



## *Service Manual*

**Lexmark™ C540n, C543dn, C544n, C544dn,  
C544dtn, C544dw, and C546dtn**

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**5025-2xx, 4xx**

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## Notices and safety information

The laser notice label may be affixed to this printer.

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### Laser notice

This product 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) AlGaInP laser producing visible radiation in the wavelength of 650-670 nanometers enclosed in a non-serviceable printhead assembly. The laser system and printer are designed so there is never any human access to laser radiation exceeding Class I levels during normal operation, user maintenance, or prescribed service condition.

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### Laser-Hinweis

Dieses Produkt ist in den USA zertifiziert und entspricht den Anforderungen der Vorschriften DHHS 21 CFR Unterkapitel J für Laserprodukte der Klasse I (1), andernorts ist er als Laserprodukt der Klasse I zertifiziert, das den Anforderungen von IEC 60825-1 entspricht.

Laserprodukte der Klasse I werden nicht als gefährlich betrachtet. Der Drucker enthält im Inneren einen Laser der Klasse IIIb (3b) AlGaInP, der sichtbare Strahlung im Wellenlängenbereich von 650 bis 670 Nanometern abgibt. Dieser befindet sich in einer Druckkopfeinheit, die nicht gewartet werden kann. Das Lasersystem und der Drucker sind so konstruiert, dass unter normalen Betriebsbedingungen bei der Wartung durch den Benutzer oder bei den vorgeschriebenen Wartungsbedingungen Menschen keiner Laserstrahlung ausgesetzt sind, die die Werte für Klasse I überschreitet.

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### Avis relatif à l'utilisation de laser

Ce produit est certifié conforme aux exigences de la réglementation des Etats-Unis relative aux produits laser (DHHS 21 CFR Sous-chapitre J pour Classe I (1)). Pour les autres pays, il est certifié conforme aux exigences des normes CEI 60825-1 relatives aux produits laser de classe I.

Les produits laser de Classe I ne sont pas considérés comme dangereux. L'imprimante contient un laser de Classe IIIb (3b) AlGaInP qui produit des radiations visibles opérant sur une longueur d'onde de l'ordre de 650 à 670 nanomètres au sein d'un boîtier non démontable de la tête d'impression. Le système laser et l'imprimante ont été conçus de manière à ce que personne ne soit jamais exposé à des radiations laser dépassant le niveau de classe I dans le cadre d'un fonctionnement normal, de l'entretien par l'utilisateur ou de la maintenance.

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## Avvertenze sui prodotti laser

Questo prodotto è certificato negli Stati Uniti come prodotto conforme ai requisiti DHHS 21 CFR Sottocapitolo J per i prodotti laser di Classe I (1), mentre in altri paesi è certificato come prodotto laser di Classe I conforme ai requisiti IEC 60825-1.

I prodotti laser di Classe I non sono considerati pericolosi. La stampante contiene un laser Classe IIIb (3b) AlGaInP che emette una radiazione visibile a una lunghezza d'onda di 650-670 nanometri all'interno dell'unità testina di stampa non sottoponibile a manutenzione. Il sistema laser e la stampante sono stati progettati in modo da impedire l'esposizione a radiazioni laser superiori al livello previsto dalla Classe I durante le normali operazioni di stampa, manutenzione o assistenza.

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## Avisos sobre el láser

Este producto se ha certificado en EE.UU. cumpliendo con los requisitos de DHHS 21 CFR subcapítulo J para los productos láser de Clase I (1) y en otros países está certificada como un producto láser de Clase I de acuerdo con los requisitos de IEC 60825-1.

Los productos láser de Clase I no se consideran peligrosos. Este producto contiene un láser interno de Clase IIIb (3b) AlGaInP que produce una radiación visible en una longitud de onda de 650-670 nanómetros cerrado en un conjunto de cabezal de impresión que no se puede reparar. El sistema láser y la impresora se han diseñado para que el ser humano no acceda nunca a las radiaciones láser por encima del nivel de Clase I durante el funcionamiento normal, mantenimiento del usuario o condición de servicio prescrita.

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## Declaração sobre Laser

Este produto foi certificado nos EUA por estar em conformidade com os requisitos do DHHS 21 CFR, subcapítulo J, para produtos a laser de Classe I (1) e, nos demais países, foi certificado como um produto a laser de Classe I em conformidade com os requisitos da IEC 60825-1.

Os produtos a laser de Classe I não são considerados prejudiciais. A impressora contém, internamente, um laser de Classe IIIb (3b) AlGaInP que produz radiação visível no comprimento de onda de 650-670 nanômetros incluso em um conjunto do cabeçote de impressão cuja manutenção não é facilitada. O sistema do laser e a impressora foram projetados para que jamais haja acesso humano à radiação do laser acima dos níveis da Classe I durante a operação normal ou a manutenção pelo usuário ou sob as condições de manutenção prescritas.

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## Aviso sobre o laser

Nos E.U.A., este produto está classificado como estando em conformidade com os requisitos DHHS 21 CFR, Subcapítulo J, para produtos laser de Classe I (1) e, nas restantes regiões, está classificado como um produto de Classe I, estando em conformidade com os requisitos IEC 60825-1.

Os produtos laser de Classe I não são considerados perigosos. A impressora possui, no seu interior, um laser de Classe IIIb (3b) AlGaInP que produz radiação num comprimento de onda de 650-670 nanômetros. Este encontra-se fechado no conjunto da cabeça de impressão, que não é passível de manutenção. O sistema de laser e a impressora estão concebidos de forma a que nunca haja acesso humano à radiação laser que excede os níveis correspondentes à Classe I durante o funcionamento normal, manutenção ou em condições de assistência recomendada.

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## Laserinformatie

Dit product is in de Verenigde Staten gecertificeerd als een product dat voldoet aan de vereisten van DHHS 21 CFR paragraaf J voor laserproducten van klasse I (1). Elders is het product gecertificeerd als een laserproduct van klasse I dat voldoet aan de vereisten van IEC 60825-1.

Laserproducten van klasse I worden geacht geen gevaar op te leveren. De printer bevat intern een laser van klasse IIIb (3b) AlGalnP die zichtbare straling produceert in een golflengtebereik van 650-670 nanometer in een niet-buikbare printkopenheid. Het lasersysteem en de printer zijn zodanig ontworpen dat gebruikers nooit blootstaan aan laserstraling die hoger is dan het toegestane niveau voor klasse I-apparaten, tijdens normaal gebruik, onderhoudswerkzaamheden door de gebruiker of voorgeschreven servicewerkzaamheden.

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## Lasermeddelelse

Dette produkt er certificeret i USA i henhold til kravene i DHHS 21 CFRi underafsnit J for klasse I (1)-laserprodukter og er andre steder certificeret som et klasse I laserprodukt i henhold til kravene i IEC 60825-1.

Klasse I-laserprodukter er ikke anset som farlige. Printerens indeholder en intern klasse IIIb (3b) AlGalnP-laser, der producerer synlig stråling med en bølgelængde på 650-670 nanometer, indkapslet i en ikke-servicerbar printhovedsamling. Lasersystemet og printerens er udviklet på en sådan måde, at der ikke er en direkte laserstråling, der overskrider Klasse I-niveauet under normal brug, brugers vedligeholdelse eller de foreskrevne servicebetingelser.

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## Laserilmoitus

Tämä tuote on sertifioitu Yhdysvalloissa DHHS 21 CFR Subchapter J -standardin mukaiseksi luokan I (1) -lasertuotteeksi ja muualla IEC 60825-1 -standardin mukaiseksi luokan I lasertuotteeksi.

Luokan I lasertuotteita ei pidetä haitallisina. Laitteen tulostuspääkokoospanossa (ei huollettavissa) on sisäänrakennettu luokan IIIb (3b) AlGalnP -laser, joka tuottaa silminnähtävää säteilyä 650-670 nanometrin aallonpituudella. Laserjärjestelmä ja tulostin ovat rakenteeltaan sellaisia, että käyttäjä ei joudu alttiiksi luokkaa 1 suuremmalle säteilylle normaalin käytön, ylläpidon tai huollon aikana.

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## Huomautus laserlaitteesta

Tämä tuote on sertifioitu Yhdysvalloissa DHHS 21 CFR Subchapter J -standardin mukaiseksi luokan I (1) -lasertuotteeksi ja muualla IEC 60825-1 -standardin mukaiseksi luokan I lasertuotteeksi.

Luokan I lasertuotteita ei pidetä haitallisina. Laitteen tulostuspääkokoospanossa (ei huollettavissa) on sisäänrakennettu luokan IIIb (3b) AlGalnP -laser, joka tuottaa silminnähtävää säteilyä 650-670 nanometrin aallonpituudella. Laserjärjestelmä ja tulostin ovat rakenteeltaan sellaisia, että käyttäjä ei joudu alttiiksi luokkaa 1 suuremmalle säteilylle normaalin käytön, ylläpidon tai huollon aikana.

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## Laser-notis

Denna produkt är certifierad i USA i enlighet med kraven i DHHS 21 CFR underkapitel J för klass I (1)-laserprodukter, och på andra platser certifierad som en klass I-laserprodukt i enlighet med kraven i IEC 60825-1.

Klass I-laserprodukter betraktas inte som skadliga. Skrivaren innehåller en klass IIIb (3b) AlGaInP-laser som producerar synlig strålning inom våglängden 650-670 nm, innesluten i en icke-servicebar skrivhuvudenhet. Lasersystemet och skrivaren är utformade så att människor aldrig utsätts för laserstrålning som överskrider klass I-nivåerna under normala förhållanden vid användning, underhåll eller service.

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## Laser-melding

Dette produktet er sertifisert i USA for samsvar med kravene i DHHS 21 CFR, underkapittel J for laserprodukter av klasse I (1) og er andre steder sertifisert som et laserprodukt av klasse I som samsvarer med kravene i IEC 60825-1.

Laserprodukter av klasse I anses ikke som helseskadelige. Skriveren inneholder en intern AlGaInP-laser av klasse IIIb (3b) som produserer synlig stråling i bølgelender på 650–670 nanometer i en ikke-reparerbar skrivhodeenhet. Lasersystemet og skriveren er utformet slik at mennesker ikke utsettes for laserstråling utover nivåene i klasse I under normal drift, vedlikehold eller foreskrevet service.

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## Aviso de láser

Este producto está certificado en Estados Unidos para el cumplimiento de los requisitos estipulados en DHHS 21 CFR Subcapítulo J para productos láser de Clase I (1), y cuenta con certificación para otros países como producto láser de Clase I de conformidad con los requisitos de IEC 60825-1.

Los productos láser de Clase I no se consideran peligrosos. La impresora contiene en su interior radiación láser visible AlGaInP Clase IIIb (3b) en la longitud de onda de 650 - 670 nanómetros dentro de un mecanismo de cabezal de impresión que no requiere servicio técnico. La impresora y el sistema láser están diseñados de forma tal que no exista nunca acceso humano a radiación láser que supere los niveles de Clase I durante el funcionamiento normal, las tareas de mantenimiento por parte del usuario o las condiciones de servicio técnico estipuladas.



### 레이저-통지

本製品は、米国においてクラス I (1) レーザー製品に対する DHHS 21 CFR Subchapter J の要件に準拠し、その他の国では IEC 60825-1 の要件に準拠するクラス I レーザー製品として認可されています。

クラス I レーザー製品は、危険性がないとみなされています。プリンタ内部には、波長が 650~670 ナノメートルの可視放射を発生するクラス IIIb (3b) AlGalnP レーザー装置が搭載されており、整備不可のプリンタヘッドアセンブリに収容されています。レーザーシステムとプリンタは、通常の操作、ユーザによるメンテナンス、または所定のサービス条件の下で、ユーザがクラス I レベルを超えるレーザー放射に絶対にさらされないように設計されています。

### 激光通知

本打印机在美国认证合乎 DHHS 21 CFR Subchapter J 对分类 I (1) 激光产品的标准，而在其他地区则被认证是合乎 IEC 60825-1 的分类 I 激光产品。一般认为分类 I 激光产品不具有危险性。本打印机内部含有分类 IIIb (3b) AlGalnP 的激光，封装在不可维修的打印头配件中，会产生波长范围在 650-670nm 之间的可见放射线。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。

### 激光通知

本產品係經過美國核可，符合 DHHS 21 CFR 二級規章之 J 級 I (1) 規定及 IEC 60825-1 規定的 I 級雷射產品。根據 I 級雷射產品的規定，這類產品不會對人體造成傷害。本印表機內部所採用之 IIIb (3b) 級 AlGalnP 雷射所產生的可見放射線含括在其作用波長為 650-670 奈米 (nanometer) 的不可修復列印頭組件中。使用者只要以正確的方法操作及維護保養，並依照先前述之維修方式進行修護，此印表機與其雷射系統絕不會產生 I 級以上的放射線，而對人體造成傷害。

### 레이저 통지

본 제품은 미국에서 레이저 제품용 DHHS 21 CFR Subchapter J의 요구 사항을 준수하며 이외 지역에서 IEC 60825-1의 요구 사항을 준수하는 클래스 I(1) 레이저 제품으로 승인되었습니다. 클래스 I 레이저 제품은 위험한 제품으로 간주되지 않습니다. 프린터에는 650-670 나노미터의 파장 영역에서 가시 방사를 방출하며 서비스 불가능한 프린터 헤드 부품에 밀봉된 레이저인 클래스 IIIb(3b) AlGalnP 레이저가 내부에 포함되어 있습니다. 레이저 시스템과 프린터는 정상적인 작동, 사용자 유지 관리 또는 사전 설명된 서비스 조건에는 사람에게 클래스 I 수준 이상의 레이저 방사가 노출되지 않도록 설계되었습니다.

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## Safety information

- The safety of this product is based on testing and approvals of the original design and specific components. The manufacturer is not responsible for safety in the event of use of unauthorized replacement parts.
- The maintenance information for this product has been prepared for use by a professional service person and is not intended to be used by others.
- There may be an increased risk of electric shock and personal injury during disassembly and servicing of this product. Professional service personnel should understand this and take necessary precautions.
-  **CAUTION:** When you see this symbol, there is a danger from hazardous voltage in the area of the product where you are working. Unplug the product before you begin, or use caution if the product must receive power in order to perform the task.

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## Consignes de sécurité

- La sécurité de ce produit repose sur des tests et des agréments 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.

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## 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 segurança, 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, desendolieu l'equip o extremeu les precaucions si, per treballar amb l'equip, l'heu de connectar.

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## 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 기술자용으로 작성된 것이므로, 비전문가는 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 위험 표시입니다. 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。

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## 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, as well as general environmental and safety instructions, are discussed.
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.

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## Change history

Revision date	Updates
2014/12/01	Updated the <b>“Image transfer unit (ITU) removal”</b> on page 4-44.
2014/11/13	<ul style="list-style-type: none"> <li>Added the ITU guide removal topic in the Repair information chapter.</li> <li>Added the ITU guide FRU (PN 41X0580) in the Parts catalog chapter.</li> </ul>
2012/08/23	Updated parts catalog index to reflect 40X7096.
2012/01/16	Added installation note to perform Motor detect test after replacing the Controller board. See <b>“Controller board removal”</b> on page 4-20.
2012/01/06	<ul style="list-style-type: none"> <li>Changed PN 40X5405 to PN 40X8395 for the <b>“High-voltage power supply”</b> on page 7-7</li> <li>Updated the <b>“High-voltage power supply (HVPS) assembly removal”</b> on page 4-38.</li> </ul>
2011/11/11	<ul style="list-style-type: none"> <li>Changed PN 40X2263 to PN 40X5803 for the <b>“Duplex reference edge”</b> on page 7-5 in Assembly 2:Frames.</li> <li>Changed PN 40X1538 with PN 40X8341 for the <b>“Optional 550-sheet drawer (complete)—C546dtn only”</b> on page 7-11 in Assembly 5: Media drawers and trays.</li> <li>Changed the following part numbers in <b>“Electronics”</b> on page 7-7: <ul style="list-style-type: none"> <li>40X1766 with 40X0269 for <b>“Power cord, 2.5 m (straight)—USA, Canada, Bolivia, Peru (shown)”</b> on page 7-7</li> <li>40X0279 with 40X1774 for <b>“Power cord, 2.5 m (straight)—Denmark”</b> on page 7-7</li> </ul> </li> <li>Deleted PN 40X0287 in <b>“Electronics”</b> on page 7-7.</li> <li>Updated the descriptions for the following part numbers in <b>“Electronics”</b> on page 7-7: <ul style="list-style-type: none"> <li>40X4596 (from 1.8 m to 2.5 m)</li> <li>40X0273 (to include Italy)</li> </ul> </li> <li>Updated the removal procedure for <b>“Duplex reference edge removal”</b> on page 4-22.</li> </ul>
2011/10/27	<ul style="list-style-type: none"> <li>Replaced PN 40X6697 with PN 40X6997 for the Optional 650-sheet Duo Drawer (complete)—(includes 100-sheet MPF) in <b>“Media drawers and trays”</b> on page 7-11.</li> <li>Removed PN 40X2512 for the MPF lock cover in <b>“Media drawers and trays”</b> on page 7-11.</li> </ul>
2011/10/06	<ul style="list-style-type: none"> <li>Changed PN 40x5434 with PN 40X6997 for the <b>“Optional 650-sheet Duo Drawer (complete)—(includes 100-sheet MPF)”</b> on page 7-11.</li> <li>Deleted PN 40X2284 and PN 40X5435 in <b>“Media drawers and trays”</b> on page 7-10.</li> <li>Updated the FRU description for PN 40X2285 in <b>“Media drawers and trays”</b> on page 7-10.</li> <li>Removed the illustration for the note on PN 40X2285 in <b>“Media drawers and trays”</b> on page 7-10.</li> </ul>
2011/03/14	<p>Changed the following part numbers in <b>“Frames”</b> on page 7-5:</p> <ul style="list-style-type: none"> <li>40X5406 to 40X7562</li> <li>40X5407 to 40X7563</li> <li>40X5408 to 40X7564</li> </ul>
2012/09/17	Added PN 40X8674 (Front toner-door pivot) to <b>“Frames”</b> on page 7-5.

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## Conventions


**Note:** A note provides additional information.

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

There are several types of caution statements you may see in this book:

	<b>CAUTION</b> A caution identifies something that might cause a servicer harm.
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	<b>CAUTION</b> This type of caution indicates 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.
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	<b>CAUTION</b> This type of caution indicates the presence of visible and invisible laser radiation.
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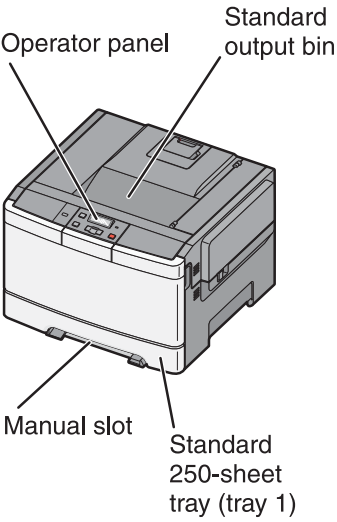
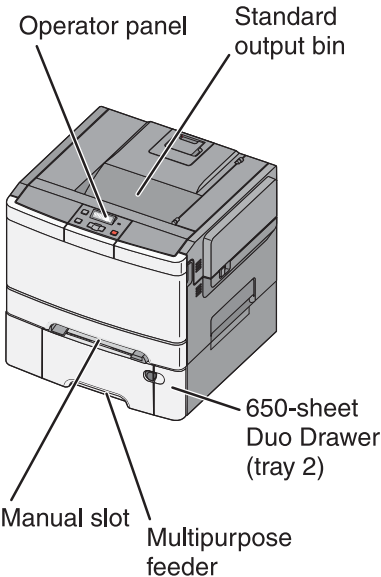
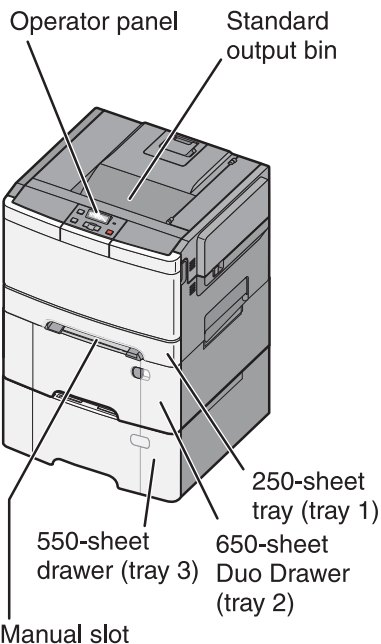
# 1. General information

The Lexmark™ C54x printer (5024-2xx, 4xx) is a color network printer in a compact size. Some models have internal duplex printing, USB-A host ports for flash drives on the operator panel, and an optional 650-sheet Duo Drawer with 550 sheets in the input tray and 100-sheets for the multipurpose feeder. The Lexmark C546dtn has a standard 650-sheet Duo Drawer and the option to add a 550-sheet drawer, which brings the input for that model up to 1,451 sheets. The Lexmark C544dw comes with wireless network and duplex printing.

## Models

Model name	Machine type/ model	Description
Lexmark C540n	5025-210	Ethernet network
Lexmark C543dn	5025-230	Ethernet network, duplex
Lexmark C544n	5025-410	Ethernet network, USB-A host port for flash drives
Lexmark C544dn	5025-430	USB-A host port for flash drive, duplex, Ethernet network
Lexmark C544dw	5025-43W	802.11n network wireless network, duplex, ethernet, USB-A host port for flash.
Lexmark C546dtn	5025-439	USB-A host port for flash drive, duplex, Ethernet network, 650-sheet Duo Drawer.

## Configurations

Lexmark C540n, C543dn, C544n, C544dn	Lexmark C544n, C544dn with optional 650-sheet Duo Drawer	Lexmark C546dtn with standard 650-sheet Duo Drawer and optional 550-sheet drawer
 <p>Operator panel Standard output bin Manual slot Standard 250-sheet tray (tray 1)</p>	 <p>Operator panel Standard output bin Manual slot Multipurpose feeder 650-sheet Duo Drawer (tray 2)</p>	 <p>Operator panel Standard output bin Manual slot 550-sheet drawer (tray 3) 650-sheet Duo Drawer (tray 2) 250-sheet tray (tray 1)</p>
See <b>"Input and output sources and capacities"</b> on page 1-8 for paper capacities.		

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## Options and features

Certain options are available on selected printer models only.

Available options include:

- 650-Sheet Duo Drawer—a 550-sheet drawer with a 100-sheet multipurpose feeder (MP Feeder).
- 550-Sheet drawer—an optional 550-sheet drawer that can be added to model C546dtn only.
- Additional memory—One 128, 256, or 512MB memory card may be added.
- Flash memory card—One 64MB card may be added.
- Font cards—One language card may be added.

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## Printer specifications

### Memory

✓—Supported ✗—Not supported	Lexmark C540n, C543dn	Lexmark C544n, C544dn,	Lexmark C546dtn
<b>Memory</b>			
Optional slots	One slot		
Standard DDRS DRAM sizes	128MB	256MB	
Optional DIMM <sup>a</sup> sizes	128MB, 256MB, and 512MB	256MB, 512MB	
Maximum printer memory <sup>b</sup>	640MB		
<b>Option Slots (single slot is available or either font or flash memory card)</b>			
Font card support	N/A	1 font card	
Optional user flash memory card sizes <sup>c</sup>	N/A	64MB	
Maximum possible DORS DRAM <sup>b</sup>			
<b>Connections</b>			
USB 2.0 High Speed	✓	✓	✓
Ethernet 10/100 BaseTx	✓	✓	✓
USB-A (allows direct USB printing using approved USB flash memory device)	✗	✓	✓
PictBridge (allows printing photos directly from a compatible camera)	✗	✓	✓
Wireless standard 802.11 b/g/n	✗	✓ (C544dn wireless unit only)	✗
<sup>a</sup> Dual Inline Memory Module. An optional memory card that can be plugged into an available memory slot. <sup>b</sup> The maximum usable DDRSDRAM is standard (soldered) plus 512MB. <sup>c</sup> The Lexmark C546dtn ships with a 128MB DIMM in the extra memory slot. Increasing memory beyond standard 256MB require the removal of this DIMM.			

## Print quality

During the life of the printer, components are subject to wear based on usage. Printers continuously operating at or near the maximum duty cycle may require service for replacement of these components to ensure high-quality printing and good performance throughout the life of the printer. The fuser and ITU replacement should be determined by checking the last sheet of the Menu Settings Page. Either **OK** or **Replace** appears.

To print a Menu Settings page:

1. Press **Menu** (☰) on the operator panel.
2. Select **Reports** from the Admin Menu, and press **Select** (✓).
3. Select **Menu Settings**, and press **Select** (✓).

Replacement is recommended every 30,000 pages for the imaging unit.

- 4800C Q (default) full printer speed
- 1200 dpi (reduced printer speed) is supported in PS and PCL only

## Connectivity (network support)

✓—Supported ✗—Not supported  <b>Network protocol</b>	<b>Lexmark C540n, C543dn</b>	<b>Lexmark C544n, C544dn, C544dn (wireless)</b>	<b>Lexmark C546dtn</b>
<b>Standard Ethernet 10/100 Base T</b>	✓	✓	✓
<b>Standard USB-B (Full speed) device port</b>	✓	✓	✓
<b>USB-A host ports</b> (In front, low/full speed) This port only supports the following flash drives and file types:  Supported flash drives <sup>a</sup> : Lexar FireFly (512 MB/1GB size), SanDisk Cruzer Micro (512 MB/1 GB size), or Sony (512 MB/1 GB).  Supported file types <sup>b</sup> : .pdf, .gif, .jpeg, .jpg, .bmp, .png, .tiff, .tif, .pcx, .dcx	✗	✓	✓
<b>802.11n Wireless Network card</b> Manufacturing installs the wireless card. A wireless card CANNOT be installed post-manufacturing.	✗	✓	✗
<sup>a</sup> While other USB flash drives have not been tested, and therefore cannot be approved by Lexmark, these products may function if the storage device meets the following qualifications: <ul style="list-style-type: none"> <li>• Supports the USB 2.0 specification supporting the Full-Speed mode</li> <li>• Uses the FAT file system</li> </ul> <sup>b</sup> PDF files used with Direct USB printing must support PDF standard version 1.5 or earlier. PDF files with restricted printing permissions or encryption are not supported.			

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## Operating modes

Mode	Description
Normal	Factory default
Quiet	Designed for customers where noise levels are a very important factor. <ul style="list-style-type: none"> <li>Print quality is maintained at factory default level.</li> <li>Speed is reduced.</li> </ul>
Eco-Mode (Off is default):	Designed for customers where the environment is a key factor. There are three options; Energy, Paper, and Energy/Paper.
<ul style="list-style-type: none"> <li>Paper</li> </ul>	<ul style="list-style-type: none"> <li>Duplex is on if <b>Energy/Paper</b> or <b>Paper</b> is selected (duplex models only) (can be overwritten by the driver).</li> </ul>
<ul style="list-style-type: none"> <li>Energy</li> </ul>	<ul style="list-style-type: none"> <li>Print quality is maintained.</li> <li>Power Saver is set to one minute.</li> <li>Fuser standby is off.</li> <li>The operator panel back light is off.</li> <li>Power supply energy consumption is reduced.</li> </ul>
<ul style="list-style-type: none"> <li>Energy + Paper</li> </ul>	All of the above.

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## Data streams

✓—Supported ✗—Not supported	Lexmark C540n, C543dn	Lexmark C544n, C544dn, C544dwn	Lexmark C546dtn
<b>Data streams</b>			
<b>PCL 6 emulation</b>	✓	✓	✓
<b>PostScript Level III emulation</b> Version 3011 of the Adobe definition of PostScript 3 is supported.	✓	✓	✓
<b>PDF</b> Supports version 1.6	✗	✓	✓
<b>PPDS</b> By default, the PPDS interpreter is inactive. A user can activate the data stream by PJL or by the <b>PPDS Emulation</b> setting in the Configuration Menu.	✗	✓	✓
<b>PictBridge</b>	✗	✓	✓
<b>Directimage</b> Devices that support Directimage support all of the following graphics formats: TIFF, TIF, JPEG, JPG, GIF, PNG, BMP, PCX, and DCX.	✗	✓	✓
<b>Host-Based Printing (HBP)/Graphics Device Interface (GDI)</b> Version 3 (color) uses PCL XL.	✓	✓	✓



## Dimensions

Models	Height	Width	Depth	Weight
Lexmark C540n, C543dn, C544n, C544dn(w)	291 mm (11.5 in.)	424 mm (16.7 in.)	400 mm (15.7 in.)	21 kg (46.2 lbs)
Lexmark C546dtn (includes 650 sheet Duo Drawer)	422 mm (16.6 in.)	424mm (16.7 in.)	416 mm (16.4 in.)	25 kg (55 lb)
650-sheet Duo Drawer	133 mm (5.2 in.)	424 mm (16.7 in.)	416 mm (16.4 in.)	4 kg (8.7 lb)
550-sheet Duo Drawer (only C526dtn)	133 mm (5.2 in.)	424 mm (16.7 in.)	416 mm (16.4 in.)	4 kg (8.7 lb)

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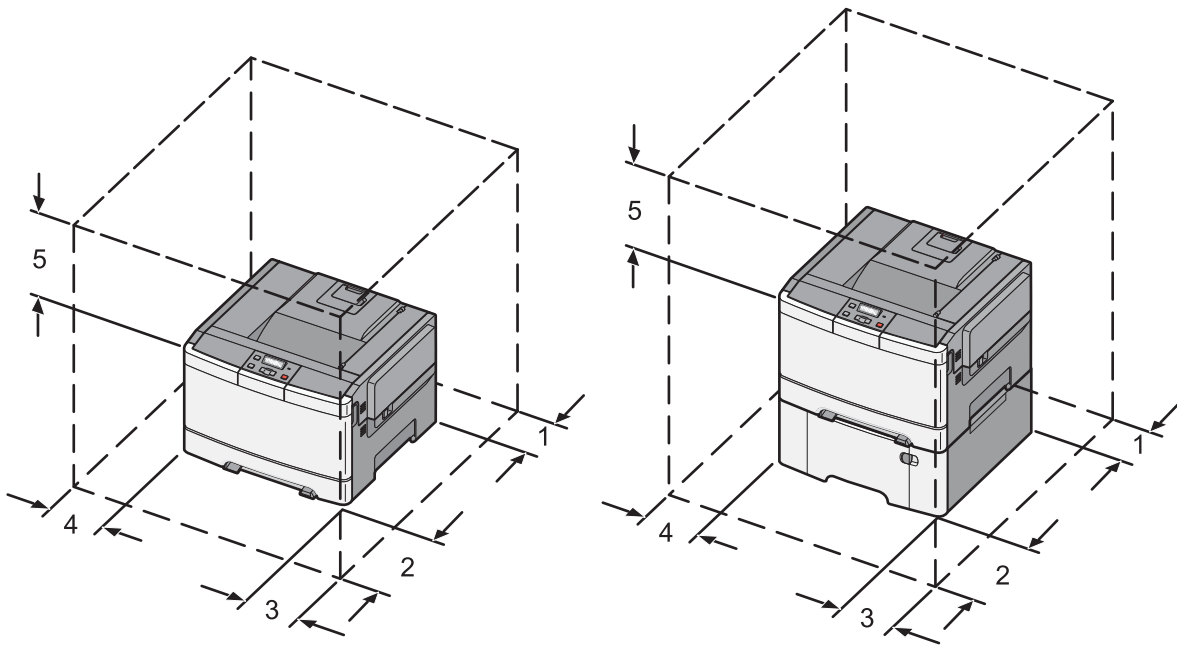


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## Clearances



	Direction	Dimensions
		Lexmark C540n, C543dn, C544n, and C544dn (w), C546dtn
1	Rear	100 mm (4 in.)
2	Front	500 mm (20 in.)
3	Right side	150 mm (6 in.)
4	Left side	75 mm (3 in.)
5	Above	250 mm (10 in.)

## Power and electrical specifications

The following table specified nominal average power requirements for the base printer configurations. All power levels are shown in Watts (W). Maximum current is given in Amperes (A).

Printing states	Lexmark C540n, C543dn	Lexmark C544n, and C544dn	Lexmark C546dtn
<b>Average power while printing</b>			
Simplex	480 W	500 W	500 W
Automatic duplex*	340 W	340 W	340 W
<b>Average power while idle</b>			
Power Saver	18 W	18 W	18 W
Ready	34 W	36 W	36 W
Off	0 W	0 W	0 W
* Automatic duplex is not supported on the C540n and C544n.			

### Typical electricity consumption<sup>2</sup>

Model	Mode	Power supply voltage (kwh)		
		100 V/50 Hz	115 V/60 Hz	230 V/50 Hz
<b>Lexmark C540n and C543dn</b>				
	TEC <sup>1</sup>	3.73 kwh	3.5 kwh	3.92 kwh
	TEC <sup>1</sup> —Eco Mode	3.41 kwh	3.30 kwh	3.55 kwh
<b>Lexmark C544n and C544dn</b>				
	TEC <sup>1</sup>	3.97 kwh	4.06 kwh	4.20 kwh
	TEC <sup>1</sup> —Eco Mode	3.57 kwh	3.42 kwh	3.57 kwh
<b>Lexmark C546dtn</b>				
	TEC <sup>1</sup>	3.97 kwh	4.06 kwh	4.20 kwh
	TEC <sup>1</sup> —Eco Mode	3.57 kwh	3.42 kwh	3.57 kwh
<sup>1</sup> TEC—Typical Electricity Consumption. <sup>2</sup> Energy measurements are made according to <i>ENERGY STAR Qualified Imaging Equipment Typical Electricity Consumption Test Procedure</i> , and are in units of kilowatts per week (kwh/week). Actual electricity consumption will vary by device usage.				

#### Low-voltage models

- 110 to 127 V ac at 47 to 63 hertz (Hz) nominal
- 99 to 137 V ac, extreme

#### 100 voltage models

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



## High-voltage models

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

**Notes:**

- Using a 220 V ac to 110 V ac power converter with a low voltage printer is not recommended.
- Using an inverter to change DC to AC voltage (12 V to 120 V for example) is not recommended.
- All duplex models are ENERGY STAR compliant.

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**Acoustics**

All acoustic measurements are made in accordance with ISO 7779-1999 and reported in conformance with ISO9296:1988-04-15.

Operating mode	1-Meter average sound pressure at 4800 CQ				
	Lexmark C540n	Lexmark C543dn	Lexmark C544n	Lexmark C544dn	Lexmark C546dtn
Printing (simplex)	47 dBA	47 dBA	49 dBA	49 dBA	49 dBA
Printing (automatic duplex)	N/A	50 dBA	N/A	51 dBA	51 dBA
Idle	Inaudible	Inaudible	Inaudible	Inaudible	Inaudible
Quiet Mode (simplex)	46 dBA	46 dBA	46 dBA	46 dBA	46 dBA

**Environment specifications**

Environment	Specifications
<b>Operating</b>	
Air temperature—operating	16 to 32°C (60 to 90°F)
Air temperature—power off	10 to 43°C (50 to 110°F)
Air relative humidity	Relative Humidity 8% to 80%
Wet bulb temperature—operating	23°C (73°F) maximum
Wet bulb temperature—power off	27°C (80°F) maximum
Altitude	0–3,048 meters (10,000 ft.)
Atmospheric pressure	74.6 kPa
Ambient operating environment*	16 to 32°C (60 to 90°F) and 8% to 80% RH
<b>Ship / Storage</b>	
Cartridges	-40 to 43°C (-40 to 110°F)
Printer with cartridges	-40 to 43°C (-40 to 110°F)
Printer without cartridges	-40 to 43°C (-40 to 110°F)
Air relative humidity	Relative Humidity 8% to 80%
Altitude	10,300 meters (34,000 feet)
Wet bulb temperature—power off	27°C (80°F) Maximum
* In some cases, performance specifications (such as paper OCF, EP cartridge usage) are specified to be measured at an ambient condition.	

## Media handling

### Input and output sources and capacities

Sheet numbers are assuming 20 lb. xerographic paper	Lexmark C540n, C544n	Lexmark C543dn, C544dn, C544dw	Lexmark C544dtn (C544dn with second tray)	Lexmark C546dtn
<b>Standard input sources</b>				
Standard input tray (250-sheet tray)	250 sheets	250 sheets	250 sheets	250 sheets
Manual feed slot (1-sheet)	1 sheet	1 sheet	1 sheet	1 sheet
Second tray capacity (650-sheet Duo Drawer)	N/A	N/A	550 sheets (standard on C544dtn, optional on C544dn)	550 sheets (standard)
Multipurpose tray capacity (650-sheet Duo Drawer)	N/A	N/A	100 sheets	100 sheets
Optional 550-sheet drawer	N/A	N/A	N/A	550 sheets
<b>Optional input sources (maximum 1, total of all inputs is 4)</b>				
650-sheet Duo Drawer <sup>ab</sup> (includes 100-sheet MP feeder)	550 sheets (or 100 sheets in MP feeder)	550 sheets (or 100 sheets in MP feeder)	0	0
Multipurpose tray capacity (650-sheet Duo Drawer)	100 sheets	100 sheets	N/A	N/A
Optional third tray capacity (550 sheets)	N/A	N/A	N/A	550 sheets (tray 3)
Maximum total input capacity	901	901	901	1,451
<b>Duplex</b>	N/A	Duplex		
<b>Standard output sources (no optional output sources are available)</b>				
Standard 100-sheet bin	100	100	100	100
<p><sup>a</sup> In the 650-sheet Duo Drawer and the integrated MP feeder count as two independent input sources. The MP feeder is configured as "cassette" does not show up as Configure MP in the Paper Menu.</p> <p><sup>b</sup> Only one 650-sheet Duo Drawer can be used on a printer. If a third tray is needed, the third one needs to be an optional 550-sheet drawer. The third drawer is compatible only with the Lexmark C546dtn model.</p>				

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## Duplex capability

✓—Supported ✗—Not supported <b>Models</b>	
	<b>Duplex capability</b>
Lexmark C540n	✗
Lexmark C543dn	✓
Lexmark C544n	✗
Lexmark C544dn	✓
Lexmark C544dw	✓
Lexmark C546dtn	✓

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## Media output size and type

There is a single 100-sheet output bin on this printer, and no additional output options.

## Media input size specifications

✓—Supported <b>without</b> size sensing ✗—Not supported <b>Input source</b>	<b>250-sheet tray</b>	<b>Optional 650-sheet Duo Drawer</b>	<b>Optional 550-sheet drawer (model C546dtn only)</b>	<b>MP feeder<sup>a</sup> (in the 650-sheet Duo Drawer)</b>	<b>Manual slot</b>	<b>Duplex</b>
A4 210 x 297mm	✓	✓	✓	✓	✓	✓
A5 <sup>a</sup> 148 x 210mm	✓	✓	✓	✓	✓	✗
A6	✗	✗	✗	✓	✓	✗
JIS <sup>b</sup> B5 <sup>a</sup> 182 x 257mm	✓	✓	✓	✓	✓	✓
Letter 8.5 x 11 in.	✓	✓	✓	✓	✓	✓
Legal 8.5 x 14 in.	✓	✓	✓	✓	✓	✓
Executive <sup>a</sup> 7.25 x 10.5 in.	✓	✓	✓	✓	✓	✗
Oficio (Mexico)	✓	✓	✓	✓	✓	✓
Folio 8.5 x 13 in.	✓	✓	✓	✓	✓	✓
Statement <sup>a</sup> 5.5 x 8.5 in.	✗	✗	✗	✓	✓	✗

<p>✓—Supported <b>without</b> size sensing ✗—Not supported</p> <p><b>Input source</b></p>	<b>250-sheet tray</b>	<b>Optional 650-sheet Duo Drawer</b>	<b>Optional 550-sheet drawer (model C546dtn only)</b>	<b>MP feeder<sup>a</sup> (in the 650-sheet Duo Drawer)</b>	<b>Manual slot</b>	<b>Duplex</b>
<p><b>Universal<sup>c</sup></b> 148 x 210mm to 216 x 356mm (5.8 x 8.3 in. to 8.5 x 14 in.)<sup>a</sup></p>	✓	✓	✓	✓	✓	✗
<p>76.x 127mm to 216 x 356mm (3 x 5 in. to 8.5 x 14 in.)<sup>a</sup></p>	✗	✗	✗	✓	✓	✗
<p>210mm x 279.4mm to 216mm x 356mm (8.27 in. x 11 in. to 8.5 in. to 14 in.)</p>	✓	✓	✓	✓	✓	✓
<p><b>7¾ Envelope<sup>a</sup></b> 98 x 191mm</p>	✗	✗	✗	✓	✓	✗
<p><b>9 Envelope<sup>a</sup></b></p>	✗	✗	✗	✓	✓	✗
<p><b>10 Envelope<sup>a</sup></b> 105 x 241mm (4.12 x 9.5 in.)</p>	✗	✗	✗	✓	✓	✗
<p><b>DL Envelope<sup>a</sup></b> 110 x 220mm (4.3 x 8.7 in.)</p>	✗	✗	✗	✓	✓	✗
<p><b>C5 Envelope<sup>a</sup></b> 162 x 229mm (6.4 x 9 in.)</p>	✗	✗	✗	✓	✓	✗
<p><b>B5 Envelope<sup>a</sup></b></p>	✗	✗	✗	✓	✓	✗
<p><b>Other envelope<sup>a</sup></b> Length: 98–432mm (3.8–17 in.) Width: 89–297mm (3.5–11.7 in.)</p>	✗	✗	✗	✓	✓	✗
<p><sup>a</sup> The MP feeder runs slower if A5, Statement, B5, A6, Executive, Statement, Universal (narrower than 210mm), or envelopes are loaded.</p> <p><sup>b</sup> Japanese Industry Standard.</p> <p><sup>c</sup> Although the user may select Universal paper size for these sources, not all tray guides can be adjusted to all Universal media sizes.</p>						



## Media input type specifications

Input type	250-sheet tray	Optional 650-sheet Duo Drawer	Optional 550-sheet drawer (model C546dtn only)	MP feeder (in 650-sheet Duo Drawer)	Manual feeder <sup>a</sup>	Duplex
✓—Supported ✗—Not supported						
Plain paper	✓	✓	✓	✓	✓	✓
Card stock	✓	✓	✓	✓	✓	✗
Transparency	✓	✓	✓	✓	✓	✗
Recycled <sup>b</sup>	✓	✓	✓	✓	✓	✓
Glossy	✓	✓	✓	✓	✓	✓
Paper-backed labels	✓	✓	✓	✓	✓	
Bond	✓	✓	✓	✓	✓	✓
Envelopes	✗	✗	✗	✓	✓	✗
Rough envelopes	✗	✗	✗	✓	✓	✗
Letterhead	✓	✓	✓	✓	✓	✓
Preprinted	✓	✓	✓	✓	✓	✓
Colored paper	✓	✓	✓	✓	✓	✓
Light paper	✓	✓	✓	✓	✓	✓
Heavy paper	✓	✓	✓	✓	✓	✓
Rough or cotton	✓	✓	✓	✓	✓	✓
Custom type <x> <sup>b</sup>	✓	✓	✓	✓	✓	✓
<p><sup>a</sup> For MP feeder and manual feeders, the Default Source Menu displays Manual Paper and Manual Env. Select <b>Manual Env.</b> for envelopes or when the type in Custom Type &lt;x&gt; is an envelope. For other types, use <b>Manual Paper</b>.</p> <p><sup>b</sup> The duplex unit supports this media type as long as the customer has selected the custom type from those types the duplex unit supports.</p>						

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## Weight ranges for each media type

Material	Type	Weight	Select
Paper <sup>2, 5, 7, 8</sup>	Xerographic or business paper	60 to 75 g/m <sup>2</sup> grain long (16 to 19.9 lb bond) <sup>2, 5</sup>	Light Paper
		75 to 90 g/m <sup>2</sup> grain long (20 to 24 lb bond)	Plain Paper
		90. to 105 g/m <sup>2</sup> grain long (24 to 28 lb bond)	Heavy Paper
		105 to 176 g/m <sup>2</sup> grain long (28 to 47 lb bond) <sup>7</sup>	Card stock
Specialty papers	Gloss Book	88 to 176 g/m <sup>2</sup> grain long (60 to 120 lb book)	
	Gloss Cover	162 to 176 g/m <sup>2</sup> grain long (60 to 65 lb cover)	
Card stock—upper limit (grain long) <sup>1</sup>	Index Bristol	120 g/m <sup>2</sup> (67 lb)	
	Tag	120 g/m <sup>2</sup> (74 lb)	
	Cover	135 g/m <sup>2</sup> (50 lb)	
Card Stock—upper limit (grain short) <sup>1</sup>	Index Bristol	163 g/m <sup>2</sup> (90 lb)	
	Tag	163 g/m <sup>2</sup> (100 lb)	
	Cover	176 g/m <sup>2</sup> (65 lb)	
Transparency <sup>6</sup>	Laser printer	170 to 180 g/m <sup>2</sup> (45 to 48 lb bond)	
Labels—upper limit	Paper	131 g/m <sup>2</sup> (35 lb bond)	
Envelopes (Multipurpose feeder or manual slot only)	Sulfite, wood-free or up to 100% cotton bond	60 to 105 g/m <sup>2</sup> to 28 lb bond) <sup>3, 4</sup>	
<p><sup>1</sup> For 60 to 176 g/m<sup>2</sup> paper, grain long fibers are recommended.</p> <p><sup>2</sup> Paper less than 75 g/m<sup>2</sup> (20 lb) must be printed with Paper Type set to <b>Light Paper</b>.</p> <p><sup>3</sup> 100% cotton content maximum weight is 24 lb bond.</p> <p><sup>4</sup> 28 lb bond envelopes are limited to 25% cotton content.</p> <p><sup>5</sup> The duplex unit supports paper weights between 60–105 g/m<sup>2</sup> (16–28 pound) grain long bond. The duplex unit does not support card stock, transparencies, envelopes, or labels.</p> <p><sup>6</sup> Lexmark transparency part numbers 12A8240 and 12A8241 are supported from the standard tray, manual slot, and the multi-purpose feeder.</p> <p><sup>7</sup> Paper 90 to 104.9 g/m<sup>2</sup> (23.9 to 27.8 lb) must be printed with Paper Type set to <b>Heavy Paper</b>.</p> <p><sup>8</sup> Paper 105 to 176 g/m<sup>2</sup> (27.9 to 47 lb) must be printed with Paper Type set to <b>Cardstock</b>.</p>			

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## Media guidelines

### Paper characteristics

The following paper characteristics affect print quality and reliability. Consider these characteristics when evaluating new paper stock.

- **Weight**—The printer can automatically feed paper weights from 60 to 176 g/m<sup>2</sup> (16 to 47 lb bond) grain long. Paper lighter than 75 g/m<sup>2</sup> (20 lb) might not be stiff enough to feed properly, causing jams. For best performance, use 80 g/m<sup>2</sup> (21 lb bond) grain long paper. For paper smaller than 182 x 257 mm (7.2 x 10.1 in.), we recommend 90 g/m<sup>2</sup> or heavier paper.
- **Curl**—Curl is the tendency for paper to curl at its edges. Excessive curl can cause paper feeding problems. Curl can occur after the paper passes through the printer, where it is exposed to high temperatures. Storing paper unwrapped in hot, humid, cold, or dry conditions, even in the trays, can contribute to paper curling prior to printing and can cause feeding problems.



- **Smoothness**—Paper smoothness directly affects print quality. If paper is too rough, toner cannot fuse to it properly. If paper is too smooth, it can cause paper feeding or print quality issues. Always use paper between 100 and 300 Sheffield points; however, smoothness between 150 and 200 Sheffield points produces the best print quality.
- **Moisture content**—The amount of moisture in paper affects both print quality and the ability of the printer to feed the paper correctly. Leave paper in its original wrapper until it is time to use it. This limits the exposure of paper to moisture changes that can degrade its performance. Condition paper before printing by storing it in its original wrapper in the same environment as the printer for 24 to 48 hours before printing. Extend the time several days if the storage or transportation environment is very different from the printer environment. Thick paper may also require a longer conditioning period.
- **Grain direction**—Grain refers to the alignment of the paper fibers in a sheet of paper. Grain is either grain long, running the length of the paper, or grain short, running the width of the paper. For 60 to 176 g/m<sup>2</sup> (16 to 47 lb bond) paper, use grain long fibers.
- **Fiber content**—Most high-quality xerographic paper is made from 100% chemically treated pulped wood. This content provides the paper with a high degree of stability resulting in fewer paper feeding problems and better print quality. Paper containing fibers such as cotton possesses characteristics that can negatively affect paper handling.

