replace if worn. • Replace the 500-sheet assembly. • If the previous actions do not fix the problem, go to **"140.01/03-08—Autocomp (tray 1) motor error service check" on page 2-34**.
242	04	Input sensor is made while previous page is still in aligner.	• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • 500-sheet assembly failure • Paper pick mechanism	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in 500-sheet tray (tray 2). • Properly set media restaints in tray 2. • Check the pick arm rolls (tires) and replace if worn. • Replace the 500-sheet assembly. • If the previous actions do not fix the problem, go to **"140.01/03-08—Autocomp (tray 1) motor error service check" on page 2-34**.
242	05		• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • 500-sheet assembly failure • System card	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in 500-sheet tray (tray 2). • Properly set media restaints in tray 2. • Check the pick arm rolls (tires) and replace if worn. • If the previous actions do not fix the problem, go to **"147.xx/149.xx—Motor (500-sheet option tray2 motor) error service check" on page 2-39**.

Error code	Sub codes	Description	Possible causes	Action
242	21	Tray 2 autocomp or redrive motor stalled.	• Incorrect paper loading • 500-sheet assembly failure • System card	• Fan media and stack flat in 500-sheet tray (tray 2). • If the previous actions do not fix the problem, go to **"147.xx/149.xx—Motor (500-sheet option tray2 motor) error service check" on page 2-39**.
250	03	Input sensor flag is not made when it should be.	• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • Paper tray failure • MPF swing arm assembly failure • Paper pick mechanism failure	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • Properly set media restaints in paper tray. • Check the pick arm rolls (tires) and replace if worn. • Replace the paper tray. • Replace the MPF swing arm assembly. **"Multipurpose feeder (MPF) swing arm assembly removal" on page 4-28**. • If the previous actions do not fix the problem, replace the paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
250	04	Input sensor is made while previous page is still in aligner.	• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • Paper tray failure • Paper pick mechanism	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • Properly set media restaints in paper tray. • Check the pick arm rolls (tires) and replace if worn. • Replace the paper tray. • Replace the MPF swing arm assembly. **"Multipurpose feeder (MPF) swing arm assembly removal" on page 4-28**. • If the previous actions do not fix the problem, replace the paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.

Error code	Sub codes	Description	Possible causes	Action
250	21	MPF motor stalled.	• Incorrect paper loading • Paper pick mechanism failure • System card	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • Replace the MPF swing arm assembly. **"Multipurpose feeder (MPF) swing arm assembly removal" on page 4-28**. • If the previous actions do not fix the problem, go to **"148.xx—MPF motor error service check" on page 2-40**.
250	05		• Incorrect media setting • Incorrect paper loading • Incorrect media restraint setting • Paper tray failure • Paper pick mechanism failure • System card	• Ensure proper media is set for the type of paper used. • Fan media and stack flat in tray or MPF. • Properly set media restaints in paper tray. • Check the pick arm rolls (tires) and replace if worn. • Replace the paper tray. • Replace the MPF swing arm assembly. **"Multipurpose feeder (MPF) swing arm assembly removal" on page 4-28**. • If the previous actions do not fix the problem, replace the paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.

Printer service checks

110.xx—Mirror motor service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JMIRR1 for proper connection to system card, printhead cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If printhead cable or connector is damaged, replace printhead.Go to **"Printhead removal" on page 4-52**.
2	Replace the system card. Go to **"System card removal" on page 4-47**. Does the error clear?	Problem solved.	Replace printhead. Go to **"Printhead removal" on page 4-52**.

111.xx—Printhead error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JINT1 (5V interlock switch cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JINT1 cable or connector is damaged, replace 5V interlock switch.Go to **"Front access door 5V interlock switch removal" on page 4-43**.
2	Check connector JPH1 (large printhead cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 3.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If printhead cable is damaged, replace printhead.Go to **"Printhead removal" on page 4-52**.
3	Turn printer power on and check for 5VDC between JINT1 pin 1 (red wire) and ground. Is voltage present? **Note:** Ground lead of voltmeter can be placed on metal chasis to obtain ground.	Go to step 4.	Disconnect JINT1 and check for 5VDC between pin 1 of system card connector and ground. If voltage is present, replace 5V interlock switch.Go to **"Front access door 5V interlock switch removal" on page 4-43**. If voltage is not present, replace system card. Go to **"System card removal" on page 4-47**.

Step	Questions / actions	Yes	No
4	Reconnect JINT1 if disconnected. Ensure front access door is completely closed. Check for 5VDC between JINT1 pin 3 (white wire) and ground. Is voltage present?	Go to step 5.	Replace 5V interlock switch.Go to **"Front access door 5V interlock switch removal" on page 4-43**.
5	Replace printhead. Go to **"Printhead removal" on page 4-52**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

112.xx—Printhead error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JINT1 (5V interlock switch cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JINT1 cable or connector is damaged, replace 5V interlock switch.Go to **"Front access door 5V interlock switch removal" on page 4-43**.
2	Check connector JPH1 (large printhead cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 3.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If printhead cable is damaged, replace printhead.Go to **"Printhead removal" on page 4-52**.
3	Turn printer power on and check for 5VDC between JINT1 pin 1 (red wire) and ground. Is voltage present? **Note:** Ground lead of voltmeter can be placed on metal chasis to obtain ground.	Go to step 4.	Disconnect JINT1 and check for 5VDC between pin 1 of system card connector and ground. If voltage is present, replace 5V interlock switch.Go to **"Front access door 5V interlock switch removal" on page 4-43**. If voltage is not present, replace system card. Go to **"System card removal" on page 4-47**.
4	Reconnect JINT1 if disconnected. Ensure front access door is completely closed. Check for 5VDC between JINT1 pin 3 (white wire) and ground. Is voltage present?	Go to step 5.	Replace 5V interlock switch.Go to **"Front access door 5V interlock switch removal" on page 4-43**.
5	Replace printhead. Go to **"Printhead removal" on page 4-52**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

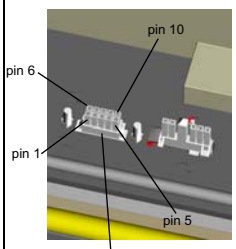
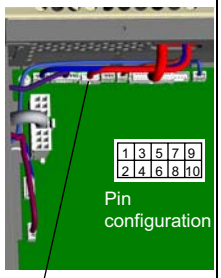
113.xx—Printhead error service check

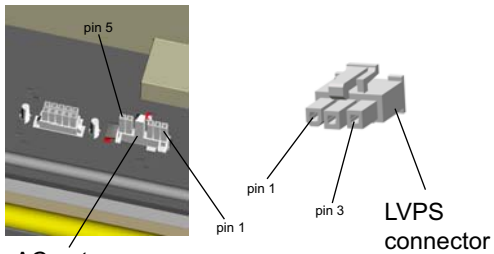
Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JINT1 (5V interlock switch cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JINT1 cable or connector is damaged, replace 5V interlock switch. Go to **"Front access door 5V interlock switch removal" on page 4-43**.
2	Check connector JPH1 (large printhead cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 3.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If printhead cable is damaged, replace printhead. Go to **"Printhead removal" on page 4-52**.
3	Turn printer power on and check for 5 V dc between JINT1 pin 1 (red wire) and ground. Is voltage present? **Note:** Ground lead of voltmeter can be placed on metal chasis to obtain ground.	Go to step 4.	Disconnect JINT1 and check for 5 V dc between pin 1 of system card connector and ground. If voltage is present, replace 5V interlock switch. Go to **"Front access door 5V interlock switch removal" on page 4-43**. If voltage is not present, replace system card. Go to **"System card removal" on page 4-47**.
4	Reconnect JINT1 if disconnected. Ensure front access door is completely closed. Check for 5 V dc between JINT1 pin 3 (white wire) and ground. Is voltage present?	Go to step 5.	Replace 5V interlock switch. Go to **"Front access door 5V interlock switch removal" on page 4-43**.
5	Replace printhead. Go to **"Printhead removal" on page 4-52**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

114.xx—Printhead error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JINT1 (5V interlock switch cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JINT1 cable or connector is damaged, replace 5V interlock switch. Go to **"Front access door 5V interlock switch removal" on page 4-43**.
2	Check connector JPH1 (large printhead cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 3.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If printhead cable is damaged, replace printhead. Go to **"Printhead removal" on page 4-52**.
3	Turn printer power on and check for 5 V dc between JINT1 pin 1 (red wire) and ground. Is voltage present? **Note:** Ground lead of voltmeter can be placed on metal chasis to obtain ground.	Go to step 4.	Disconnect JINT1 and check for 5 V dc between pin 1 of system card connector and ground. If voltage is present, replace 5V interlock switch. Go to **"Front access door 5V interlock switch removal" on page 4-43**. If voltage is not present, replace system card. Go to **"System card removal" on page 4-47**.
4	Reconnect JINT1 if disconnected. Ensure front access door is completely closed. Check for 5 V dc between JINT1 pin 3 (white wire) and ground. Is voltage present?	Go to step 5.	Replace 5V interlock switch. Go to **"Front access door 5V interlock switch removal" on page 4-43**.
5	Replace printhead. Go to **"Printhead removal" on page 4-52**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

120.01/02/08-10/13-15—Fuser error service check

Step	Questions / actions	Yes	No
1	Check the input voltage switch on the back of the low volt power supply (LVPS). Is the voltage level (115/230) properly set?	Go to step 2.	Set switch for proper country voltage.
2	Turn the printer off and remove the rear cover. Check connector JFUSER1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 3.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If fuser cable is damaged, replace cable.
3	Check connector JLVPS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 4.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If LVPS cable is damaged, replace LVPS. Go to **"Low volt power supply (LVPS) removal" on page 4-38**.
4	Remove fuser. Go to **"Fuser removal" on page 4-13**. Check AC and DC auto-connects on both the fuser and the printer for damage. Are connectors free of damage?	Go to step 5.	If connector is damaged on fuser, replace fuser. If either of the cable connectors are damaged, replace the appropriate cable.
5	Check for the following continuity between DC auto-connect and FUSER1. Is continuity present?  DC auto-connect  JFUSER1 **DC auto-connect** pin 9 pin 10 **JFUSER1** pin 9 pin 10	Go to step 6.	Replace DC fuser cable.

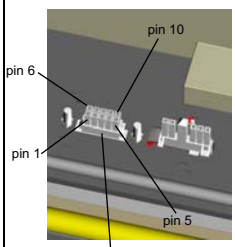
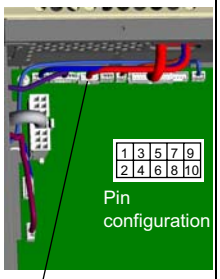
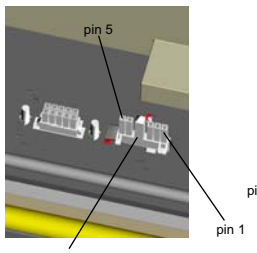
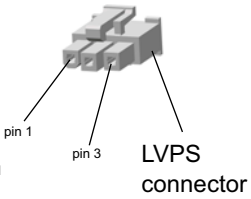
Step	Questions / actions	Yes	No
6	Check for continuity between the following pins of the AC auto-connect and the pins of the connector that connects to the LVPS. Is continuity present?  **LVPS connector** / **AC auto-connect** pin 1 / pin 5 pin 2 / pin 4 pin 3 / pin 1	Go to step 7.	Replace AC fuser cable.
7	Reinstall fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Go to step 8.
8	Replace fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

120.03—Fuser error service check

Step	Questions / actions	Yes	No
1	Check the input voltage switch on the back of the low volt power supply (LVPS). Is the voltage level (115/230) properly set?	Go to step 2.	Set switch for proper country voltage.
2	Turn the printer off and remove the rear cover. Check connector JFUSER1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 3.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If fuser cable is damaged, replace cable.
3	Check connector JLVPS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 4.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If LVPS cable is damaged, replace LVPS. Go to **"Low volt power supply (LVPS) removal" on page 4-38**.
4	Replace fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

120.04-07—Fuser error service check

Step	Questions / actions	Yes	No
1	Check the input voltage switch on the back of the low volt power supply (LVPS). Is the voltage level (115/230) properly set?	Go to step 2.	Set switch for proper country voltage.
2	Turn the printer off and remove the rear cover. Check connector JFUSER1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 3.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If fuser cable is damaged, replace cable.
3	Remove fuser. Go to **"Fuser removal" on page 4-13**. Check AC and DC auto-connects on both the fuser and the printer for damage. Are connectors free of damage?	Go to step 4.	If connector is damaged on fuser, replace fuser. If either of the cable connectors are damaged, replace the appropriate cable.

Step	Questions / actions	Yes	No
4	Check for the following continuity between DC auto-connect and FUSER1. Is continuity present?  DC auto-connect  JFUSER1 **DC auto-connect** pin 9 pin 10 **JFUSER1** pin 9 pin 10	Go to step 5.	Replace DC fuser cable.
5	Check for continuity between the following pins of the AC auto-connect and the pins of the connector that connects to the LVPS. Is continuity present?  AC auto-connect  **LVPS connector** pin 1 pin 2 pin 3 **AC auto-connect** pin 5 pin 4 pin 1	Go to step 6.	Replace AC fuser cable.
6	Reinstall fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Go to step 7.
7	Replace fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

140.01/03-08—Autocomp (tray 1) motor error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRAY2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free? Go to **"Network system card" on page 5-5** for fuse location on the network system card. Go to **"Parallel system card" on page 5-6** for fuse location on the network system card.	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRAY2 cable is damaged, replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
2	Measure the resistance across fuser F2 on the system card. Is fuser blown? Go to **"Network system card" on page 5-5**.	Replace system card. Go to **"System card removal" on page 4-47**.	Go to step 3.
3	Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

140.02—Autocomp (tray 1) motor error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRAY2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRAY2 cable is damaged, replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
2	Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

142.xx—Motor (fuser) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JFUSER1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If fuser cable is damaged, replace cable.

Step	Questions / actions	Yes	No
2	Turn printer power on and check for 24 V dc between JCVR1 pin 1 (red wire) and ground. Is voltage present? **Note:** Ground lead of voltmeter can be placed on metal chasis to obtain ground.	Go to step 3.	Disconnect JCVR1 and check for 24 V dc between pin 1 of system card connector and ground. If voltage is present, replace 24V interlock switch.Go to **"Top access door 24V interlock switch removal" on page 4-60**. If voltage is not present, replace system card. Go to **"System card removal" on page 4-47**.
3	Reconnect JCVR1 if disconnected. Ensure top access door is completely closed. Check for 24 V dc between JCVR1 pin 2 (white wire) and ground. Is voltage present?	Go to step 4.	Replace 24V interlock switch. Go to **"Top access door 24V interlock switch removal" on page 4-60**.
4	Replace fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

143.09-11/15/17-18/20-25—Motor (EP drive asm top cartridge) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JCART1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JCART1 cable is damaged, replace JCART1 cable. The cable parts packet contains 1 cartridge motor cable that works for either of the cartridge motors.
2	Measure the resistance across fuser F4 on the system card. Is fuser blown? Go to **"Network system card" on page 5-5** for fuse location on the network system card. Go to **"Parallel system card" on page 5-6** for fuse location on the network system card.	Replace system card. Go to **"System card removal" on page 4-47**.	Go to step 3.
3	Replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

143.12-14/16—Motor (EP drive asm top cartridge) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JCART1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JCART1 cable is damaged, replace JCART1 cable. The cable parts packet contains one cartridge motor cable that works for either of the cartridge motors.
2	Measure the resistance across fuser F4 and F5 on the system card. Is either fuser blown? Go to **"Network system card" on page 5-5** for fuse location on the network system card. Go to **"Parallel system card" on page 5-6** for fuse location on the network system card.	Replace system card. Go to **"System card removal" on page 4-47**.	Go to step 3.
3	Replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

144.09-11/15/17-18/20-25—Motor (EP drive asm bottom cartridge) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JCART2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JCART2 cable is damaged, replace JCART2 cable. The cable parts packet contains one cartridge motor cable that works for either of the cartridge motors.
2	Measure the resistance across fuser F6 on the system card. Is fuser blown? Go to **"Network system card" on page 5-5** for fuse location on the network system card. Go to **"Parallel system card" on page 5-6** for fuse location on the network system card.	Replace system card. Go to **"System card removal" on page 4-47**.	Go to step 3.
3	Replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

144.12-14/16—Motor (EP drive asm bottom cartridge) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JCART2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JCART2 cable is damaged, replace JCART2 cable. The cable parts packet contains one cartridge motor cable that works for either of the cartridge motors.
2	Measure the resistance across fuser F5 and F6 on the system card. Is either fuser blown? Go to **"Network system card" on page 5-5** for fuse location on the network system card. Go to **"Parallel system card" on page 5-6** for fuse location on the network system card.	Replace system card. Go to **"System card removal" on page 4-47**.	Go to step 3.
3	Replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

145.xx—Motor (bump aligner) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JBUMP1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JBUMP1 cable is damaged, replace bump aligner motor. Go to **"Bump aligner gear removal" on page 4-31**.
2	Open the front access door and slowly close it. You should hear the 24V interlock switch closing when the door almost shuts. If you do not, check the switch for damage. Is the switch damaged?	Replace 24V interlock switch. Go to **"Top access door 24V interlock switch removal" on page 4-60**.	Go to step 3.

Step	Questions / actions	Yes	No
3	Close the front access door. Turn printer power on and check for 24 V dc between JCVR1 pin 1 (red wire) and ground. Is voltage present? **Note:** Ground lead of voltmeter can be placed on metal chasis to obtain ground.	Go to step 4.	Disconnect JCVR1 and check for 24 V dc between pin 1 of system card connector and ground. If voltage is present, replace 24V interlock switch.Go to **"Top access door 24V interlock switch removal" on page 4-60**. If voltage is not present, replace system card. Go to **"System card removal" on page 4-47**.
4	Reconnect JCVR1 if disconnected. Ensure top access door is completely closed. Check for 24 V dc between JCVR1 pin 2 (white wire) and ground. Is voltage present?	Go to step 5.	Replace 24V interlock switch.Go to **"Top access door 24V interlock switch removal" on page 4-60**.
5	Replace bump aligner motor. Go to **"Bump aligner motor removal" on page 4-45**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

146.xx—Motor (duplex) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JDUPLX1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JDUPLX1 cable is damaged, replace duplex front door assembly. Go to **"Duplex front door assembly removal" on page 4-34**.
2	Turn printer power on and check for 24 V dc between JCVR1 pin 1 (red wire) and ground. Is voltage present? **Note:** Ground lead of voltmeter can be placed on metal chasis to obtain ground.	Go to step 3.	Disconnect JCVR1 and check for 24 V dc between pin 1 of system card connector and ground. If voltage is present, replace 24V interlock switch.Go to **"Top access door 24V interlock switch removal" on page 4-60**. If voltage is not present, replace system card. Go to **"System card removal" on page 4-47**.
3	Reconnect JCVR1 if disconnected. Ensure top access door is completely closed. Check for 24 V dc between JCVR1 pin 2 (white wire) and ground. Is voltage present?	Go to step 4.	Replace 24V interlock switch.Go to **"Top access door 24V interlock switch removal" on page 4-60**.

Step	Questions / actions	Yes	No
4	Replace duplex front door assembly. Go to **"Duplex front door assembly removal" on page 4-34**.	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

147.xx/149.xx—Motor (500-sheet option tray2 motor) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JOPT1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JOPT1 cable is damaged, replace option cable.
2	Remove 500-sheet assembly. Check auto-connects on both the assembly and the printer for damage. Are connectors free of damage?	Go to step 3.	If connector is damaged on 500-sheet assembly, replace 500-sheet assembly. If JOPT1 cable is damaged, replace option cable.
3	Check connectors J1 and J2 on the 500-sheet assembly for proper connection, cable for pinch points and cable or connector for any other damage. Are cables properly connected and damage free?	Go to step 4.	Replace 500-sheet assembly.
4	Reinstall 500-sheet assembly. Does error clear?	Problem solved.	Go to step 5.
5	Replace 500-sheet assembly. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

148.xx—MPF motor error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRAY2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRAY2 cable is damaged, replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
2	Measure the resistance across fuser F2 on the system card. Is fuser blown? Go to **"Network system card" on page 5-5** for fuse location on the network system card. Go to **"Parallel system card" on page 5-6** for fuse location on the network system card.	Replace system card. Go to **"System card removal" on page 4-47**.	Go to step 3.
3	Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

910.01—Engine error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRAY1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRAY1 cable is damaged, replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
2	Check transparency sensor for correct mounting. Is transparency sensor properly mounted in paper pick mechanism?	Go to step 3.	Remove paper pick mechanism, properly install transparency sensor and reinstall paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
3	Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.01—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JBUMP1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JBUMP1 cable is damaged, replace bump aligner motor. Go to **"Bump aligner motor removal" on page 4-45**.
2	Replace bump aligner motor. Go to **"Bump aligner motor removal" on page 4-45**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.02—POST (power on self test) error service check

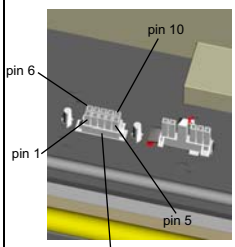
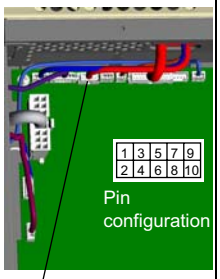
Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRAY2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRAY2 cable is damaged, replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
2	Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.03—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRANS2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRANS2 cable is damaged, replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**.
2	Replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.04—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JFUSER1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If fuser cable is damaged, replace cable.
2	Remove fuser. Go to **"Fuser removal" on page 4-13**. Check DC auto-connects on both the fuser and the printer for damage. Are connectors free of damage?	Go to step 3.	If connector is damaged on fuser, replace fuser. If the cable connector is damaged, replace the DC auto-connect cable.

Step	Questions / actions	Yes	No
3	Check for the following continuity between DC auto-connect and FUSER1. Is continuity present?  DC auto-connect  JFUSER1 **DC auto-connect** / **JFUSER1** pin 3 / pin 3 pin 8 / pin 8 pin 9 / pin 9 pin 10 / pin 10	Go to step 4.	Replace DC fuser cable.
4	Reinstall fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Go to step 5.
5	Replace fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.05—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JPH1 (large printhead cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If printhead cable is damaged, replace printhead. Go to **"Printhead removal" on page 4-52**.
2	Replace system card. Go to **"System card removal" on page 4-47**. Does error clear?	Problem solved.	Replace printhead. Go to **"Printhead removal" on page 4-52**.

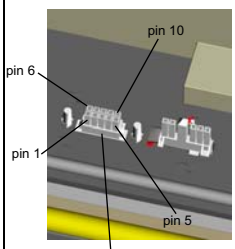
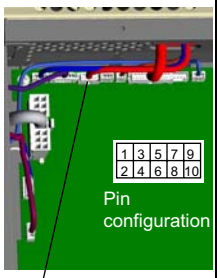
920.06—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRAY1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRAY1 cable is damaged, replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
2	Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.07—POST (power on self test) error service check

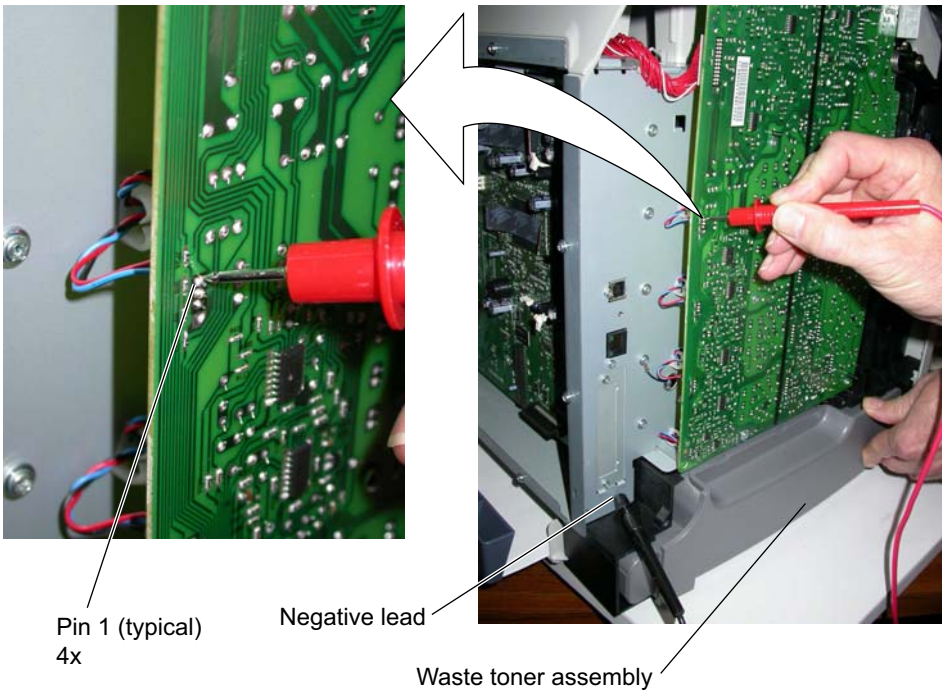
Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRAY1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRAY1 cable is damaged, replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
2	Check transparency sensor for correct mounting. Is transparency sensor properly mounted in paper pick mechanism?	Go to step 3.	Remove paper pick mechanism, properly install transparency sensor and reinstall paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
3	Replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.08—POST (power on self test) error service check

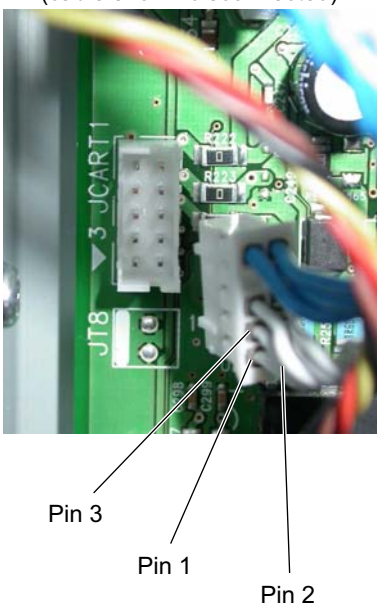
Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JFUSER1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If fuser cable is damaged, replace cable.
2	Remove fuser. Go to **"Fuser removal" on page 4-13**. Check DC auto-connects on both the fuser and the printer for damage. Are connectors free of damage?	Go to step 3.	If connector is damaged on fuser, replace fuser. If the cable connectors are damaged, replace the JFUSER1 cable.
3	Check for the following continuity between DC auto-connect and FUSER1. Is continuity present?  DC auto-connect  JFUSER1 **DC auto-connect** pin 6, pin 7, pin 8 **JFUSER1** pin 6, pin 7, pin 8	Go to step 4.	Replace DC fuser cable.
4	Reinstall fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Go to step 5.
5	Replace fuser. Go to **"Fuser removal" on page 4-13**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.09-12—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JHVPS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If HVPS1 cable is damaged, replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.
2	Remove left cover. Go to **"Left cover removal" on page 4-20**. Check all toner level sensor cables connected to the rear of the HVPS for proper connection to HVPS, cable for pinch points and cable or connector for any other damage. Are connectors properly connected and cables and connectors damage free?	Go to step 3.	Properly connect toner level sensor cable if not properly connected. If sensor cable or connector is damaged, replace sensor. Go to **"Toner level sensor removal" on page 4-58**. If connector is damaged on HVPS, replace HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**.
3	Disconnect JHVPS1 from system card and HVPS. Check for the following continuity. **JHVPS1 cable** **HVPS end** **System card end** pin 14 pin 14 Is continuity present?	Go to step 4.	Replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.
4	Reconnect JHVPS1 cable to system card and HVPS. Do not reinstall left cover, but ensure that front access door and top cover assembly are closed and that the waste toner assembly is reinstalled. Turn printer on. Attach the negative end of the voltmeter to the ground and check the voltage on pin 1 of each toner level sensor cable. You will need to check this on the back of the HVPS (see illustration below). Is there approximately 5 Vdc on any of the pins?	Replace toner level sensor that has 5 V dc on pin 1. Go to **"Toner level sensor removal" on page 4-58**.	Go to step 5.

Step	Questions / actions	Yes	No
			
5	Replace HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.13—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JCART1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JCART1 cable is damaged, replace JCART1 cable. The cable parts packet contains 1 cartridge motor cable that works for either of the cartridge motors.
2	Remove right cover. Check for the following continuity between JCART1 and top cartridge connector. Is continuity present? **JCART1** — **Top cartridge motor connector** pin 1 — pin 1 pin 2 — pin 2 pin 3 — pin 3	Go to step 3.	Replace JCART1 cable. The cable parts packet contains 1 cartridge motor cable that works for either of the cartridge motors.
	 Top cartridge motor 		
3	Replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.14—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JCART2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JCART2 cable is damaged, replace JCART2 cable. The cable parts packet contains one cartridge motor cable that works for either of the cartridge motors.
2	Remove right cover. Check for the following continuity between JCART2 and bottom cartridge connector. Is continuity present? **JCART1** — **Bottom cartridge motor connector** pin 1 — pin 1 pin 2 — pin 2 pin 3 — pin 3	Go to step 3.	Replace JCART2 cable. The cable parts packet contains one cartridge motor cable that works for either of the cartridge motors.
	Bottom cartridge motor  Pin 1	JCART2 connector  	
3	Replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.15—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRANS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRANS1 cable is damaged, replace front door assembly. Go to **"Front door assembly removal" on page 4-32** for a non-duplex printer. Go to **"Duplex front door assembly removal" on page 4-34** for a duplex printer.
2	Replace transfer belt assembly. Go to **"Transfer belt removal" on page 4-15**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.16—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JPH1 (large printhead cable) for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If printhead cable is damaged, replace printhead.Go to **"Printhead removal" on page 4-52**.
2	Replace system card. Go to **"System card removal" on page 4-47**. Does error clear?	Problem solved.	Replace printhead. Go to **"Printhead removal" on page 4-52**.

920.17—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JBIN1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JBIN1 cable is damaged, replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.
2	Replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.18—POST (power on self test) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JOPT1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JOPT1 cable is damaged, replace option cable.
2	Remove 500-sheet assembly. Check auto-connects on both the assembly and the printer for damage. Are connectors free of damage?	Go to step 3.	If connector is damaged on 500-sheet assembly, replace 500-sheet assembly. If JOPT1 cable is damaged, replace option cable.
3	Check connectors J1 and J2 on the 500-sheet assembly for proper connection, cable for pinch points and cable or connector for any other damage. Are cables properly connected and damage free?	Go to step 4.	Replace 500-sheet assembly.
4	Reinstall 500-sheet assembly. Does error clear?	Problem solved.	Go to step 5.
5	Replace 500-sheet assembly. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

920.19—POST (power on self test) error service check

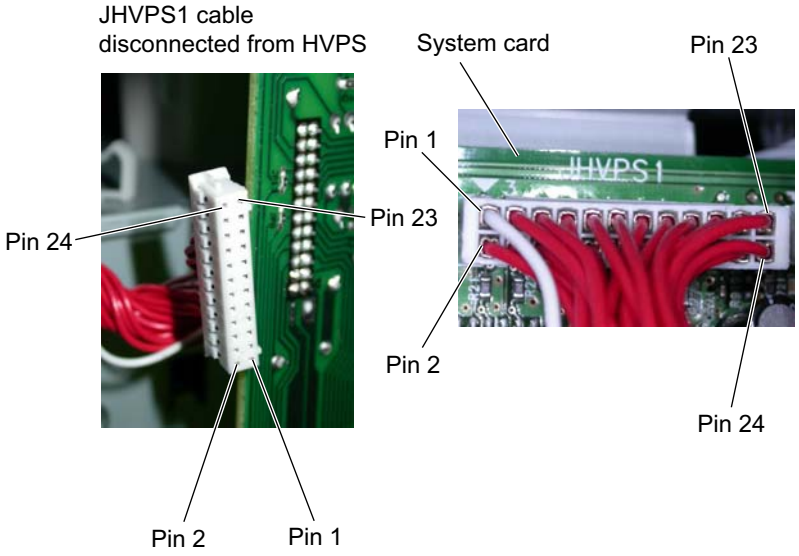
Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JTRANS2 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go to step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JTRANS2 cable is damaged, replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**.
2	Replace EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

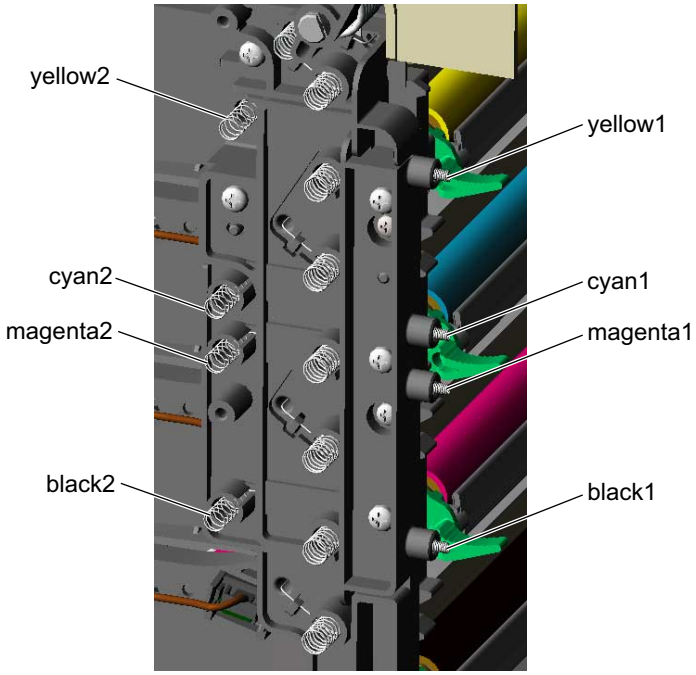
925.01—Fan error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JFAN1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If JFAN1 cable is damaged, replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.
2	Replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

945.00, 946.00, 947.01—Transfer roll (yellow) error service check

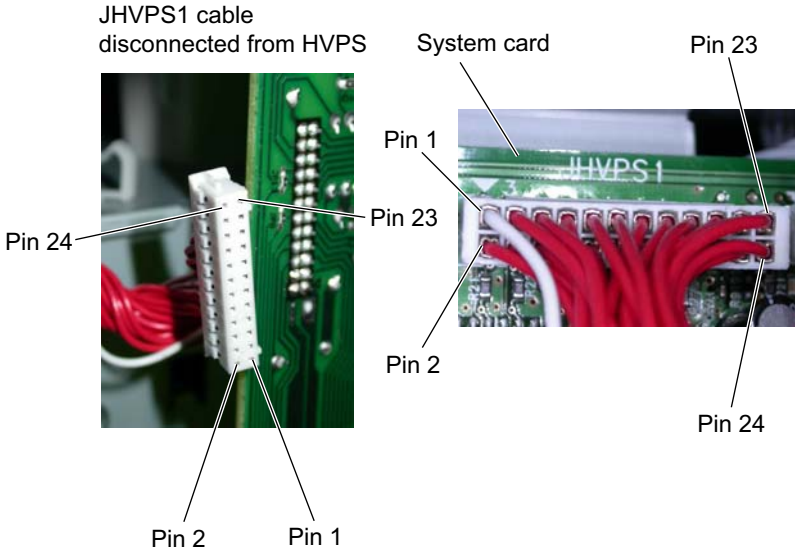
Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JHVPS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If HVPS1 cable is damaged, replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.
2	Disconnect JHVPS1 from system card and HVPS. Check for the following continuity. **JHVPS1 cable** **HVPS end** **System card end** pin 19 pin 19 pin 20 pin 20 Is continuity present?	Go to step 3.	Replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.

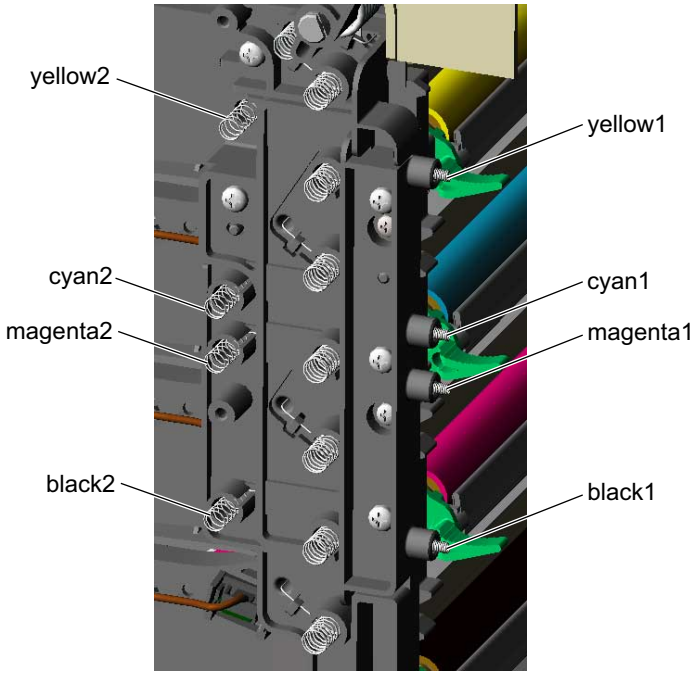


Step	Questions / actions	Yes	No
3	Remove HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Check for continuity between yellow1 and yellow2 on transfer contact assembly. Is continuity present?	Go to step 4.	Replace transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**.
			
4	Replace transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**. Does error clear?	Problem solved.	Go to step 5.
5	Replace HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

945.01, 946.01, 947.02—Transfer roll (cyan) error service check

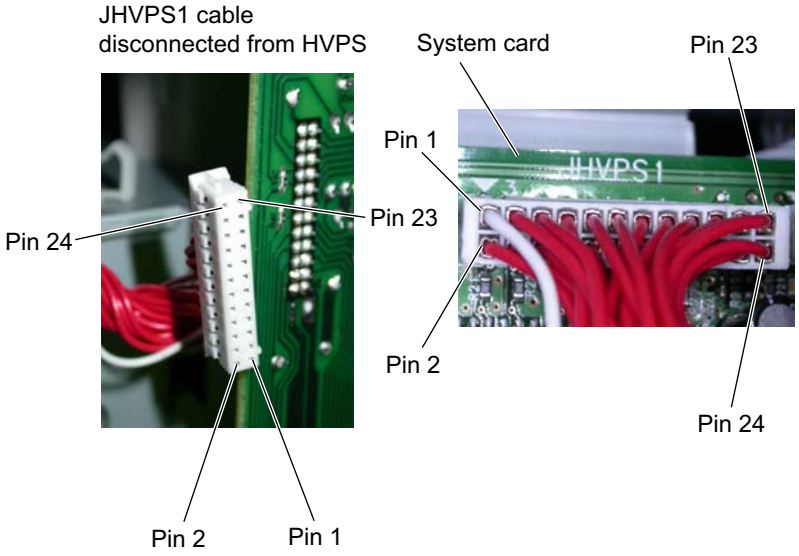
Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JHVPS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If HVPS1 cable is damaged, replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.
2	Disconnect JHVPS1 from system card and HVPS. Check for the following continuity. **JHVPS1 cable** **HVPS end** — **System card end** pin 15 — pin 15 pin 16 — pin 16 Is continuity present?	Go to step 3.	Replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.

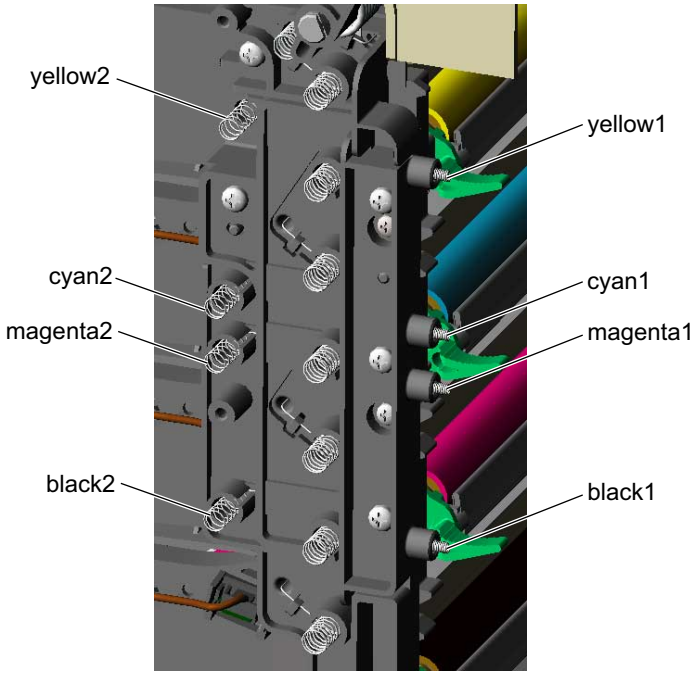


Step	Questions / actions	Yes	No
3	Remove HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Check for continuity between cyan1 and cyan2 on transfer contact assembly. Is continuity present?	Go to step 4.	Replace transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**.
			
4	Replace transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**. Does error clear?	Problem solved.	Go to step 5.
5	Replace HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

945.02, 946.02, 947.03—Transfer roll (magenta) error service check

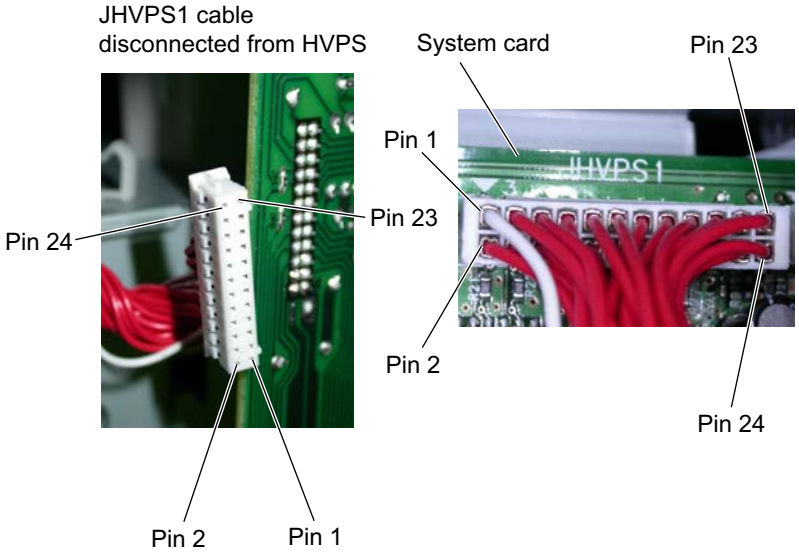
Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JHVPS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If HVPS1 cable is damaged, replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.
2	Disconnect JHVPS1 from system card and HVPS. Check for the following continuity. **JHVPS1 cable** **HVPS end** — **System card end** pin 17 — pin 17 pin 18 — pin 18 Is continuity present?	Go to step 3.	Replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.

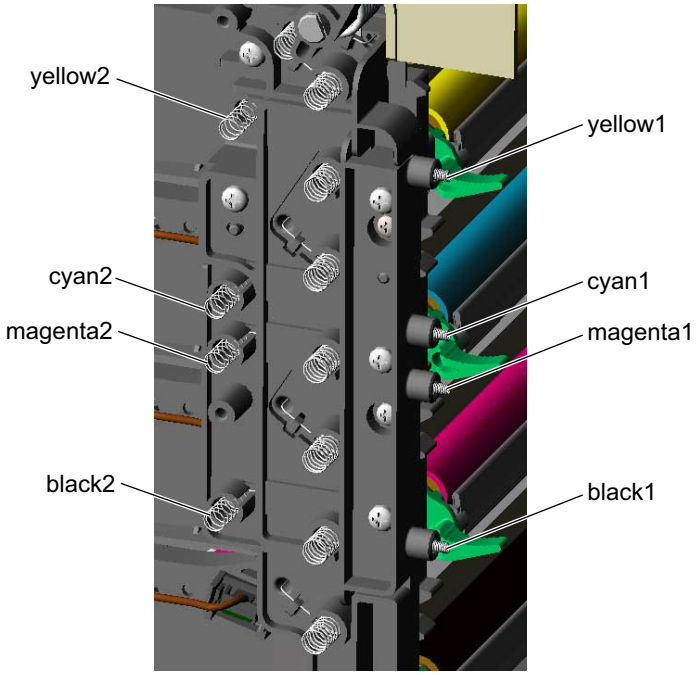


Step	Questions / actions	Yes	No
3	Remove HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Check for continuity between magenta1 and magenta2 on transfer contact assembly. Is continuity present?	Go to step 4.	Replace transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**.
			
4	Replace transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**. Does error clear?	Problem solved.	Go to step 5.
5	Replace HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

945.03, 946.03, 947.04—Transfer roll (black) error service check

Step	Questions / actions	Yes	No
1	Turn the printer off and remove the rear cover. Check connector JHVPS1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. Is cable properly connected and damage free?	Go step 2.	If connector is damaged on system card, replace system card. Go to **"System card removal" on page 4-47**. If HVPS1 cable is damaged, replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.
2	Disconnect JHVPS1 from system card and HVPS. Check for the following continuity. **JHVPS1 cable** **HVPS end** — **System card end** pin 23 — pin 23 pin 24 — pin 24 Is continuity present?	Go to step 3.	Replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.



Step	Questions / actions	Yes	No
3	Remove HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Check for continuity between black1 and black2 on transfer contact assembly. Is continuity present?	Go to step 4.	Replace transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**.
			
4	Replace transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**. Does error clear?	Problem solved.	Go to step 5.
5	Replace HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**. Does error clear?	Problem solved.	Replace system card. Go to **"System card removal" on page 4-47**.

950.00 through 950.29 EPROM mismatch failure

Warning: When replacing any one of the following components:

- **Operator panel assembly**
- **System card**
- **Smart chip card**

Only replace one component at a time. Replace the required component and perform a POR before replacing a second component listed above. If this procedure is not followed the printer will be rendered inoperable.

Warning: Never install and remove components listed above as a method of troubleshooting components. Once a component has been installed in a printer, it can not be used in another printer. It must be returned to the manufacturer.

This error code indicates a mismatch between the operator panel assembly and the smart chip card.

	FRU	Action
1	Smart chip card	If the smart chip card has been recently replaced, go to step 3. If the card has not been replaced go to step 2.
2	Operator panel assembly	If the operator panel assembly has been recently replaced, go to step 4. If the operator panel assembly has not been replaced, contact your next level of support.
3	Smart chip card	Replace the current smart chip card with the original smart chip card. Go to **"Smart chip card removal" on page 4-51**. If the error remains, go to step 5.
4	Operator panel assembly	Replace the current operator panel assembly with the original operator panel assembly. Go to **"Operator panel assembly removal" on page 4-22**. If the error persists, go to step 6.
5	Smart chip card	Replace the original smart chip card with a new and not previously installed smart chip card. If the error remains, contact your next level of support.
6	Operator panel assembly	Replace the original operator panel assembly with a new and not previously installed operator panel assembly. If the error remains, contact your next level of support.

950.30 through 950.60 EPROM mismatch failure

Warning: When replacing any one of the following components:

- **Operator panel assembly**
- **System card**
- **Smart chip card**

Only replace one component at a time. Replace the required component and perform a POR before replacing a second component listed above. If this procedure is not followed the printer will be rendered inoperable.

Warning: Never install and remove components listed above as a method of troubleshooting components. Once a component has been installed in a printer, it can not be used in another printer. It must be returned to the manufacturer.

This error code indicates a mismatch between the system card and the smart chip card.

	FRU	Action
1	Smart chip card	If the smart chip card has been recently replaced, go to step 3. If the smart chip card has not been recently replaced, contact the next level of support.
2	System card	If the system card has been recently replaced, go to step 4. If the system card has not been replaced, contact the next level of support.
3	Smart chip card	Replace the current smart chip card with the original smart chip card. Go to **"Smart chip card removal" on page 4-51**. If the error remains, go to step 5.
4	System card	Replace the current system card with the original system card. Go to **"System card removal" on page 4-47**. If the error remains, go to step 6.
5	Smart chip card	Replace the original smart chip card with a new and not previously installed smart chip card. If the problem remains, contact the next level of support.
6	System card	Replace the original system card with a new and not previously installed system card. If the problem remains, contact the next level of support.

Input sensor service check

	FRU	Action
1	Input sensor flag	Check the input sensor flag for damage and proper operation. If a problem is found, replace the paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
2	Input sensor/sensor cable	Check connector JTRAY1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. With the printer turned on, place a voltmeter between JTRAY1 pin2 and ground. Initially, meter should indicate 5VDC. Activate input sensor flag–voltage level should drop to approximately 0VDC. If input sensor cable is damaged or sensor operation is incorrect, replace paper pick mechanism. Go to **"Paper pick mechanism assembly removal" on page 4-30**.
3	System card	If input sensor is free of damage and operates correctly, replace system card. Go to **"System card removal" on page 4-47**.

Exit sensor service check

	FRU	Action
1	Exit sensor flag	Check the exit sensor flag for damage and proper operation. If a problem is found, replace the fuser. Go to **"Fuser removal" on page 4-13**.
2	Input sensor/sensor cable	Check connector JFUSER1 for proper connection to system card, cable for pinch points and cable or connector for any other damage. With the printer turned on, place a voltmeter between JFUSER1 pin 7 and ground. Initially, meter should indicate 5VDC. Activate exit sensor flag–voltage level should drop to approximately 0VDC. If sensor operation is incorrect, go to **"120.04-07—Fuser error service check" on page 2-32**.
3	System card	If sensor operation in previous step is correct, replace system card. Go to **"System card removal" on page 4-47**.