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## Unacceptable paper

The following paper types are not recommended for use with the printer:

- Chemically treated papers used to make copies without carbon paper, also known as carbonless papers, carbonless copy paper (CCP), or no carbon required (NCR) paper
- Preprinted papers with chemicals that may contaminate the printer
- Preprinted papers that can be affected by the temperature in the printer fuser
- Preprinted papers that require a registration (the precise print location on the page) greater than  $\pm 2.3$  mm ( $\pm 0.9$  in.), such as optical character recognition (OCR) forms  
In some cases, registration can be adjusted with a software application to successfully print on these forms.
- Coated papers (erasable bond), synthetic papers, thermal papers
- Rough-edged, rough or heavily textured surface papers, or curled papers
- Recycled papers that fail EN12281:2002 (European)
- Paper weighing less than 60 g/m<sup>2</sup> (16 lb)
- Multiple-part forms or documents

## Selecting paper

Using appropriate paper prevents jams and helps ensure trouble-free printing. To help avoid jams and poor print quality:

- Always use new, undamaged paper.
- Before loading paper, know the recommended print side of the paper. This information is usually indicated on the paper package.
- Do not use paper that has been cut or trimmed by hand.
- Do not mix paper sizes, types, or weights in the same source; mixing results in jams.
- Do not use coated papers unless they are specifically designed for electrophotographic printing.

## Selecting preprinted forms and letterhead

Use these guidelines when selecting preprinted forms and letterhead:

- Use grain long for 60 to 176 g/m<sup>2</sup> weight paper.
- Use only forms and letterhead printed using an offset lithographic or engraved printing process.
- Avoid papers with rough or heavily textured surfaces.

Use papers printed with heat-resistant inks designed for use in xerographic copiers. The ink must be able to withstand temperatures up to 200°C (392°F) without melting or releasing hazardous emissions. Use inks that

are not affected by the resin in toner. Inks that are oxidation-set or oil-based generally meet these requirements; latex inks might not. When in doubt, contact the paper supplier.

Preprinted papers such as letterhead must be able to withstand temperatures up to 200°C (392°F) without melting or releasing hazardous emissions.

### Storing paper

Use these paper storage guidelines to help avoid jams and uneven print quality:

- For best results, store paper where the temperature is 21°C (70°F) and the relative humidity is 40%. Most label manufacturers recommend printing in a temperature range of 18 to 24°C (65 to 75°F) with relative humidity between 40 and 60%.
- Store paper in cartons when possible, on a pallet or shelf, rather than on the floor.
- Store individual packages on a flat surface.
- Do not store anything on top of individual paper packages.

### Using recycled paper and other office papers

As an environmentally conscious company, Lexmark supports the use of recycled office paper produced specifically for use in laser (electrophotographic) printers. In 1998, Lexmark presented to the US government a study demonstrating that recycled paper produced by major mills in the US fed as well as non-recycled paper. However, no blanket statement can be made that all recycled paper will feed well. Lexmark consistently tests its printers with recycled paper (20–100% post-consumer waste) and a variety of test paper from around the world, using chamber tests for different temperature and humidity conditions. Lexmark has found no reason to discourage the use of today's recycled office papers, but generally the following property guidelines apply to recycled paper.

- Low moisture content (4–5%)
- Suitable smoothness (100–200 Sheffield units, or 140–350 Bendtsen units, European)
 

**Note:** Some much smoother papers (such as premium 24 lb laser papers, 50–90 Sheffield units) and much rougher papers (such as premium cotton papers, 200–300 Sheffield units) have been engineered to work very well in laser printers, despite surface texture. Before using these types of paper, consult your paper supplier.
- Suitable sheet-to-sheet coefficient of friction (0.4–0.6)
- Sufficient bending resistance in the direction of feed

Recycled paper, paper of lower weight (<60 g/m<sup>2</sup> [16 lb bond]) and/or lower caliper (<3.8 mils [0.1 mm]), and paper that is cut grain-short for portrait (or short-edge) fed printers may have lower bending resistance than is required for reliable paper feeding. Before using these types of paper for laser (electrophotographic) printing, consult your paper supplier. Remember that these are general guidelines only and that paper meeting these guidelines may still cause paper feeding problems in any laser printer (for example, if the paper curls excessively under normal printing conditions).



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## Tools required for service

Flat-blade screwdrivers, various sizes  
#1 Phillips screwdriver, magnetic  
#2 Phillips screwdriver, magnetic  
#2 Phillips screwdriver, magnetic short-blade  
Long-shank Phillips screwdriver at least 8 in. or 200 mm long, preferably magnetized  
7/32 inch (5.5 mm) open-end wrench  
7.0 mm nut driver  
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  
Flashlight (optional)

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## Acronyms

BLDC	Brushless DC Motor
C	Cyan
DIMM	Dual Inline Memory Module
DRAM	Dynamic Random Access Memory
EEPROM	Electrically Erasable Programmable Read-Only Memory
EP	ElectroPhotographic
ESD	Electrostatic Discharge
FRU	Field Replaceable Unit
GB	Gigabyte
HVPS	High-Voltage Power Supply
ITU	Image Transfer Unit
IU	Imaging Unit
JIS	Japanese Industry Standard
K	Black
LASER	Light Amplification by Stimulated Emission of Radiation
LCD	Liquid Crystal Display
LED	Light-Emitting Diode
LVPS	Low-Voltage Power Supply
M	Magenta
MPF	Multipurpose Feeder (also MP feeder)
NVRAM	Nonvolatile Random Access Memory
PC	Photoconductor
pixel	Picture elements (same as pel)
POR	Power-On Reset
POST	Power-On Self Test
PWM	Pulse Width Modulation
RIP	Raster Imaging Processor
ROM	Read Only Memory
SDRAM	Synchronous Dual Random Access Memory
SIMM	Single Inline Memory Module
TDS	Toner Density Sensor (see Toner Patch Sensor)
TPS	Toner Patch Sensor (also referred to as Toner Density Sensor)
V ac	Volts alternating current
V dc	Volts direct current
Y	Yellow

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## 2. Diagnostic information

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### Start

	<p><b>CAUTION</b></p> <p>Unplug power cord from the electrical outlet before you connect or disconnect any cable or electronic board or assembly for personal safety and to prevent damage to the printer. Disconnect any connections between the printer and PCs/peripherals.</p>
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Begin here to locate 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.

- **Does the POR stop?** Check the **“POR (Power-On Reset) sequence” on page 2-2.**
- **Do you have a symptom**, rather than an error message? Locate your symptom and take the appropriate action:
  - **“Printer symptom table” on page 2-3**
  - **“Print quality symptom table” on page 2-4**
- **Do you have an error message or persistent user message**, check the following:
  - **“Service error messages” on page 2-13**
  - **“User status and customer attendance messages” on page 2-5**
  - **“Paper Jam messages” on page 2-11**
  - **“Paper jams” on page 3-31**
  - **“Service checks” on page 2-22** for individual error messages
- Additional information can be found at the following locations:
  - **“User operator panel and Administration menus” on page 2-58**
  - **“Theory of operation” on page 3-37**

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## POR (Power-On Reset) sequence

The following is an example of the events that occur during the POR sequence for the base machine with no paper handling options installed.

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

*128MB	500Mhz
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9. The fuser turns on. The fuser takes longer to warm up from a cold start than a warm start.
10. The operator panel LED starts blinking.
11. The following errors or messages may appear:
  - Close Door or Insert Cartridge displays if the upper front cover is open or the print cartridge is missing.
  - Any cartridge errors, such as Defective Cartridge or Missing Cartridge.
12. Ready appears on the display.
13. The main drive motor turns on.
14. The EP drive assembly drives the developer shaft located in the toner cartridge.
15. The printer calibrates.

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## Symptom tables

### Printer symptom table

Symptom	Action
Dead printer	Go to <b>“Dead printer service check” on page 2-27.</b>
Operator panel—one or more buttons do not work.	Go to <b>“One or more operator panel buttons fail” on page 2-36.</b>
Operator panel—display is blank.	Go to <b>“Operator panel display blank, five beeps” on page 2-37.</b>
Operator panel continuously displays all diamonds and does not complete POST.	Go to <b>“Operator panel displays all diamonds, no beeps” on page 2-39.</b>
Operator panel display is dim and unchanging.	Go to <b>“Operator panel display is dim and unchanging” on page 2-41.</b>
Pages print blank after replacing the controller board.	<p>When replacing the controller board, verify the cable from the high-voltage power supply is seated properly. The cable may have come loose from the HVPS.</p> <p><b>Warning:</b> A blank page that should have toner on it could be an indication that toner is applied to the ITU belt but not transferred. Therefore the toner goes into the ITU cleaner which cannot process massive amounts of toner. It is important to prevent extensive blank pages from being processed if they should have toner on them.</p>
Tray linking does not work.	<ul style="list-style-type: none"> <li>• Check that the same size and type of paper are in each tray.</li> <li>• Check the location of the paper guides.</li> <li>• The multipurpose feeder does not automatically sense the paper size. You must set the size from the Paper Size/Paper Type menu.</li> <li>• Print a menu settings page and compare the settings for each tray, and adjust on the operator panel, if necessary. To print a menu settings page: <ol style="list-style-type: none"> <li>1. Press <b>Menu</b> (☰) on the operator panel.</li> <li>2. Select <b>Reports</b> from the Admin Menu, and press <b>Select</b> (✓).</li> <li>3. Select <b>Menu Settings</b>, and press <b>Select</b> (✓).</li> </ol> </li> </ul>
Unexpected page breaks occur.	<ul style="list-style-type: none"> <li>• Increase the Print Timeout value on the operator panel (<b>Settings</b>→<b>General Settings</b>→<b>Timeouts</b>→<b>Print Timeout</b>.)</li> </ul>
Multipurpose feeder has constant misfeeds or jams.	<ul style="list-style-type: none"> <li>• Remove and flex the paper in the tray. Reload the paper, and try printing.</li> <li>• Remove the paper, turn it over and place it back in the tray.</li> <li>• Make sure the feeder is properly installed.</li> <li>• Make sure the paper is loaded correctly in the tray.</li> <li>• Make sure the paper is not damaged.</li> <li>• Make sure the paper meets specifications. See <b>“Media handling” on page 1-8.</b></li> <li>• Make sure the paper guides are positioned correctly for the paper size loaded in the tray.</li> </ul>
Page that jammed does not reprint after you clear the jam.	Jam Recovery may be set to Off. Change the setting to Auto or On on the operator panel ( <b>Settings</b> → <b>General settings</b> → <b>Print Recovery</b> → <b>Jam Recovery</b> .)
Printing speed reduced for more than 10 pages. May happen after a service call.	Check the narrow media sensor cable is correctly connected at the sensor, and the cable is correctly connected to JBIN1 on the controller board.

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**Print quality symptom table**

Symptom	Action
Background	Go to <b>“Print quality—background” on page 2-44.</b>
Blank page	Go to <b>“Print quality—blank page” on page 2-45.</b>
Blurred or fuzzy print	Go to <b>“Print quality—blurred or fuzzy print” on page 2-46.</b>
Color matching problems	See <b>“Color theory” on page 3-49.</b>
Half-color page	Go to <b>“Print quality—half-color page” on page 2-46.</b>
Horizontal banding	Go to <b>“Print quality—horizontal banding” on page 2-47.</b>
Horizontal line	Go to <b>“Print quality—horizontal line” on page 2-47.</b>
Insufficient fusing	Go to <b>“Print quality—insufficient fusing” on page 2-48.</b>
Light print on solids	See <b>“Media guidelines” on page 1-12.</b>
Missing image at edge	Go to <b>“Print quality—missing image at edge” on page 2-48.</b>
Mottle (2–5mm speckles)	Go to <b>“Print quality—mottle (2–5mm speckles)” on page 2-48.</b>
Narrow vertical line	Go to <b>“Print quality—narrow vertical line” on page 2-49.</b>
Random marks	Go to <b>“Print quality—random marks” on page 2-49.</b>
Residual image	Go to <b>“Print quality—residual image” on page 2-50.</b>
Skew (image not parallel to sides or to top and bottom)	Check to see if the right tray is in the proper drawer for the 650-sheet Duo Drawer. Check the printhead alignment. See <b>“Alignment” on page 3-7</b>
Solid color page	Go to <b>“Print quality—solid color page” on page 2-51.</b>
Vertical banding	Go to <b>“Print quality—vertical banding” on page 2-51.</b>

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## Error codes and messages

### User status and customer attendance messages

User primary message	Explanation
Busy	Wait for the message to clear.
Calibrating	The printer is performing a color adjustment. Wait for the message to clear.
Close door	Message clears when front cover, right cover, and toner door are closed or securely fastened.
Check Config ID	The printer configuration ID is invalid.
Check Model Name	Message clears when a valid model name is set.
Check Serial Num	Message clears when a valid serial number is set.
<color> Low	Replace the toner cartridge, and then wait for the message to clear.
Defragmenting Flash DO NOT POWER OFF	The printer is performing the defragmentation operation of flash memory. Wait for the message to clear. <b>Warning:</b> Do not turn the printer off while this message appears on the display.
Flushing buffer	Wait for the message to clear.
Formatting Flash DO NOT POWER OFF	Wait for the message to appear. <b>Warning:</b> Do not turn the printer off while this message appears on the display.
Hex Trace	This message appears between status messages and warnings. Wait for the message to clear.
Imaging Kit	Replace the imaging kit, and then press <b>Select</b> (  ) to clear the message and continue printing.
Insert Tray <x>	This message is displayed when the printer requests the user to insert tray x before it can continue printing the job. The printer needs to pick media from the missing tray or the trays below it.  Tray x=Tray 1, Tray 2, Tray 3.  <b>Note:</b> This message displays when refilling the trays during a job. Before filling a tray, take the printer offline by pressing <b>Stop</b> (  ), and wait for pages to stop feeding into the output bin.  The following actions can be taken: <ul style="list-style-type: none"> <li>• Insert the requested tray.</li> <li>• Press <b>Stop</b> (  ), and then press to cancel printing.</li> </ul>
Invalid Engine Code	The engine code is invalid.
Invalid Network Code	The Network code is invalid.
Load <source> with <custom string>	Printer does not detect media meeting the description <custom string> in <source>, where <source> is Tray 1, Tray 2, Tray 3, or multipurpose feeder. <ul style="list-style-type: none"> <li>• Load the input source with the correct type and size media.</li> <li>• Press <b>Stop</b> (  ), and then press <b>Select</b> (  ) to cancel printing.</li> </ul>
Load <source> <custom type>	Printer does not detect media meeting the description <custom type> in <source>, where <source> is Tray 1, Tray 2, Tray 3, or Multi-Page feeder. <ul style="list-style-type: none"> <li>• Load the input source with the correct type and size media.</li> <li>• Press <b>Stop</b> (  ), and then press <b>Select</b> (  ) to cancel printing.</li> </ul>
Load <source> <type or size>	Printer does not detect media meeting the size requested in the source indicated. <ul style="list-style-type: none"> <li>• Load the input source with the correct type and size media.</li> <li>• Press <b>Stop</b> (  ), and then press <b>Select</b> (  ) to cancel printing.</li> </ul>

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User primary message	Explanation
Load <source> <type> <size>	Printer does not detect media meeting the size or type requested in the source indicated. <ul style="list-style-type: none"> <li>Load the input source with the correct type and size media.</li> <li>Press <b>Stop</b> (⏹), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
Load single sheet feeder with <custom type name>	Printer does not detect media meeting the description <custom type name> in the single sheet feeder. The following actions can be taken: <ul style="list-style-type: none"> <li>Load paper, press <b>Select</b> (✓), and the job continues.</li> <li>Press <b>Select</b> (✓) to override the source, and an alternate source for media is selected.</li> <li>Press <b>Stop</b> (⏹), and then press <b>Select</b> (✓) to cancel printing.</li> <li>Define a name for each custom type (Custom 1–6) using the MarkVision™ utility. When the printer is prompting for one of the custom types, which has been named, then only the custom name is displayed.</li> </ul>
Load single sheet feeder with <custom string>	Printer does not detect media meeting the description <custom string> in the single sheet feeder. The following actions can be taken: <ul style="list-style-type: none"> <li>Load paper and the job continues.</li> <li>Press <b>Select</b> (✓), and choose an alternate source for media.</li> <li>Press <b>Stop</b> (⏹), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
Load single sheet feeder with <size>	Printer does not detect media meeting the description <size> in the single sheet feeder. The following actions can be taken: <ul style="list-style-type: none"> <li>Load the single sheet feeder with the correct paper type and size. If no paper is in the feeder, load a sheet of paper, and then press <b>Select</b> (✓) to clear the message and continue printing.</li> <li>Press <b>Select</b> (✓) to clear the message and continue printing. The printer manually overrides the manual request, and then paper prints from an automatic source.</li> <li>Press <b>Stop</b> (⏹), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
Load single sheet feeder with <type> <size>	Printer does not detect media meeting the description <type> and <size> in the single sheet feeder (manual feeder). The following actions can be taken: <ul style="list-style-type: none"> <li>Load the manual feeder with the correct paper type and size. If no paper is in the feeder, load a sheet, and then press <b>Select</b> (✓) to clear the message and continue printing.</li> <li>Press <b>Select</b> (✓) to clear the message and continue printing. The printer manually overrides the manual request, and then paper prints from an automatic source.</li> <li>Press <b>Stop</b> (⏹), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
Power Saver	The printer is saving power while it waits for the next print job. <ul style="list-style-type: none"> <li>Send a job to print.</li> <li>Press <b>Select</b> (✓) to warm the printer to normal operating temperature. Afterwards, <i>Ready</i> appears.</li> </ul>
Programming Code	The printer is receiving a file that is a code update. Wait for the message to clear. <b>Warning—Potential Damage:</b> Do not turn the printer off while this message appears on the display.
Programming Flash	Fonts and macros are being written to flash. Wait for the message to clear.
Ready	The printer is ready to print.
Reload printed paged in Tray <x>	<ul style="list-style-type: none"> <li>Press <b>Select</b> (✓) to clear the message and continue processing the second side of the sheet.</li> <li>Press <b>Stop</b> (⏹), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>



User primary message	Explanation
Remote Management Active	The printer is offline while it configures settings. Wait for the message to clear.
Remove paper from standard output bin	The following actions can be taken: <ul style="list-style-type: none"> <li>Remove paper from the standard exit bin to clear the message and continue printing.</li> <li>Press <b>Select</b> (✓) to clear the message and continue printing.</li> </ul>
Remove packaging material	Packaging material is detected by the printer. Remove the packaging material, and press <b>Select</b> (✓). If all the packaging material is removed, then the printer resumes.
Replace <color> cartridge	Replace the toner cartridge, and then press <b>Select</b> (✓) to clear the message and continue printing.
Std Bin Full	The following actions can be taken: <ul style="list-style-type: none"> <li>Remove paper from the standard exit bin to clear the message and continue printing.</li> <li>Press <b>Select</b> (✓) to clear the message and continue printing.</li> </ul>
Tray <x> Empty	The following actions can be taken: <ul style="list-style-type: none"> <li>Load the paper tray or other source with the correct paper type and size.</li> <li>Press <b>Stop</b> (✗) and then press <b>Select</b> (✓) to cancel the current job.</li> </ul>
Tray <x> Low	Load the paper tray or other source with the correct paper type and size.
Tray <x> Missing	Insert the specified tray into the printer.
Unplug and Change Mode	Camera is not in a proper mode to use the PictBridge feature. Unplug the camera cable to the printer, and change the camera mode.
Unsupported USB device, please remove	Remove the unrecognized device from the USB port on the front of the printer.
Unsupported USB hub, please remove	Remove the unrecognized USB hub from the USB port on the front of the printer.
Waiting	The printer has received data to print, but is waiting for an End-of-job command, a Form Feed command, or additional data. The following actions can be taken: <ul style="list-style-type: none"> <li>Press <b>Select</b> (✓) to print the contents of the buffer.</li> <li>Cancel the current print job.</li> </ul>
Waiting, too many events	Wait for the message to clear. <b>Warning—Potential Damage:</b> Do not turn the printer off while this message appears on the display.
Waste Toner Box	The waste toner bottle is nearly full. Press <b>Select</b> (✓) to clear the message and continue printing.
30 <color> Toner Cart Missing	The specified toner cartridge is missing. Re-install the missing toner cartridge to clear the message, and then continue printing. If the message recurs remove and re-install the cartridge. Listen for the <i>click</i> to ensure the cartridge is installed properly. Close the front cover.
31.xx Defective <color> Cartridge	The specified cartridge is defective. The following actions can be taken: <ul style="list-style-type: none"> <li>Remove and re-install the imaging kit.</li> <li>Open and close the top cover.</li> <li>Remove and re-install the cartridge(s). Listen for the <i>click</i> to ensure the cartridge is installed properly.</li> <li>Turn the printer power off and turn the printer power on.</li> </ul> If the message persists, replace the cartridge with a new one, and close the front cover.

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User primary message	Explanation
31.xx Defective Imaging Kit	<p>Defective imaging kit.</p> <p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>• Open and close the top cover.</li> <li>• Remove and re-install the imaging kit.</li> <li>• Turn the printer power off, and after a few seconds, turn the printer power back on.</li> </ul> <p>If the message persists, determine if the imaging kit counter is greater than 15,000 cycles. If it is, then replace the entire kit. See <b>“Imaging unit (IU) removal” on page 4-49</b>. If the counter is below 250,000 cycles, replace only the photoconductors.</p>
32.xx Replace Unsupported <color> Cartridge	<p>Remove the specified cartridge, replace with a supported cartridge, and close the front cover.</p>
34 Short paper	<ul style="list-style-type: none"> <li>• Press <b>Select</b> (✓) to clear the message and continue printing. The printer does not automatically reprint the page that prompted the message.</li> <li>• Check tray length and width guides to ensure paper is properly fitted in the tray.</li> <li>• Make sure the print job is requesting the correct size of paper.</li> <li>• Adjust the Paper Size setting for the size paper you are using. If MP Feeder Size is set to Universal, make sure the paper is large enough for the formatted data.</li> <li>• Press <b>Stop</b> (✗), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
35 Insufficient memory to support Resource Save feature	<p>This message displays when the printer lacks sufficient memory to enable Resource Save. This message usually indicates the user has allocated too much memory for one or more of the printer link buffers; however, modification of other printer settings which affect the amount of available memory may also create this condition. If restoration of Resource Save is required after this message is received, the customer should install additional memory or set each link buffer to Auto. Once all link buffers are returned to Auto, you should exit the menu to activate the link buffer changes. Once the printer returns to the Ready state, you can enable Resource Save and go back and modify the link buffers again. Note the reduction of available memory to the link buffers when Resource Save has been enabled, and compare it to the memory available when Resource Save is disabled.</p> <ul style="list-style-type: none"> <li>• Press <b>Select</b> (✓) to disable Resource Save and continue printing.</li> <li>• Install additional memory.</li> </ul>
37 Insufficient memory to collate job	<p>This message is displayed when the printer memory used to store pages is too full to collate the print job.</p> <p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>• Press <b>Select</b> (✓) to print the portion of the job already stored, and begin collating the rest of the job.</li> <li>• Press <b>Stop</b> (✗), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
37 Insufficient Memory for Flash memory Defragment operation	<p>This message is displayed when insufficient printer memory is available to perform Flash Memory Defragment operation.</p> <p>This message appears prior to the actual start of the defragment operation.</p> <p>Press <b>Select</b> (✓) to stop the defragment operation.</p> <p>To perform the defragment operation, you can:</p> <ul style="list-style-type: none"> <li>• Delete fonts, macros, and other data in RAM.</li> <li>• Install additional printer memory.</li> <li>• Press <b>Stop</b> (✗), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>



User primary message	Explanation
38 Memory Full	<p>This message is displayed when the printer is processing an incoming job and there is not enough memory available to continue processing the job.</p> <p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>• Determine how to make more memory available to your print job by: <ul style="list-style-type: none"> <li>- Deleting fonts and other data in RAM.</li> <li>- Simplify your print job by reducing the amount of text or graphics on a page.</li> <li>- Install additional memory</li> </ul> </li> <li>• Press <b>Select</b> (✓) to clear the message and continue printing. The job may not print correctly.</li> <li>• Press <b>Stop</b> (✗), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
39 Complex page, some data may not have printed	<p>This message is displayed when a page is too complex to print.</p> <p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>• Press <b>Select</b> (✓) to clear the message and continue printing. The job may not print correctly.</li> <li>• Simplify the print job by reducing the amount of text or graphics on a page.</li> <li>• Press <b>Stop</b> (✗), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
40 <color> Invalid Refill, change cartridge	<p>Replace the toner cartridge with a new one.</p>
50 PPDS Font Error	<p>This error only occurs when a printer is formatting PPDS print data.</p> <p>The PPDS interpreter has detected a font error. When a specific font, which is not installed, is requested based on a PPDS mode Set Font Global command, a Select Code Page command, or a Comprehensive Font Selection command, and the printer Best Fit setting is off. If Best Fit is on, the printer performs a best fit search to find a similar font, and this error does not occur.</p> <p>This error also displays when the printer receives invalid PPDS download font data.</p> <p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>• Press <b>Select</b> (✓) to clear the message and continue printing. The job may not print correctly.</li> <li>• The printer cannot find the requested font. From the PPDS menu, select <b>Best Fit</b>, and then select <b>On</b>. The printer will find a similar font and reformat the affected text.</li> <li>• Press <b>Stop</b> (✗), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
51 Defective Flash Detected	<p>Press <b>Select</b> (✓) to clear the message and continue printing.</p> <p>You must install different flash memory before you can download any resources to flash.</p>
52 Not enough free space in flash memory for resources	<p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>• Press <b>Select</b> (✓) to clear the message and continue printing.</li> <li>• Delete fonts, macros, and other data stored on the flash memory.</li> <li>• Upgrade to a larger capacity flash memory.</li> <li>• Press <b>Stop</b> (✗), and then press <b>Select</b> (✓) to cancel printing.</li> </ul>
53 Unformatted flash detected	<p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>• Press <b>Select</b> (✓) to clear the message and continue printing.</li> <li>• Format the flash memory before you store any resources on it. If the error message remains, the flash memory may be defective and require replacing.</li> </ul>

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User primary message	Explanation
54 Standard network software error	<p>The printer detects a network port, but cannot communicate with it. The printer disables all communication to the associated network interface.</p> <p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>Press <b>Select</b> (✓) to clear the message and continue printing. The job may not print correctly.</li> <li>Upgrade the network firmware in the printer or the print server.</li> <li>Turn the printer power off and then back on to reset the printer.</li> <li>Format the flash memory. If the error message remains, the flash memory may be defective and require replacing.</li> </ul>
54 Network <x> software error	<p>The printer disables all communications to the associated network interface. No data may be received or sent from or to the associated interface.</p> <ul style="list-style-type: none"> <li>Press <b>Select</b> (✓) to clear the message and continue printing. The job may not print correctly.</li> <li>Turn the printer power off and then back on to reset the printer.</li> <li>Upgrade the network firmware in the printer or the print server.</li> </ul>
56 Standard USB Port disabled	<p>This message may appear when data is sent to the printer across a USB port, but the port is disabled.</p> <p><b>Note:</b> Once the error is displayed the first time, reporting of further errors is suppressed until the printer is reset or menus are entered.</p> <p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>Press <b>Select</b> (✓) to clear the message. Any data received on the USB port is discarded.</li> <li>Press <b>Menus</b> (≡) to access the Administrative Menus. Make sure the USB Buffer menu item is not set to Disabled. (Press <b>Menus</b> (≡) to access the Administrative Menus, select <b>Network/Ports</b>, <b>USB Menu</b>, and <b>USB Buffer</b>.)</li> </ul>
58 Too many Flash options installed	<p>Too many optional flash memory cards or optional firmware cards are installed on the printer.</p> <ul style="list-style-type: none"> <li>Press <b>Select</b> (✓) to clear the message and continue printing.</li> <li>Remove extra flash options: <ol style="list-style-type: none"> <li>Turn off and unplug the printer.</li> <li>Remove the excess flash memory or optional firmware cards.</li> <li>Plug in the printer, and turn it on.</li> </ol> </li> </ul>
58 Too many trays attached	<p>Too many trays are installed.</p> <ol style="list-style-type: none"> <li>Turn off and unplug the printer.</li> <li>Remove the additional trays.</li> <li>Plug in the printer, and turn it on.</li> </ol>
59 Incompatible trays <x>	Remove the specified tray.
82 Replace waste toner box	<p>Replace the waste toner bottle, and press <b>Select</b> (✓) to clear the message and continue printing. See <b>“Waste toner bottle removal” on page 4-84</b>.</p> <p><b>Note:</b> The printer will not continue until the waste toner bottle is replaced.</p>
82.xx Waste toner box missing	Replace the waste toner bottle, and press <b>Select</b> (✓) to clear the message and continue printing.
82.xx Waste toner nearly full	<p>The following actions can be taken:</p> <ul style="list-style-type: none"> <li>Replace the waste toner bottle, and then press <b>Select</b> (✓) to clear the message and continue printing. See <b>“Waste toner bottle removal” on page 4-84</b>.</li> <li>Press <b>Select</b> (✓) to clear the message and continue printing.</li> <li>Order the waste toner bottle so it will be available when the replacement message is displayed. Once the replacement message is displayed, the printer will not continue until the waste toner is replaced.</li> </ul>



User primary message	Explanation
88.xx <color> Cartridge is low	The term <color> includes black, cyan, magenta, and yellow. Replace the toner cartridge, and then close the toner door to clear the message and continue printing.
88 Replace <color> Cartridge	The term <color> includes black, cyan, magenta, and yellow. Replace the toner cartridge, and then close the toner door to continue printing.

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## Paper Jam messages

### Paper jam messages (2xx)

Error code	Description	Action
200.xx Paper Jam Check <area>  or 200.xx Paper Jam <x> Pages Jammed	A single page of media jam at the input (S2) sensor.  Multiple pages of media are jammed at the input sensor.	Pull out tray 1, open the front door, and then remove the print cartridge to access the jam area. Remove the jammed page(s). See <b>"200 paper jams" on page 3-33.</b>
201.xx Paper Jam Check <area>  or 201.xx Paper Jam <x> Pages Jammed	A single page of media is jammed between the input and exit sensors.  Multiple pages of media are jammed between the input and exit sensors.	Open the front door, and then remove the jammed page or pages. See <b>"201 paper jam" on page 3-33.</b>
202.xx Paper Jam Check <area>  or 202.xx Paper Jam <x> Pages Jammed	A single page of media is jammed at the exit sensor.  Multiple pages of media are jammed at the exit sensor.	Open the front door to access the jam area. Remove the jammed page or pages. See <b>"202 paper jam" on page 3-34.</b>
230.xx Paper Jam Check <area>  or 230.xx Paper Jam <x> Pages Jammed	A single page of media is jammed at the inner door.  Multiple pages of media are jammed at the inner door.	Open the front door, and then remove the jammed page or pages. See <b>"230 paper jam" on page 3-35.</b>
235.xx Paper Jam Check Duplex	Paper jam in the duplex area.	<ul style="list-style-type: none"> <li>The printer does not support narrow media in for duplex printing. If that was the issue, select a supported paper size.</li> <li>Open the door, and remove all the jammed pages. See <b>"235 paper jam" on page 3-35.</b></li> </ul>
241.xx Paper Jam Check <area>  or 241.xx Paper Jam <x> Pages Jammed	Paper jam in the primary tray.	<ul style="list-style-type: none"> <li>Open the door, and remove all the jammed pages. See <b>"241 paper jam in primary tray" on page 3-35.</b></li> <li>Verify the proper tray settings for the media.</li> <li>Fan the media.</li> <li>Check the condition of the pick tires, and replace if necessary. See <b>"Pick tires removal" on page 4-71.</b></li> </ul>
242.xx Paper Jam Check <area>  or 242.xx Paper Jam <x> Pages Jammed	A single or multiple page media jam in the 650-sheet Duo Drawer (tray 2).  Multiple pages of media are jammed in the 650-sheet Duo Drawer (tray 2).	Open the door, and remove all the jammed pages. See <b>"242 paper jam in the 650-sheet Duo Drawer" on page 3-35.</b>

## Paper jam messages (2xx) (continued)

Error code	Description	Action
243.xx Paper Jam Check <area>  <b>or</b> 243.xx Paper Jam <x> Pages Jammed	A single or multiple page media jam in the optional 550-sheet drawer (tray 3).  Multiple pages of media are jammed in the optional 550-sheet drawer (tray 3).	Open the door, and remove all the jammed pages. See <b>“242 paper jam in the 650-sheet Duo Drawer” on page 3-35.</b>
250.xx Paper Jam Check Manual Feeder  <b>or</b> 250.xx Paper Jam <x> Pages Jammed	A single page of media is jammed in the multipurpose feeder.  Multiple pages of media are jammed in the multipurpose feeder.	Open tray 2 to access the jam area. Remove the jammed page or pages. See <b>“250 paper jam” on page 3-36.</b>

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## Service error messages

### Service error messages (1xx, 9xx)

Error code	Description	Action
106.xx Service Yellow Printhead	Yellow printhead error.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.01 Service Yellow Printhead	The yellow printhead lost HSYNC.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.02 Service Yellow Printhead	The yellow printhead failed to complete servo.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.03 Service Yellow Printhead	The yellow printhead mirror motors failed to achieve lock.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.04 Service Yellow Printhead	The yellow printhead mirror motors lost motor lock.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.05 Service Yellow Printhead	Failure reading NVRAM from printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.08 Service Yellow Printhead	The yellow laser showed bad in testing.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.11 Service Yellow Printhead	Failure writing data to the printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.12 Service Yellow Printhead	Failure reading data from the printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
106.13 Service Yellow Printhead	Printhead declared error.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.xx Cyan Printhead Error	Cyan printhead error.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.01 Service Cyan Printhead	The cyan printhead lost HSYNC.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.02 Service Cyan Printhead	The cyan printhead failed to complete servo.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.03 Service Cyan Printhead	The cyan printhead mirror motor failed to achieve lock.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.04 Service Cyan Printhead	The cyan printhead mirror motor lost motor lock.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.05 Service Cyan Printhead	Failure reading NVRAM from the cyan printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>

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## Service error messages (1xx, 9xx) (continued)

Error code	Description	Action
107.08 Service Cyan Printhead	The cyan laser showed bad in testing.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.11 Service Cyan Printhead	Failure writing data tot he printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.12 Service Cyan Printhead	Failure reading data from the printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
107.13 Service Cyan Printhead	Printhead declared error.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.xx Service Magenta Printhead	Magenta printhead error.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.01 Service Magenta Printhead	The magenta printhead lost HSYNC.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.02 Service Magenta Printhead	The magenta printhead failed to complete servo.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.03 Service Magenta Printhead	The magenta printhead mirror motors failed to achieve lock.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.04 Service Magenta Printhead	The magenta printhead mirror motors lost motor lock.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.05 Service Magenta Printhead	Failure reading NVRAM from the magenta printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.08 Service Magenta Printhead	The magenta laser showed bad in testing.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.11 Service Magenta Printhead	Failure writing data tot he printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.12 Service Magenta Printhead	Failure reading data from the printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
108.13 Service Magenta Printhead	Printhead declared error.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.xx Service Black Printhead	Black printhead error.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.01 Service Black Printhead	The black printhead lost HSYNC.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>

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## Service error messages (1xx, 9xx) (continued)

Error code	Description	Action
109.02 Service Black Printhead	The black printhead failed to complete servo.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.03 Service Black Printhead	The black printhead mirror motors failed to achieve lock.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.04 Service Black Printhead	The black printhead mirror motors lost motor lock.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.05 Service Black Printhead	Failure reading NVRAM from printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.08 Service Black Printhead	The black laser showed bad in testing.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.11 Service Black Printhead	Failure writing data to the printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.12 Service Black Printhead	Failure reading data from the printhead.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
109.13 Service Black Printhead	Printhead declared error.	Perform a POR. If the problem persists, go to <b>“Printhead service check” on page 2-52.</b>
122.xx Service Fuser Error	Fuser error	Go to <b>“Fuser service check” on page 2-31.</b>
122.01 Service Fuser Error	Attempting to print with estimated power at or below minimum power.	Go to <b>“Fuser service check” on page 2-31.</b>
122.02 Service Fuser Error	Fuser over temperature.	<b>Note:</b> Some of these errors are caused by a faulty component on the LVPS. Check the history file in the printer to verify other occurrences. If there are others, replace the LVPS. Go to <b>“Low-voltage power supply (LVPS) assembly removal” on page 4-53.</b> Go to <b>“Fuser service check” on page 2-31.</b>
122.03 Service Fuser Error	Fuser open thermistor check failed.	Go to <b>“Fuser service check” on page 2-31.</b>
122.04 Service Fuser Error	Attempting to print with estimated power at or above minimum power.	Go to <b>“90x.xx error (902.xx–907.xx)” on page 2-24.</b>
122.05 Service Fuser Error	Fuser failed to reach final temperature in time.	Go to <b>“90x.xx error (902.xx–907.xx)” on page 2-24.</b>
122.06 Service Fuser Error	Attempting to print when the estimated power is too low.	Go to <b>“90x.xx error (902.xx–907.xx)” on page 2-24.</b>
122.07 Service Fuser Error	Timed out waiting for home sensor event.	Go to <b>“Fuser service check” on page 2-31.</b>

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## Service error messages (1xx, 9xx) (continued)

Error code	Description	Action
122.08 Service Fuser Error	Wrong lamp bit is set in NVRAM.	Go to <b>“Fuser service check” on page 2-31.</b>
122.10 Service Fuser Error	Fuser failed to warm up.	Go to <b>“Fuser service check” on page 2-31.</b>
122.11 Service Fuser Error	Fuser under temperature error while in standby.	Go to <b>“Fuser service check” on page 2-31.</b>
122.12 Service Fuser Error	Fuser under temperature error while printing.	Go to <b>“Fuser service check” on page 2-31.</b>
122.13 Service Fuser Error	Fuser open thermistor check failed for second thermistor.	Go to <b>“Fuser service check” on page 2-31.</b>
122.14 Service Fuser Error	Fuser shorted thermistor check failed for hot roll thermistor.	Go to <b>“Fuser service check” on page 2-31.</b>
122.15 Service Fuser Error	Fuser started thermistor check failed for second thermistor	Go to <b>“Fuser service check” on page 2-31.</b>
122.16 Service Fuser Error	Estimated power is at or above maximum power.	Go to <b>“Fuser service check” on page 2-31.</b>
122.17 Service Fuser Error	Total failure to close fuser nip.	Go to <b>“Fuser service check” on page 2-31.</b>
141.xx Service Staging Motor	Staging motor error.	Go to <b>“Paper pick motor drive assembly service check” on page 2-42.</b>
141.01 Service Staging Motor	Staging motor has exceeded the ramp up table.	Go to <b>“Paper pick motor drive assembly service check” on page 2-42.</b>
141.02 Service Staging Motor	Staging motor has exceeded number of encoders at minimum PWM.	Go to <b>“Paper pick motor drive assembly service check” on page 2-42.</b>
141.03 Service Staging Motor	Staging motor has exceeded number of encoders at maximum PWM.	Go to <b>“Paper pick motor drive assembly service check” on page 2-42.</b>
141.04 Service Staging Motor	Motor encoder count did not change between interrupts.	Go to <b>“Paper pick motor drive assembly service check” on page 2-42.</b>
141.05 Service Staging Motor	Staging motor has encountered a stall timeout.	Go to <b>“Paper pick motor drive assembly service check” on page 2-42.</b>
150.xx Service Black/ITU cartridge Motor	Black/ITU Cartridge Motor	Go to <b>“Main drive gear assembly (EP drive) service check” on page 2-33.</b>
150.01 Service Black/ITU cartridge Motor	Failed to achieve lock for motor within allotted time.	Go to <b>“Main drive gear assembly (EP drive) service check” on page 2-33.</b>
150.02 Service Black/ITU cartridge Motor	Timeout waiting for SAP BLDC motor to reach valid FG speed.	Go to <b>“Main drive gear assembly (EP drive) service check” on page 2-33.</b>
150.03 Service Black/ITU cartridge Motor	Timeout waiting for MP_NUM_INITIAL_SAP_HALLS.	Go to <b>“Main drive gear assembly (EP drive) service check” on page 2-33.</b>
150.04 Service Black/ITU cartridge Motor	Timeout waiting for SAP BLDC motor FG.	Go to <b>“Main drive gear assembly (EP drive) service check” on page 2-33.</b>

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## Service error messages (1xx, 9xx) (continued)

Error code	Description	Action
150.05 Service Black/ITU cartridge Motor	Lost lock for motor.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
150.06 Service Black/ITU cartridge Motor	Excessive SAP BLDC PWM.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
150.07 Service Black/ITU cartridge Motor	Motor stalled in time-based commutation.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
152.xx Service CMY Cartridge Motor		Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
152.01 Service CMY Cartridge Motor	Failed to achieve lock for motor within allotted time.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
152.02 Service CMY Cartridge Motor	Timeout waiting for SAP BLDC motor to reach valid FG speed.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
152.03 Service CMY Cartridge Motor	Timeout waiting for MP_NUM_INITIAL_SAP_HALLS.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
152.04 Service CMY Cartridge Motor	Timeout waiting for SAP BLDC motor FG.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
152.05 Service CMY Cartridge Motor	Lost lock for motor.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
152.06 Service CMY Cartridge Motor	Excessive SAP BLDC PWM.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
152.07 Service CMY Cartridge Motor	Motor stalled in time-based commutation.	Go to <b>“Main drive gear assembly (EP drive) service check”</b> on page 2-33.
900.xx Service RIP Software	Unrecoverable RIP software error/illegal trap.	Go to <b>“900.xx—System software error”</b> on page 2-22.
902.xx Service Engine Software	A general engine software error.	Go to <b>“90x.xx error (902.xx–907.xx)”</b> on page 2-24.
903.xx Service Engine Software	A general engine software error.	Go to <b>“90x.xx error (902.xx–907.xx)”</b> on page 2-24.
904.xx Service Engine Software	A general engine software error.	Go to <b>“90x.xx error (902.xx–907.xx)”</b> on page 2-24.
905.xx Service Engine Software	A general engine software error.	Go to <b>“90x.xx error (902.xx–907.xx)”</b> on page 2-24.
906.xx Service Engine Software	A general engine software error.	Go to <b>“90x.xx error (902.xx–907.xx)”</b> on page 2-24.
907.xx Service Engine Software	A general engine software error.	Go to <b>“90x.xx error (902.xx–907.xx)”</b> on page 2-24.
908.01 Service Engine Software	Board level was not obtained.	Go to <b>“90x.xx error (902.xx–907.xx)”</b> on page 2-24.
908.02 Service Engine Software	Timeout waiting for bullet serial data to be updated.	Go to <b>“90x.xx error (902.xx–907.xx)”</b> on page 2-24.

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## Service error messages (1xx, 9xx) (continued)

Error code	Description	Action
908.03 Service Engine Software	NVM_OK was not received from NV2 server for successfully submitted request.	Go to <b>“90x.xx error (902.xx–907.xx)” on page 2-24.</b>
908.04 Service Engine Software	Over temperature condition detected.	Go to <b>“90x.xx error (902.xx–907.xx)” on page 2-24.</b>
925.01 Service Fan Stalled	The printer fan has stalled.	Go to <b>“925.01—Fan error service check” on page 2-25.</b>
930.xx Service LVPS	Low voltage power supply did not detect zero crossing.	Replace the LVPS. See <b>“Low-voltage power supply (LVPS) assembly removal” on page 4-53.</b>
930.09 Service LVPS	Fuser zero crossings out of range. Zero crossing detected.	Go to <b>“Fuser service check” on page 2-31.</b>
940.0x Service Cyan TMC Sensor	The cyan cartridge toner meter cycle (TMC) switch error. .01—Recoverable .02—Nonrecoverable	Go to <b>“Toner meter sensors (Y, C, M, K) on TMC card” on page 2-53.</b>
941.0x Service Magenta TMC Sensor	The magenta cartridge toner meter cycle (TMC) switch error. .01—Recoverable .02—Nonrecoverable	Go to <b>“Toner meter sensors (Y, C, M, K) on TMC card” on page 2-53.</b>
942.0x Service Yellow TMC Sensor	The yellow cartridge toner meter cycle (TMC) switch error. .01—Recoverable .02—Nonrecoverable	Go to <b>“Toner meter sensors (Y, C, M, K) on TMC card” on page 2-53.</b>
943.0x Service Black TMC Sensor	The black cartridge toner meter cycle (TMC) switch error. .01—Recoverable .02—Nonrecoverable	Go <b>“Toner meter sensors (Y, C, M, K) on TMC card” on page 2-53.</b>
950.xx Service NVRAM Failure	There is a mismatch between controller EEPROM and mirror. <ul style="list-style-type: none"> <li>950.00 through 950.29 codes: mismatch between controller and mirror</li> <li>950.30 through 950.60 codes: mismatch between secure and controller</li> </ul>	Go to <b>“950.xx NVRAM Failure service check” on page 2-26.</b>
951.xx Service NVRAM Failure	Mismatch between controller EEPROM and mirror. <ul style="list-style-type: none"> <li>951.00 through 951.29 codes: mismatch between controller and mirror</li> <li>951.30 through 951.60: mismatch between secure and controller</li> </ul>	
952.xx Service NVRAM Failure: <i>n</i>	A recoverable MVRAM Cyclic Redundancy Check (CRC) error occurred. <i>n</i> is the offset at which the error occurred.	Performing a POR will clear this error.

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## Service error messages (1xx, 9xx) (continued)

Error code	Description	Action
953.xx Service NVRAM Failure	NVRAM chip failure with mirror.	
954.xx Service NVRAM Failure	The NVRAM chip failure with controller part.	
955.xx Service Code CRC <loc>	<p>The Code ROM or NAND flash failed the Cyclic Redundancy Check (CRC) check or the NAND experienced an uncorrectable multi-bit failure. &lt;loc&gt; indicates the source of the failure and has one of the following values:</p> <ul style="list-style-type: none"> <li>• <b>CRC Failure:</b> The source is a failing package indicated by <math>Pn</math> where <math>n</math> is the package number. This error could occur on a controller with ROM or NAND flash and could occur as a result of the CRC check done when the machine is powered on. The range of package numbers is from 0 to 15.</li> <li>• <b>Error Correction Code (ECC) Failure:</b> The source is a failing page indicated by <math>Bn</math> where “<math>n</math>” is the page number. This error occurs only if a multi-bit failure is detected during the ECC execution. Single bit failures will be corrected automatically and will not result in a service error. The range of page numbers is from 0 to 1023.</li> </ul>	
956.00 Service System Board	Controller board failure. Processor failure.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
956.01 Service System Board	Processor over temperature.	
957.xx Service System Board	Controller board failure. ASIC failure.	
958.xx Service NAND Failure	Printer has performed more than 100 “shift and reflash” operations as a result of ECC bit corrections.	
959.01 Service Invalid Firmware	Controller verification failure of system boot code	Update firmware or replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.02 Service Invalid Firmware	Failure to authenticate Signature Verification Code.	Update firmware or replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.03 Service Invalid Firmware	Signature verification Code failure to authenticate a code partition.	Update firmware or replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.04 Service Invalid Firmware	Jump to unverified address.	Update firmware or replace the controller board. See <b>“Controller board removal” on page 4-20.</b>

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## Service error messages (1xx, 9xx) (continued)

Error code	Description	Action
959.05 Service Invalid Firmware	Unknown Boot Failure.	Update firmware or replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.20 Service System Board	System hardware failure.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.21 Service System Board	System did not respond to command request.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.22 Service System Board	Challenge Secret Failure.	ASIC/SP mismatch.
959.23 Service System Board	System self test failure during initialization.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.24 Service System Board	EEPROM Retention Error (write failure)	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.25 Service System Board	Insufficient device space during hardware programming.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.26 Service System Board	Incremental counter reset exceeds maximum value.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.27 Service System Board	Increment count failed due to maximum value limit.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
959.28 Service System Board	Invalid SP memory configuration.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
960.xx Service Memory Error	RAM memory error: RAM soldered on the board is bad.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
961.xx Service Memory Failure	RAM memory error: slot 1 RAM is bad.	Check RAM. If RAM is OK, replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
962.xx Service Memory Failure	RAM memory error: slot 2 RAM is bad.	Check RAM. If RAM is OK, replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
964.xx Service Emulation Error	Download emulation cyclic redundancy check (CRC) failure has occurred. A checksum failure detected in the emulation header or emulation file.	The following actions may be taken: <ol style="list-style-type: none"> <li>1. Disable the Download Emulation.</li> <li>2. Program the download emulation into the code overlay SIMM again.</li> <li>3. If the problem is not resolved replace the code overlay SIMM, and download emulation again.</li> </ol>
975.xx Service Standard Network or 975.xx Service Network Card x	Network error: unrecognizable network port.	Replace the standard network card or the card in the specified slot.

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## Service error messages (1xx, 9xx) (continued)

Error code	Description	Action
976.xx Service Standard Network  or 976.xx Service Network Card x	Unrecoverable software or error in network or network card x.	If unable to clear the error message, check the following: <ul style="list-style-type: none"> <li>• If installed, check network card for correct installation.</li> <li>• If correctly installed, replace the network card.</li> <li>• If a network card is not installed, replace the controller board. See <b>“Controller board removal” on page 4-20.</b></li> </ul>
978.xx Service Standard Network  or 978.xx Service Network Card x	Bad checksum while programming Standard Network or Network Card x port.	Check the following: <ul style="list-style-type: none"> <li>• Make sure you have downloaded the code in binary mode, not ASCII.</li> <li>• Reprogram the Network card.</li> <li>• If the problem persists, and if installed, check the network card for correct installation.</li> <li>• If correctly installed, replace the network card.</li> </ul> If a network card is not installed, replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
979.xx Service Standard Network  or 979.xx Service Network Card x	Flash parts failed while programming the Standard Network or Network Card x port.	Check the following: <ul style="list-style-type: none"> <li>• If installed, check the network card for correct installation.</li> <li>• If correctly installed, replace the network card.</li> <li>• If a network card is not installed, replace the controller board. See <b>“Controller board removal” on page 4-20.</b></li> </ul>
982.xx Service <device> Comm.	Communications error detected by the specified device. <b>Note:</b> <device> can be one of the following: <ul style="list-style-type: none"> <li>• Tray 2</li> <li>• Tray 3.</li> </ul>	
990.xx Service <device>	This error message indicates that an equipment check condition has occurred in the specified device. <b>Note:</b> <device> can be one of the following: <ul style="list-style-type: none"> <li>• Tray 2</li> <li>• Tray 3.</li> </ul>	Go to the service check for the device indicated.

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## Service checks

### 900.xx—System software error

There are different types of 900.xx errors that can occur. There may be a communication problem (Bad cable, network connection, and so on) software issue, or a hardware problem with the controller board, or ISP (Internal solutions port). The communication and software aspects should be checked first. Determine if the problem is constant or intermittent. Use the troubleshooting procedure below to isolate the issue. Take any notes as instructed. You will need that information in the event you need to contact your next level support.

**Note:** Before troubleshooting, determine the operating system used when the error occurred. If possible determine whether a PostScript or PCL file was sent to the device when the error occurred. Ask the customer which Lexmark Solutions applications are installed on the device.

Step	Action and questions	Yes	No
1	POR the device. <b>Does the error reoccur?</b>	Go to step 2.	Problem resolved.
2	<ul style="list-style-type: none"> <li>• Write down the exact 900.xx error code displayed on the device.</li> <li>• Turn the device off.</li> <li>• Clear the print queues.</li> <li>• Disconnect all communication cables, and remove all memory options.</li> <li>• Remove all ISP and modem cards.</li> <li>• Restart the device into diagnostic mode.</li> </ul> <b>Does the 900.xx error reoccur during startup?</b>	Go to step 3.	Go to step 6.
3	Check all the cables connected to the RIP board for proper connectivity. <b>Are the cables properly connected?</b>	Go to step 5.	Go to step 4.
4	Properly connect the cables to the RIP board. Restart the device into diagnostic mode. <b>Does the 900.xx error reoccur during startup?</b>	Go to step 5.	Go to step 6.
5	Replace the RIP board, and restart the device. <b>Does this fix the problem?</b> <b>Note:</b> If an error, different from the original 900.xx, is displayed, consult the service check for that error.	Problem resolved.	Go to step 31.
6	Print the following: <ul style="list-style-type: none"> <li>• Error log</li> <li>• Menu settings page</li> <li>• Network settings page</li> </ul> <b>Does the 900.xx error reoccur while these pages were printing?</b>	Go to step 31.	Go to step 7.

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Step	Action and questions	Yes	No
7	<p>Re-attach the communications cable. Restart the printer to operating mode. Send the printer a print job.</p> <p><b>Does the 900.xx error reoccur?</b></p> <p><b>Note:</b> Before performing this step, write down this information about the file being sent to the printer:</p> <ul style="list-style-type: none"> <li>• Application used</li> <li>• Operating system</li> <li>• Driver type</li> <li>• File type (PCL, PostScript, XPS, etc.)</li> </ul>	Go to step 8.	Go to step 10.
8	<p>Restart the printer to operating mode. Send a different print job to the device.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 9.	Go to step 10.
9	<p>Upgrade the firmware. Contact your next level of support for the correct firmware level to use.</p> <p>Restart the printer to operating mode. Send the printer a print job.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 31.	Go to step 10.
10	Is the device a Multi Function Printer?	Go to step 11.	Go to step 13.
11	<p>Run a copy job.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 31.	Go to step 12.
12	<p>Run a scan to PC job.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 31.	Go to step 13.
13	Is there optional memory installed?	Go to step 14.	Go to step 16.
14	<p>Reinstall the memory, and send a print job to the device.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 15.	Go to step 16.
15	<p>Install a Lexmark recommended memory option. Send a print job to the device.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 31.	Problem resolved.
16	Is there a modem installed on the device?	Go to step 17.	Go to step 21.
17	<p>Reinstall the modem. Restart the device.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 18.	Go to step 20.
18	<p>Upgrade the firmware. Contact your next level of support for the correct firmware level to use.</p> <p>Restart the printer to operating mode. Send the printer a print job.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 19.	Problem resolved.
19	<p>Replace the modem. Restart the device.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 31.	Problem resolved.
20	<p>Run a fax job.</p> <p><b>Does the 900.xx error reoccur?</b></p>	Go to step 31.	Go to step 21.
21	Are there any ISP (internal solutions port) options installed?	Go to step 22.	Problem resolved.

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Step	Action and questions	Yes	No
22	Reinstall the first ISP option. Restart the device. <b>Does the 900.xx error reoccur?</b>	Go to step 24.	Go to step 23.
23	Run a job to test the option. <b>Does the 900.xx error reoccur?</b>	Go to step 24.	Go to step 26.
24	Upgrade the firmware. Contact your next level of support for the correct firmware level to use. Restart the printer to operating mode. <b>Does the 900.xx error reoccur?</b>	Go to step 25.	Problem resolved.
25	Replace the faulty ISP option. Restart the device. <b>Does the 900.xx error reoccur?</b>	Go to step 31.	Go to step 26.
26	Are there any more ISP options to install?	Go to step 27	Problem resolved.
27	Install the next ISP option. Restart the device. <b>Does the 900.xx error reoccur?</b>	Go to step 29.	Go to step 28.
28	Run a job to test the option. <b>Does the 900.xx error reoccur?</b>	Go to step 29.	Go to step 26.
29	Upgrade the firmware. Contact your next level of support for the correct firmware level to use. Restart the printer to operating mode. <b>Does the 900.xx error reoccur?</b>	Go to step 30.	Go to step 26.
30	Replace the faulty ISP option. Restart the device. <b>Does the 900.xx error reoccur?</b>	Go to step 31.	Go to step 26.
31	Contact your next level of support. You will need the following information for them: <ul style="list-style-type: none"> <li>• Exact 900.xx error digits and complete error message</li> <li>• Printed menu settings page</li> <li>• Printed network settings page</li> <li>• Device error log</li> <li>• A sample print file if error appears to be isolated to a single file</li> <li>• File/Application used if error is related to specific print file</li> <li>• Device Operating System</li> <li>• Driver used (PCL/PS)</li> <li>• Frequency of the occurrence of the error</li> </ul>		

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### 90x.xx error (902.xx–907.xx)

Step	Questions / actions	Yes	No
1	Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13</b> . Check the cable connections. Are all the cable connections secure?	Replace the controller board. See <b>“Controller board removal” on page 4-20</b> .	Securely make all the connections. POR the printer.

**925.01—Fan error service check**

Step	Questions / actions	Yes	No										
1	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13</b>. Check the fan cable at JFAN1 for the following values:</p> <table border="1" data-bbox="443 436 662 646"> <thead> <tr> <th colspan="2" data-bbox="443 436 662 485">JFAN1</th> </tr> <tr> <th data-bbox="443 485 508 527">Pin</th> <th data-bbox="508 485 662 527">Value</th> </tr> </thead> <tbody> <tr> <td data-bbox="443 527 508 569">1</td> <td data-bbox="508 527 662 569">+3.3 V dc</td> </tr> <tr> <td data-bbox="443 569 508 611">2</td> <td data-bbox="508 569 662 611">Ground</td> </tr> <tr> <td data-bbox="443 611 508 646">3</td> <td data-bbox="508 611 662 646">0 (fan off)</td> </tr> </tbody> </table> <p>Are the measured values correct?</p>	JFAN1		Pin	Value	1	+3.3 V dc	2	Ground	3	0 (fan off)	<p>Replace the top cover (which includes the fan). See <b>“Top cover assembly removal” on page 4-13</b>.</p>	<p>Replace the controller board. See <b>“Controller board removal” on page 4-20</b>.</p>
JFAN1													
Pin	Value												
1	+3.3 V dc												
2	Ground												
3	0 (fan off)												

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**950.xx NVRAM Failure service check**

**Warning:** Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer will be rendered inoperable:

- Operator panel assembly
- Controller board

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

This error code indicates a mismatch between the memory on the operator panel assembly and the one on the controller board.

Step	Questions / actions	Yes	No
1	Have any updates been made to the firmware?	Reload the firmware and try again. Go to step 2.	Replace the controller board with a new, and not previously installed controller board. See <b>“Controller board removal” on page 4-20.</b>
2	Did reloading the firmware correct the problem?	Problem resolved.	Replace the controller board with a new, and not previously installed controller board. See <b>“Controller board removal” on page 4-20.</b>

**Bin-full/narrow media sensor service check**

Step	Questions / actions	Yes	No										
1	Inspect the bin-full/narrow media sensor located towards the front of the <u>top</u> cover assembly. Is the bin-full/ <del>narrow media</del> <u>narrow media</u> sensor dislodged or damaged?	Repair or replace the bin-full/ <del>narrow media</del> <u>narrow media</u> sensor. See <b>“Bin-full/narrow media sensor removal” on page 4-18.</b>	Go to step 2.										
2	Does the flag rotate freely and interrupt the sensor beam when in normal position?	Go to step 3.	Reposition or replace the flag. See <b>“Bin-full/narrow media sensor flag and exit deflector removal” on page 4-19.</b>										
3	Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b> Turn the printer on, and then check the values below at JBIN1: <table border="1" data-bbox="305 1612 708 1848"> <thead> <tr> <th colspan="2">JBIN1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0 V dc (+5 V dc during cycle)</td> </tr> <tr> <td>2</td> <td>+3.3 V dc beam blocked 0 V dc unblocked</td> </tr> <tr> <td>3</td> <td>Ground</td> </tr> </tbody> </table> Are the values correct?	JBIN1		Pin	Value	1	0 V dc (+5 V dc during cycle)	2	+3.3 V dc beam blocked 0 V dc unblocked	3	Ground	Problem resolved.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JBIN1													
Pin	Value												
1	0 V dc (+5 V dc during cycle)												
2	+3.3 V dc beam blocked 0 V dc unblocked												
3	Ground												

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## Dead printer service check

A dead printer is one which, when powered on from a known good electrical outlet, displays no indication of power to the printer by changes to the LCD, LED, or any movement of the fan or motors. If the printer appears dead but makes a *beeping* sound, check the operator panel. See **“Operator panel display blank, five beeps” on page 2-37**.

If a 650-sheet Duo Drawer is installed, remove the option and check the base printer for correct operation. If the base printer operates correctly, replace the 650-sheet Duo Drawer.

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

	<p><b>CAUTION</b></p> <p>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.</p>
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Remove any input paper-handling options from the printer.

Step	Questions / actions	Yes	No																																				
1	Check the AC <del>power</del> voltagepower voltage. Is the line voltage correct?	Go to step 2.	Inform the customer.																																				
2	Is the AC power cord damaged?	Replace the line cord.	Go to step 3.																																				
3	Is the LVPS cable correctly connected at JLVPS1 on the controller board?	Go to step 5.	Reconnect the cable at JLVPS1, and then go to step 4.																																				
4	Turn the printer off, and then on. Does the problem persist?	Go to step 5.	Problem resolved.																																				
5	<p><b>Warning:</b> Damage to the printer is possible. Be careful to touch only one conductor at a time. Rest the probe against the connector to steady it.</p> <p>With the printer on, verify the following values at JLVPS1:</p> <table border="1" data-bbox="331 1367 773 1738"> <thead> <tr> <th colspan="4">JLVPS1 (exposed conductors)</th> </tr> <tr> <th>Pin</th> <th>Value</th> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+5 V dc</td> <td>2</td> <td>Ground</td> </tr> <tr> <td>3</td> <td>+5 V dc</td> <td>4</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>+5 V dc</td> <td>6</td> <td>Ground</td> </tr> <tr> <td>7</td> <td>+24 V dc</td> <td>8</td> <td>Ground</td> </tr> <tr> <td>9</td> <td>+24 V dc</td> <td>10</td> <td>Ground</td> </tr> <tr> <td>11</td> <td>+24 V dc</td> <td>12</td> <td>Ground</td> </tr> <tr> <td></td> <td></td> <td>16</td> <td>Ground</td> </tr> </tbody> </table> <p>Are the values approximately correct?</p>	JLVPS1 (exposed conductors)				Pin	Value	Pin	Value	1	+5 V dc	2	Ground	3	+5 V dc	4	Ground	5	+5 V dc	6	Ground	7	+24 V dc	8	Ground	9	+24 V dc	10	Ground	11	+24 V dc	12	Ground			16	Ground	<p>Replace the controller board. See <b>“Controller board removal” on page 4-20</b>.</p>	<p>Replace the LVPS. See <b>“Low-voltage power supply (LVPS) assembly removal” on page 4-53</b>.</p>
JLVPS1 (exposed conductors)																																							
Pin	Value	Pin	Value																																				
1	+5 V dc	2	Ground																																				
3	+5 V dc	4	Ground																																				
5	+5 V dc	6	Ground																																				
7	+24 V dc	8	Ground																																				
9	+24 V dc	10	Ground																																				
11	+24 V dc	12	Ground																																				
		16	Ground																																				

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### Duplex/manual feed sensor (S1) service check



Step	Questions / actions	Yes	No								
1	Is the printer setting on a hard, flat surface?	Go to step 2.	Make sure the printer is setting on a level, flat surface.								
2	<p>Enter Diagnostics Menu (turn the printer off, press and hold ◀ and [✓], turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Base Sensor Test. See <b>“Base Sensor Test” on page 3-16.</b></p> <ol style="list-style-type: none"> <li>1. Select <b>Base Sensor Test</b>, and press <b>Select</b> ([✓]).</li> <li>2. Select <b>S1</b>, and press <b>Select</b> ([✓]).</li> <li>3. Install tray 1.</li> </ol> <p>Does the display indicate InputS1—Media Clear...?</p>	Go to step 3.	Go to step 5.								
3	<p>Pull tray 1 out.</p> <p>Does the display indicate InputS1—Media Present...?</p>	The sensor is functioning correctly.	Go to step 4.								
4	<p>Remove the tray, and inspect the sensor.</p> <p>Is there something obstructing the sensor?</p>	Remove the obstruction, and restart the test.	Go to step 5.								
5	<p>Inspect the spring-loaded shaft/flag in the tray. The flag portion of the shaft intercepts the sensor, except when a sheet is being staged for duplexing.</p> <p>Does the shaft rotate freely and return to home position (flag at top of rotation)?</p>	Go to step 6.	Replace the tray with a new one.								
6	Is the flag on the shaft broken?	Replace the tray.	Go to step 7.								
7	<p>Verify the cable is correctly connected to JFUSES1 on the controller board and to the sensor.</p> <p>Is the sensor cable properly connected?</p>	Go to step 8.	Reconnect the cable. If the problem persists, go to step 8.								
8	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b> Turn the printer on, and check the values at JFUSES1:</p> <table border="1" data-bbox="393 1478 615 1650"> <thead> <tr> <th colspan="2">JFUSES1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>Ground</td> </tr> <tr> <td>9</td> <td>+3.3 V dc</td> </tr> </tbody> </table> <p>Are the values approximately correct?</p>	JFUSES1		Pin	Value	8	Ground	9	+3.3 V dc	Replace the duplex sensor. See <b>“Duplex sensor removal” on page 4-28.</b>	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JFUSES1											
Pin	Value										
8	Ground										
9	+3.3 V dc										



## Front door sensor or switches service check

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Step	Questions / actions	Yes	No																
1	<p>Enter Diagnostics Menu (turn the printer off, press and hold  and , turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Base Sensor Test. See <b>“Base Sensor Test” on page 3-16.</b></p> <ol style="list-style-type: none"> <li>1. Select <b>Base Sensor Test</b>, and press <b>Select</b> ().</li> <li>2. Select <b>Front Door</b>, and press <b>Select</b> ().</li> <li>3. Open and close the front door, and observe the display.</li> </ol> <p>Does the display indicate Value Closed with the door closed and Value Opened with the door opened?</p>	Sensor, toner door, and right doors are OK.	Go to step 2.																
2	<p>Open the front door, and check the thin, tall, plastic web (pivot plate) at the top right of the printer. With the other covers in place and closed, this web interacts with switches in the door.</p> <p>Open the toner cover, and check the motion of the web. Is the web loose, damaged, or missing?</p>	Replace the right cover assembly. See <b>“Right cover assembly removal” on page 4-12.</b>	Go to step 3.																
3	<p>Open the toner door, and inspect the vertical web that pushes and rotates the pivot plate. Is it damaged?</p>	Replace the top cover assembly. See <b>“Top cover assembly removal” on page 4-13.</b>	Go to step 4.																
4	<p>With the front cover open, inspect the two switches. Using a tool, such as a spring hook, push the metal arms to check the movement. Is there any damage to the switches or the surrounding area?</p>	Replace the right cover assembly. See <b>“Right cover assembly removal” on page 4-12.</b>	Go to step 5.																
5	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b> Turn the printer on, and verify the following values at JINT1 and JCVR1:</p> <table border="1" data-bbox="332 1367 774 1539"> <thead> <tr> <th colspan="2">JINT1</th> <th colspan="2">JCVR1</th> </tr> <tr> <th>Pin</th> <th>Value</th> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+5 V dc</td> <td>1</td> <td>+24 V dc</td> </tr> <tr> <td>2</td> <td>Ground</td> <td></td> <td></td> </tr> </tbody> </table> <p>Are the values approximately correct?</p>	JINT1		JCVR1		Pin	Value	Pin	Value	1	+5 V dc	1	+24 V dc	2	Ground			Go to step 6.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JINT1		JCVR1																	
Pin	Value	Pin	Value																
1	+5 V dc	1	+24 V dc																
2	Ground																		

Step	Questions / actions	Yes	No
6	<p>Close the front cover and the toner door. Be sure the right cover is in place. Turn the printer off, and then disconnect the cables at JINT1 and JCVR1. Test continuity at the connector under the following conditions:</p> <ul style="list-style-type: none"> <li>• <b>With front cover and toner door closed:</b> Test pin 1 and pin 3 at JINT1 cable end and pin 1 and pin 2 at JCVR1 cable end.</li> <li>• <b>With one or both doors open:</b> Pin 2 and 3 at JINT1 cable end should indicate continuity, but pins 1 and 2 at JCVR1 should have no continuity.</li> </ul> <p>Are the tests verified?</p>	Contact your next level of support.	Replace the front cover assembly. See <b>“Front cover assembly removal” on page 4-2.</b>

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### Fuser exit sensor service check

Step	Questions / actions	Yes	No
1	<p>Enter Diagnostics Menu (turn the printer off, press and hold  and , turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Base Sensor Test. See <b>“Base Sensor Test” on page 3-16.</b></p> <ol style="list-style-type: none"> <li>1. Select <b>Base Sensor Test</b>, and press <b>Select</b> ().</li> <li>2. Select <b>Fuser Exit Sensor</b>, and press <b>Select</b> ().</li> <li>3. Open and close the front door, and inspect the fuser exit sensor located on the LVPS shield.</li> </ol> <p>Is the sensor dislodged or damaged?</p>	Correct the sensor, or replace it. See <b>“Fuser exit sensor removal” on page 4-36.</b>	Go to step 2.
2	<p>Rotate the flag (paper diverter) in and out of the sensor.</p> <p>Does the display indicate <b>Media Clear</b> and <b>Media Present</b> with the cycle?</p>	Sensor is good.	Go to step 3.
3	<p>Does the flag rotate freely, but return to block the sensor?</p>	Go to step 4.	Replace the fuser. See <b>“Fuser assembly removal” on page 4-32.</b>
4	<p>Turn the printer off, and then remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b></p> <p>Is the cable correctly connected to JBIN1 on the controller board and to the sensor?</p>	Go to step 5.	Reconnect the cable.

Step	Questions / actions	Yes	No										
5	<p>Turn the printer on, and check the values at JBIN1:</p> <table border="1"> <thead> <tr> <th colspan="2">JBIN1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>0 V dc (+5 V dc during cycle)</td> </tr> <tr> <td>5</td> <td>+0 V dc (unblocked), +3.3 V dc (blocked)</td> </tr> <tr> <td>6</td> <td>Ground</td> </tr> </tbody> </table> <p>Are the values correct?</p>	JBIN1		Pin	Value	4	0 V dc (+5 V dc during cycle)	5	+0 V dc (unblocked), +3.3 V dc (blocked)	6	Ground	<p>Replace the fuser exit sensor. See <b>“Fuser exit sensor removal” on page 4-36.</b></p>	<p>Replace the controller board. See <b>“Controller board removal” on page 4-20.</b></p>
JBIN1													
Pin	Value												
4	0 V dc (+5 V dc during cycle)												
5	+0 V dc (unblocked), +3.3 V dc (blocked)												
6	Ground												

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### Fuser service check

Step	Questions / actions	Yes	No
1	<p>Some low-voltage power supply FRUs have a voltage selector switch. If it does, the switch needs to be set to the correct voltage for your area.</p>  <p>Has the LVPS been changed?</p>	<p>Check the switch on the side of the LVPS to verify the correct voltage is set.</p>	<p>Go to step 2.</p>
2	 <p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b> Check the cable at JFUSES1 for proper connection to the controller board, the cable for pinch points, and the cable or connector for any other damage.</p> <p>Is the cable damaged?</p>	<p>Replace the fuser cable.</p>	<p>Go to step 3.</p>
3	<p>Check the connector JLVPS1 for proper connection to the controller board, the cable for pinch points, and the cable or connector for any other damage.</p> <p>Is the cable damaged?</p>	<p>Repair or replace the LVPS cable.</p>	<p>Go to step 4.</p>
4	<p>Check the power cable on the left side of the fuser and the thermistor cables and connections on the right side of the fuser.</p> <p>Are the cables or connectors damaged?</p>	<p>Repair the cables. If the cables cannot be repaired, replaced the fuser. See <b>“Fuser assembly removal” on page 4-32.</b></p>	<p>Go to step 5.</p>

Step	Questions / actions	Yes	No																						
5	<p>Check the following values at JFUSES1:</p> <table border="1"> <thead> <tr> <th colspan="2">JFUSES1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+24 V dc (doors closed)</td> </tr> <tr> <td>2</td> <td>+24 V dc (doors closed)</td> </tr> <tr> <td>3</td> <td>+24 V dc (doors closed)</td> </tr> <tr> <td>4</td> <td>+24 V dc (doors closed)</td> </tr> <tr> <td>5</td> <td>Between 0.6 and 3.28 V dc</td> </tr> <tr> <td>6</td> <td>Ground</td> </tr> <tr> <td>8</td> <td>Ground</td> </tr> <tr> <td>10</td> <td>Between -3 and +3.3 V dc</td> </tr> <tr> <td>11</td> <td>Ground (no wire)</td> </tr> </tbody> </table> <p>Are the values approximately correct?</p>	JFUSES1		Pin	Value	1	+24 V dc (doors closed)	2	+24 V dc (doors closed)	3	+24 V dc (doors closed)	4	+24 V dc (doors closed)	5	Between 0.6 and 3.28 V dc	6	Ground	8	Ground	10	Between -3 and +3.3 V dc	11	Ground (no wire)	Go to step 6.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JFUSES1																									
Pin	Value																								
1	+24 V dc (doors closed)																								
2	+24 V dc (doors closed)																								
3	+24 V dc (doors closed)																								
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6	Ground																								
8	Ground																								
10	Between -3 and +3.3 V dc																								
11	Ground (no wire)																								
6	<p>Replace the fuser. See <b>“Fuser assembly removal” on page 4-32.</b></p> <p>Does the error clear?</p>	Problem resolved.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>																						

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### Input (S2) sensor service check

**Note:** The input (S2) sensor is part of the paper pick motor drive assembly FRU, and is not available otherwise.

Step	Questions / actions	Yes	No
1	<p>Enter Diagnostics Menu (turn the printer off, press and hold ◀ and [✓], turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Base Sensor Test. See <b>“Base Sensor Test” on page 3-16.</b></p> <ol style="list-style-type: none"> <li>Select <b>Base Sensor Test</b>, and press <b>Select</b> ([✓]).</li> <li>Select <b>S2</b>, and press <b>Select</b> ([✓]).</li> <li>Pull tray 1 out, and rotate the S2 sensor flag (S2 is located in front of the center paper pick motor drive assembly housing.) It should rotate freely and return to its original position.</li> </ol> <p>Is the input (S2) sensor flag damaged?</p>	Replace the paper pick motor drive assembly. See <b>“Paper pick motor drive assembly removal—standard tray” on page 4-68.</b>	Go to step 2.
2	<p>Watch the display while rotating the flag.</p> <p>Does the display indicate Media Clear and Media Present?</p>	Problem resolved.	Go to step 3.
3	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b></p> <p>Is the JSP1 cable connector properly connected to the controller board?</p>	Go to step 4.	Reseat the connector.

Step	Questions / actions	Yes	No
4	Turn the printer on, and check the voltage at JSP1 pin 15. Is the voltage approximately +5 V dc?	Replace the paper pick motor drive assembly. See <b>“Paper pick motor drive assembly removal—standard tray”</b> on page 4-68.	Replace the controller board. See <b>“Controller board removal”</b> on page 4-20.

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### Main drive gear assembly (EP drive) service check

Step	Questions / actions	Yes	No																				
1	Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal”</b> on page 4-13. Check the cable at JCARTB1 for proper connection to the controller board, the cable for pinch points, and the cable or connector for any other damage. Is the cable damaged?	Replace the JCARTB1 cable.	Go to step 2.																				
2	Verify the following values at JCARTB1 on the controller board. <table border="1" data-bbox="441 856 662 1268"> <thead> <tr> <th colspan="2">JCARTB1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>+24 V dc</td> </tr> <tr> <td>6</td> <td>+24 V dc</td> </tr> <tr> <td>8</td> <td>+24 V dc</td> </tr> <tr> <td>9</td> <td>Ground</td> </tr> <tr> <td>12</td> <td>Ground</td> </tr> <tr> <td>13</td> <td>+24 V dc</td> </tr> <tr> <td>15</td> <td>+24 V dc</td> </tr> <tr> <td>17</td> <td>+24 V dc</td> </tr> </tbody> </table> Are the values approximately correct?	JCARTB1		Pin	Value	4	+24 V dc	6	+24 V dc	8	+24 V dc	9	Ground	12	Ground	13	+24 V dc	15	+24 V dc	17	+24 V dc	Go to step 3.	Replace the controller board. See <b>“Controller board removal”</b> on page 4-20.
JCARTB1																							
Pin	Value																						
4	+24 V dc																						
6	+24 V dc																						
8	+24 V dc																						
9	Ground																						
12	Ground																						
13	+24 V dc																						
15	+24 V dc																						
17	+24 V dc																						
3	Replace the main drive assembly. See <b>“Main drive gear assembly removal”</b> on page 4-66. Does the error clear?	Problem resolved.	Replace the controller board. See <b>“Controller board removal”</b> on page 4-20.																				

## Networking service check

**Note:** Before starting this service check, print out the network setup page. This page is found under Menu - Reports - Network Settings. Consult the network administrator to verify that the physical and wireless network settings displayed on the network settings page for the device are properly configured. If a wireless network is used, verify that the printer is in range of the host computer or wireless access point, and there is no electronic interference. Have the network administrator verify that the device is using the correct SSID, and wireless security protocols. For more network troubleshooting information, consult the Lexmark Network Setup Guide.

Step	Questions / actions	Yes	No
1	If the device is physically connected to the network, verify that the ethernet cable is properly connected on both ends. Is the cable properly connected?	Go to step 3. If the network is wireless, <a href="#">go to</a> step 3.	Go to step 2.
2	Connect the ethernet cable. Did this fix the problem?	Problem resolved	Go to step 3.
3	Check the printer's online status under Printers and Faxes on the host computer. Delete all print jobs in the print queue. Is the printer online and in a <b>Ready</b> state.	Go to step 5.	Go to step 4.
4	Change the printer status to online. Did this fix the issue?	Problem resolved.	Go to step 5.
5	Does the IP address displayed on the network settings page match the IP address in the port of the drivers using the printer?	Go to step 10.	Go to step 6.
6	Does the LAN use DHCP? <b>Note:</b> A printer should use a static IP address on a network.	Go to step 7.	Go to step 9.
7	Are the first two segments if the IP address 169.254?	Go to step 8.	Go to step 9
8	POR the printer. Is the problem resolved	Problem resolved	Go to step 10.
9	Reset the address on the printer to match the IP address on the driver. Did this resolve the issue?	Problem fixed.	Go to step 10.
10	Have the network admin verify that the printer and PC's IP address have identical subnet addresses. Are the subnet addresses the same?	Go to step 12.	Go to step 11.
11	Using the subnet address supplied by the network admin, assign a unique IP address to the printer. <b>Note:</b> The printer IP address should match the IP address on the printer driver. Did this fix the problem?	Problem resolved.	Go to step 12.
12	Is the device physically connected (ethernet cable) to the network?	Go to step 13.	Go to step15.

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Step	Questions / actions	Yes	No
13	Try using a different ethernet cable. Did this remedy the situation?	Problem resolved	Go to step 14.
14	Have the network administrator check the network drop for activity. Is the drop functioning properly?	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>	Contact the network administrator.
15	Is the printer on the same wireless network as the other devices?	Go to step 17.	Go to step 16.
16	Assign the correct wireless network to the printer. Did this fix the problem?	Problem resolved	Go to step 17.
17	Are the other devices on the wireless network communicating properly?	Go to step 18.	Contact the network administrator.
18	Verify that the wireless card is properly seated on the controller board. Is the wireless card seated correctly?	Go to step 20.	Go to step 19.
19	Properly reseal the wireless card. Did this fix the problem?	Problem resolved.	Go to step 20.
20	Is the antenna damaged?	Go to step 22.	Go to step 21.
21	Replace the antenna. Did this fix the problem?	Problem resolved	Go to step 22.
22	Verify that the antenna is properly connected to the wireless card. Is it connected correctly?	Go to step 24.	Go to step 23.
23	Properly connect the antenna. Did this fix the problem?	Problem resolved	Go to step 24.
24	Check pin 6 for +3.3V, and Pin 5 for +5V, on connector JUSBW1 of the controller board. Pin 1 and 4 are GND. Are the voltages and grounds correct?	Replace the wireless card. See <b>“Wireless network card” on page 4-88.</b>	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>

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## Operator panel service check

**Warning:** Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer will be rendered inoperable:

- Operator panel assembly
- Controller board

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

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### One or more operator panel buttons fail

Step	Questions / actions	Yes	No														
1	<p>Enter Diagnostics Menu (turn the printer off, press and hold ◀ and ▣, turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Panel Test. See <b>“Panel Test” on page 3-11</b>. The Panel Test should show alternating display of all pixels on, and all pixels off. Press <b>Stop</b> to end the test.</p> <p>Did the test show errors on the display?</p>	<p>Replace the operator panel assembly. See <b>“Operator panel logo plate” on page 4-9</b>.</p>	<p>Go to step 2.</p>														
2	<p>Perform the Button Test. See <b>“Button Test” on page 3-12</b> in Diagnostics Menu.</p> <p>Did any of the buttons fail the test?</p>	<p>Replace the operator panel assembly. See <b>“Operator panel logo plate” on page 4-9</b>.</p>	<p>Go to step 3.</p>														
3	<p>Remove the rear shield. <b>“Top cover assembly removal” on page 4-13</b>.</p> <p>Turn the printer on, and verify the following values at JOPP1:</p> <table border="1" data-bbox="396 1209 618 1499"> <thead> <tr> <th colspan="2">JOPP1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>+5 V dc</td> </tr> <tr> <td>4</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>+5 V dc</td> </tr> <tr> <td>6</td> <td>+3.3 V dc</td> </tr> <tr> <td>7</td> <td>Ground</td> </tr> </tbody> </table> <p>Are the values approximately correct?</p>	JOPP1		Pin	Value	2	+5 V dc	4	Ground	5	+5 V dc	6	+3.3 V dc	7	Ground	<p>Replace the operator panel. See <b>“Operator panel logo plate” on page 4-9</b>.</p> <p>If this does not fix the problem, replace the front cover assembly which contains the operator panel cables. See <b>“Front cover assembly removal” on page 4-2</b>.</p>	<p>Replace the controller board. See <b>“Controller board removal” on page 4-20</b>.</p>
JOPP1																	
Pin	Value																
2	+5 V dc																
4	Ground																
5	+5 V dc																
6	+3.3 V dc																
7	Ground																



## Operator panel display blank, five beeps

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

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Step	Questions / actions	Yes	No														
1	Is the operator panel assembly cable properly installed at controller board JOPP1 and at the operator panel assembly?	Go to step 2.	Reinstall the cable.														
2	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b></p> <p>Turn the printer on, and verify the following values at JOPP1:</p> <table border="1" data-bbox="444 674 664 963"> <thead> <tr> <th colspan="2">JOPP1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>+5 V dc</td> </tr> <tr> <td>4</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>+5 V dc</td> </tr> <tr> <td>6</td> <td>+3.3 V dc</td> </tr> <tr> <td>7</td> <td>Ground</td> </tr> </tbody> </table> <p>Are the values approximately correct?</p>	JOPP1		Pin	Value	2	+5 V dc	4	Ground	5	+5 V dc	6	+3.3 V dc	7	Ground	Go to step 3.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JOPP1																	
Pin	Value																
2	+5 V dc																
4	Ground																
5	+5 V dc																
6	+3.3 V dc																
7	Ground																
3	<p>Check continuity of the operator panel assembly cable.</p> <p>Is there continuity?</p>	Replace the operator panel assembly. See <b>“Operator panel logo plate” on page 4-9.</b>	Replace the front cover assembly. See <b>“Front cover assembly removal” on page 4-2.</b>														

**Operator panel display blank, printer beeps five times and pauses**

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Step	Questions / actions	Yes	No																		
<p><b>1</b></p>	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b></p> <p>Turn the printer on, and verify the following values at JOPP1 on the controller board:</p> <table border="1" data-bbox="394 468 613 835"> <thead> <tr> <th colspan="2">JOPP1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0 V dc</td> </tr> <tr> <td>2</td> <td>+5 V dc</td> </tr> <tr> <td>3</td> <td>0 V dc</td> </tr> <tr> <td>4</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>+5 V dc</td> </tr> <tr> <td>6</td> <td>+3.3 V dc</td> </tr> <tr> <td>7</td> <td>Ground</td> </tr> </tbody> </table> <p>Are all these values approximately correct?</p>	JOPP1		Pin	Value	1	0 V dc	2	+5 V dc	3	0 V dc	4	Ground	5	+5 V dc	6	+3.3 V dc	7	Ground	<p>Go to step 2.</p>	<p>Replace the controller board. See <b>“Controller board removal” on page 4-20.</b></p>
JOPP1																					
Pin	Value																				
1	0 V dc																				
2	+5 V dc																				
3	0 V dc																				
4	Ground																				
5	+5 V dc																				
6	+3.3 V dc																				
7	Ground																				
<p><b>2</b></p>	<p>Turn the printer off, and check for continuity in the operator panel cable.</p> <p><b>Note:</b> Remove the three screws holding the operator panel, and place it facedown on top of the printer. The cable connector pins will be exposed and easier to contact.</p> <p>Do all the conductors indicate continuity?</p>	<p>Replace the operator panel. See <b>“Operator panel logo plate” on page 4-9.</b></p>	<p>Replace the front cover assembly. See <b>“Front cover assembly removal” on page 4-2.</b></p>																		

## Operator panel displays all diamonds, no beeps

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Step	Questions / actions	Yes	No																		
1	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b></p> <p>Disconnect the cable at JOPP1 on the controller board. Verify the following values:</p> <table border="1"> <thead> <tr> <th colspan="2">JOPP1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0 V dc</td> </tr> <tr> <td>2</td> <td>+5 V dc</td> </tr> <tr> <td>3</td> <td>0 V dc</td> </tr> <tr> <td>4</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>+5 V dc</td> </tr> <tr> <td>6</td> <td>+3.3 V dc</td> </tr> <tr> <td>7</td> <td>Ground</td> </tr> </tbody> </table> <p>Are all these values approximately correct?</p>	JOPP1		Pin	Value	1	0 V dc	2	+5 V dc	3	0 V dc	4	Ground	5	+5 V dc	6	+3.3 V dc	7	Ground	Go to step 2.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JOPP1																					
Pin	Value																				
1	0 V dc																				
2	+5 V dc																				
3	0 V dc																				
4	Ground																				
5	+5 V dc																				
6	+3.3 V dc																				
7	Ground																				
2	<p>Check for continuity in the operator panel cable connector.</p> <p><b>Note:</b> Remove the three screws holding the operator panel, and place it facedown on top of the printer. The cable connector pins will be exposed and easier to contact.</p> <p>Do all the conductors indicate continuity?</p>	Replace the operator panel. See <b>“Operator panel logo plate” on page 4-9.</b>	Replace the front cover assembly. See <b>“Front cover assembly removal” on page 4-2.</b>																		

**Operator panel displays all diamonds, five beeps**

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Step	Questions / actions	Yes	No																		
<p><b>1</b></p>	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b></p> <p>Turn the printer on, and verify the following values at JOPP1:</p> <table border="1" data-bbox="396 468 615 835"> <thead> <tr> <th colspan="2">JOPP1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0 V dc</td> </tr> <tr> <td>2</td> <td>+5 V dc</td> </tr> <tr> <td>3</td> <td>0 V dc</td> </tr> <tr> <td>4</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>+5 V dc</td> </tr> <tr> <td>6</td> <td>+3.3 V dc</td> </tr> <tr> <td>7</td> <td>Ground</td> </tr> </tbody> </table> <p>Are all these values approximately correct?</p>	JOPP1		Pin	Value	1	0 V dc	2	+5 V dc	3	0 V dc	4	Ground	5	+5 V dc	6	+3.3 V dc	7	Ground	<p>Go to step 2.</p>	<p>Replace the controller board. See <b>“Controller board removal” on page 4-20.</b></p>
JOPP1																					
Pin	Value																				
1	0 V dc																				
2	+5 V dc																				
3	0 V dc																				
4	Ground																				
5	+5 V dc																				
6	+3.3 V dc																				
7	Ground																				
<p><b>2</b></p>	<p>Check for continuity in the operator panel cable connector.</p> <p><b>Note:</b> Remove the three screws holding the operator panel, and place it facedown on top of the printer. The cable connector pins will be exposed and easier to contact.</p> <p>Do all the conductors indicate continuity?</p>	<p>Replace the operator panel. See <b>“Operator panel logo plate” on page 4-9.</b></p>	<p>Replace the front cover assembly. See <b>“Front cover assembly removal” on page 4-2.</b></p>																		

## Operator panel display is dim and unchanging

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Step	Questions / actions	Yes	No																		
1	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b></p> <p>Turn the printer on, and verify the following values at JOPP1 on the controller board:</p> <table border="1" data-bbox="443 468 664 835"> <thead> <tr> <th colspan="2">JOPP1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0 V dc</td> </tr> <tr> <td>2</td> <td>+5 V dc</td> </tr> <tr> <td>3</td> <td>0 V dc</td> </tr> <tr> <td>4</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>+5 V dc</td> </tr> <tr> <td>6</td> <td>+3.3 V dc</td> </tr> <tr> <td>7</td> <td>Ground</td> </tr> </tbody> </table> <p>Are all these values approximately correct?</p>	JOPP1		Pin	Value	1	0 V dc	2	+5 V dc	3	0 V dc	4	Ground	5	+5 V dc	6	+3.3 V dc	7	Ground	Go to step 2.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JOPP1																					
Pin	Value																				
1	0 V dc																				
2	+5 V dc																				
3	0 V dc																				
4	Ground																				
5	+5 V dc																				
6	+3.3 V dc																				
7	Ground																				
2	<p>Check for continuity in the operator panel cable connector.</p> <p><b>Note:</b> Remove the three screws holding the operator panel, and place it facedown on top of the printer. The cable connector pins will be exposed and easier to contact.</p> <p>Do all the conductors indicate continuity?</p>	Replace the operator panel. See <b>“Operator panel logo plate” on page 4-9.</b>	Replace the front cover assembly. See <b>“Front cover assembly removal” on page 4-2.</b>																		

## Operator panel USB cable service check

Step	Questions / actions	Yes	No
1	<p>Check the operator panel USB cable for continuity.</p> <p>Is there continuity?</p>	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>	Replace the USB port connector. <b>“USB port connector removal” on page 4-83</b>

## Paper pick motor drive assembly service check

**Note:** The input (S2) sensor is part of the paper pick motor drive assembly, and is not available separately.

Step	Questions / actions	Yes	No																						
1	Turn the printer off, and then remove the rear shield. See <b>“Top cover assembly removal” on page 4-13</b> . Check the cable at JSP1 on the controller board for proper connection. Is the cable properly connected?	Go to step 3.	Properly connect the cables, and POR the printer. Go to step 2.																						
2	Did the printer function correctly after reconnecting the cables?	Problem resolved.	Go to step 3.																						
3	Turn the printer on, and then verify the following approximate values at JSP1: <table border="1" data-bbox="280 680 732 1129"> <thead> <tr> <th colspan="2">JSP1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>+24 V dc</td> </tr> <tr> <td>4</td> <td>+24 V dc</td> </tr> <tr> <td>5</td> <td>+5V (when paper is picked)</td> </tr> <tr> <td>7</td> <td>Ground</td> </tr> <tr> <td>8</td> <td>Ground</td> </tr> <tr> <td>10</td> <td>+5 V dc</td> </tr> <tr> <td>12</td> <td>_5 V dc (when paper is picked)</td> </tr> <tr> <td>15</td> <td>+5 V dc</td> </tr> <tr> <td>16</td> <td>Ground</td> </tr> </tbody> </table> Are the values approximately correct?	JSP1		Pin	Value	2	+24 V dc	4	+24 V dc	5	+5V (when paper is picked)	7	Ground	8	Ground	10	+5 V dc	12	_5 V dc (when paper is picked)	15	+5 V dc	16	Ground	Replace the paper pick motor drive assembly. See <b>“Paper pick motor drive assembly removal—standard tray” on page 4-68</b> .	Replace the controller board. See <b>“Controller board removal” on page 4-20</b> .
JSP1																									
Pin	Value																								
2	+24 V dc																								
4	+24 V dc																								
5	+5V (when paper is picked)																								
7	Ground																								
8	Ground																								
10	+5 V dc																								
12	_5 V dc (when paper is picked)																								
15	+5 V dc																								
16	Ground																								

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## 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.

To print a menu settings page:

- a. Press **Menu** () on the operator panel.
- b. Select **Reports** from the Admin Menu, and press **Select** ()
- c. Select **Menu Settings**, and press **Select** ()

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

2. On the menu page, make sure the following is set to the default level:
  - Color Correction: Set to Auto.
  - Print Resolution: Set to 600 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.

Once the printer has been restored to its default levels, do the following:

1. Inspect the imaging unit for damage, including the developers and toner cartridges. Replace if damaged.
2. If paper other than 20lb plain letter/A4 paper is being used, load 20lb plain letter/A4.
3. Print the Print Quality pages to see if the problem remains. Look for variations in the print from what is expected.

To print the print Quality pages:

- a. Enter Diagnostics (turn the printer off, press and hold **Left** (◀) and **Select** (☑), turn the printer on, and release when the installed memory and processor speed displays).
- b. Select **PRINT TESTS**, and press **Select** (☑).
- c. Select **Print Quality Pgs**, and press **Select** (☑).

The message `Printing Quality Test Pages` is displayed.

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

When you measure voltages, measure from the connector to the printer ground.

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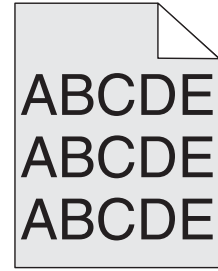


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## Print quality—background

Service tip: Some background problems can be caused by using rough paper or incorrectly setting the operator panel settings to rough texture when the texture is not rough. Using non-Lexmark toner cartridges may also cause the problem.

Some slick or coated papers may also cause background problems. Some problems occur by running a large amount of graphics in a humid environment.



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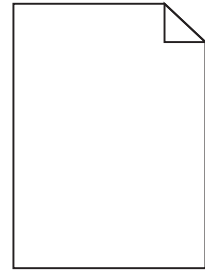


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Step	Questions / actions	Yes	No
1	<p>Read the current status of the imaging unit from the customer menus.</p> <p>To view the status of the photoconductor units:</p> <ol style="list-style-type: none"> <li>In Ready mode, press <b>Menus</b> (☰).</li> <li>Select <b>Reports</b>, and press <b>Select</b> (✓).</li> <li>Select <b>Device Statistics</b>, and press <b>Select</b> (✓).</li> </ol> <p>It is possible a new imaging unit was installed, but the counter was not reset.</p> <p>Has the imaging unit been recently replaced?</p>	<p>Reset the value. To reset this value:</p> <ol style="list-style-type: none"> <li>In Ready mode, press <b>Menus</b> (☰).</li> <li>Select <b>Supplies Menu</b>, and press <b>Select</b> (✓).</li> <li>Select <b>Replace Supply</b>, and press <b>Select</b> (✓).</li> <li>Select the imaging unit, and press <b>Select</b> (✓).</li> <li>Select <b>Yes</b>, and press <b>Select</b> (✓).</li> </ol> <p>If this does not fix the problem, go to step 2.</p>	Go to step 2.
2	<p>Is the background only one of the primary colors; yellow, cyan, magenta, or black?</p>	<p>Replace the developer unit for the background color and retest. See <b>“Developer unit removal” on page 4-21</b>.</p> <p>Go to step 3.</p>	Go to step 4.
3	<p>Did replacing the developer unit correct the problem?</p>	Problem resolved.	Go to step 4.
4	<p>Replace the photoconductor unit.</p> <p>Does this fix the problem?</p>	Problem resolved.	Go to step 5.
5	<p>Check the high-voltage contact from the HVPS to the image transfer unit (ITU).</p> <p>Is a problem found?</p>	<p>Replace the failing FRU:</p> <ul style="list-style-type: none"> <li>Image transfer unit (ITU). See <b>“Image transfer unit (ITU) removal” on page 4-44</b>.</li> <li>High-voltage power supply (HVPS). See <b>“High-voltage power supply (HVPS) assembly removal” on page 4-38</b>.</li> </ul>	Go to step 6.
6	<p>Reseat the cable in the JHVPS1 connector.</p> <p>Does this fix the problem?</p>	Problem resolved.	Go to step 7.
7	<p>Replace the HVPS. See <b>“High-voltage power supply (HVPS) assembly removal” on page 4-38</b>.</p> <p>Does this fix the problem?</p>	Problem resolved.	Go to step 8.
8	<p>Clean the printhead.</p> <p>Does this fix the problem?</p>	Problem resolved.	Replace the printhead. See <b>“Printhead removal” on page 4-72</b> .