Dead printer service check

A dead printer is a condition where the display is blank, the LED on the operator panel is off, no fans turn, no motors turn, and the fuser lamp does not come on.

If a 500-sheet option assembly is installed, remove the option and check the base printer for correct operation. If the base printer operates correctly, replace the 500-sheet option assembly.

Warning: Observe all necessary ESD precautions when removing and handling the system card or any installed option cards or assemblies. See **"Handling ESD-sensitive parts" on page 4-1**.

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

Remove any input and output paper handling options from the printer.

	FRU	Action
1	Line voltage	Check the AC line voltage. If the line voltage is incorrect, inform the customer.
2	AC line cord	Unplug the line cord from the wall outlet and check the line cord for damage, such as a damaged plug or a cut or damaged cord. If damaged, replace the cord. If cord is not damaged, check the continuity of the line cord and replace if necessary. If the cord is okay, go to step 3.
3	+5VDC test point on the system card	Check for approximately +5 V dc between JLVPS1 pin 1 and ground. If the voltage is correct, replace the system card. Go to **"System card removal" on page 4-47**. If the voltage is incorrect, go to step 4.
4	System card	Check to make sure the JLVPS1 cable is correctly installed at JLVPS1 on the system card. If not, reseat and recheck the voltage between JLVPS1 pin 1 (red wire) and ground If test point does not measure +5 V dc, go to step 5.
5	LVPS	Turn the printer off. Unplug the AC line cord from the LVPS and disconnect JLVPS1 cable from the system card. Reconnect the AC line cord, turn the printer back on, and measure the voltage between JLVPS1 cable pin 1 (red wire) and the JLVPS1 pin 14 (black wire). The voltage should measure approximately +5 V dc. If the voltage is correct, go to step 6. If the voltage is incorrect, replace the LVPS assembly. Go to **"Low volt power supply (LVPS) removal" on page 4-38**.
6	Feature or option installed on the system card	**Warning:** Observe all the ESD precautions and turn the printer off before any feature or option cards are removed or replaced. Remove one option/feature at a time to help isolate the failing part. Replace the faulty part.
7	Loads connected to the system card	Turn the printer off and disconnect a cable (with exception of JLVPS1) connected to the system card. Turn the printer back on. Repeat this for all cables (with exception of JLVPS1) until the problem is located. **Warning**: When removing any card installed on the system card observe all ESD precautions when handling these options.

Operator panel service check

Warning: When replacing any one of the following components:

- **Operator panel assembly**
- **System card**
- **Smart chip card**

Only replace one component at a time. Replace the required component and perform a POR before replacing a second component listed above. If this procedure is not followed the printer will be rendered inoperable.

Warning: Never install and remove components listed above as a method of troubleshooting components. Once a component has been installed in a printer, it can not be used in another printer. It must be returned to the manufacturer.

One or more operator panel buttons fail

	FRU	Action
1	Operator panel assembly	If any button fails the Button Test, replace the operator panel assembly. Go to **"Operator panel assembly removal" on page 4-22**. If a 950.00 through 950.29 error code is displayed after replacing the operator panel assembly, go to **"950.00 through 950.29 EPROM mismatch failure" on page 2-61**.
2	System card Operator panel assembly cable Operator panel assembly	Disconnect the operator panel assembly cable from JOPP1 on the system card and measure the voltage pin 6 and ground. The voltage should measure approximately +3.3 V dc. If incorrect, replace the system card. Go to **"System card removal" on page 4-47**. If correct, replace the operator panel assembly. Go to **"Operator panel assembly removal" on page 4-22**. If this does not fix the problem, check the operator panel cable. If a problem is found, replace the top cover access assembly. Go to **"Top access cover assembly removal" on page 4-23**.

Operator panel display

Service tip: The printer has detected a problem with the system card, the operator panel assembly cable (part of the top cover access assembly), or the operator panel assembly if POST does not complete. The printer emits 5 *beeps*, and sticks in a continuous pattern until the printer is turned off.

	FRU	Action
1	Operator panel cable	Check for proper installation of the operator panel assembly cable at system card JOPP1 and at the operator panel assembly. Check continuity of the operator panel assembly cable. If incorrect, replace the top cover access assembly. Go to **"Top access cover assembly removal" on page 4-23**.
2	Operator panel display blank, 5 beeps, LED off	Check for proper installation of the operator panel assembly cable at system card JOPP1 and at the operator panel assembly. If incorrect, reinstall the cable properly. If correct, measure the voltage between JOPP1 pin 2 and ground on the system card. The voltage should measure approximately +5 V dc. If incorrect, replace the system card. Go to **"System card removal" on page 4-47**. If correct, check continuity of the operator panel assembly cable. If continuity is incorrect, replace the top cover access assembly. Go to **"Top access cover assembly removal" on page 4-23**. If continuity is correct, replace the operator panel assembly. Go to **"Operator panel assembly removal" on page 4-22**.
3	Operator panel display blank, 5 beeps, LED on	Check for ground between JOPP1 pin 4 and ground. If correct, replace the operator panel assembly. Go to **"Operator panel assembly removal" on page 4-22**. If incorrect, check the operator panel assembly cable. If the cable is damaged, replace the top cover access assembly. Go to **"Top access cover assembly removal" on page 4-23**. If the cable is okay, replace the system card. Go to **"System card removal" on page 4-47**.
4	Operator panel all diamonds, no beeps	Communication between the operator panel and the system card has been interrupted. • Check the cable that connects operator panel and system card for visible defects. Ensure pins are fully mounted in the cable connectors. Check for continuity between the the two cable connectors. If cable is defective, replace top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**. • Top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**. • System card. Go to **"System card removal" on page 4-47**. • Operator panel assembly. Go to **"Operator panel assembly removal" on page 4-22**.
5	Operator panel all diamonds, 5 beeps	Replace the FRUs in the following order. POR the printer after each replacement: • Operator panel assembly. Go to **"Operator panel assembly removal" on page 4-22**. • System card. Go to **"System card removal" on page 4-47**. • Top access cover assembly. Go to **"Top access cover assembly removal" on page 4-23**.

Print quality service check

Note: This symptom may require replacement of one or more CRUs (Customer Replaceable Units) designated as supplies or maintenance items, which are the responsibility of the customer. With the customer's permission, you may need to install a developer (toner) cartridge or photoconductor unit.

Service tip: Before troubleshooting any print quality problems do the following:

1. Print a menu settings page and check the life status of all supplies. Any supplies that are low should be replaced.
2. On the menu page, make sure the following is set to the default level:
   - Color Correction: Set to Auto.
   - Print Resolution: Set to 1200 dpi (print quality problems should be checked at different resolution settings).
   - Toner Darkness: Set to 4 (default).
   - Color Saver: Set to OFF.
   - RGB Brightness, RGB Contrast, RGB Saturation: Set to 0.
   - Color Balance: Select Reset Defaults to zero out all colors.
   - Check the paper type, texture and weight settings against what is loaded in the printer

* Be sure and keep the original menu page to restore the customer's custom settings if needed.

Once the printer has been restred to their default levels, do the following:

3. Inspect the transfer belt for damage. Replace if damaged.
4. Inspect the OPCs and toners cartridges for damage. Replace if damaged.
5. If paper other then 20lb plain letter/A4 paper is being used, load 20lb plain letter/A4 and print the Print Quality pages to see if the problem remains.
6. Use Tray 1 to test print quality problems.
7. Print the Print Quality Pages and looked for variations in the print from what is expected.

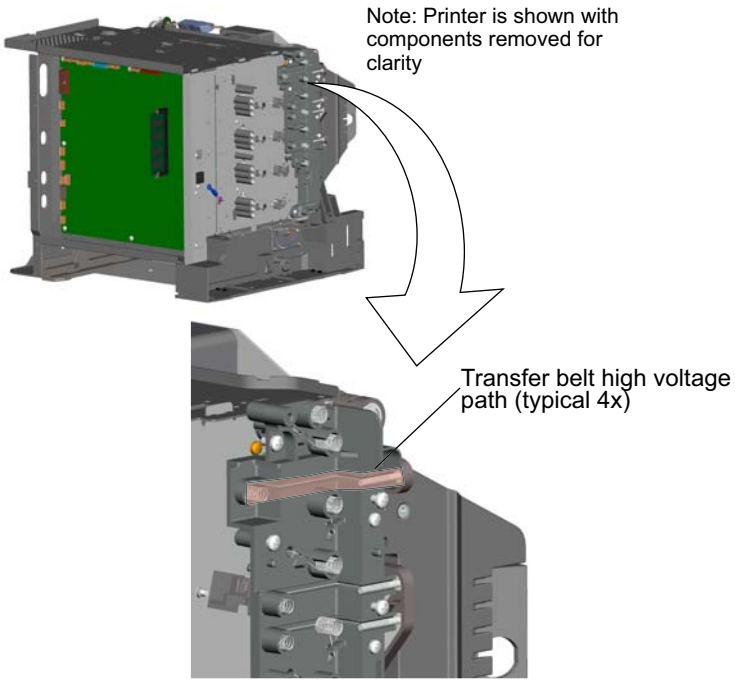
An incorrect printer driver for the installed software can cause problems. Incorrect characters could print, and the copy may not fit the page correctly.

Measure all voltages from the connector to the printer ground.

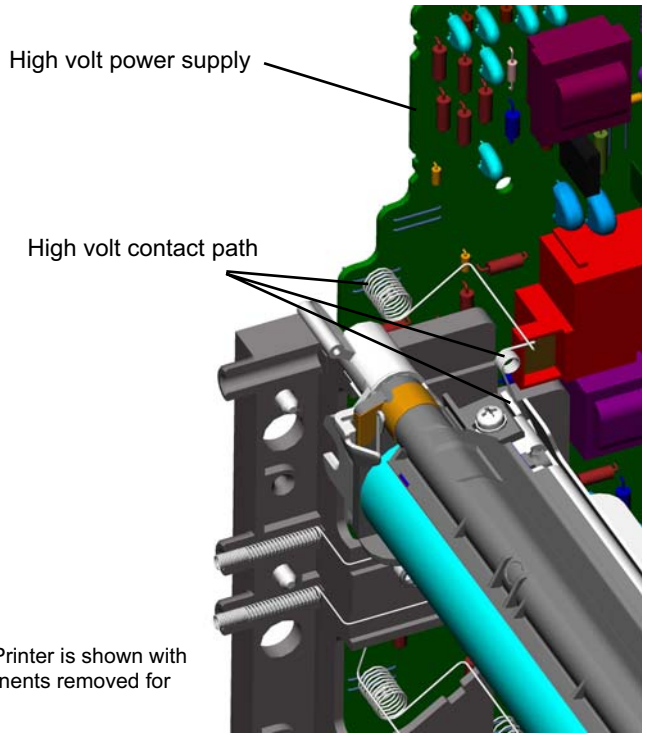
Print quality—background

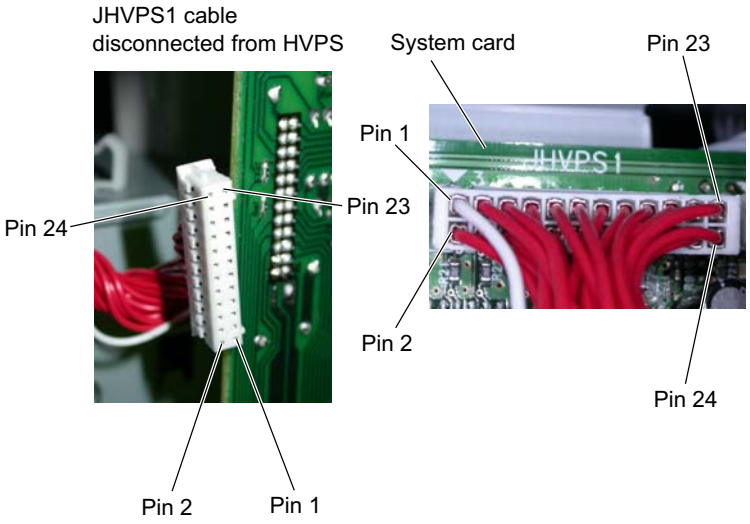
Service tip: Some background problems can be caused by rough papers, non-Lexmark toner cartridges or if the media texture is set to the rough setting.

Some slick or coated papers may also cause background problems. Some problems occur with printers that run a large amount of graphics in a humid environment.

	Potential cause	Action
1	Transfer belt assembly HVPS contacts	Check the high voltage contact from the HVPS to the transfer belt assembly. If a problem is found, replace the spring or the transfer contact assembly. Go to **"Transfer contact assembly removal" on page 4-57**. 
2	HVPS	Replace the HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**.
3	Printhead	Clean the printhead. If this does not help, replace the printhead. Go to **"Printhead removal" on page 4-52**.

Print quality—blank page

	Potential cause	Action
1	Packing material	Remove the packing material for the photoconductor unit in question.
2	Photoconductor unit	Replace the photoconductor unit for the color in question.
3	Cartridge drive motor	Enter the diagnostic mode. Go to **"Accessing service menus" on page 3-1**. Run the appropriate cartridge drive motor test for the color missing to see if the motor is turning. Go to **"General motor test" on page 3-7**. If the motor fails to turn, replace the EP drive assembly. Go to **"Electrophotographic Process (EP) drive assembly removal" on page 4-40**.
4	Photoconductor unit charge roll HVPS contact path.	Check the high voltage contact from the HVPS to the photoconductor charge roll. Ensure contact springs are properly mounted and that the charge roll contact spring is making good contact with the HVPS spring that runs through the left printer frame. Go to **"Contact springs removal" on page 4-56** to view proper mounting and for removal procedures if the spring(s) is defective.  Note: Printer is shown with components removed for clarity

	Potential cause	Action
5	HVPS cable	Turn the printer off and check the continuity of the HVPS cable. If incorrect, replace the cable assembly. 
6	HVPS	Replace the HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**.
7	Printhead	Replace the printhead. Go to **"Printhead removal" on page 4-52**.
8	System card	Replace the system card. Go to **"System card removal" on page 4-47**.

Print quality—blurred or fuzzy print

Blurred or fuzzy print is usually caused by a problem in the EP drive assembly or in the transfer belt assembly. Check the EP drive assembly and transfer belt assembly for correct operation.

Blurred print can also be caused by incorrect feeding from one of the input paper sources, paper trays, or duplex paper path.

Check the high voltage spring contacts to ensure they are not bent, corroded, or damaged. Replace as necessary.

Print quality—half-color page

	Potential cause	Action
1	Photoconductor unit	Photoconductor unit is not properly seated. Reseat the specific photoconductor unit.

Print quality—horizontal banding

	Potential cause	Action
1	Developer cartridge	Measure distance between bands. Faulty developer cartridge will measure either 27 or 36mm between bands.
2	Photoconductor unit	Measure distance between bands. Faulty photoconductor unit will measure 72mm between bands.

Print quality—horizontal line

	Potential cause	Action
1	Photoconductor unit	Photoconductor unit is defective. Replace photoconductor unit.

Print quality—insufficient fusing

	Potential cause	Action
1	Fuser	Ensure fuser has been properly installed. If so, replace fuser.
2	LVPS	Replace LVPS. Go to **"Low volt power supply (LVPS) removal" on page 4-38**.

Print quality—missing image at edge

	Potential cause	Action
1	Developer cartridge	Reseat developer cartidge.

Print quality—mottle (2 - 5mm speckles)

	Potential cause	Action
1	Developer cartridge	Keep running prints through and the problem normally clears up. If the problem persists, replace developer cartridge.

Print quality—narrow vertical line

	Potential cause	Action
1	Photoconductor unit	Photoconductor unit is defective. Replace photoconductor unit.
2	Developer cartridge	If replacing the photoconductor unit does not fix the problem, replace the developer cartridge.

Print quality—random marks

Service tip: The primary cause of random marks is due to loose material moving around inside the printer and attaching to the photoconductor unit, developer roll, or transfer belt.

	Potential cause	Action
1	Photoconductor unit, developer roll (part of developer cartridge), transfer belt assembly	Check for loose or foreign material that might be on the photoconductor unit. Check for loose or foreign material that might be on the developer roll. Check the transfer belt assembly for any pieces of material that are stuck to the belt.

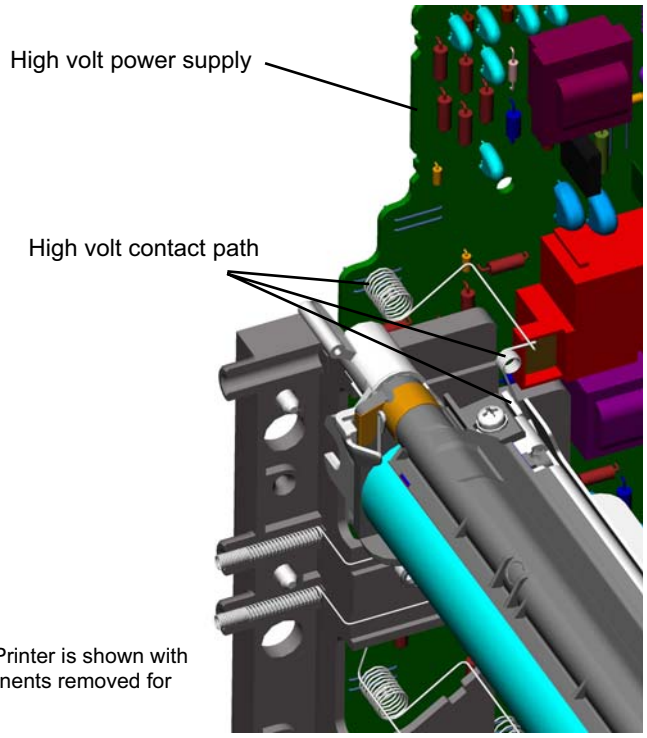
Print quality—residual image

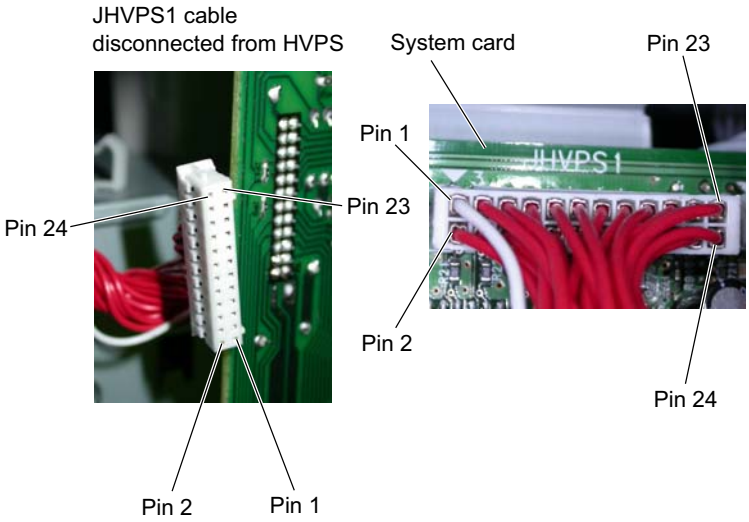
Service tip: Install a new print cartridge if available before doing this service check. Residual image can be caused by the photoconductor, cleaning blade, and other parts inside the print cartridge.

	FRU	Action
1	Hot roll fuser assembly	Check the fuser assembly for toner contamination. The hot roll especially might cause toner to be retained and deposited on the page.

Print quality—solid color page

Service tip: A solid color page is generally caused by a problem in the high voltage system or an incorrect high voltage in the printing process resulting in toner development on the entire photoconductor drum.

	Potential cause	Action
1	Photoconductor unit	Replace the photoconductor unit for the color in question.
2	Photoconductor unit charge roll HVPS contact path.	Check the high voltage contact from the HVPS to the photoconductor charge roll. Ensure contact springs are properly mounted and that the charge roll contact spring is making good contact with the HVPS spring that runs through the left printer frame. Go to **"Contact springs removal" on page 4-56** to view proper mounting and for removal procedures if the spring(s) is defective.  Note: Printer is shown with components removed for clarity

	Potential cause	Action
3	HVPS cable	Turn the printer off and check the continuity of the HVPS cable. If incorrect, replace the cable assembly. 
4	HVPS	Replace the HVPS. Go to **"High volt power supply (HVPS) removal" on page 4-55**.
5	System card	Replace the system card. Go to **"System card removal" on page 4-47**.

Print quality—vertical banding

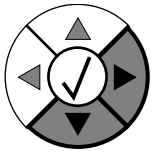
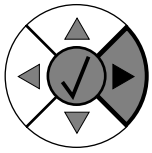
	Potential cause	Action
1	Developer cartridge	Replace the developer cartridge.

3. Diagnostic aids

This chapter explains the tests and procedures to identify printer failures and verify repairs have corrected the problem.

Accessing service menus

There are different test menus that can be accessed during POR to identify problems with the printer.

Diagnostics Mode	1. Turn off the printer. 2. Press and hold ▼ and ▶.  3. Turn on the printer. 4. Release the buttons when the clock graphic displays.	The Diagnostics Mode group contains the settings and operations used while manufacturing and servicing the printer. Go to **"Diagnostic mode" on page 3-2** for more information.
Configuration Menu	1. Turn off the printer. 2. Press and hold ✓ and ▶.  3. Turn on the printer. 4. Release the buttons when the clock graphic displays.	The Configuration Menu group contains a set of menus, settings, and operations which are infrequently required by a user. Generally, the options made available in this menu group are used to configure a printer for operation. See **"Configuration menu (CONFIG MENU)" on page 3-17** for more information.

To run the printer diagnostic tests described in this chapter, you must put the printer in Diagnostic Mode.

Diagnostic mode

Note: Tray 2 refers to the 500-sheet tray located in the 500-sheet option assembly.

Diagnostics menu structure

When the diagnostic menu is entered, each diagnostic main menu item displays on the operator panel. When a diagnostic test is selected from the main menu, a sub menu displays and each individual test displays in the order shown. Any options that are referred to in the menus are displayed when the option is installed.

Available tests

The tests display on the operator panel in the order shown:

Diagnostics mode tests

REGISTRATION	Go to **"Registration" on page 3-5**.
Top Margin	
Bottom Margin	
Left Margin	
Right Margin	
Skew	
Quick Test	
ALIGNMENT	
Cyan	Go to **"Alignment" on page 3-7**.
Yellow	Go to **"Alignment" on page 3-7**.
Magenta	Go to **"Alignment" on page 3-7**.
Factory Scanner	Not applicable.
Factory Manual	A summary page for all the color alignment settings. Can be used in place of each individual color alignment pages.
MOTOR TESTS	
Align Motor Test	Tests the bump aligner motor. Go to **"General motor test" on page 3-7**.
Bottom Cartridge	Tests the bottom cartridge motor located on the EP drive assembly. Go to **"General motor test" on page 3-7**.
Fuser	Tests the fuser motor. Go to **"General motor test" on page 3-7**.
Top Cartridge	Tests the top cartridge motor located on the EP drive assembly. Go to **"General motor test" on page 3-7**.
Transfer	Tests the transfer belt assembly motor located on the EP drive assembly. Go to **"General motor test" on page 3-7**.
Tray 1	Tests tray 1 motor located in the paper pick mechanism. Go to **"General motor test" on page 3-7**.
Mirror Motor Test	Tests the mirror motor located in the printhead assembly. Go to **"Mirror motor test" on page 3-8**.
Motor Calibration	Synchronizes the bump aligner and fuser motor speeds with the transfer belt speed to ensure that output is printed correctly. Go to **"Motor calibration" on page 3-8**.
Servo Laser Test	Tests servo laser located in the printhead. Go to **"Servo laser test" on page 3-8**.

Diagnostics mode tests (Continued)

PRINT TESTS	
Tray 1	Go to **“Input source tests” on page 3-9**.
Tray 2 (if installed)	
Manual Feeder	
MP Feeder	
Prt Quality Pgs	Go to **“Print quality pages (Prt Quality Pgs)” on page 3-9**.

Diagnostics mode tests (Continued)

DUPLEX TESTS (if installed)	
Quick Test	Go to **"Quick Test (duplex)" on page 3-10**.
Print Test	Go to **"Print Test (duplex)" on page 3-10**.
Top Margin	Go to **"Top Margin (duplex)" on page 3-10**.
Motor Test	Go to **"Motor Test (duplex)" on page 3-11**.
BASE SENSOR TEST	
Bin Full Test	Go to **"Bin Full Test" on page 3-12**.
Sensor Test	Go to **"Sensor Test" on page 3-12**.
PRINTER SETUP	
Defaults	Go to **"Defaults" on page 3-13**.
Page Counts	This menu contains three submenus: Color Page Count, Mono Page Count, and Perm Page Count. Go to **"Page Counts" on page 3-13**.
Serial Number	Go to **"Serial Number" on page 3-13**.
Engine Setting 1 through 4	Go to **"Engine Setting 1 through 4" on page 3-13**.
Model Name	Go to **"Model Name" on page 3-13**.
Configuration ID	Go to **"Configuration ID" on page 3-14**.
Edge to Edge	Go to **"Edge to Edge" on page 3-14**.
Par *S* Strobe Adj	Not applicable.
Par *x* Strobe Adj (if additional parallel options are installed)	

Diagnostics mode tests (Continued)

EP SETUP	
EP Defaults	Go to **"EP Defaults" on page 3-14**.
Fuser Temp	Go to **"Fuser Temperature (Fuser Temp)" on page 3-15**.
DC Charge Adjust	Go to **"DC Charge Adjust, Dev Bias Adj, Transfer Adjust" on page 3-15**.
Dev Bias Adj	
Transfer Adjust	
EVENT LOG	
Display Log	Go to **"Display Log" on page 3-16**.
Print Log	Go to **"Print Log" on page 3-16**.
Clear Log	Go to **"Clear Log" on page 3-16**.
EXIT DIAGNOSTICS	This selection exits Diagnostics mode, and `Resetting the Printer` displays. The printer performs a POR, and returns to normal mode.

Registration

Print registration makes sure the printing is printed properly aligned on the page.

The settings available are:

Bottom Margin
Top Margin
Left Margin
Right Margin
Skew
Quick Test

To set print registration:

1. Select **REGISTRATION** from the DIAGNOSTICS menu.
2. Select Quick Test, and press ✓.

   To print the Quick Test page:

   a. Press ▼ until the ✔ appears next to `Quick Test`.
   b. Press ✓.
      The message `Quick Test Printing...` appears on the display.

   Retain this page to determine the changes you need to make to the margins settings.
3. Use ▼ or ▲ to select the margin setting you need to change, and press ✓.

4. Use ◀ to decrease or ▶ to increase the offset values, and press ✓ to confirm the value.

   The message `Submitting selection` displays, and the original REGISTRATION screen appears with the ✔ beside the previously selected margin setting.

   The print registration range is:

Description	Value	Direction of change
Bottom margin	-20 to +20 Each increment causes approximately 0.55 mm shift in the bottom margin.	A positive offset moves text up the page and widens the bottom margin while a negative offset moves text down the page and narrows the bottom margin.
Top margin	-25 to +25 Each increment corresponds to 8 scans at a 600 dpi scan rate (0.0133 inches or 0.339 mm).	A positive change moves the image down the page and increases the top margin. A negative change moves the image up and decreases the top margin.
Left margin	-25 to +25 Each increment corresponds to 4 pels at 600 dpi (0.00666 in. or 0.1693 mm).	A positive change moves the image to the right, and a negative change moves the image to the left. No compression occurs.
Right margin	-10 to +10 Each increment corresponds to an approximate shift of 4 pels at 600 dpi.	A positive change moves the image to the right, and a negative change moves the image to the left.
Skew	Each increment corresponds to 1/1200 of an inch.	A positive value causes the left end of the scan line to move up the page. A negative value causes the left end of the scan line to move down the page.

5. Continue changing the settings by repeating steps 2 through 4.
6. Print another copy of the Quick Test to verify your changes.
7. To exit REGISTRATION, press **Back** (↺).

Quick Test

The Quick Test contains the following information:

- Print registration settings
- Alignment diamonds at the left, right, top and bottom
- Horizontal lines to check for skew
- General printer information, including current page count, installed memory, serial number, and code level.

To print the Quick Test page:

Note: Print the Quick Test Page on letter or A4 paper.

1. Select **REGISTRATION** from DIAGNOSTICS.
2. Press ▼ until the ✔ appears next to `Quick Test`.

   The message `Quick Test Printing…` appears on the display.

   Once the Quick Test Page completes printing, the Registration screen displays again.

Alignment

1. Select **ALIGNMENT** from **DIAGNOSTICS**. Scroll until you reach the color that you desire to align. Go to each submenu, press Select and use the right and left arrow keys to zero out all settings. Press the Select button after you zero out each setting.

Note: It is important to zero out all settings to make the adjustment easier.

2. Scroll to Quick Test in the same color menu. Press Select; two pages print.
3. On the pages, ensure all the Current Values are set to zero. If not, go back two steps and repeat.
4. Look at the course and fine adjustments on the top left of the page and enter the best number for the top adjustment in the T space. Go ahead and transfer this number over to the computation area for Z so that you don't forget later.
5. On the operator panel, use your up and down arrows to find Top Margin Press Select and then use the left and right arrows to enter the setting computed for T. Press Select to save.
6. Repeat this process for skew (Z). Don't forget to add the T value and the current Z value to obtain the new skew (Z) value.
7. Reprint the Quick Test page and observe. Make additional adjustments if necessary before proceeding on to Quick Test step two page.
8. Obtain left (L), right (R), and Bow (P) value using the same method as obtaining T from Quick Test Step 1. Reprint the Quick Test to ensure the settings are correct. Make additional adjustments as required.
9. Press **Back** ( ) to return to ALIGNMENT.

Motor tests

The motor tests are run primarily to locate noises in the printer.

General motor test

In some instances, when you enter a particular test, you will be given the choice to run the motor in forward or reverse. Other times, there will only be the option to run the motor in forward direction.

Before you run any particular motor test, ensure you have configured the printer as directed in the following table:

Motor test	**Setup requirements**	
	Top access cover	**Front access door**
Align motor	Closed	Closed
Fuser motor	Closed	Closed
Bottom cartridge[a]	Closed	Open
Top cartridge[a]	Closed	Open
Transfer	Closed	Open
Tray 1[b]	Not applicable	Not applicable
Tray 2[c]	Not applicable	Not applicable
[a]The toner cartridges should be removed when testing the cartridge motors for any extended period of time. However, they will have to be in initially when entering the diagnostic mode. [b]A paper jam will occur if all paper is not removed from the input source before performing this test. [c]A paper jam will occur if all tray 2 is not completely removed.		

1. Select **Motor Tests** from **DIAGNOSTICS**. Scroll until you reach the motor that you desire to test.
2. Press **Select** to run the test. Forward will appear or forward and reverse will appear. If both appear, scroll to the direction that you desire. Press **Select** again.
3. Press **Stop** ( ) to end the test.

Mirror motor test

1. Select **Motor Tests** from **DIAGNOSTICS**. Scroll until you reach Mirror Motor.
2. Press **Select** (✓) to run the test. The panel displays “Mirror Motor Test”. After the test completes, the panel displays either “Pass” or “Fail”.
3. To stop the test, press **Stop** (⊗).

Servo laser test

1. Select **Motor Tests** from **DIAGNOSTICS**. Scroll until you reach Servo Laser Test.
2. Press **Select** (✓) to run the test. The panel displays “Servo Laser Test”. After the test completes, the panel displays either “Pass” or “Fail”.
3. To stop the test, press **Stop** (⊗).

Motor calibration

1. Select **Motor Tests** from **DIAGNOSTICS**. Scroll until you reach Motor Calibration.
2. Press **Select** (✓) to run calibration. The printer generates eight pages as part of this test.
3. To stop the test, press **Stop** (⊗).

Print tests

Input source tests

The purpose of the diagnostic Print Tests is to verify that the printer can print on media from each of the installed input options. The contents of the Print Test Page varies depending on the media installed in the selected input source.

Check each Test Page from each source to assist in print quality and paper feed problems.

To run the Print Test Page:

1. Select **PRINT TESTS** from the Diagnostics menu.
2. Select the media source.

   Tray 1
   Tray 2 (if installed)
3. Select **Single** or **Continuous**.
   - If **Single** is selected, a single page is printed.
   - If **Continuous** is selected, printing continues until **Stop** ( )is pressed to cancel the test.

     If a source is selected that contains envelopes, an envelope test pattern is printed. If Continuous is selected, the test pattern is printed only on the first envelope.

   Note: The Print Test Page always prints on one side of the paper, regardless of the duplex setting.
4. Press **Back** ( ) to return to PRINT TESTS.

Print quality pages (Prt Quality Pgs)

This setting enables a user to view the values of a broad range of the device's settings and to test the device's ability to generate acceptable printed output. After a user selects this option, the printer begins generating 5 pages in English. The device always uses the media that is currently installed in Tray 1 to print this report; it will not post a Change Media prompt regardless of the media currently installed in Tray 1. While these pages print, the panel displays, "Printing Quality Test Pages". Once started, printing cannot be canceled and all key presses are ignored until printing completes.

Print Quality Pages Content by Report Page Number

Page number	Content
1	General printer information, including: • A circular graphic with spokes emanating from a dark center • Device information • Cartridge information • Registration values • Alignment values • A repeated string of characters in varying font sizes
2	A mixture of text and horizontal bands of color.
3	Entire printable area covered with vertical bands of color.
4	Entire printable area covered by four wide horizontal bands of color
5	Entire printable area covered by 4 vertical bands of color with a series of numbers that repeat.

To run the Print Quality Test Pages, select **Prt Quality Pgs** from PRINT TESTS. The message `Printing Quality Test Pages` is displayed.

Duplex tests

Quick Test (duplex)

This test prints a duplex version of the Quick Test that can be used to verify that the correct placement of the top margin on the back side of a duplex page. You can run one duplexed page (**Single**), or continue printing duplexed pages (**Continuous**) until **Stop** ( ) is pressed. For information about changing the margin, see **"Top Margin (duplex)" on page 3-10**.

Note: Before you set the duplex top margin, be sure to set the registration. See **"Registration" on page 3-5**.

The paper you choose to print the page on should be either Letter or A4.

To run the Quick Test (duplex):

1. Select **Quick Test** from DUPLEX TESTS.
2. Select **Single** or **Continuous**.
   - The single Duplex Quick test cannot be canceled.
   - The printer attempts to print the Quick Test Page from the default paper source.
   - Check the Quick Test Page for the correct offset between the placement of the first scan line on the front and back side of a duplexed sheet.

The single test stops automatically when a single duplex sheet is printed, and the continuous test continues until you press **Stop** ( ).

Print Test (duplex)

This test provides service personnel with a way to verify the fuctioning of the printer's duplex hardware. After the user selects this test, the device automatically executes a continuous print test that generates a duplexed, color output page. To stop the test, the user must press **Stop** ( ). While this test executes, the power indicator light blinks green and the panel displays "DUPLEX TESTS Printing...".

The paper you choose to print the page on should be either Letter or A4.

To run the Print Test (duplex):

1. Select **Print Test** from DUPLEX TESTS. The printer executes a continuous print test that generates a duplexed, color output page.
2. To stop the test, press **Stop** ( ).

Top Margin (duplex)

This setting controls the offset between the first scan line on the front of the duplex page and the first scan line on the back of the page. Therefore, be sure to set the top margin in REGISTRATION before setting the duplex top margin. See **"Registration" on page 3-5**.

To set the Top Margin (duplex):

1. Print the Quick Test (duplex):
   a. Select **Quick Test** from DUPLEX TESTS.
   b. Select **Single**.
   c. Hold the page to the light to see the whether the top margin of the backside aligns with the top margin of the frontside.
2. Select **Top Margin** from DUPLEX TESTS.

3. Use ▼ or ▲ to select the margin setting you need to change.
   - Each increment shifts the duplex top margin by 1/100 of an inch.
   - The Top Margin (duplex) range is -20 to +20, and the default value is 0.
   - An increase moves the top margin down and widens the top margin. A decrease moves the top margin upward and narrows the top margin.
4. Press ✓.
5. Print the Quick Test (duplex) again to verify the adjustment. Repeat if necessary.

Motor Test (duplex)

This test is used to determine whether or not the duplexer's paper feed drive system is working correctly.

1. Select **Motor Test** from DUPLEX TESTS. The duplex motor runs continously until stopped.

   The message `Motor Running` displays.
2. To stop the test, press **Stop** (⊗).

Base sensor test

Bin Full Test

This test is used to determine if the bin full sensor is operating correctly. This test is only applicable to network printers. To run the Bin Full Test:

1. Select **BASE SENSOR TEST** from the DIAGNOSTICS menu.
2. Select Bin Full Test. The panel displays “Bin Full Test” in the header row. Below the header row, the panel displays “BinFull” and the current state of this sensor. Move the bin full sensor flag (located on the fuser) up and down to toggle the sensor state.

Sensor Test

This test is used to determine if specific sensors are working correctly. If you need to know where a sensor is located, refer to **“Sensors” on page 5-1**. To run the Sensor Test:

1. Select **BASE SENSOR TEST** from the DIAGNOSTICS menu.
2. Select Sensor Test. The panel displays “Sensor Test” in the header row. Below the header row, the panel displays each one of the sensors, one line at a time, and the current state of the sensor. Use the down arrow to locate the sensor in question. Use the following table to toggle the sensor

Sensor	Possible values	Sensor activation
Fuser exit (paper exit)	Open/closed	Open top access cover. Activate fuser exit flag. Sensor should change state.
Inner door (front access door)	Open/closed	Open front access door. Sensor should change state.
Input	Open/closed	Remove paper tray 1. Activate input sensor flag. Sensor should change state.
Narrow media (transparency)	Open/closed	Remove paper tray 1. Sensor should change state.
Toner C	Open/closed	Remove toner cartridge in question. Shine a flashlight on the toner level sensor for the cartridge in question. Sensor should change state.
Toner M		
Toner Y		
Toner K		
Top door (top access cover assembly)	Open/closed	Open top access cover assembly. Sensor should change state.
TPS	Open/closed	Open front access door. Slip a piece of paper between the TPS and the transfer belt. Sensor should change state.
Waste toner	OK/Full	Not applicable.

3. Press **Back** () or **Stop** () to exit the test.

Printer setup

Defaults

US/Non-US defaults changes whether the printer uses the US factory defaults or the non-US factory defaults. The settings affected include paper size, envelope size, PCL symbol set, code pages, and units of measure.

Warning: Changing this setting resets the printer to factory defaults, and data may be lost. It cannot be undone.

Page Counts

All of the submenus under this menu are read only. You cannot chane any of the values. The page count can only be viewed and cannot be changed.

To view the color page count, mono page count or the permanent page count:

1. Select **Page Counts** from PRINTER SETUP.
2. Scroll to the desired page count and press Select ..
3. Press **Back** ( ) to return to PRINTER SETUP.

Serial Number

The serial number can only be viewed and changed.

To view or change the serial number:

1. Select **Serial number** from PRINTER SETUP.
2. Press **Back** ( ) to return to PRINTER SETUP.

Engine Setting 1 through 4

Warning: Do not change these settings unless requested to do so by your next level of support.

Model Name

The model name can only be viewed and cannot be changed.

Configuration ID

The two configuration IDs are used to communicate information about certain areas of the printer that cannot be determined using hardware sensors. The configuration IDs are originally set at the factory when the printer is manufactured, however the servicer may need to reset Configuration ID 1 or Configuration ID 2 whenever you replace the system board. The IDs consist of eight digits. The first seven digits in each ID are hexadecimal numbers while the last digit is a checksum of the preceeding seven digits. Each ID can contain a combination of the digits 0 through 9 and A through F.

Note: When the printer detects a Configuration ID that is not defined or invalid, the following occurs:

- The default standard model Configuration ID is used instead.
- Configuration ID is the only function available in DIAGNOSTICS.
- Unless the menu is in DIAGNOSTICS, `Check Config ID` displays.

To set the configuration ID:

1. Select **Printer Setup** from the Diagnostic mode.
2. Select **Configuration ID** from the Printer Setup menu.

   `Submitting Selection` displays, followed by the value for Configuration ID 1.
3. Enter the Configuration ID 1.
   - To select a digit or character to change, press ◀ or ▶ until the digit or character is underlined.
   - To change a digit or character, press ▲ to increase or ▼ to decrease the value.
   - When the last digit is changed, press ✓ to validate the Configuration ID 1.

     If `Invalid ID` appears, the entry is discarded, and the previous Configuration ID 1 is displayed on the screen.

     If the process is successful, `Submitting Selection` appears on the display, followed by the current value for Confirguration ID 2.
4. Repeat the steps for entering the Configuration ID, and press ✓.

   If the Configuration ID 2 is validated, `Submitting Selection` appears, and a check (✔) appears next to **Printer Setup**.
5. Restart the printer.

Edge to Edge

When this setting is On, the text and graphics are shifted to the physical edges of the paper for all margins. When the setting is Off, the normal margins are restored.

EP setup

EP Defaults

This setting is used to restore each printer setting listed in EP SETUP to its factory default value. Sometimes this is used to help correct print quality problems.

To restore EP Defaults:

1. Select **EP Defaults** from EP SETUP.
2. Select **Restore** to reset the values to the factory settings, and select **Do Not Restore** to exit without changing the settings.

Fuser Temperature (Fuser Temp)

This adjustment can be used to help solve some customer problems with paper curl on low grade papers and problems with letterheads on some types of media.

The fuser temperature can be adjusted to: Low, Normal, High. The default is Normal.

DC Charge Adjust, Dev Bias Adj, Transfer Adjust

Each of these three settings enables you to adjust the high voltage levels controlling the EP process. You will use these settings to compensate for unusual operating circumstances such as high humidity. The printer uses the value of these settings together with other settings to calculate printing speed and media selection.

Event log

Display Log

The event log provides a history of printer errors. It contains the 12 most recent errors that have occurred on the printer. The most recent error displays in position 1, and the oldest error displays in position 12 (if 12 errors have occurred). If an error occurs after the log is full, the oldest error is discarded. Identical errors in consecutive positions in the log are entered, so there may be repetitions. All 2*xx* and 9*xx* error messages are stored in the event log.

To view the event log:

1. Select **Display Log** from EVENT LOG.

   Up to three error codes display at a time. Press ▲ or ▼ to view additional error codes.

2. Press **Back** ( ) to return to the EVENT LOG menu.

Print Log

Additional diagnostic information is available when you print the event log from DIAGNOSTICS rather than CONFIG MENU.

The Event Log printed from DIAGNOSTICS includes:

- Detailed printer information, including code versions
- Time and date stamps
- Page counts for most errors
- Additional debug information in some cases

The printed event log can be faxed to Lexmark or your next level of support for verification or diagnosis.

To print the event log:

Select **Print Log** from EVENT LOG.

Press **Back** ( ) to return to EVENT LOG.

Clear Log

Use Clear Log to remove the current information in the Event Log. This affects both the viewed log and the printed log information.

1. Select **Clear Log** from the Event Log menu.
2. Select **YES** to clear the Event Log or **NO** to exit the Clear Log menu. If **YES** is selected, `Deleting EVENT LOG` displays on the screen.

Press **Back** ( ) to return to EVENT LOG.

Configuration menu (CONFIG MENU)

The Configuration Menu menu items and values are as follows. Factory defaults are identified with an asterisk (*). Once in the **CONFIG MENU**, press the down arrow to scroll to each menu item.

Menu item	Purpose	Values and descriptions	
Reset Fuser Cnt	Resets the fuser count value to zero. The Event Log records each time that a user executes the Reset Fuser Count operation. See **"EVENT LOG" on page 3-19** for more information.	Reset	The **Resetting Fuser Count Value** message appears. After this, one should select Motor Calibration. See **"Motor Calibration" on page 3-20**. This setting only appears if the Maintenance Warning and Intervention function is enabled in the printer Configuration ID. Press **Select** for the Reset value. To cancel a reset, press **Back**.
Black Only Mode	Used when printing for extended periods with only black toner. This saves the toner cartridges (cyan, magenta, and yellow) and photoconductor units from excessive wear. In addition to setting the values, the cyan, magenta, and yellow toner cartridges and their matching photoconductor units must be removed from the printer.	Off* On	Note: Remove all the color supplies from the printer before selecting the On value from the operator panel. Install all the color supplies before selecting the Off value from the operator panel. Select On when printing with black only. Select Off when printing with color toner.
Prt Quality Pages	To help isolate print quality problems, print the Print Quality Test Pages.	No values exist for this operation. Press **Select** to print the pages.	The pages are formatted. The **Printing Quality Test Pages** message appears, then the pages print. The message remains on the operator panel until all the pages print. The Print Quality Test Pages contain several pages. The first page which is printed in English text only contains a mixture of text and graphics. The information includes values of the **Quality Menu** settings in **Settings**, and printer and toner cartridge configuration information. The remaining pages only contain graphics.

Menu item	Purpose	Values and descriptions	
Color Trapping	Uses an algorithm to compensate for mechanical mis-registration in the printer. When small black text or fine black lines are being printed, the printer checks to see if they are being printed on top of a colored background. If so, rather than remove the color from beneath the black content, the printer leaves the color around the edge of the text or line. The hole in the colored region is reduced in size which prevents the characteristic white gap that is caused by mis-registration. This menu item applies to PCL 5 emulation, PCL XL, PDF, and PostScript.	1–5 (2)* Off	Values 1 through 5 indicate the amount of color remaining beneath the black content. Each setting i 1/600 of an inch. The more inaccurate the registration setting, the higher the setting needs to be adjusted. Select Off to disable color trapping.
Size Sensing	Turns the automatic size sensing for print media input sources either On or Off.	Tray 2 Sensing Auto* Off	This is a two-level menu that displays only those print media sources which support automatic size sensing. Auto is the same as On.
Panel Menus	Lets the system support person enable or disable the operator panel menus. The advantage of disabling the menus is so users cannot change values for the printer once the system support person has set them for the majority of the users.	Enable* Disable	This menu item only appears when the PJL PASSWORD Environment variable is set to 0.
PPDS Emulation	Determines if the printer can recognize and use the Personal Printer Data Stream (PPDS) emulation language.	Deactivate* Activate	This menu item only appears if the PPDS interpreter is available.
Download Emuls	Lets the system support person turn the download emulator off.	Disable	This menu item only appears if one download emulator is installed. An Enable value is unnecessary because the printer automatically re-enables all download emulators after two instances of a power-on reset for the printer. To re-enable these emulators, a user would perform another power-on reset after exiting the CONFIG MENU.
Demo Mode	Lets marketing personnel or merchandisers demonstrate the printer to potential customers by printing the demo page.	Deactivate* Activate	Select Deactivate to turn Demo Mode off. Select Activate to turn Demo Mode on.

Menu item	Purpose	Values and descriptions	
Factory Defaults	Sets the majority of printer values back to their factory default settings. Note: When factory default settings are restored: • All downloaded resources (fonts, macros, symbol sets) in the printer memory (RAM) are deleted. • All menu settings return to the factory default setting *except*: – The Display Language setting in the "Setup" Menu. – All settings in the Parallel Menu, Serial Menu, Network Menu, Infrared Menu, LocalTalk Menu, and USB Menu.	Restore Base Restore Network	The Restore Network value only appears on printer models that have integrated network support. This selection cannot be reversed, so this operation should only be used as a last resort to fix any printer problem. **`Restoring Factory Defaults`** appears on the operator panel while factory defaults are restored.
Energy Conserve	Affects the values that appear in the Power Saver menu item in the Setup Menu. This menu item only appears when the printer model does not support Automatic Power Saver or has deactivated Automatic Power Saver. The menu item only affects the values that are displayed in the Power Saver menu item.	On* Off	Select Off to cause Power Saver to only display Disabled. If Disabled is selected in Power Saver, the printer deactivates the Power Saver feature. Select On to cause Disabled to not appear on the operator panel for Power Saver.
EVENT LOG	Lets the system support person print a limited set of the information contained in the Diagnostics version of the printed Event Log. The limited Configuration log and the full Diagnostics log printed versions show the same operator panel messages when they print and follow the same layout guidelines.	Print Log	Press **Select** to begin printing the log.
Auto Align Adj	Controls whether the printer executes the automatic alignment calibration after an initiating event occurs.	On* Off	Toner Patch Sensing (TPS) is a diagnostic mechanism that automatically adjusts the printer toner density and alignment settings. When TPS executes, the printer generates toner patches on the transfer belt. Then, it uses these to calculate the appropriate amount of adjustment, if necessary. When an event initiates a TPS operation, the printer performs a toner density calibration or an alignment calibration, or both of the calibrations.

Menu item	Purpose	Values and descriptions	
Auto Color Adj	Sets the suggested number of pages which the printer should print between consecutive calibrations.	100–1000 (500*) Off	Increases in increments of 50. If the printer exceeds the set value while printing a job, it completes the current job and any other jobs received while printing the current job before it initiates a calibration. The printer does not cancel or suspend an active job in order to perform a calibration. If a user is in any of the menus, including the Configuration Menu and the Diagnostics Menu, an automatic color adjust calibration does not occur.
Enforce Color Order	Lets the system support person set whether the color order of the cartridges inside the printer is enforced and if messages appear. From top to bottom, as indicated by the color labels in the printer, the enforced toner cartridges order is yellow, cyan, magenta, and black.	On* Off	When On is selected, the printer lets users place each toner cartridge in only its specified slot, for instance the Magenta toner cartridge must be in the Magenta slot. Then, if the user tries to place a cartridge in an incorrect slot, the printer message **`31 Defective or Missing [color] Cartridge`** or **`32 Unsupported [color] Cartridge`** appears where [color] stands for Cyan, Magenta, Yellow, and Black. When Off is selected, the printer does not issue any message to let the user know that the cartridge is placed in the wrong slot inside the printer.
Color Alignment	Prints the Print Alignment Page and requires that the best line in each set of lines must be selected.	No values exist for this operation. Press **Select** to begin printing.	Once the page prints, follow the instructions on the operator panel to chose the best appearing line numbered 0–20 for the following sets of lines. Set A Set B Set C Set D Set E Set F Set G Set H Set I Set J Set K Set L For each of the sets listed, the sub-value is 0–20 (10*).
Motor Calibration	Allows for speed calibration after resetting the fuser maintenance counter.	No values exist for this operation. Press **Select**.	The **`Calibrating`** message appears. The printer prints several blank pages and then returns to the CONFIG MENU.