## Print quality—blank page



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Step	Questions / actions	Yes	No
1	Is all the packing material for the imaging unit in question removed?	Go to step 2.	Remove the packing material.
2	<p>Print a document that requires all four colors with just a few characters to verify if one specific color is a problem. For example, print the Print Quality Test Pages:</p> <ol style="list-style-type: none"> <li>1. Enter Diagnostic mode. (Turn the printer off, press and hold <b>Left</b> (◀) and <b>Select</b> (✓), turn the printer on, and then release the buttons when the installed memory and processor speed displays.)</li> <li>2. Select <b>PRINT TESTS</b>, and press <b>Select</b> (✓).</li> <li>3. Select <b>Prt Qual Pgs</b>, and press <b>Select</b> (✓).</li> </ol> <p>Is only one color missing?</p>	Replace the developer unit for the missing color.	Go to step 3.
3	<p>Replace the imaging unit. See <b>“Imaging unit (IU) removal” on page 4-49</b>.</p> <p>Does this fix the problem?</p>	Problem resolved.	Go to step 4.
4	<p>Run the Motor Detect Test:</p> <ol style="list-style-type: none"> <li>1. Remove the imaging unit and the waste toner bottle. See <b>“Imaging unit (IU) removal” on page 4-49</b>.</li> <li>2. Reinstall the right cover assembly.</li> <li>3. Close the front cover.</li> <li>4. Enter Diagnostics menu (Turn the printer off, press and hold <b>Left</b> (◀) and <b>Select</b> (✓), turn the printer on, and release the buttons when the installed memory and processor speed displays.</li> <li>5. Select <b>MISC TESTS</b> in the Diag Menu, and press <b>Select</b> (✓).</li> <li>6. Select <b>Motor Detect</b>, and press <b>Select</b> (✓).</li> </ol> <p>Motor Detection In Progress... appears.</p> <p>The motor detection process takes about 10 seconds, and stops automatically.</p> <p>Detect Complete. Rebooting... appears, and the printer performs a POR (Power On Reset).</p> <p>Did the motor run?</p>	Go to step 5.	Replace the Main drive gear assembly. See <b>“Main drive gear assembly removal” on page 4-66</b> .

Step	Questions / actions	Yes	No
5	Remove the developer unit. See <b>“Developer unit removal” on page 4-21</b> . Check the developer cartridge contacts from the HVPS to the IU. Are all the toner cartridge contacts clean on both the pins and IU?	Go to step 6.	Clean the developer cartridge contacts. See <b>“Developer unit removal” on page 4-21</b> .
6	Are all the spring-loaded pins in the HVPS free to move in and out with an equal amount of spring force?	Go to step 7.	Replace the HVPS. See <b>“High-voltage power supply (HVPS) assembly removal” on page 4-38</b> .
7	Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13</b> . Check the continuity between the spring-loaded pins and the JSC1 connector on the controller board. Are all conductors continuous?	Go to step 8.	Replace the cable.
8	Replace the printhead. See <b>“Printhead removal” on page 4-72</b> . Did this fix the problem?	Problem resolved.	Replace the controller board. See <b>“Controller board removal” on page 4-20</b> .

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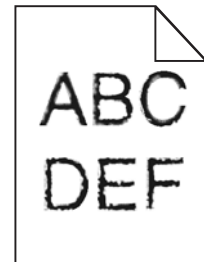


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### Print quality—blurred or fuzzy print

Run the automatic alignment. The TPS sensor may be damaged. To run Reset Color Cal:

1. Enter the Diagnostics Menu. (Turn the printer off, press and hold ◀ and , turn the printer on, and release the buttons when installed memory and processor speed displays.
2. Select **TPS Setup** from Diag Menu, and press **Select** ()
3. Select **Reset Color Cal**, and press **Select** ()  
Resetting appears. When the reset is complete, the screen is automatically returned to TPS Setup.



Blurred or fuzzy print is usually caused by a problem in the main drive gear assembly or in the image transfer unit (ITU). Check the main drive gear assembly and ITU for correct operation.

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

Check the high-voltage spring contacts to ensure they are not bent, corroded, or damaged. Replace the high-voltage power supply as necessary. See **“High-voltage power supply (HVPS) assembly removal” on page 4-38**.

### Print quality—half-color page

The imaging unit and developer units may not properly seated. Reseat the imaging unit. If that does not work, remove the imaging unit and reseat each of the developer units.

## Print quality—horizontal banding

Print the Print Defect Page:

1. At the Ready prompt, press **Menu** (☰).
2. Select **Reports**, and press **Select** (✓).
3. Select **Print Defects**, and press **Select** (✓).



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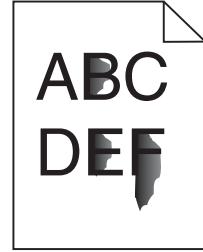
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Step	Questions / actions	Yes	No
1	Measure the distance between repeating bands. Is the distance between bands either 34.6 or 94.2 mm?	Replace the photoconductor unit. Remove the imaging unit and remove the original developer units, and then put them back into the new photoconductor unit, and reinstall the imaging unit. See <b>“Imaging unit (IU) removal” on page 4-49.</b>	Go to step 2.
2	Does the distance measure 95 mm or 108 mm?	Replace the fuser. See <b>“Fuser assembly removal” on page 4-32.</b>	Go to step 3.
3	Does the distance measure 37.7, 55, or 78.5 mm?	Replace the ITU. See <b>“Image transfer unit (ITU) removal” on page 4-44.</b>	Go to step 4.
4	Does the distance measure 43.9 mm or 45.5?	Replace the developers that match the missing color (black, cyan, magenta, or yellow). See <b>“Developer unit removal” on page 4-21.</b>	Check the various rollers in the printer for debris.

## Print quality—horizontal line

Either the photoconductor unit or one of the developer units that make up the imaging unit is defective. Remove and inspect the imaging unit. Replace the damaged part of the imaging unit. See **“Imaging unit (IU) removal” on page 4-49.**

**Print quality—insufficient fusing**



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Step	Questions / actions	Yes	No
1	Is the printer setup to use the correct media?	Go to step 2.	Change the settings to indicate the correct media.
2	Check the fuser connections on the left and right side of the printer. Are the cables and connection correct?	Go to step 3.	Properly reconnect or replace the cables.
3	Is the fuser properly installed?	Go to step 4.	Install the fuser properly.
4	Replace the fuser. See <b>“Fuser assembly removal” on page 4-32.</b> Does this fix the problem?	Problem resolved.	Replace the LVPS. See <b>“Low-voltage power supply (LVPS) assembly removal” on page 4-53.</b>

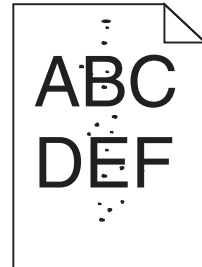
**Print quality—missing image at edge**

Remove and reseal the following:

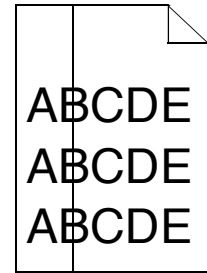
- Toner cartridge
- Imaging unit
- Developer units.

**Print quality—mottle (2–5mm speckles)**

Keep running prints through, and the problem normally clears up. If the problem persists, replace the developer.



## Print quality—narrow vertical line



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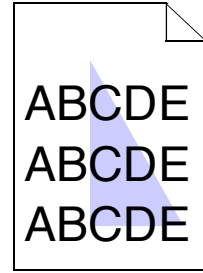
Step	Questions / actions	Yes	No
1	Replace the photoconductor unit. See <b>“Imaging unit (IU) removal” on page 4-49.</b>	Problem resolved.	Replace the developer unit. See <b>“Developer unit removal” on page 4-21.</b>

## Print quality—random marks

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

Step	Questions / actions	Yes	No
1	Is there any loose or foreign material on the imaging unit?	Inspect the imaging unit by looking at the individual developers and photo conductors. Clean or replace the faulty unit. See <b>“Imaging unit (IU) removal” on page 4-49.</b>	Go to step 2.
2	Is there any loose or foreign material on the developer roll?	Replace the developer unit.	Go to step 3.
3	Is there any loose or foreign material on the transfer belt?	Replace the image transfer unit. See <b>“Image transfer unit (ITU) removal” on page 4-44.</b>	Contact your next level of support.

**Print quality—residual image**



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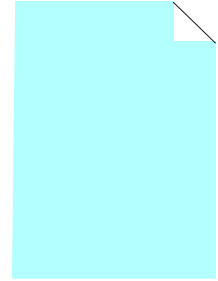


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Step	Questions / actions	Yes	No
1	Check the condition of the imaging unit using the customer menus (administrative menus): <ol style="list-style-type: none"> <li>At the Ready prompt, press <b>Menu</b> (☰).</li> <li>Select <b>Supplies Menu</b>, and press <b>Select</b> (✓).</li> <li>Select <b>Imaging Kit</b>, and press <b>Select</b> (✓).</li> </ol> Does the display indicate OK?	Go to step 2.	Replace the imaging unit or the photoconductor unit. See <b>“Imaging unit (IU) removal” on page 4-49.</b>
2	Measure the distance from the original image to the same point on the residual image. Is the distance 43.9 mm?	Replace the developer corresponding to the color of the image. See <b>“Developer unit removal” on page 4-21.</b>	Replace the imaging unit or the photoconductor unit. See <b>“Imaging unit (IU) removal” on page 4-49.</b>
3	Is the distance between the original image and the residual image 94.2 mm?	Replace the photoconductor. See <b>“Developer unit removal” on page 4-21.</b>	
4	Run the Menu Setting Page twice to clear any debris. To print a menu settings page: <ol style="list-style-type: none"> <li>Press <b>Menu</b> (☰) on the operator panel.</li> <li>Select <b>Reports</b> from the Admin Menu, and press <b>Select</b> (✓).</li> <li>Select <b>Menu Settings</b>, and press <b>Select</b> (✓).</li> </ol> Is there still any toner contamination on the fuser assembly?	Replace the fuser. See <b>“Fuser assembly removal” on page 4-32.</b>	Contact your next level of support.

## Print quality—solid color page

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



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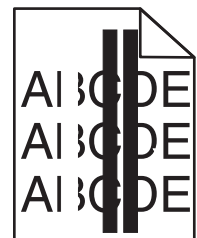


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Step	Questions / actions	Yes	No
1	Replace the photoconductor unit (part of the imaging unit). Remove the imaging unit and remove the developers. Place the original developers in the new photoconductor, and then replace the imaging unit. See <b>“Imaging unit (IU) removal”</b> . Does this fix the problem?	Problem resolved.	Go to step 2.
2	A faulty printhead can cause the problem. To test the printhead for solid colors, place a narrow strip of paper over the gap between the developers. Make sure the paper stays in place when you replace the imaging unit. This will block the laser from discharging the photoconductors. Print a Quality Test Page. Does the page have a white vertical band?	Replace the printhead. See <b>“Printhead removal” on page 4-72.</b>	Go to step 3.
3	Check the high-voltage contact from the HVPS to the photoconductor charge roll. Ensure the contact springs are properly mounted and that the charge roll contact spring is making good contact with the HPVS spring that runs through the left printer frame. See <b>“Toner cartridge contacts” on page 4-74</b> to view the proper mounting and for removal procedures. Are the spring(s) defective?	Replace the transfer contact assembly. See <b>“Toner cartridge contacts” on page 4-74.</b>	Go to step 4.
4	Turn the printer off, and check the continuity of the HVPS cable. Is there continuity?	Go to step 5.	Replace the cable assembly.
5	Replace the HVPS. See <b>“High-voltage power supply (HVPS) assembly removal” on page 4-38.</b> Did this solve the problem?	Problem resolved.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>

## Print quality—vertical banding

Replace the developer unit.



### Printhead service check

This service check includes the following errors:

Error code	Color
106.xx	Yellow
107.xx	Cyan
108.xx	Magenta
109.xx	Black

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Step	Questions / actions	Yes	No														
1	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13</b>. Check the cable at JMIRR1 for proper connection to the controller board, the printhead cable for pinch points, and the cable or connector for any other damage.</p> <p>Is the cable damaged?</p>	<p>Replace the printhead. See <b>“Printhead removal” on page 4-72</b>.</p>	<p>Go to step 2.</p>														
2	<p>Turn the printer on, and then wait until the printer posts an error. Using a voltmeter, check the following values at JMIRR1:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">JMIRR1</th> </tr> <tr> <th>Pin</th> <th>Volt. (V dc)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>5</td> </tr> <tr> <td>2</td> <td>3.3</td> </tr> <tr> <td>3</td> <td>5</td> </tr> <tr> <td>4</td> <td>GND</td> </tr> <tr> <td>5</td> <td>24</td> </tr> </tbody> </table> <p>Are the values approximately correct?</p>	JMIRR1		Pin	Volt. (V dc)	1	5	2	3.3	3	5	4	GND	5	24	<p>Replace the controller board See <b>“Controller board removal” on page 4-20</b>.</p>	<p>Replace the printhead. See <b>“Printhead removal” on page 4-72</b>.</p>
JMIRR1																	
Pin	Volt. (V dc)																
1	5																
2	3.3																
3	5																
4	GND																
5	24																



**Toner meter cycle (TMC) card**

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Step	Questions / actions	Yes	No
1	<p>Perform the Base Sensor Test:</p> <ol style="list-style-type: none"> <li>1. Enter Diagnostics menu (turn the printer off, press and hold  and <b>Select</b> (), turn the printer on, and release the buttons when the installed memory and processor speed displays).</li> <li>2. Select <b>Base Sensor Test</b>, and press <b>Select</b> ().</li> <li>3. Select the sensor you want to test, open the toner door, remove the corresponding toner cartridge, and press <b>Select</b> ().</li> <li>4. Note whether the operator panel shows a change in state.</li> </ol> <p><b>Note:</b> If the reflective disk is not showing on the cartridge, rotate the gear clockwise to expose the reflective surface.</p> <p>For additional information about the Base Sensor Test, see <b>“Base Sensor Test” on page 3-16.</b></p> <p>Does the operator panel display a change of state?</p>	Replace the toner cartridge.	Replace the toner meter cycle (TMC) card. See <b>“Toner meter cycle (TMC) card removal” on page 4-78.</b>

**Toner meter sensors (Y, C, M, K) on TMC card**

Step	Questions / actions	Yes	No																
1	<p>Remove the toner cartridge, and inspect the lenses on the toner meter cycle (TMC) card.</p> <p>Are the lenses blocked, damaged, or dirty?</p>	Repair or replace the TMC card. See <b>“Toner meter cycle (TMC) card removal” on page 4-78.</b>	Go to step 2.																
2	<p>Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b> Turn the printer on, and measure the values below at JCTM1 during POR:</p> <table border="1" data-bbox="441 1333 662 1663"> <thead> <tr> <th colspan="2">JCTM1</th> </tr> <tr> <th>Pin</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+5 V dc</td> </tr> <tr> <td>2</td> <td>+3.3 V dc</td> </tr> <tr> <td>3</td> <td>+3.3 V dc</td> </tr> <tr> <td>4</td> <td>+3.3 V dc</td> </tr> <tr> <td>5</td> <td>+3.3 V dc</td> </tr> <tr> <td>6</td> <td>Ground</td> </tr> </tbody> </table> <p>Are any of the values incorrect?</p>	JCTM1		Pin	Value	1	+5 V dc	2	+3.3 V dc	3	+3.3 V dc	4	+3.3 V dc	5	+3.3 V dc	6	Ground	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>	Replace the TMC card. See <b>“Toner meter cycle (TMC) card removal” on page 4-78.</b>
JCTM1																			
Pin	Value																		
1	+5 V dc																		
2	+3.3 V dc																		
3	+3.3 V dc																		
4	+3.3 V dc																		
5	+3.3 V dc																		
6	Ground																		

**Transfer roll service check**

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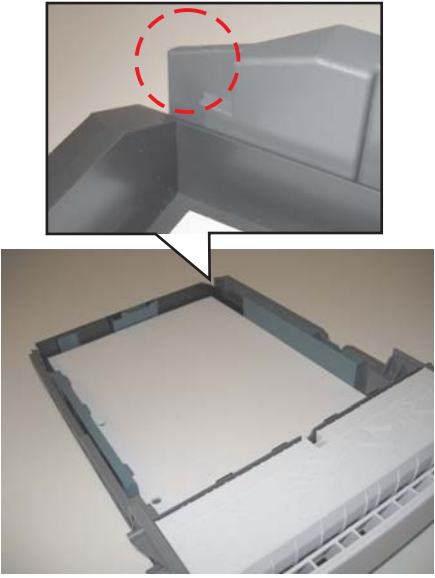


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Step	Questions / actions	Yes	No																
1	Remove the ITU. See <b>“Image transfer unit (ITU) removal” on page 4-44</b> . Check the contacts between the HVPS and the ITU. Clean the contacts and recheck. Does the error <a href="#">recur?</a>	Replace the ITU. See <b>“Image transfer unit (ITU) removal” on page 4-44</b> . Go to step 2.	Problem resolved.																
2	Does the new ITU fix the problem	Problem resolved.	Go to step 3.																
3	Turn the printer off, and remove the rear shield. See <b>“Top cover assembly removal” on page 4-13</b> . Turn the printer on, and check the cable at JHVPS1 connector on the controller board without disconnecting it. Verify the following voltage values: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th colspan="2">JHVPS1</th> </tr> <tr> <th>Pin</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>7</td> <td>+3.3 V dc</td> </tr> <tr> <td>10</td> <td>+3.3 V dc</td> </tr> <tr> <td>11</td> <td>+3.3 V dc</td> </tr> <tr> <td>13</td> <td>+24 V dc</td> </tr> <tr> <td>14</td> <td>Ground</td> </tr> <tr> <td>16</td> <td>Ground</td> </tr> </tbody> </table> Are the values approximately correct?	JHVPS1		Pin	Voltage	7	+3.3 V dc	10	+3.3 V dc	11	+3.3 V dc	13	+24 V dc	14	Ground	16	Ground	Replace the HVPS. See <b>“High-voltage power supply (HVPS) assembly removal” on page 4-38</b> .	Replace the controller board. See <b>“Controller board removal” on page 4-20</b> .
JHVPS1																			
Pin	Voltage																		
7	+3.3 V dc																		
10	+3.3 V dc																		
11	+3.3 V dc																		
13	+24 V dc																		
14	Ground																		
16	Ground																		

**Tray (x) sensor service check**

Step	Questions / actions	Yes	No
1	When the printer is in Ready state, pull the standard tray out. The display should indicate Tray (x) Missing. Reinsert the tray. Does the message remain on the display?	Go to step 2.	Go to step 4.

Step	Questions / actions	Yes	No
2	<p>Check the vertical wall at the right rear of the tray for damage.</p>  <p>Is the tray damaged?</p>	Replace the tray.	Go to step 3.
3	<p>Check for a dislodged tray present sensor. Is the sensor dislodged?</p>	<p>Replace the option tray present sensor.</p> <ul style="list-style-type: none"> <li>• If the 650 sheet tray is affected replace the 650 sheet drawer assembly.</li> <li>• If the 550 sheet assembly is affected, replace the entire 550 sheet drawer assembly.</li> </ul>	Contact the next level of support.
4	<p>Does the message Tray (x) Missing fail to appear when the tray is pulled out?</p>	Go to step 5.	Problem resolved.

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Step	Questions / actions	Yes	No																																				
5	<p>1. Turn off the printer</p> <p>2. Remove the rear shield. See <b>“Top cover assembly removal” on page 4-13.</b></p> <p>3. Disconnect the cable at JTRAY1 connector for tray1 or JOPT1 for tray 2 and 3 on the controller board.</p> <p>4. Turn the printer on, and measure the voltages below:</p> <table border="1" data-bbox="269 485 740 884"> <thead> <tr> <th colspan="2">JTRAY1 for tray 1</th> <th colspan="2">JOPT1 for tray 2 or 3</th> </tr> <tr> <th>Pin</th> <th>Voltage</th> <th>Pin</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+5 V dc</td> <td>2</td> <td>Ground</td> </tr> <tr> <td>2</td> <td>+5 V dc</td> <td>3</td> <td>Ground</td> </tr> <tr> <td>3</td> <td>Ground</td> <td>5</td> <td>+24V</td> </tr> <tr> <td></td> <td></td> <td>6</td> <td>Ground</td> </tr> <tr> <td></td> <td></td> <td>7</td> <td>+5V</td> </tr> <tr> <td></td> <td></td> <td>9</td> <td>Ground</td> </tr> <tr> <td></td> <td></td> <td>10</td> <td>Ground</td> </tr> </tbody> </table> <p>Are the voltage values approximately correct?</p>	JTRAY1 for tray 1		JOPT1 for tray 2 or 3		Pin	Voltage	Pin	Voltage	1	+5 V dc	2	Ground	2	+5 V dc	3	Ground	3	Ground	5	+24V			6	Ground			7	+5V			9	Ground			10	Ground	Problem resolved.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JTRAY1 for tray 1		JOPT1 for tray 2 or 3																																					
Pin	Voltage	Pin	Voltage																																				
1	+5 V dc	2	Ground																																				
2	+5 V dc	3	Ground																																				
3	Ground	5	+24V																																				
		6	Ground																																				
		7	+5V																																				
		9	Ground																																				
		10	Ground																																				

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### Trays 2 and 3 (optional) service check

Step	Questions / actions	Yes	No
1	Are two option trays being used?	Go to step 2.	Go to step 4.
2	If two option trays are being used, is the 550 sheet tray on the bottom?	Go to step 4.	Go to step 3.
3	Switch the order of the trays so the 500 sheet tray is on the bottom, and print a page from both trays. Did the pages print from both trays?	Problem resolved.	Go to step 4.
4	Inspect the paperfeed pick tires on the tray that fails to pick. Do they appear worn or damaged.	Go to step 5.	Go to step 6.
5	Replace the pick tires on the faulty tray, and print a page with media from the affected tray. See <b>“Pick tires removal” on page 4-71.</b> Did the page print?	Problem resolved.	Go to step 6.
6	Check the option cable connected to JOPT1 for continuity. Is there continuity?	Go to step 8.	Go to step 7.
7	Replace the cable, and print from both option trays. Did the pages print from both trays?	Problem resolved.	Go to step 8.

Step	Questions / actions	Yes	No																		
8	<p>Print a menu settings page.</p> <p><b>Note:</b> If two option trays are used, the 650 sheet will appear as tray 2, and the 550 sheet tray will appear as tray 3.</p> <p>Are all the attached option trays listed on the first page of the menu settings pages?</p>	Go to step 9.	<ul style="list-style-type: none"> <li>If the 550 sheet option failed to appear, <a href="#">go to</a> step 9.</li> <li>If the 650 sheet tray failed to appear, go to step 10.</li> </ul>																		
9	<ol style="list-style-type: none"> <li>Remove the 650 sheet tray from the printer</li> <li>Attach the 550 sheet tray directly to the printer</li> <li>Print a page from the 550 sheet tray.</li> </ol> <p>Did the page print?</p>	Go to step 11.	Replace the 550 sheet tray.																		
10	<p>With only the 650 sheet tray attached to the printer, print a page from the 650 sheet tray.</p> <p>Did the page print?</p>	Go to step 11.	Replace the 650 sheet tray.																		
11	<ol style="list-style-type: none"> <li>Turn off the printer.</li> <li>Remove the rear shield. <a href="#">see “Top cover assembly removal” on page 4-13.</a></li> <li>Disconnect the cable at JOPT1 on the controller board.</li> <li>Turn the printer on.</li> <li>Measure the voltages below:</li> </ol> <table border="1" data-bbox="440 930 662 1299"> <thead> <tr> <th colspan="2">JOPT1</th> </tr> <tr> <th>Pin</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>Ground</td> </tr> <tr> <td>3</td> <td>Ground</td> </tr> <tr> <td>5</td> <td>+24V</td> </tr> <tr> <td>6</td> <td>Ground</td> </tr> <tr> <td>7</td> <td>+5V</td> </tr> <tr> <td>9</td> <td>Ground</td> </tr> <tr> <td>10</td> <td>Ground</td> </tr> </tbody> </table> <p>Are the voltages correct?</p>	JOPT1		Pin	Voltage	2	Ground	3	Ground	5	+24V	6	Ground	7	+5V	9	Ground	10	Ground	Consult your next level support.	Replace the controller board. See <b>“Controller board removal” on page 4-20.</b>
JOPT1																					
Pin	Voltage																				
2	Ground																				
3	Ground																				
5	+24V																				
6	Ground																				
7	+5V																				
9	Ground																				
10	Ground																				

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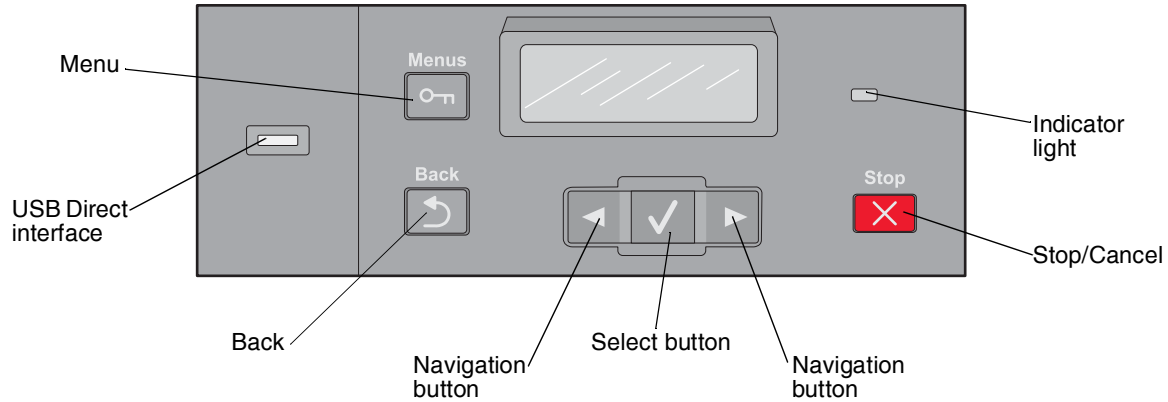
## USB service check

Step	Questions / actions	Yes	No
1	Is the USB cable properly connected to the printer and host PC?	Go to step 2.	Properly connect the cable at both ends.
2	Try a different USB cable. Does this fix the issue?	Issue fixed.	Go to step 3.
3	Connect a different device to the USB cable. Did the host PC see the device?	Replace the Controller board. See <b>“Controller board removal” on page 4-20.</b>	There is an issue with the host machine.






## User operator panel and Administration menus

### Printer operator panel

The printer operator panel has a two-line, back lit, grayscale text display. The Back, Menu, and Stop buttons are located to the left of the display and the navigation buttons are located below the display.



### Operator panel buttons

Button or indicator	Function										
Select 	Press <b>Select</b> (✓) to initiate action on a menu item.										
Indicator light	Indicates the printer status: <table border="1" data-bbox="565 1157 1417 1367"> <thead> <tr> <th>Status</th> <th>Indicates</th> </tr> </thead> <tbody> <tr> <td>Off</td> <td>The power is off.</td> </tr> <tr> <td>Blinking green</td> <td>The printer is warming up, processing data, or printing a job.</td> </tr> <tr> <td>Solid green</td> <td>The printer is on, but idle.</td> </tr> <tr> <td>Blinking red</td> <td>Operator intervention is needed.</td> </tr> </tbody> </table>	Status	Indicates	Off	The power is off.	Blinking green	The printer is warming up, processing data, or printing a job.	Solid green	The printer is on, but idle.	Blinking red	Operator intervention is needed.
Status	Indicates										
Off	The power is off.										
Blinking green	The printer is warming up, processing data, or printing a job.										
Solid green	The printer is on, but idle.										
Blinking red	Operator intervention is needed.										
Stop/Cancel 	Stops all printer activity. A list of options is offered once Stopped appears on the display.										
Navigation buttons 	Press ◀ or ▶ to scroll through menu lists. Use the Select button in the center to initiate action on a menu item.										
Back 	Returns the display to the previous screen.										
Menu 	Opens the menu index.										
USB Direct interface	<b>Note:</b> The USB connector is available on some models.										



## Menu map

This menu map identifies menus available to customers. The diagram shows the menus on the operator panel and items available under each menu.

Some menu items or values are displayed only if a specific option or feature is installed on your printer. Other menu items may only be effective for a particular printer language. You can select these values at any time, but they affect printer function only when you have the optional equipment, feature on your model, or the specified printer language.

### Supplies Menu

- Cyan Cartridge
- Magenta Cartridge
- Yellow Cartridge
- Black Cartridge
- Imaging Kit
- Waste Toner Box

### Paper Menu

- Default Source
- Size/Type
- Paper Texture
- Paper Weight
- Paper Loading
- Custom Types
- Universal Setup
  - Units of Measure
  - Portrait Width
  - Portrait Height
  - Feed Direction

### Reports

- Menu Settings Page
- Device Statistics
- Network Setup Page
- Profiles List
- Print Fonts
- Print Directory
- Print Defects
- Print Demo
  - Demo Page
  - PPDS Info
- Asset Report

### Network/Ports

- Active NIC
- Network Menu
  - PCL Smartswitch
  - PS Smartswitch
  - NPA Mode
  - Network Buffer
  - Mac Binary PS
  - Network Setup
    - Reports
    - Network Card
    - TCP/IP
    - IPv6
    - Wireless
    - AppleTalk
    - SE Menu
- USB Menu
  - PCL Smartswitch
  - PS Smartswitch
  - NPA Mode
  - USB Buffer
  - Mac Binary PS
  - USB With ENA
    - ENA Address
    - ENA Netmask
    - ENA Gateway
    - ENA Gateway

### Settings

- General Settings
  - Display Language
  - Eco-Mode
  - Quiet Mode
  - Run Initial Setup
  - Alarms
  - Timeouts
  - Print Recovery
  - Factory Defaults
- Setup Menu
  - Printer Language
  - Print Area
  - Download Target
  - Resource Save
- Finishing Menu
  - Sides (Duplex)
  - Duplex Binding
  - Copies
  - Blank Pages
  - Collate
  - Separator Sheets
  - Separator Source
  - N-up (Pages/Side)
  - N-up Ordering
  - Orientation
  - N-up Border
- Quality Menu
  - Color Correction
  - Print Resolution
  - Toner Darkness
  - Enhance Fine Lines
  - Color Saver
  - RGB Brightness
  - RGB Contrast
  - RGB Saturation
  - Color Balance
  - Color Samples
  - Manual Color
  - Color Adjust
- Utilities Menu
  - Format Flash
  - Defragment Flash
  - Hex Trace
  - Coverage Estimator
- PDF Menu
- PostScript Menu
- PCL Emul Menu
- PPDS Menu
- Image Menu
- PictBridge Menu
- Flash Drive Menu

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## 3. Diagnostic aids

### Accessing service menus

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

Diagnostics Menu	<ol style="list-style-type: none"> <li>1. Turn the printer off.</li> <li>2. Press and hold <b>Left</b> (◀) and <b>Select</b> (✓).</li> </ol>  <ol style="list-style-type: none"> <li>3. Turn the printer on.</li> <li>4. Release the buttons when the installed memory and processor speed displays.</li> </ol>	<p>The Diagnostics menu group contains the settings and operations used while manufacturing and servicing the printer.</p> <p>See <b>“Diagnostics Menu (Diag Menu)” on page 3-2</b> for more information.</p>
Configuration Menu	<ol style="list-style-type: none"> <li>1. Turn the printer off.</li> <li>2. Press and hold <b>Select</b> (✓) and <b>Right</b> (▶).</li> </ol>  <ol style="list-style-type: none"> <li>3. Turn the printer on.</li> <li>4. Release the buttons when the installed memory and processor speed displays.</li> </ol>	<p>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.</p> <p>See <b>“Configuration menu (Config Menu)” on page 3-24</b> for more information.</p>

The following menus do not require a POR:

Network SE Menu	<ol style="list-style-type: none"> <li>1. From the Ready prompt, press <b>Menu</b> (☰).</li> <li>2. Select Customer Network/Ports menu.</li> <li>3. Press and hold <b>Left</b> (◀) and <b>Right</b> (▶).</li> </ol>  <ol style="list-style-type: none"> <li>4. Release the buttons when the menu appears.</li> </ol>	
SE Menu	In a browser, add /se to printer's IP address. For example, http://158.183.3.2/se.	Enters the SE menus online.
Additional error message information	While the error displays on the panel, press <b>Back</b> (⏪) and <b>Right</b> (▶).	Access secondary debug information.
Invalid Engine Code Mode	<ol style="list-style-type: none"> <li>1. Turn the printer off.</li> <li>2. Press and hold <b>Back</b> (⏪) and <b>Left</b> (◀).</li> </ol>	This mode is used if the machine has invalid code and needs the correct code loaded. After entering this mode, the firmware code can be updated.
Firmware update from USB	For use on machines with operator panel USB port.	See <b>“Updating printer firmware” on page 3-28</b> .

To run the printer diagnostic tests described in this chapter, you must put the printer in Diagnostics Menu or in the Configuration Menu.

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## Diagnostics Menu (Diag Menu)

**Note:** Tray 2 refers to the 550-sheet tray located in the 650-sheet Duo Drawer.

### Diagnostics Menu structure

When the Diagnostics menu is entered, each Diagnostics 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 Menu

<b>Registration (black registration)</b>	
Top Margin	See <b>“Registration”</b> on page 3-4.
Bottom Margin	
Left Margin	
Right Margin	
Skew	See <b>“Skew”</b> on page 3-5.
Quick Test	See <b>“Quick Test”</b> on page 3-5.
<b>Alignment Menu (color alignment)</b>	
Cyan	See <b>“Alignment”</b> on page 3-7.
Yellow	
Magenta	
Factory Scanner	A summary page for all the color alignment settings: it can be used in place of alignment pages for each individual color.
Factory Manual	
<b>PRINT TESTS</b>	
Tray 1	See <b>“Input source tests”</b> on page 3-10.
Tray 2 (if installed)	
Tray 3 (if installed C546dn)	
Manual Feeder	
MP Feeder (if installed)	
Prt Qual Pgs	See <b>“Print quality test pages (Prt Qual Pgs)”</b> on page 3-11.
<b>Hardware Test</b>	
Panel Test	See <b>“Panel Test”</b> on page 3-11.
Button Test	See <b>“Button Test”</b> on page 3-12.
DRAM Test	See <b>“DRAM Test”</b> on page 3-12.
<b>DUPLEX TESTS (if installed)</b>	
Quick Test	See <b>“Quick Test (duplex)”</b> on page 3-13.
Top Margin	See <b>“Top Margin (duplex)”</b> on page 3-14.
Left Margin	See <b>“Left Margin (duplex)”</b> on page 3-14.
<b>INPUT TRAY TESTS</b>	
Feed Tests	See <b>“Feed Tests”</b> on page 3-15.



**Diagnostics Menu (continued)**

Sensor Test	See <b>“Sensor Test (not available on all printers)”</b> on page 3-15.
<b>Base Sensor Test</b>	
Front Door	See <b>“Base Sensor Test”</b> on page 3-16.
Input - S1	
Input - S2	
Fuser exit Sensr	
Standard Bin	
C-TMC	
M-TMC	
Y-TMC	
K-TMC	
<b>MISC TESTS</b>	
Motor Detect	See <b>“Motor Detect”</b> on page 3-17.
<b>DEVICE TESTS</b>	
Flash Test (if flash memory is installed)	See <b>“Flash Test”</b> on page 3-17.
<b>Printer Setup</b>	
Defaults	See <b>“Defaults”</b> on page 3-18.
Prt Color Pg Count	See <b>“Page counts”</b> on page 3-18.
Prt Mono Pg Count	
Perm Page Count	
Serial Number	See <b>“Serial Number”</b> on page 3-18.
Engine Setting 1	See <b>“Engine Setting 1 through 4”</b> on page 3-18.
Engine Setting 2	
Engine Setting 3	
Engine Setting 4	
Model Name	See <b>“Model Name”</b> on page 3-18.
Config ID (Configuration ID)	See <b>“Configuration ID”</b> on page 3-19.
ITU Barcode	See <b>“ITU Barcode”</b> on page 3-19.
Reset Fuser Cnt	See <b>“Reset Fuser Cnt”</b> on page 3-20.
<b>EP Setup</b>	
EP Defaults	See <b>“EP Defaults”</b> on page 3-20.
Fuser Temp	See <b>“Fuser Temperature”</b> on page 3-20.
DC Charge Adjust	See <b>“DC Charge Adjust, Dev Bias Adj, Transfer Adjust”</b> on page 3-20.
Dev Bias Adjust	
Transfer Adjust	
<b>TPS Setup</b>	
Right	See <b>“Right or Left TPS”</b> on page 3-21.
Left	
Cal Ref Adjust	See <b>“Cal Ref Adj”</b> on page 3-21.
Reset Color Calibration	See <b>“Reset Color Cal”</b> on page 3-21.
<b>Reports</b>	
Menu Settings Page	See <b>“Menu Settings Page”</b> on page 3-22.

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**Diagnostics Menu (continued)**

Event Log	
Display Log	See <b>“Display Log” on page 3-22.</b>
Print Log	See <b>“Print Log” on page 3-22.</b>
Clear Log	See <b>“Clear Log” on page 3-23.</b>
<b>Exit Diags</b>	This selection exits the Diagnostics Menu. The printer performs a POR, and returns to normal mode.

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**Registration**

Print registration makes sure the black printing plane is properly aligned on the page. This is one of the steps in aligning a new printhead. See **“Alignment” on page 3-7.** It is also the first step in aligning the duplex registration. See **“Quick Test (duplex)” on page 3-13.**

To set print registration:

1. Select **Registration** from the Diag Menu, and press **Select** (✓).
2. Use ◀ or ▶ to select **Print Quick Test**, and press ✓. See **“Quick Test” on page 3-5** for additional information.

The message *Printing...* appears on the display, and the page prints.

Retain this page to determine the changes you need to make to the margin settings.

3. Press **Select** (✓) to enter the **Registration**.
4. Use ◀ or ▶ to select the margin setting you need to change, and press **Select** (✓).
5. Use ◀ to decrease or ▶ to increase the offset values, and press **Select** (✓) to confirm the value.

The message *Submitting changes* displays, and the original margin setting screen appears.

The print registration ranges are:

Description	Value	Direction of change
Top margin	-50 to +50 Each increment corresponds to 8 scans at a 600 dpi scan rate (0.0133 inches or 0.339 mm). The default is 0.	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. No compression or expansion occurs.
Bottom margin	-25 to +25 Each increment causes approximately 0.55 mm shift in the bottom margin. The default is 0.	A positive offset moves text down the page and narrows the bottom margin, while a negative offset moves text up the page and narrows the bottom margin. The image is compressed or expanded.
Left margin	-25 to +25 Each increment corresponds to 4 pixels at 600 dpi (0.00666 in. or 0.1693 mm). The default is 0.	A positive change moves the image to the left, and a negative change moves the image to the right. No compression or expansion occurs.
Right margin	-50 to +50 Each increment corresponds to an approximate shift of 4 pixels at 600 dpi. The default is 0.	A positive change moves the image to the left, and a negative change moves the image to the right.

Description	Value	Direction of change
Skew	-100 to +100 Each increment corresponds to 1/1200 of an inch. The default is 0.	A positive value causes the left end of the scan line to move down the page. A negative value causes the left end of the scan line to move up the page. The right end stays fixed. There is no compression or expansion of the image.

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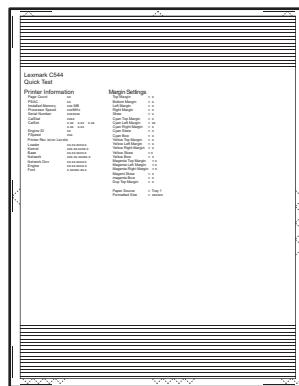
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6. Print another copy of the Quick Test to verify your changes.
7. Continue changing the settings by repeating steps 3 through 5.

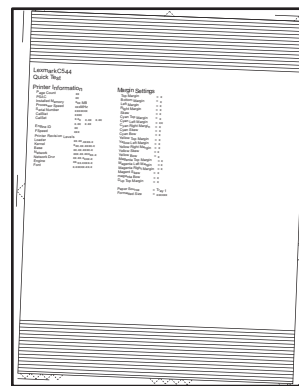
To exit Registration, press **Back** (  ) or **Stop** (  ).

## Skew

One printhead houses the four color planes. The black plane is aligned to the printer, and the other color planes are internally aligned to black. Electronic alignment fine tunes the alignment of the color planes to the black plane once the printhead is installed. See **“Alignment” on page 3-7** for instructions on setting printhead alignment. This must be performed before color skew adjustment is attempted. The following illustration shows proper alignment versus skewed alignment.



Straight



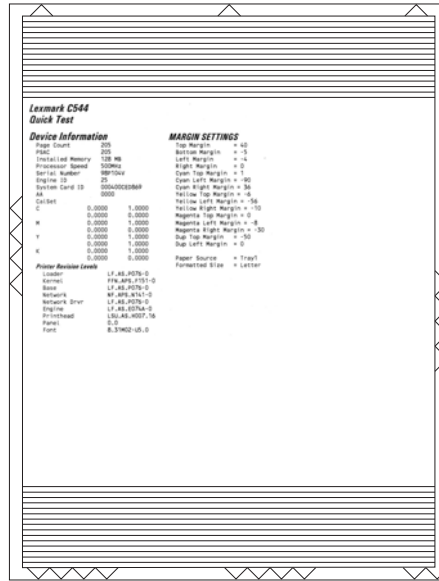
Skewed

## 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.



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To print the Quick Test page:

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

1. Select **Registration** from Diag Menu, and press **Select** (✓).
2. Select **Quick Test Page**, and press **Select** (✓).

The message Printing... appears on the display.

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

## Alignment

Aligns each of the color planes to the black plane. Print the Quick Test under each color, Cyan, Yellow, and Magenta, and adjust the Top Margin, Left Margin, Right Margin, Skew, and Bow.


Prints the Print Alignment Pages and requires that the best line in each set of lines must be selected.

To get started:

1. Select **Alignment Menu** from the Diag Menu, and press **Select** (✓).
2. Select a color (**Cyan, Yellow, or Magenta**), and press **Select** (✓).  
**Note:** The yellow alignment page markings are more difficult to see, so you might not want to pick it first.
3. Select the **Quick Test**, and press **Select** (✓) to begin printing.


The message Printing... appears on the display. A page similar to the following prints:

Top (T) Coarse Adjustment

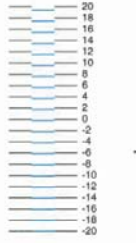


### Cyan Alignment Step 1

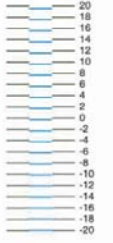
Skew (Z) Coarse Adjustment



Top (T) Fine Adjustment



Skew (Z) Fine Adjustment



T → Z

$$T = 0 + \text{---} = \text{---}$$

↑                    ↑

Current            New

Cyan                Cyan

T value             T value

$$Z = 0 - \text{---} + \text{---} = \text{---}$$

↑                    ↑

Current            New

Cyan                Cyan

Z value             Z value

STEP 1: Adjust the Top (T) margin and Skew (Z) then confirm before going to Step 2.

Press the up or down buttons until a check appears at the setting in need of adjustment. Press Select. Then use the < and > buttons to enter the new value. Press Select to save.

NOTE: If the alignment values cannot be determined by using the fine adjustment scales, then use the coarse adjustment scales at the top of the page.

STEP 2: Go to the next page to adjust the Left (L) margin, Right (R) margin, and Bow (P).

STEP 3: Reprint these pages to confirm final settings.

**Go To Step 2**

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4. Select **Top Margin**, and press **Select** (✓).
5. Select the best choice for fine or coarse adjustment in Step 1 (first page), and add it to the current value for the Top Margin.

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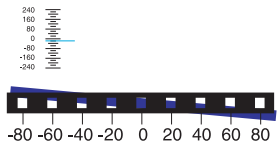


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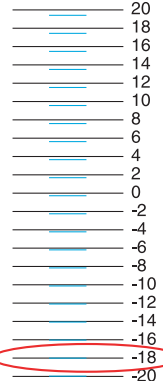
### Top (T) Coarse Adjustment



-80 -60 -40 -20 0 20 40 60 80

If the alignment is not close enough to use the fine adjustment, get close to the ideal value by using the coarse 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 for the new value. Reprint the quick test page, and then use the fine adjustment.

### Top (T) Fine Adjustment



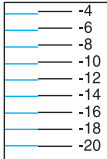
20  
18  
16  
14  
12  
10  
8  
6  
4  
2  
0  
-2  
-4  
-6  
-8  
-10  
-12  
-14  
-16  
-18  
-20

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 coarse adjustment to get close, reprint this page and then use the fine adjustment.

6. Use ◀ or ▶ to enter the sum of the numbers, and press **Select** (✓).

Submitting changes... appears.

Print the Quick Test again to verify the observed value is the same as the current value (no change is needed). If change is still needed, repeat steps 4–6. When the observed values and the current value are the same, continue to the next step.



T

↓

$$T = 0 + \underline{-18} = \underline{-18}$$

↑

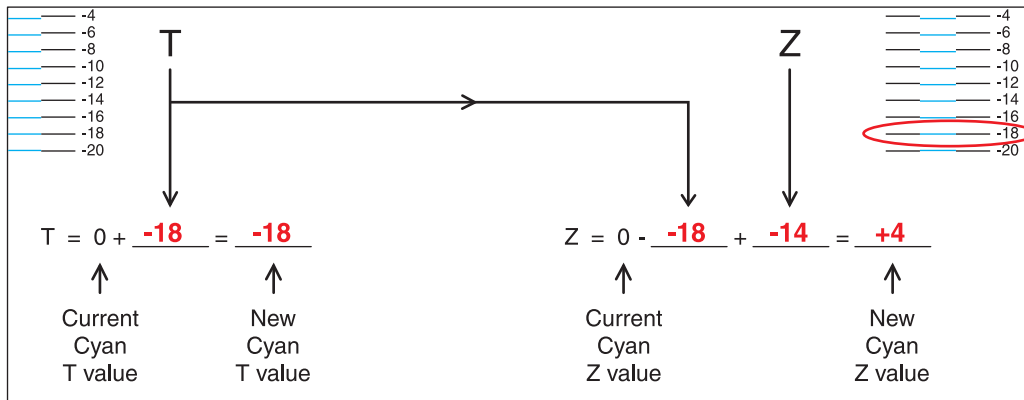
Current  
Cyan  
T value

↑

New  
Cyan  
T value



7. Select the Skew value in the same way, enter the value, press **Select** (✓), and print the Quick Test to see if the observed values and the current values are the same.



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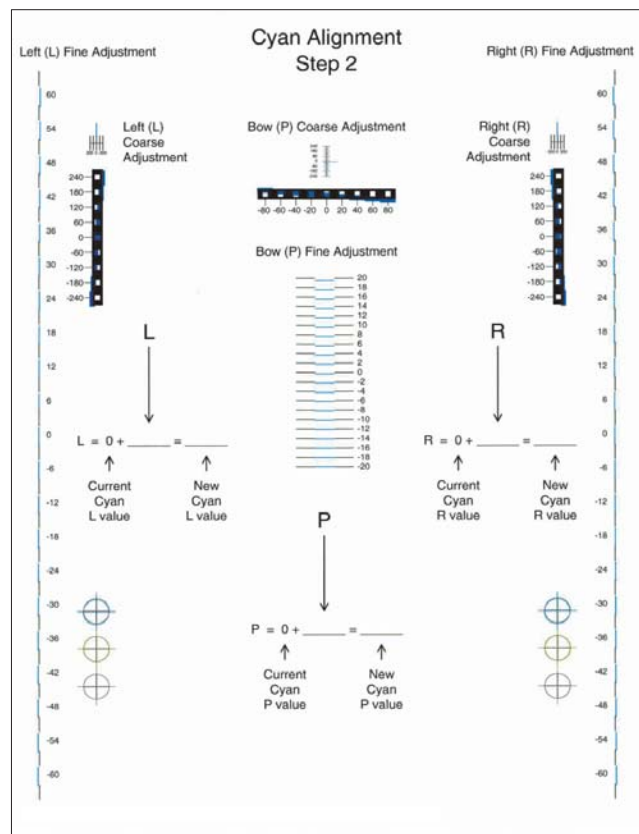


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8. On the second page of the latest Quick Test you printed, proceed to Step 2; adjust the left, right, and bow settings. Continue printing the Quick Test after each adjustment to verify your settings.