Menu item	Purpose	Values and descriptions	
Paper Prompts	Controls the source the printer selects for a change paper source message. The printer displays the change paper source message based on the size of the paper requested and not by the paper type.	Auto MP Feeder Manual Paper	MP Feeder is only available on some printer models. Note: If the Configure MP setting is changed to Manual, and a power-on reset is performed, and the value of the Paper Prompts menu item before the power-on reset was MP Feeder. Then, when the printer restarts, the printer automatically changes the Paper Prompts setting to Manual Paper. Load Manual overrides that would result in a change paper message are disabled for Paper or Env prompts that are set to Manual, Manual Paper, or Manual Env.
Env Prompts	Controls the source the printer selects for a change envelope source message. The printer displays the change envelope message based on the size of the envelope requested and not by the envelope type.	Auto MP Feeder Manual Env	MP Feeder is only available on some printer models. Note: If the Configure MP setting is changed to Manual, and a power-on reset is performed, and the value of the Env Prompts menu item before the power-on reset was MP Feeder. Then, when the printer restarts, the printer automatically changes the Env Prompt setting to Manual Env. Load Manual overrides that would result in a change paper message are disabled for Paper or Env prompts that are set to Manual, Manual Paper, or Manual Env.
Jobs on Disk	Lets the user select whether or not the printer deletes all buffered jobs on the hard disk.	Do Not Delete Delete	This menu item only appears if a hard disk is installed. It appears even if no buffered jobs exist on the hard disk.
Disk Encryption	Controls whether the printer encrypts the information that it writes to the hard disk. When the value for Disk Encryption, the printer completely formats the hard disk which means that all information on the disk is deleted. Note: If an encrypted disk is removed from the printer and another disk is installed, the message **`Disk Corrupted. Reformat?`** message appears. So, the newly installed disk must either be formatted or removed from the printer. The selections under the message are **Yes** or **No**.	Disable* Enable	The Disk Encryption menu item only appears in the Configuration Menu when: • a non-defective disk is installed in the printer • the values of bits 3-2 of digit 4 in the Configuration ID 2 are either 01 for Supported) or 10 for Supported with an internal network adapter (INA). Encrypting may be canceled if Enable is selected. Formatting may be canceled if Disable is selected. Select one of these, then select **No**, and press **Select**. After pressing **Select**, the printer performs the selected action on the hard disk. A graphic appears showing: • either Encrypting Disk or Formatting Disk • a percentage scale • the message **`DO NOT POWER OFF`** The process is complete when the percentage scale displays 100%.

Menu item	Purpose	Values and descriptions	
Duplex Gloss	Generates higher quality duplex copies than when using the normal duplex mode.	Off* On	The major difference between normal duplex and duplex gloss mode is the number of sheets in the duplex print media path. Normal duplex mode feeds two sheets simultaneously, while duplex gloss feeds only one sheet.
Font Sharpening	Lets a user set a text point-size value below the setting of the high frequency screens used when printing font data. This menu item only affects the PostScript, PCL 5, PCL XL, and PDF emulators.	0–150 (24*)	For example, if the value is set to 24, then all fonts sized 24 points or less use the high frequency screens. To increase value by 1, press the right arrow; to decrease the value by 1, press the left arrow.
Exit Config Menu	Lets a user exit the CONFIG MENU once any of the other menu items have been accessed or accessed and their values set.	No values exist for this operation. Press **Select** to exit the menu.	The printer performs a power-on reset, and the printer restarts in normal mode which means it is not in the CONFIG MENU.

4. Repair information

Removal and cleaning precautions

Observe the following precautions whenever you service the printer:

- Be sure to unplug the printer from the outlet before attempting to service the printer.
- To reassemble the printer, reverse the order of removal unless otherwise specified.
- Do not operate the printer anytime during removals. If it is absolutely necessary to run the printer with its covers removed, use care not to allow your clothing to be caught in revolving parts such as the gears, rollers and fan motor.
- Never touch the terminals of electrical parts or high-voltage parts such as the high voltage power supply.
- After part replacement, ensure the wiring harness is not caught or damaged.
- Do not attempt to cut or extend the wiring harness.
- Confirm the wiring harness connector is connected properly.
- Be sure to handle the fuser carefully as it remains hot for a while after the printer stops running. Always unplug connectors by holding the connector housing.

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 electronic 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 need to put down the ESD-sensitive part for any reason, first put it into its special bag.
- printer 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 printer covers when you are not working on the printer, 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.

Photoconducter unit

The following precautions must be observed when handling the photoconductor unit. The photoconductor unit is a supply item you will have to remove during some of the repair procedures:

During transportation/storage

Use the specified carton whenever moving or storing the photoconductor unit.

Handling

- The optical photoconductor roller in the photoconductor unit exhibits the greatest light fatigue after being exposed to strong light over an extended period of time. Never expose it to direct sunlight. Cover the photoconductor unit when you remove it from the printer.
- Use care not to contaminate the surface of the optical photoconductor roller with an oil-based solvent, fingerprints, and other foreign matter.
- Do not scratch the surface of the optical photoconductor roller.

Parts not to be touched

Any part where the mounting screws are used to meet a printer alignment set at the factory must not be removed, disassembled, or adjusted.

Printer adjustments

Printhead alignment

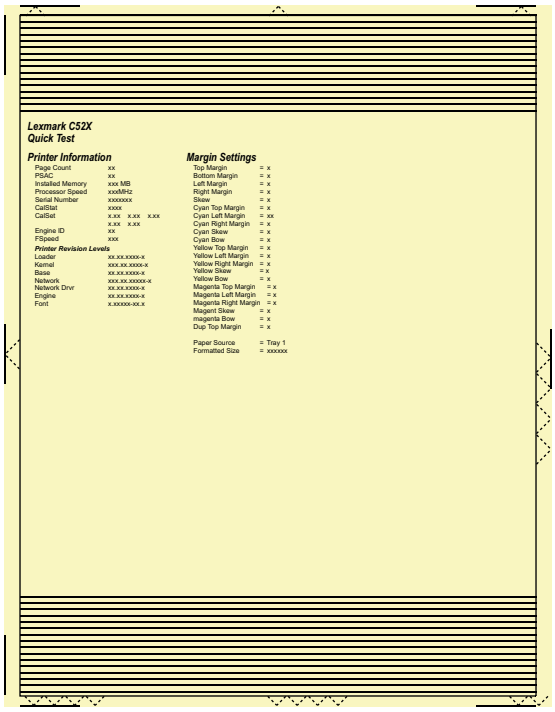
Overview

When reinstalling the printhead, it is important to keep in mind that the printhead mounting screws should be initially tightened just enough to hold the printhead in the printer. This allows the pages to be printed that will be used to align the black plane to the printer frame and also allows skew adjustment with the printhead alignment screw. Once black skew is adjusted, the mounting screws will be fully tightened.

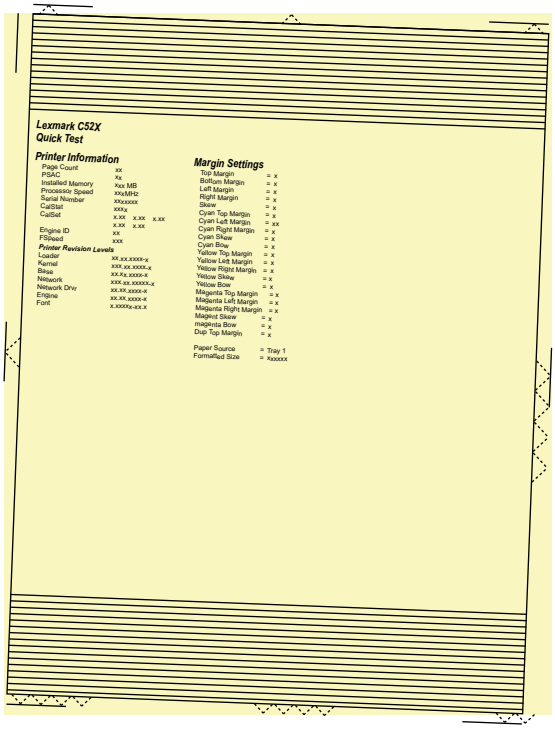
There is one printhead that houses the four color planes. The black plane is aligned to the printer and the color planes are internally aligned to black. Electrical alignment is done to fine tune the alignment of the color planes to the black plane once the printhead is installed.

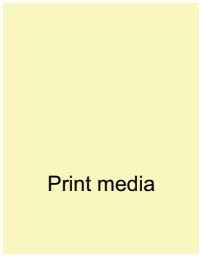
The first step in aligning the printhead is to set the skew for black. The following illustration shows proper skew versus improper skew.

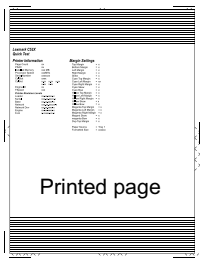
Proper skew



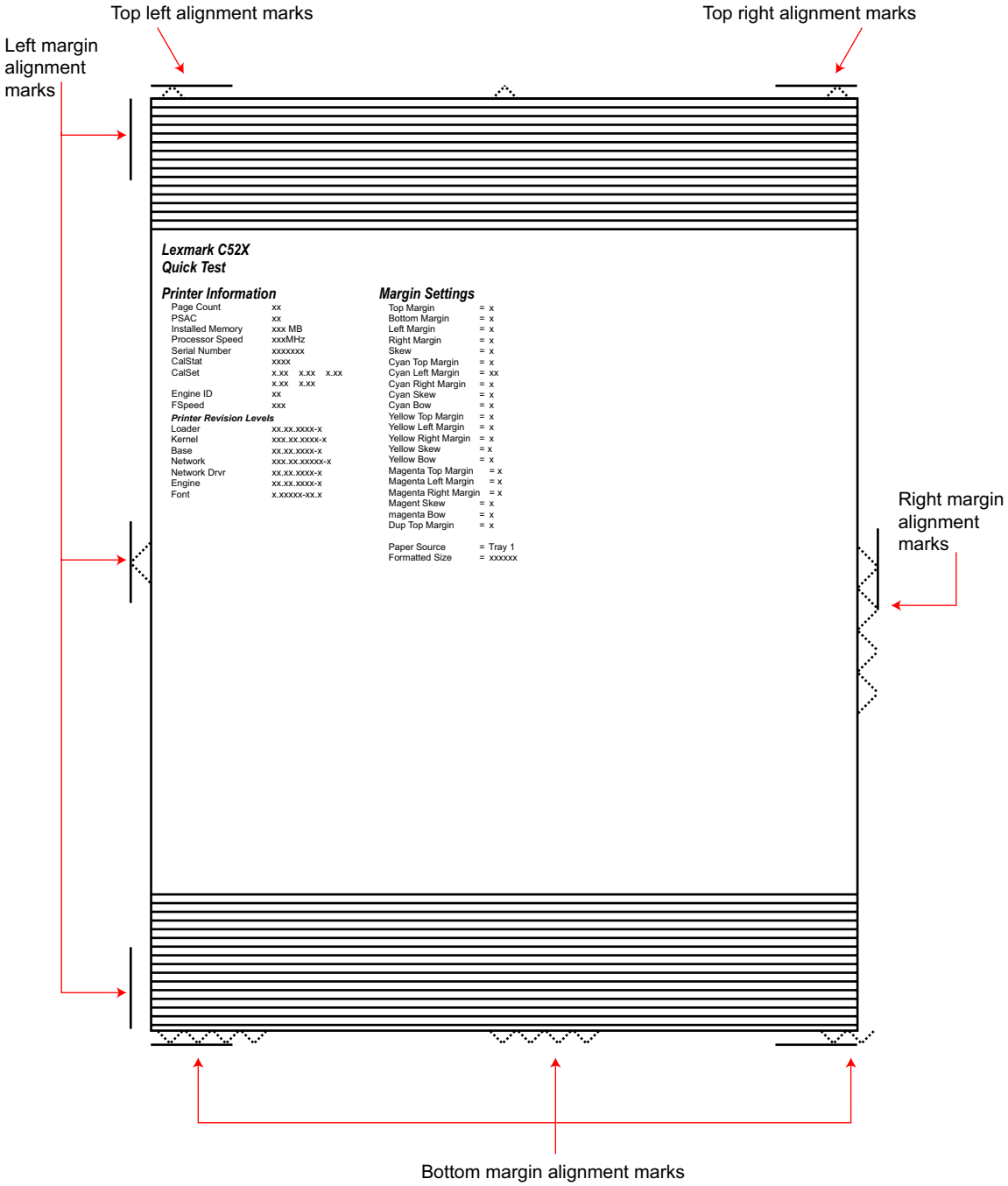
Improper skew



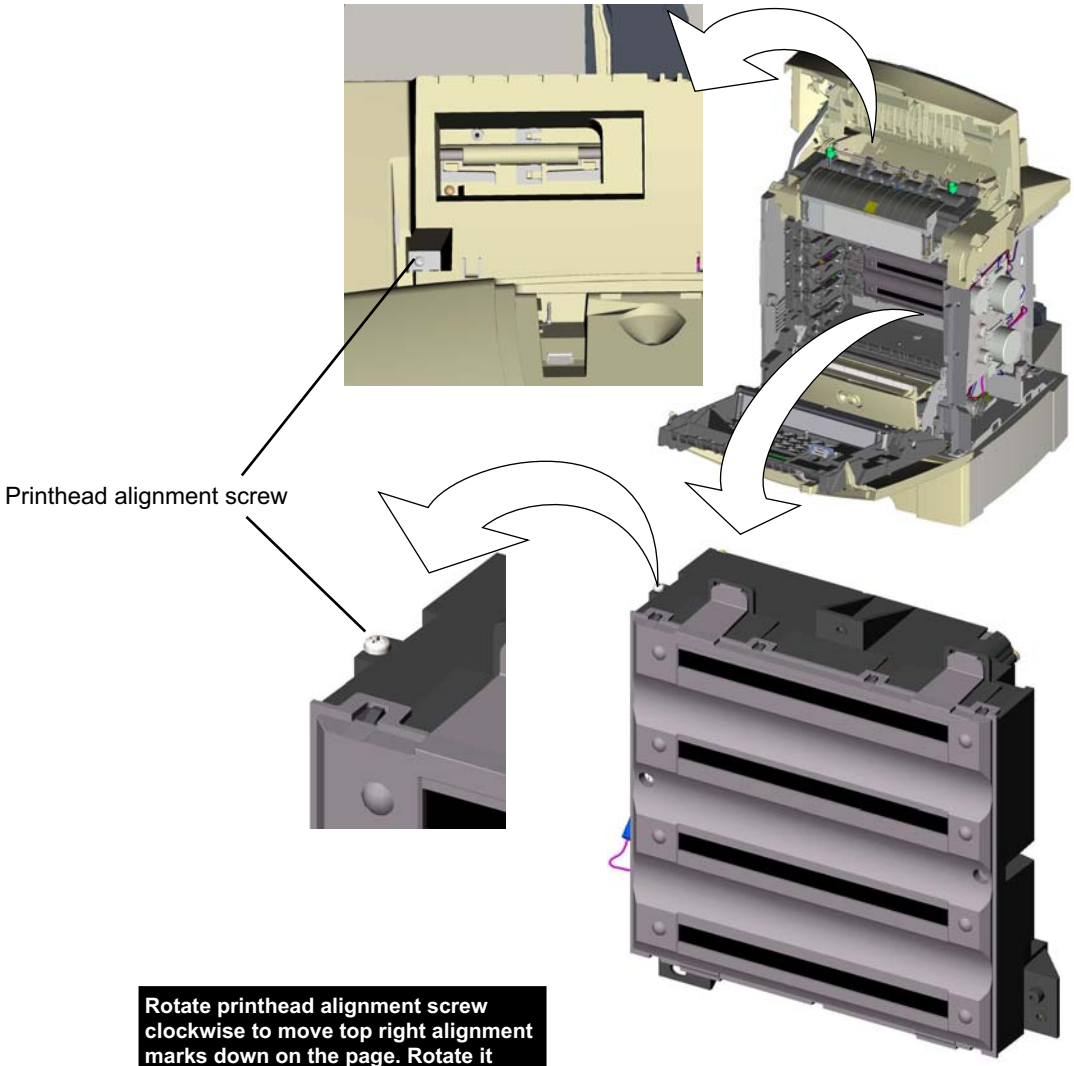




1. During installation of the printhead, the printhead's lower right corner slot (as seen when looking through the rear of the printer) and the hole in the frame should have been visually aligned.
2. Remove the paper exit tray for access to the printhead alignment screw.
3. Enter Diagnostic mode. Go to **"Accessing service menus" on page 3-1**.
4. Enter Registration menu and select `Skew`. Adjust this setting to zero.
5. Press the **Back** button and then scroll down to `Quick Test`. Press **Select**. A page similar to this one prints:

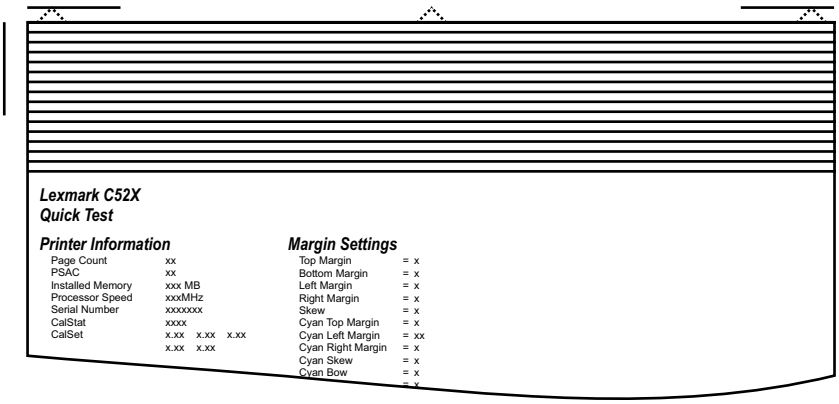


Note: One rotation of the printhead alignment screw equals approximately .5 millimeter movement of the top edge print alignment marks.



Rotate printhead alignment screw clockwise to move top right alignment marks down on the page. Rotate it counterclockwise to move them up.

Top right alignment marks



Lexmark C52X
Quick Test

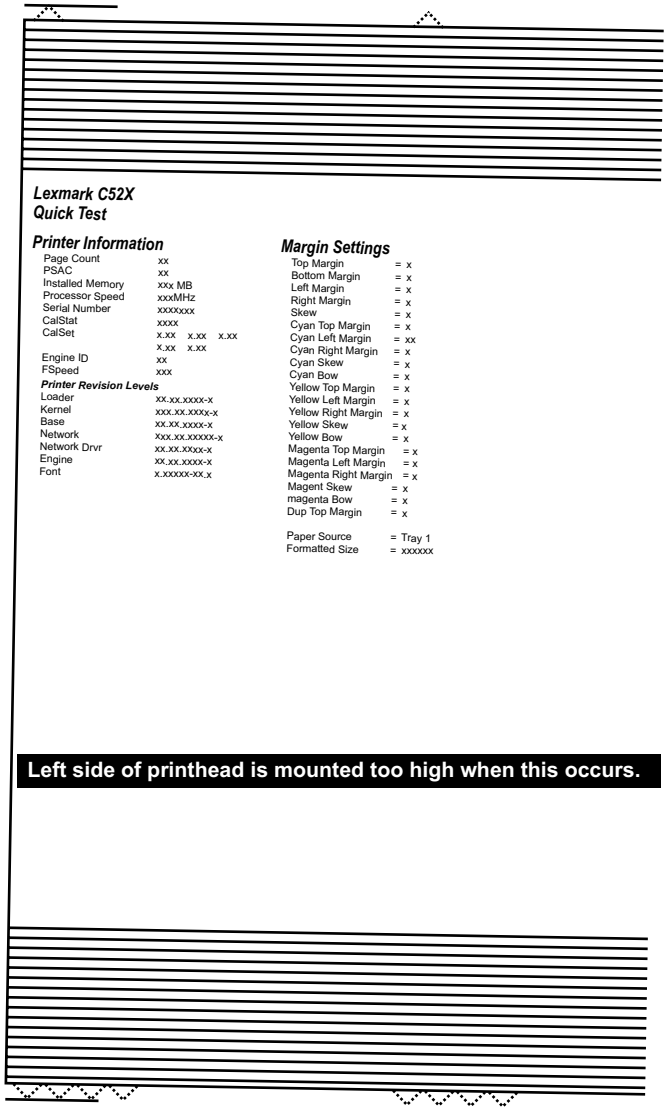
Printer Information

Page Count	xx		
PSAC	xx		
Installed Memory	xxx MB		
Processor Speed	xxxMHz		
Serial Number	xxxxxxx		
CalStat	xxxx		
CalSet	x.xx	x.xx	x.xx
	x.xx	x.xx	

Margin Settings

Top Margin	= x
Bottom Margin	= x
Left Margin	= x
Right Margin	= x
Skew	= x
Cyan Top Margin	= x
Cyan Left Margin	= xx
Cyan Right Margin	= x
Cyan Skew	= x
Cyan Bow	= x
	= x

Note: If the right side of the print is missing, the visual alignment was too far off and the left side of the printhead is too high. Rotate the alignment screw counterclockwise a full revolution and print the Quick Test page. Check right side of print. Repeat screw rotation and printing of Quick Test page until a complete page prints.



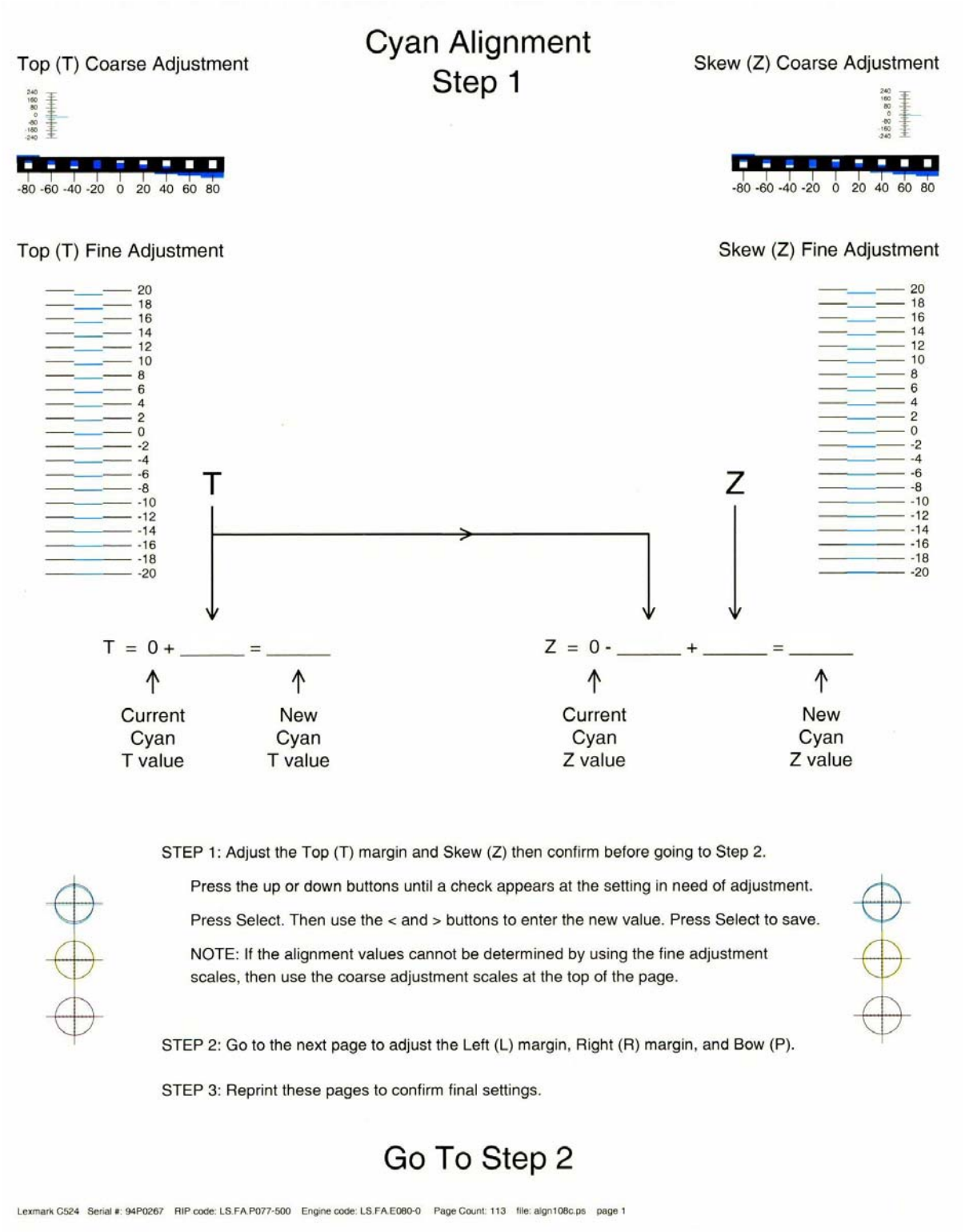
6. It is important that the top margin is set so that you can see the top left alignment mark. If this mark is not present, scroll up in the operator panel and select `Top Margin`. Increase the value (right arrow) if the alignment mark is off the page, decrease the value (left arrow) if the mark is down on the page. Press the **Select** button, scroll down to `Quick Test` and press **Select**. Check the top margin alignment and repeat top margin adjust until the top left alignment mark is close to the top edge of the print.
7. Using the alignment marks on the top of the page, adjust the printhead alignment screw until you have proper alignment. Rotate the alignment screw counterclockwise if the top right alignment mark is lower than the top left alignment mark and clockwise if the top right is higher than the left. In some cases, the top right mark may be off the page. You will have to repeat print the Quick Test page to see your printhead adjustment. Continue adjusting the printhead alignment screw and reprinting the Quick Test page until the skew is corrected. Save the last Quick Test print for use while adjusting black margins.
8. Tighten the printhead mounting screws in the following order: top middle, lower left and lower right. Reinstall the paper exit tray and the fuser cable cover.
9. Scroll in the operator panel until you reach `Top Margin`. Press **Select** and adjust the margins until both top alignment marks are on the top edge of the print. Increasing the value (right arrow) moves the alignment marks down on the print. Decreasing moves them up. Print the Quick Test page and check the

top alignment marks. Repeat adjustment of top margin and printing of Quick Test page until top margin is set.

10. Scroll to `Bottom Margin` and press **Select**. Adjust the bottom margin by increasing the value (right arrow) to move the alignment marks up on the page or decreasing the value (left arrow) to move the marks down on the page. Print the Quick Test page and repeat this process until the bottom margin is adjusted.
11. Scroll to `Left Margin` and press **Select**. Adjust the left margin by pressing the left arrow to decrease the value and move the left alignment marks to the left or by pressing the right arrow to increase the value and move the left alignment marks to the right. Press **Select** to accept the value and scroll to `Right Margin`. Press **Select** and adjust the right margin by pressing the left arrow to decrease the value and move the right alignment marks to the right or by pressing the right arrow to increase the value and move the right alignment marks to the left. Scroll to `Quick Test` and press **Select**. Observe your results. Repeat this process for the left and right margins until they are set.
12. Press **Back** on the operator panel until you reach the top menu. Scroll to `Alignment Menu` and press **Select**. Scroll until you reach `Cyan` and press **Select**. Go to each submenu in `Cyan`, press **Select** and use the right and left arrow keys to zero out all settings. Press the **Select** button after you zero out each setting.

Note: It is important to zero out all settings to make the adjustment easier.

13. Scroll to `Quick Test` in the `Cyan` menu. Press **Select**; two pages print. You may have to print these pages several times until you get T and Z aligned. Do not go to step 2 until T and Z are aligned. The first page is similar to the following:

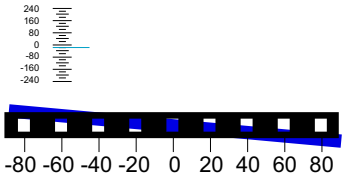


14. On the pages, ensure all the Current Values are set to zero. If not, go back two steps and repeat.

15. Look at the course and fine adjustments on the top left of the page and enter the best number for the top adjustment in the T space. Go ahead and transfer this number over to the computation area for Z so that you don't forget later.

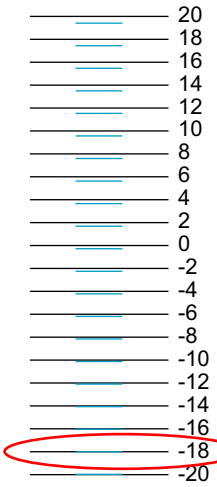
Typical course and fine adjustment

Top (T) Course Adjustment



If the alignment is not close enough to use the fine adjustment, get close to the ideal value by using the course adjustment marks. Select the block that is most filled by the color on the left or approximate if none of the blocks are completely filled and enter it in for the new value. Reprint the quick test page and then use the fine adjustment.

Top (T) Fine Adjustment

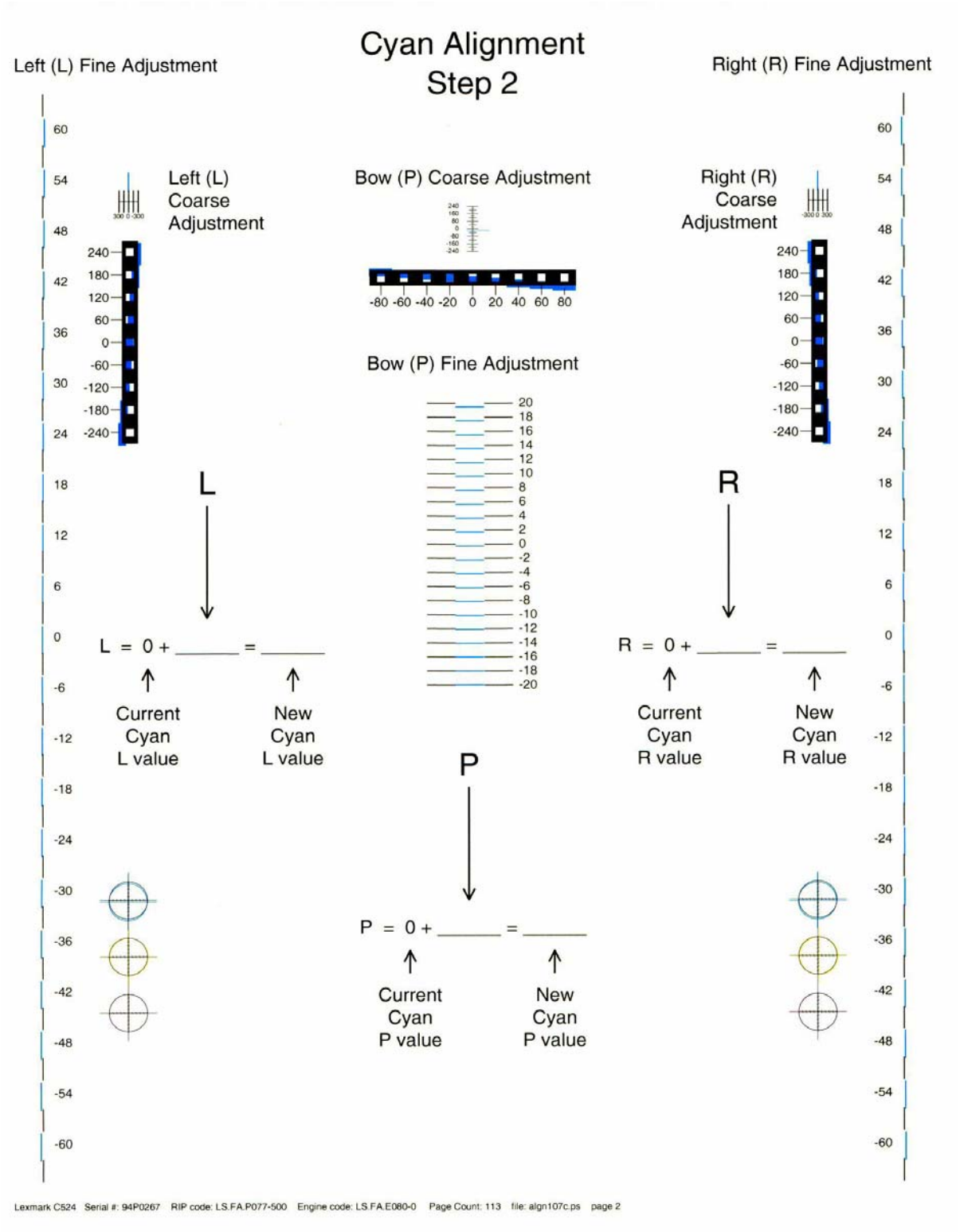


First, locate the line of the color that you are aligning that lines up best with the scale line. In this example, it is -18. If none of the colored lines match up, use the course adjustment to get close, reprint this page and then use the fine adjustment.

16. On the operator panel, use your up and down arrows to find `Top Margin`. Press **Select** and then use the left and right arrows to enter the setting computed for T. Press **Select** to save.

17. Repeat this process for skew (Z). Don't forget to add the T value and the current cyan Z value to obtain the new skew (Z) value.

18. Reprint the cyan Quick Test page and observe. Make additional adjustments if necessary before proceeding on to Quick Test step two page.



19. Obtain left (L), right (R), and Bow (P) value using the same method as obtaining T from Quick Test Step 1. Reprint the Quick Test to ensure the settings are correct. Make additional adjustments as required.

20. Repeat steps 12 through 20 for yellow and magenta.

Printer removal procedures

Precautions to take before maintenance work

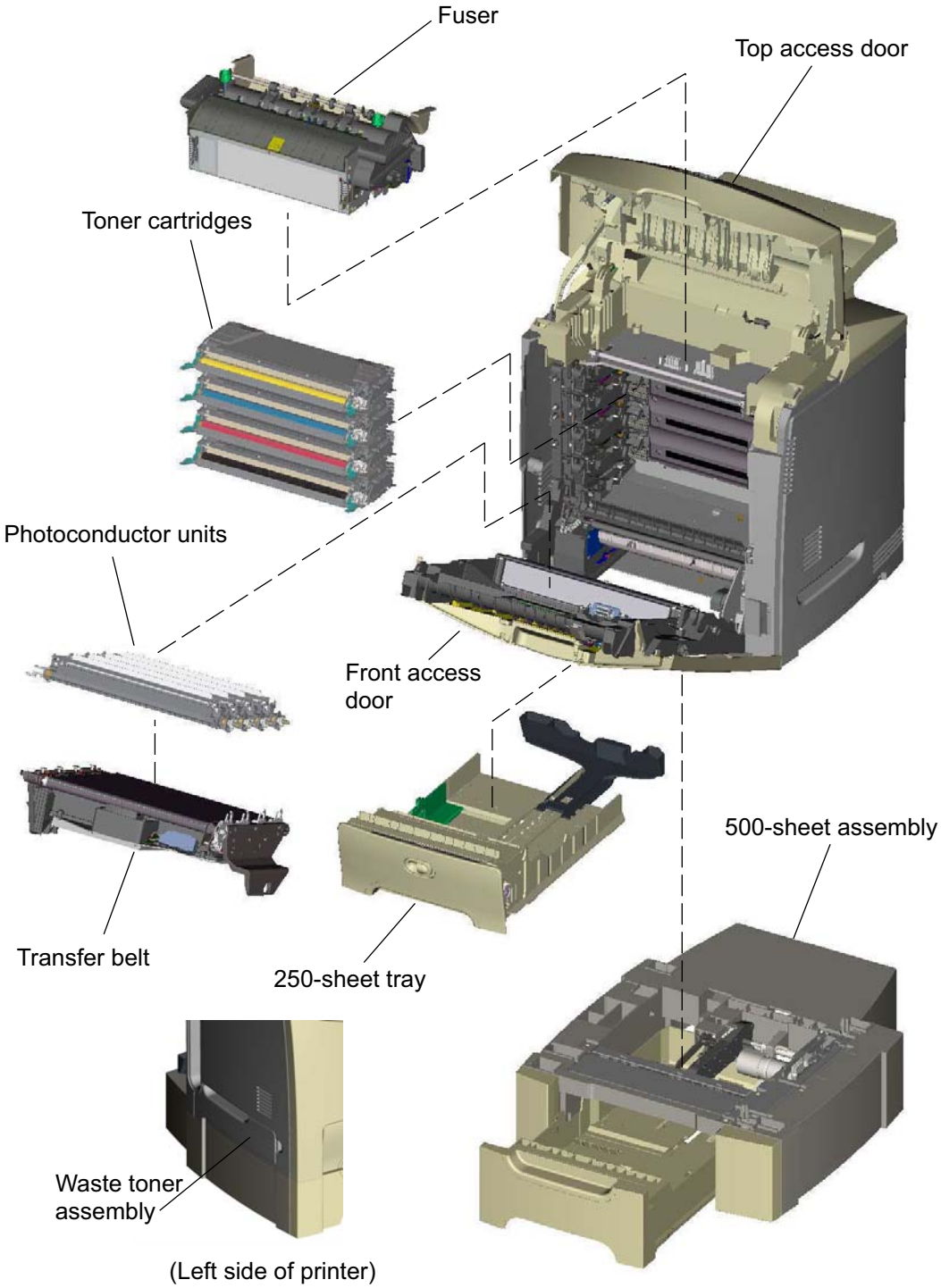
Do not implement any operation, removal, or modification and so on, which are not presented in this manual.

1. Turn the printer power off and unplug the power cable from the outlet prior to starting removals or checks.

2. Prior to starting any repairs, read and understand the warnings in this manual.
   - High temperature
   - High voltage
   - Laser radiation
3. Confirm the direction of all parts and screw lengths during removal/replacement.
4. Utilize the proper cleaning procedures/solvents during maintenance.
5. Confirm that all parts and covers are properly installed and assembled prior to starting the print test.

CRU/FRU and supplies removals

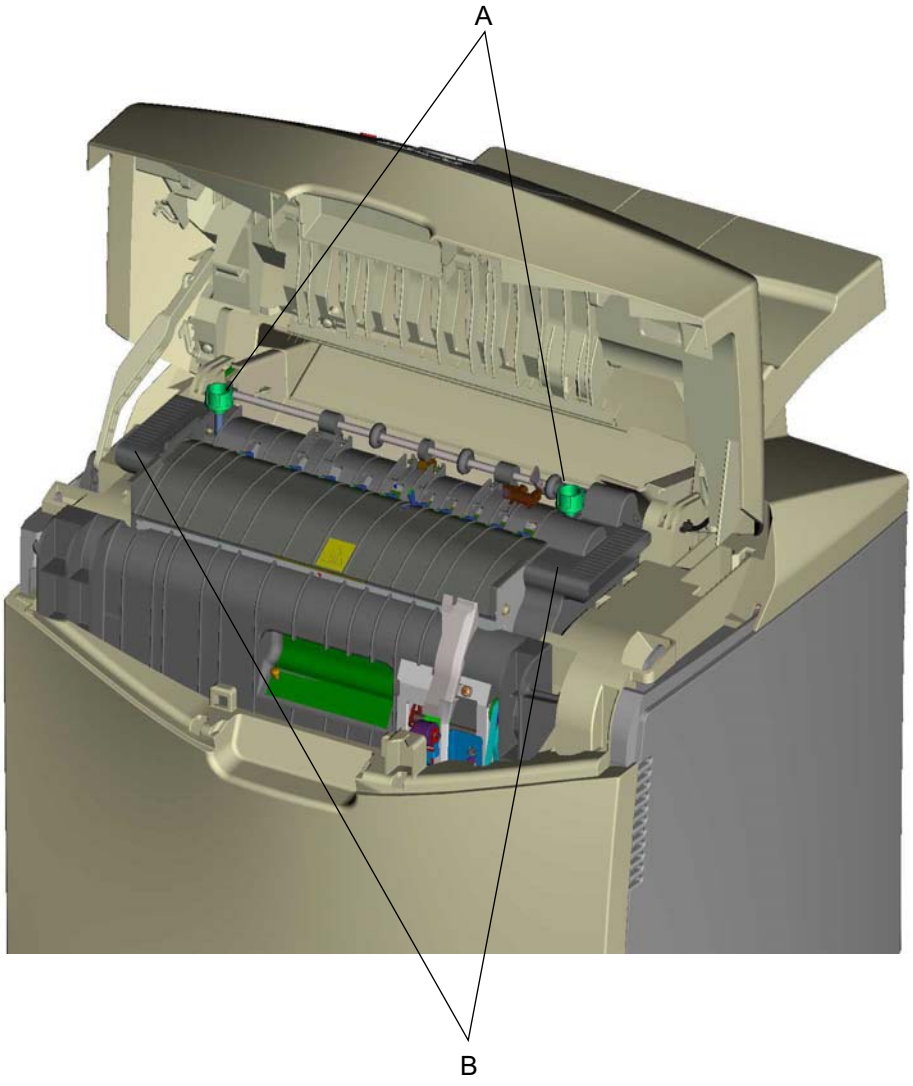
There are FRU/CRUs and supply items that will need to be removed prior to some of the removal procedures. The removal procedure will specify when the part must be removed.



Fuser removal

Warning: Fuser can be extremely hot. Use care when handling to avoid burns.

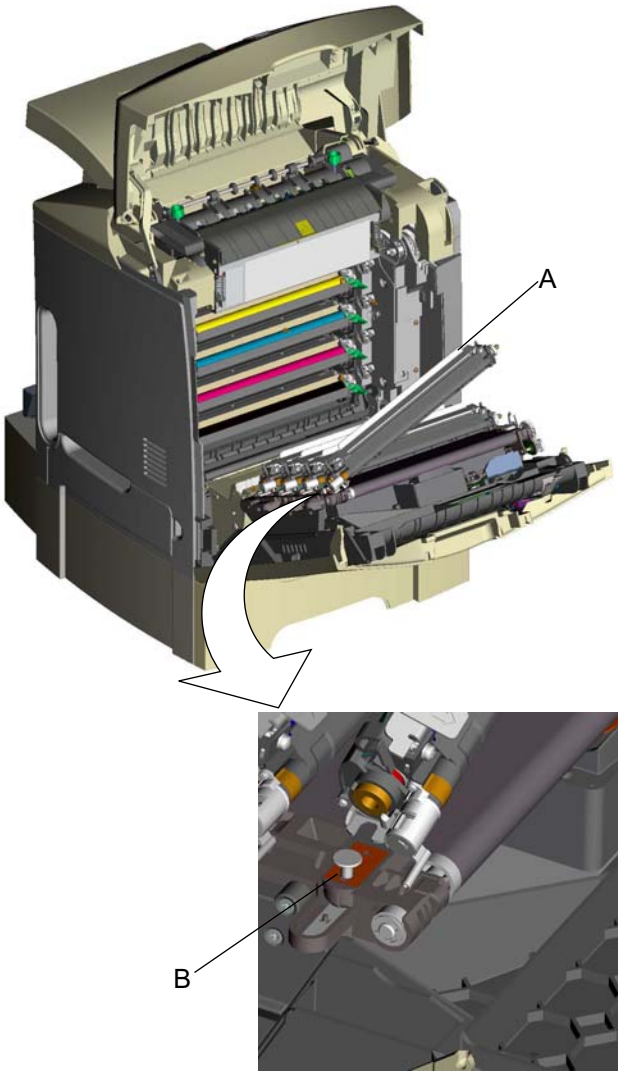
1. Turn off printer.
2. Open top access door.
3. Rotate fuser thumbscrew (A) counterclockwise until loosened.
4. Grasp handles (B), lift fuser straight up and away from printer.



Photoconductor unit removal

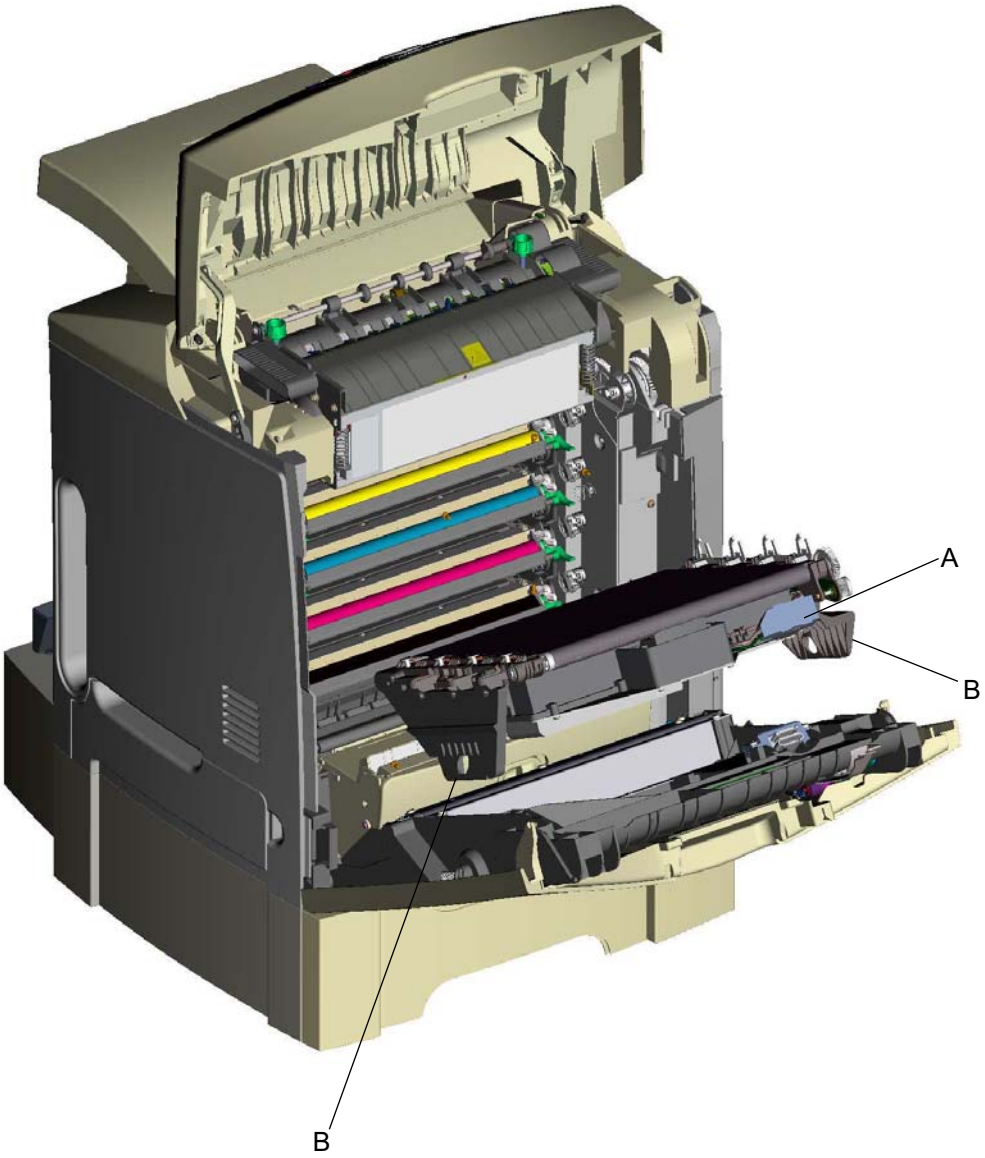
Warning: To avoid damaging the photoconductor drum, hold the photoconductor units by their handle and place the photoconductor units on a clean surface.

1. Open top access and front access doors.
2. Lift right end handle (A) of photoconductor unit, releasing from mount.
3. Lift unit up and away from left side of printer, ensuring left end of photoconductor is released from holding pin (B).



Transfer belt removal

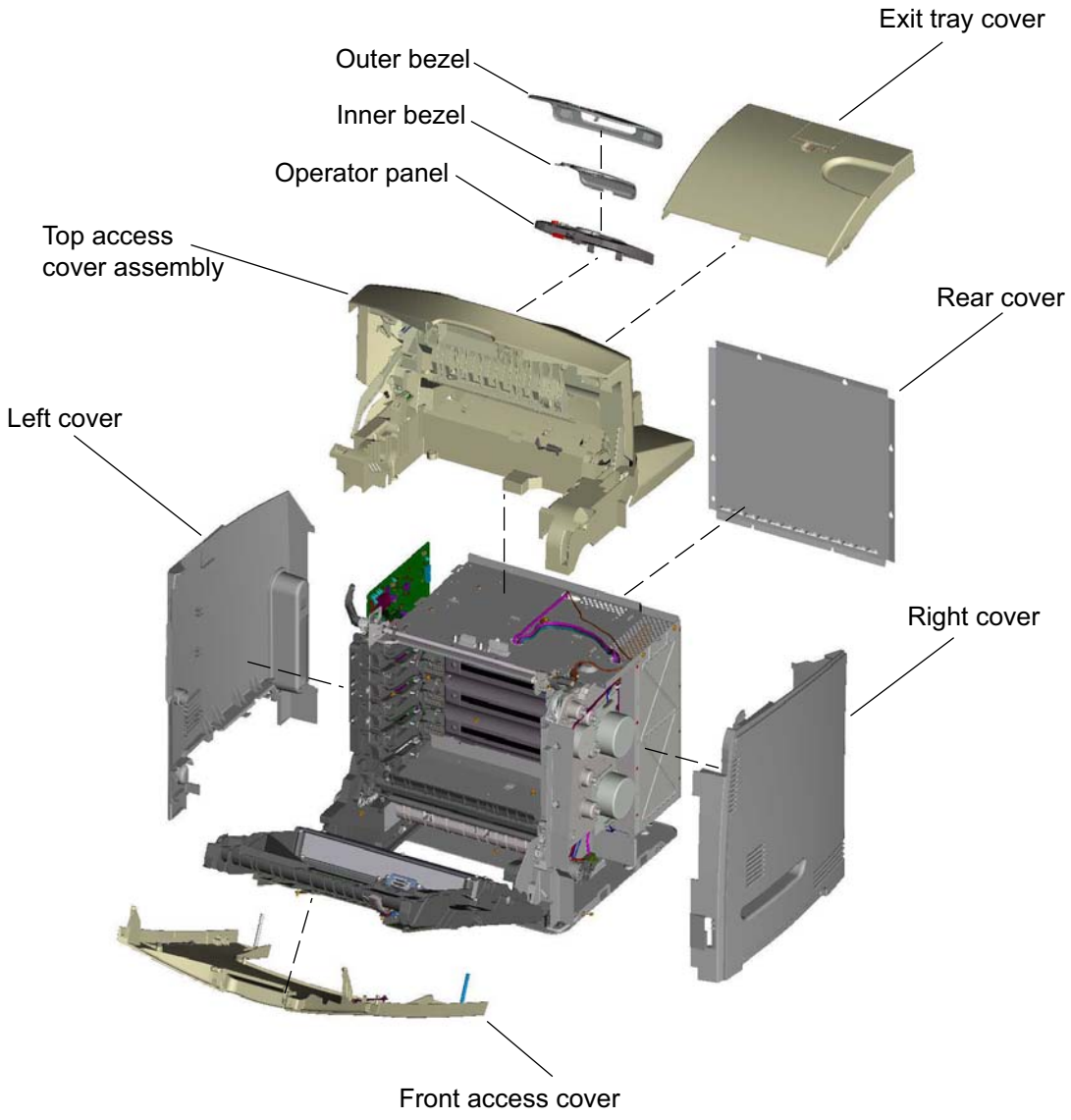
1. Remove all photoconductor units. See **"Photoconductor unit removal" on page 4-14**.
2. Disconnect connector (A) on top of transfer belt.
3. Pull out on transfer belt locking handles (B) until they release; lift belt up and away from printer.



Waste toner assembly removal

1. Depress release latch.
2. Swing front of waste toner away from printer and remove.

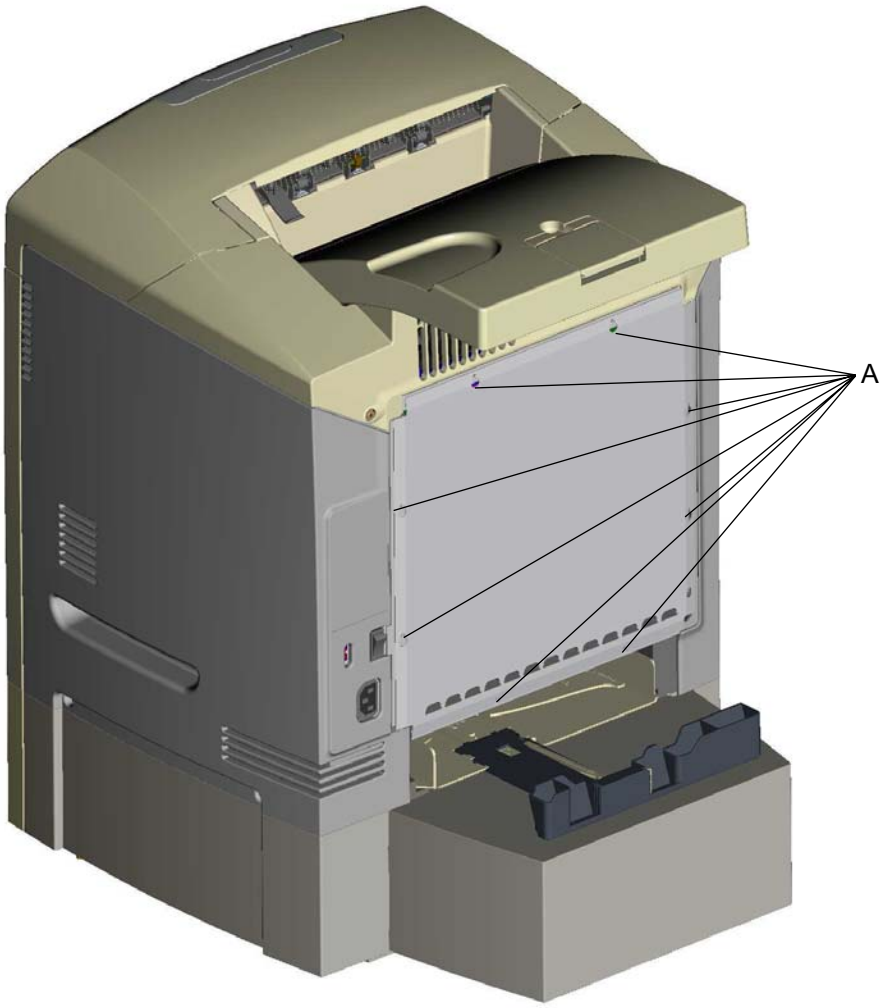
Cover removals



Exit tray cover removal

1. Grasp exit tray and lift away from printer.

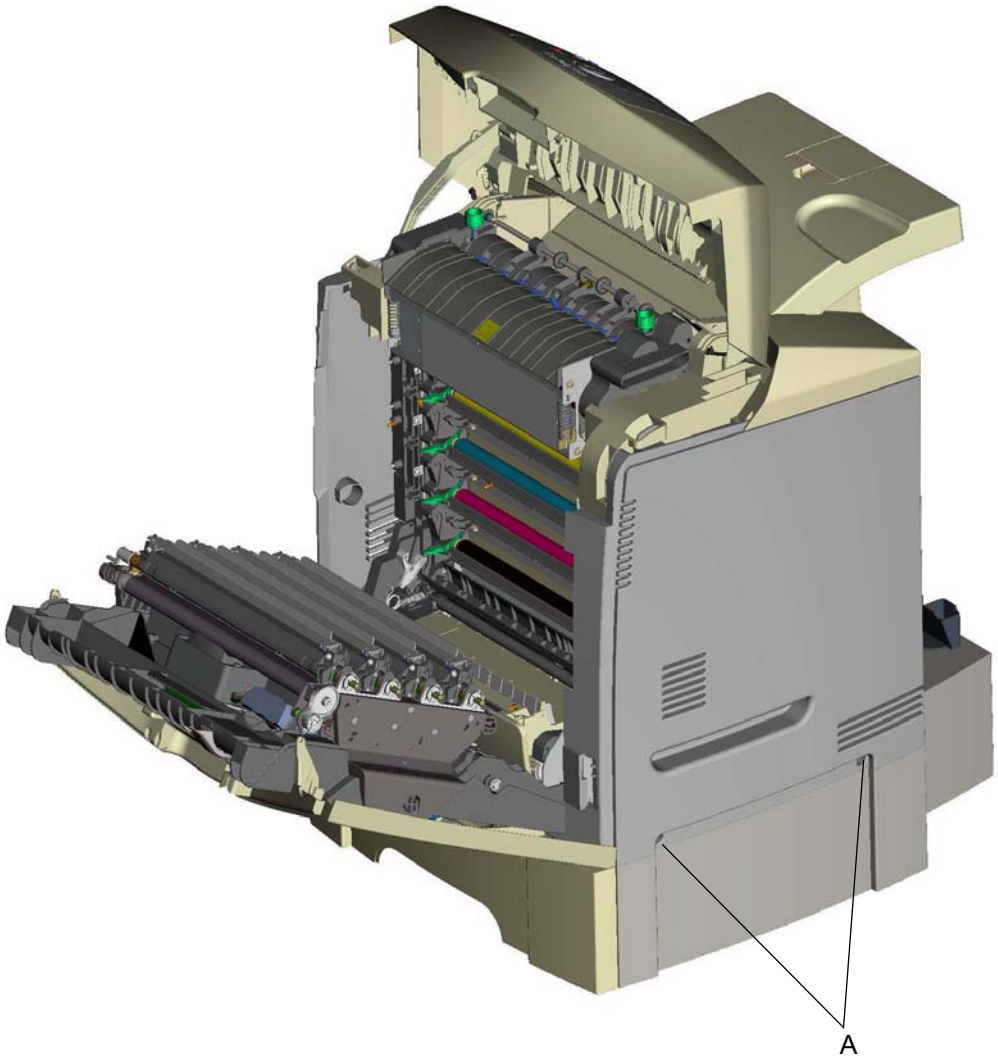
Rear cover removal



1. Loosen eight screws (A). Do not remove screws.
2. Lift up on rear cover and remove from back of printer.

Right cover removal

1. Open top access door.
2. Open front access door.
3. Ensure power cord is removed.
4. Remove two screws (A).
5. Lift cover and remove from right side of printer.

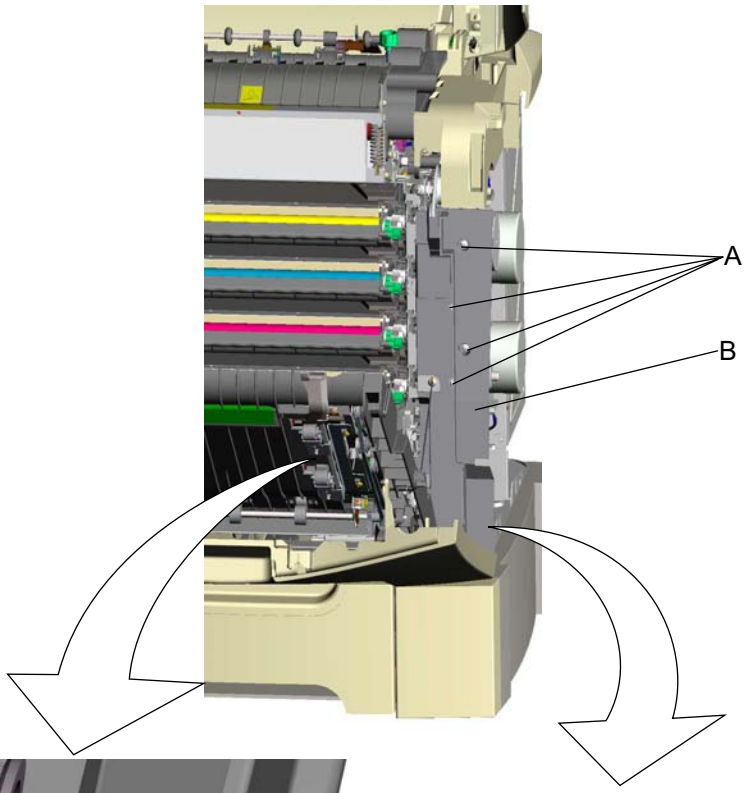


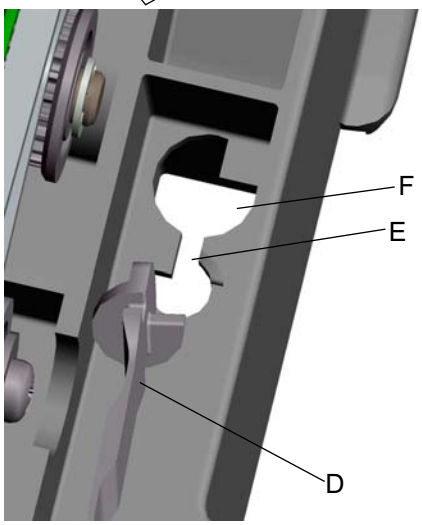
Front access cover assembly removal

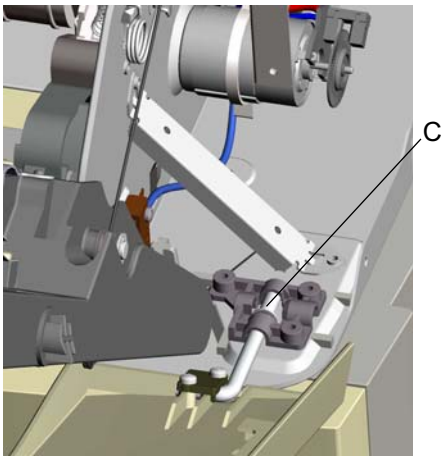
1. Remove 250-sheet tray.
2. Remove right cover. See **"Right cover removal" on page 4-18**.
3. Remove transport belt. See **"Transfer belt removal" on page 4-15**.

Note: In order to speed up the removal process, you can leave the photoconductor units on the transport belt when removing. However, follow all warnings in regards to care of the photoconductor units.

4. Remove four screws (A).







5. Remove gearbox shield (B). There is a locking tab on the back of the gearbox shield.

Warning: When removing gearbox shield, be careful not to damage 5V interlock switch arm.

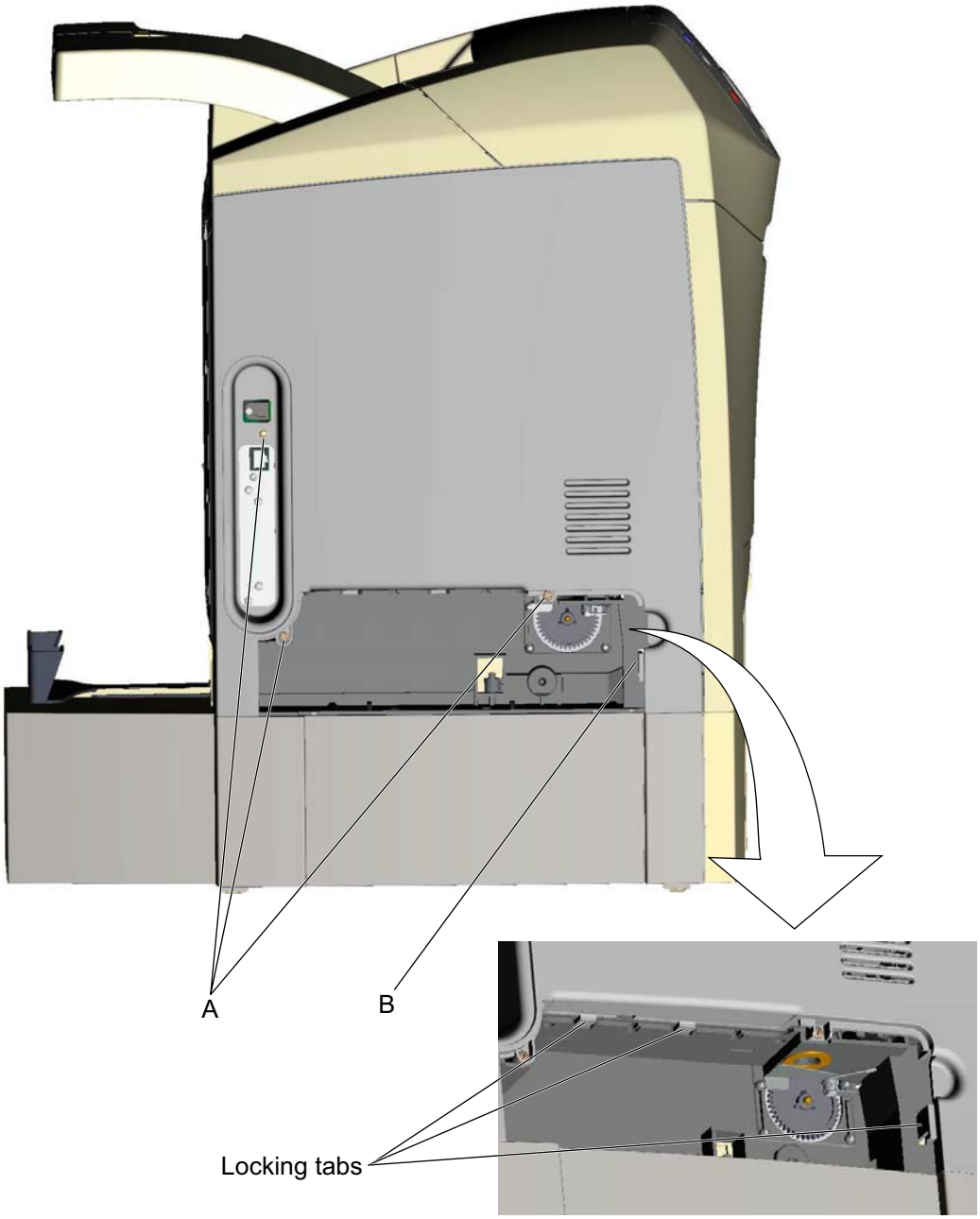
6. Remove e-clip (C). Repeat for left side.

Note: Do not remove screws that attach pivot pin to front access door cover.

7. Raise front access door to closed position.
8. Looking down at keyed end of restraint (D), twist the end clockwise, slide restraint upward through slit (E) and slip end of restraint (D) through keyed hole (F). Repeat for other side.
9. Slide front access cover assembly forward, away from printer.

Left cover removal

1. Remove waste toner assembly. See **"Waste toner assembly removal" on page 4-15**.
2. Open front access door.
3. Remove three screws (A).
4. Depress locking tab (B), press down on cover and slide bottom of cover away from printer. Be careful not to damage the two small locking tabs that are shown in the illustration..



Operator panel outer bezel removal

1. Using a flathead screwdriver or similar tool, disengage lock tabs (A) on upper left and upper right of outer bezel.

Note: Top portion of operator panel will disengage with outer bezel. Flex top of outer bezel to disengage operator panel.

2. Remove outer bezel with inner bezel attached.
3. When reinstalling or replacing outer bezel, insert bottom of bezel first, ensuring that outer bezel bottom portion fully seats.

Operator panel inner bezel removal

1. Remove outer bezel. See **"Operator panel outer bezel removal" on page 4-21**.
2. Press top of inner bezel to release inner bezel from outer bezel.

Operator panel assembly removal

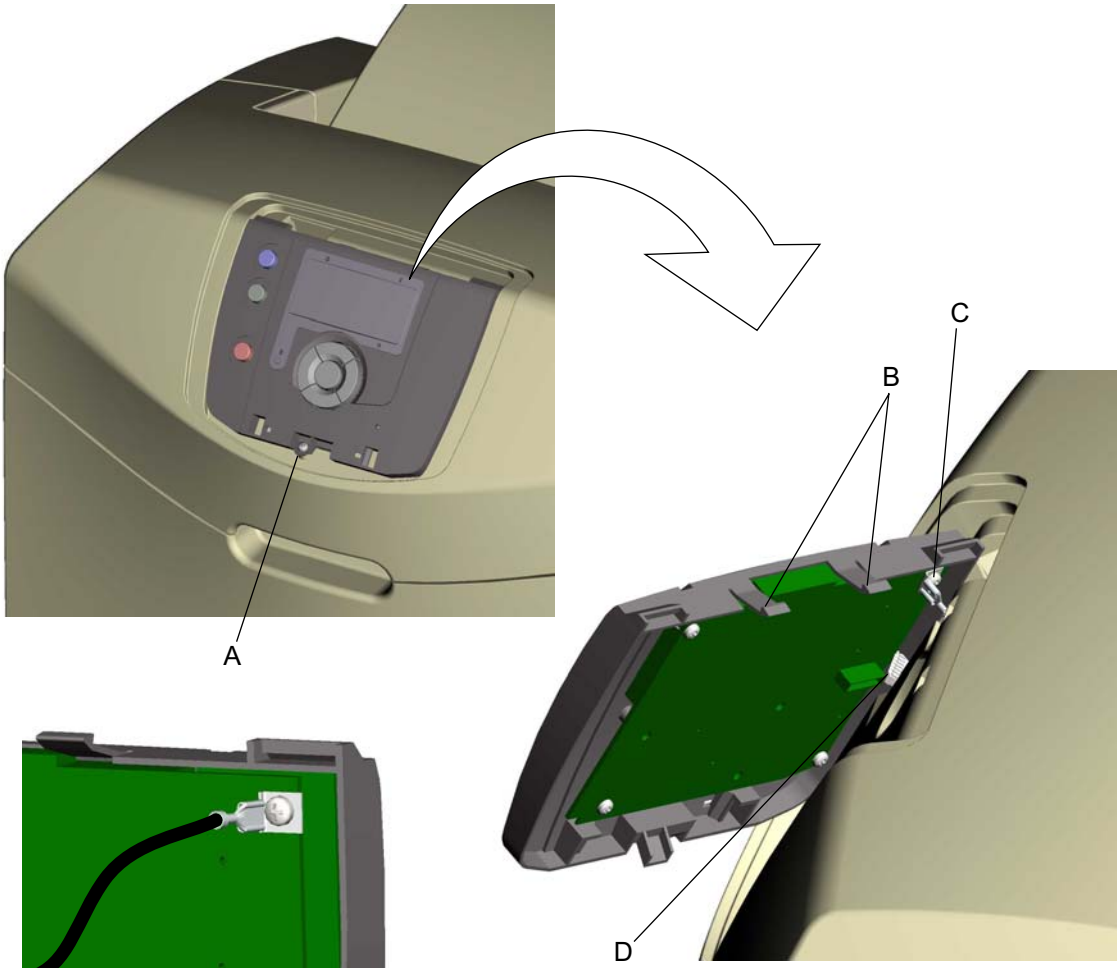
Warning: When replacing any one of the following components:

- **Operator panel assembly**
- **System card**
- **Smart chip card**

Only replace one component at a time. Replace the required component and perform a POR before replacing a second component listed above. If this procedure is not followed the printer will be rendered inoperable.

1. Remove outer bezel. See **"Operator panel outer bezel removal" on page 4-21**.
2. Remove screw (A).
3. Disengage upper locking tabs (B).
4. Remove screw (C) and ground cable.
5. Disconnect cable (D).

Note: When reinstalling, ensure ground cable is oriented as shown in the illustration or the operator panel will not mount.



Proper placement of ground clip

Top access cover assembly removal

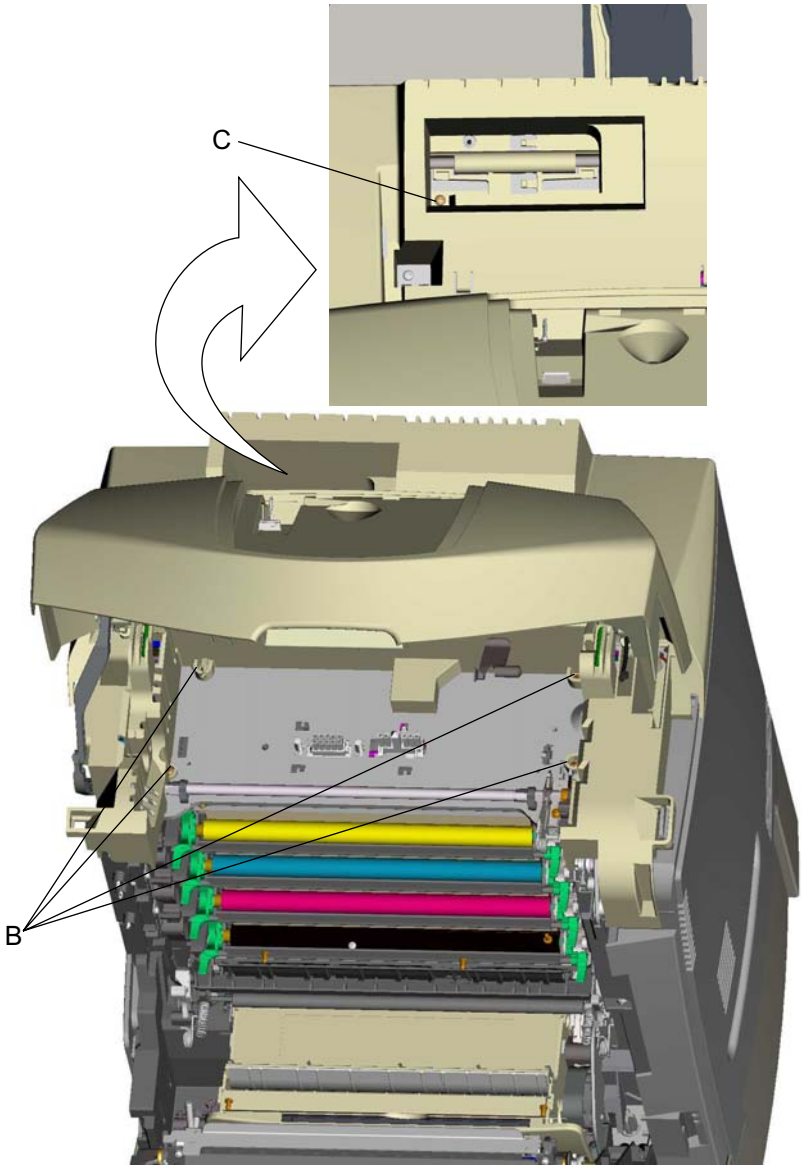
1. Remove operator panel. See **"Operator panel assembly removal" on page 4-22**.
2. Remove left cover. See **"Left cover removal" on page 4-20**.
3. Remove rear cover. See **"Rear cover removal" on page 4-17**.
4. Remove exit tray. See **"Exit tray cover removal" on page 4-16**.
5. If top access door is open, close it.

Warning: Ensure that top access door is closed before removing linkage screw. Failing to close the door leaves the linkage under load, which may result in the linkage screw being catapulted away from the printer when removed.

6. Remove linkage screw (A).

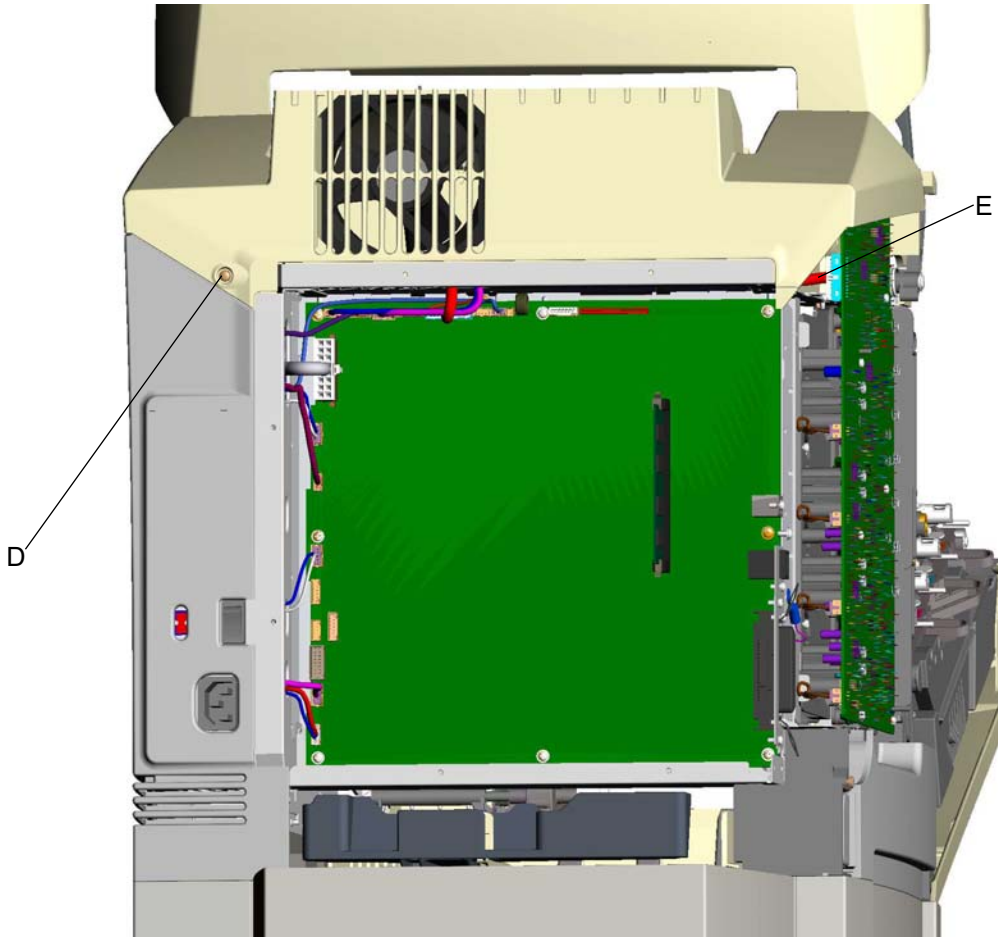
7. Remove fuser. See **"Fuser removal" on page 4-13**.

8. Remove four screws (B) exposed after removing fuser.



9. Remove screw (C) exposed after removing exit tray.

10. Remove screw (D) from rear.

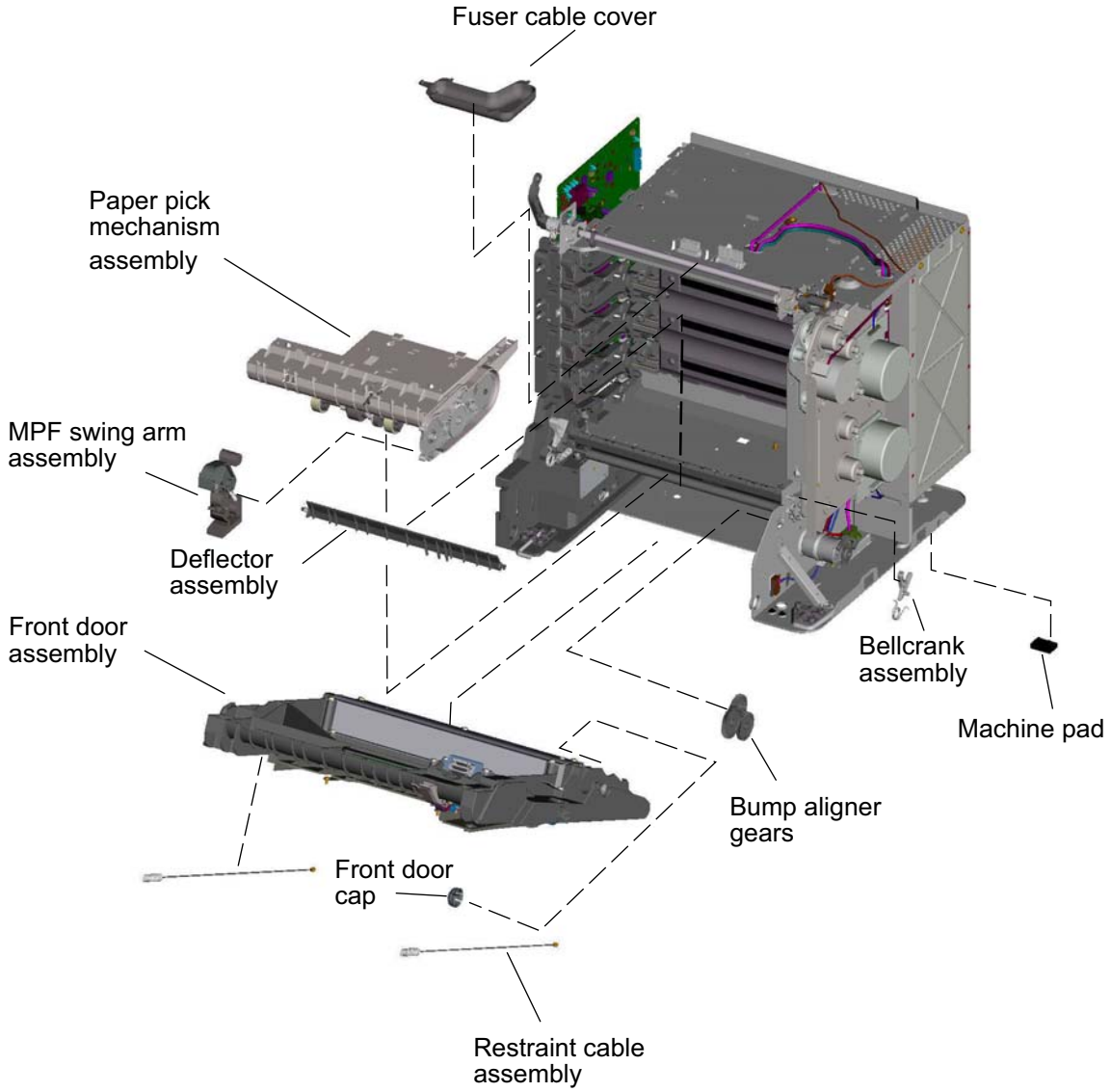


11. Disconnnect fan (JFAN1), operator panel (JOPP1), high volt power supply connector (JHVPS1) and bin-full sensor (JBIN1-network printers only) cables from system card.

12. Unplug connector (E) from CN1 on high volt power supply (HVPS).

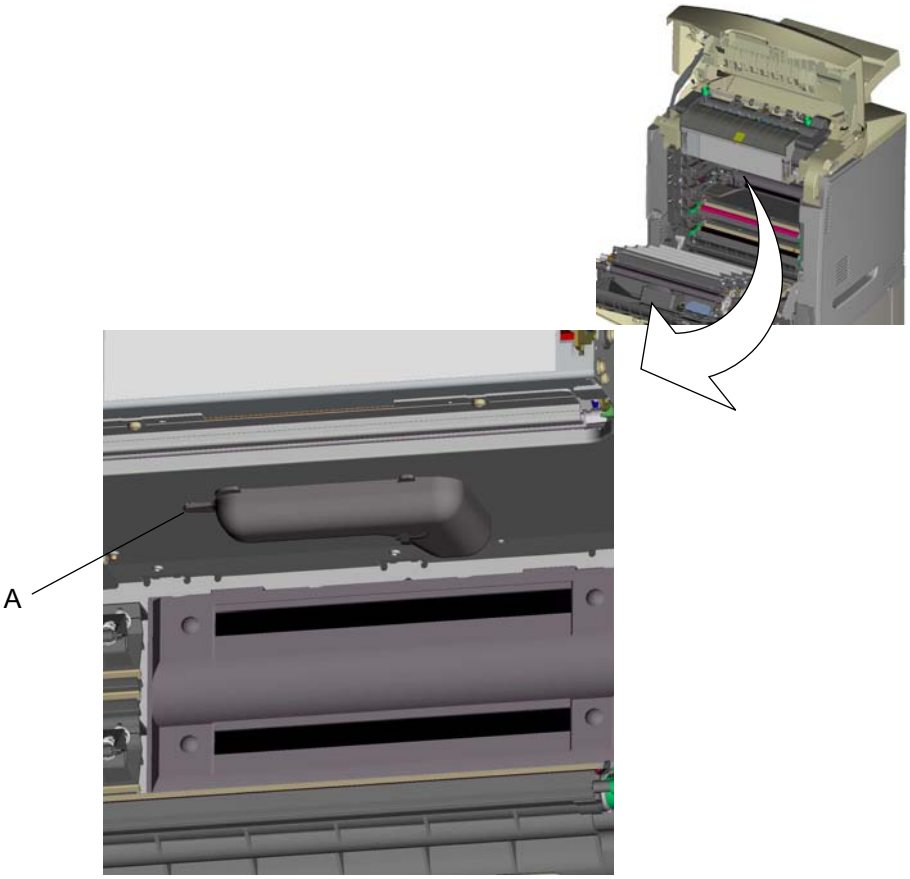
13. Lift and remove top access cover assembly.

Front removals



Fuser cable cover removal

1. Open top access cover
2. Open front access door
3. Remove yellow and cyan toner cartridges.
4. While releasing locking tab (A) on left side of cable cover, slide cable to left, lower and remove.

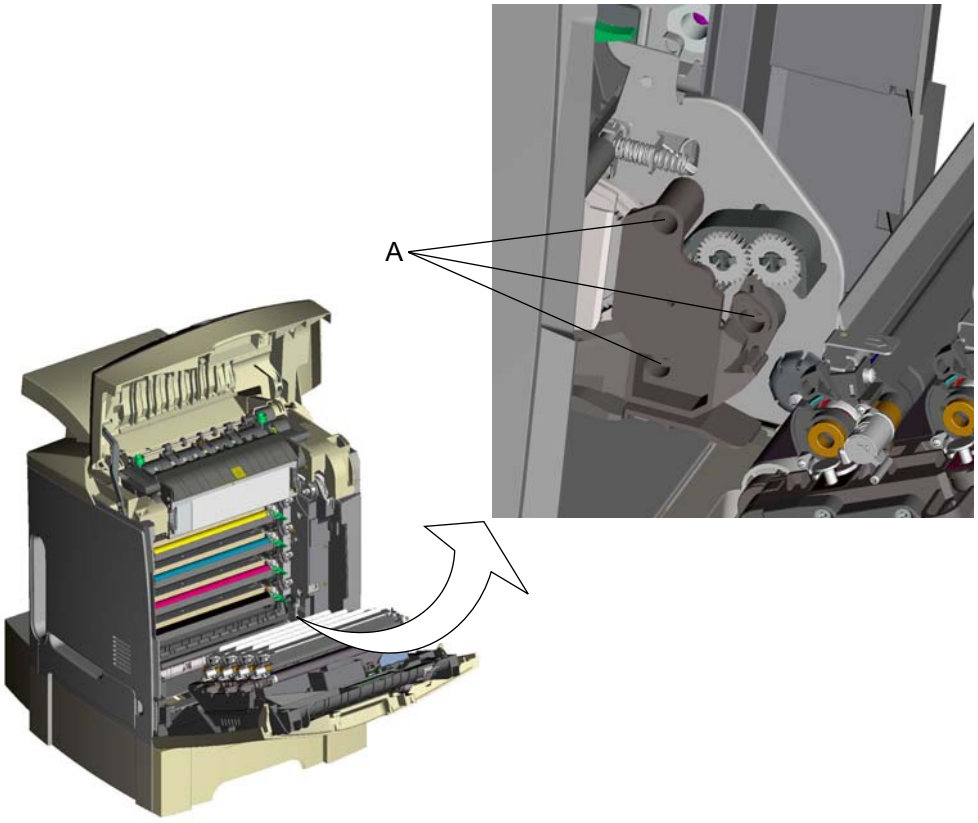


printer pad removal

1. Slide corner of printer containing damaged pad over corner of work area. Pull pad from bottom of printer.
2. When installing new pad, remove appropriate side cover that corresponds to damaged pad. It is necessary to remove the corresponding side cover to see if the pad fully seats in the installation holes.

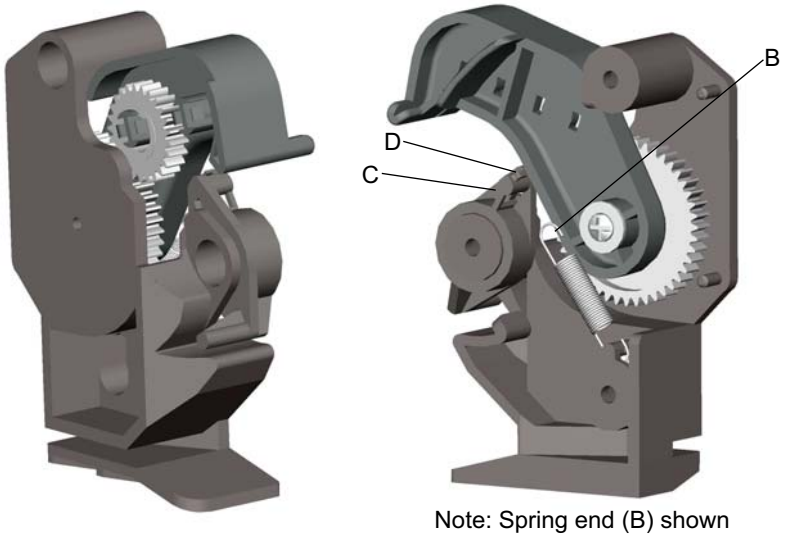
Multipurpose feeder (MPF) swing arm assembly removal

1. Remove 250-sheet paper tray.
2. Open top access door.
3. Open front access door.
4. Remove three mounting screws (A).



5. Remove swing arm assembly from frame.

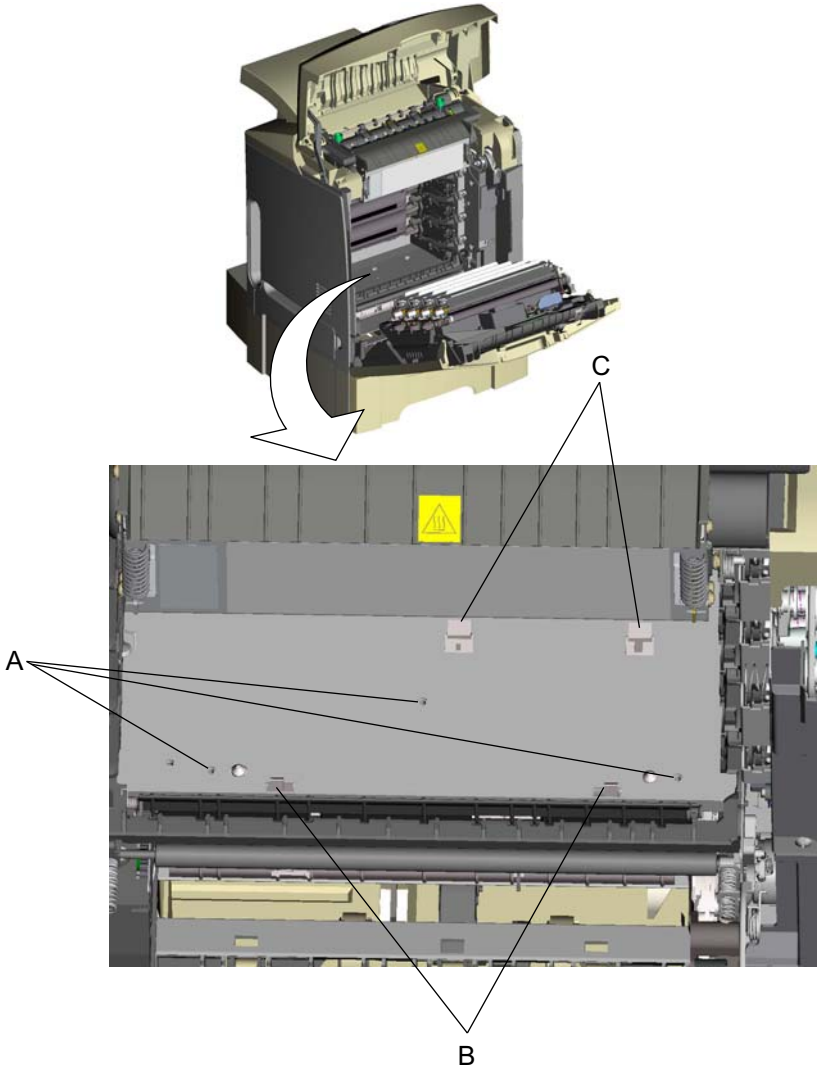
6. Refer to the following illustration if swing arm crank comes lose from swing arm assembly. Ensure that end of spring (B) is attached to swing arm crank as shown in the illustration. Spring end should slide under retaining tab (D) after installation.



Note: Spring end (B) shown disengaged from swing arm crank.

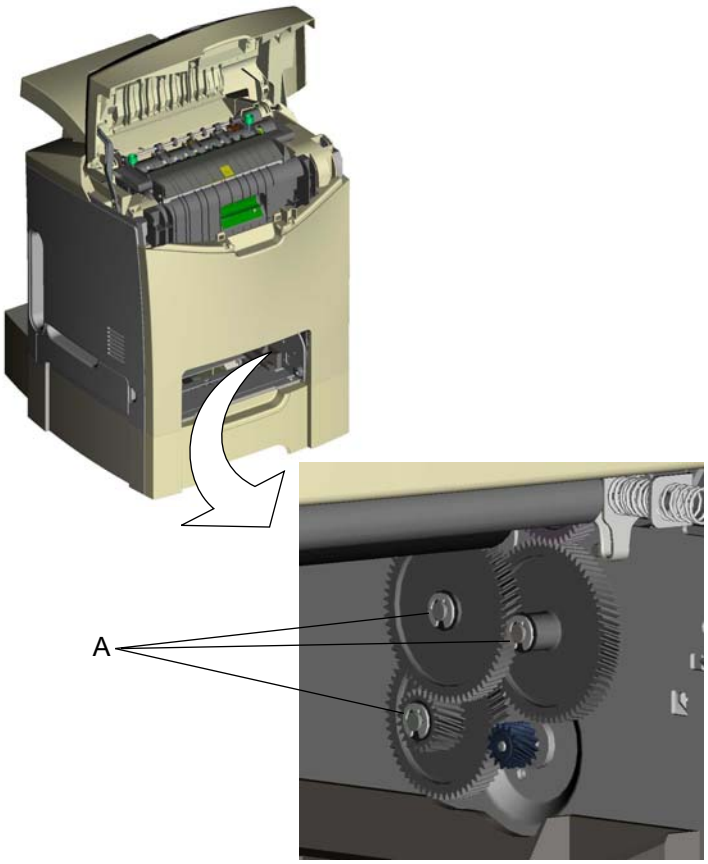
Paper pick mechanism assembly removal

1. Remove rear cover. See **"Rear cover removal" on page 4-17**.
2. Disconnect JTRAY1 and JTRAY2 connectors from system card.
3. Remove all toner cartridges.
4. If installed, remove MPF swing arm assembly. See **"Multipurpose feeder (MPF) swing arm assembly removal" on page 4-28**.
5. Remove three mounting screws (A).
6. Release front locking tabs (B).
7. Slide paper pick mechanism forward until rear locking tabs release (C).
8. Lower paper pick mechanism and remove through front of printer. Ensure that JTRAY1 and JTRAY2 connectors do not bind when passing through frame access hole.

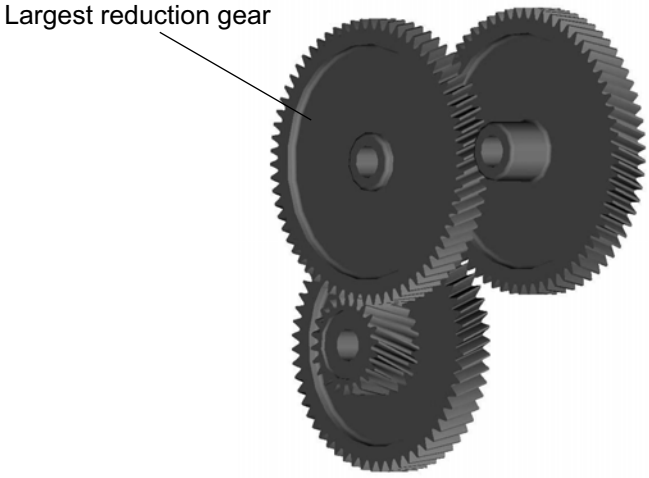


Bump aligner gear removal

1. Remove paper pick mechanism assembly. See **"Paper pick mechanism assembly removal" on page 4-30**.
2. Close front access door for better access to gears.
3. Remove three e-clips and washers (A).
4. Remove gears.
5. When reinstalling gears, apply a light coat of the packaged grease.

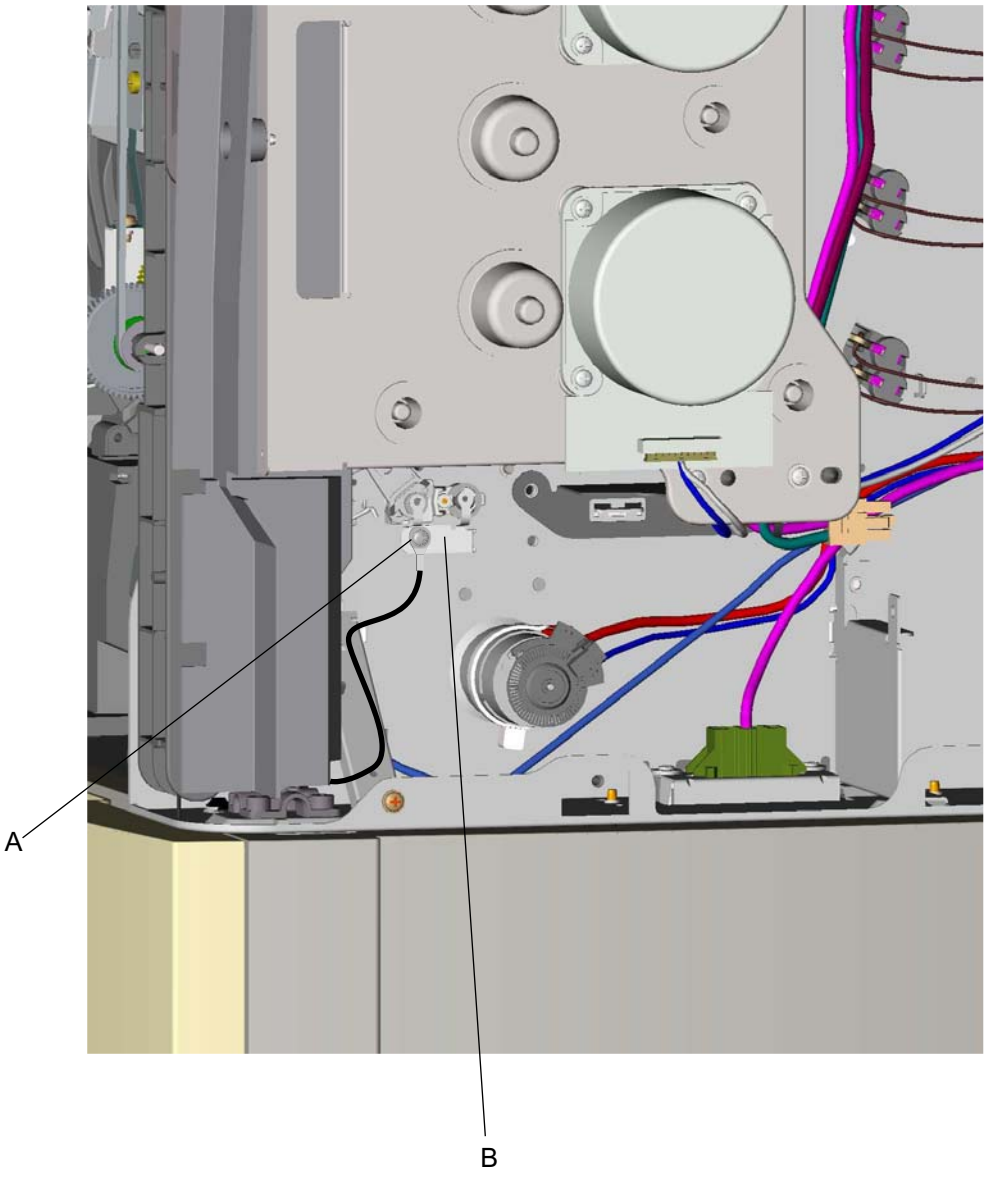


Note: The following illustration shows proper orientation of gears for installation. Two gears are reduction gears with the largest of the two located in the middle, on the top.