9. Continue on the other two colors in the same manner.

## 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 vary 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 Diag Menu, and press **Select** (✓).
  2. Select the media source (**Tray 1**, **Tray 2**, **Manual Feeder**, or **Multi-Purpose Feeder**), and press **Select** (✓).
  3. Select **Single** or **Continuous**, and press **Select** (✓).
    - 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.

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## Print quality test pages (Prt Qual Pgs)

The print quality test consists of five pages. Pages one and two contain a mixture of graphics and text. The remainder of the pages contain only graphics. The test prints on the media in tray 1.



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This test may be printed from either the Configuration Menu or the Diagnostics Menu.

To run the print quality pages from the Diagnostics Menu:

1. Select **PRINT TESTS**, and press **Select** (✓).
2. Select **Prt Qual Pgs**, and press **Select** (✓).  
The message **Printing Quality Test Pages** is displayed.  
**Note:** Once the test is started, it cannot be canceled.

When the test pages print, the printer returns to the original screen.

## Hardware Tests

### Panel Test

This test verifies the operator panel LCD function.

To run the Panel Test:

1. Select **Hardware Tests** from Diag Menu, and press **Select** (✓).
2. Select **Panel Test**, and press **Select** (✓).  
The Panel Test continually executes.

Press **Stop** (✗) to cancel the test.

## Button Test

This test verifies the operator panel button function.

To run the Button Test:

1. Select **Hardware Tests** from Diag Menu, and press **Select** (✓).

2. Select **Button Test**, and press **Select** (✓).

Press count: 0 appears.

Press each operator panel button, and watch to see if the count of button presses increases by one for each press.

**Note:** If you press **Stop** (✗), you end the test.

Press **Stop** (✗) to cancel the test.

## DRAM Test

This test checks the validity of DRAM, both standard and optional. The test writes patterns of data to DRAM to verify that each bit in memory can be set and read correctly.

To run the DRAM Test:

1. Select **Hardware Tests** in Diag Menu, and press **Select** (✓).

2. Select **DRAM Test**, and press **Select** (✓).

- a. The printer displays:

DRAM Test Testing...
----------------------

- b. The printer initiates a POR of the printer, and the following screen is displayed:

Resetting the Printer
--------------------------

- c. After the POR, the printer begins testing the memory.

DRAM Test	128M
P:#####	F:#####

P:##### represents the number of times the memory test has passed and finished successfully. Initially, 000000 displays with the maximum pass count being 99,999.

F:##### represents the number of times the memory test has failed and finished with errors. Initially, 0000 displays with the maximum fail count being 99,999.

3. Once the all the memory is tested, the test stops.

To stop the test early, turn the printer off.

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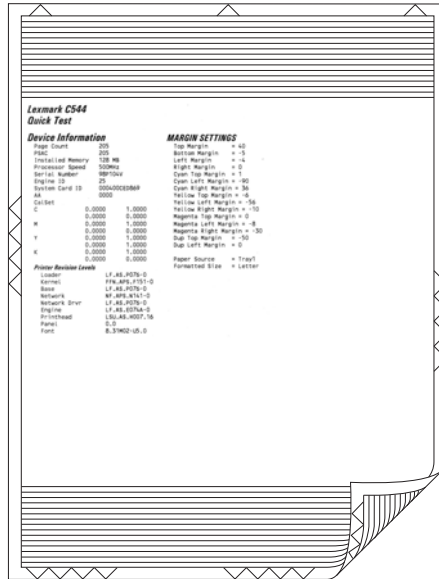


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## Duplex Tests

### Quick Test (duplex)

This test prints a duplex version of the Quick Test that can be used to verify the correct placement of the top margin on the back side of a duplex page.



**Note:** Before you set the duplex top margin, be sure to set the registration. See **“Registration”** on page 3-4.

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

To run the Quick Test (duplex):

1. Select **DUPLEX TESTS** from Diag Menu, and press **Select** (✓).
2. Select **Quick Test**, and press **Select** (✓).
3. Select **Single** or **Continuous**, and press **Select** (✓).
  - The single Duplex Quick test prints the Quick Test on front and back.
  - 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 the duplexed sheet.

For information about changing the margin, see **“Top Margin (duplex)”** on page 3-14.

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

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## 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 3-4**.

To set the Top Margin (duplex):

1. Select **DUPLEX TESTS** from Diag Menu, and press **Select** (✓).
2. Select **Quick Test**, and press **Select** (✓).
3. Select **Single**, and press **Select** (✓).
4. Hold the page to the light to see whether the top margin of the back aligns with the top margin of the front.
5. Select **Top Margin** from DUPLEX TESTS.
6. 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 -50 to +50, and the default value is 0.
  - An increase in the value moves the backside top margin down and widens the top margin. A decrease moves the top margin upward and narrows the top margin.
7. Press **Select** (✓) to save the new value.
8. Print the Quick Test (duplex) again (steps 1–4) to verify the adjustment. Repeat if necessary.

## Left Margin (duplex)

This setting shifts the image on the back of the duplex sheet to the left or right to correctly position it on the page. Therefore, be sure to set the top margin in REGISTRATION before setting the duplex top margin. See **“Registration” on page 3-4**.

To set the Left Margin (duplex):

1. Select **DUPLEX TESTS** from Diag Menu, and press **Select** (✓).
2. Select **Quick Test**, and press **Select** (✓).
3. Select **Single**, and press **Select** (✓).
4. Hold the page to the light to see whether the left margin of the back aligns with the left margin of the front.
5. Select **Left Margin** from DUPLEX TESTS.
6. Use ◀ or ▶ to select the margin setting you need to change.
  - Each increment shifts the duplex left margin by 4 pixels at 500 dpi (0.0067 inches or 0.1693 mm).
  - The Left Margin (duplex) range is -25 to +25, and the default value is 0.
  - An increase in the value moves the backside left margin to the right, and widens the left margin. A decrease moves the backside left margin to the left, and narrows the left margin.
7. Press **Select** (✓) to save the new value.
8. Print the Quick Test (duplex) again (steps 1–4) to verify the adjustment. Repeat if necessary.

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## Input Tray Tests

### Feed Tests

Any installed input tray can be tested. The pages fed through the printer are blank.

To run the Feed Test:

1. Select **INPUT TRAY TESTS** from Diag Menu, and press **Select** (✓).
2. Select **Feed Tests**, and press **Select** (✓).
3. Select the tray to be tested. Choices are installed trays, including **Tray 1**, **Tray 2**, **MP Feeder**.
4. Select **Single** or **Continuous**, and press **Select** (✓).
  - Single—a single sheet of blank paper is fed, and the test stops.
  - Continuous—sheets are fed continuously, until **Stop** (✗) is pressed.

### Sensor Test (not available on all printers)

This test is used to verify that the sensors are working correctly for an individual input tray.

1. Select **INPUT TRAY TESTS** from Diag Menu, and press **Select** (✓).
2. Select **Sensor Tests**, and press **Select** (✓).
3. Select the tray where you want to test the sensors.
4. Depending on the tray selected, you may have **Empty Sensor**, **Low Sensor**, or **Passthru Sensor**. Sensors will be displayed with either *Open* or *Closed*. Toggle the sensor you want to test and note the change of state of that sensor.

Input Tray	Empty Sensor	Low Sensor	Passthru Sensor
Tray 1	✗	✗	✗
Tray 2 (650-sheet duo tray)	✓	✓	✓
Tray 3 (550-sheet tray, C546tdn)	✓	✓	✓
MP Feeder	✗	✗	✗

To Exit the text, press **Back** (⏪) or **Stop** (✗).

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## Base Sensor Test

These tests allow you to verify the correct functioning of the front door, input, and output sensors.

1. Select **Base Sensor Test** from Diag Menu, and press **Select** (✓).
2. Select the sensor you want to test, and press **Select** (✓).

The following tests are available:

Sensor	Value	How to test
Front Door	Opened/ Closed	Open and close the front door. The sensor should change state.
Input - S1	Media clear... or Media present...	Activate the sensor by removing and re-inserting the paper tray. The sensor should change state.
Input - S2	Media clear... or Media present...	Remove the media tray. Activate the input (S2) sensor flag. The sensor should change state.
Fuser exit sensr	Media clear... or Media present...	Open the front cover. Activate the fuser exit flag. The sensor should change state.
Standard Bin	Bin full	Lift up on the bin-full/narrow media flag, and then release. The sensor should change state.
C-TMC	Not Closed/ Closed	Remove the cyan toner cartridge while noticing the operator panel for a change in state. If none is noticed, pass a flat reflective object or bright light in front of the TMC sensor. The sensor should momentarily change state.
M-TMC	Not Closed/ Closed	Remove the magenta toner cartridge while noticing the operator panel for a change in state. If none is noticed, pass a flat reflective object or bright light in front of the TMC sensor. The sensor should momentarily change state.
Y-TMC	Not Closed/ Closed	Remove the yellow toner cartridge while noticing the operator panel for a change in state. If none is noticed, pass a flat reflective object or bright light in front of the TMC sensor. The sensor should momentarily change state.
K-TMC	Not Closed/ Closed	Remove the black toner cartridge while noticing the operator panel for a change in state. If none is noticed, pass a flat reflective object or bright light in front of the TMC sensor. The sensor should momentarily change state.

To exit the test, press **Back** (⏪) or **Stop** (⏹).

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## Miscellaneous tests

### Motor Detect

This test initiates an automatic motor detection process that should be performed whenever the controller board is replaced.

To run Motor Detect:

1. Remove the imaging unit and the waste toner bottle. See **“Imaging unit (IU) removal” on page 4-49.**
2. Reinstall the right cover assembly.
3. Close the front cover.
4. Enter Diagnostics menu (Turn the printer off, press and hold **Left** (◀) and **Select** (✓), turn the printer on, and release the buttons when the installed memory and processor speed displays.
5. Select **MISC TESTS** in the Diag Menu, and press **Select** (✓).
6. Select **Motor Detect**, and press **Select** (✓).

If you press **Select** before closing the front cover, a message appears: `Close Cover. Press Select.`

`Motor Detection In Progress...` appears.

The motor detection process takes about 10 seconds, and stops automatically.

`Detect Complete. Rebooting...` appears, and the printer performs a POR (Power On Reset).

If the motor ran, the test was passed. If the motor did not run, the test failed.

## Device Tests

### Flash Test

This menu item appears only if the flash card is installed. Data is written to the flash card and read back to check the accuracy.

**Warning:** This test deletes all data stored on the flash device. After the test is over, reformat the flash using **Format Flash** in the customer Utilities Menu.

To run the Flash Test:

1. Select **DEVICE TESTS** from Diag Menu, and press **Select** (✓).
2. Select **Flash Test**, and press **Select** (✓).  
`Contents will be lost. Continue?` appears.
3. To continue, select **Yes**, and press **Select** (✓). To end the test, select **No**, and press **Select** (✓).  
If you continue, `Flash Test Testing...` appears.
  - If the test is successful, `Flash Test Test Passed` appears. Use **Format Flash** in the Utilities Menu to reformat the flash card.
  - If the test is unsuccessful, `Flash Test Test Failed` appears. Replace the flash card.
4. Press **Back** (⏪) to remove the message and return to the Device Tests menu.

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## 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.

To change the Defaults:

1. Select **Printer Setup** from Diag Menu, and press **Select** (✓).
2. Select **Defaults**, and press **Select** (✓).
3. Select **U.S.** (default) or **Non-U.S.**, and press **Select** (✓).

Press **Back** (⏪) to return to Printer Setup.

### Page counts

You can view but not change any of the three counts.

To view the **Prt Color Pg Count**, the **Prt Mono Pg Count**, or the **Perm Page Count**:

1. Select **Printer Setup** from Diag Menu, and press **Select** (✓).
2. Select the page count you wish to view:
  - **Prt Color Pg Count**
  - **Prt Mono Pg Count**
  - **Perm Page Count**
3. Press **Select** (✓).  
The value of the page count displays.

Press **Back** (⏪) to return to Printer Setup.

### Serial Number

The serial number can only be viewed, but cannot be changed.

To view the serial number:

1. Select **Printer Setup** from Diag Menu, and press **Select** (✓).
2. Select **Serial number**, and press **Select** (✓).  
The Serial Number is displayed.

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.

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## 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 the system board is replaced. 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 preceding 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 the Diagnostics Menu.
- Unless the menu is in the Diagnostics Menu, **Check Config ID** displays.

To set the configuration ID:

1. Select **Printer Setup** from Diag Menu, and press **Select** (✓).
2. Select **Configuration ID**, and press **Select** (✓).  
The current value for Configuration ID 1 is displayed.
3. Enter the Configuration ID 1.
  - Change the left character or digit first.
  - To change the value of a character or digit, press ◀ to decrease or ▶ to increase the underlined value, and press **Select** (✓) to move to the next character or digit.
  - To move to the next character or digit without changing the current value, press **Select** (✓).
  - When you press **Select** (✓) on the last digit, the value will be submitted.  
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 Configuration ID 2.
4. Repeat the steps for entering the Configuration ID 2, and press **Select** (✓).  
If the Configuration ID 2 is validated, **Submitting Selection** appears, and a check (✓) appears next to **Printer Setup**.
5. Restart the printer. A POR is not automatically performed.

## ITU Barcode

The 16-digit numeric value matches the ITU installed in the printer. If you replace the ITU, reenter this value. **Stop** (✗) exits the menu.

To enter the ITU barcode:

1. Select **PRINTER SETUP** from Diag Menu, and press **Select** (✓).
2. Select **ITU Barcode**, and press **Select** (✓).
3. To enter the 16-digit numeric value:  
Use ◀ to decrease the leftmost digit value or ▶ to increase the value. Press **Select** (✓) to advance to the next digit. If a digit is already correct, press **Select** (✓) to accept the number and to continue. When the last number is entered and you press **Select** (✓), **Submitting changes...** should appear. If the entered number is incorrect, **Check Sum Does Not Match** displays. Check and reenter the number.

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## 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 3-25 for more information. This setting appears only if the Maintenance Warning and Intervention function is enabled in the printer Configuration ID.

To reset the fuser count:

1. Select **Printer Setup** from Diag Menu, and press **Select** (✓).
2. Select **Reset Fuser Cnt**, and press **Select** (✓).
3. Select **Reset**, and press **Select** (✓).  
Reset Resetting... appears.

To cancel a reset, press **Back** (⏪).

## 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 Setup** from Diag Menu, and press **Select** (✓).
2. Select **EP Defaults**, and press **Select** (✓).
3. Select **Restore** to reset the values to the factory settings, and select **Do Not Restore**.

To cancel and return to the menus, press **Back** (⏪).

### Fuser Temperature

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.

To adjust the fuser temperature:

To restore EP Defaults:

1. Select **EP Setup** from Diag Menu, and press **Select** (✓).
2. Select **Fuser Temp**, and press **Select** (✓).
3. Select Normal, High, or Low. The default is Normal.

To return to the menus, press **Back** (⏪).

### DC Charge Adjust, Dev Bias Adj, Transfer Adjust

Each of these three settings enables you to adjust the high voltage levels controlling the electrophotographic 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.

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## TPS Setup

### Right or Left TPS

The value of the toner density sensor (also called toner patch sensor or TPS) is set at manufacturing. If a sensor is replaced, enter the 32-digit hexadecimal toner density value (TPS) value from the bar code next to the sensor.

To enter the value:

1. Select **TPS Setup** from Diag Menu, and press **Select** (✓).
2. Select **Right or Left**, and press **Select** (✓).  
TPS Right 1-16 or TPS Left 1-16 appears above a blinking 0 in the left position.
3. To enter a character or digit:
  - a. Press ◀ to decrease or ▶ to increase the blinking value.
  - b. Pause for several seconds without pressing any buttons. The blinking value becomes solid.  
If the value is incorrect, use **Back** (↩) to go back and reenter the number.
  - c. Continue until the last value is reached.
  - d. When the last of the 16 values is entered and becomes solid, TPS Right 17-32 or TPS Left 17-32 appears.
  - e. Continue entering and pausing
4. After the 32nd number is entered and becomes solid, the number is automatically entered.
  - If the number is incorrect, **Checksum does not match** appears, and the original screen appears to reenter the value.
  - If the number is correct, **Saving changes to NVRAM** appears.

### Cal Ref Adj

Used with Reset Color Cal, which resets to a default value, Cal Ref Adj allows you to fine tune the TPS function.

To set the Cal Ref Adj:

1. Select **TPS Setup** from Diag Menu, and press **Select** (✓).
2. Select **Cal Ref Adj**, and press **Select** (✓).
3. Select **CMY** or **Black**, and press **Select** (✓).
4. Press ◀ to decrease or ▶ to increase the value.  
The values can be -8 to +8, and the default value is 0.

To cancel and return to the menus, press **Back** (↩).

### Reset Color Cal

This setting allows the device to adjust the alignment of the color planes using pre-programmed default values.

To reset the programmed value:

1. Select **TPS Setup** from Diag Menu, and press **Select** (✓).
2. Select **Reset Color Cal**, and press **Select** (✓).  
Resetting appears. When the reset is complete, the screen is automatically returned to TPS Setup.

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## Reports

### Menu Settings Page

To print the Menu Settings Page:

1. Select **Reports** from Diag Menu, and press **Select** (✓).
2. Select **Menu Settings Page**, and press **Select** (✓).

## Event Log

### Display Log

The event log provides a history of printer errors. It contains the most recent errors that have occurred on the printer. The most recent error displays in position 1. 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 2xx and 9xx error messages are stored in the Event Log.

To view the event log:

1. Select **Event Log** from Diag Menu, and press **Select** (✓).
2. Select **Display Log**, and press **Select** (✓).

As many error codes display as fit on the screen at a time. Press ◀ or ▶ to view additional error codes. Press ▶ to view additional details.

Press **Back** (⏪) to return to the Event Log menu.

### Print Log

Additional diagnostic information is available when you print the event log from the Diagnostics Menu rather than the Configuration Menu.

The Event Log printed from Diag Menu includes:

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

**Event Log** Page 11  
Lexmark CS44 (4xx 90P104V)

**Device Information**

```

Page Count          010
Installed Memory    128 MB
Processor Speed     320MHz
Engine ID           01
MID                 01
CustID              0.0000 1.0000 0.0000 0.0000
MID                 0.0000 1.0000 0.0000 0.0000
P                     0.0000 1.0000 0.0000 1.0000
R                     0.0000 1.0000 0.0000 0.0000

```

**Alignment Info**

```

Cyan             None Auto
M                 0      0
Magenta          None Auto
Y                 0      0
Thru             0      0
Yellow           None Auto
P                 0      0
R                 0      0
Thru             0      0

```

**Event Log Information**

```

8500 Services Network Software361 mac_prog (30a0ffffffffff) Mag400000013 Lexcu00200916,
Process          mac_prog361
Page Count       010
PDR Count        18
Date and Time    1/11
Up Time         16 mins 33 secs 138 msec
Code Levels
Target1 (200) 90P104V          Thu Feb 7 17:10:02 2008  nic-bid
0: Copy@P104V-L1-AS-P076     Thu Feb 7 17:10:02 2008  nic-bid
1: Loader-L1-AS-P076         Thu Feb 7 17:10:02 2008  nic-bid
2: Network-97-AS-P076        Thu Feb 7 17:10:02 2008  nic-bid
3: Base-L1-AS-P076           Thu Feb 7 17:10:02 2008  nic-bid
4: Network-97-AS-P076        Thu Feb 7 17:10:02 2008  nic-bid
5: Network-97-L1-AS-P076     Thu Feb 7 17:10:02 2008  nic-bid
6: MID-97-L1-AS-P076         Thu Feb 7 17:10:02 2008  nic-bid
7: 301000000000000000000000 Thu Feb 7 17:10:02 2008  nic-bid
8: Engine-L1-AS-P076         Thu Feb 12 14:09:19 2008  nic-bid
9: Network-L1-0              Thu Feb 7 17:10:02 2008  nic-bid
10: Network-97-0             Mon Feb 4 12:35:52 2008  nic-bid
11: Network-97-0             Mon Feb 4 12:35:52 2008  nic-bid

```

**8500 Services Network Software361 mac\_prog (30a0ffffffffff) Mag400000013 Lexcu00200916,**

```

Process          mac_prog361
Page Count       010
PDR Count        18
Date and Time    1/11
Up Time         16 mins 33 secs 138 msec
Code Levels
Target1 (200) 90P104V          Thu Feb 7 17:10:02 2008  nic-bid
0: Copy@P104V-L1-AS-P076     Thu Feb 7 17:10:02 2008  nic-bid
1: Loader-L1-AS-P076         Thu Feb 7 17:10:02 2008  nic-bid
2: Network-97-AS-P076        Thu Feb 7 17:10:02 2008  nic-bid
3: Base-L1-AS-P076           Thu Feb 7 17:10:02 2008  nic-bid
4: Network-97-AS-P076        Thu Feb 7 17:10:02 2008  nic-bid
5: Network-97-L1-AS-P076     Thu Feb 7 17:10:02 2008  nic-bid
6: MID-97-L1-AS-P076         Thu Feb 7 17:10:02 2008  nic-bid
7: 301000000000000000000000 Thu Feb 7 17:10:02 2008  nic-bid
8: Engine-L1-AS-P076         Thu Feb 12 14:09:19 2008  nic-bid
9: Network-L1-0              Thu Feb 7 17:10:02 2008  nic-bid
10: Network-97-0             Mon Feb 4 12:35:52 2008  nic-bid
11: Network-97-0             Mon Feb 4 12:35:52 2008  nic-bid

```



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

To print the event log:

1. Select **Event Log** from Diag Menu, and press **Select** (✓).
2. Select **Print Log**, and press **Select** (✓).

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 **Event Log** from Diag Menu, and press **Select** (✓).
2. Select **Clear Log**, and press **Select** (✓).
3. 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.

### EXIT Diags

Press **Select** (✓) to exit Diag Menu. The printer performs a power-on reset and returns to normal mode.

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## Configuration menu (Config Menu)

### Available tests

The tests display on the operator panel in the order shown for all models.

#### Configuration menu

Prt Quality Pgs	See <b>“Prt Quality Pgs”</b> on page 3-24.
Color Trapping	See <b>“Color Trapping”</b> on page 3-24.
Reports	See <b>“Color Trapping”</b> on page 3-24.
Panel Menus	See <b>“Panel Menus”</b> on page 3-25.
PPDS Emulation	See <b>“PPDS Emulation”</b> on page 3-25.
Demo Mode	See <b>“Demo Mode”</b> on page 3-25.
Factory Defaults	See <b>“Factory Defaults”</b> on page 3-26.
Energy Conserve	See <b>“Energy Conserve”</b> on page 3-26.
Auto Color Adj	See <b>“Auto Color Adj”</b> on page 3-27.
Font Sharpening	See <b>“Font Sharpening”</b> on page 3-27.
Exit Config Menu	This selection exits Configuration Menu, and Resetting the Printer displays. The printer performs a POR and returns to normal mode.

### Prt Quality Pgs

The Print Quality Pages can be printed from both the Configuration Menu and the Diagnostics Menu. The Configuration Menu is limited in information compared to the pages printed from the Diagnostics Menu.

To help isolate print quality problems, print the Print Quality Test 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.

Press **Select** () to print the pages. 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 contain only graphics. For samples of the pages, see **“Print quality test pages (Prt Qual Pgs)”** on page 3-11.

### Color Trapping

Uses an algorithm to compensate for mechanical incorrect 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 incorrect registration.

Values include Off and numbers 1–5 (the default is 2). Values 1 through 5 indicate the amount of color remaining beneath the black content. Each setting increments by 1/600 of an inch. The more inaccurate the registration setting, the higher the setting needs to be adjusted. Selecting **Off** disables color trapping.

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## Reports

### Menu Settings Page

Print the menu settings pages to list the customer settings and to verify printer options are installed correctly. It is helpful to print the customer settings before you restore factory defaults or make major changes.

To print the menu settings:

1. Select **Reports** from the Config Menu, and press **Select** (✓).
2. Select **Menu Setting Page**, and press **Select** (✓).

### Event Log

Lets the system support person print a limited set of the information contained in the Diagnostics Menu version of the printed Event Log. For a sample of a printout, see **“Event Log” on page 3-22**. 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.

To print the event log:

1. Select **Reports** from the Config Menu, and press **Select** (✓).
2. Select **Print Log**, and press **Select** (✓) to begin printing the log.

## Panel Menus

Lets the system support person enable or disable the operator panel menus. Selecting **On** (the default) allows users to change values for the printer. **Off** disables the users' access to menus. If a user presses **Menu** (⏏), they receive a message that the panel menus are locked. When set to **Off**, this setting restricts all menu access, even to menus or items set for PIN access. However, when set to **On**, all PIN restrictions are restored.

This menu item appears only when the PJI PASSWORD Environment variable is set to 0.

## PPDS Emulation

Activates or deactivates (default) the Personal Printer Data Stream (PPDS) emulation language. This menu item appears only if the PPDS interpreter is available.

## Demo Mode

Lets marketing personnel or merchandisers demonstrate the printer to potential customers by printing the demo page.

Selections include Deactivate (default) and Activate. Select **Deactivate** to turn Demo Mode off; or select **Activate** to turn Demo Mode on.

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## Factory Defaults

Sets the majority of printer values back to their factory default settings.

**Warning:** This selection cannot be reversed, so this operation should be used only as a last resort to fix any printer problem. 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.

To print current menu settings:

It is recommended that you first print the customer's current settings by printing a copy of the Menu Settings pages. Customer settings are available from the Ready prompt, Diagnostics Menu settings are available in the Diagnostics Menu, and Config Menu settings are available in the Config Menu.

1. Turn the printer off, or select **Exit Config Menu**.
2. At the Ready prompt, select **Menus** ([-]), and press **Select** (✓).
3. Select **Reports**, and press **Select** (✓).
4. Select **Menu Settings Page**, and press **Select** (✓).
5. Enter the Diagnostic Menu, select **Reports, Menu Settings Page**, and press **Select** (✓).  
See "**Menu Settings Page**" on page 3-22.
6. Turn the printer off, or select **Exit Diags**.
7. Enter Configuration Menu, select **Reports, Menu Settings Page**, and press **Select** (✓).  
See "**Menu Settings Page**" on page 3-25.

To reset factory defaults:

1. Select **Reports** from the Config Menu, and press **Select** (✓).
2. Select **Factory Defaults**, and press **Select** (✓).
3. Select **Restore Base** (for locally attached printers) or **Restore STD NET** (if you have integrated network support).  
Submitting Changes... appears on the operator panel, and then the printer PORs (restarts in Ready mode).

## Energy Conserve

Affects the values that appear in the Power Saver menu in the customer Setup Menu. This menu item appears only when the printer model does not support Automatic Power Saver or has deactivated Automatic Power Saver. Energy Conserve affects only the values that are displayed in the Power Saver menu.

Select **Off** in Energy Conserve to allow Power Saver in the customer menu to display Disable as an option. If **Disable** is selected in the customer Power Saver, the printer deactivates the Power Saver feature. Select **On** (the default) in Energy Conserve to prevent **Disable** from appearing as an option in the Power Saver setting, and preventing the customer from turning off Power Saver.

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## ***Auto Color Adj***

Sets the suggested number of pages which the printer should print between consecutive calibrations.

Selections are **Off** and the values between **100** and **1000** in increments of 50. The default is 500 pages.

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 using the menus, including the Configuration Menu and the Diagnostics Menu, an automatic color adjust calibration does not occur.


When an event other than page count triggers this calibration, the count that monitors the maximum number of pages printed will be reset. For example, if the user replaces an empty toner cartridge, the next time the printer is started, it will sense the new cartridge and perform the automatic color adjustment, even though the page counter for Auto Color Adj is fewer than required. The Auto Color Adj page counter is then reset.

## ***Font Sharpening***

This setting allows a user to set a text point-size value below the setting of the high-frequency screens used when printing font data. This menu item affects only the PostScript, PCL 5, PCL XL, and PDF emulators.

Settings are in the range of 0–150 (24 is the default). For example, if the value is set to 24, then all fonts sized 24 points or less use the high-frequency screens. To increase the value by 1, press the right arrow; to decrease the value by 1, press the left arrow.

## ***Exit Config***

Press **Select** () to exit the Configuration Menu. The printer performs a power-on reset and returns to normal mode.

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## Updating printer firmware

**Warning:** Before performing a firmware update on the printer, contact your next level support to confirm, or obtain the correct code. The wrong code, or wrong level of code could lead to a malfunction or render the device inoperable.

### From a flash drive

The printer firmware can be updated from a USB flash drive on models equipped with a USB Direct Interface on the operator panel. The printer must be in a Ready state in order to perform the code update. A printer that is in Invalid Code mode cannot be updated via the flash drive.

**Note:** Make sure the **Enable Drive** and **Update Code** settings are enabled. These settings are found in the Flash Drive menu under the Settings menu in the Administrative menus.

To update the code using a USB flash drive, perform the following steps:

1. Insert the flash drive into the USB port located on the operator panel.  
USB Menu: Print from USB displays. If Print from USB doesn't display by default, use ◀ or ▶ to navigate to **Print from USB**.
2. Press **Select** (✓).  
You now have access to the directory structure of the flash drive.
3. Use ◀ or ▶ to navigate to the firmware file. The file will have a .fls extension.
4. When the file is displayed, press **Select** (✓).  
Program Device: Yes displays.
5. Press **Select** (✓). The printer will start the update process. Various status and progress messages will appear.  
**Warning:** Do not turn the printer off until the update is complete. When the code update is completed, the printer automatically performs a POR and returns to a Ready state.

### Using a networked computer to update the printer firmware over a network

#### Using FTP

**Note:** The servicer should know how to use FTP before attempting to update the firmware using this method.

The printer firmware can be updated by performing the following steps:

1. POR the printer to a **Ready** state.
2. Go to the **TCP/IP** menu in the administrative menu to retrieve the IP address. Return printer to Ready state.
3. Go to the Command Prompt on a computer attached to the network and open a FTP session to the printer's IP address.  
**Note:** The new file must be available to the computer.
4. Use a PUT command to place the firmware file on the printer.  
Various status and progress messages will appear. The printer will reboot. The FTP session will terminate.
5. Repeat steps 2 through 4 for any other files.

#### Using the Web server

1. On a computer attached to the network, open a Web browser.
2. Enter the printer's IP address in the address bar of the Web browser.
3. When the home page opens, click **Configuration**.
4. Click the **Update Firmware** link on the Configuration page.
5. Click the **Browse** button.

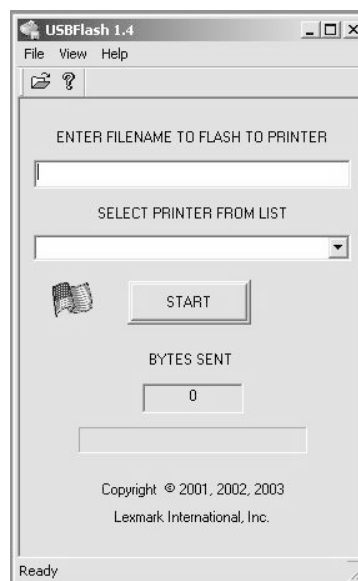


6. In the browser that opens, browse to the file you want to use.  
**Note:** The new file must be available to the computer.
7. Click **Open**.  
Various status and progress messages will appear. The printer will reboot. The HTTP session will terminate.
8. Repeat steps 2 through 7 for any other files.

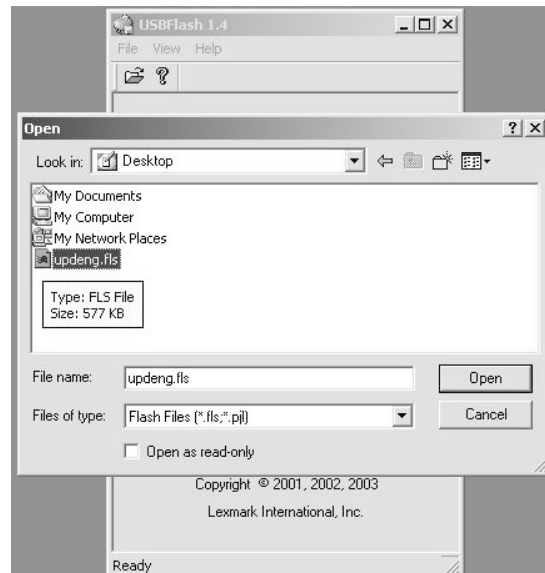
### Using the host computer to update the firmware over USB

**Note:** This procedure uses the program, USB Flash. USButil is a command line USB flash utility that can also be used to update firmware from a host computer via USB. To use any USB flashing utility, the printer must be installed on the host computer so a USB virtual printer port can be established on the host computer. The virtual printer port is needed so the host computer can communicate with the printer. Call the next level of support for a USB utility if you do not have one.

1. Open the USB Utility.



2. Browse for flash file.



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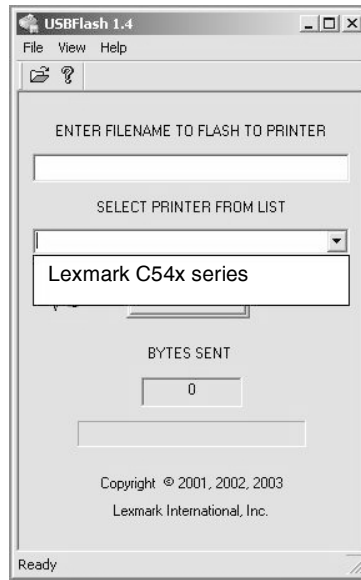


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3. Select the printer from the list of printers installed on the computer.



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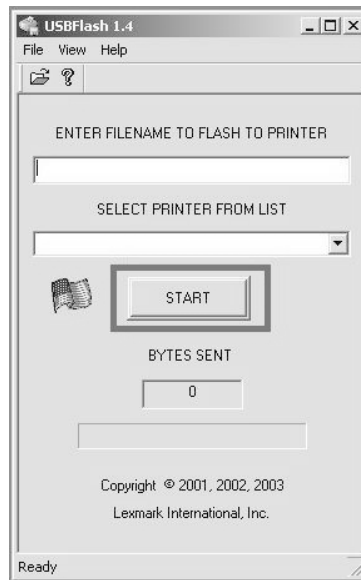


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4. Press **Start**.



5. Repeat these steps for every file you are updating on the printer.

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## Paper jams

### *Avoiding jams*

The following hints can help you avoid jams:

- Use only recommended paper or specialty media.  
For more information, see the *Card Stock & Label Guide* available on the Lexmark Web site at [www.lexmark.com/publications](http://www.lexmark.com/publications).
- Do not load too much paper. Make sure the stack height does not exceed the indicated maximum height.
- Do not load wrinkled, creased, damp, or curled paper.
- Flex, fan, and straighten paper before loading it.
- Do not use paper that has been cut or trimmed by hand.
- Do not mix paper sizes, weights, or types in the same stack.
- Store the paper in an appropriate environment.
- Do not remove trays while the printer is printing. Wait for Load tray <x> or Ready to appear before removing a tray.
- Do not load the manual feeder while the printer is printing. Wait for Load Manual feeder with <x> to appear.
- Push all trays in firmly after loading paper.
- Make sure the guides in the trays are properly positioned, and are not pressing too tightly against the paper.
- Make sure all paper sizes and paper types are set correctly in the operator panel menu.
- Make sure all printer cables are attached correctly.

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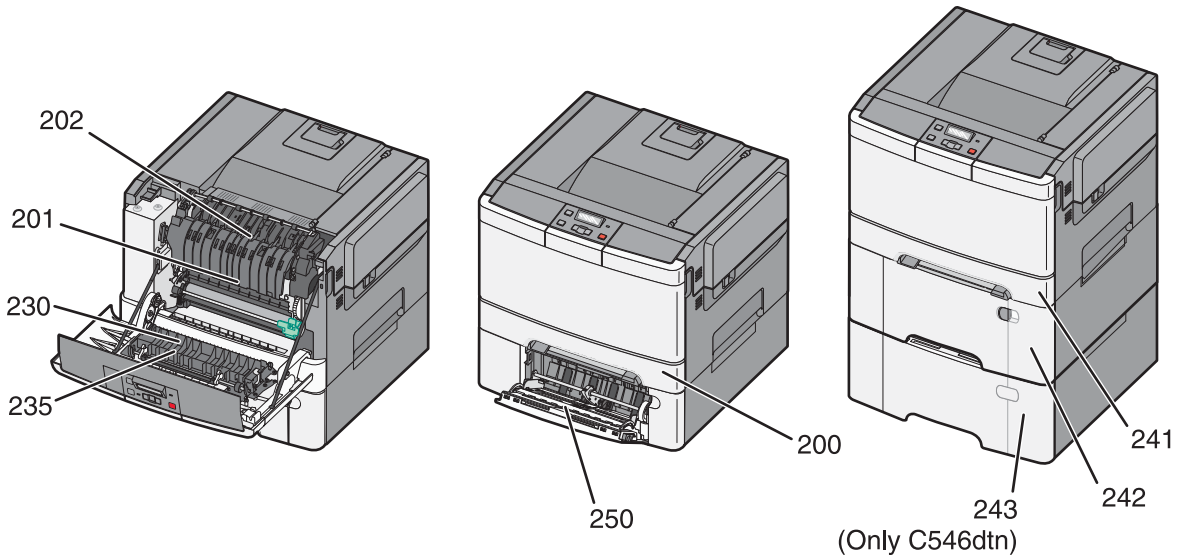


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### Understanding jam numbers and locations



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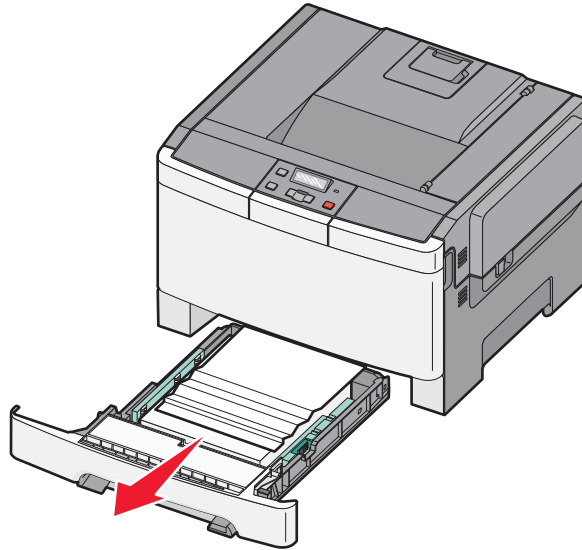
When a jam occurs, a message indicating the jam location appears. The following illustration and table list the paper jams that can occur and the location of each jam. Open doors and covers, and remove trays to access jam locations.

Error message	Jam message	Instructions	Go to page
200	Standard 250-sheet tray and manual feeder (tray 1). Jam in the input (S2) sensor.	Pull tray 1 out, and remove the jam.	<b>3-33</b>
201	Jam under the fuser	Open the front door, and remove the jam.	<b>3-33</b>
202	Jam in the fuser	Open the front door, and pull the fuser cover toward you. Remove the jam.	<b>3-34</b>
230	Jam in the duplex	Open the front door, and remove the jam.	<b>3-35</b>
235	Media not supported in the duplex	Load the tray with the correct paper size.	<b>3-35</b>
241	Jam in the primary tray (tray 1)	Pull the primary tray out, and remove the jam.	<b>3-35</b>
242	Jam in the 650-sheet Duo Drawertray (tray 2) /MP feeder	Pull the 640-sheet Duo Drawer tray out, and remove the jam.	<b>3-35</b>
243	Jam in the optional 550-sheet tray (tray 3)	Pull the tray out, and remove the jam.	<b>3-36</b>
250	Jam in the multipurpose feeder	Pull tray 2 out, and remove the jam.	<b>3-36</b>



## 200 paper jams

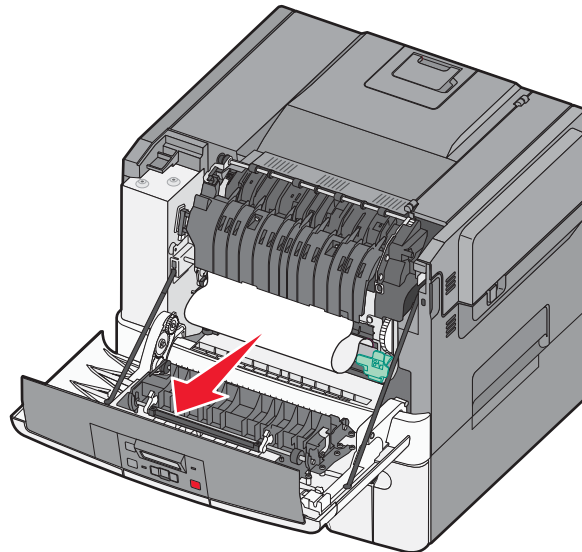
1. Remove the standard 250-sheet tray (tray 1).
2. Remove the jam.  
**Note:** Make sure all paper fragments are removed.



3. Insert the tray.
4. Press **Select** (✓).

## 201 paper jam

1. Grasp the front door at the side handholds, and then pull it toward you to open it.
2. Remove the jammed paper.  
**Note:** Make sure all paper fragments are removed.



3. Close the top door.
4. Press **Select** (✓).

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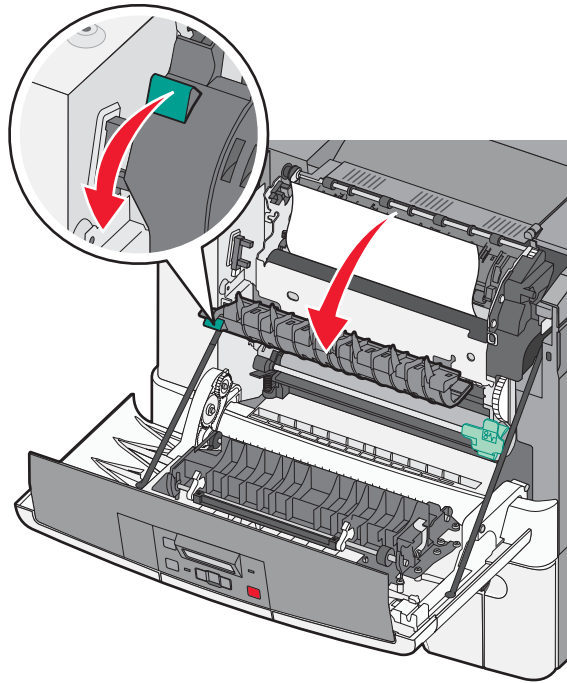
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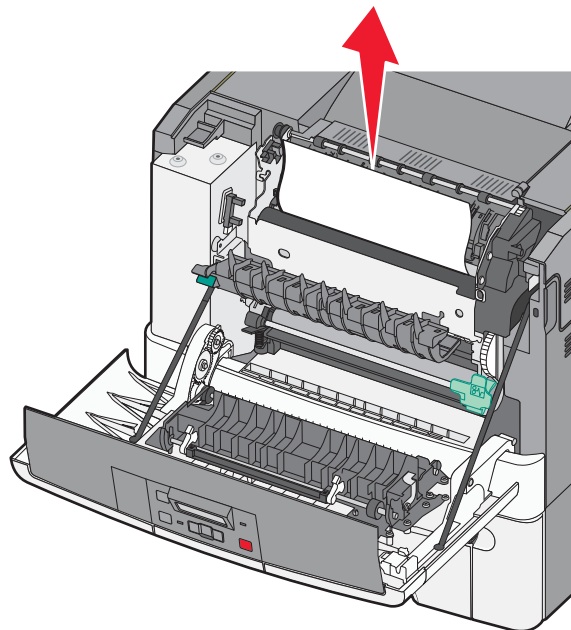
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## 202 paper jam

1. Grasp the front door at the side handholds, and then pull it toward you to open it.
2. Grasp the green lever, and pull the fuser cover toward you.



3. Hold the fuser cover down, and then remove the jammed paper. The fuser cover closes when released.



4. Close the fuser cover.
5. Close the front door.
6. Press **Select** (✓) to continue.

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**230 paper jam**

1. Grasp the front door at the side handholds, and pull it toward you to open it.
2. Remove the jam.
3. Close the front door.
4. Press **Select** (✓) to continue printing.

**235 paper jam**

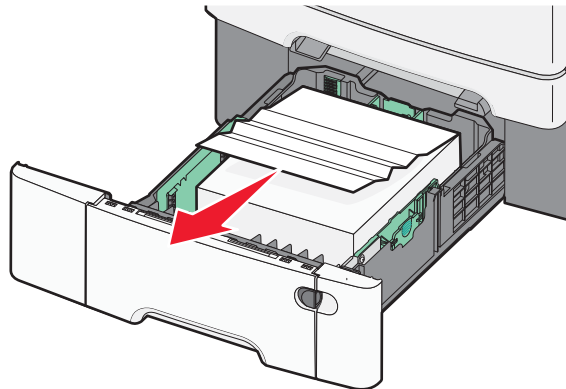
1. Load the tray with the correct paper size (supported for duplex).
2. Insert the tray.
3. Close the front door.
4. Press **Select** (✓) to continue printing.

**241 paper jam in primary tray**

1. Remove the primary tray.
2. Remove the jam.
3. Check the tray adjustments for the size of paper used.
4. Check the pick tires for foreign material or wear. Replace if necessary. See **“Pick tires removal” on page 4-71.**
5. Close the primary tray.
6. Press **Select** (✓) to continue printing.

**242 paper jam in the 650-sheet Duo Drawer**

1. Remove the 650-sheet duo tray (tray 2).
2. Remove the jam.  
**Note:** Make sure all paper fragments are removed.



3. Check the tray adjustments for the size of paper used.
4. Check the pick tires for foreign material or wear. Replace if necessary. See **“Pick tires removal” on page 4-71.**
5. Close the primary tray.
6. Press **Select** (✓) to continue printing.  
**Note:** Make sure all paper fragments are removed.
7. Align the tray, and insert it.
8. Press **Select** (✓) to continue.

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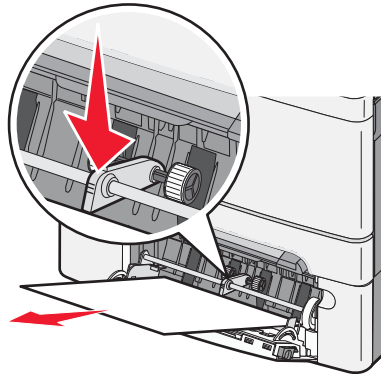
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### 243 paper jam in the 550-sheet drawer

1. Remove the 550-sheet tray (tray 3).
2. Remove the jam.  
**Note:** Make sure all paper fragments are removed.
3. Check the tray adjustments for the size of paper used.
4. Check the pick tires for foreign material or wear. Replace if necessary. See **“Pick tires removal” on page 4-71.**
5. Close the primary tray.
6. Press **Select** (✓) to continue printing.  
**Note:** Make sure all paper fragments are removed.
7. Align the tray, and insert it.
8. Press **Select** (✓) to continue.

### 250 paper jam

1. Push the lever to remove the media jam in the multipurpose feeder.  
**Note:** Make sure all paper fragments are removed.



2. Press **Select** (✓).

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## Theory of operation

### *Print engine theory*

#### **Electrophotographic process (EP process)**

The method that all laser and LED printers use to print is called the electrophotographic process. These machines use differences in charge to manipulate and move toner from the toner cartridge to the printed page.

Even though the basic EP process is the same for every laser and LED printer, the specifics for each printer are different.

#### **Electrophotographic process basics**

This printer is a single laser printer that uses four toner cartridges (cyan, yellow, magenta and black) to create text and images on media.

The printer has four photoconductors (called a photodeveloper cartridge or PC unit) and an image transfer unit (ITU). Each color toner is painted to its respective photoconductor at the same time. The transfer belt passes under the four photoconductors and the four color image is produced and transferred to the media in one pass.

During the printing process, the printer follows the six basic EP process steps to create its output to the page. These six steps are:

1. Charge the photoconductor (PC unit)
2. Expose the photoconductor (PC unit)
3. Develop the toner on the photoconductor (PC unit)
4. First and second transfer of toner to the ITU and then to the media.
5. Fuse the toner to the media
6. Clean/erase the photoconductor and the ITU.