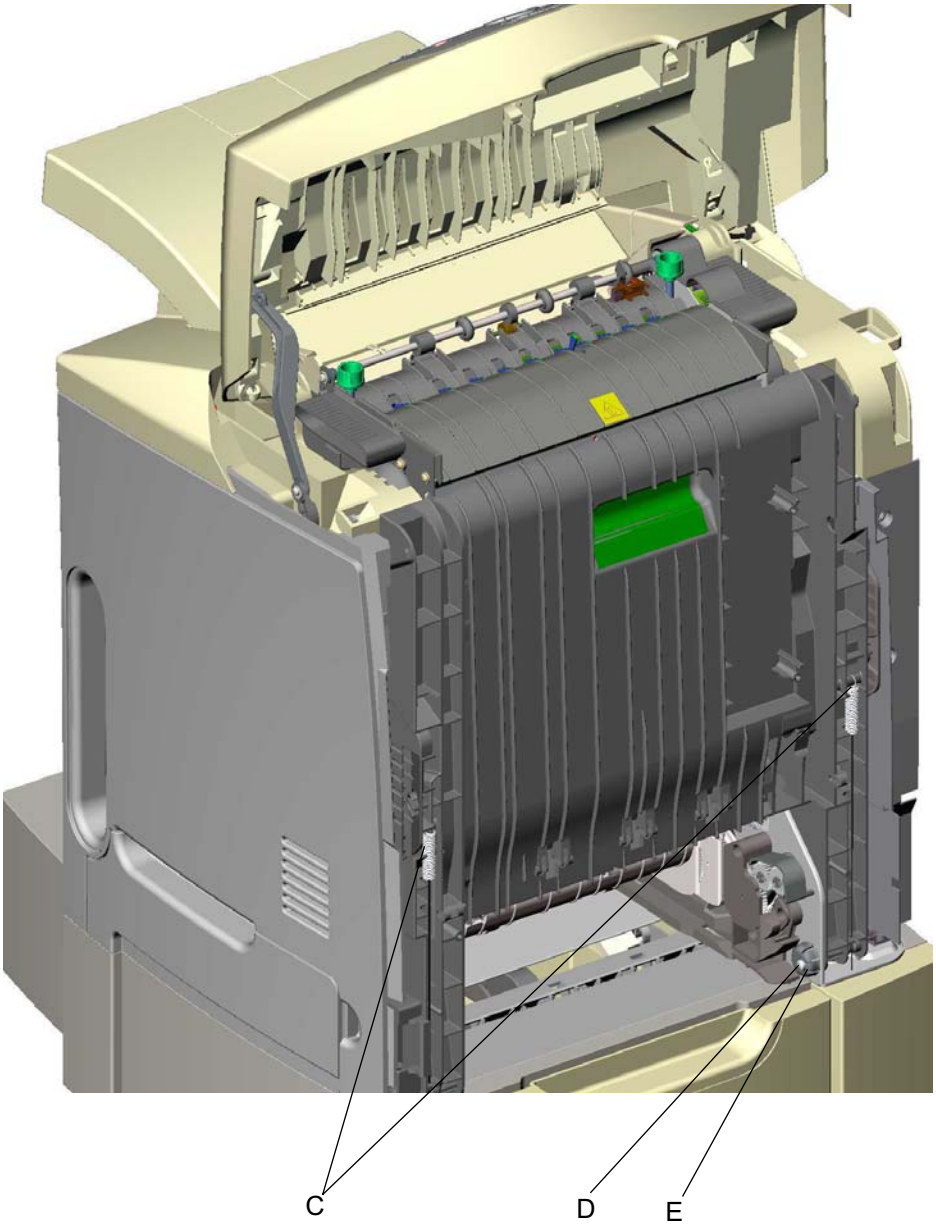
Front door assembly removal

1. Remove front access cover assembly. See **"Front access cover assembly removal" on page 4-19**.
2. Remove rear cover. See **"Rear cover removal" on page 4-17**.
3. Disconnect JTRANS1 cable from system card.
4. Disconnect cable (A) from right side of frame. Be careful not to lose grounding clip (B).



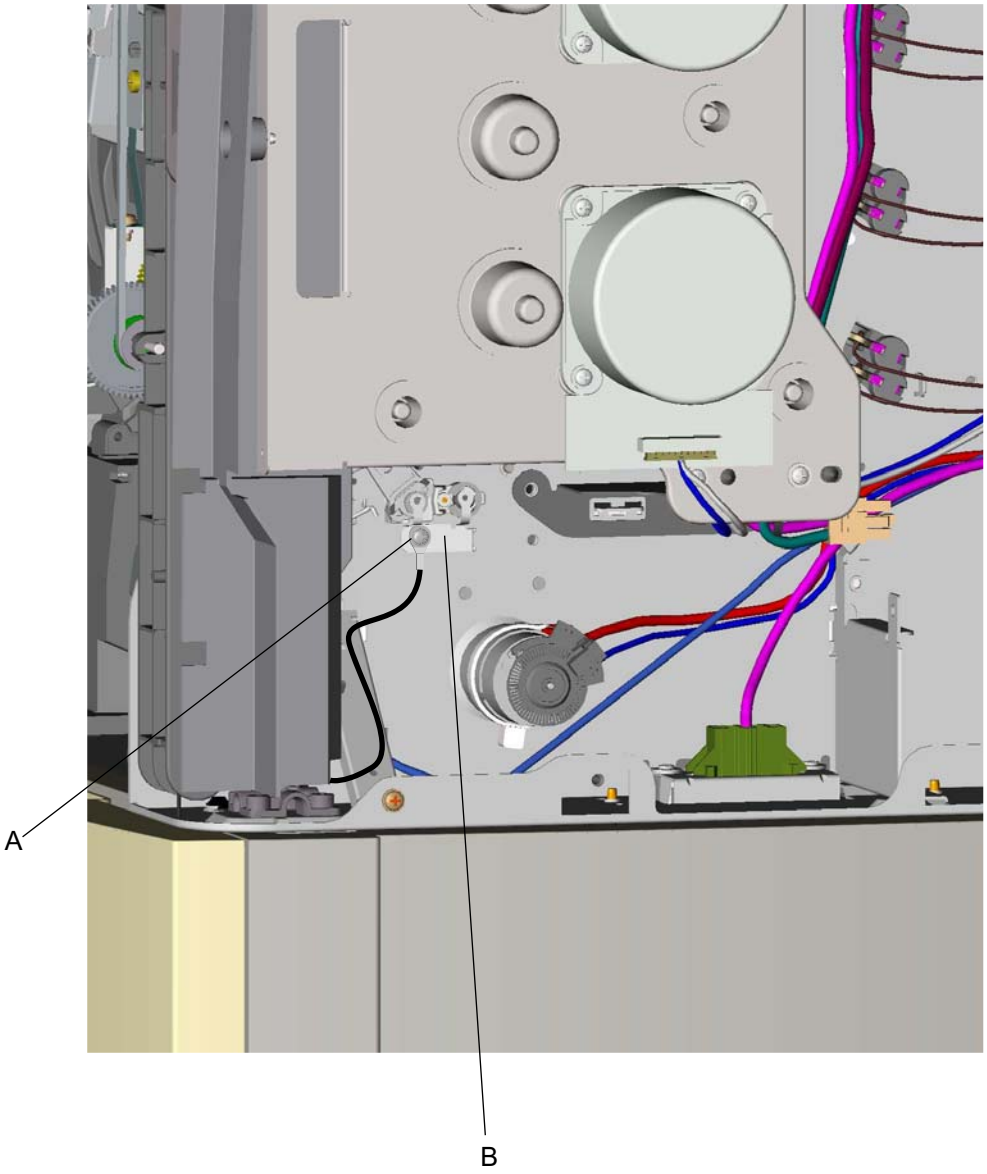
5. Close front door assembly.

6. Release left and right front door assembly cable restraint springs (C) from front door assembly. Unwrap cable restraints.
7. Remove mounting screw (D) and cap (E).
8. Open front door assembly, slide to the right, and remove.
9. See **"Front door assembly restraint cable removal" on page 4-36** for proper installation of cable restraints.



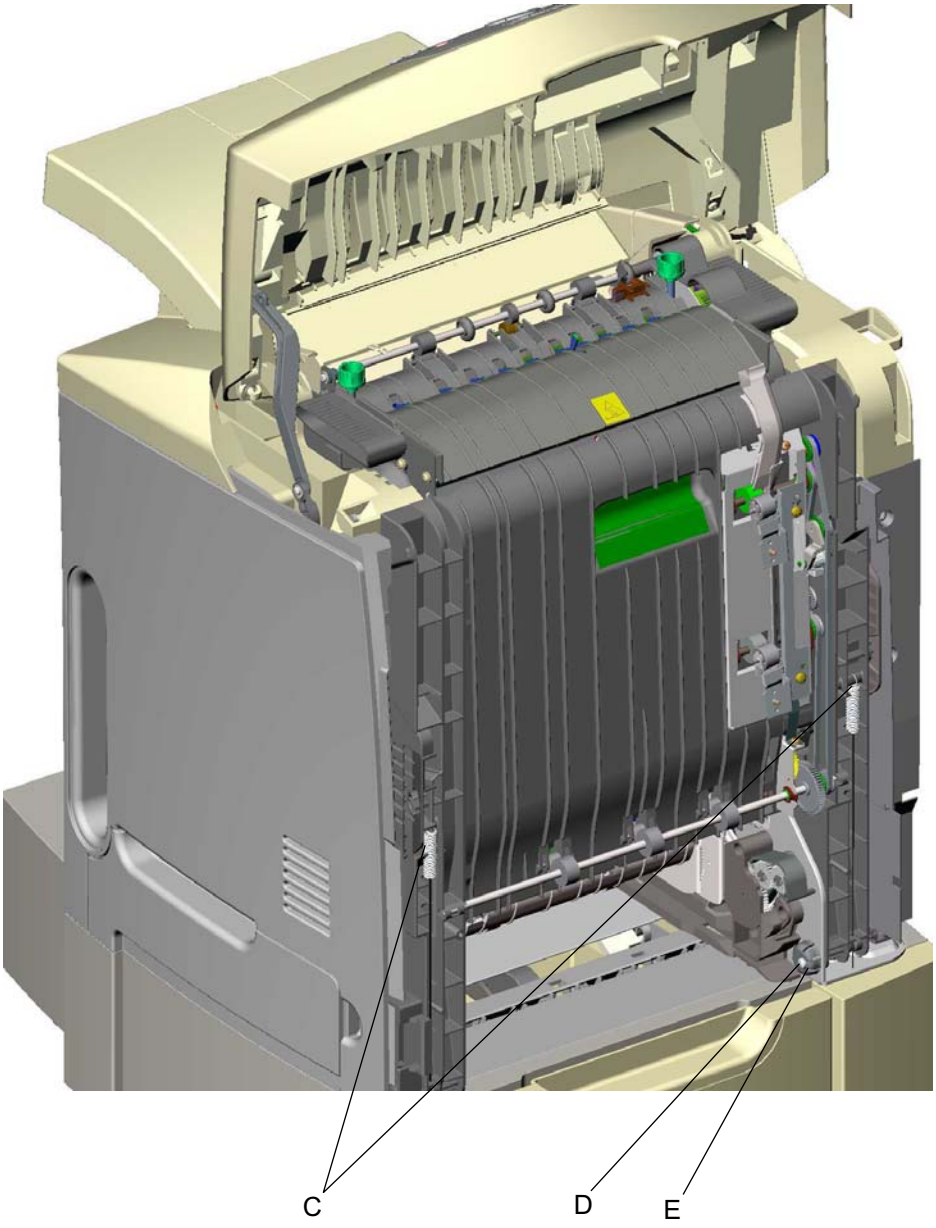
Duplex front door assembly removal

1. Remove low volt power supply. See **“Low volt power supply (LVPS) removal” on page 4-38**.
2. Disconnect JDUPLX1 and JTRANS1 cable from system card.
3. Disconnect cable (A) from right side of frame. Be careful not to lose grounding clip (B).



4. Remove front access cover assembly. See **“Front access cover assembly removal” on page 4-19**.
5. Close duplex front door assembly.

6. Release left and right front door assembly cable restraint springs (C) from duplex front door assembly. Unwrap cable restraints.

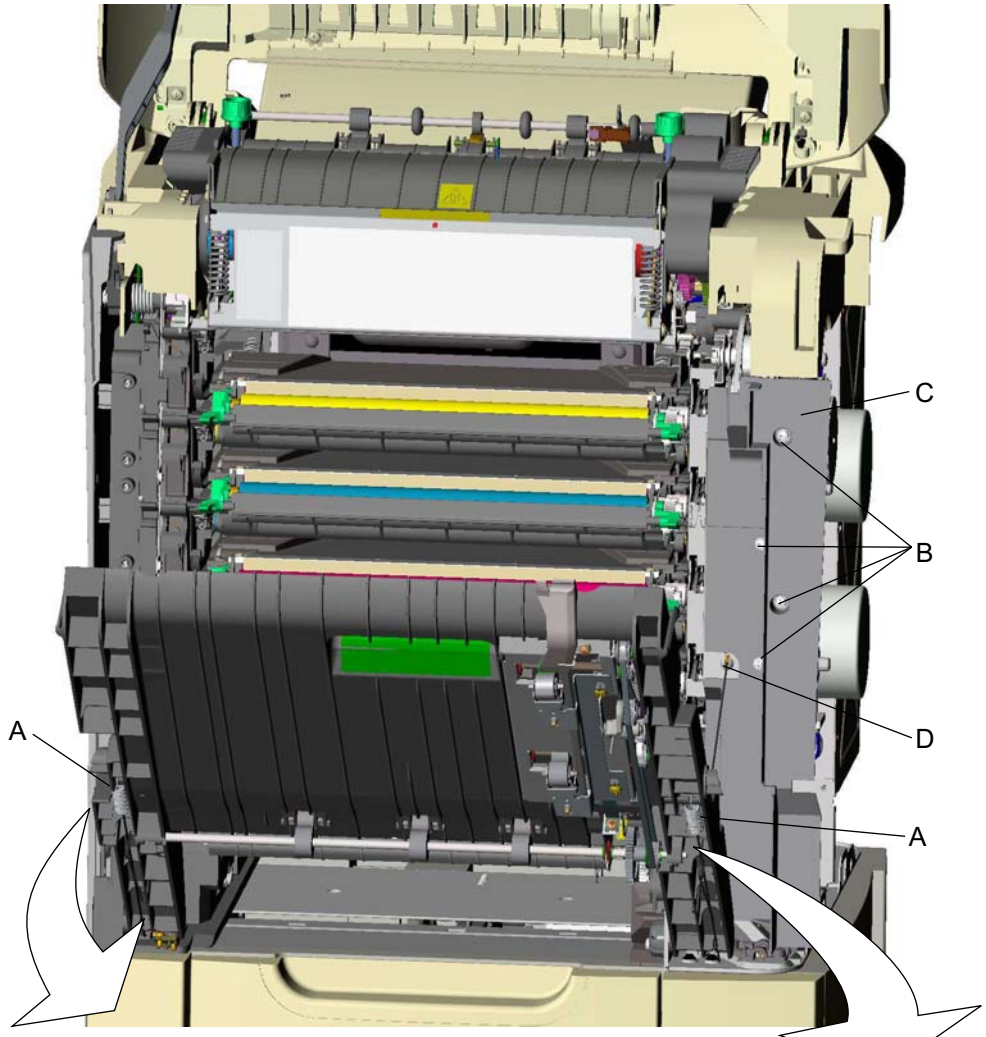


7. Remove mounting screw(D) and cap (E).
8. Open duplex front door assembly, slide to the right, and remove.
9. See **"Front door assembly restraint cable removal" on page 4-36** for proper installation of cable restraints.

Front door assembly restraint cable removal

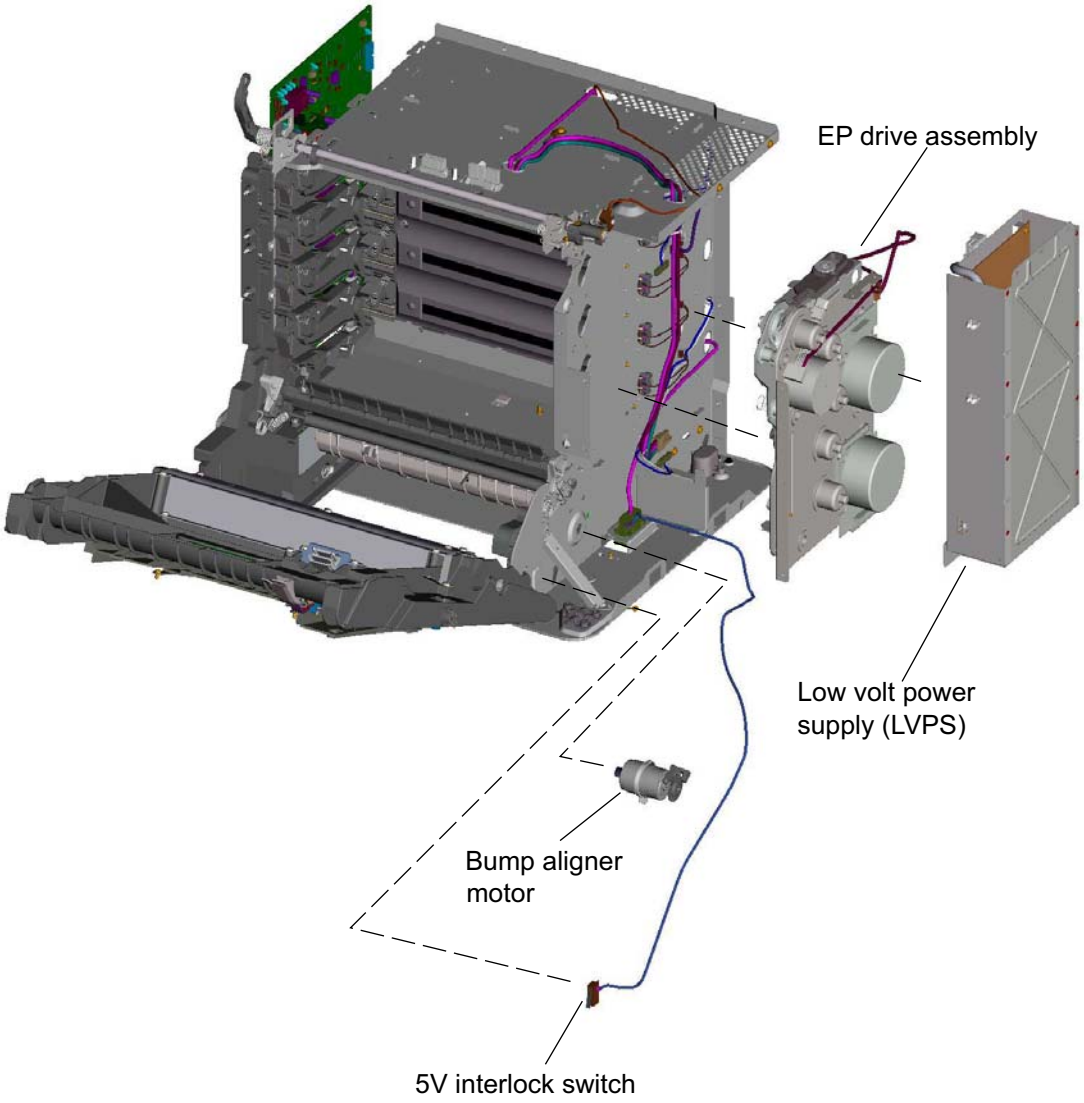
1. Remove front access cover assembly. See **"Front access cover assembly removal" on page 4-19**.
2. For either right or left, release cable spring (A) from front door assembly.
3. For right cable, remove four screws (B) and gearbox/switch shield (C). There is a locking tab on the back of the gearbox shield.
4. For left and right cables, remove end of cable (D) from frame.

Note: The shortest cable installs on the right side of the printer.



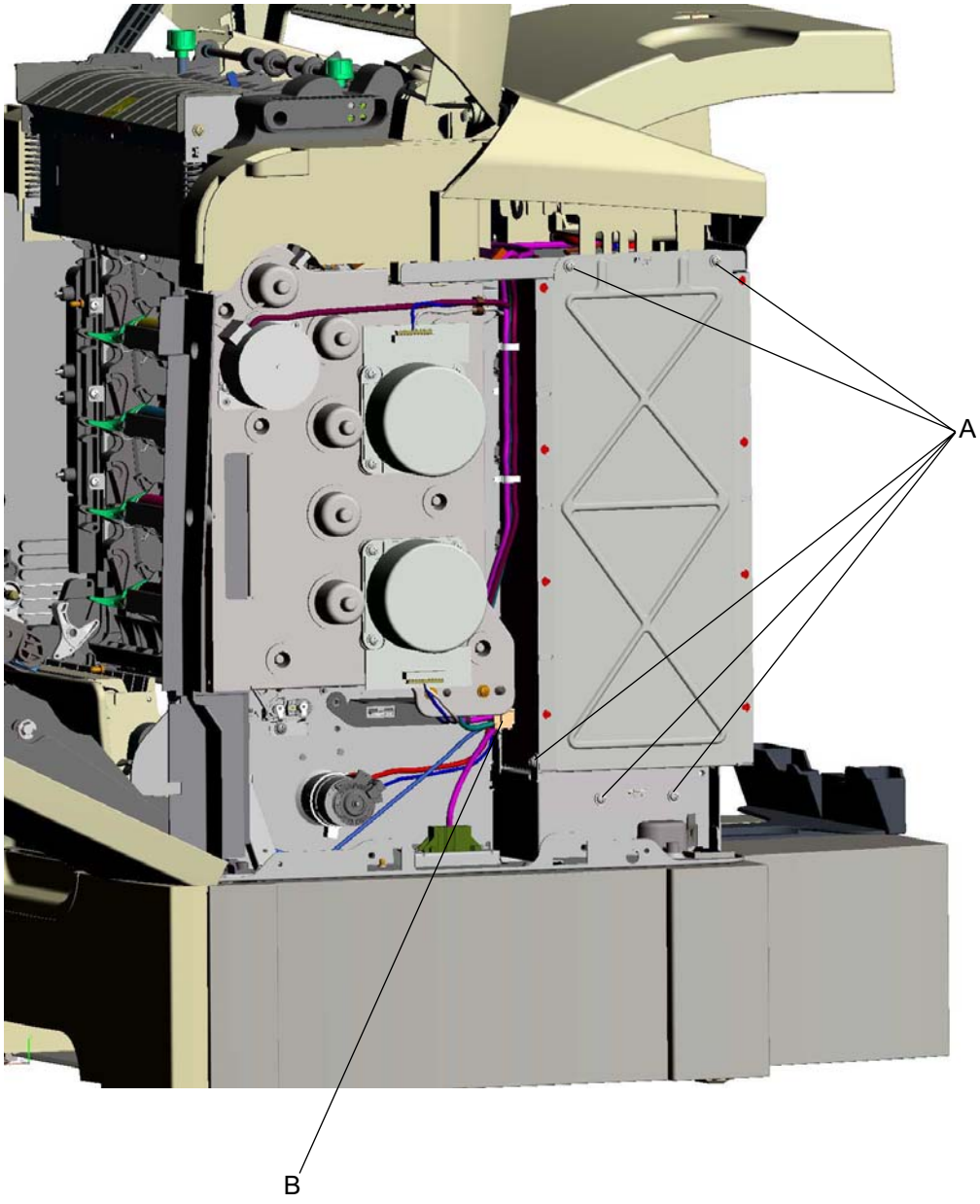
Note: Enlarged views shown without door for clarity. Views show proper winding of cable around left and right pulleys. ***Ensure you double-wrap the cable.***

Right side removals

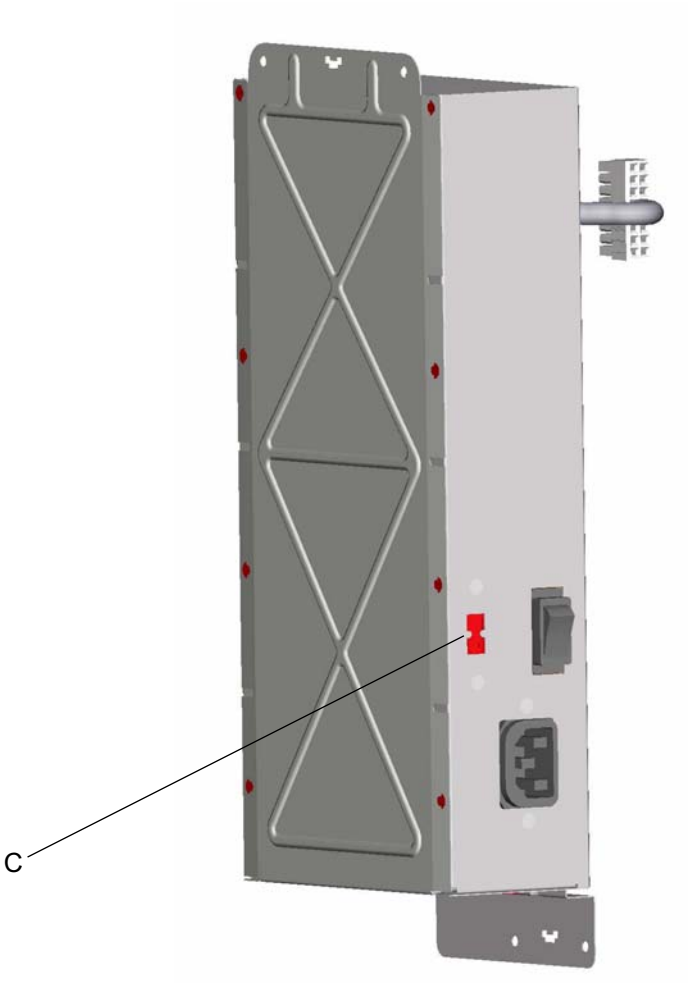


Low volt power supply (LVPS) removal

1. Remove right side cover. See **"Right cover removal" on page 4-18**.
2. Remove rear cover. See **"Rear cover removal" on page 4-17**.
3. Unplug JLVPS1 connector from system card.
4. Remove five LVPS mounting screws (A).
5. Disconnect cable from LVPS (B).
6. Remove cable from cable guide and remove LVPS.

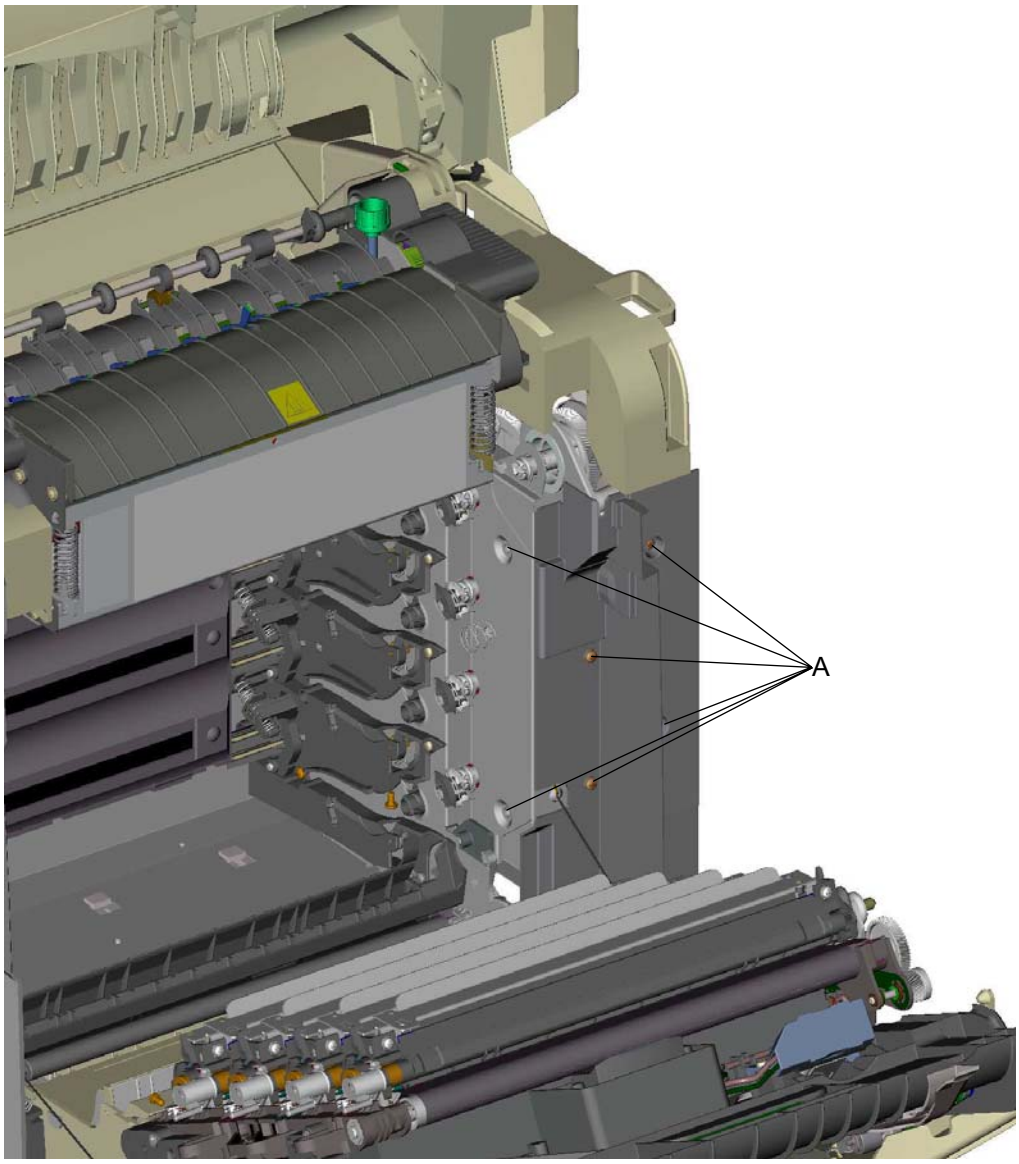


7. When installing new LVPS, ensure voltage switch (C) is set for proper value (115 or 230 V), depending on the country.

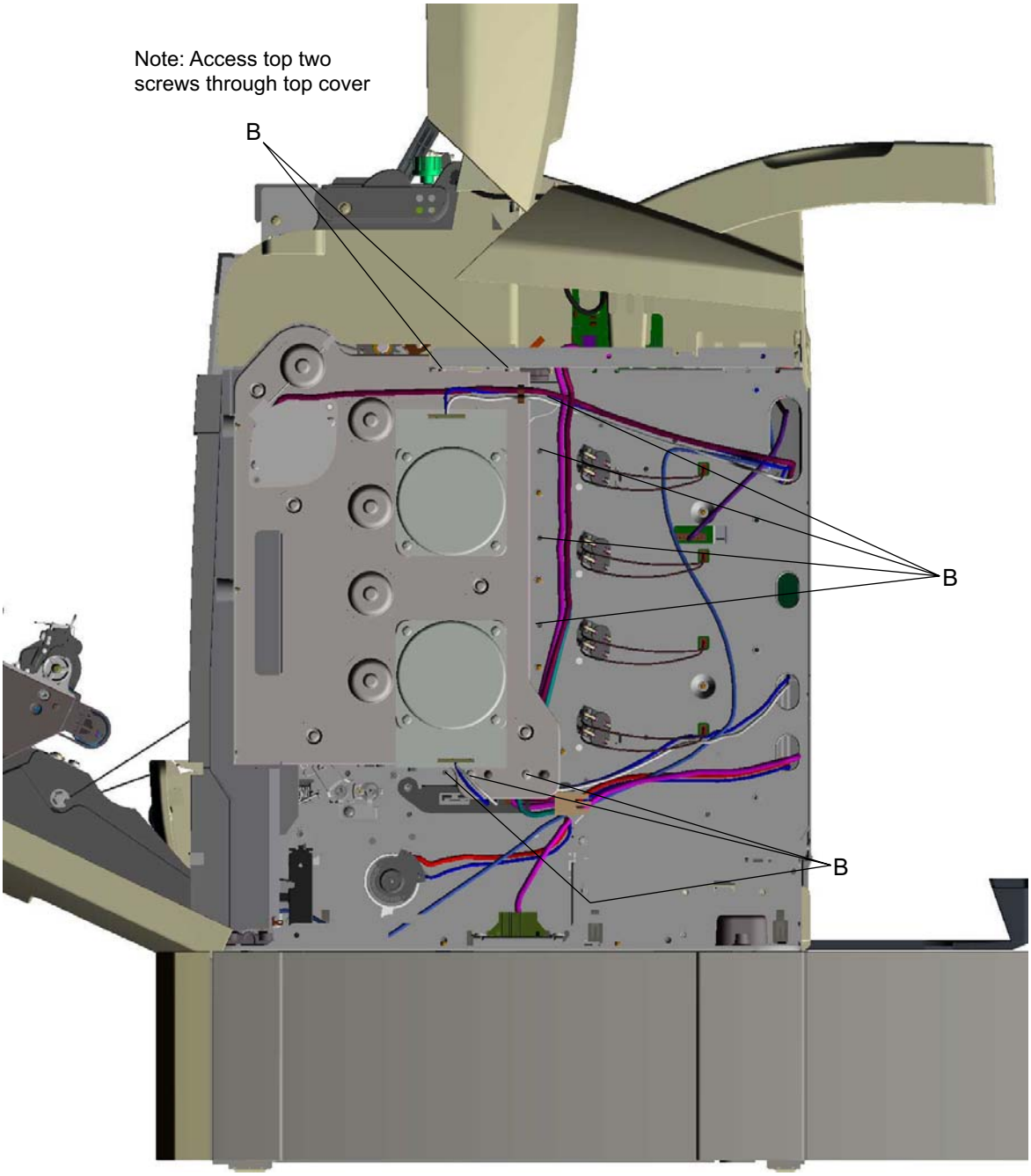


Electrophotographic Process (EP) drive assembly removal

1. Remove low volt power supply. See **"Low volt power supply (LVPS) removal" on page 4-38**.
2. Open top access door.
3. Open front access door.
4. Remove all toner cartridges.
5. Disconnect JCART1, JCART2, and JTRANS2 connectors from system card.
6. Remove six inner screws (A).



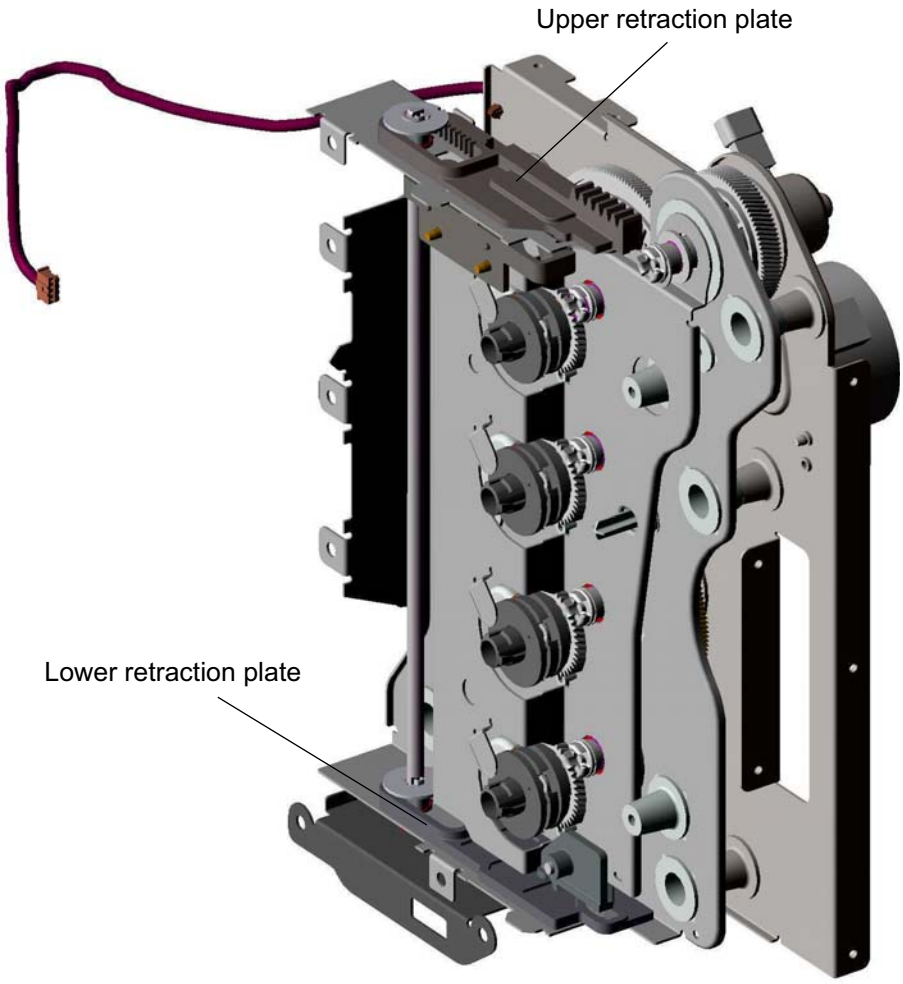
7. Remove nine outer screws (B).



8. Remove EP drive assembly from printer.

Note: Ensure that top access door is open and EP drive is retracted when installing new EP drive assembly.

EP drive shown retracted



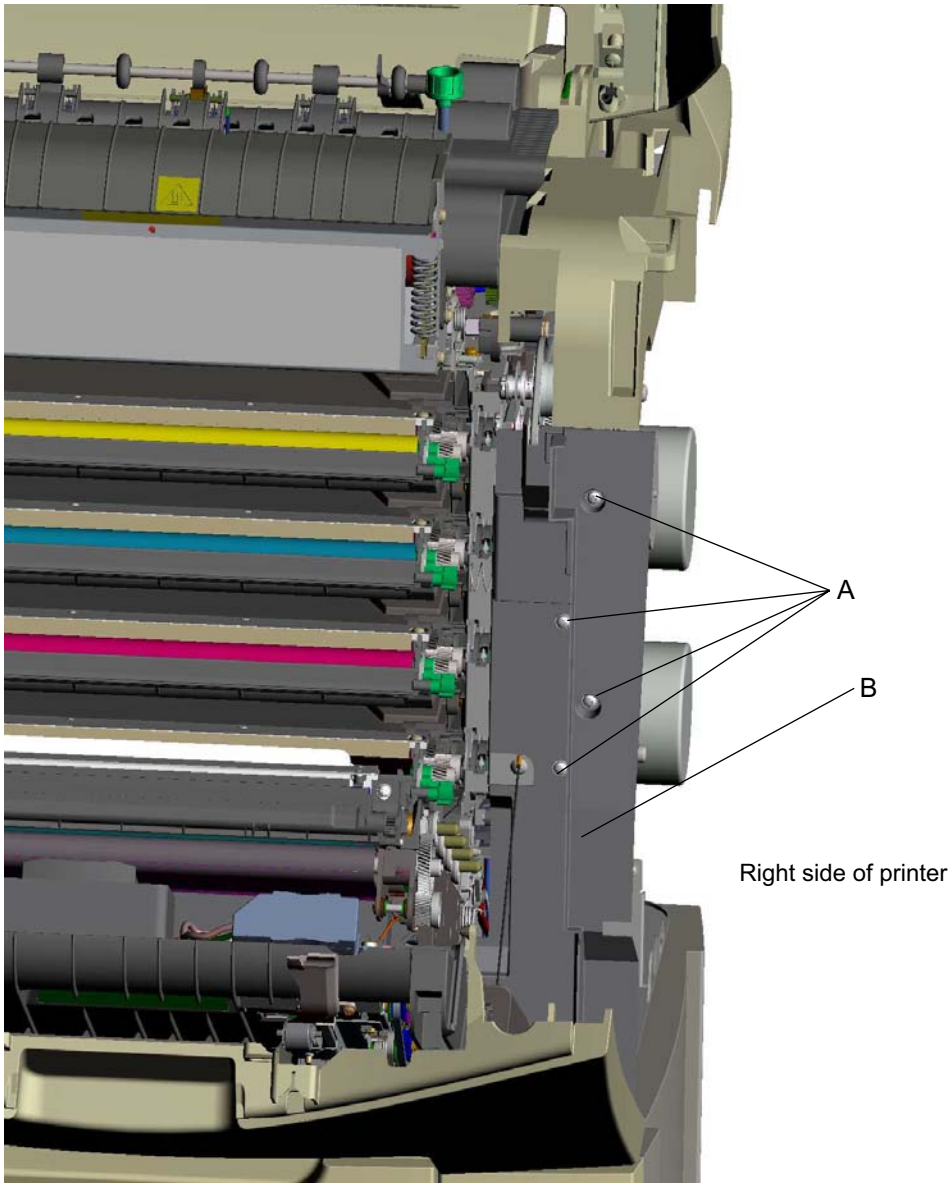
Note: When retracted, upper and lower retraction plates will be fully forward and EP drive assembly will disengage from developers. If not, slide upper retraction plate forward until EP drive retracts.

Front access door 5V interlock switch removal

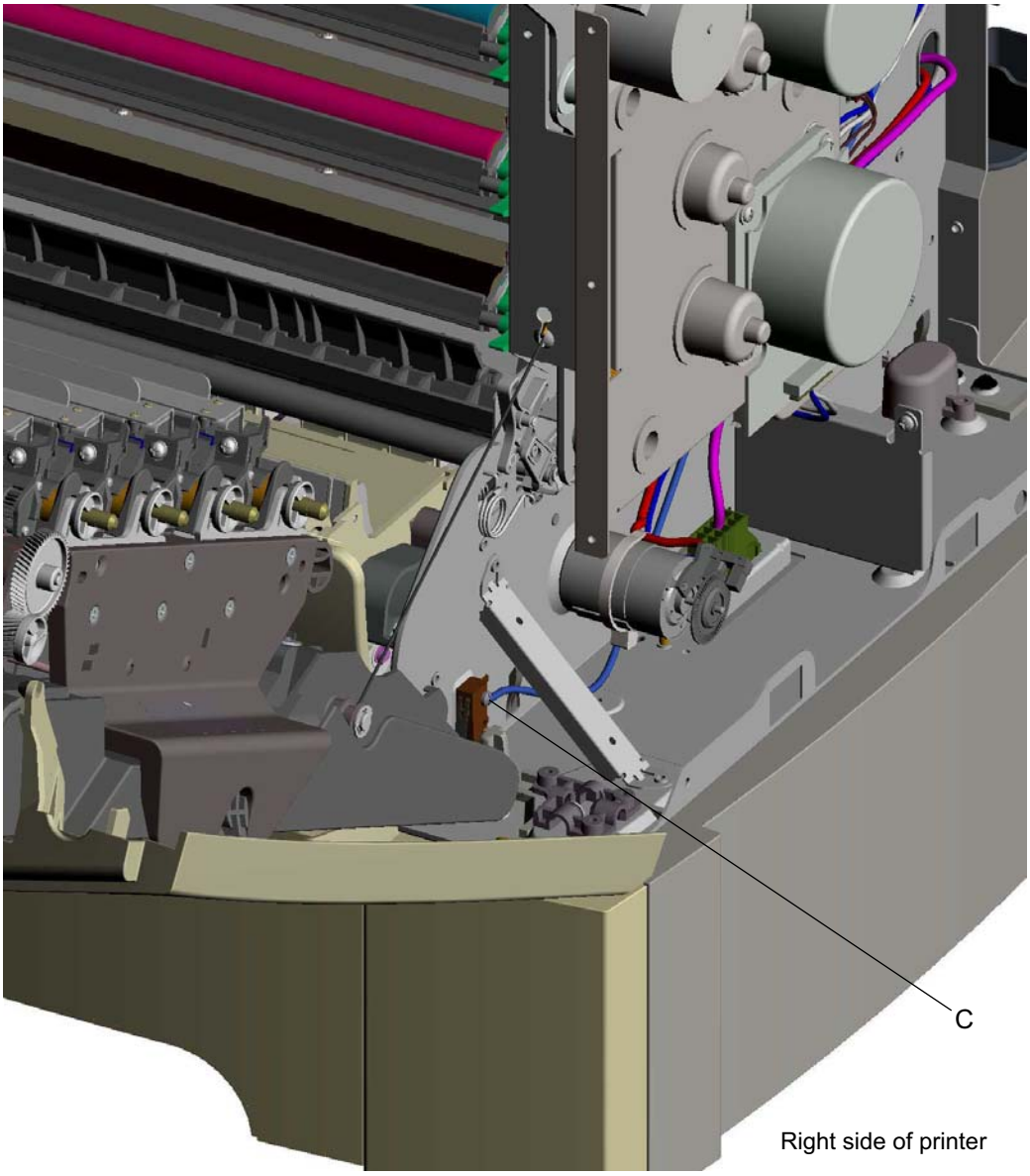
1. Remove LVPS. See **"Low volt power supply (LVPS) removal" on page 4-38**.
2. Disconnect JINT1 connector from system card.
3. Open top access door.
4. Open front access door.

Warning: When removing gearbox/switch shield, ensure you do not damage the 5V interlock switch activation arm.

5. Remove four screws (A) and remove gearbox/switch shield (B). There is a locking tab on the back of the gearbox shield.