In summary, the printer's controller board receives print data and the command to print. The controller board then initiates the print process. The controller board is the command center for the EP process and coordinates the various motors and signals.

The high-voltage power supply sends charge to various components in the EP process. The laser fires on the photoconductors and alters the surface charge relative to the planned image for each photoconductor. Each photoconductor rotates past its respective developer roll and toner is developed on the surface of each photoconductor. The four separate color images are then transferred to the transfer belt on the ITU as it passes under the photoconductors. After the image is transferred to the transfer belt the photoconductors are cleaned and recharged.

The transfer belt, carries the four-colored image towards the transfer roll. Media is picked up from the tray and carried to the transfer roll where the image is transferred from the transfer belt to the media. The timing of the paper pick is determined by the speed of the transfer belt.

The media is carried to the fuser rollers where heat and pressure are applied to the page to permanently bond the toner to the page. The fuser rollers push the media into the output bin. The transfer unit is cleaned and the process begins again for the next page.

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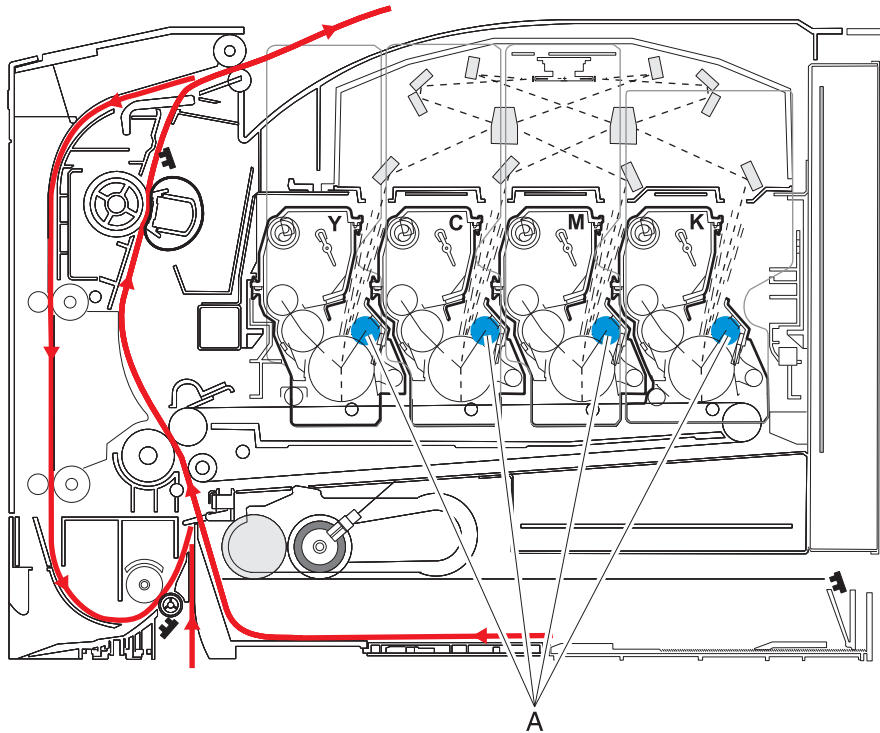


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## Step 1: Charge

During the charge step, voltage is sent from the high-voltage power supply to the charge roll inside each of the four photoconductors. The charge roll is part of the photoconductor unit.

The charge rolls (A) put a uniform negative charge over the entire surface of the photoconductor to prepare it for the laser beam.



### Service tips:

- If the surface of the charge roll is damaged (such as a nick or pit), it will cause the charge to be uneven on the photoconductor. This will cause a repeating mark on the printed page. Check the repeating marks table that prints from the operator panel. (Press **Menu** (☰), select **Reports**, and select **Print Defects**.)
- If the charge roll is severely damaged, the surface of the photoconductor will not be charged properly and heavy amounts of toner will be deposited on the photoconductor. This causes the printed page to be saturated with 100% of each color. The imaging unit will need to be replaced sooner.

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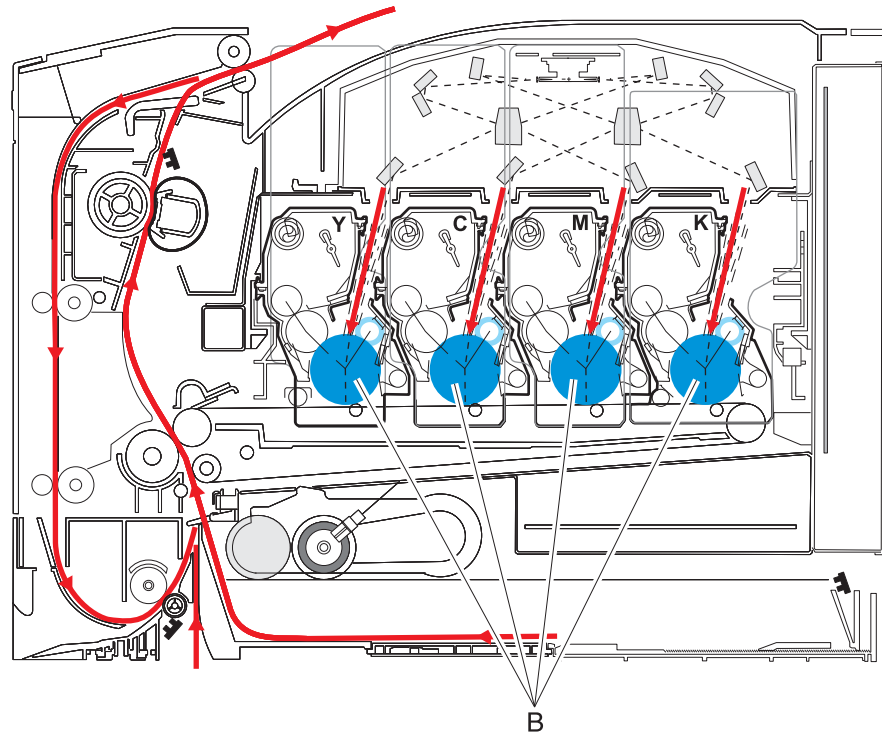


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## Step 2: Expose

During the expose step, the laser fires a focused beam of light at the surface of each photoconductor (B) and writes an invisible image called a latent image or electrostatic image for each color.

The laser beam actually discharges the surface only where the beam hits the photoconductor. This creates a difference in charge potential between the exposed area and the rest of the photoconductor surface.



### Service tips:

- The laser beam passes through a glass lens as it exits the laser unit. If this lens gets contaminated with toner or other debris, it will cause white or light vertical streaks on the page. Cleaning the lens solves the problem.
- Never touch the surface of the photoconductor with your bare hand. The oil from your skin may cause a charge differential on the surface and toner will not stick properly. The result would be repeating patches of voids or light print on a page. Then the photoconductor will have to be replaced.
- The surface of the photoconductor is coated with an organic substance that makes it sensitive to light. Be sure and cover the photoconductor when you are working on the printer so you don't "burn" it. If exposed to light for too long, it will cause light/dark print quality problems and have to be replaced.

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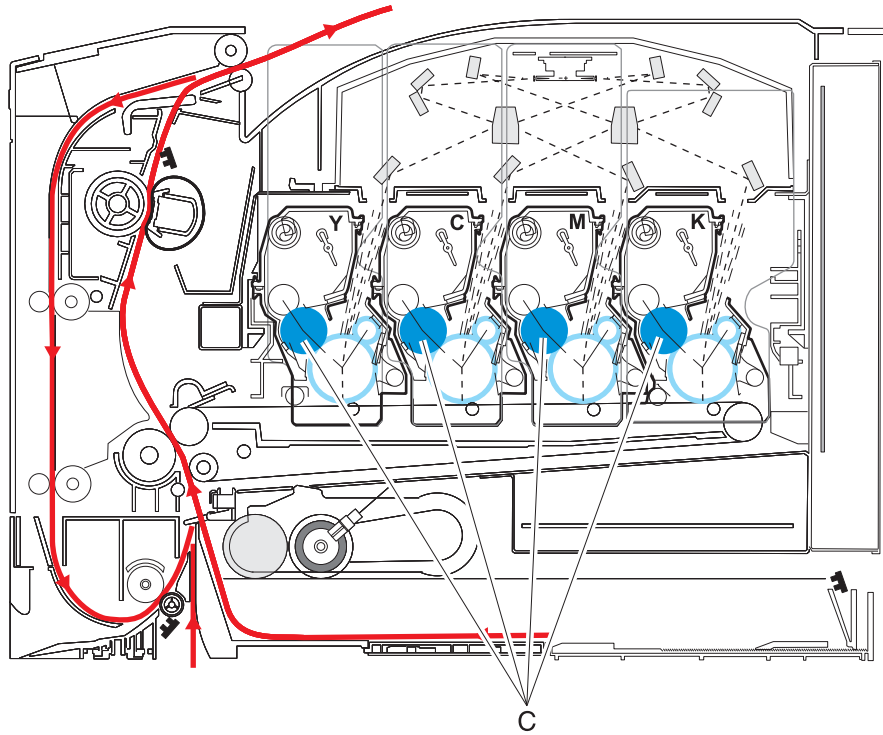


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### Step 3: Develop

Once the laser exposes the photoconductor, the high-voltage power supply sends charge to the developer roll (C). For each color, the toner cartridge engages the photoconductor so it applies toner to the surface. Because of the charge difference between the toner on the developer roll and the electrostatic image created by the laser, the toner will cling to the PC. The toner will only stick where the laser exposed the surface.

This process would be similar to using glue to write on a can and then rolling it over glitter. The glitter sticks to the glue but won't stick to the rest of the can.



#### Service tips:

- Never touch the surface of the developer roller with your bare hand. The oil from your skin may cause a charge differential on the surface and toner will not stick properly. The result would be repeating blotches of voids/light print on a page. Then the affected cartridge will have to be replaced.
- If the developer roll is damaged, it will not contact the surface of the photoconductor properly. The result could be repeating marks, thin vertical voids or thin vertical lines of color on the printed page. Check the surface of the developer for damage.

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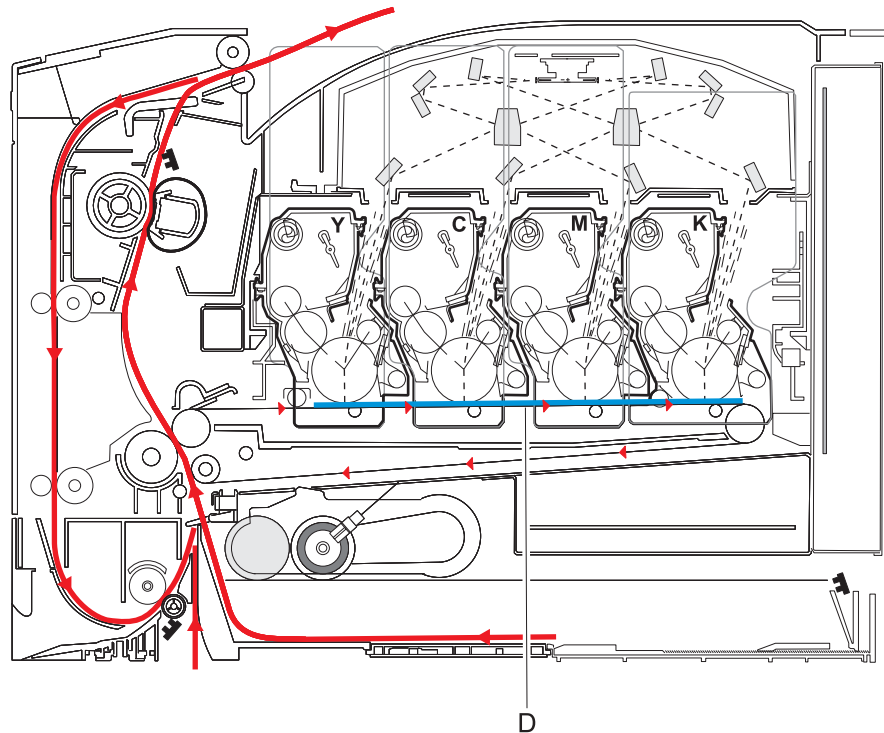
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### Step 4a: First transfer

When the latent images are developed on each photoconductor, the high-voltage power supply sends voltage to the first transfer rolls located in the ITU (D).

The charge difference between the developed toner image on the photoconductor surface and the first transfer roll causes the images to transfer to the surface of the ITU belt for each color. This takes place by a direct surface-to-surface contact between the photoconductors and the ITU belt.



#### Service tips:

- Never touch the surface of the ITU belt with your bare hand. The oil from your skin will cause a charge differential on the surface and toner will not stick properly. The result would be repeating blotches of voids/light print on a page. Then the ITU belt will have to be replaced.
- Don't use solvents or other cleaners to clean the ITU belt surface. No matter how careful you are, the surface will be compromised causing scratches or a charge differential that will produce a void or light blotch on the printed page. Then the ITU belt will need to be replaced.

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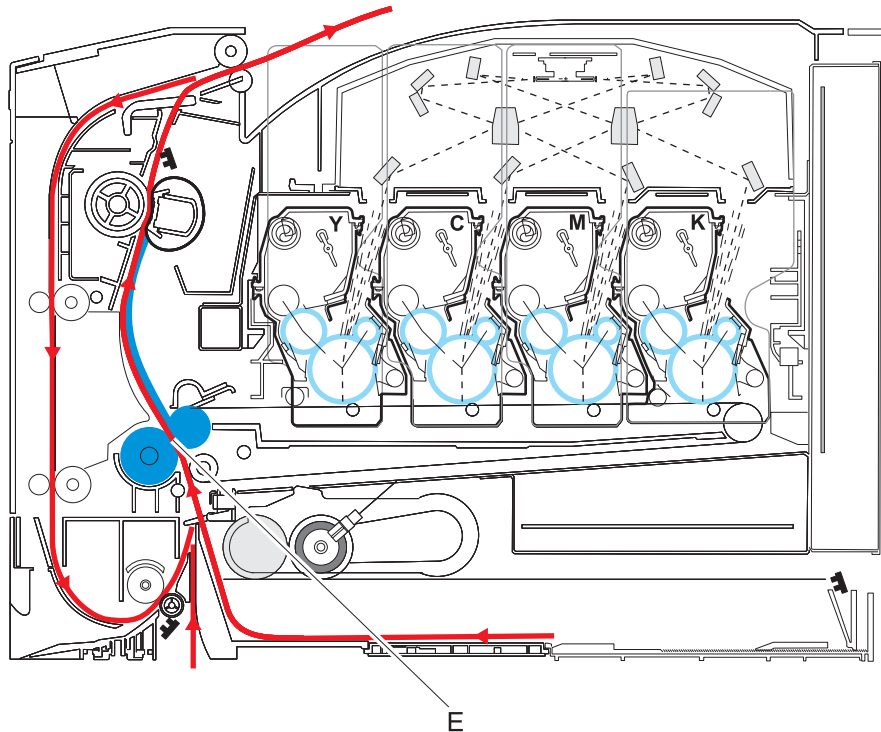


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## Step 4b: Second transfer

Once the four planes of color are transferred to the transfer belt from the photoconductors, the image is carried towards the transfer roll (E). The transfer roll is also part of the ITU. Based on the speed of the transfer belt, the proper time to send the signal to pick the media from an input source is determined. The timing of the pick is such that the media reaches the point where the transfer belt and transfer roll meet. The paper passes between the transfer belt and transfer roll when the image on the belt reaches the second transfer area.

The high-voltage power supply sends voltage to the transfer roll to create a positive charge. Once the image on the transfer belt reaches the transfer roll, the negatively charged toner clings to the media and the entire image is transferred from the transfer belt to the media.



### Service tips:

- If the transfer roll has nicks, pits or flat spots on it, the surface doesn't come into contact with the media and transfer unit properly. This will cause voids or light spots on the page or repeating voids/light areas, because the toner can't be fully transferred due to the charge difference in the areas of damage.
- If the transfer roll does not engage the transfer unit, or does not have voltage coming from the high-voltage power supply, the toner will not fully transfer from the transfer unit; the entire page will be very light or blank. Any toner that does transfer will be due to a "contact" transfer instead of a "charge" transfer. Check the transfer roll clutch and the high-voltage power supply contacts to the transfer roll.

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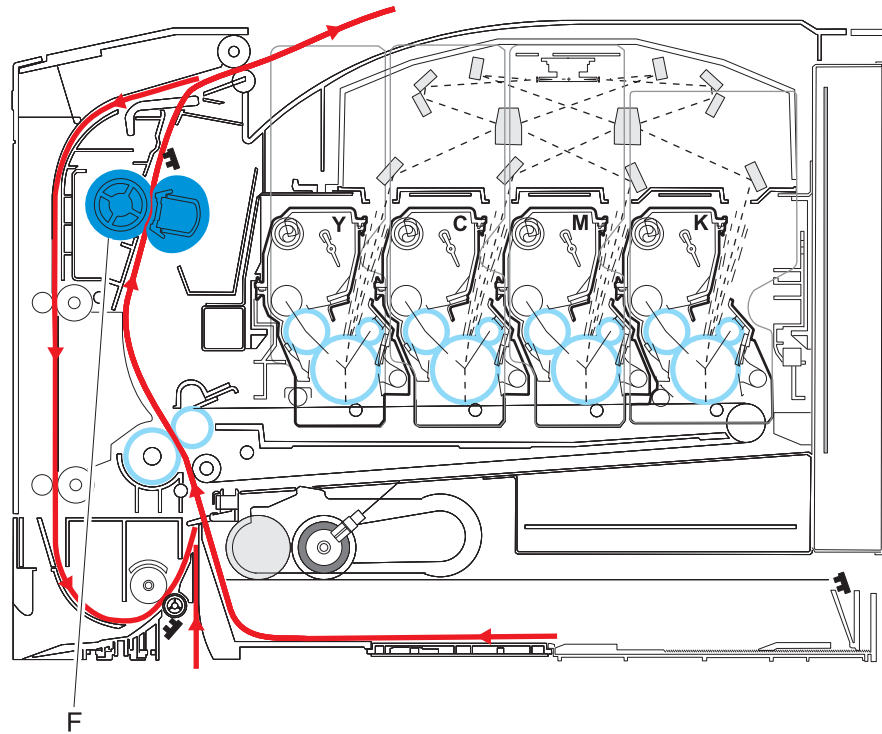


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## Step 5: Fuse

Once the image has been fully transferred to the media, the transfer roll helps move the paper into the fuser area.

The fuser (F) applies heat and pressure to the page to melt the tiny toner particles and bond them permanently to the media. The fuser moves the paper from the rollers and into the exit bin.



### Service tips:

- If the fuser rolls are damaged, they can cause toner to be pulled off the page or cause paper jams.
- Toner that rubs off a printed page can be a sign of a malfunctioning fuser or an improper media setting. Always check the paper type setting before replacing the fuser. A common mistake is to print on heavier media (such as card stock) with the paper type set to plain paper.
- Never pull media with unfused toner up through the fuser if you can help it; try to back the jammed page out of the fuser in the opposite direction it was traveling.

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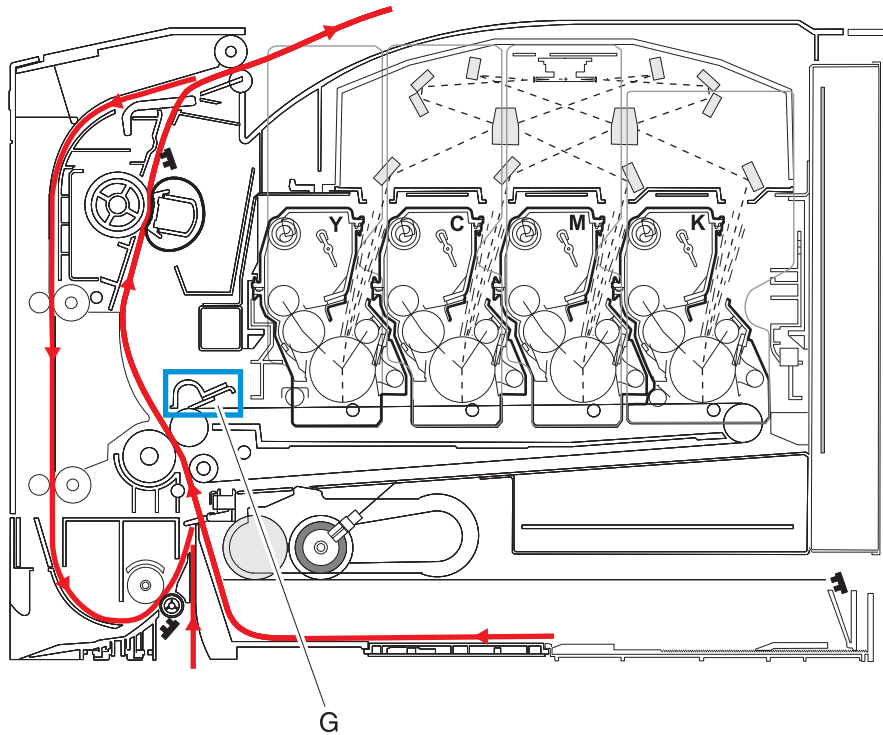
### Step 6: Clean/erase

There are two main cleaning processes that take place during the EP process. One process cleans the transfer belt and the other cleans the photoconductors.

#### Transfer unit clean

Once the toner image on the transfer belt has been transferred to the page, the transfer belt rotates around and is cleaned by the cleaning blade (G). This occurs for every page that is printed.

After the toner is moved to the cleaning blade, the toner is moved from the cleaning blade to the waste toner area using an auger system.



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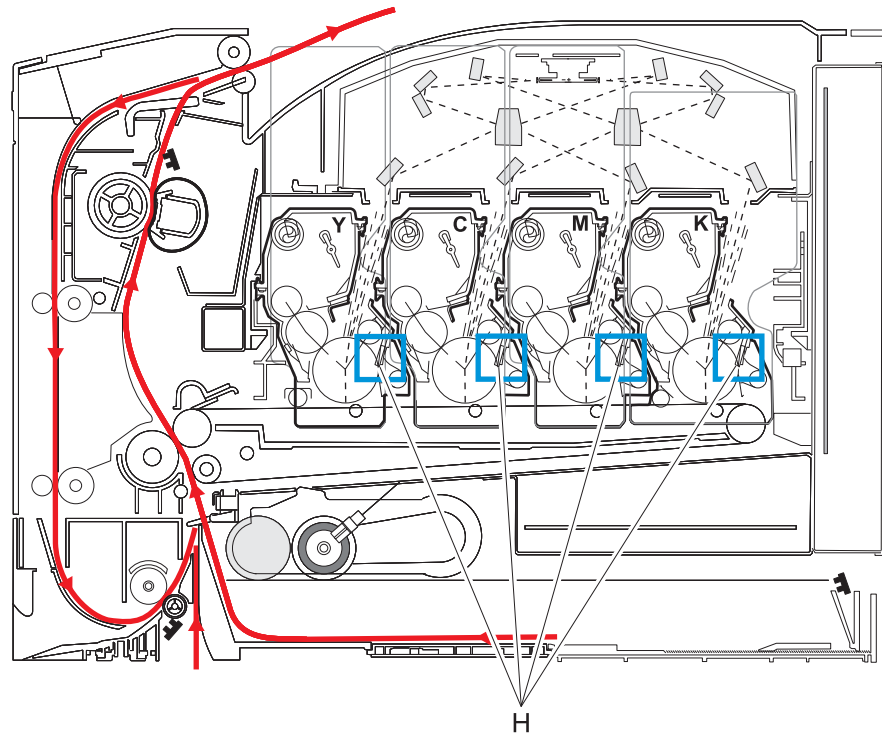


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### Photoconductor clean/erase

After each plane of color has been transferred to the transfer belt from the photoconductors, a cleaning blade (H) scrapes the left over toner from the surface of each photoconductor. This is the clean/erase process.

Now the photoconductor surface is prepared to begin the EP cycle once again. This cleaning/erasing cycle happens after each plane of color is transferred to the transfer belt.



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## Paper path, transport components

In order for an image to be printed, the media has to be moved from an input source (such as a tray) into the printer and eventually exit into the output bin.

The most important component in this process is this media itself. Old, damaged or out-of-specification media can and will cause feed and transport problems. If you encounter problems, you should always check the media first. See **“Media guidelines” on page 1-12**. In addition, it is always good practice to check the printer and driver settings to see if the media being used matches the user’s settings. It is not uncommon to find a user printing on card stock with the printer programmed to print on a plain paper setting.

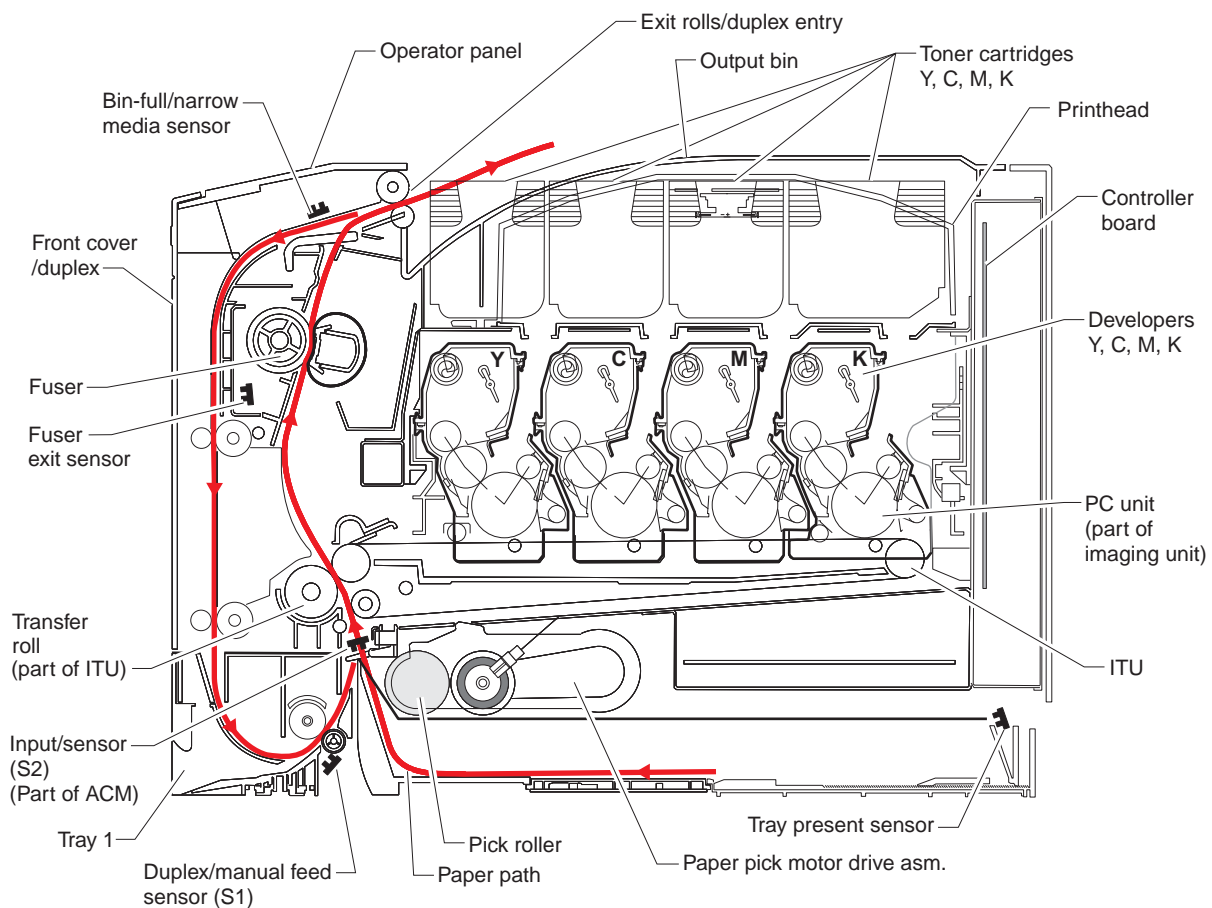
The printer’s feed and transport components can fail and cause paper jams or other feed and transport problems. These components should be examined for damage or wear and replaced if necessary.

### Paper path Information

This printer has a simple “C” shaped paper path (see the picture below). The tray 1 paper path is shown in red and the optional 650-sheet Duo Drawer paper path is not shown.

Paper is fed from the rear of the printer and travels upward through the front cover.

There is a duplex unit on this printer. The duplex unit is built into the front cover and tray 1. The duplex process is described later. See **“Duplex process” on page 3-48**.



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## Transport components

In summary, the media is fed from the tray into the printer by a feed roll and carried to the transfer roll (ITU). The pick rollers time the media to enter the EP process at just the right moment.

The pick rollers push the media to the ITU where the image is transferred to the page.

The transfer roller moves the media to the fuser where heat and pressure are applied to the page. The fuser rollers push the media toward the exit bin and past the exit sensor. The exit rollers guide the paper into the output bin.

### Service tip:

If the printer posts a paper jam message but no paper is found, paper dust or paper particles may have fallen on one of the sensors. Use a can of compressed air to gently clean the sensor.

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## Duplex process

The duplex paper path is a secondary paper path in the front cover and the 250-sheet paper tray to print on the second side of a sheet of paper.

After the first side of the media is printed and the trailing edge of the paper clears the fuser exit sensor, the fuser motor reverses. The reversed motor pulls the media into the duplex paper path. In addition to the fuser motor reversing, the pick motor also reverses. The pick motor drives the duplex aligner rolls (A) which push the media down to the bottom turnaround in the paper tray and gate aligner (B).

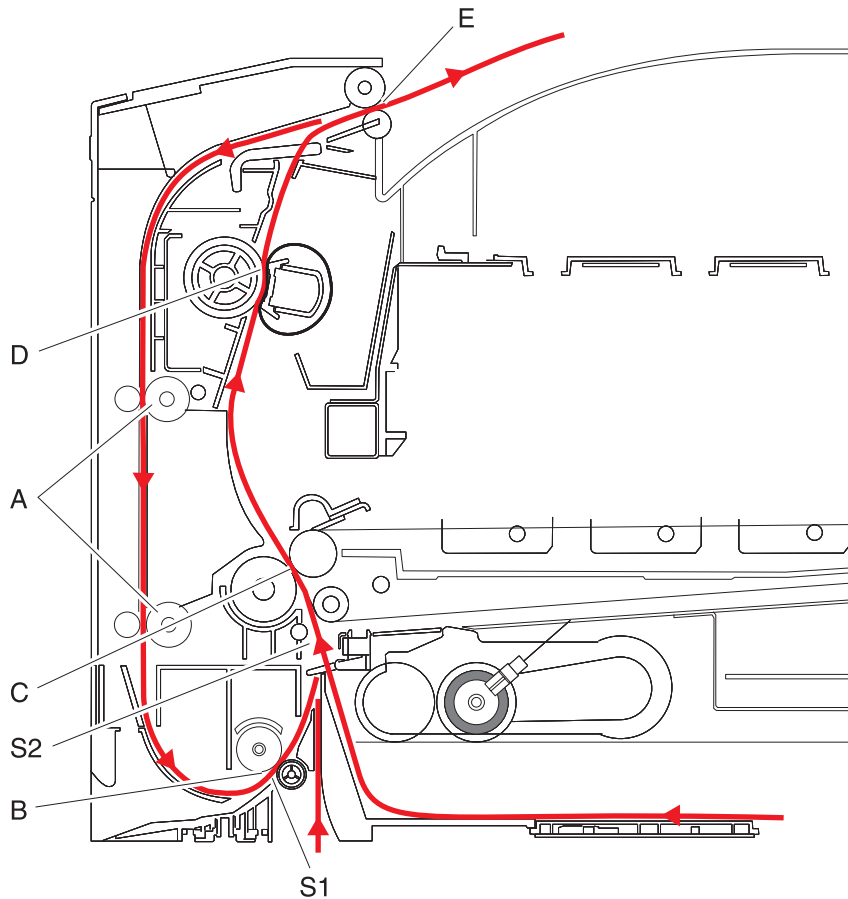
**Note:** While the sheet is being transported through the front door and paper tray, it is the only piece of media being processed by the print engine. A user should not attempt to insert a piece of media into the manual paper feed while a duplex job is being processed. This would invoke a jam error.

When the trailing edge of the media clears the fuser, the fuser engine rotates forward to prepare the fuser for the page traveling through the duplex unit.

As the media reaches the gate aligner, a sensor (S1) is triggered, indicating the presence of the leading edge.

When the S1 sensor is triggered, the paper continues to the S2 sensor (S2). When the S2 signal is detected, the speed of the pick motor is adjusted to accommodate the speed of the transfer belt, ensuring the proper registration of the image on the media. The paper travels to the ITU (C), and the second image is transferred to the reverse side of the media.

Once the image is transferred, the media travels to the fuser (D), the fuser exit rolls (E), and the output bin.



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## Color theory

### What is RGB color?

Red, green, and blue light can be added together in various amounts to produce a large range of colors observed in nature. For example, red and green can be combined to create yellow. Televisions and computer monitors create colors in this manner. RGB color is a method of describing colors by indicating the amount of red, green, or blue needed to produce a certain color.

### What is CMYK color?

Cyan, magenta, yellow, and black inks or toners can be printed in various amounts to produce a large range of colors observed in nature. For example, cyan and yellow can be combined to create green. Printing presses, inkjet printers, and color laser printers create colors in this manner. CMYK color is a method of describing colors by indicating the amount of cyan, magenta, yellow, and black needed to reproduce a particular color.

### How is color specified in a document to be printed?

Software programs typically specify document color using RGB or CMYK color combinations. Additionally, they allow users to modify the color of each object in a document. For more information, see the software program Help topics.

### How does the printer know what color to print?

When a user prints a document, information describing the type and color of each object is sent to the printer. The color information is passed through color conversion tables that translate the color into the appropriate amounts of cyan, magenta, yellow, and black toner needed to produce the desired color. The object information determines the application of color conversion tables. For example, it is possible to apply one type of color conversion table to text while applying a different color conversion table to photographic images.

### Should I use PostScript or PCL emulation printer software? What settings should I use for the best color?

The PostScript driver is strongly recommended for best color quality. The default settings in the PostScript driver provide the preferred color quality for the majority of printouts.

### Why doesn't the printed color match the color I see on the computer screen?

The color conversion tables used in Auto Color Correction mode generally approximate the colors of a standard computer monitor. However, because of technology differences that exist between printers and monitors, there are many colors that can also be affected by monitor variations and lighting conditions. For recommendations on how the printer color sample pages may be useful in solving certain color-matching problems, see **“How can I match a particular color (such as a corporate logo)?” on page 3-51.**

### The printed page appears tinted. Can I adjust the color?

Sometimes a printed page may appear tinted (for example, everything printed seems to be too red). This can be caused by environmental conditions, paper type, lighting conditions, or user preference. In these instances, adjust the Color Balance setting to create a more preferable color. Color Balance provides the user with the ability to make subtle adjustments to the amount of toner being used in each color plane. Selecting positive or negative values for cyan, magenta, yellow, and black (from the Color Balance menu) will slightly increase or decrease the amount of toner used for the chosen color. For example, if a printed page has a red tint, then decreasing both magenta and yellow could potentially improve the color balance.

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## My color transparencies seem dark when they are projected. Is there anything I can do to improve the color?

This problem most commonly occurs when projecting transparencies with reflective overhead projectors. To obtain the highest projected color quality, transmissive overhead projectors are recommended. If a reflective projector must be used, then adjusting the Toner Darkness setting to 1, 2, or 3 will lighten the transparency. Make sure to print on the recommended type of color transparencies.

## What is manual color correction?

When manual color correction is enabled, the printer employs user-selected color conversion tables to process objects. However, Color Correction must be set to Manual, or no user-defined color conversion will be implemented. Manual color correction settings are specific to the type of object being printed (text, graphics, or images), and how the color of the object is specified in the software program (RGB or CMYK combinations).

### Notes:

- Manual color correction is not useful if the software program does not specify colors with RGB or CMYK combinations. It is also not effective in situations in which the software program or the computer operating system controls the adjustment of colors.
- The color conversion tables—applied to each object when Color Correction is set to Auto—generate preferred colors for the majority of documents.

To manually apply a different color conversion table:

1. Press **Menus** (☰) to open the Admin menus.
2. Select **Settings**, and press **Select** (✓).
3. Select **Quality**, and press **Select** (✓).
4. Select **Color Correction**, and press **Select** (✓).
5. Select **Manual**, and press **Select** (✓).  
The printer is in manual mode, and you need to select a color conversion table.
6. Press **Back** (⏪) to return to the Quality menu, select **Manual Color**, and press **Select** (✓).
7. Select the appropriate color conversion table for the affected object type.

Object type	Color conversion tables
RGB Image RGB Text RGB Graphics	<ul style="list-style-type: none"> <li>• <b>Vivid</b>—Produces brighter, more saturated colors and may be applied to all incoming color formats.</li> <li>• <b>sRGB Display</b>—Produces an output that approximates the colors displayed on a computer monitor. Black toner usage is optimized for printing photographs.</li> <li>• <b>Display—True Black</b>—Produces an output that approximates the colors displayed on a computer monitor. Uses only black toner to create all levels of neutral gray.</li> <li>• <b>sRGB Vivid</b>—Provides an increased color saturation for the sRGB Display color correction. Black usage is optimized for printing business graphics.</li> <li>• <b>Off</b>—No color correction is implemented.</li> </ul>
CMYK Image CMYK Text CMYK Graphics	<ul style="list-style-type: none"> <li>• <b>US CMYK</b>—Applies color correction to approximate the SWOP (Specifications for Web Offset Publishing) color output.</li> <li>• <b>Euro CMYK</b>—Applies color correction to approximated EuroScale color output.</li> <li>• <b>Vivid CMYK</b>—Increases the color saturation of the US CMYK color correction setting.</li> <li>• <b>Off</b>—No color correction is implemented.</li> </ul>



## How can I match a particular color (such as a corporate logo)?

From the printer Quality menu, nine types of Color Samples sets are available. These are also available from the Color Samples page of the Embedded Web Server. Selecting any sample set generates a multiple-page printout consisting of hundreds of colored boxes. Either a CMYK or RGB combination is located on each box, depending on the table selected. The observed color of each box is obtained by passing the CMYK or RGB combination labeled on the box through the selected color conversion table.

To print Color samples from the printer:

1. Press **Menu** (☰) to open the Admin menus.
2. Select **Settings**, and press **Select** (✓).
3. Select **Quality**, and press **Select** (✓).
4. Select **Color Samples**, and press **Select** (✓).
5. Select the **Color Conversion** table to print, and press **Select** (✓).

By examining Color Samples sets, a user can identify the box whose color is the closest to the desired color. The color combination labeled on the box can then be used for modifying the color of the object in a software program. For more information, see the software program Help topics. Manual color correction may be necessary to utilize the selected color conversion table for the particular object.

Selecting which Color Samples set to use for a particular color-matching problem depends on the Color Correction setting being used (Auto, Off, or Manual), the type of object being printed (text, graphics, or images), and how the color of the object is specified in the software program (RGB or CMYK combinations). When the printer Color Correction setting is set to Off, the color is based on the print job information; and no color conversion is implemented.

**Note:** The Color Samples pages are not useful if the software program does not specify colors with RGB or CMYK combinations. Additionally, certain situations exist in which the software program or the computer operating system adjusts the RGB or CMYK combinations specified in the program through color management. The resulting printed color may not be an exact match of the Color Samples pages.

## What are detailed Color Samples, and how do I access them?

Detailed Color Samples sets are available only through the Embedded Web Server of a network printer. A detailed Color Samples set contains a range of shades (displayed as colored boxes) that are similar to a user-defined RGB or CMYK value. The likeness of the colors in the set are dependent on the value entered in the RGB or CMYK Increment box.

To access a detailed Color Samples set from the Embedded Web Server:

1. Open a Web browser.
2. In the address bar, type the network printer IP address.
3. Click **Configuration**.
4. Click **Color Samples**.
5. Click **Detailed Options** to narrow the set to one color range.
6. When the Detailed Options page appears, select a color conversion table.
7. Enter the RGB or CMYK color number.
8. Enter an Increment value from 1–255.  
**Note:** The closer the value is to 1, the narrower the color sample range will appear.
9. Click **Print** to print the detailed Color Samples set.

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## 4. Repair information

**Warning:** Read the following before handling electronic parts.

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### 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, use the following instructions in addition to all the usual precautions, such as turning off power before removing logic boards:

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

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## Removal procedures

	<p><b>CAUTION</b></p> <p>Remove the power cord from the electrical outlet before you connect or disconnect any cable or electronic board or assembly for personal safety and to prevent damage to the printer. Disconnect any connections between the printer and PCs/peripherals.</p>
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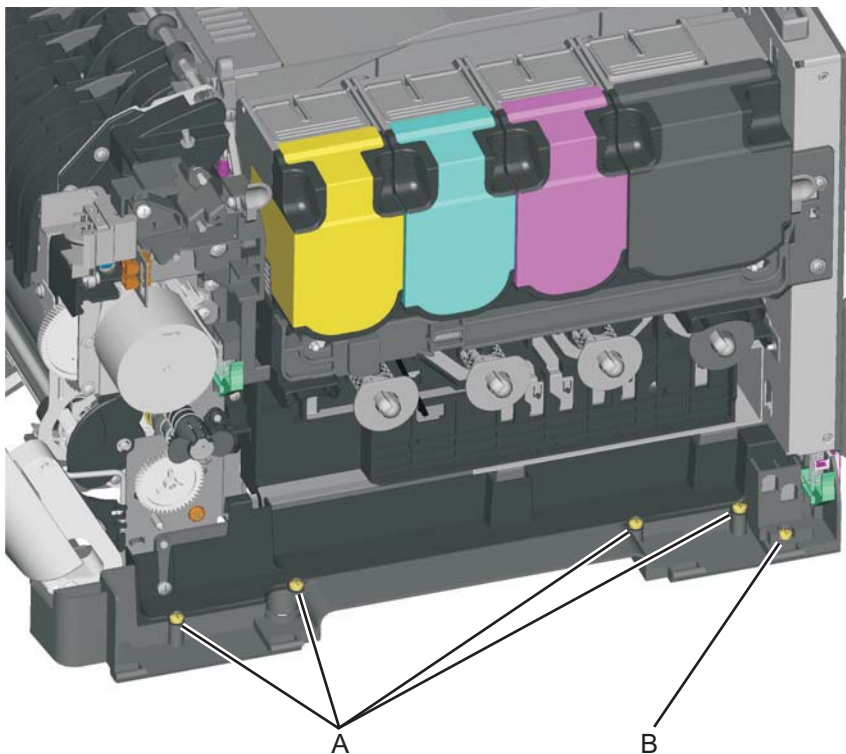
### Notes:

- Remove the waste toner bottle, color toner cartridges, imaging unit, and media tray before removing other printer parts. The imaging unit should be carefully set on a clean, smooth, and flat surface. It should also be protected from light while out of the printer.
- Unless otherwise stated, reinstall the parts in reverse order of removal.
- When reinstalling a part held with several screws, start all screws before final tightening.
- Some removal procedures require removing cable ties. You must replace cable ties during reassembly to avoid pinching wires, obstructing the paper path, or restricting mechanical movement.

### Front cover assembly removal

See the front cover assembly on [page 7-3](#) for the part number.

1. Open the front cover.
2. Remove the operator panel. See [“Operator panel logo plate” on page 4-9](#).
3. Remove the right cover assembly. See [“Right cover assembly removal” on page 4-12](#).
4. Remove the waste toner bottle. See [“Waste toner bottle removal” on page 4-84](#).
5. Remove the four screws (A) from the cable cover, and remove the cable cover.
6. Remove the screw (B) from the back of the waste toner cartridge ground connector.



7. Remove the rear shield. See [“Top cover assembly removal” on page 4-13](#).

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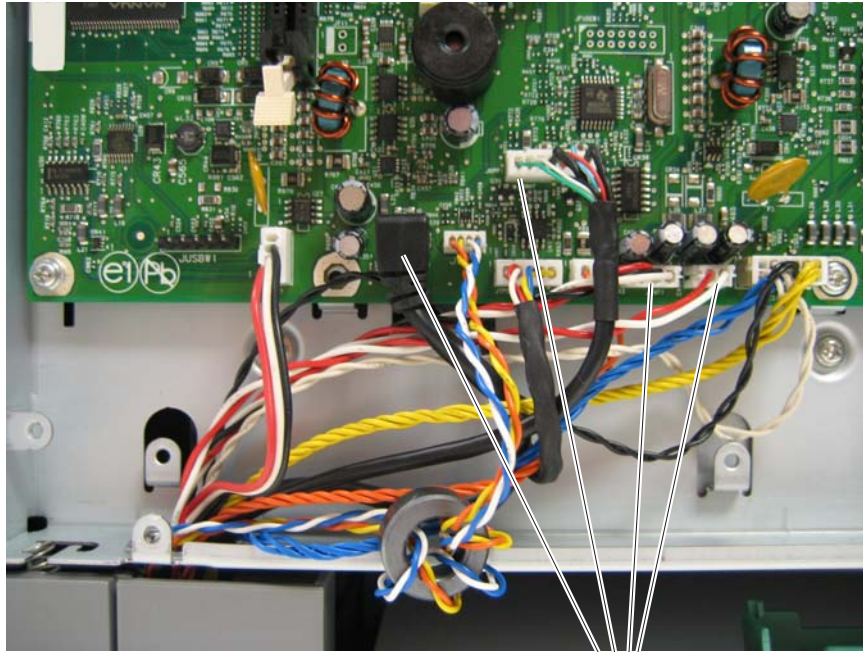


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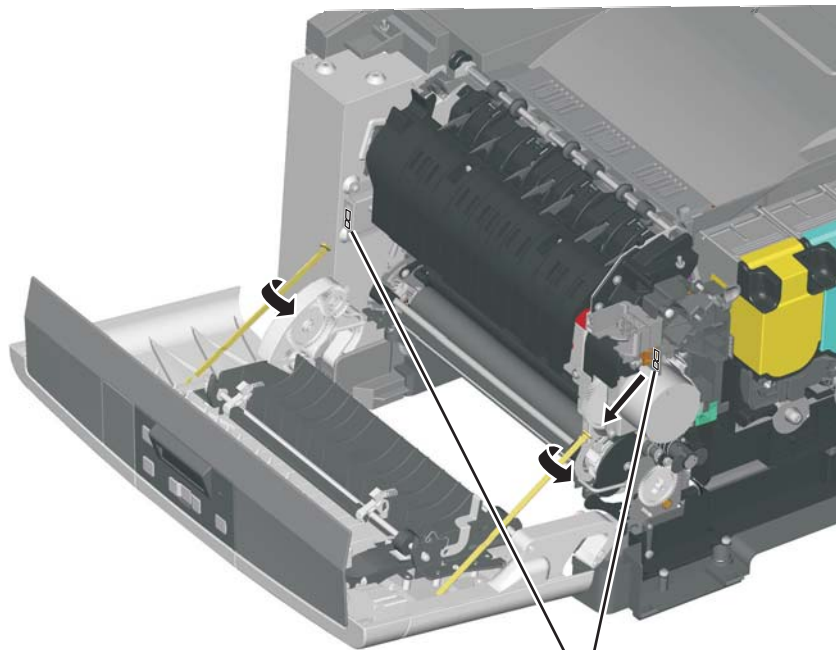
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8. Disconnect the operator panel cable, the USB port (if installed) cable, and the front door open sensor cables from the controller board (C).



C

9. Pull the cables through the opening in the rear.  
 10. Position the printer with the front cover overlapping the front edge of the table.  
 11. Remove the two restraining straps from the printer by turning the end sideways and lifting out of the connector (D).



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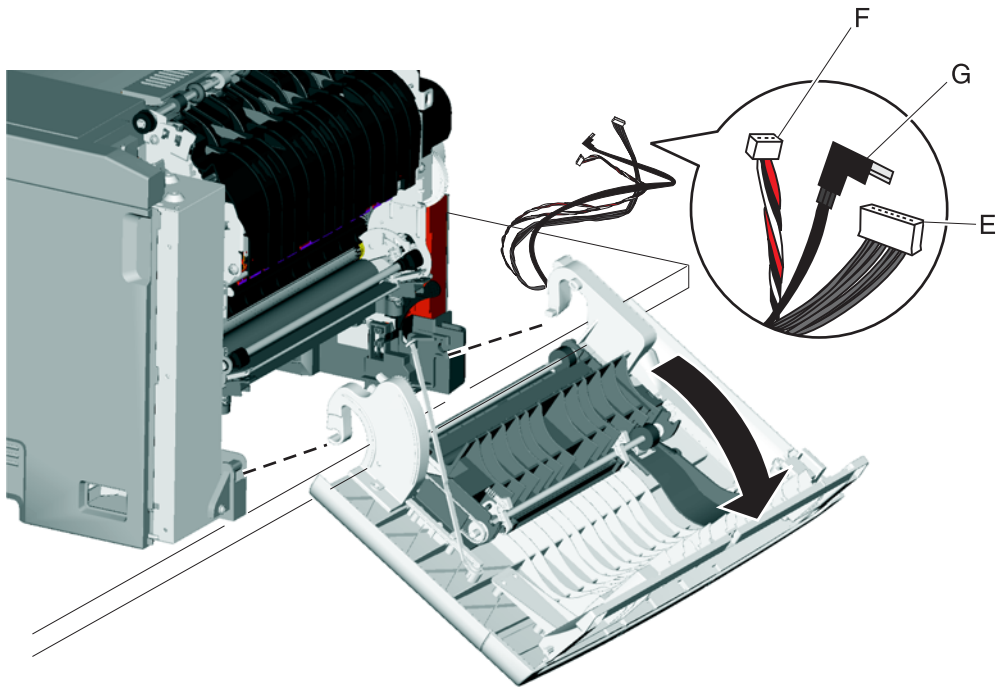
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12. Lower the front cover to align the flats on the hinges, and remove the front cover.

**Note:** Not all models have all three cables shown. See the chart below.



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**Installation notes:**

When installing the front cover on the following models, note the differences relating to the USB port cable:

Models	Contents of front cover FRU	Order front cover P/N
Lexmark C540n (5025-210)	<ul style="list-style-type: none"> <li>• Operator panel cable (E)</li> <li>• Front door switch cable (F)</li> </ul> <b>Note:</b> The USB port cable (G) is not included.	<b>40X5420</b>
Lexmark C543dn (5025-230)	<ul style="list-style-type: none"> <li>• Operator panel cable (E)</li> <li>• Front door switch cable (F)</li> <li>• USB port cable (G)—not used</li> </ul> <b>Note:</b> Clip the USB cable at each end before installing. There is no place to plug the cable in.	<b>40X5430</b>
Lexmark C544n, C544dn, C544dw, C546dtn (5025-410, -430, -43W, -439)	<ul style="list-style-type: none"> <li>• Operator panel (E)</li> <li>• Front door switch cable (F)</li> <li>• USB port cable (G)</li> </ul>	<b>40X5430</b>

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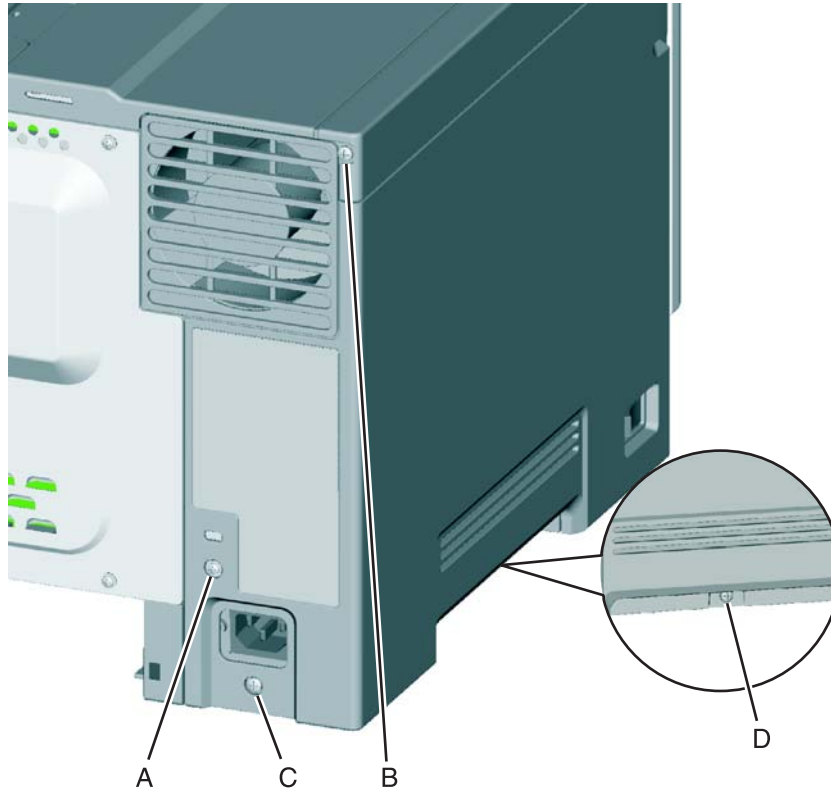


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## Left cover assembly removal

See “**Left cover assembly**” on page 7-3 for the part number.

1. Remove the media tray.
2. Position the printer with the left side hanging over the edge of the table.
3. On the rear, remove the metal screw (A), the short plastic screw (B), and the longer plastic screw (C).
4. Remove the screw (D) on the bottom of the cover.



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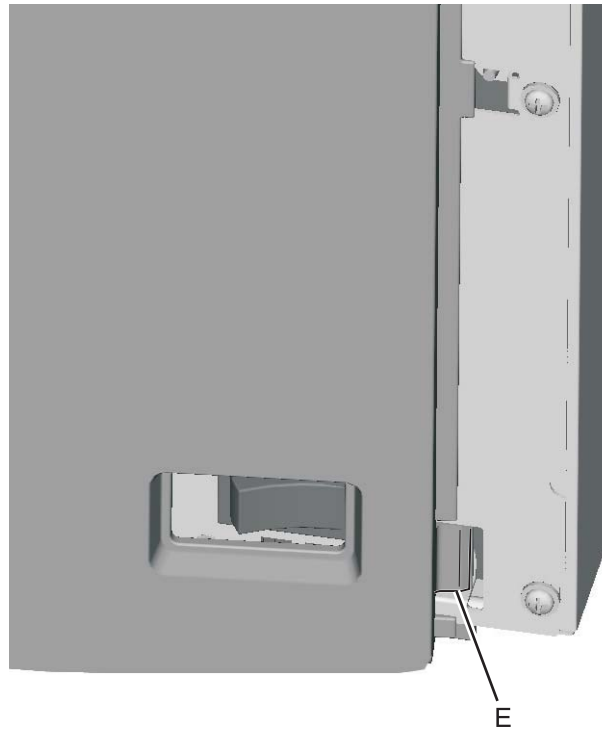


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5. Unlatch the front bottom corner tab (E), and lower the front while disengaging from the top cover.



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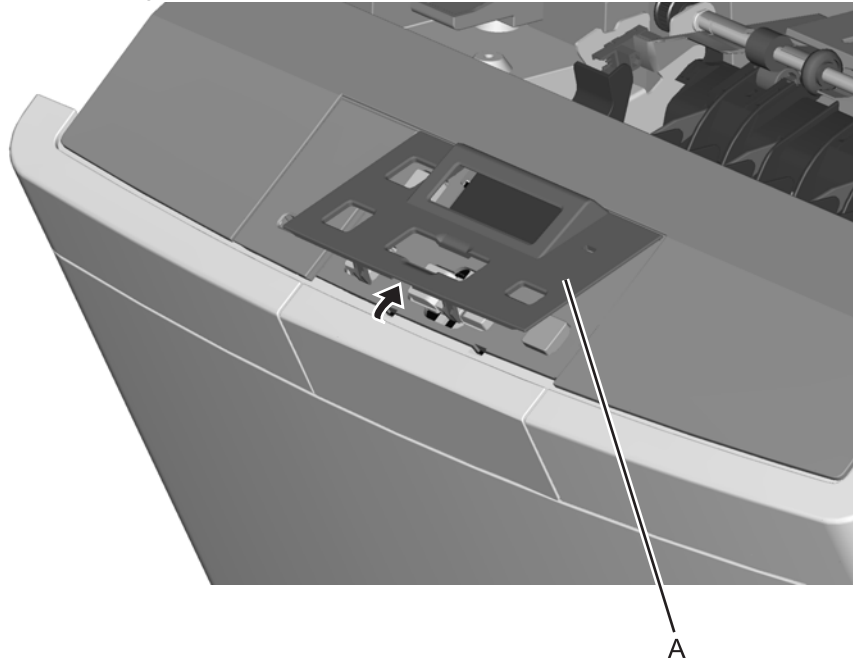
**Installation note:** When replacing the left cover, flex the cover slightly to engage the tab (E) near the power switch.



## Operator panel bezel and name plate removal

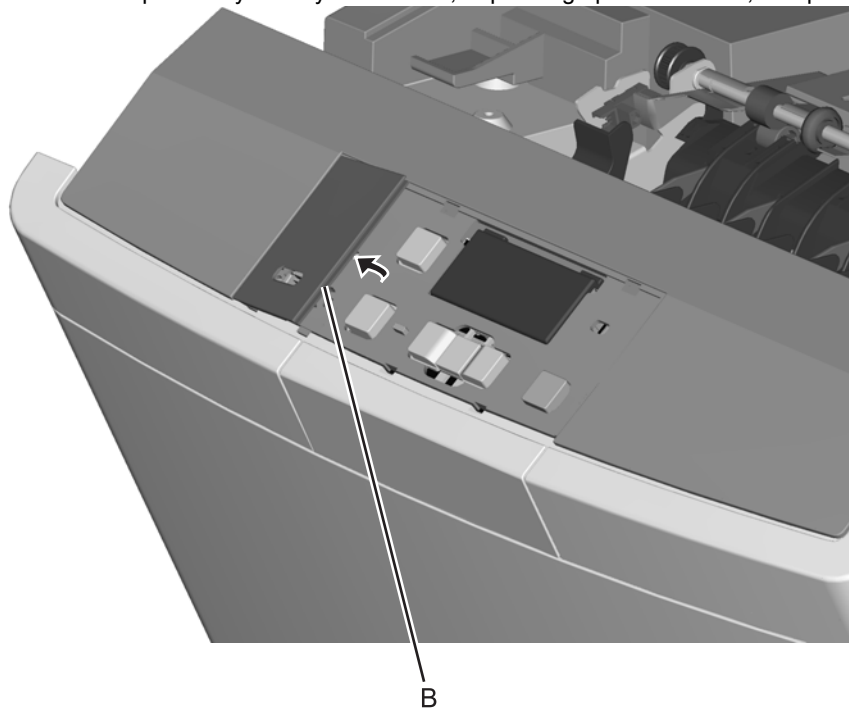
See **“Operator panel bezel and name plates, including:”** on page 7-3 for the part number.

1. Remove the operator panel logo plate. See **“Operator panel logo plate”** on page 4-9.
2. Lift the bottom edge of the bezel (A), and remove the bezel.



3. Lift the name plate (B).

**Note:** The name plate may or may not contain, depending upon the model, an opening for the USB port.



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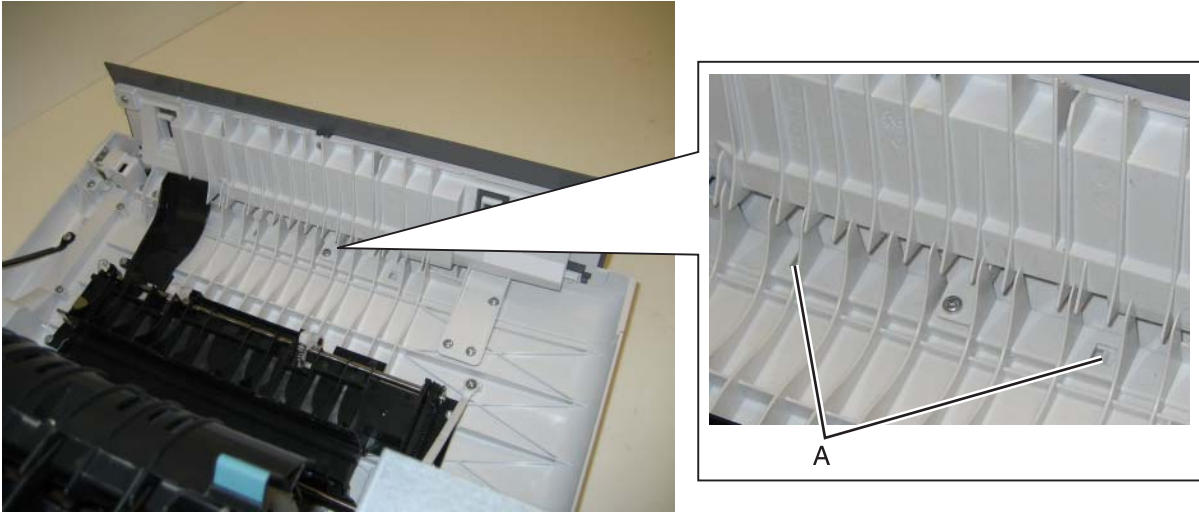
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## Operator panel logo plate

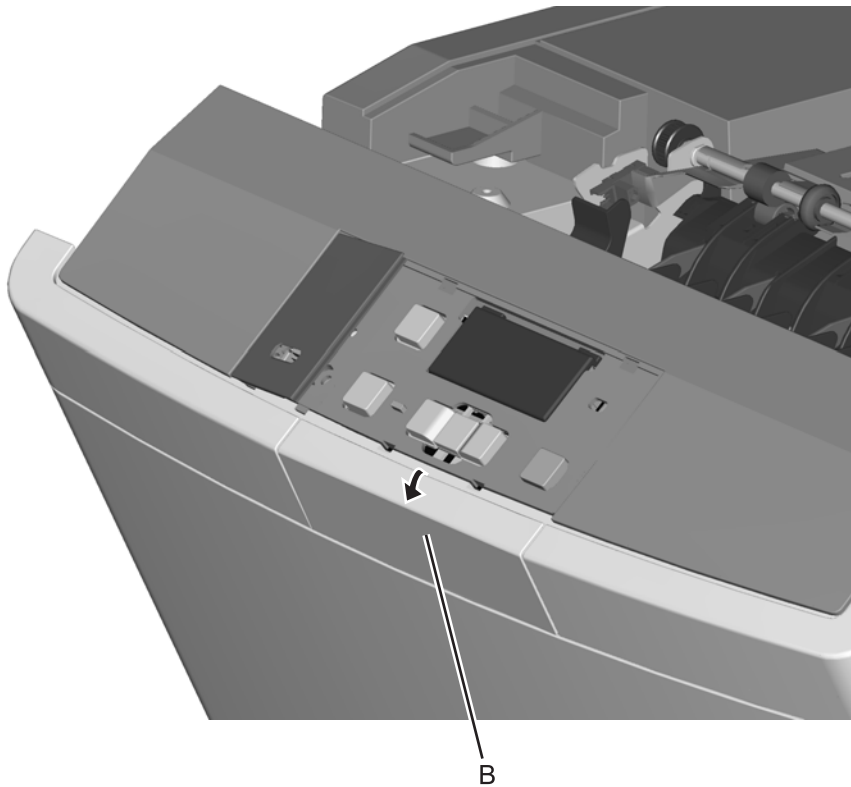
See “operator panel bezel and name plates on [page 7-3](#) for the part number.

This is part of the operator panel bezel and name plate FRU.

1. Open the front cover.
2. With a flat-bladed screwdriver, unlatch the two latches (A) on the inside cover.



3. Remove the logo plate (B).



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## Operator panel removal

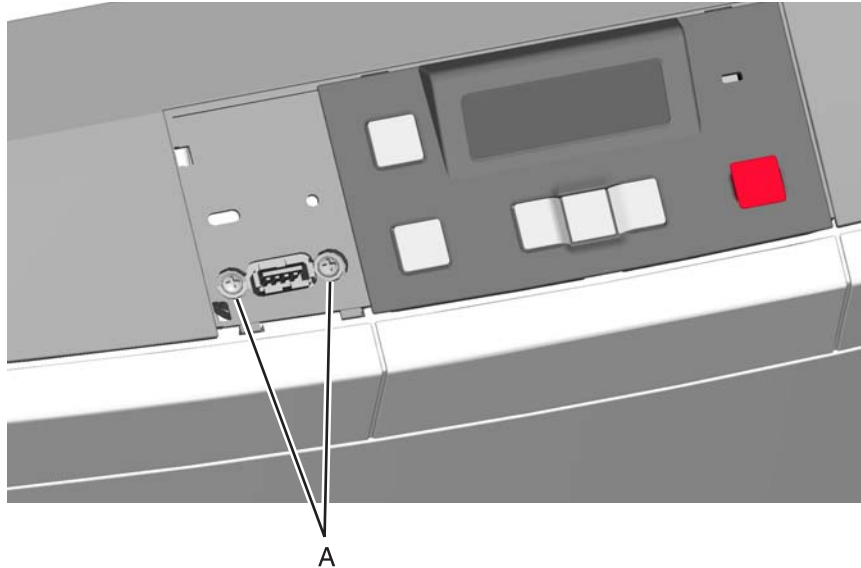
See **“Operator panel and display assembly” on page 7-3** for the part number.

**Warning:** Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer may be rendered inoperable:

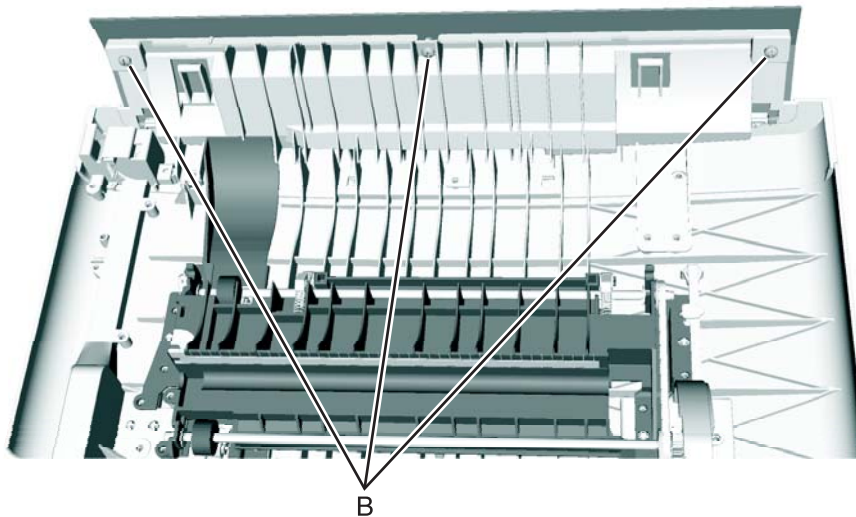
- Operator panel assembly
- Controller board

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

1. Remove the operator panel bezel and name plate. See **“Operator panel bezel and name plate removal” on page 4-8**.
2. If you have a model with the USB port, remove the two screws (A) to detach the USB connector.



3. Open the front cover.
4. Remove the three screws (B) attaching the operator panel to the front cover assembly.



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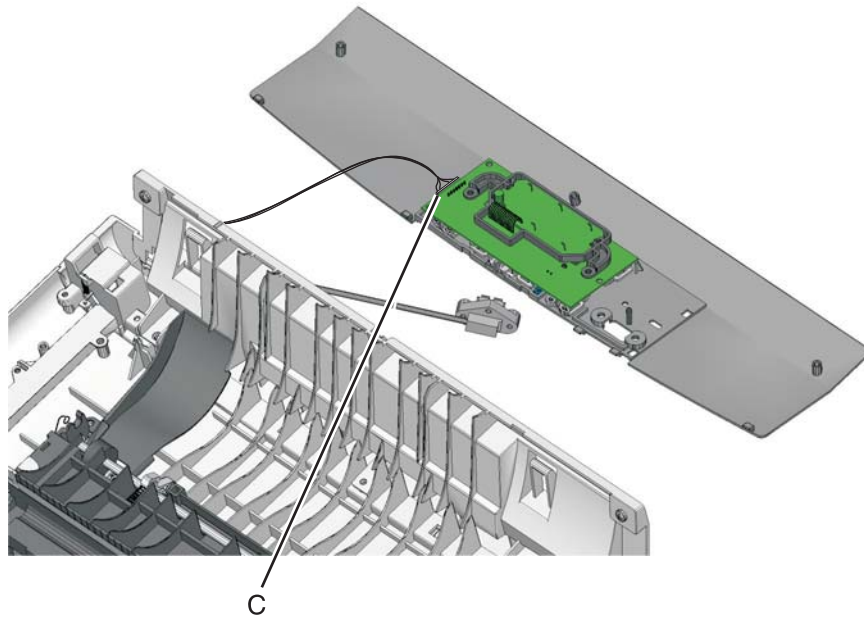


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5. Detach the operator panel cable (C) from the panel.



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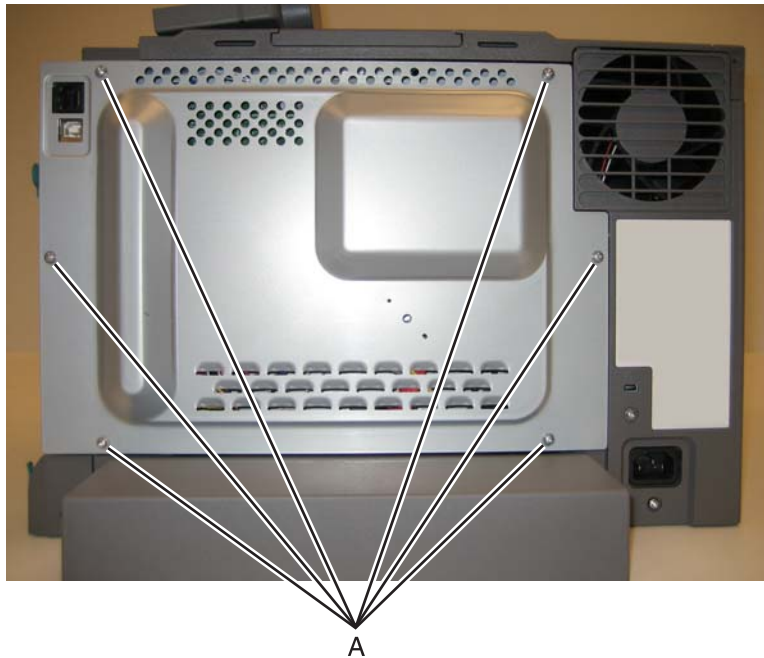


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### ***Rear shield removal***

The rear shield is not a field replaceable unit (FRU).

1. Remove the six screws (A).

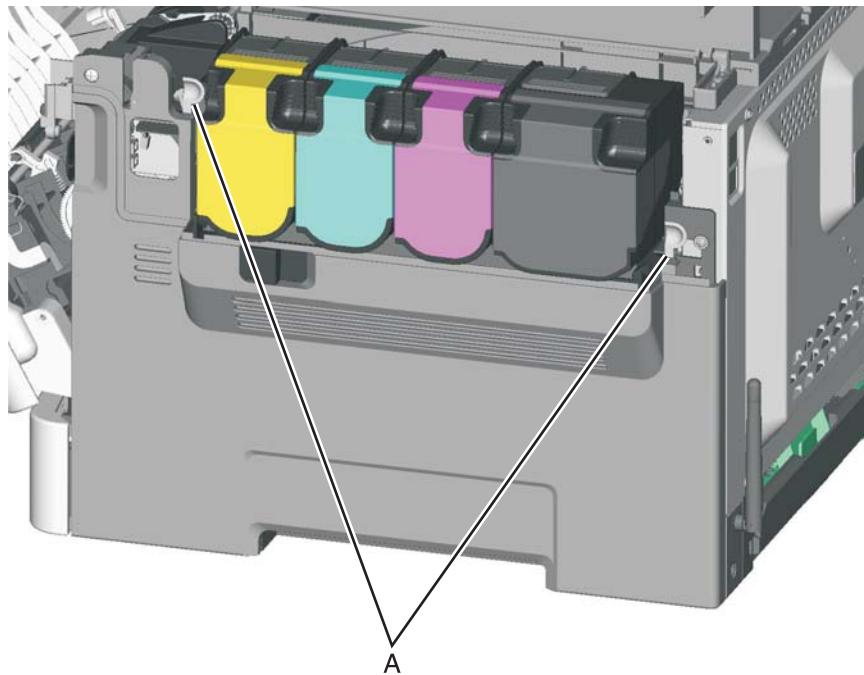


2. Remove the rear shield.

## ***Right cover assembly removal***

See **“Right cover assembly”** on page 7-3 for the part number.

1. Open the toner supply door.
2. Open the front cover.
3. Release the latches (A), and lift off the cover.



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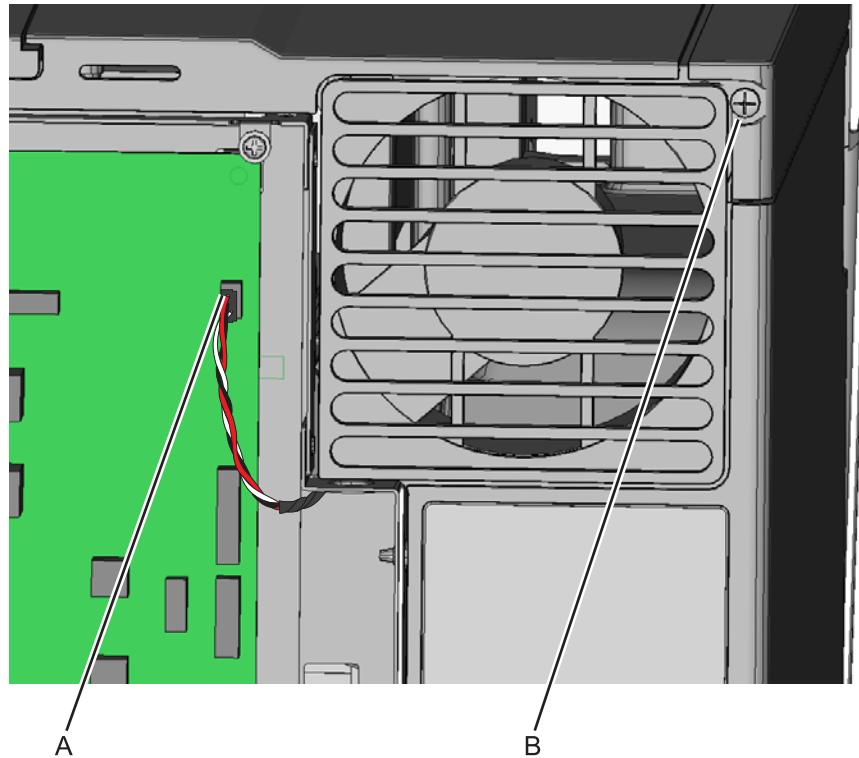
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## Top cover assembly removal

See **“Top cover assembly”** on page 7-3 for the part number.

1. Remove the right cover assembly. See **“Right cover assembly removal”** on page 4-12.
2. Remove the waste toner bottle. See **“Waste toner bottle removal”** on page 4-84.
3. Remove the imaging unit. See **“Imaging unit (IU) removal”** on page 4-49.
4. Remove the rear shield. See **“Top cover assembly removal”** on page 4-13.
5. Disconnect the fan cable from JFAN1 (A) on the controller board.
6. Remove the screw (B).



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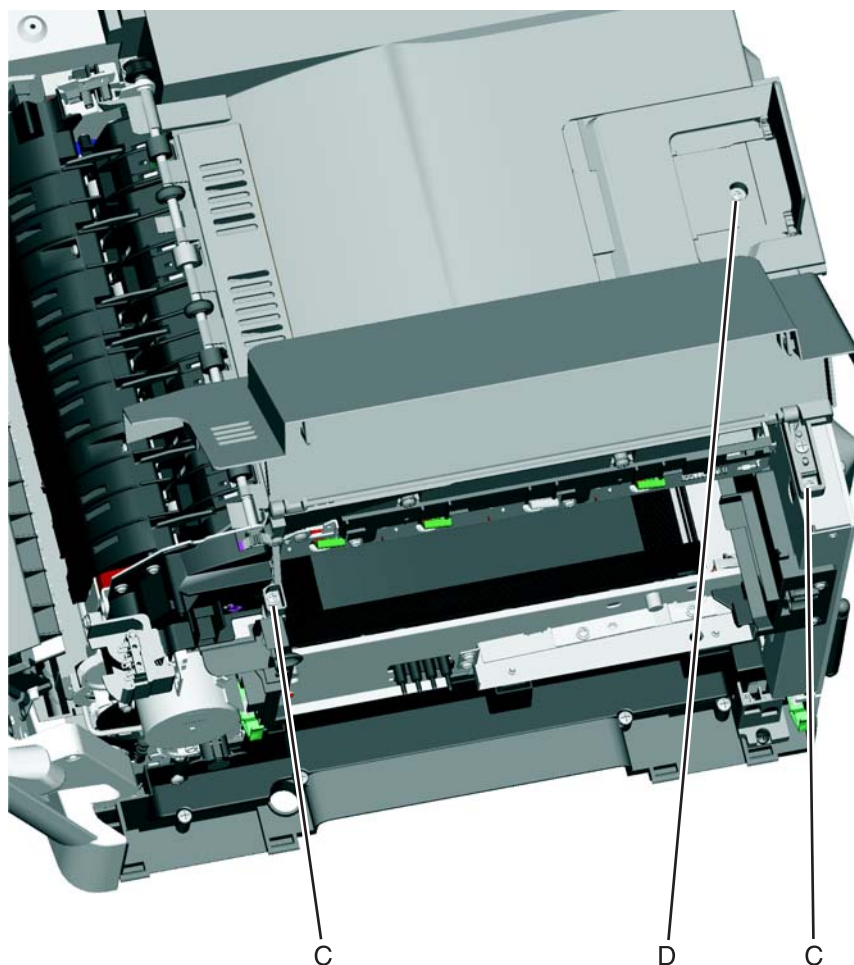


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7. Remove the machine screws (C), and remove the ground cable from the cover.
8. Lift and slide the paper stop to expose the screw (D), and remove the screw.



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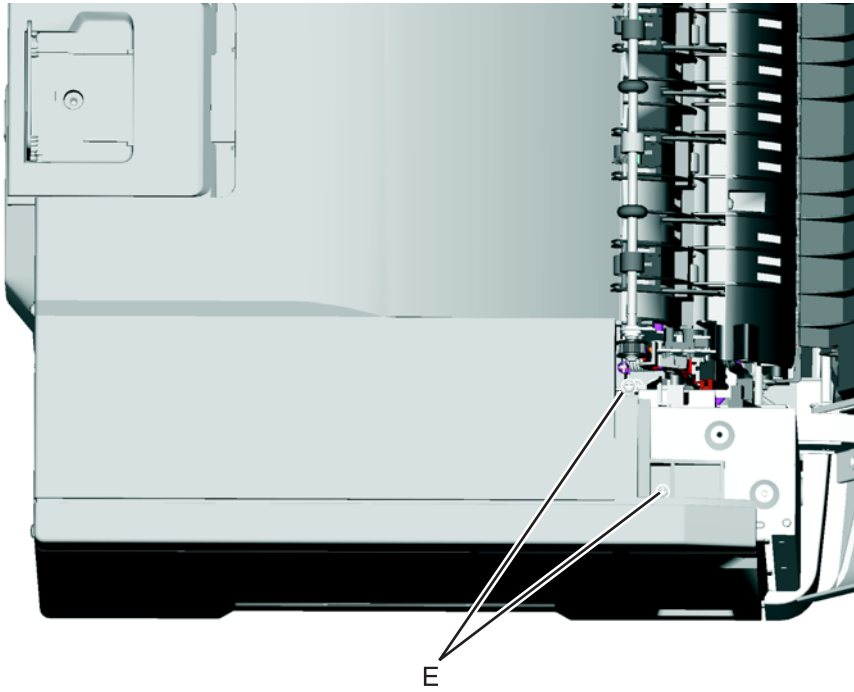


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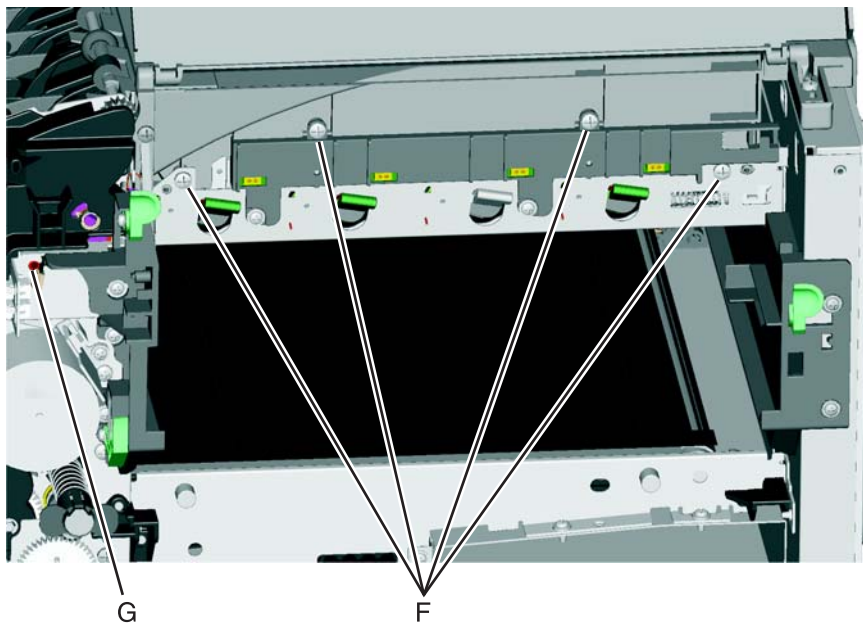


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9. Remove the two top screws (E) near the front.



10. Remove the remaining four screws (F).  
11. Remove the fuser screw (G).



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12. Disconnect the left fuser spring (H) from the fuser.
13. Disconnect the right fuser spring (J) from the fuser.

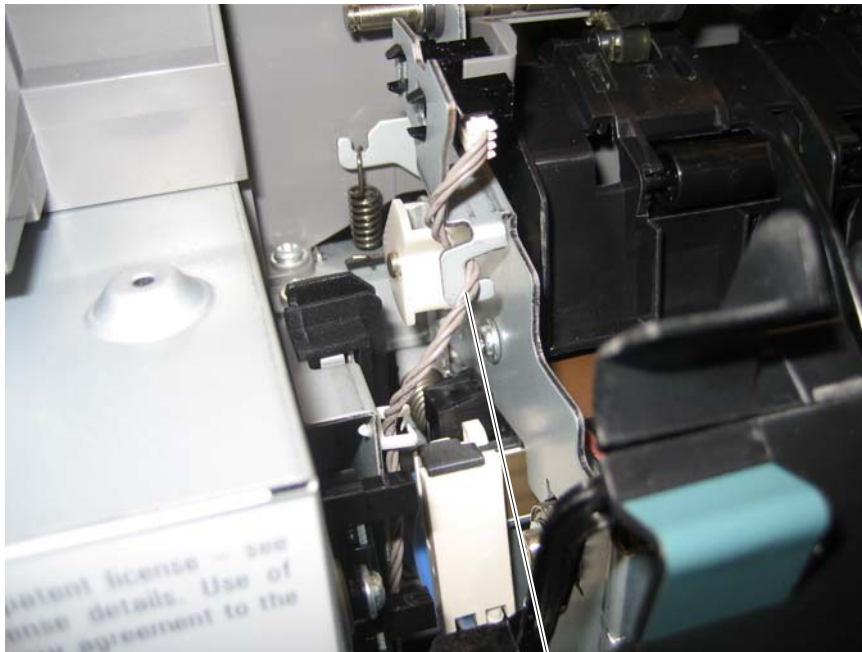


H



J

14. Disengage the bin-full/narrow media sensor cable (K) from the retainer.



K

15. Gently rotate the fuser away from the top cover, and let it rest.  
**Note:** If fuser needs to be propped up, use something that will not move or shift. Avoid putting additional stress on the cables.

Previous

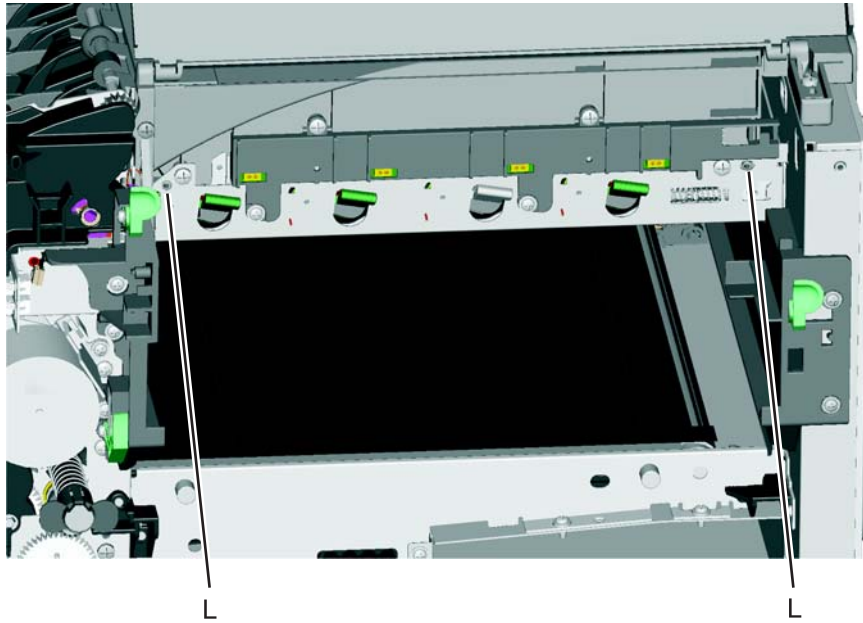


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16. Push in on the cover above the locating pins (L) while lifting to disengage the cover. Carefully lift the cover while keeping it horizontal.
- Note:** Guide the fan connector through the hole.



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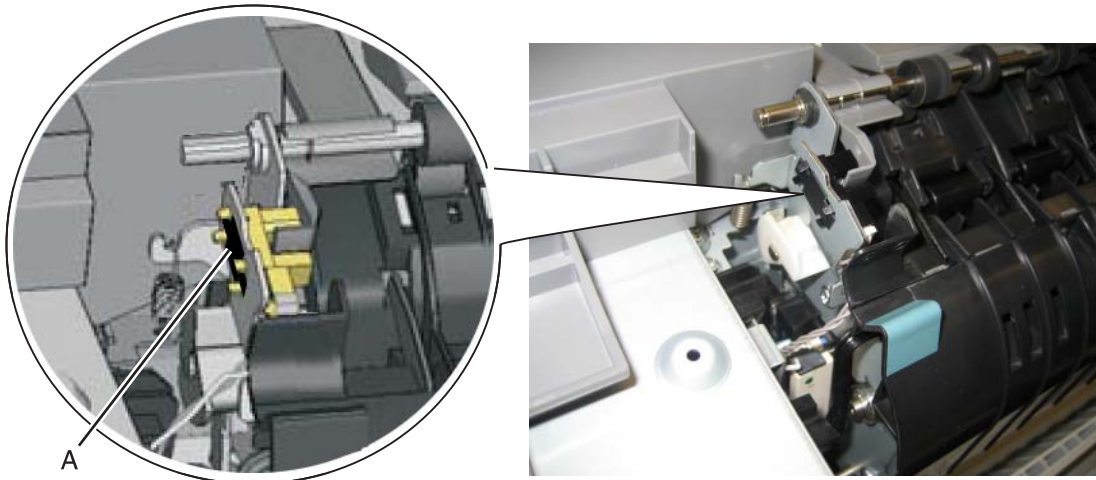


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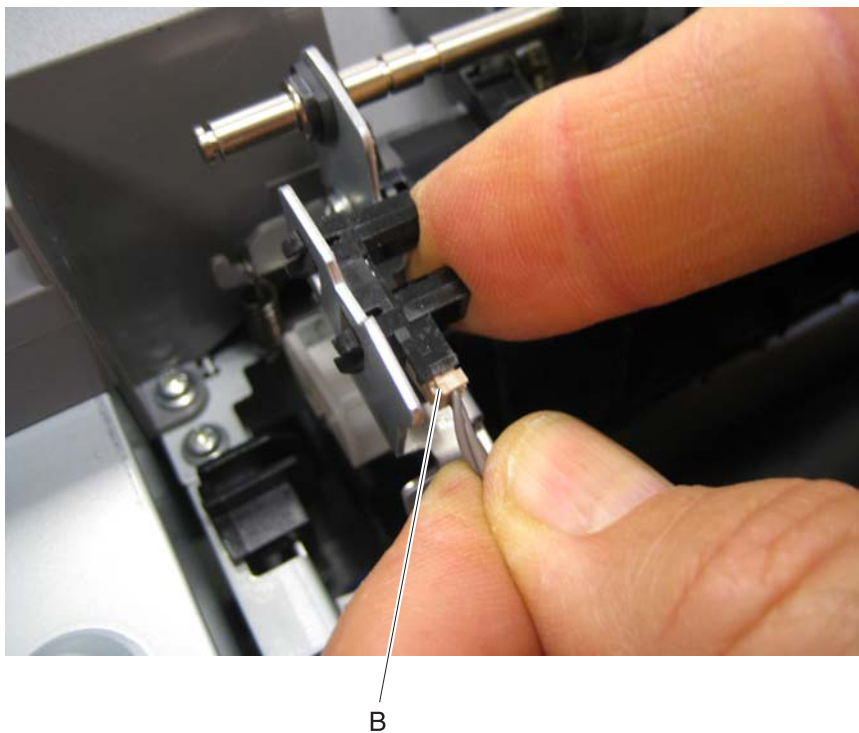
## Bin-full/narrow media sensor removal

See “Photo sensor” on [page 7-7](#) for the part number.

1. Open the front cover.
2. Remove the cable from the retainer.  
**Note:** Be sure to note the routing for re-installation.
3. Disconnect the cable from the bin-full/narrow media sensor.
4. If there is a sensor retaining plate (A) on the side the latches connect, remove the old adhesive plate.



5. Gently remove the sensor (B) from the bracket by pressing the latches.



**Installation note:**

1. Clean the contact surface where you removed the sensor retaining plate, or where you need to install the new one.
2. Guide the latches that hold the sensor in the bracket into place.
3. Squeeze the latches together until they latch to the metal frame.
4. Remove the backing from the new plate, and place the plate on the surface between the sensor mounting legs.
5. Reconnect the cable, and reroute the cable through the retainer.

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***Bin-full/narrow media sensor flag and exit deflector removal***

The bin-full/narrow media sensor flag and the exit deflector are in the same FRU. See **“Exit deflector and bin-full/narrow media sensor flag removal” on page 4-30.**

## Controller board removal

See **Controller board—C544n, C544dn, C544dw, Controller board—C540n, C543dn, C540dw**, or **“Controller board—C546dn only”** on page 7-7 for the part number.

	<p><b>CAUTION</b></p>
<p>After disconnecting the high-voltage power cable from the controller board, always check that the HVPS connection was not loosened. Make this check anytime you are working near the HVPS cable.</p>	

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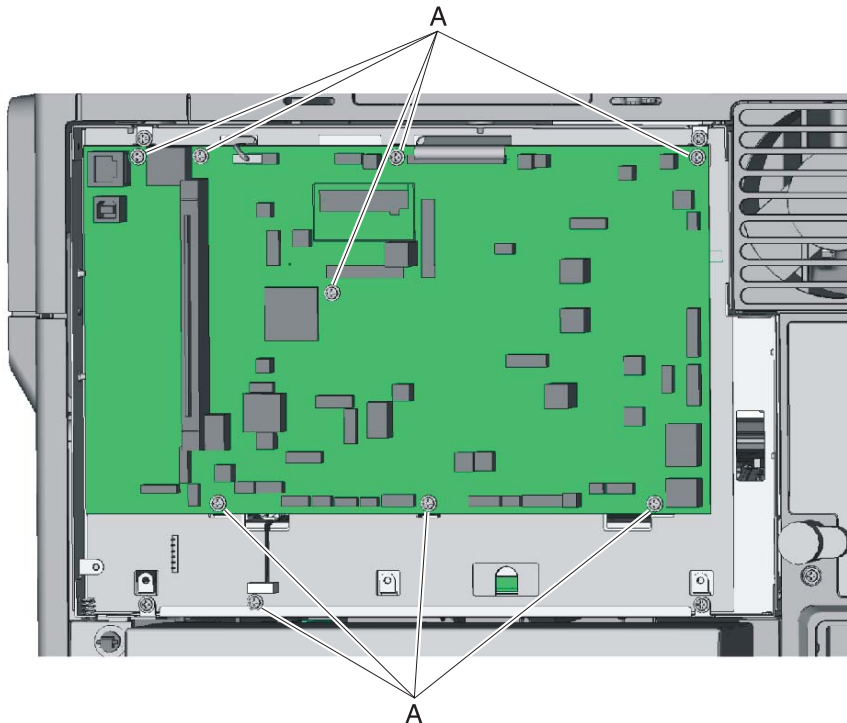
**Warning:** Observe all ESD precautions while handling electrostatic-discharge sensitive parts. See **“Handling ESD-sensitive parts”** on page 4-1.

**Warning:** Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer may be rendered inoperable:

- Operator panel assembly
- Controller board

**Warning:** Never install and remove components listed above as a method of troubleshooting components. **Once one of these components has been installed in a printer, and the printer is powered on, the component cannot be used in another printer. The component must be returned to the manufacturer.**

1. Remove the rear shield. See **“Top cover assembly removal”** on page 4-13.
2. Disconnect all the cables from the controller board.
3. Remove the nine screws (A) that are securing the controller board.



4. If the unit has a wireless card, disconnect the card from the controller board.
5. Remove the board.

**Installation note:** Perform the Motor detect test after replacing the controller board. See **“Motor Detect”** on page 3-17.



**Warning:** When replacing the controller board, verify the cable from the high-voltage power supply is seated properly. The cable may have come loose from the HVPS.

Print a few pages to verify the installation. If the pages are blank, confirm that the high-voltage power supply cable is properly seated. The connector may have been loosened at the HVPS.

A blank page that should have toner on it could be an indication that toner is applied to the ITU belt but not transferred. Therefore the toner goes into the ITU cleaner which cannot process massive amounts of toner. It is important to prevent extensive blank pages from being processed if they should have toner on them.

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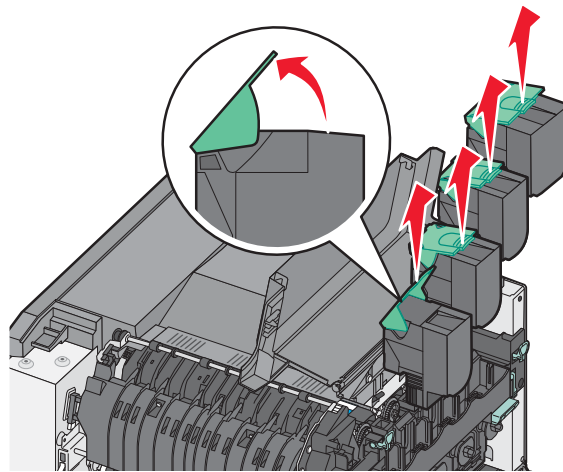


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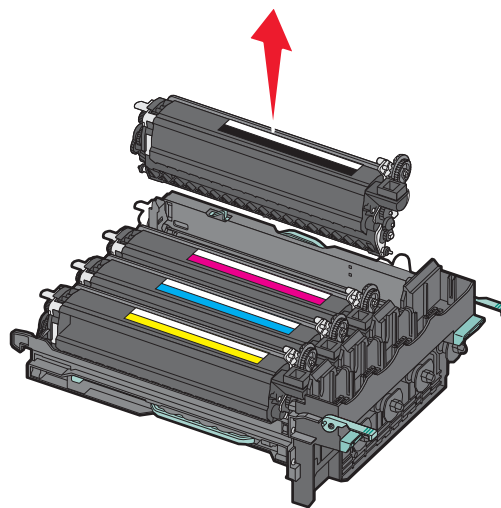
## Developer unit removal

The developer units are not FRUs.