6. Remove interlock switch mounting screw (C).

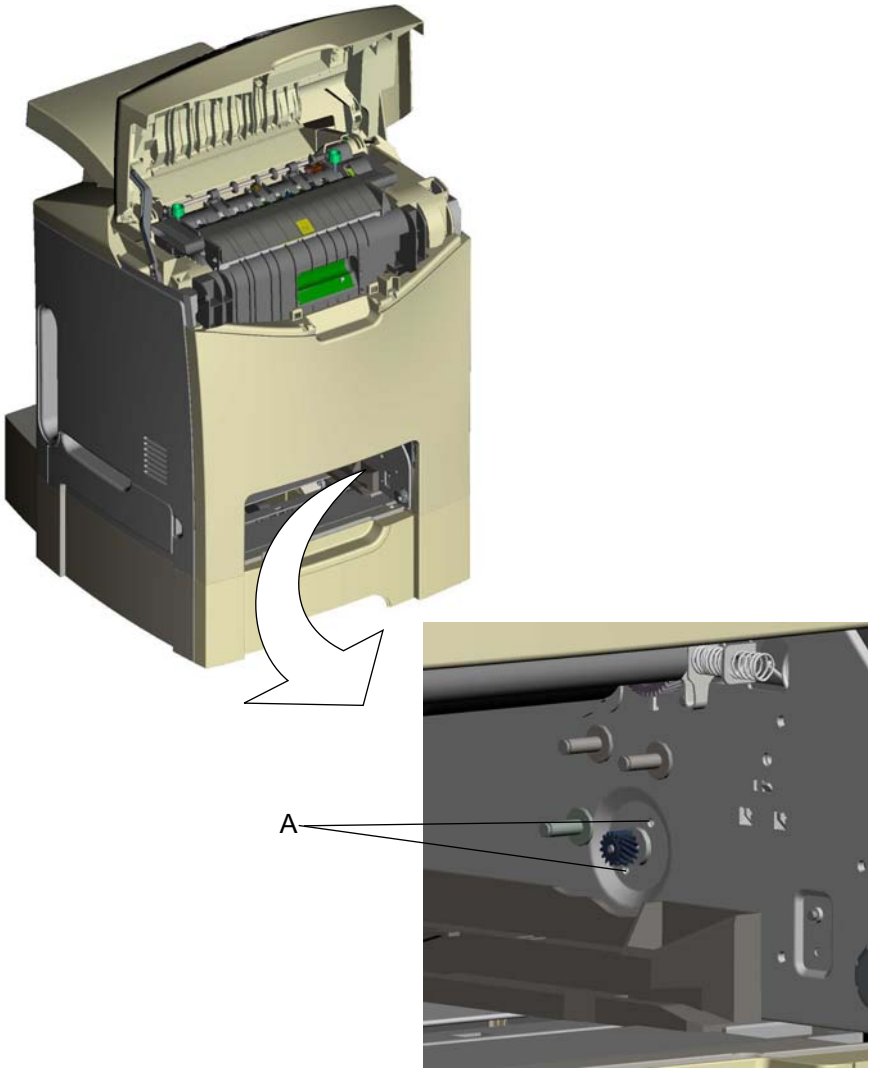


Right side of printer

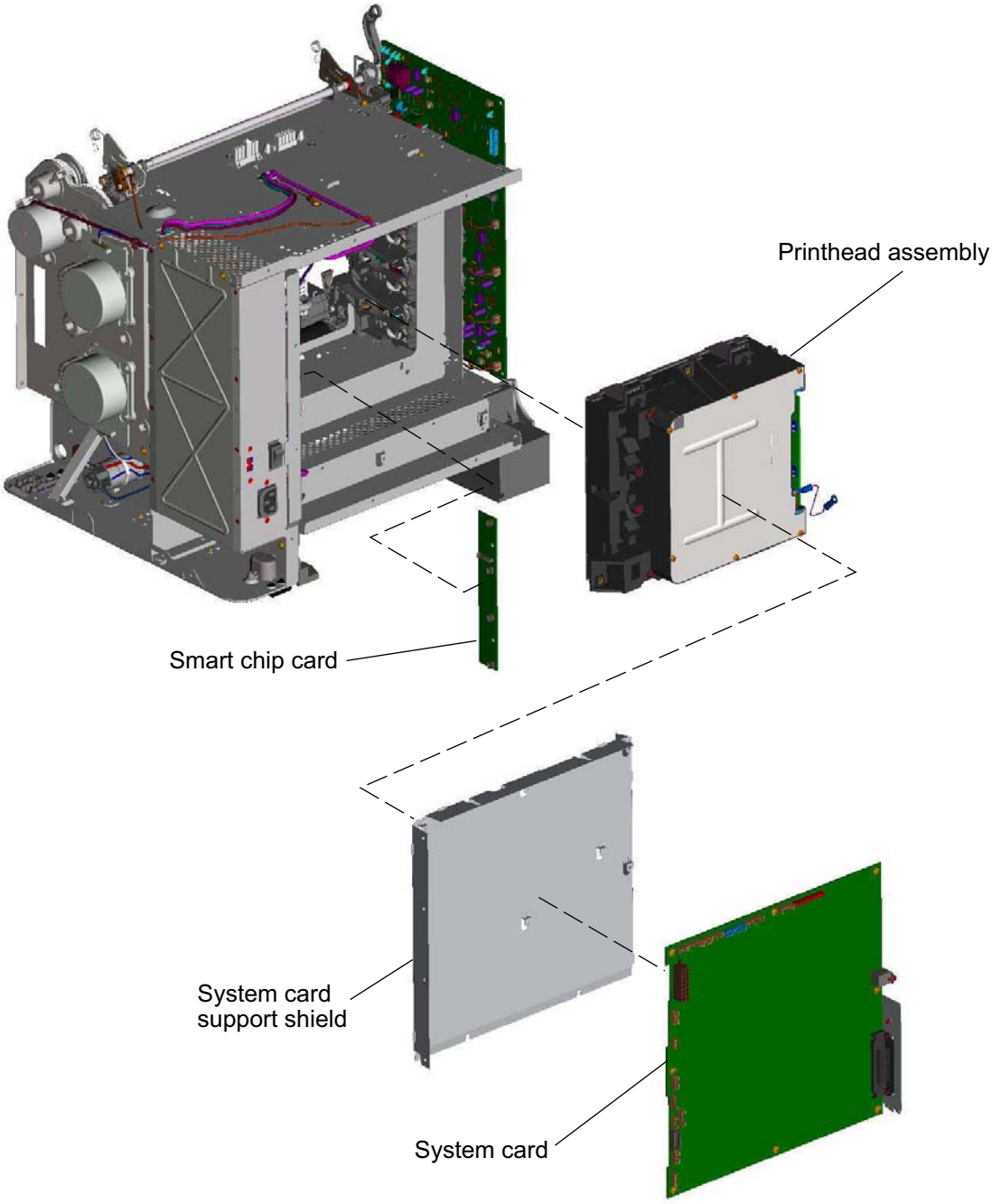
7. Remove cable from cable guide and remove 5V interlock switch.

Bump aligner motor removal

1. Remove right side cover.
2. Remove bump aligner gears. See **"Bump aligner gear removal" on page 4-31**.
3. Remove two bump aligner motor mounting screws (A).
4. Disconnect JBUMP1 connector from system card.
5. Remove bump aligner motor from printer.



Rear removals



System card removal

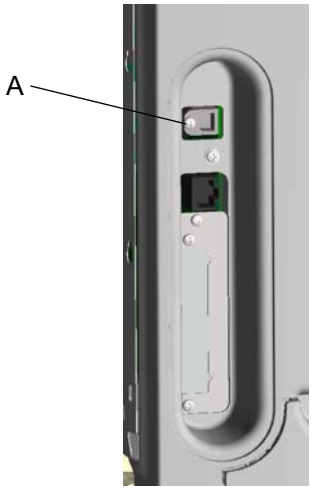
Warning: When replacing any one of the following components:

- **Operator panel assembly**
- **System card**
- **Smart chip card**

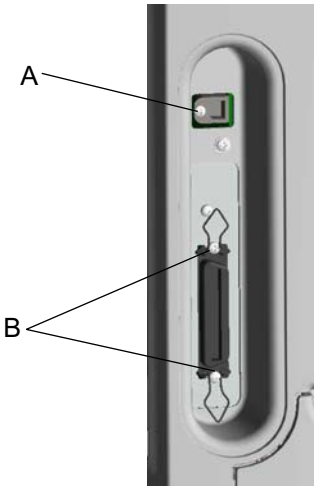
Only replace one component at a time. Replace the required component and perform a POR before replacing a second component listed above. If this procedure is not followed the printer will be rendered inoperable.

Be careful not to damage the printhead cable when removing the system card.

1. Remove rear cover. See **"Rear cover removal" on page 4-17**.
2. Disconnect all connectors from system card.
3. Remove screw (A) from USB connector.



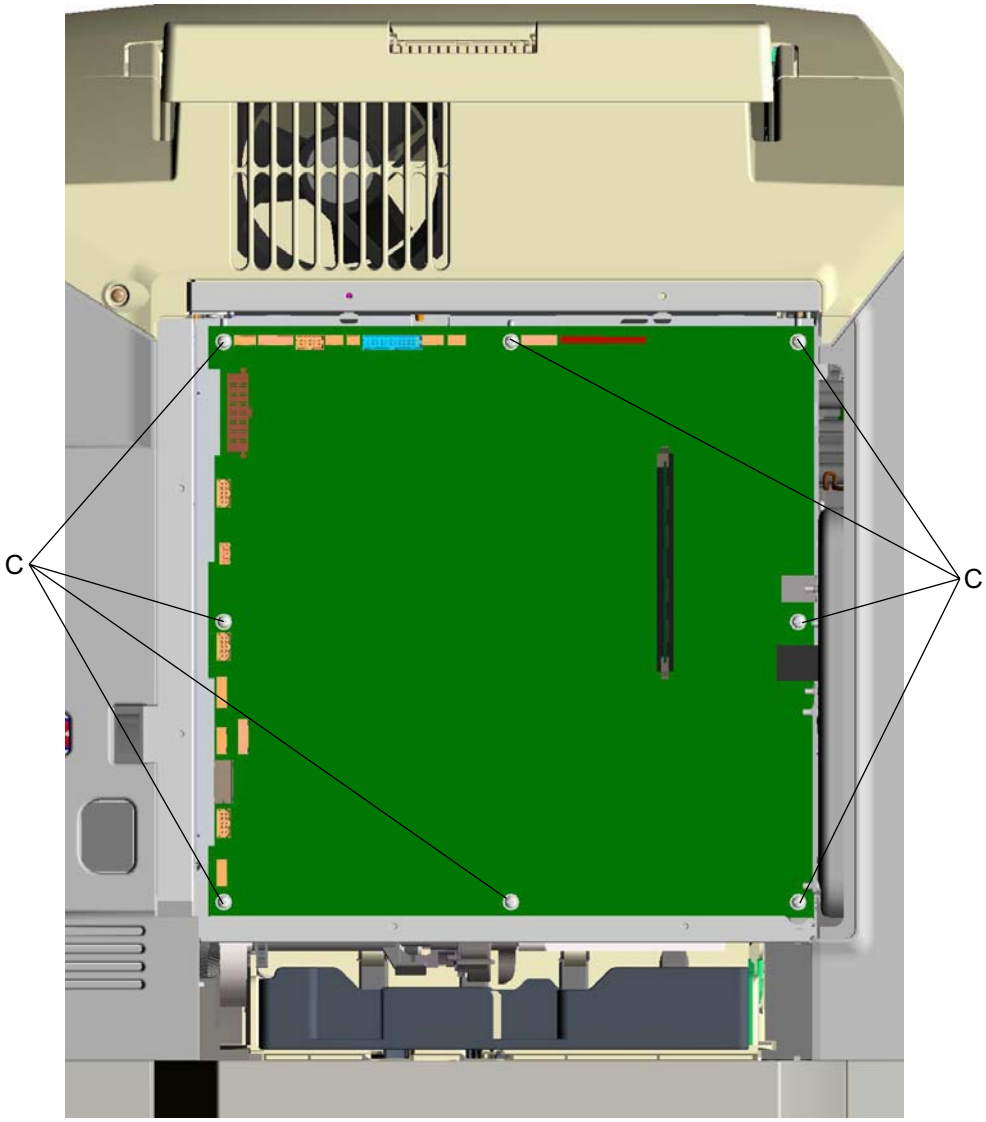
Network system card



Parallel system card

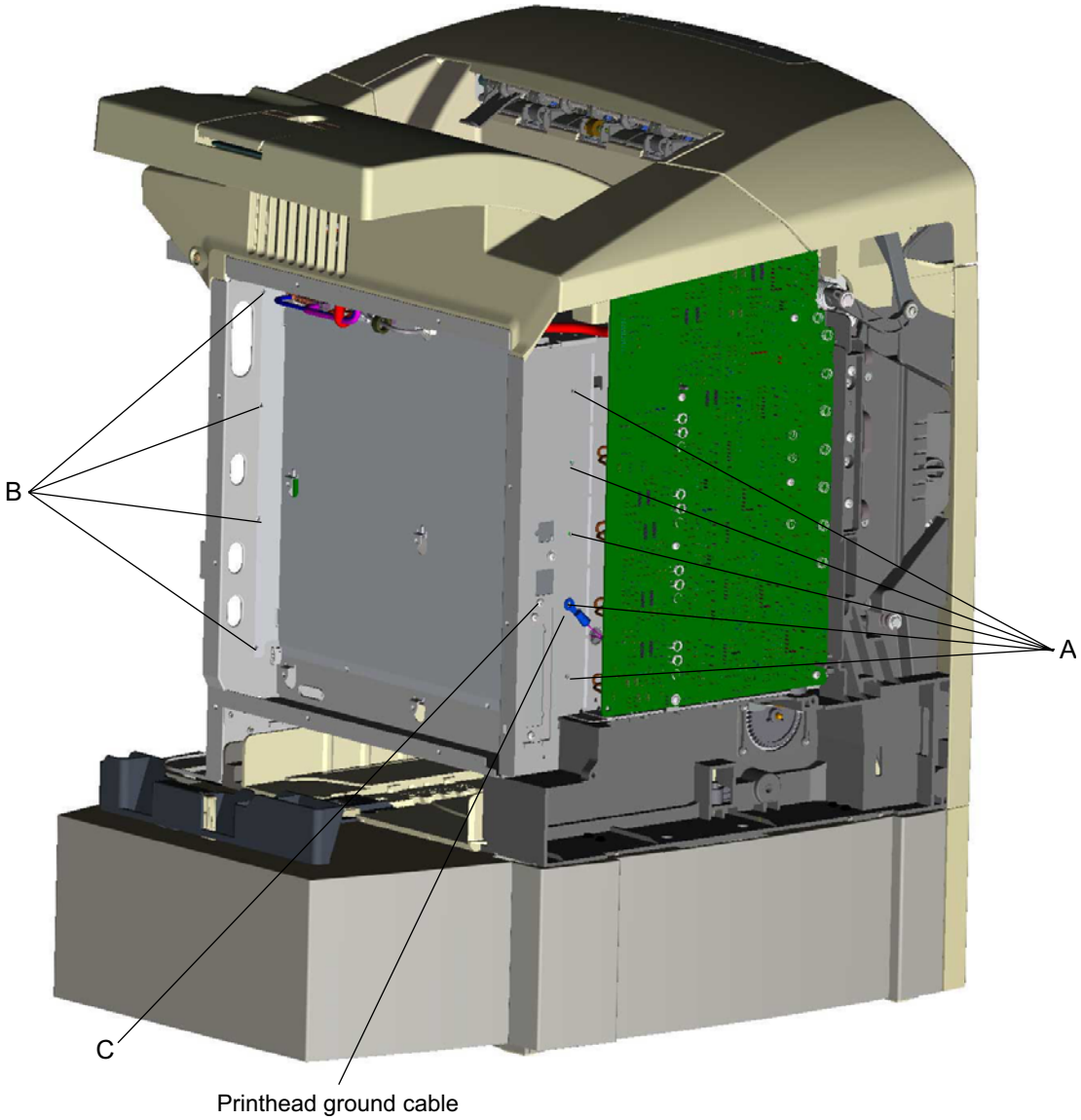
4. If a non-network system card is installed, remove two screws (B) from parallel connector.

5. Remove eight screws (C) from system card.



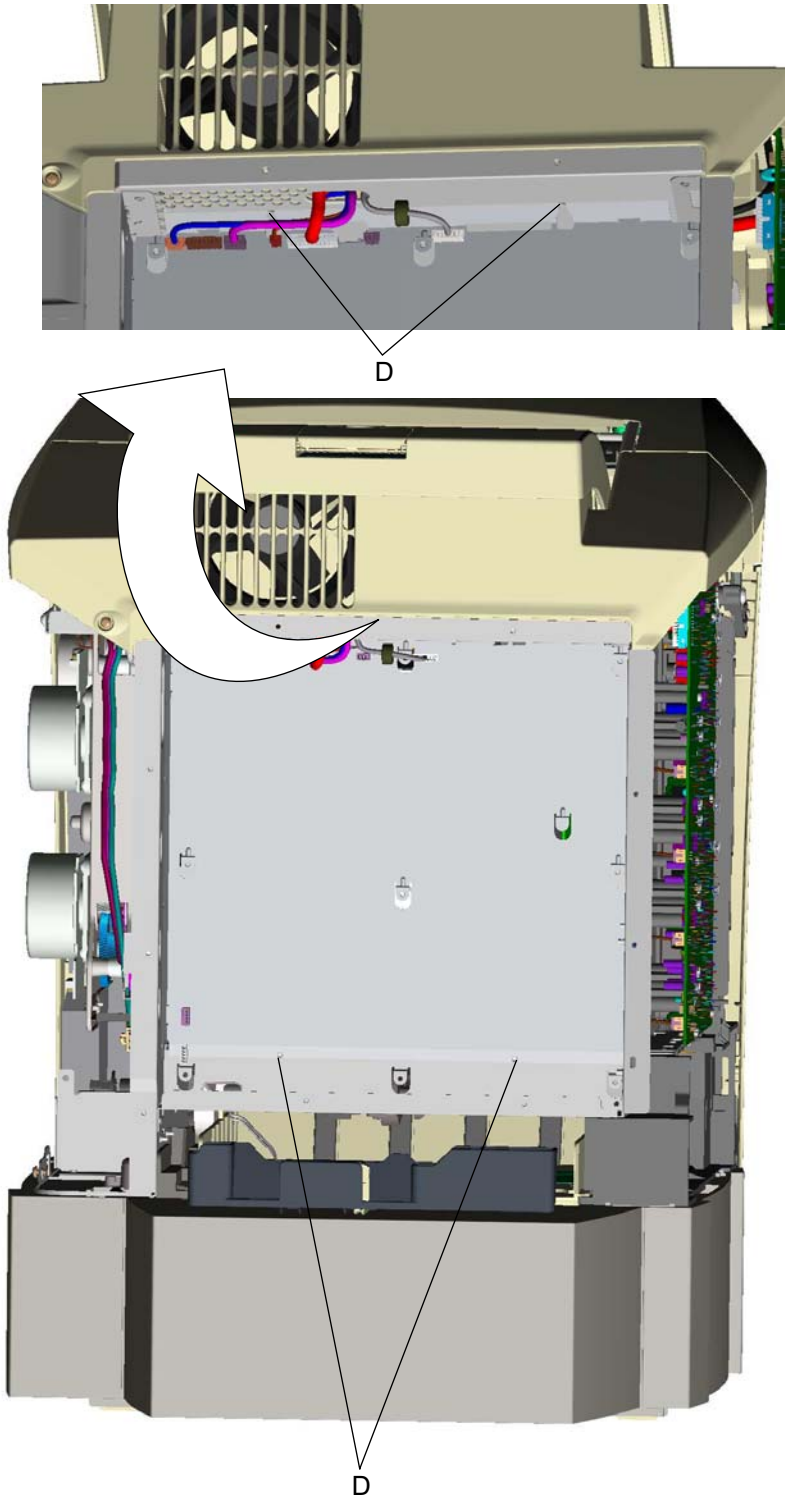
System card support shield removal

1. Remove left cover. See **"Left cover removal" on page 4-20**.
2. Remove LVPS. See **"Low volt power supply (LVPS) removal" on page 4-38**.
3. Remove system card. See **"System card removal" on page 4-47**.
4. Remove five mounting screws (A) from outer left side of printer. Note attachment of printhead ground cable to the second screw from the bottom for later installation.



5. Remove four screws (B) from inner right side of support shield.
6. Pull cables through access holes on right side of printer.
7. On network printers, remove INA mounting plate screw (C) and INA mounting plate. On non-network printers, remove parallel connector support plate.

8. Remove four mounting screws (D) from top and bottom of support shield.



Note: Only the printhead cables come through the access holes in the system card support shield.

9. Lower and remove support shield. Be careful not to cut the cables that route through top frame of printer.

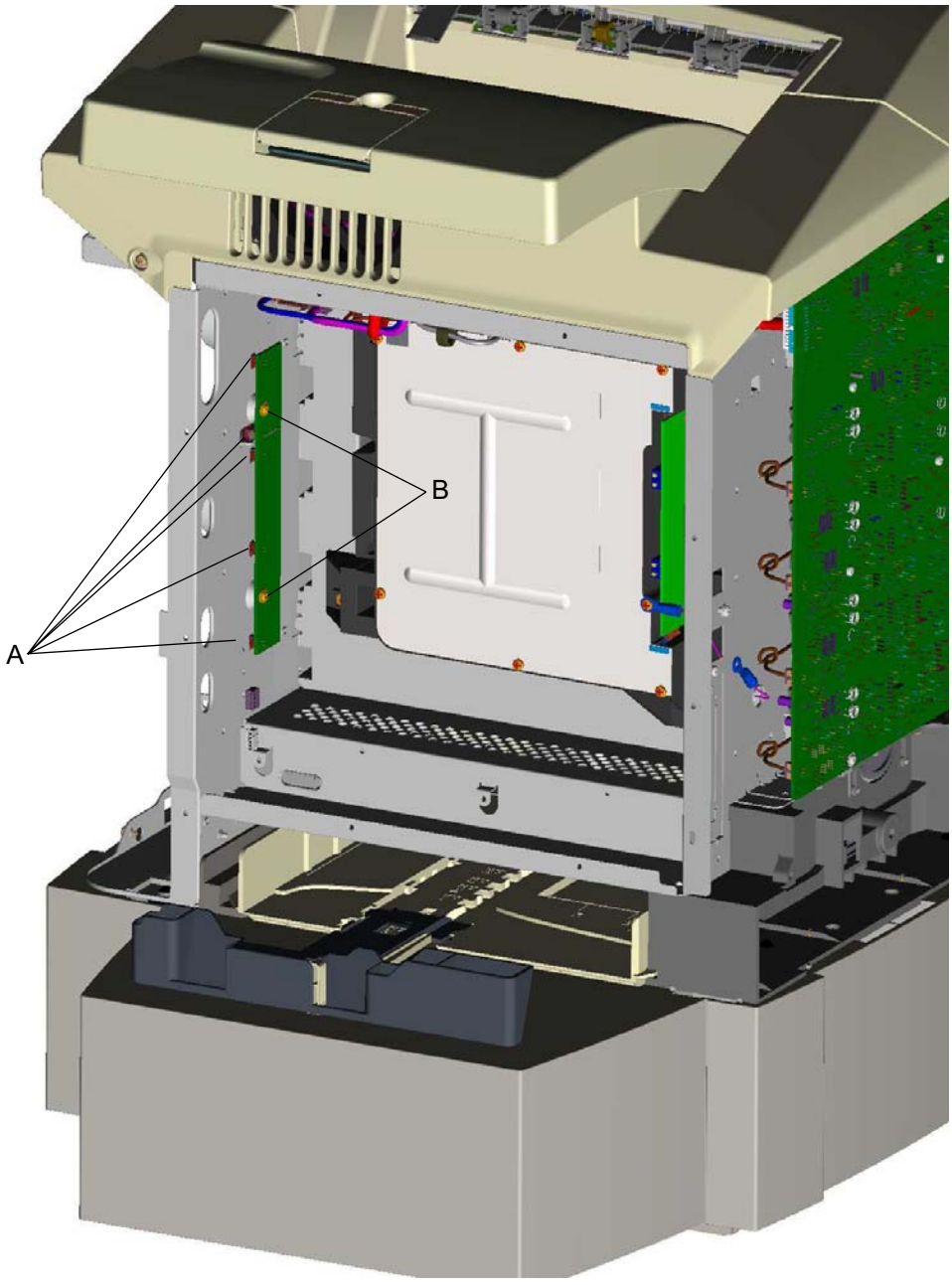
Smart chip card removal

Warning: When replacing any one of the following components:

- **Operator panel assembly**
- **System card**
- **Smart chip card**

Only replace one component at a time. Replace the required component and perform a POR before replacing a second component listed above. If this procedure is not followed the printer will be rendered inoperable.

1. Remove system card support shield. See **"System card support shield removal" on page 4-49**.
2. From outside right of printer, disconnect five connectors (A).
3. Remove two mounting screws (B) and remove smart chip card.



Printhead removal

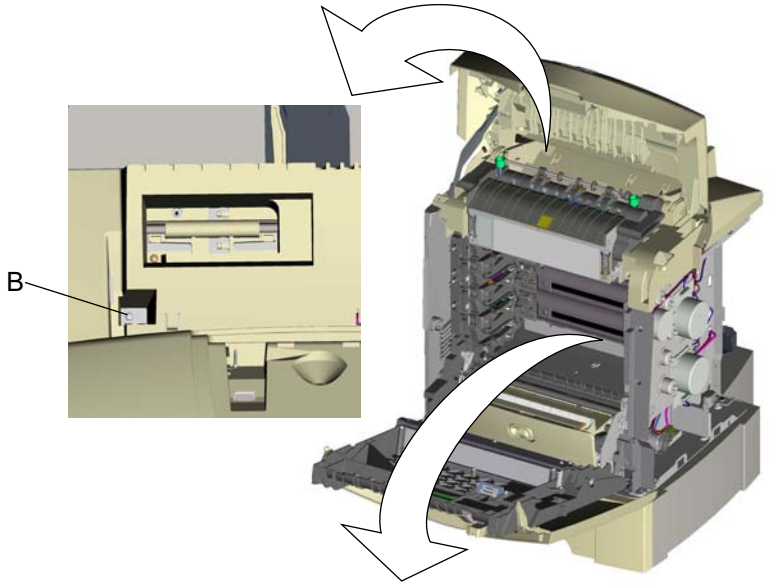
1. Remove toner cartridges.
2. Remove exit tray cover. See **"Exit tray cover removal" on page 4-16**.
3. Remove transfer belt and photoconductor units. See **"Photoconductor unit removal" on page 4-14** and **"Transfer belt removal" on page 4-15**.

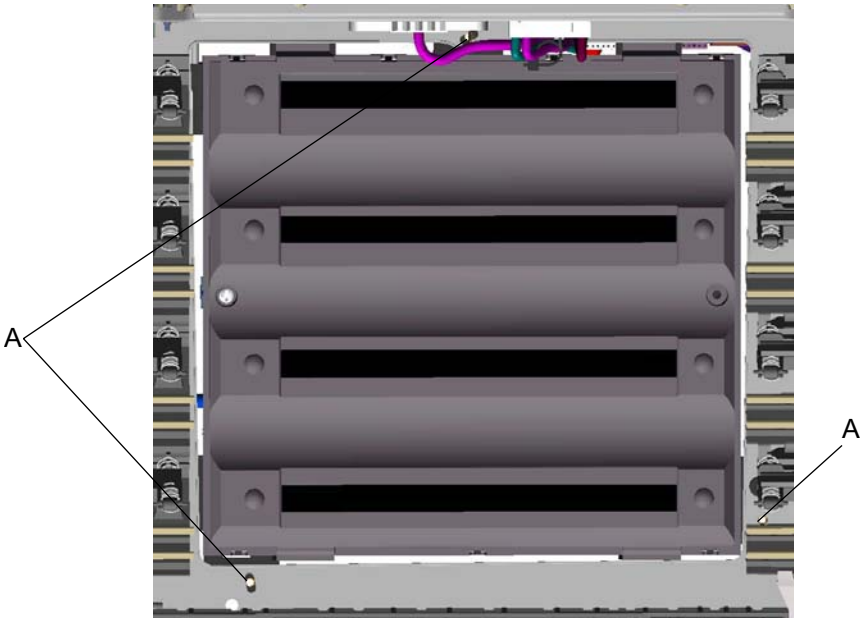
Warning: Cover the photoconductor units with a scratch-resistant material to reduce light exposure.

4. Remove system card support shield. See **"System card support shield removal" on page 4-49**.
5. Remove fuser cable cover. See **"Fuser cable cover removal" on page 4-27**.
6. Remove three mounting screws (A) from front of printhead.

Warning: Secure printhead when removing printhead alignment screw. Failure to do this will allow the printhead to fall out of the printer, potentially damaging the printhead.

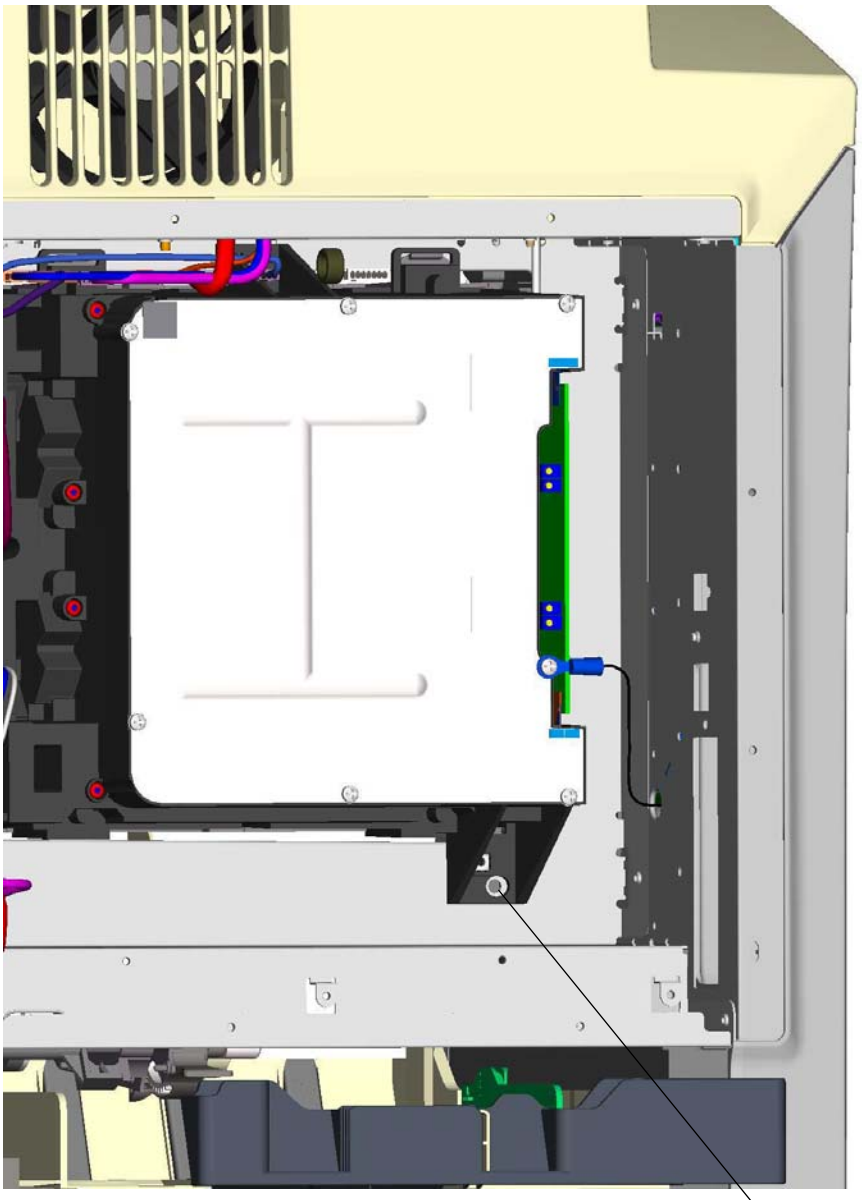
7. Remove printhead alignment screw (B) and remove printhead.





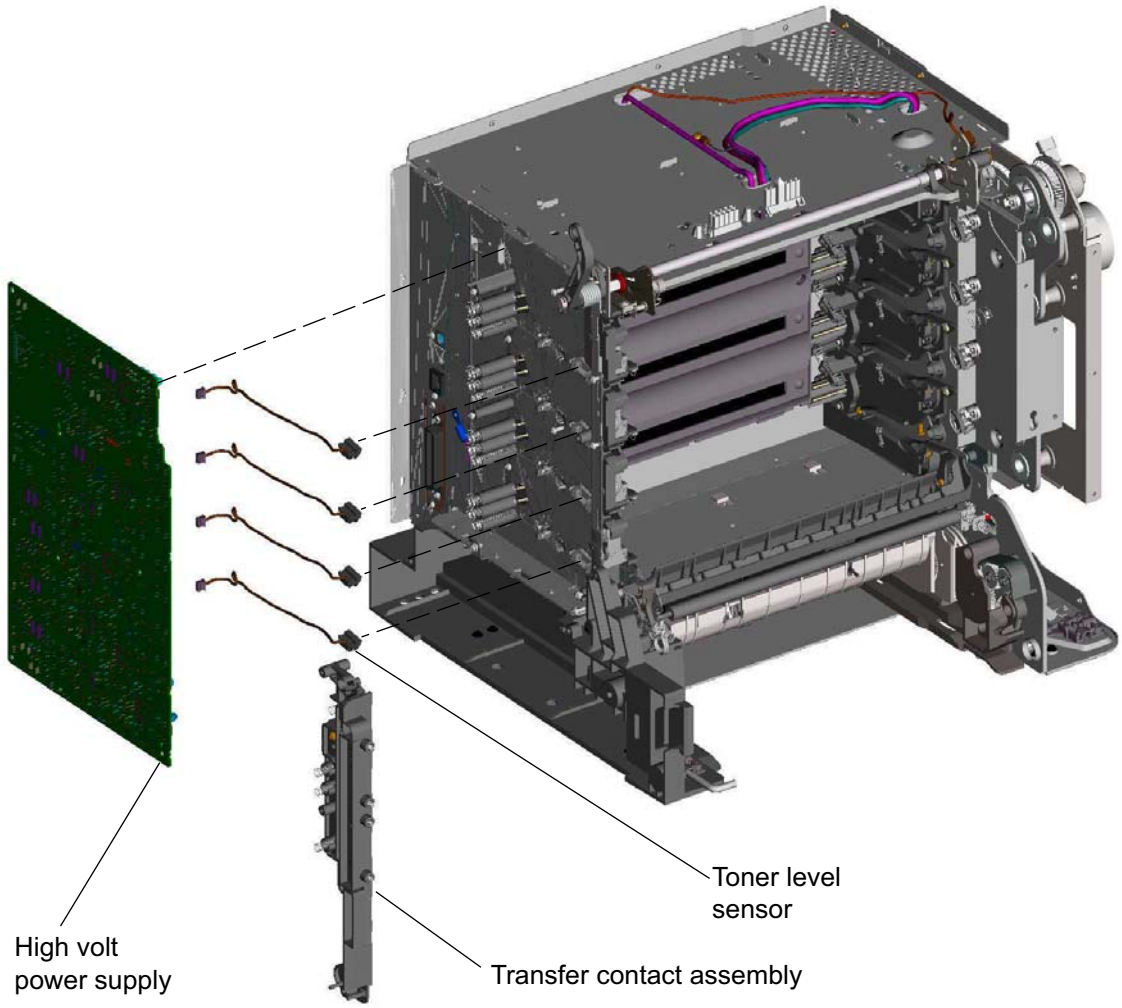
Note: Do not install printhead mounting screws in rear of printer. When reinstalling the printhead, it is important to keep in mind that the printhead mounting screws should be initially tightened just enough to hold the printhead in the printer. This allows the pages to be printed that will be used to align the black plane to the printer frame and also allows skew adjustment with the printhead alignment screw. Once black skew is adjusted, the mounting screws will be fully tightened.

8. When installing the printhead, do a rough alignment by visually centering the hole in the frame (C) with the slot on the bottom of the printhead. Do not fully tighten printhead mounting screws until skew has been adjusted.
9. Align the printhead. See **"Printhead alignment" on page 4-3**.



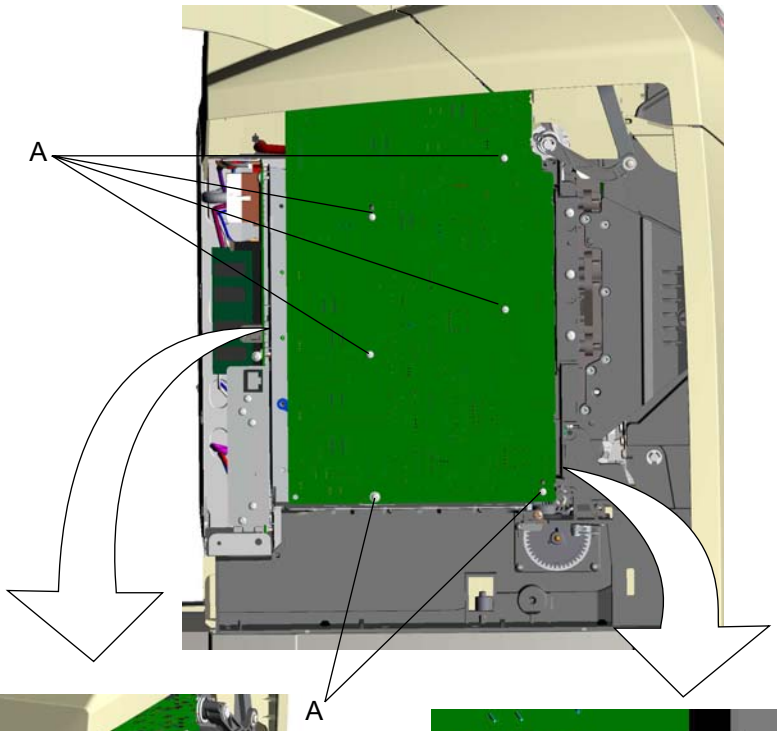
Rear view of printhead

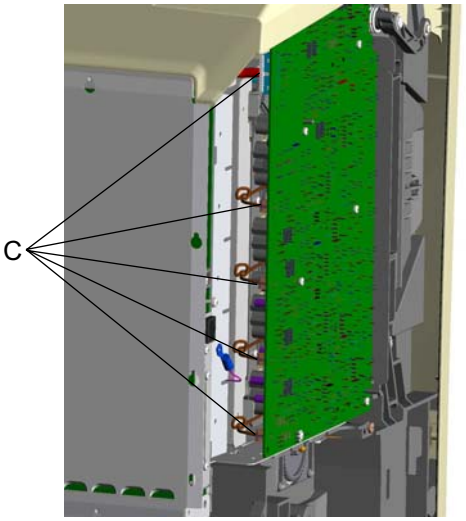
Left side removals

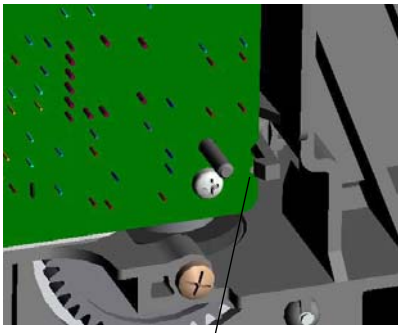


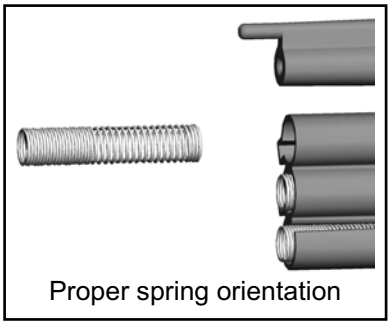
High volt power supply (HVPS) removal

1. Remove left cover. See **"Left cover removal" on page 4-20**.
2. Remove six mounting screws (A).
3. Release locking tab (B) from front, lower corner of HVPS.
4. Disconnect five connectors (C) from HVPS.



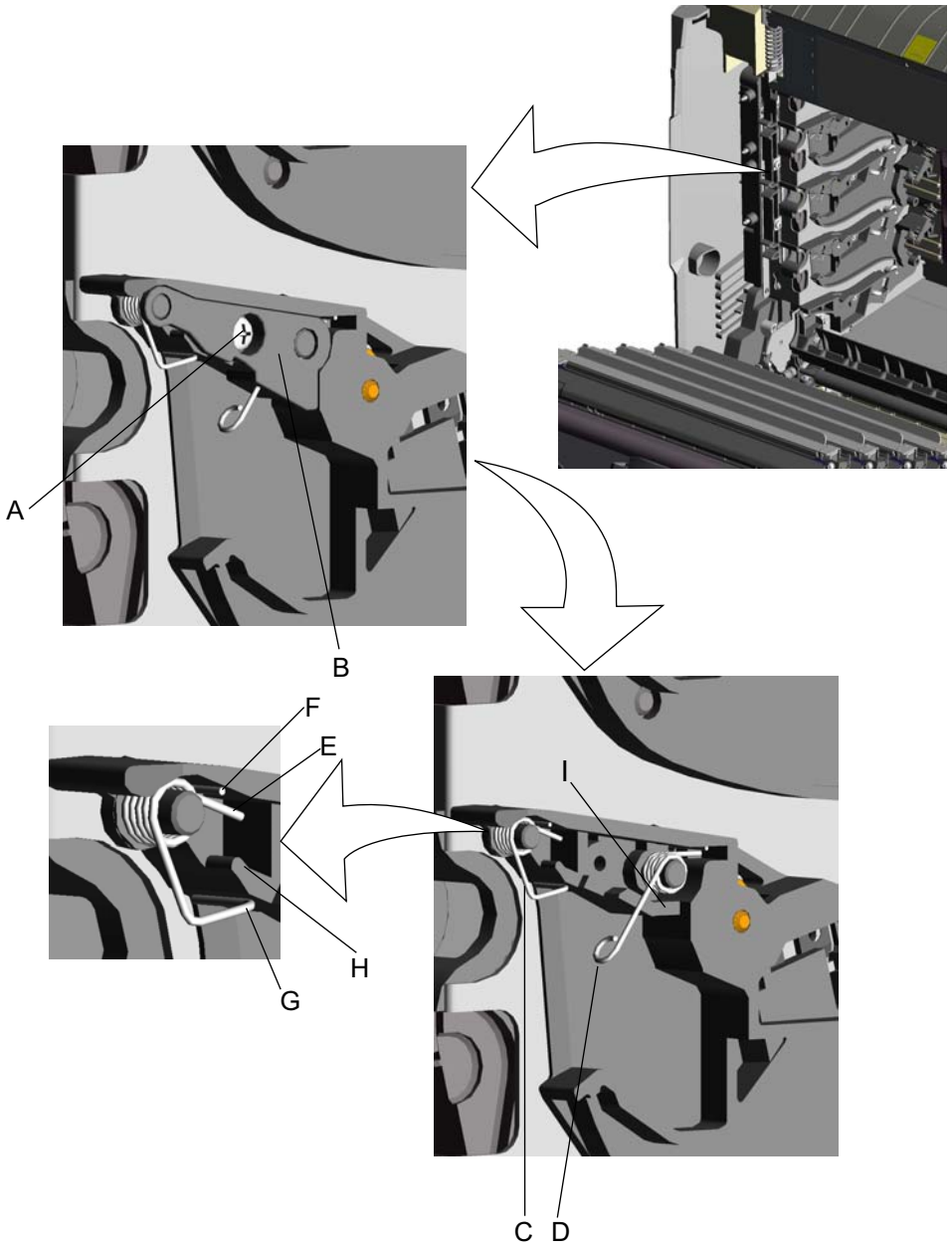






Contact springs removal

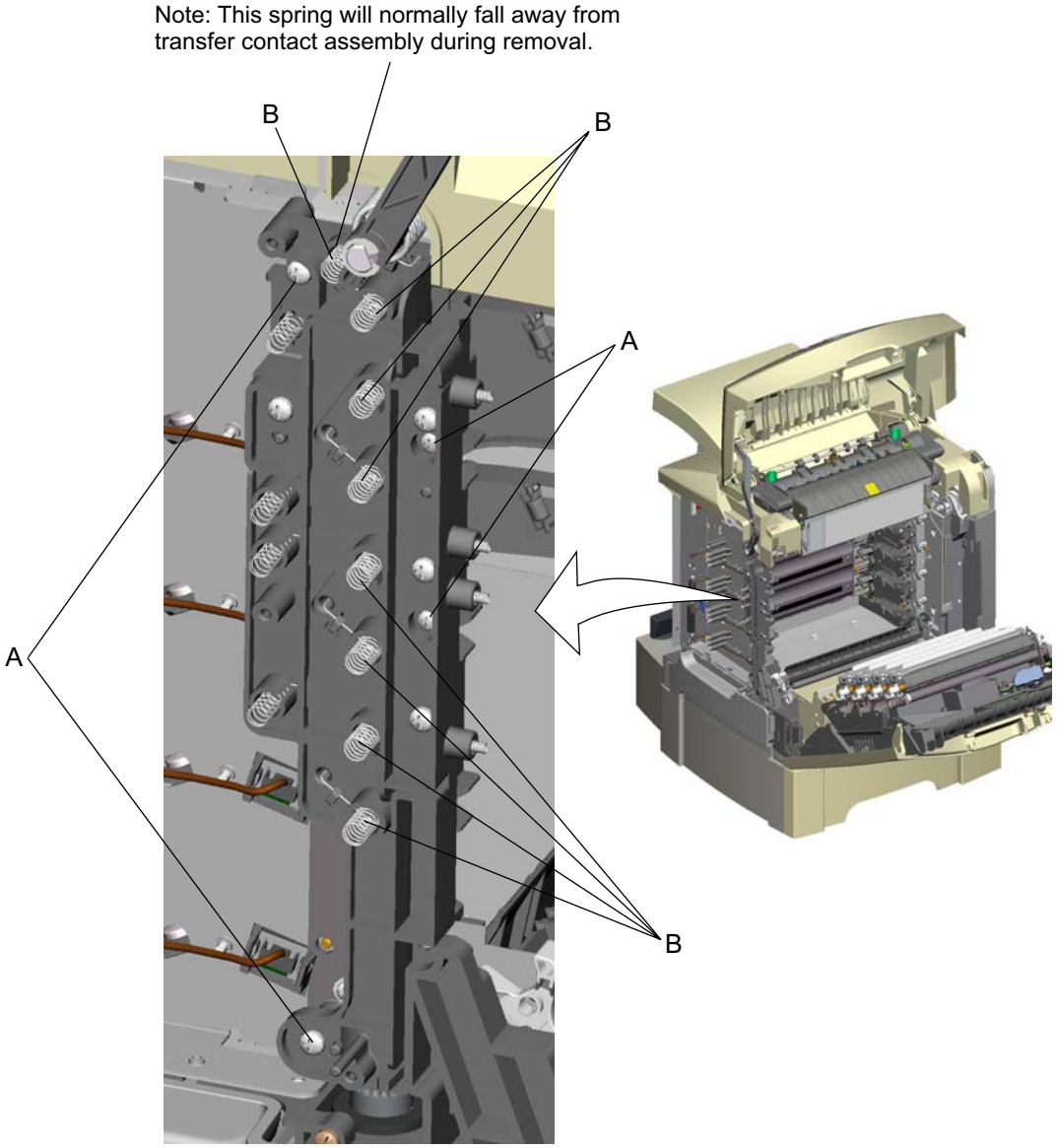
1. Remove appropriate toner cartridges.
2. Remove screw (A) and spring cap (B).
3. Press lower half (C, D) of springs and remove springs.
4. When installing, ensure top half (E) of spring is under straight spring (F). This is typical for both types of springs. Also ensure bottom half (D,G) of both springs are compressed and locked by appropriate locking tab (H,I).



Transfer contact assembly removal

1. Remove HVPS. See **"High volt power supply (HVPS) removal" on page 4-55**.
2. Remove all inside contact springs. See **"Contact springs removal" on page 4-56**.
3. Remove four screws (A) and remove transfer contact assembly.
4. Remove eight springs (B) for reuse during installation.

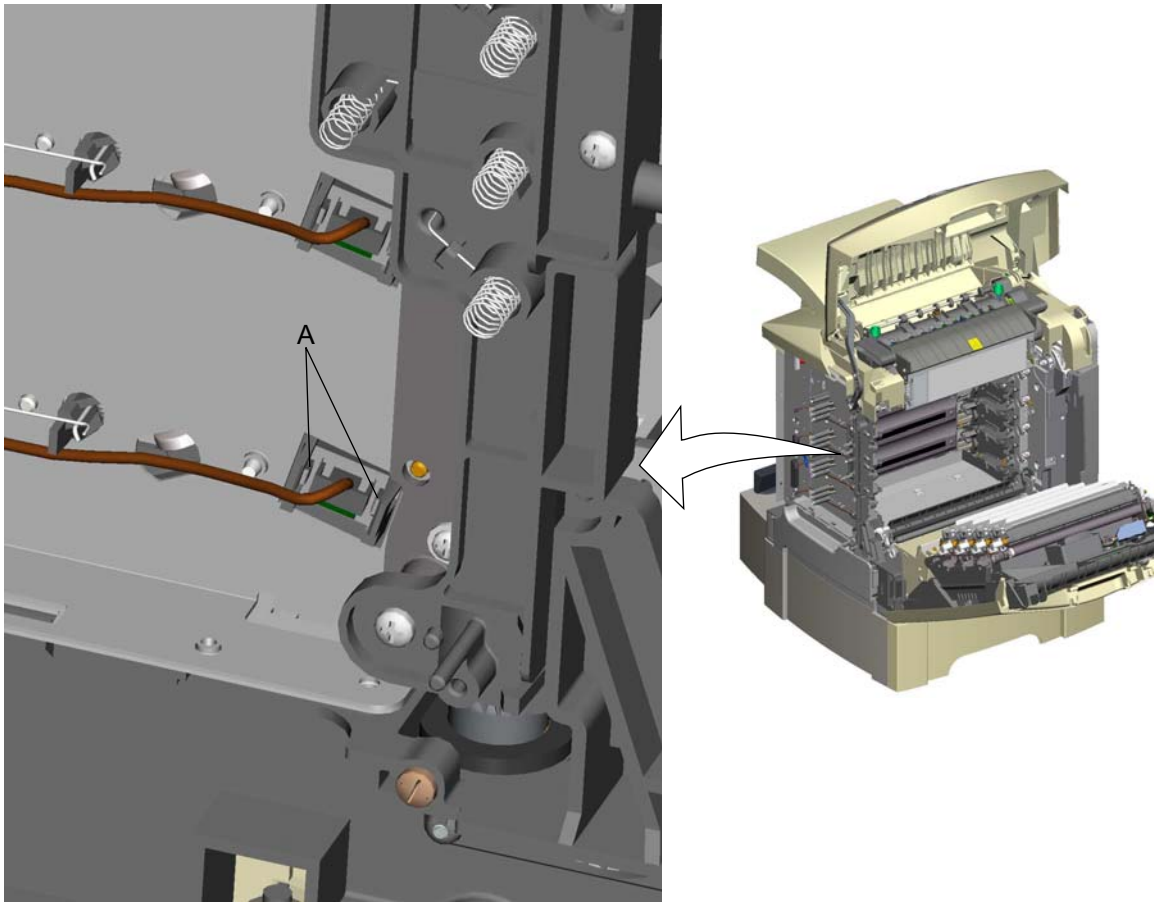
Note: For ease of installation, put transfer contact assembly on before installing springs.



Toner level sensor removal

Black and Magenta

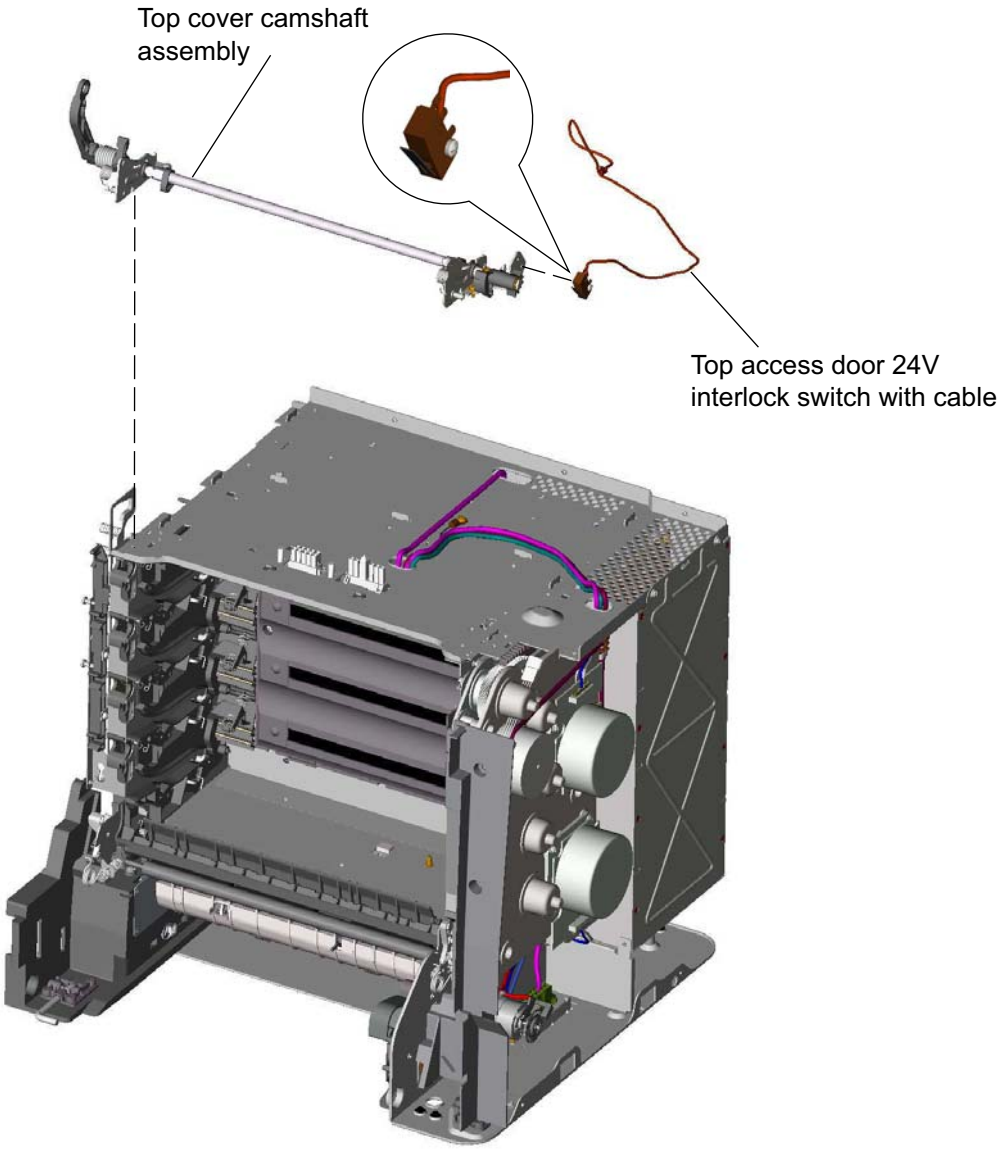
1. Remove HVPS. See **"High volt power supply (HVPS) removal" on page 4-55**.
2. Depress locking tabs (A) on sensor; remove sensor.



Cyan and Yellow

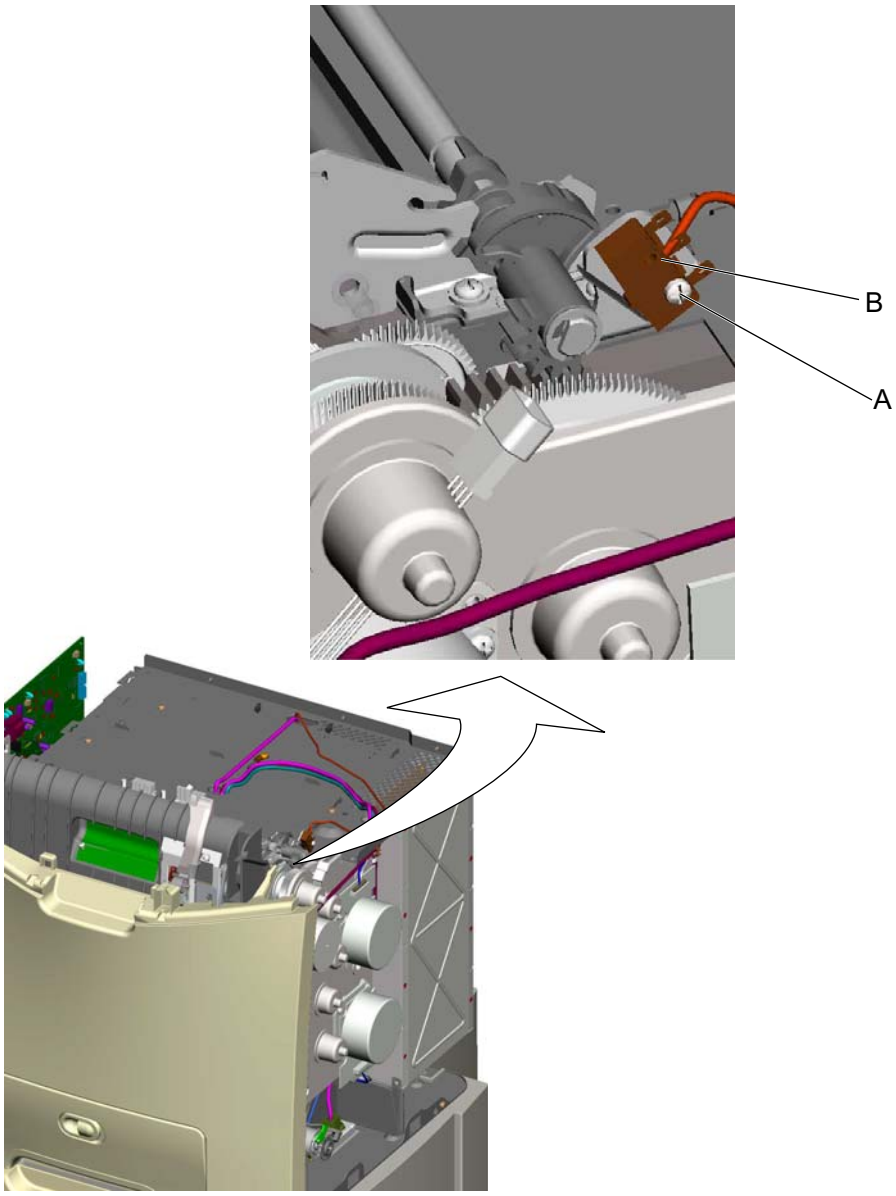
3. Remove transfer contact assembly. See **"Transfer contact assembly removal" on page 4-57**. Do not remove springs from contact assembly as stated in last step of procedure.
4. Depress locking tabs (A) on sensor; remove sensor.

Top removals



Top access door 24V interlock switch removal

1. Remove top access cover assembly. See **"Top access cover assembly removal" on page 4-23**.
2. Disconnect JCVR1 connector from system card.
3. Remove right cover. See **"Right cover removal" on page 4-18**.
4. Remove mounting screw(A) and 24V interlock switch (B).

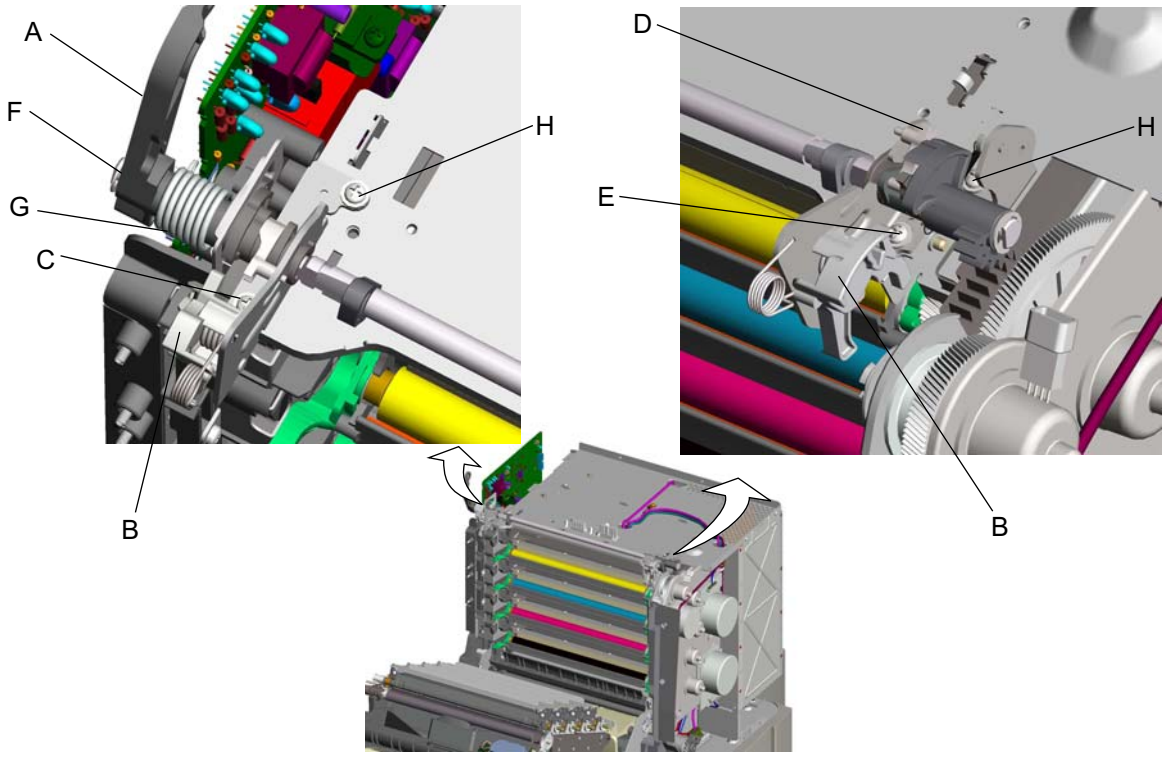


Top cover camshaft assembly removal

1. Remove top access door 24V interlock switch. See **"Top access door 24V interlock switch removal" on page 4-60**.
2. Remove left cover. See **"Left cover removal" on page 4-20**.
3. Rotate lever arm (A) all the way up as if the top access door were open; hold lever arm (A) in place and rotate camshafts (B) down to the closed postion.
4. While still holding lever arm (A) up, remove left front mounting screw (C) and flip right lock (D) back.
5. Continue to hold lever arm (A) up and remove right front mounting screw (E); release lever arm.
6. Remove e-clip (F) .
7. Slide lever arm (A) and spring (G) off shaft.

Warning: When removing right rear mounting screw, be careful not to damage or remove spring that mounts over the screw.

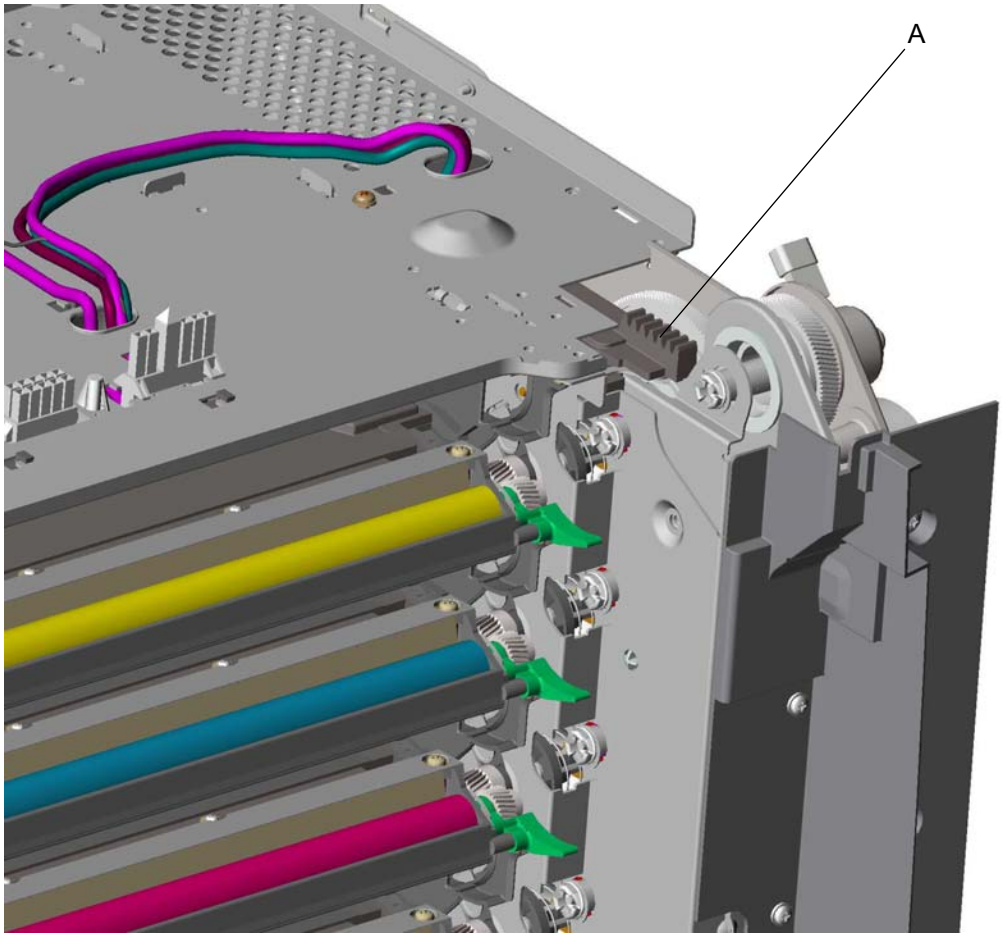
8. Remove rear mounting screws (H).
9. Remove top cover camshaft assembly.



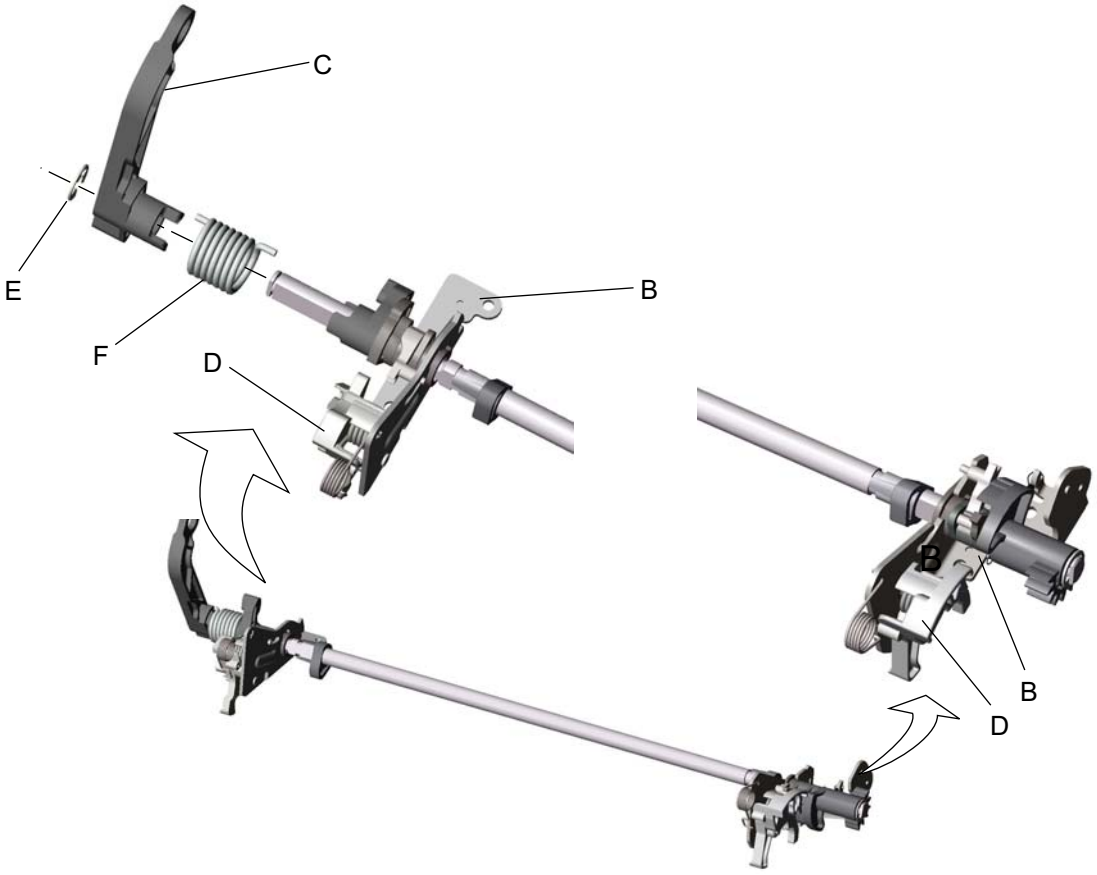
Top cover camshaft assembly installation

Warning: Do not install the camshaft assembly by reversing the removal procedures. The camshaft assembly and EP drive assembly must be set to the closed and engaged positions respectively before the camshaft assembly is installed or the printer will not work correctly.

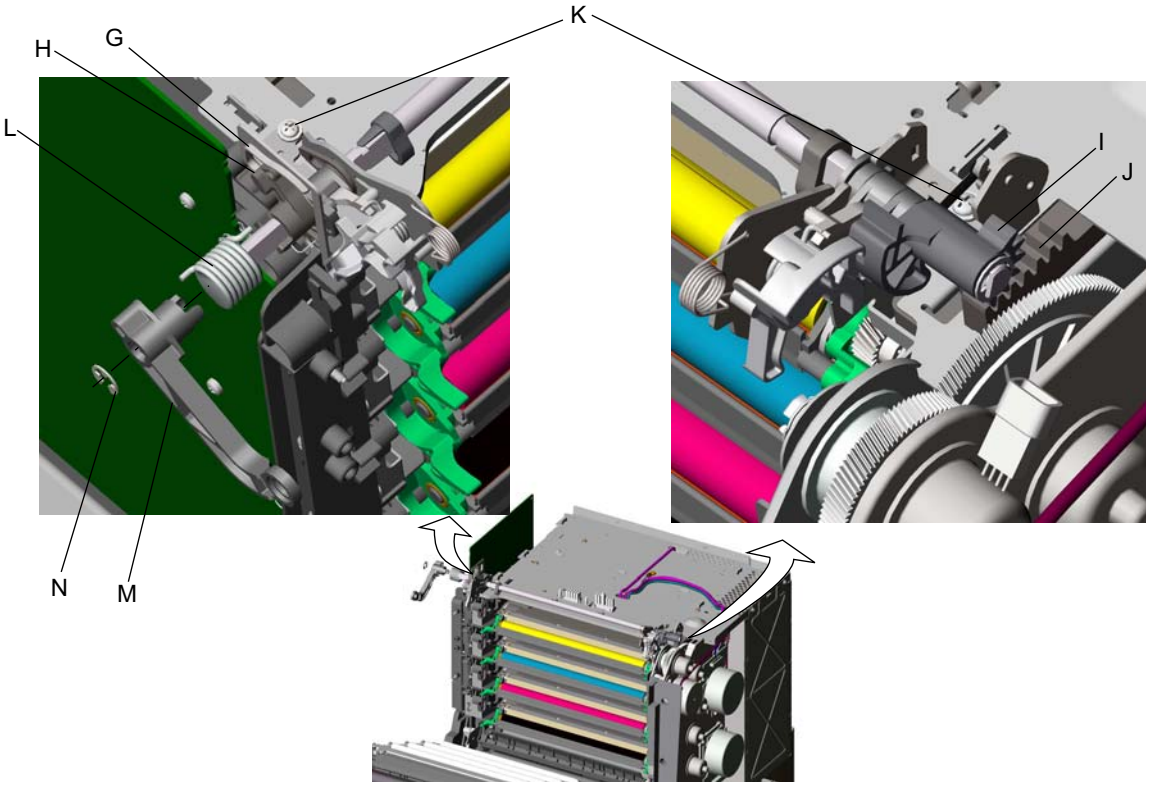
1. Ensure EP drive assembly is engaged by sliding upper retraction plate (A) fully to the rear.



2. Remove camshaft from package and place left and right mounting brackets (B) on a flat surface.
3. Rotate lever arm (C) all the way up as if the top access door were open; hold lever arm (C) in place and rotate camshafts down (D) to the closed position. Release lever arm (C).
4. Remove e-clip (E).
5. Slide lever arm (C) and spring (F) off shaft.



6. Place left side of camshaft assembly through opening in waste toner shutter (G). Ensure cam (H) engages waste toner shutter (G) as illustrated. Also ensure drive pinion (I) engages upper retraction plate (J) as illustrated.
7. Install rear mounting screws (K).
8. Slide spring (L) and lever arm (M) on shaft.
9. Install e-clip (N).



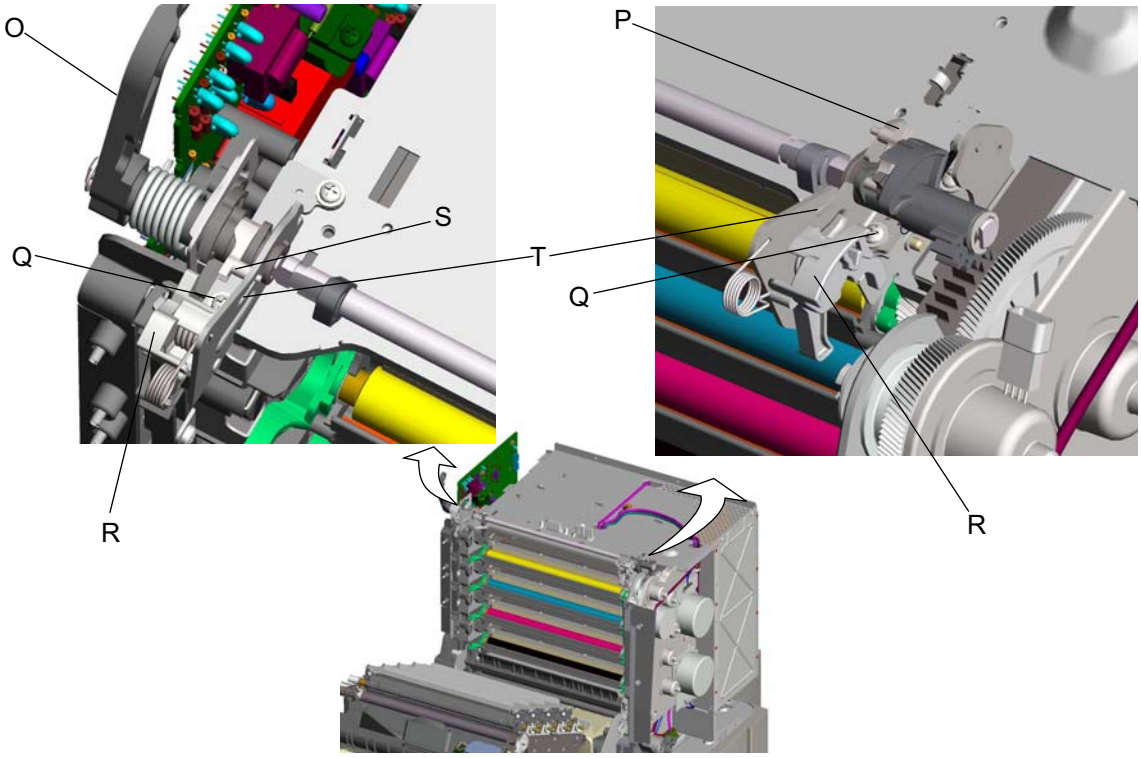
10. Rotate lever arm (O) all the way up as if the top access door were open.

11. While still holding lever arm (O) up, flip right lock (P) up and install front mounting screws (Q).

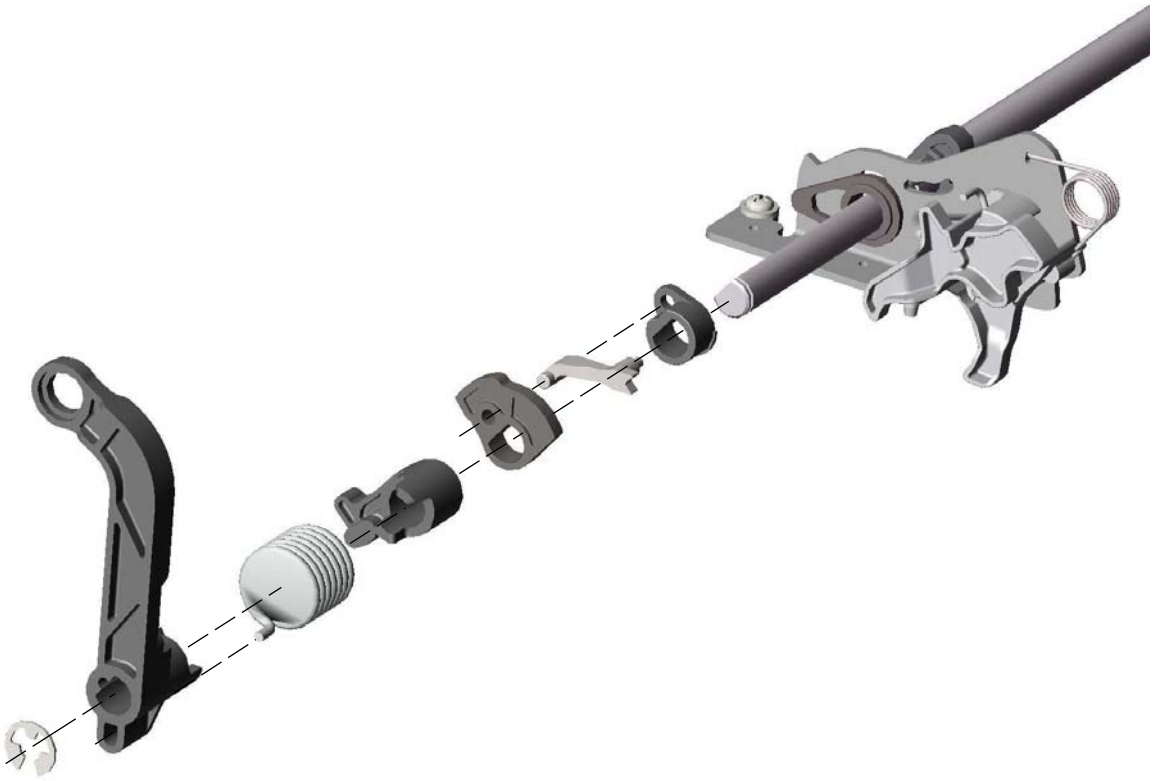
Warning: Failure to place the camshaft assembly in the open position will prevent the front access door from closing and may cause damage to the door during closing.

12. Continue to hold lever arm (O) up. Flip right lock (P) down and rotate camshafts (R) up. This is the open position.

13. Lower lever arm (O) and ensure that left lock (S) and right lock (P) are positioned correctly in their respective channels (T).



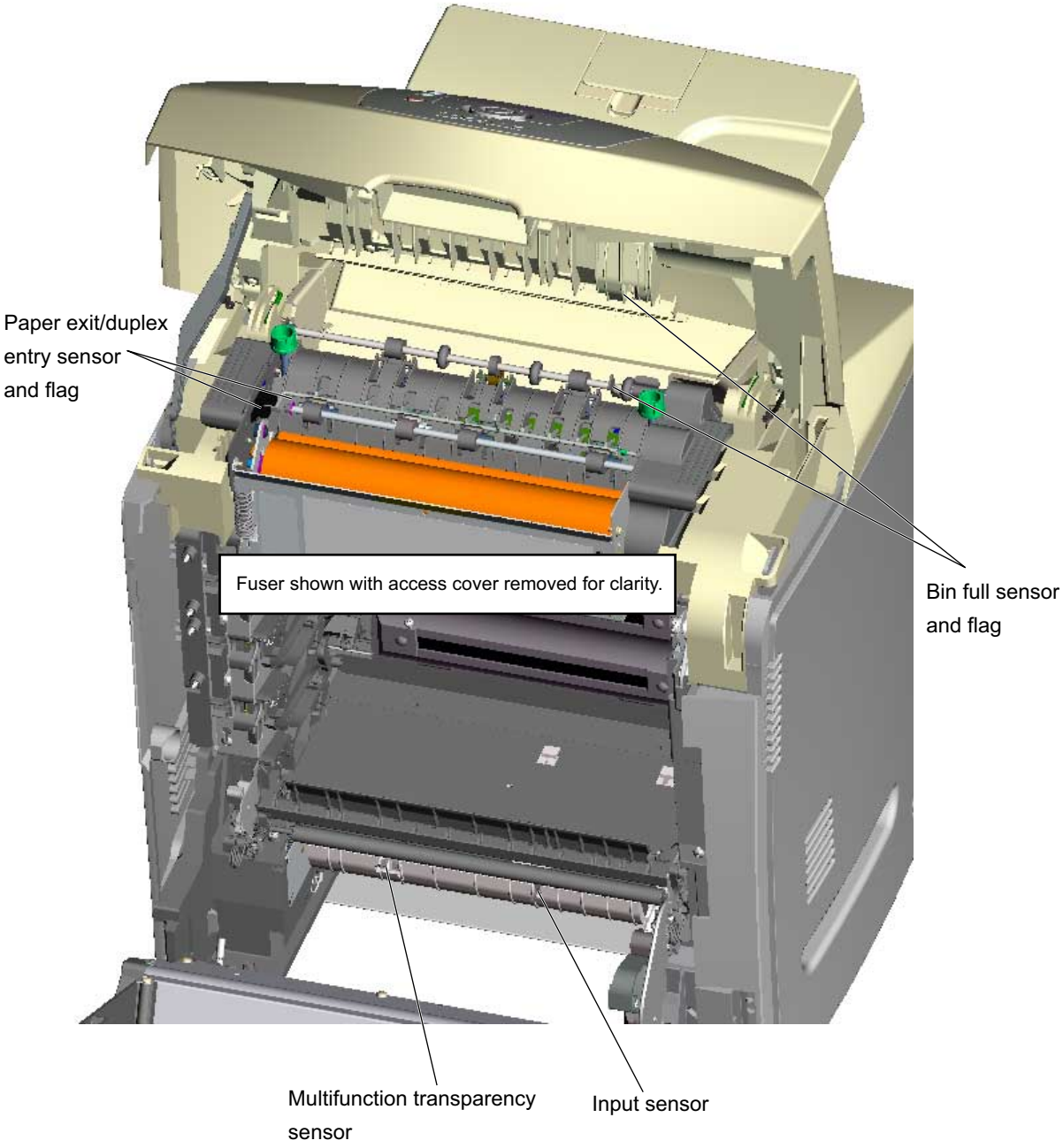
Note: Prior to installation, if the left side of the camshaft assembly becomes disassembled, use the following illustration:

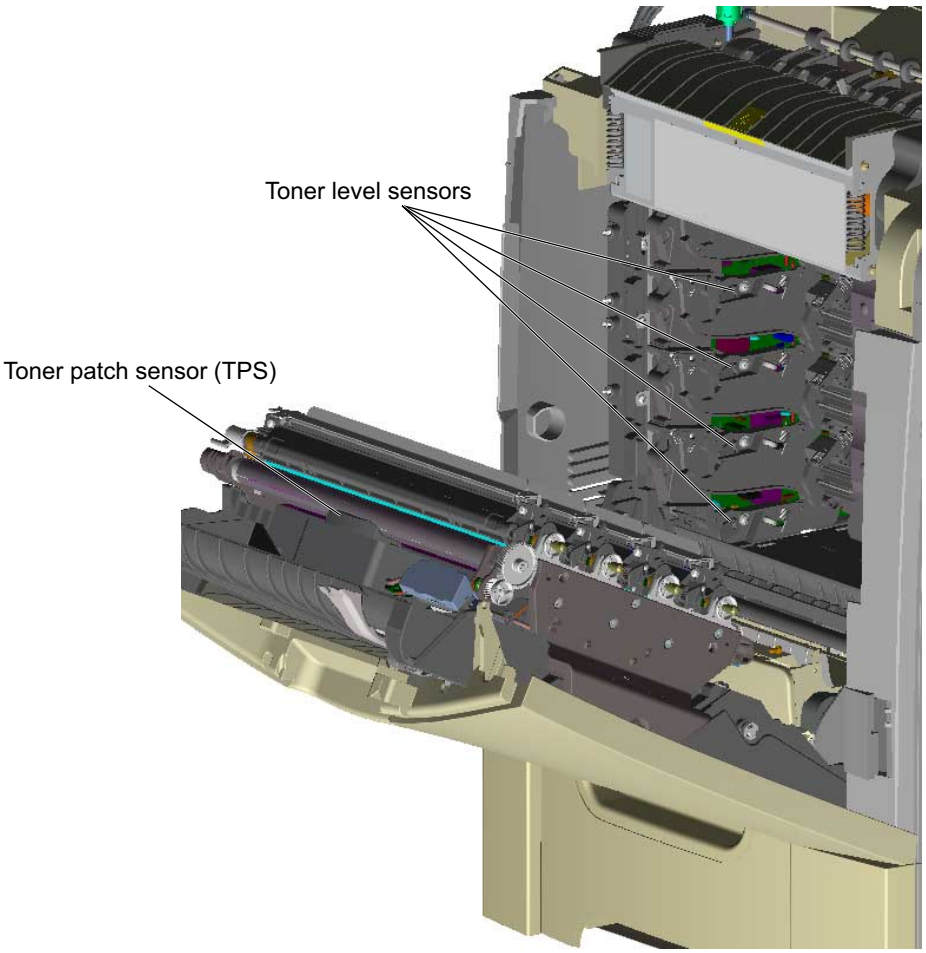


5. Locations and connectors

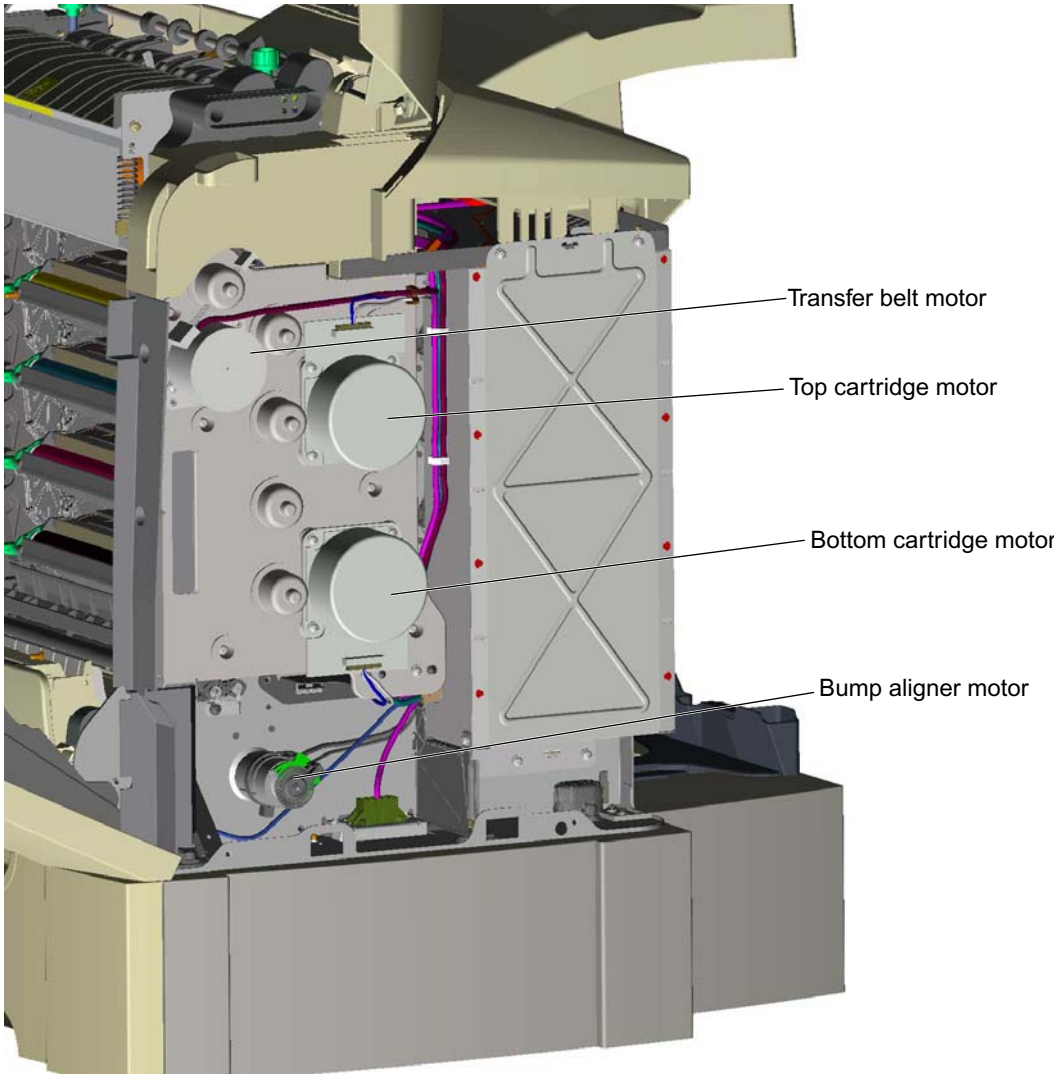
Locations

Sensors

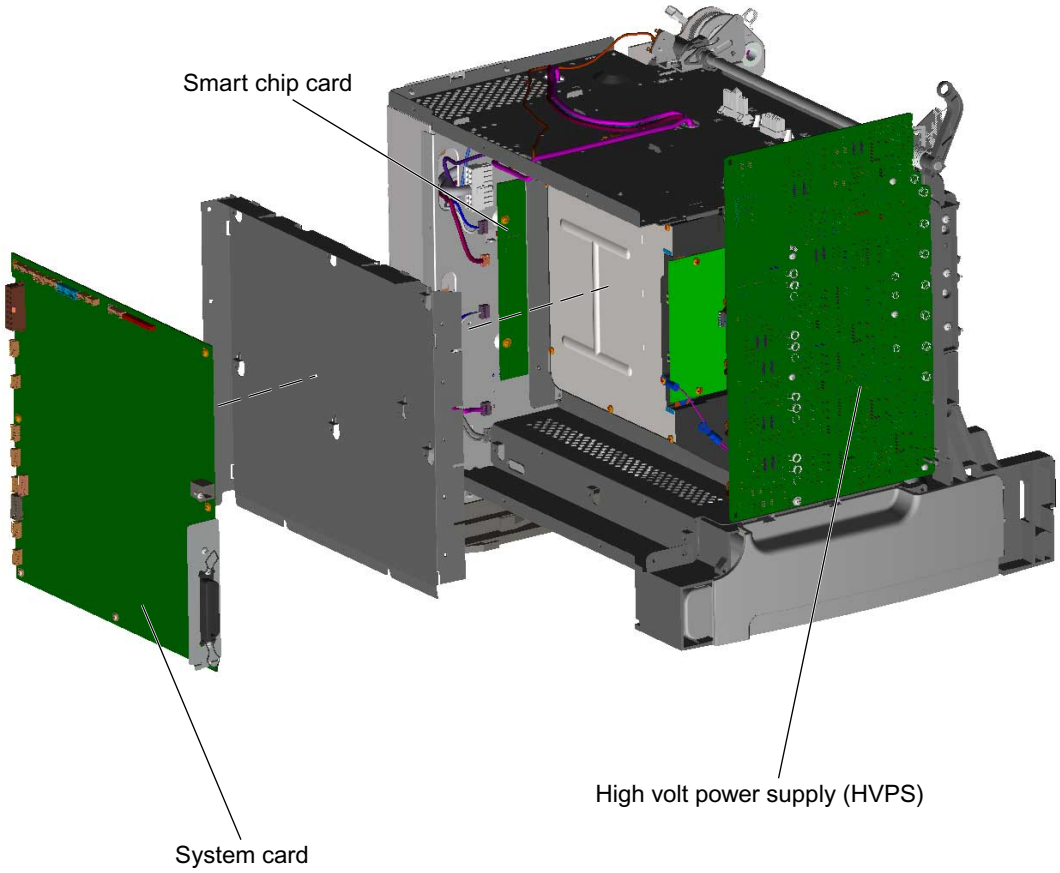



Toner level sensors
Toner patch sensor (TPS)

Motors

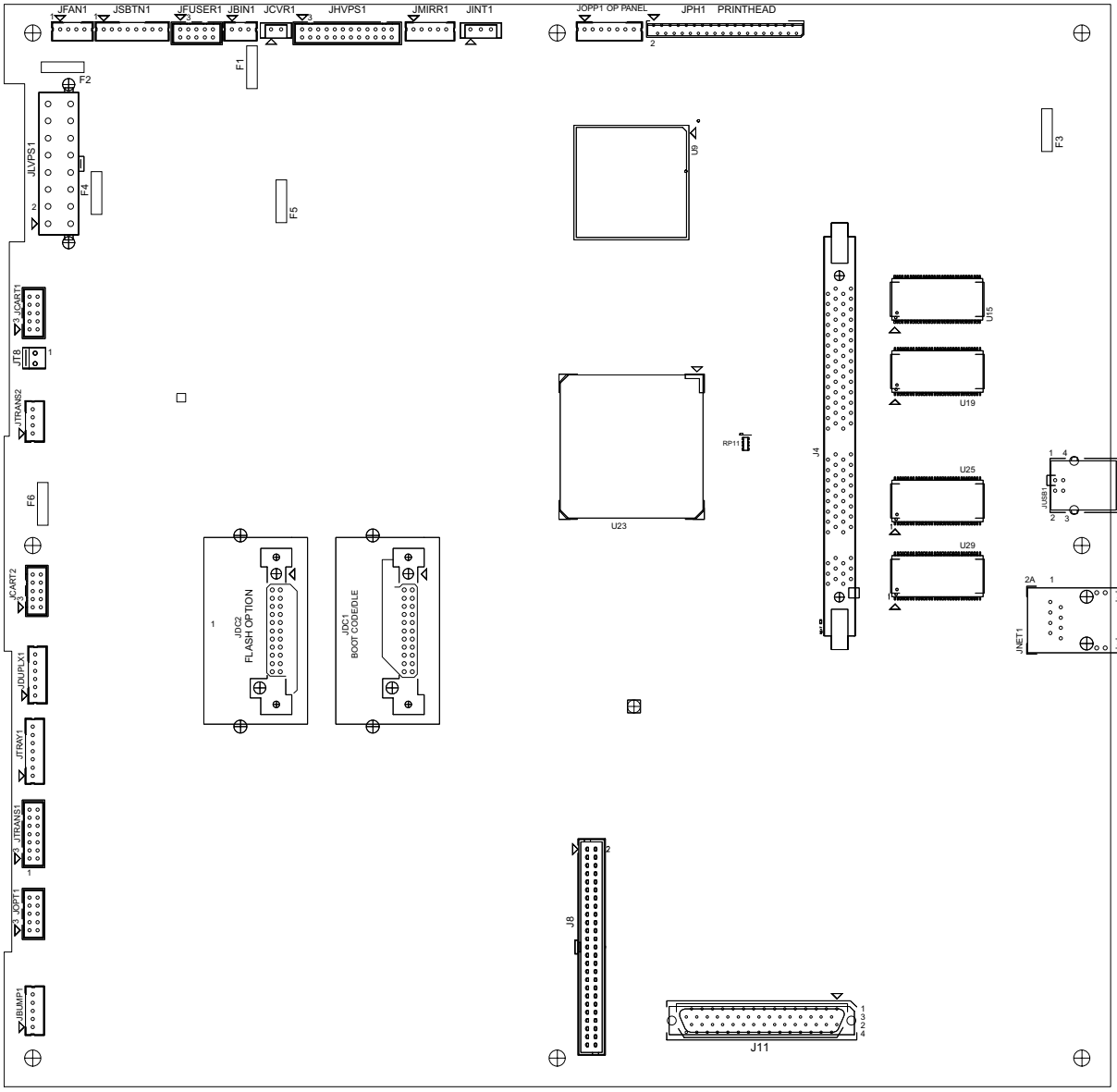

Transfer belt motor
Top cartridge motor
Bottom cartridge motor
Bump aligner motor

Printer cards



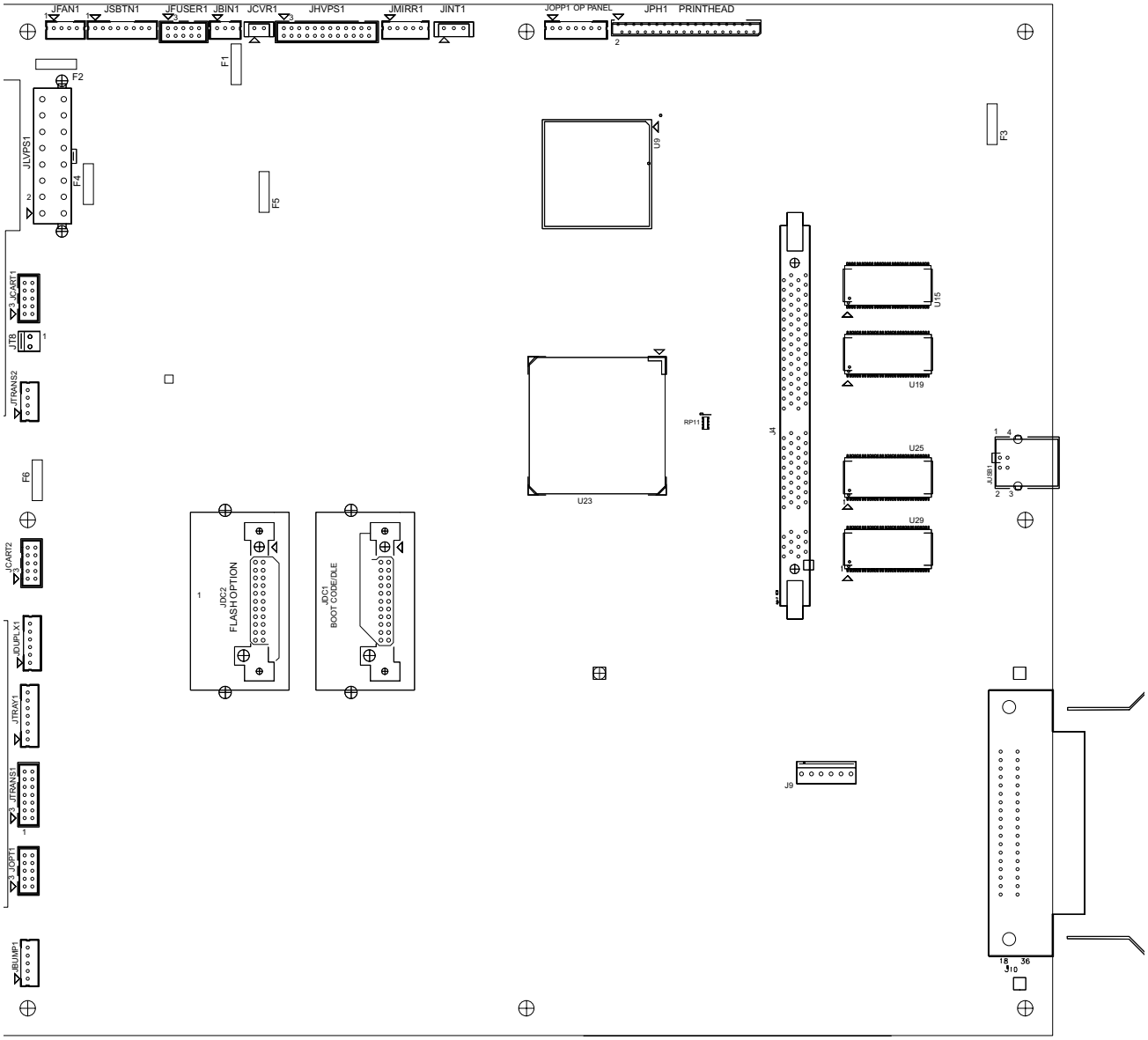
Connectors

Network system card



Legend:
Jxx-connector
Fx-fuse

Parallel system card



Legend:
Jxx-connector
Fx-fuse

Wiring diagrams

See back of manual.

6. Preventive maintenance

There is no preventive maintenance for this printer.

7. Parts catalog

How to use this parts catalog

The following legend is used in the parts catalog:

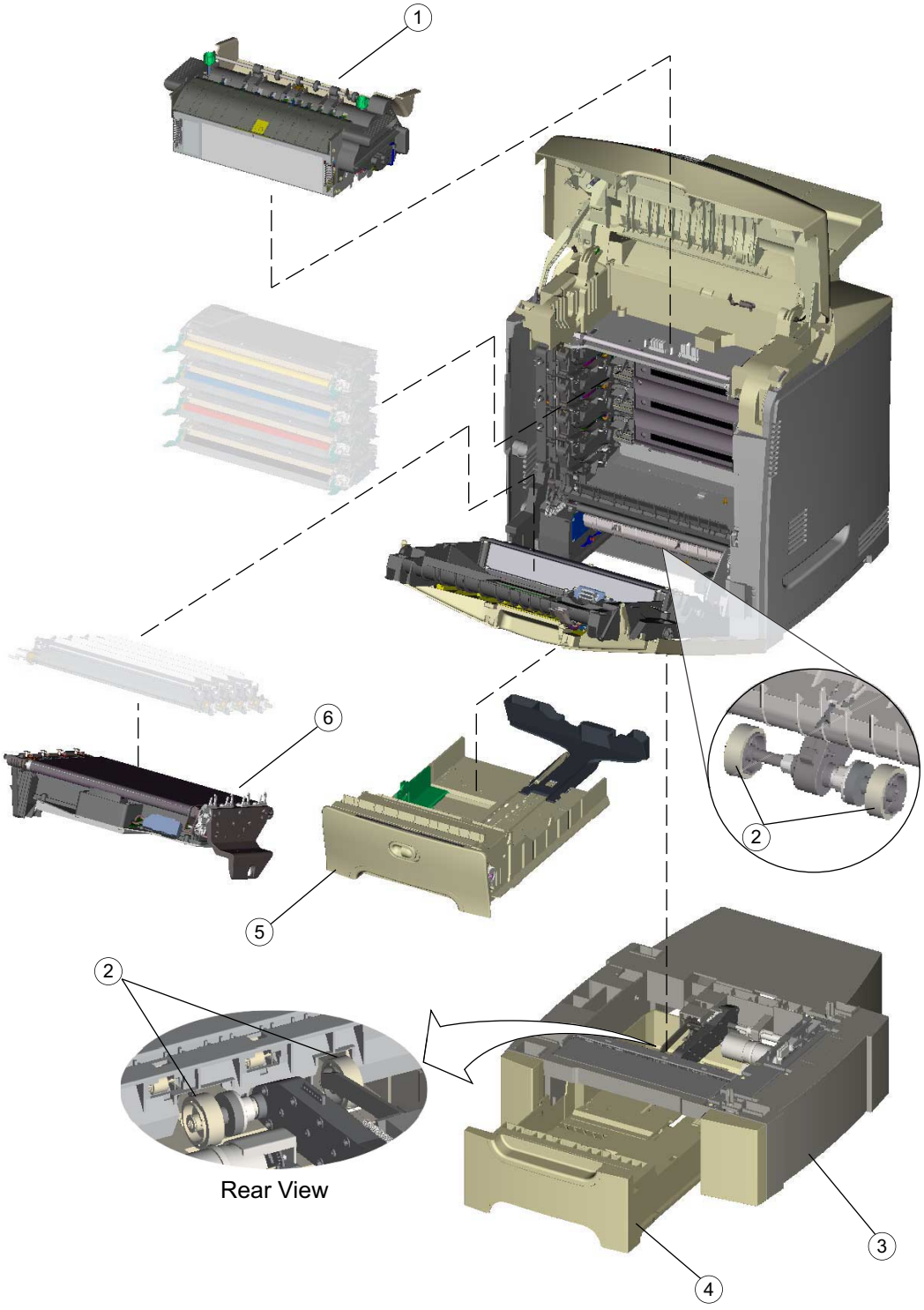
Asm-Index	Part number	Units/mach	Units/ kit or pkg	Description

- **Asm-index**: identifies the assembly and the item in the diagram. For example, 3-1 indicates Assembly 3 and the item number 1.
- **Part number**: identifies the unique number that identifies this FRU.
- **Units/mach**: refers to the number of units actually used in the base printer or product.
- **Units/kit or pkg**: refers to the number of units packaged together and identified by the part number.
- **NS**: (Not shown) in the Asm-Index column indicates that the part is procurable but is not pictured in the illustration.

Model information used in the parts catalog.

Model name	Configuration	Model/printer type
C520n	Network	5022-010
C522n	Network	5022-210
C524	Non-network	5022-400
C524n	Network	5022-410
C524dn	Duplex network	5022-430

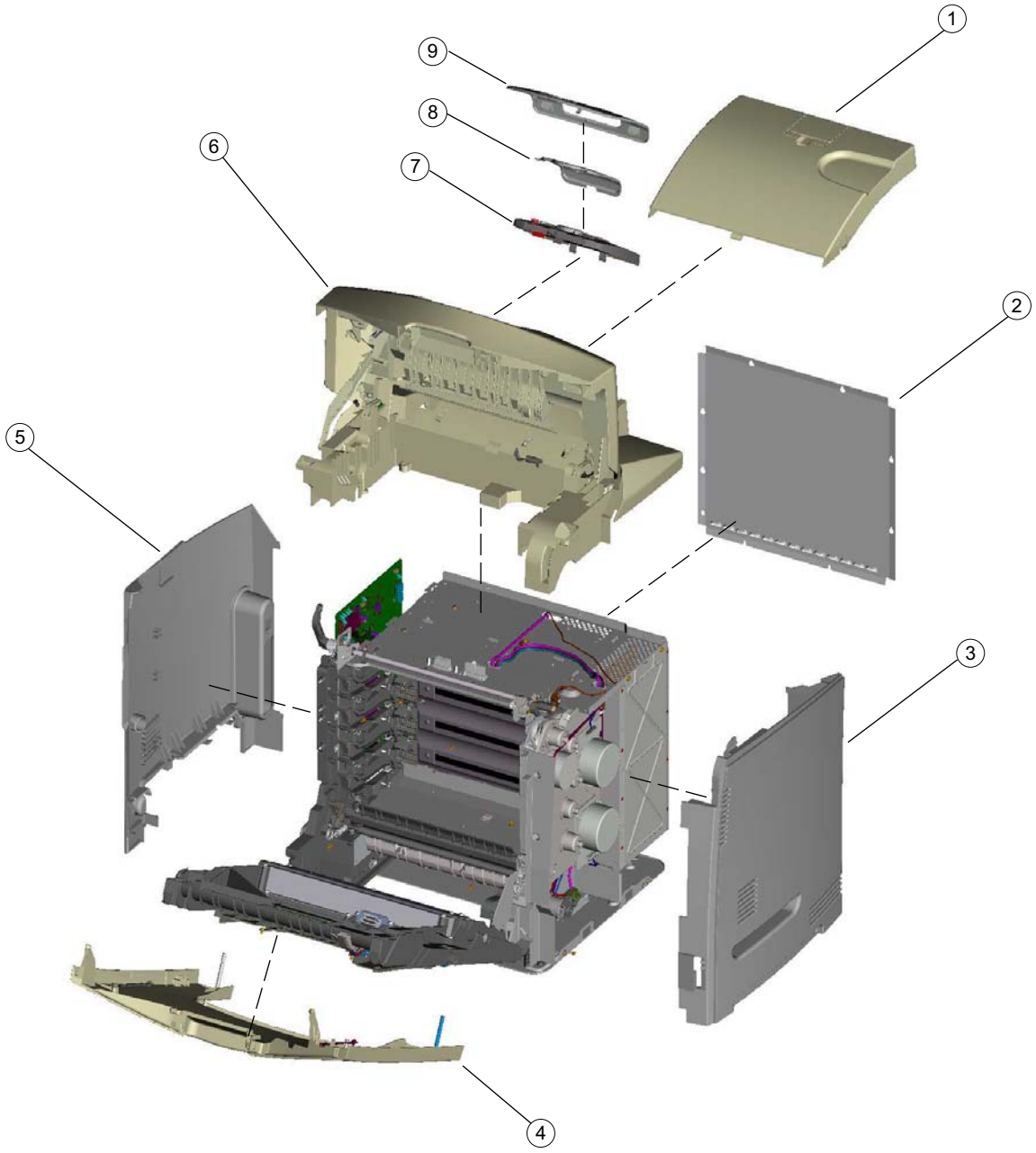
Assembly 1: CRUs



Assembly 1: CRUs

Index	P/N	Units/ mach	Units/kit or pkg	Description
1-1	40X1400	1	1	Fuser assembly, 115 V
1	40X1402	1	1	Fuser assembly, 230 V
1	40X1403	1	1	Fuser assembly, 100 V
2	40X0070	2	2	Roll, pick arm
3	40X1439	1	1	Assembly, 500-sheet option (includes 40X1423 tray)
4	40X1423	1	1	Tray assembly, 500-sheet
5	40X1404	1	1	Tray assembly, 250 MFP paper (C524)
NS	40X1424	1	1	Tray assembly, single feeder (C520, C522)
6	40X1401	1	1	Assembly, transfer belt
NS	40X0297	1	1	Power cord, USA, Canada, Bolivia, Peru
NS	40X0288	1	1	Power cord, Argentina
NS	40X0273	1	1	Power cord, Chile, Uruguay
NS	40X0277	1	1	Power cord, Brazil
NS	40X0270	1	1	Power cord, Japan
NS	40X0282	1	1	Power cord, China
NS	40X0281	1	1	Power cord, Taiwan
NS	40X0280	1	1	Power cord, Korea
NS	40X0286	1	1	Power cord, Singapore, Hong Kong
NS	40X0296	1	1	Power cord, Australia, New Zealand
NS	40X0278	1	1	Power cord, Austria, Belgium, Catalan, Czechoslovakia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Paraguay, Poland, Portugal, Russia, Spain, Sweden, Turkey, United Kingdom
NS	40X0279	1	1	Power cord, Denmark
NS	40X0275	1	1	Power cord, Israel
NS	40X0276	1	1	Power cord, South Africa
NS	40X0274	1	1	Power cord, Switzerland

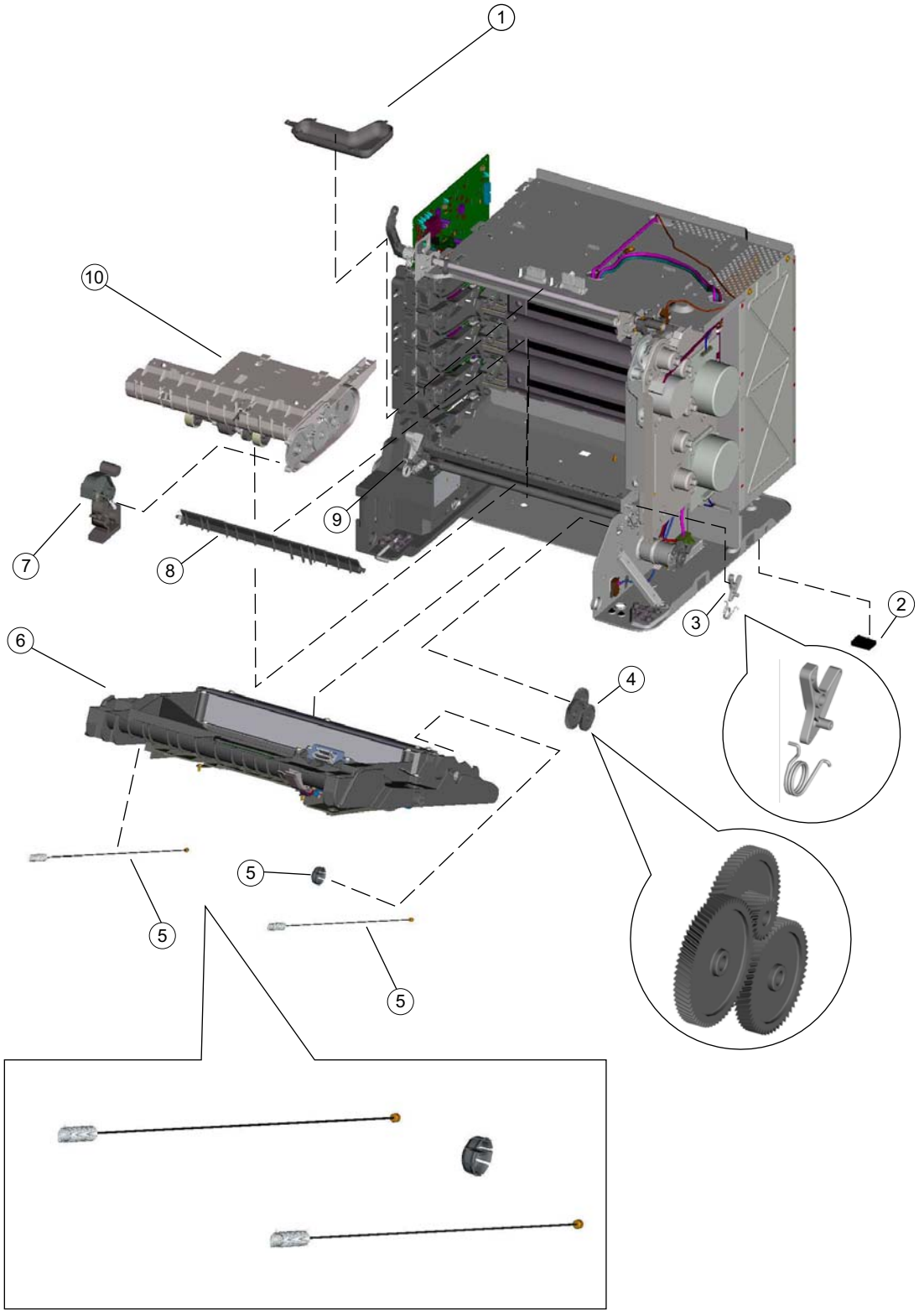
Assembly 2: Covers



Assembly 2: Covers

Index	P/N	Units/ mach	Units/kit or pkg	Description
2-1	40X1422	1	1	Cover, exit tray
2	40X1427	1	1	Cover, rear
3	40X1425	1	1	Cover, right
4	40X1443			Cover assembly, duplex front access door (C524dn only)
NS	40X1413	1	1	Cover assembly, front access door (non-duplex)
5	40X1426	1	1	Cover, left
6	40X1451	1	1	Cover assembly, network top access
NS	40X1412	1	1	Cover assembly, non-network top access
7	40X1414	1	1	Assembly, operator panel
8	40X1448	1	1	Bezel, inner (C524)
8	40X1449	1	1	Bezel, inner (C522)
8	40X1450	1	1	Bezel, inner (C520)
9	40X1415	1	1	Bezel, outer

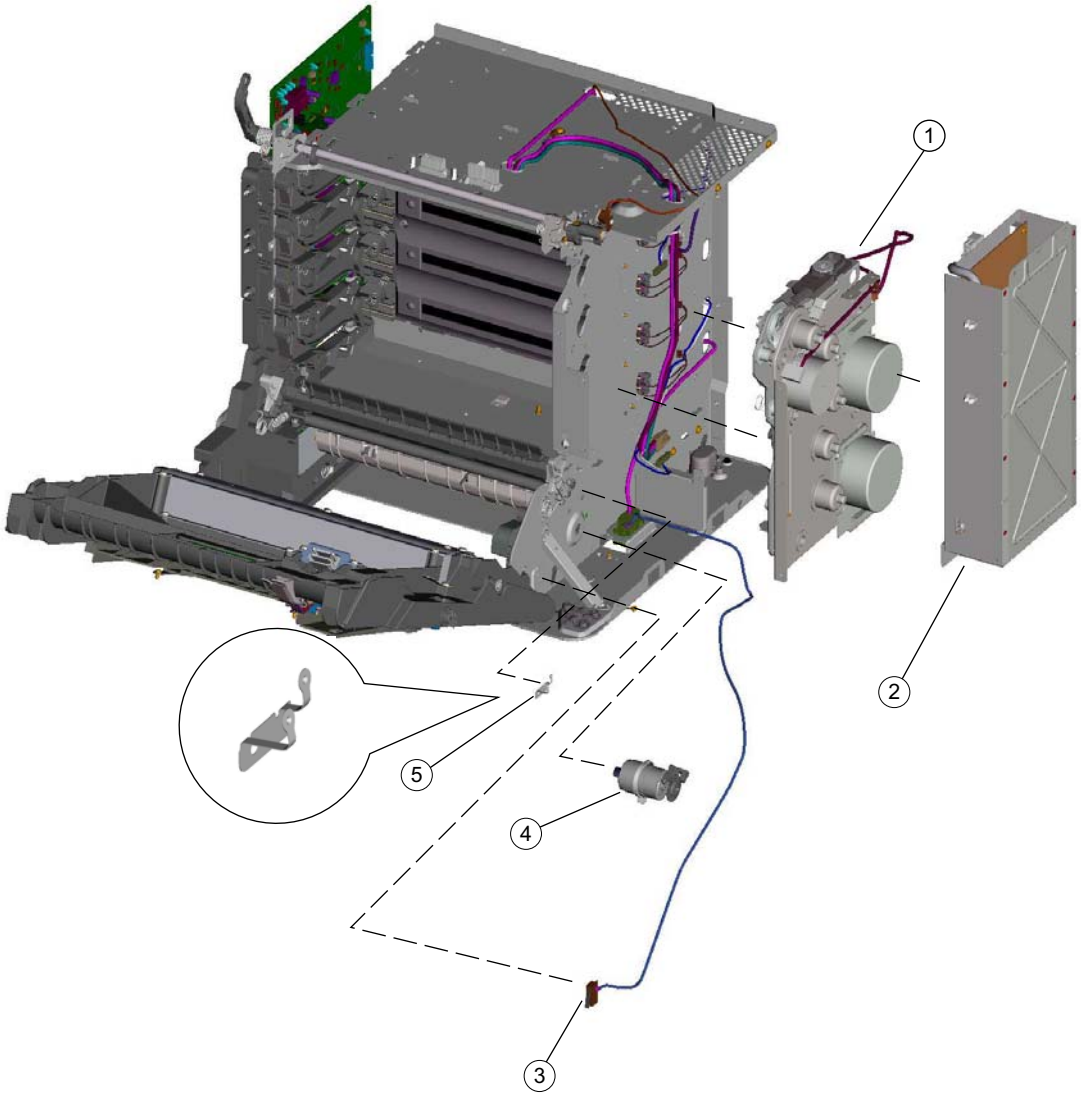
Assembly 3: Front



Assembly 3: Front

Index	P/N	Units/ mach	Units/kit or pkg	Description
3-1		1	1	Cover, fuser cable (Part of 40X1430 cable parts packet)
2		4	1	Pad, printer (Part of 40X1431 screw parts packet)
3	40X1446	1	1	Bellcrank assembly, right
4	40X1432	1	1	Parts packet, bump aligner gear
5	40X1420	1	1	Parts packet, front door
6	40X1419	1	1	Door assembly, duplex front
NS	40X1418	1	1	Door assembly, front (non-duplex)
7	40X1435	1	1	Assembly, MPF swing arm
8	40X1444	1	1	Assembly, deflector
9	40X1447	1	1	Bellcrank assembly, left
10	40X1405	1	1	Assembly, paper pick mechanism

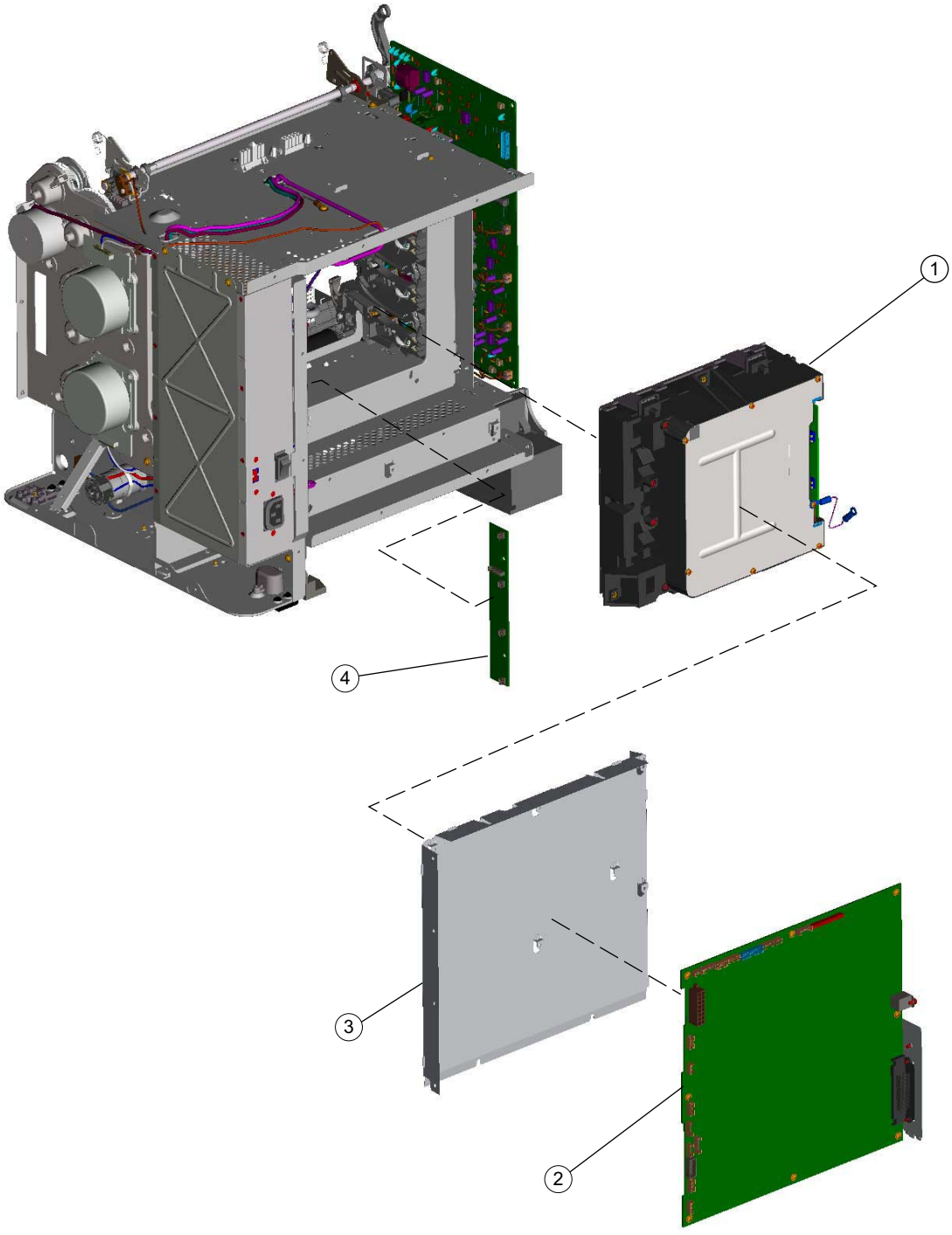
Assembly 4: Right



Assembly 4: Right

Index	P/N	Units/ mach	Units/kit or pkg	Description
4-1	40X1409	1	1	Drive assembly, EP
2	40X1406	1	1	Power supply, low volt 115/230 V
3	40X1436	1	1	Switch, front door 5V interlock
4	40X1433	1	1	Motor, bump aligner
5	40X1445	1	1	Plate, ground contact

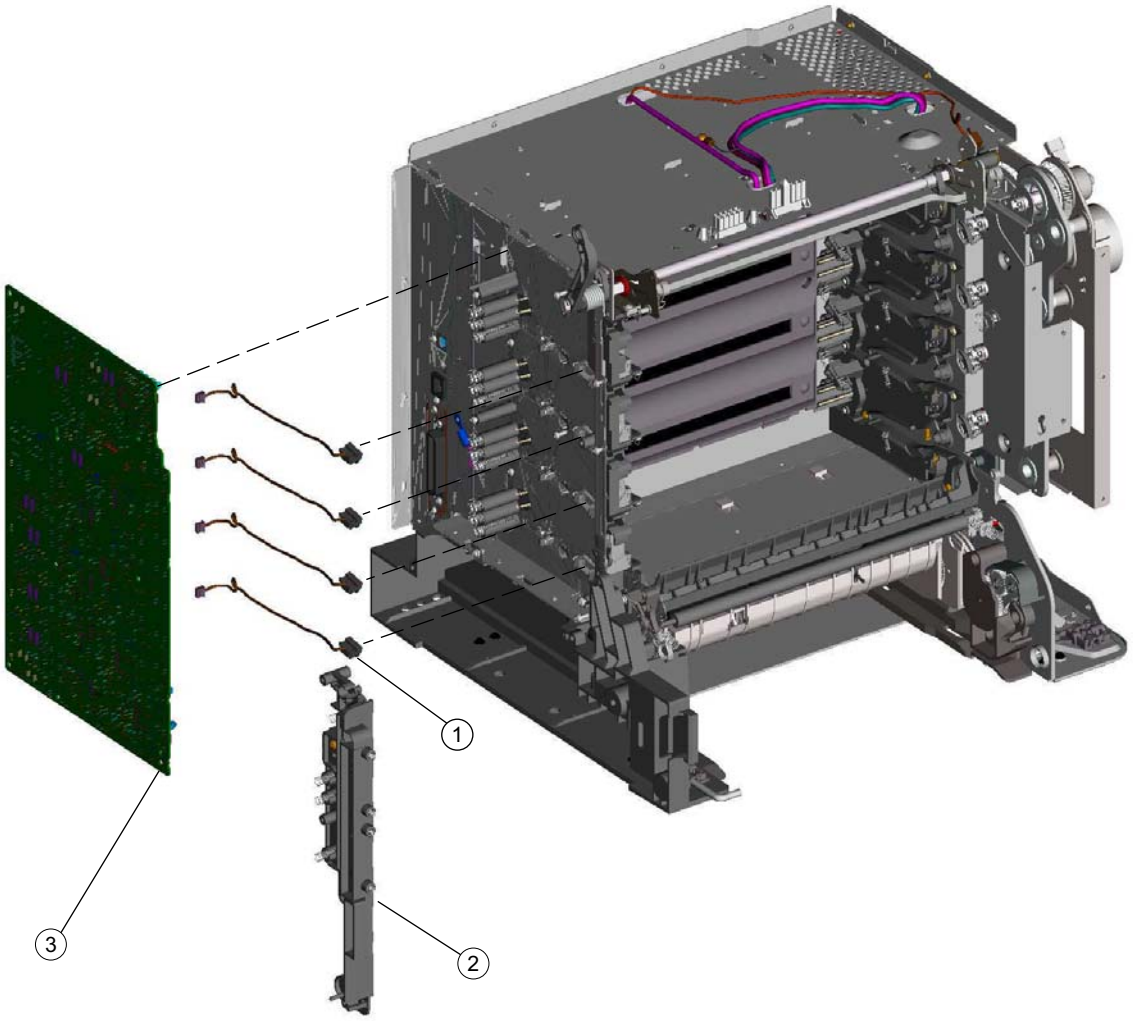
Assembly 5: Rear



Assembly 5: Rear

Index	P/N	Units/ mach	Units/kit or pkg	Description
5-1	40X1417	1	1	Printhead assembly
2	40X1408	1	1	Card, system network (C524n, C524dn)
NS	40X1442	1	1	Card, system network (C520n, C522n)
3	40X1429	1	1	Shield, system card support
4	40X1410	1	1	Card, smart chip

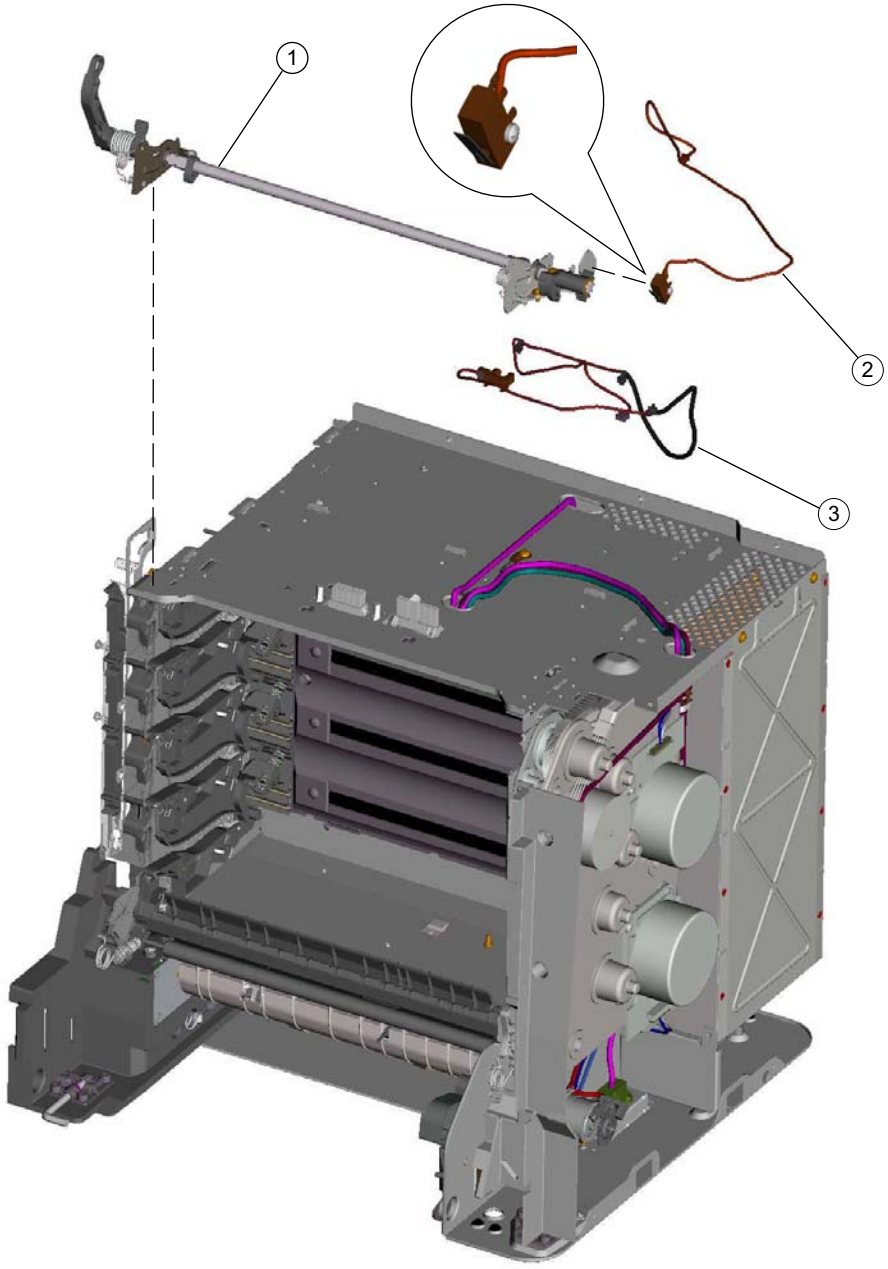
Assembly 6: Left



Assembly 6: Left

Index	P/N	Units/ mach	Units/kit or pkg	Description
6-1	40X1416	4	1	Sensor, toner level
2	40X1428	1	1	Contact assembly, transfer
3	40X1411	1	1	Power supply, high volt

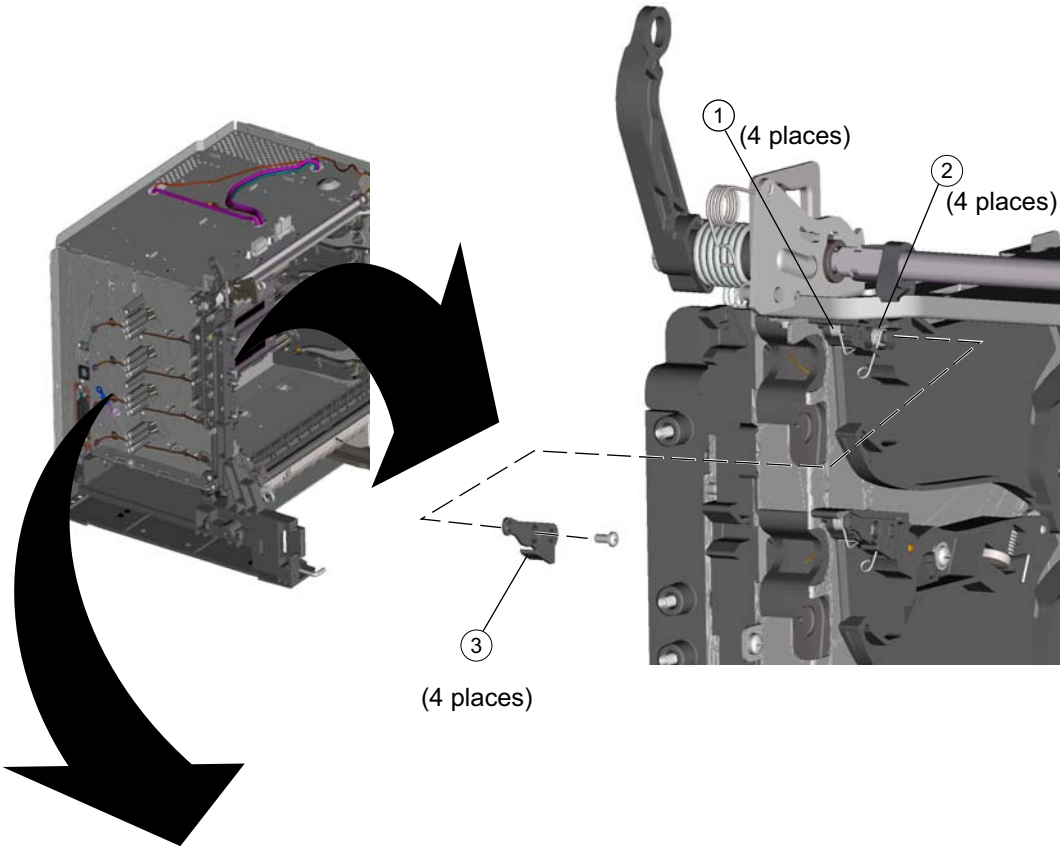
Assembly 7: Top

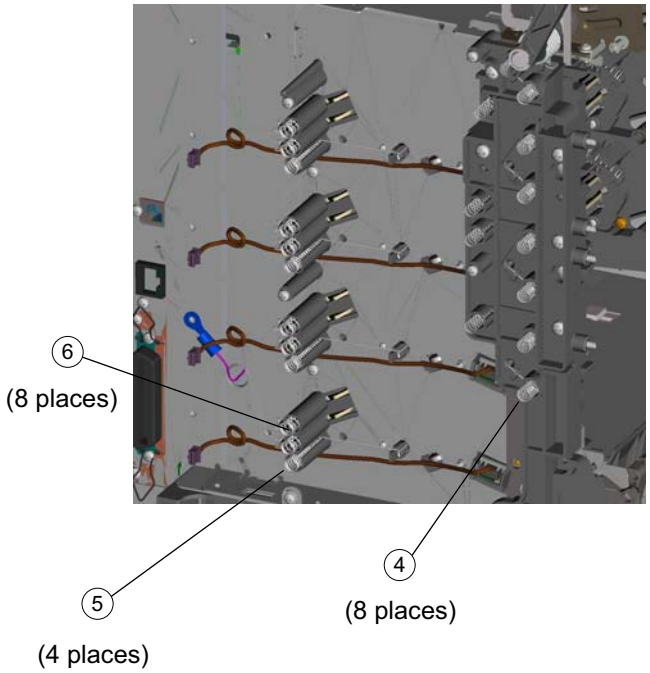


Assembly 7: Top

Index	P/N	Units/ mach	Units/kit or pkg	Description
7-1	40X1421	1	1	Assembly, top cover camshaft
2	40X1437	1	1	Switch, top access door 24V interlock
3	40X1440	1	1	Sensor, bin full with cable (network printers only)

Assembly 8: Contact Springs Packet

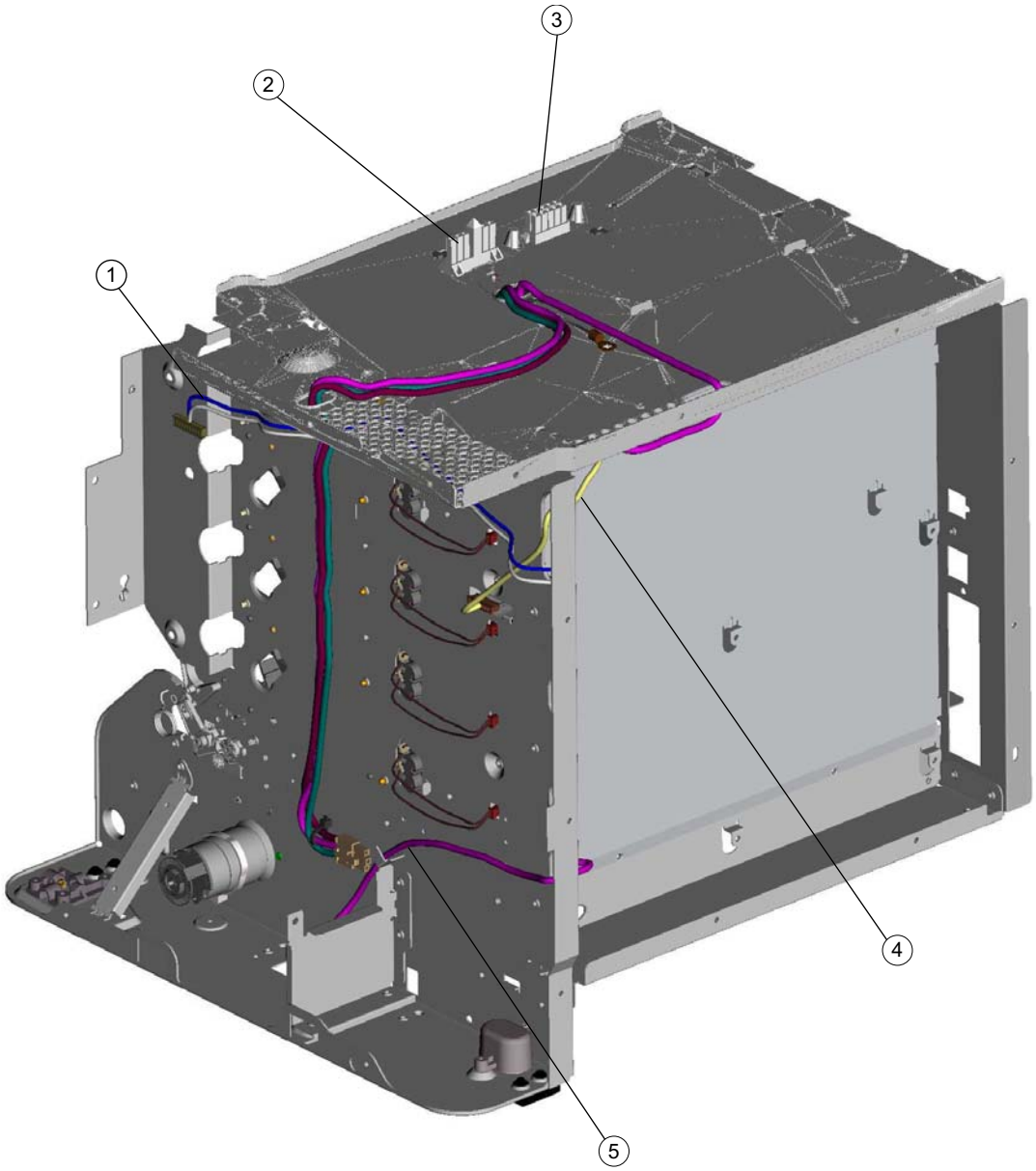




Assembly 8: Contact Springs Packet

Index	P/N	Units/ mach	Units/kit or pkg	Description
8-	40X1434	1	1	Parts packet, contact springs
1	N/A	4	1	• Contact spring, torsion PCD
2	N/A	4	1	• Contact spring, torsion CR
3	N/A	4	1	• Cap, contact spring
4	N/A	8	1	• Contact spring, charge roll
5	N/A	4	1	• Contact spring, HVPS tar
6	N/A	8	1	• Contact spring, HVPS dr/dev

Assembly 9: Cable Parts Packet



Assembly 9: Cable Parts Packet

Index	P/N	Units/ mach	Units/kit or pkg	Description
9-	40X1430	1	1	Parts packet, cable
1	N/A	1	1	• Cable, cartridge motor
2	N/A	1	1	• Cable, fuser AC
3	N/A	1	1	• Cable, fuser DC
4	N/A	1	1	• Cable, smart chip
5	N/A	1	1	• Cable, option
NS	N/A	1	1	• Cover, fuser cable (see Front Assembly for part identification and location)
NS	N/A	1	1	• Cable, duplex

Assembly 10: Miscellaneous

Index	P/N	Units/ mach	Units/kit or pkg	Description
10-	40X1431	1	1	Parts packet, screw (Contains one of each screw used in the printer, with the exception of the parts specifically called out.)
NS	40X1508	1	1	128 MB SDRAM, 100-pin
NS	40X1509	1	1	256 MB SDRAM, 100-pin
NS	40X1510	1	1	512 MB SDRAM, 100-pin
NS	40X1454	1	1	32 MB flash card
NS	40X1455	1	1	64 MB flash card
NS	40X1515	1	1	Korean font card
NS	40X1514	1	1	Traditional Chinese font card
NS	40X1513	1	1	Simplified Chinese font card
NS	40X1512	1	1	Japanese font card
NS	40X2664	1	1	Bar code card
NS	40X2663	1	1	Forms card
NS	46D0060	1	1	MarkNet X2011e ethernet 10/100baseTx
NS	46D0040	1	1	MarkNet X2012e ethernet 10/100baseTx/10base2
NS	46D0020	1	1	MarkNet X2031e ethernet 10/100baseTx
NS	46D0000	1	1	MarkNet X2030t token-ring
NS	1010042	1	1	US 802.11g wireless print adapter
NS	1010043	1	1	International 802.11g wireless print adapter
NS	14T0030	1	1	N4000e print server, US and Americas
NS	14T0040	1	1	N4000e print server, Western Europe
NS	14T0050	1	1	N4000e print server, United Kingdom
NS	14T0060	1	1	N4000e print server, Australia/New Zealand
NS	14T0070	1	1	N4000e print server, Argentina
Note: Only one internal network connection is supported at any given time. The standard network connection will not work when any of the MarkNet N80XX cards are installed.				
NS	40X1375	1	1	MarkNet N8000 fast ethernet print server (C524n only)
NS	40X1376	1	1	MarkNet N8020 gigabit ethernet print server (C524n only)
NS	40X1377	1	1	MarkNet N8030 fiber ethernet print server (C524n only)
NS	40X1378	1	1	MarkNet N8050 802.11g wireless print server (US/Americas, C524n only)
NS	40X1562	1	1	MarkNet N8050 802.11g wireless print server (rest of world, C524n only)
NS	40X0291	1	1	Adapter, parallel 1284-B interface card (C524n only)
NS	40X0290	1	1	Adapter, serial interface card (C524n only)
NS	12A2405	1	1	Cable, USB, 2-meter

Index

R

S

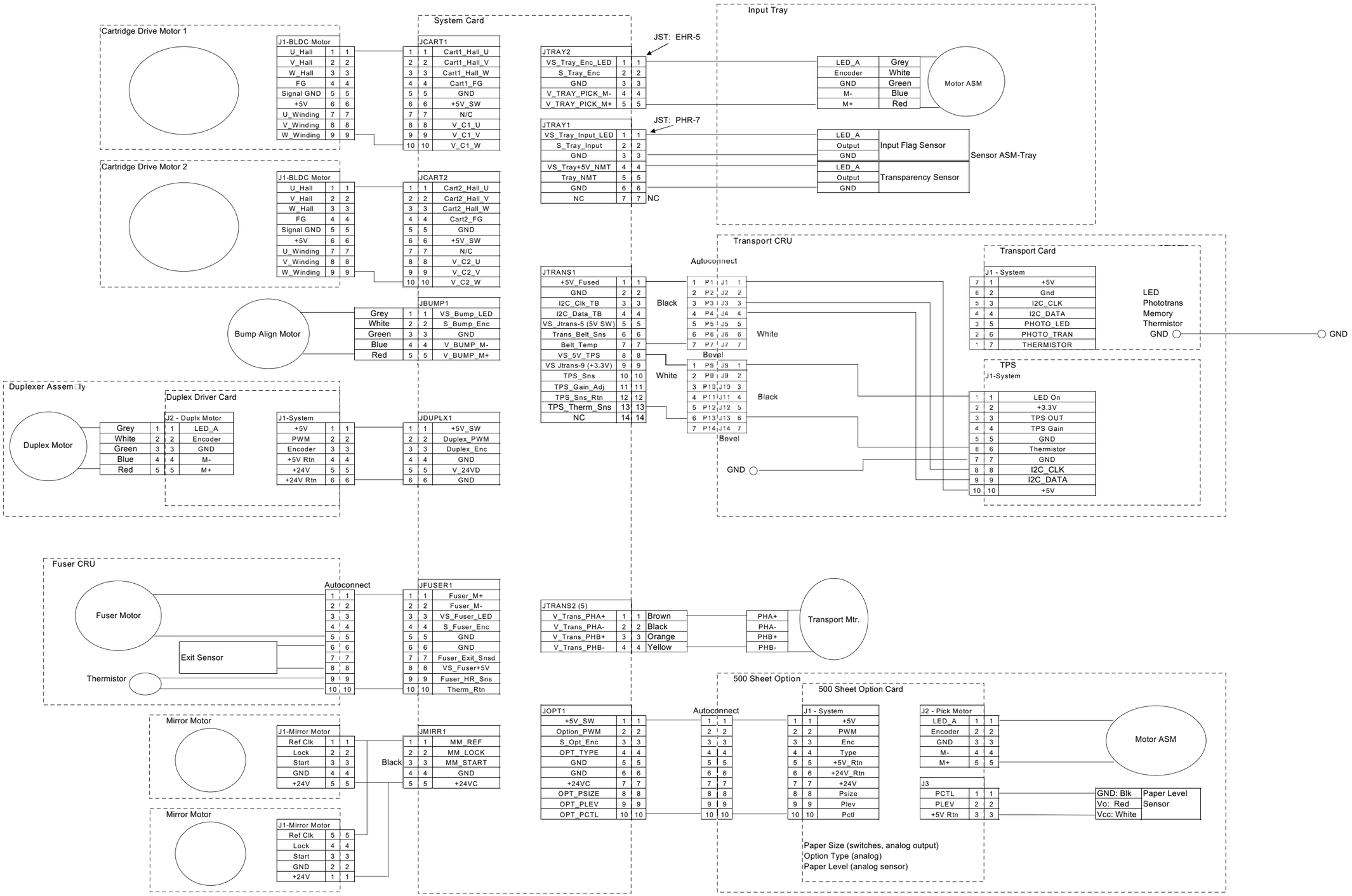
T

U

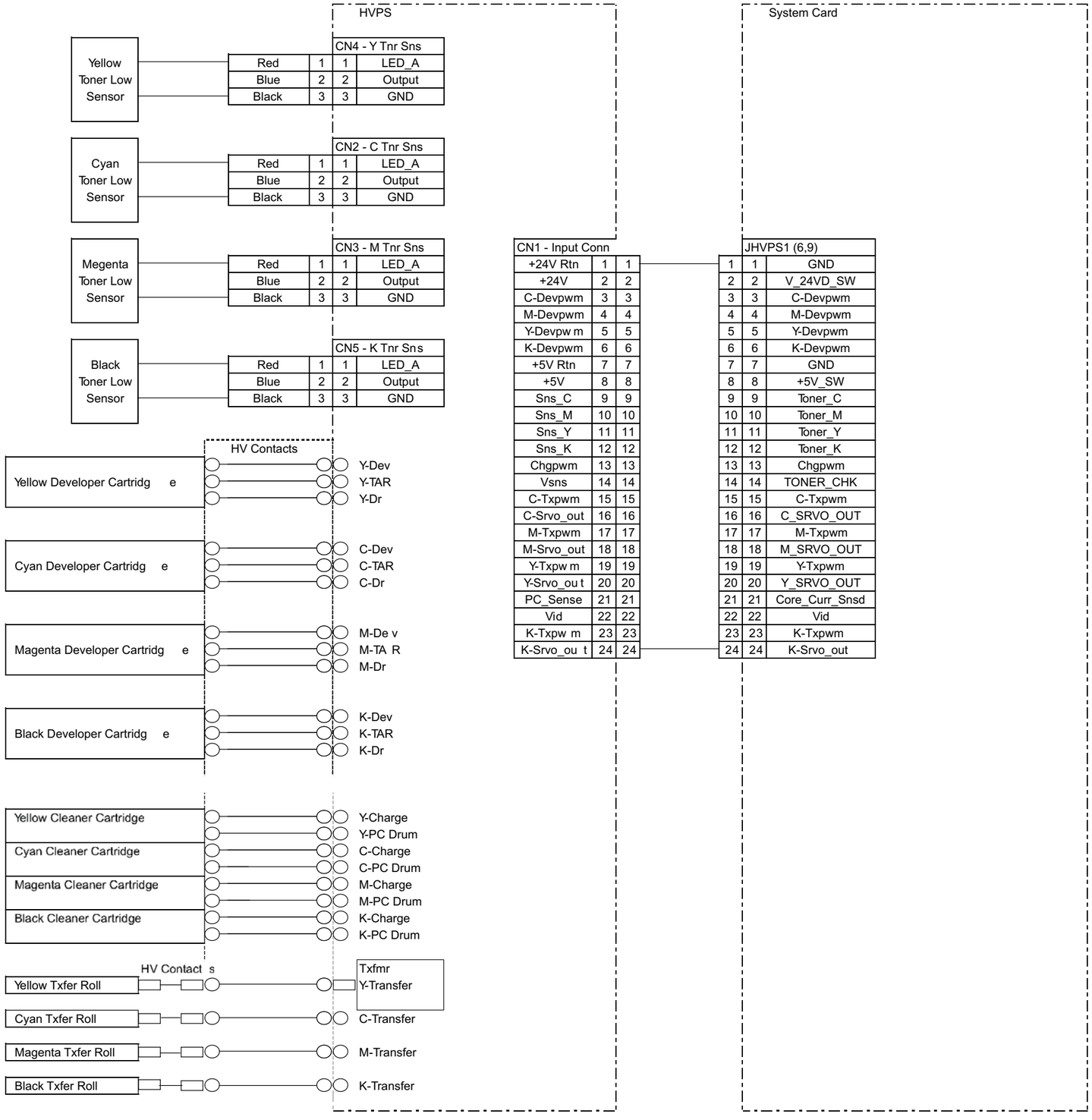
W

Part number index

Wiring diagram–Motors and CRUs



Wiring diagram–HVPS



Wiring diagram–Printhead,LVPS, system card