1. Open the toner access door.
2. Remove the toner cartridges.



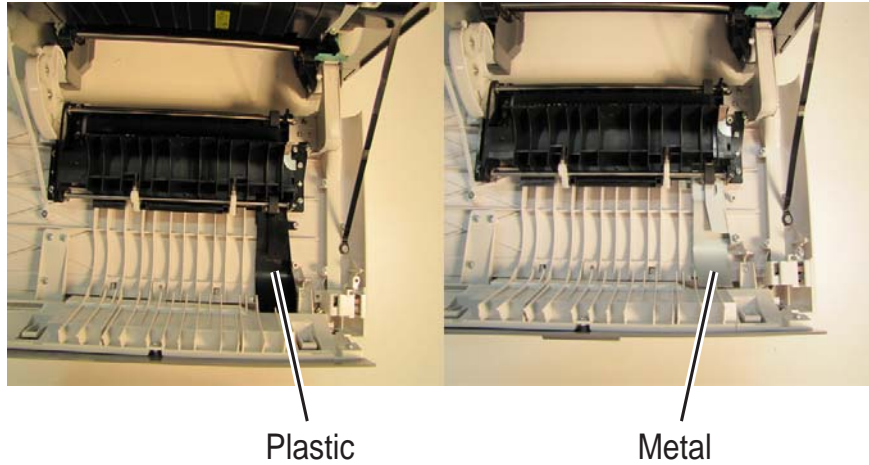
3. Remove the imaging unit. See **“Imaging unit (IU) removal”**.  
**Warning:** Do not touch the underside of the imaging unit. This could damage it.
4. Remove the developer unit(s).



## Duplex reference edge removal

See “Duplex reference edge” on page 7-5 for the part number.

**Note:** If the duplex reference edge is made out of plastic, then replace it.  
If the duplex reference edge is made out of metal, then do not replace it.



1. Open the front door.
2. Remove the four short screws (A) in front, and the four longer screws (B) in the back of the duplex aligner.



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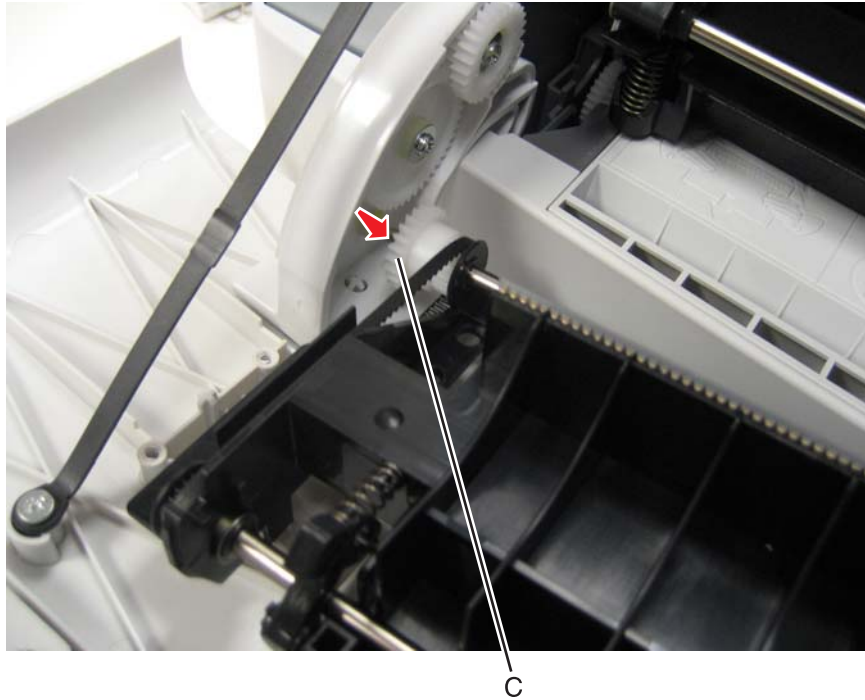


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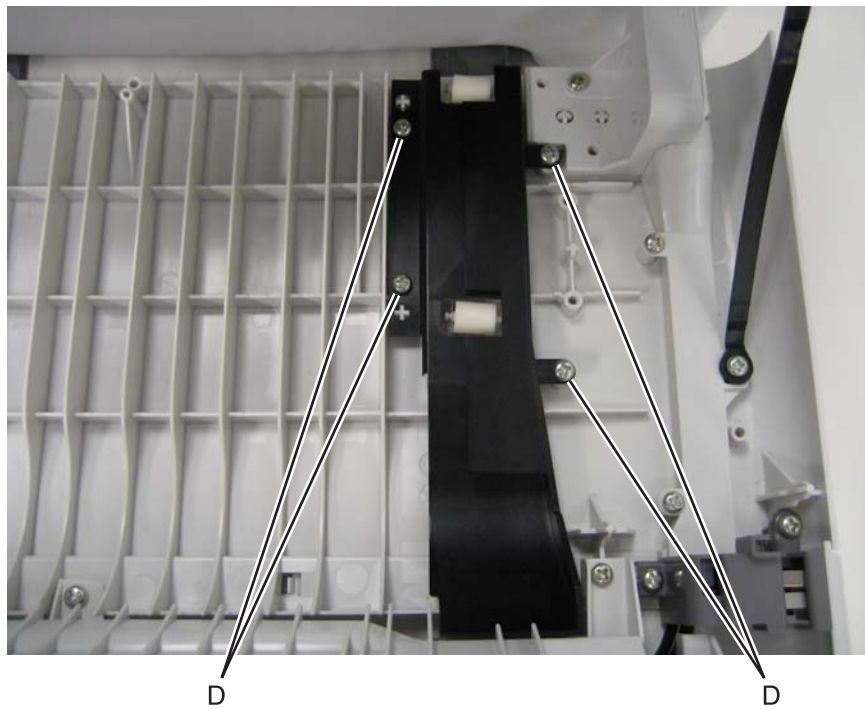


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3. Lift the duplex aligner on the right side, and disengage the gears (C) on the left.



4. Remove the four screws (D) from the duplex reference guide, and remove the guide.



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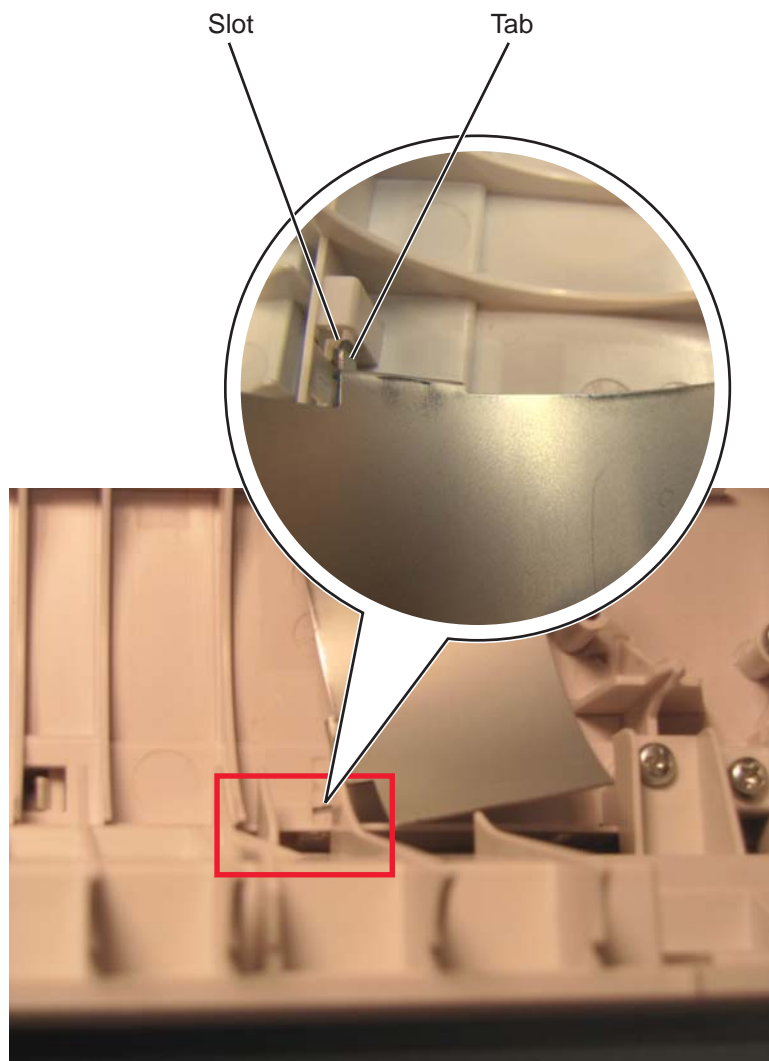
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**Installation notes:**

1. Depending on the kind of front cover, follow the procedure below that applies:
  - a. If the front cover has the slot below, then place the tab in the slot as shown.



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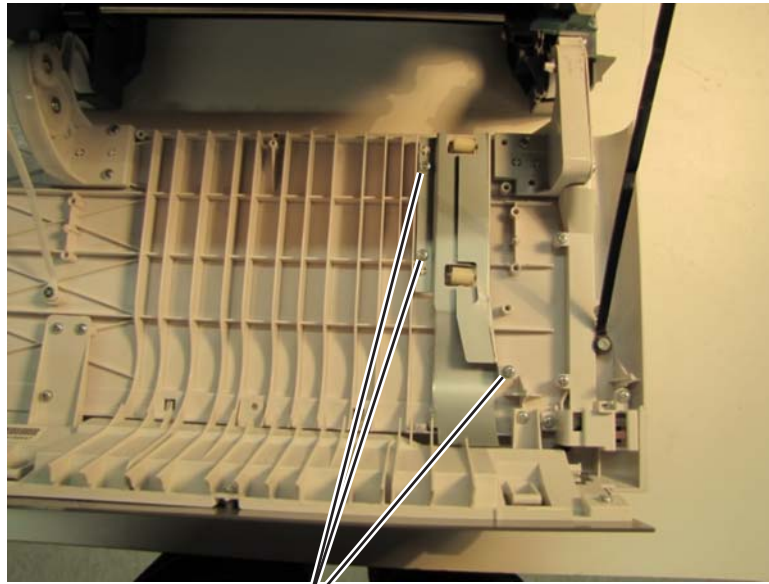


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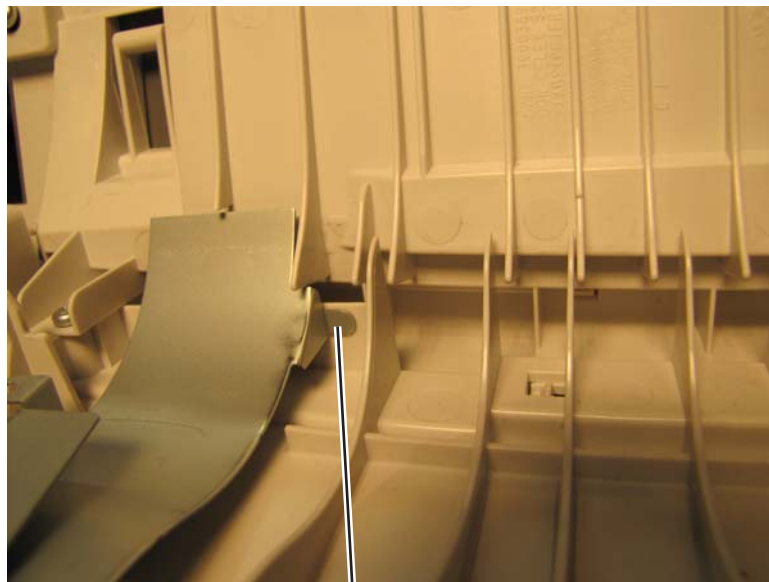
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Rotate the tab into position, and replace the three screws (A).



A

**b.** If the front cover has no slot, then place the tab against the cover as shown.



Tab

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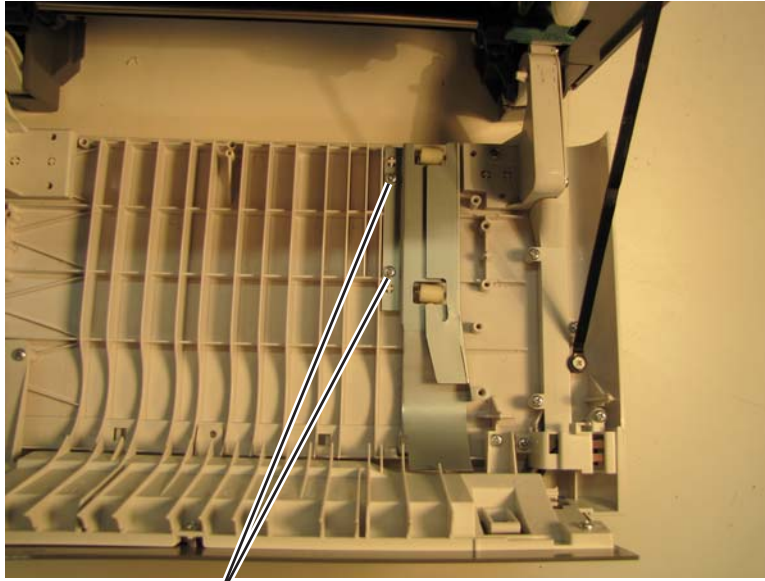


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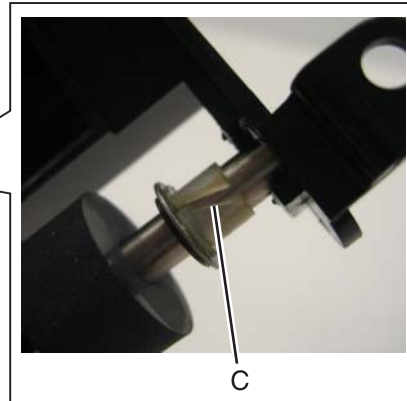
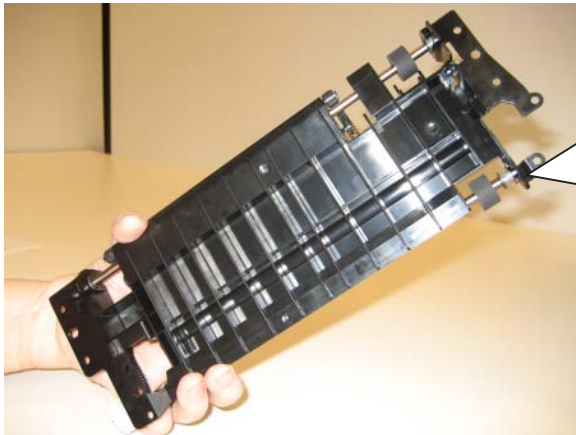
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Replace the two screws (B).



B

2. Be sure the shaft and bearing have not shifted out of the guide. If so, make sure that the bearing on the left is aligned with the slot (C) facing down (towards the front door).
  - c. Improperly aligned bearings or seated shafts may cause vibration and noise in the front door.



C

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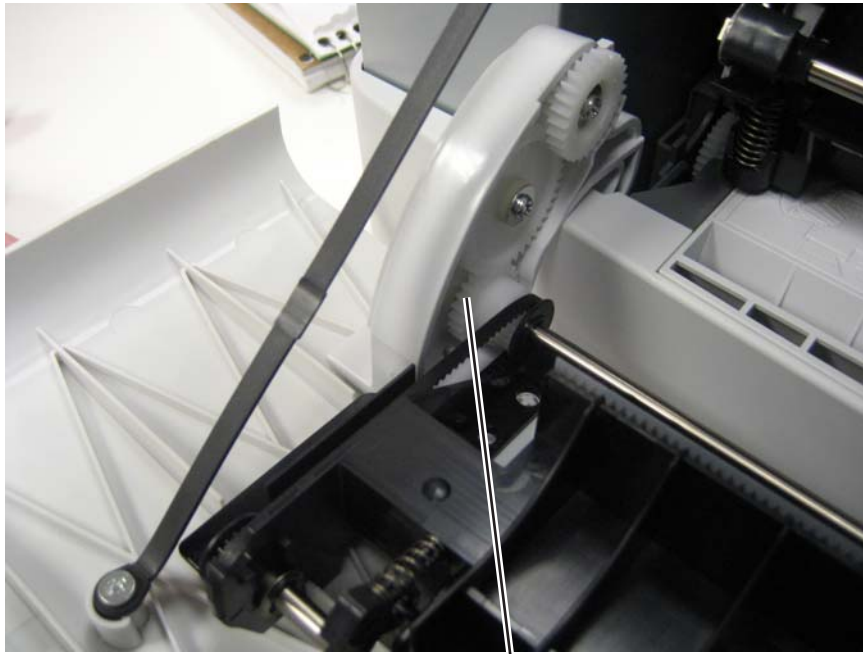


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3. Align the duplex aligner guide so the gears (D) mesh on the left.



4. Replace the eight screws in the duplex aligner.
5. Close the front door.

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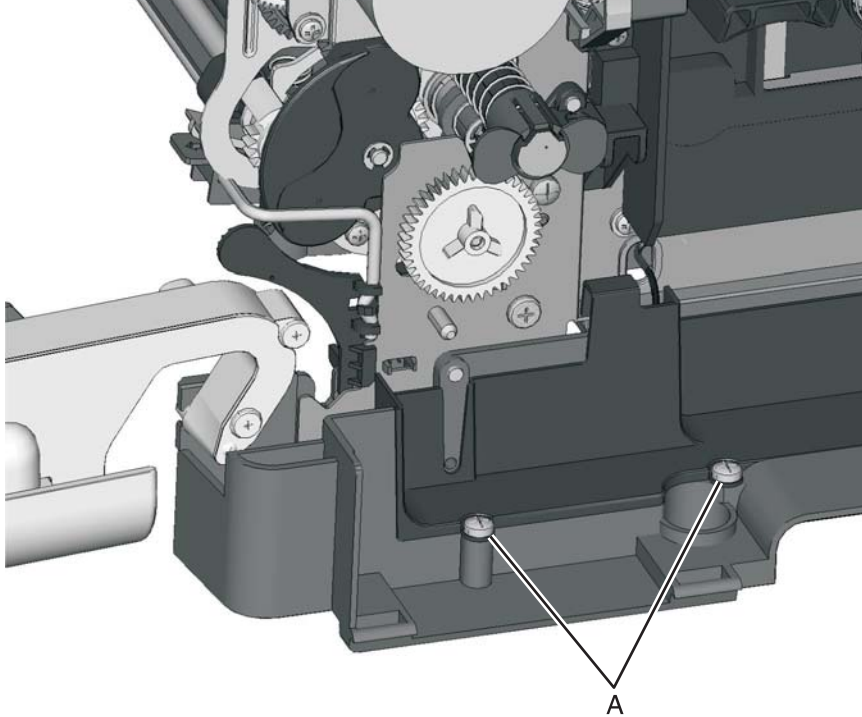


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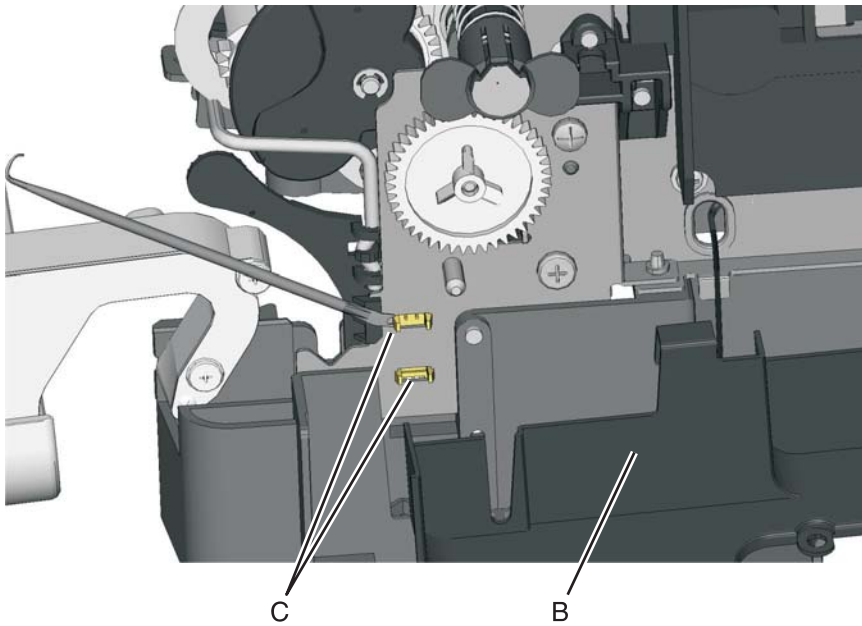
## Duplex sensor removal

See “photo sensors” on [page 7-7](#) for the part number.

1. Remove the waste toner bottle. See [“Waste toner bottle removal” on page 4-84](#).
2. Remove the two screws (A) from the cable cover.



3. Pull corner of cable cover (B) away from the right side to access the sensor posts (C).



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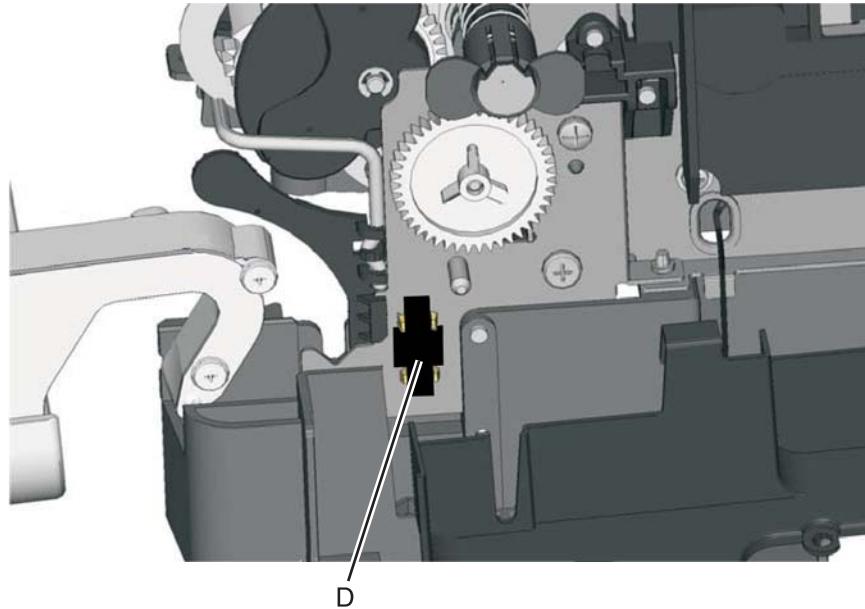
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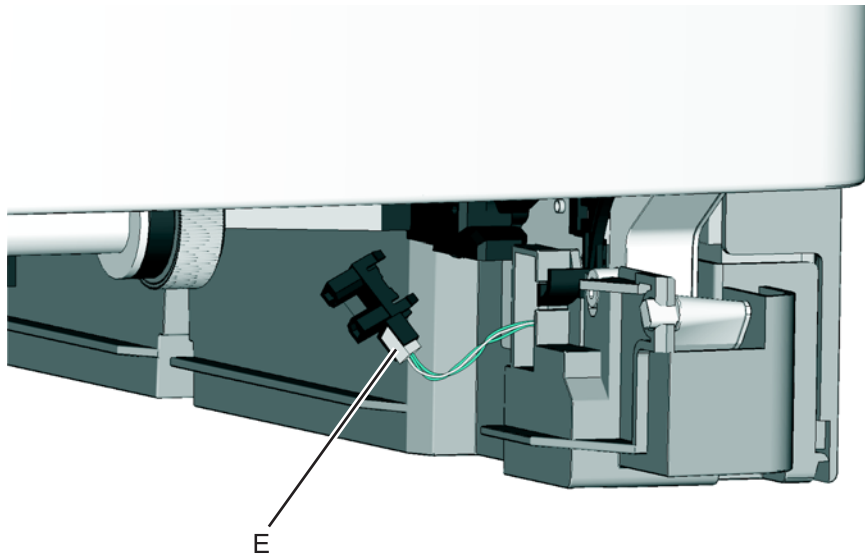
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4. If there is a plate on the side the latches of the sensor connected, remove the old adhesive plate (D).



5. Unlatch the sensor by pushing on the latches.  
 6. Remove the sensor, and disconnect the cable (E) from the duplex sensor.  
**Note:** Close the front cover, and slightly lift the front of the printer to get better access.



**Installation notes:**

1. Clean the contact surface where you removed the sensor retaining plate, or where you need to install the new one,
2. Install the new sensor.  
**Note:** Make sure the clamps on the legs latch to the metal frame.
3. Remove the backing from the new plate, and place the plate on the surface between the sensor mounting legs.

Previous



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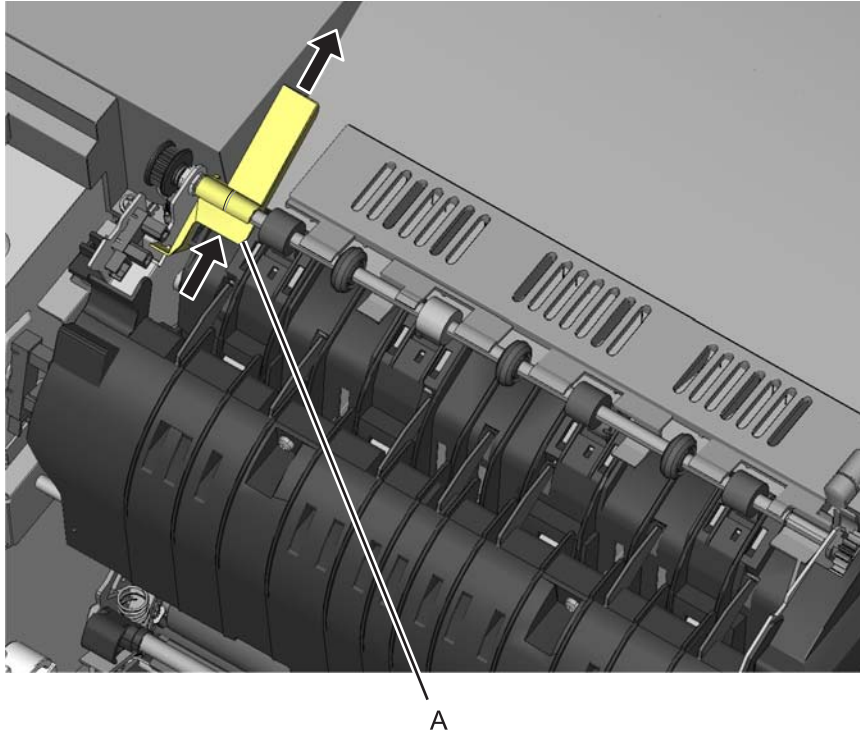
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## Exit deflector and bin-full/narrow media sensor flag removal

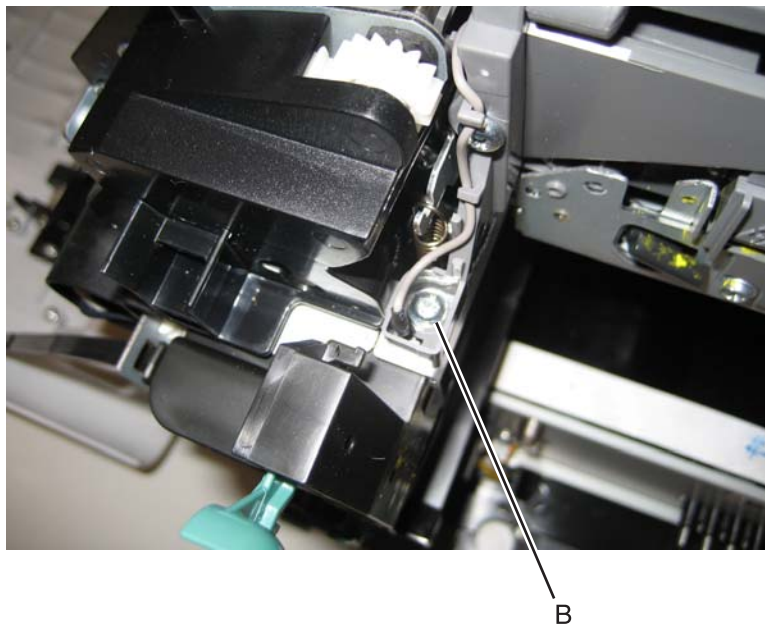
See “Exit deflector and bin-full/narrow media sensor flag” on page 7-5 for the part number.

The exit deflector and bin-full/narrow media sensor flag are in the same FRU and should be replaced together.

1. Open the front cover.
2. Press upward on the tab (A) to un*snap* the bin-full/narrow media sensor flag, and remove the flag.  
**Note:** Be careful not to dislodge the sensor.



3. Remove the exit deflector ground screw (B), and remove the cable from the retainers.  
**Note:** Note the routing of the cable through the retainers for reinstallation.



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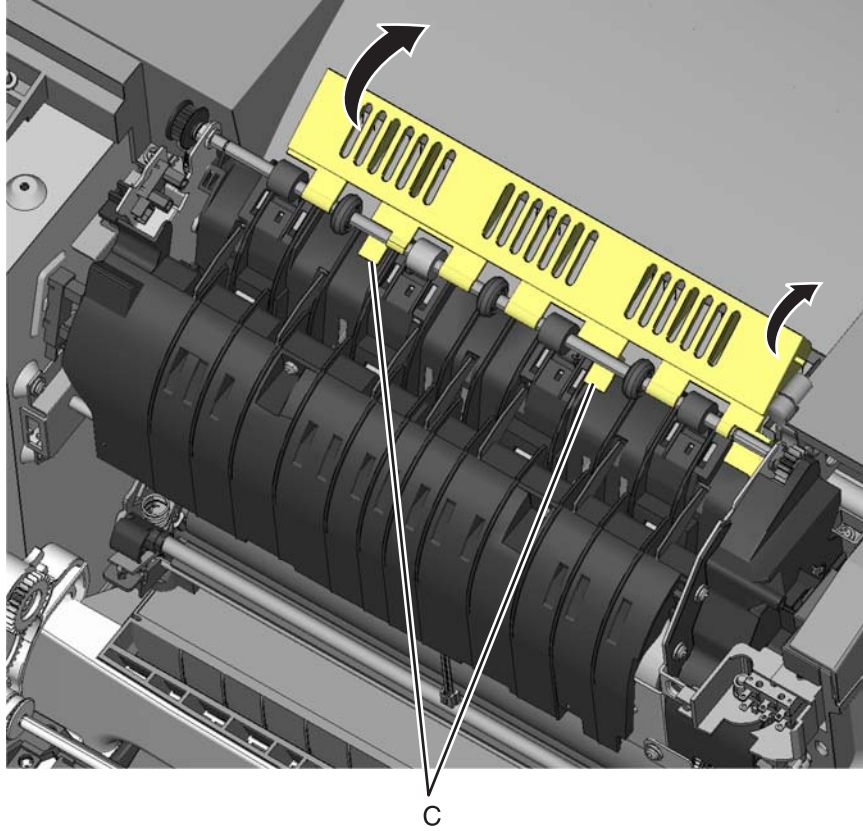


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4. With one hand, gently pull the exit deflector towards the rear, and with the other hand, press to *unsnap* the tabs (C).



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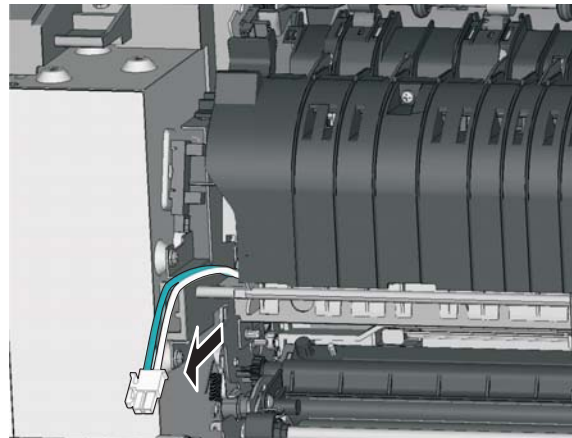
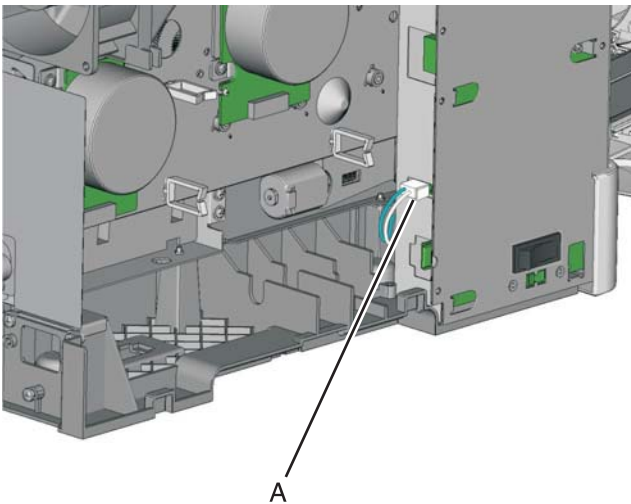
## Fuser assembly removal



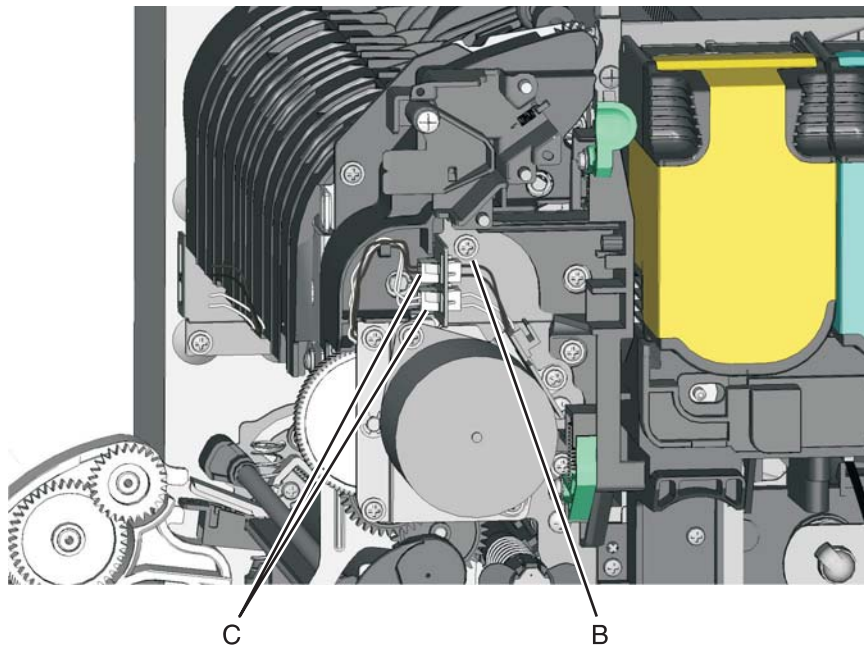
See “Fuser assembly” on [page 7-5](#) for the part number.

1. Remove the right cover assembly. See [“Right cover assembly removal” on page 4-12](#).
2. Remove the left cover. See [“Left cover assembly removal” on page 4-6](#).
3. Disconnect the two-wire fuser cable (A) from the LVPS.
4. Position the fuser cable so that it can be pulled through from the front of the printer, and guide the cable through to the front.

**Warning:** Be careful not to damage the cable by pulling too hard or cutting the cable insulation.

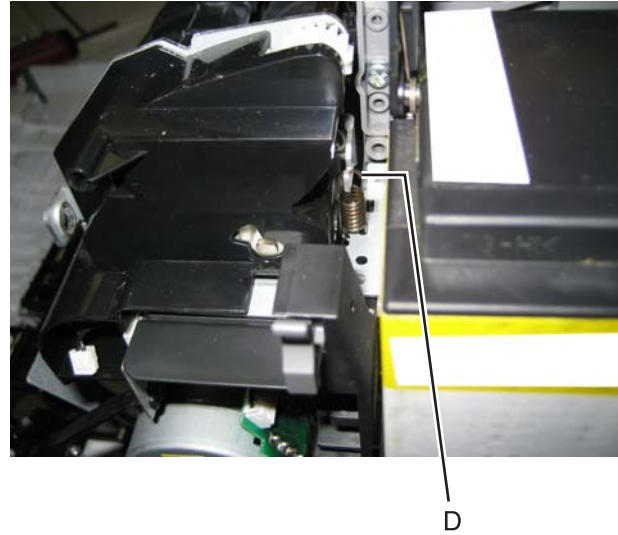
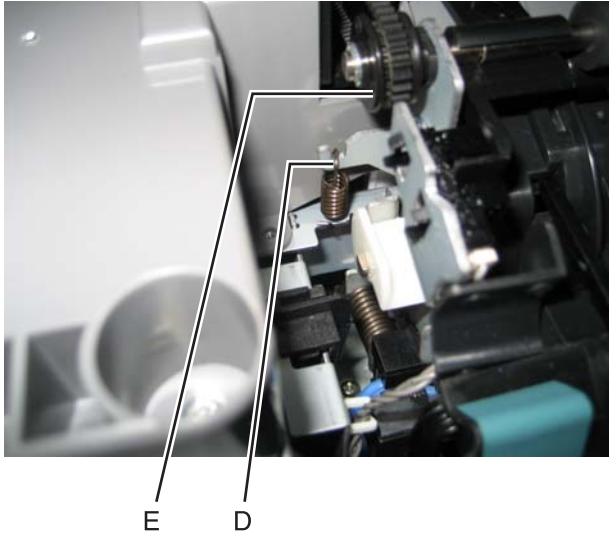


5. Remove the screw and grounding washer (B) on the right side of the frame.
- Note:** Be careful not to lose the grounding washer.
6. Disconnect the thermistor cables (C).



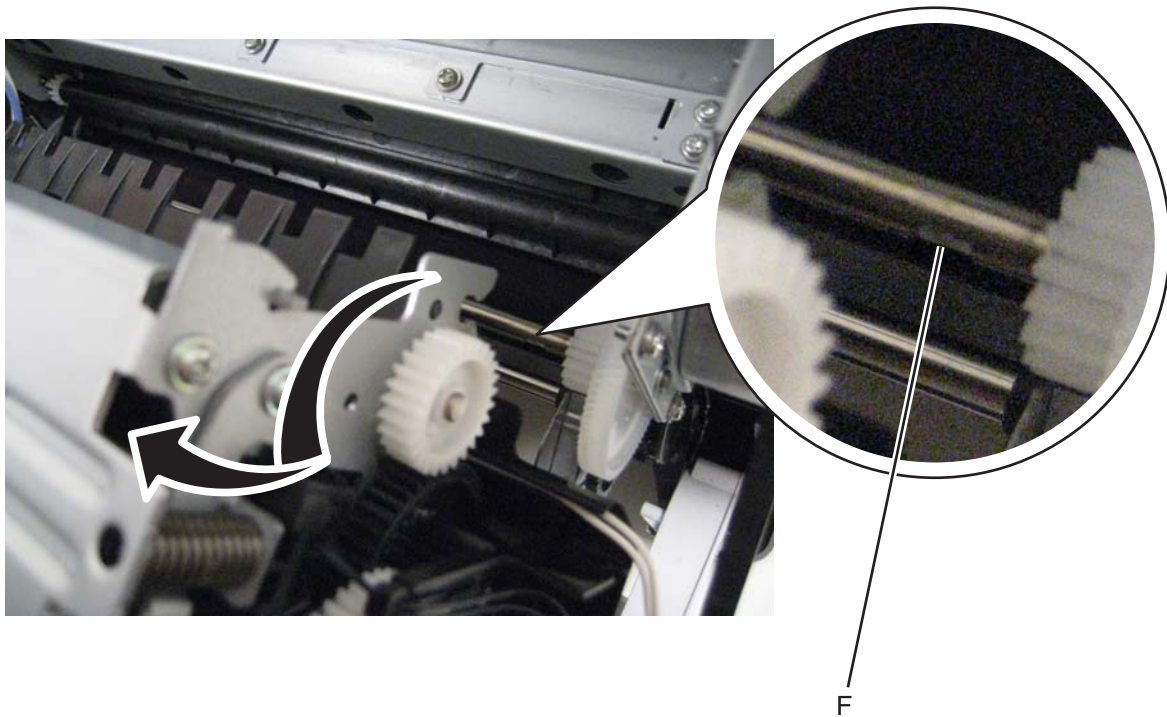
7. Remove the exit deflector and bin-full/narrow media sensor flag. See **“Exit deflector and bin-full/narrow media sensor flag removal” on page 4-30.**
8. Remove the bin-full/narrow media sensor. See **“Bin-full/narrow media sensor removal” on page 4-18.**
9. Unhook the springs (D) from both sides of the fuser.
 

**Note:** This pulley (E) is not used and may not be present on the failed fuser. It does not need to be removed in Lexmark C54x printers.



10. Rotate the top of the fuser toward the front, then slide it to the left to align the fuser side frames with the flat areas of the shaft (F), and lift to remove the fuser.

**Warning:** Be careful to not interfere with or damage the fuser exit sensor to the left of the fuser when rotating the fuser.



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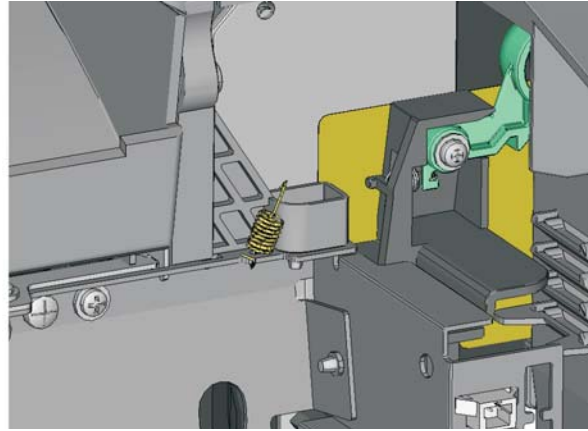
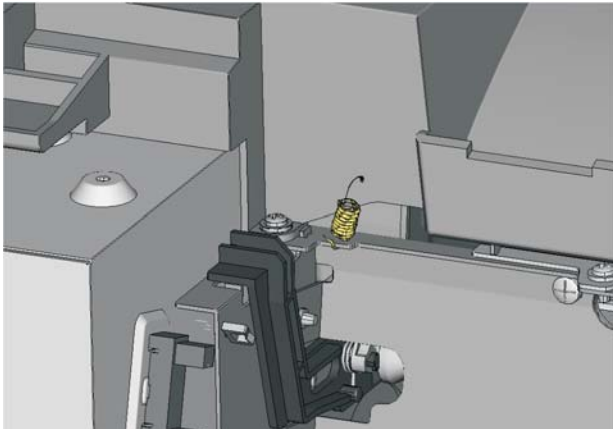
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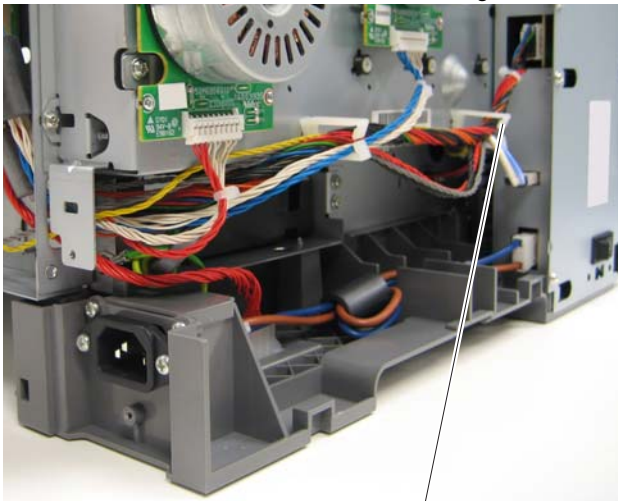
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**Installation notes:**

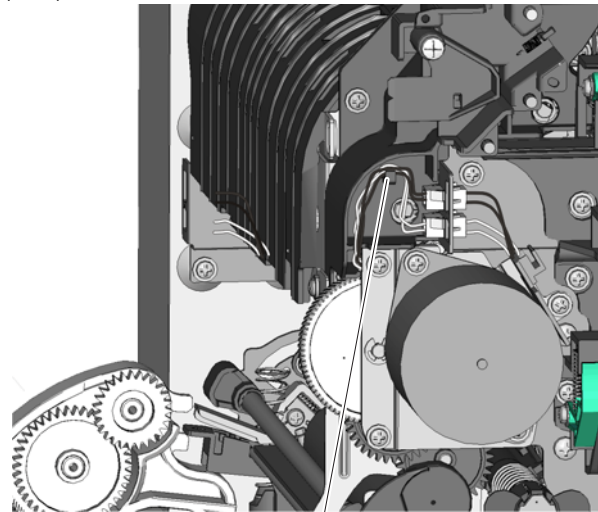
- Make sure the springs are resting on the frame so they can be positioned once the new fuser is in place. They can be difficult to reach if they hang down.



- Be careful not to bump into the fuser exit sensor on the left side.
- When reinstalling on the right side, make sure the gears mesh.
- Reroute the cables back through their retainers (A, B).



A



B

- When you replace a new fuser, be sure to reset the Fuser Page Count.
  1. Enter Diagnostics Menu (turn the printer off., press and hold **Left** (◀) and **Select** (✓)), turn the printer on, and release the buttons when the installed memory and processor speed displays.
  2. Select **Printer Setup**, and press **Select** (✓).
  3. Select **Reset Fuser Cnt**, and press **Select** (✓).  
Reset Fuser Cnt Reset appears on the display.
  4. Select **Back** (↵) twice, and select **Exit Diags**, and press **Select** (✓).

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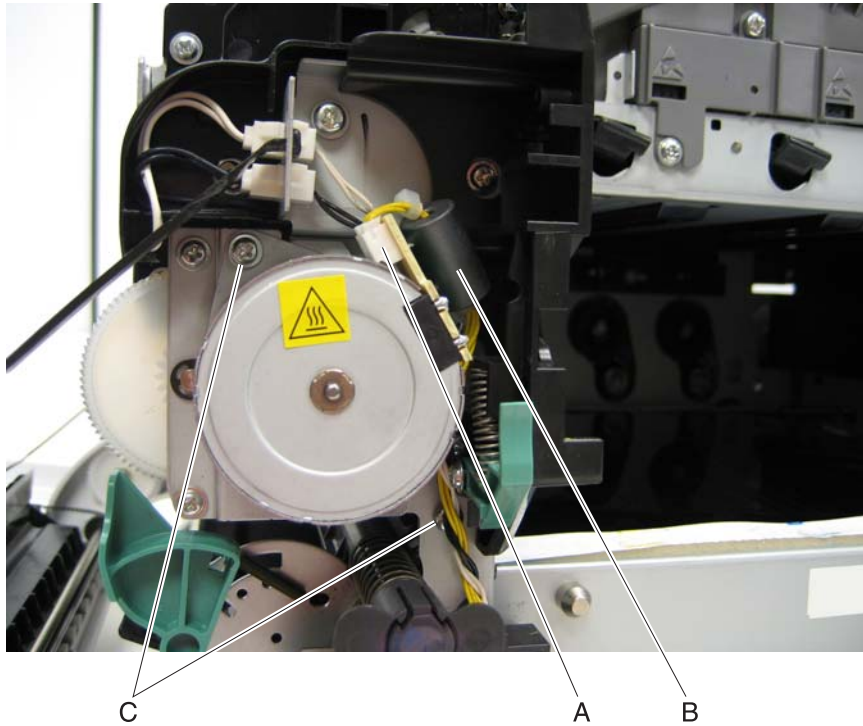


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## Fuser drive motor assembly removal

See **“Fuser drive motor assembly”** on page 7-5 for the part number.

1. Open the front cover.
2. Remove the right cover assembly. See **“Right cover assembly removal”** on page 4-12.
3. Disconnect the cable (A) from the fuser drive motor assembly.  
**Note:** If you remove the toroid (B) from the cable, be sure to return the toroid to the cable when you re-install.
4. Remove the two screws (C).



5. Remove the fuser drive motor assembly.

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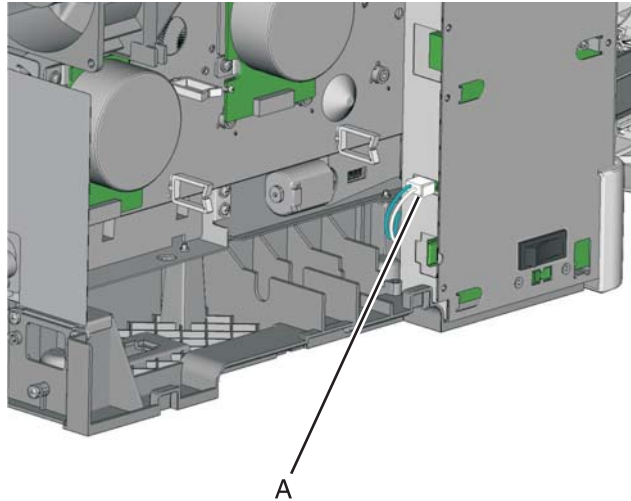
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## Fuser exit sensor removal

See **“Fuser exit sensor” on page 7-7** for the part number.

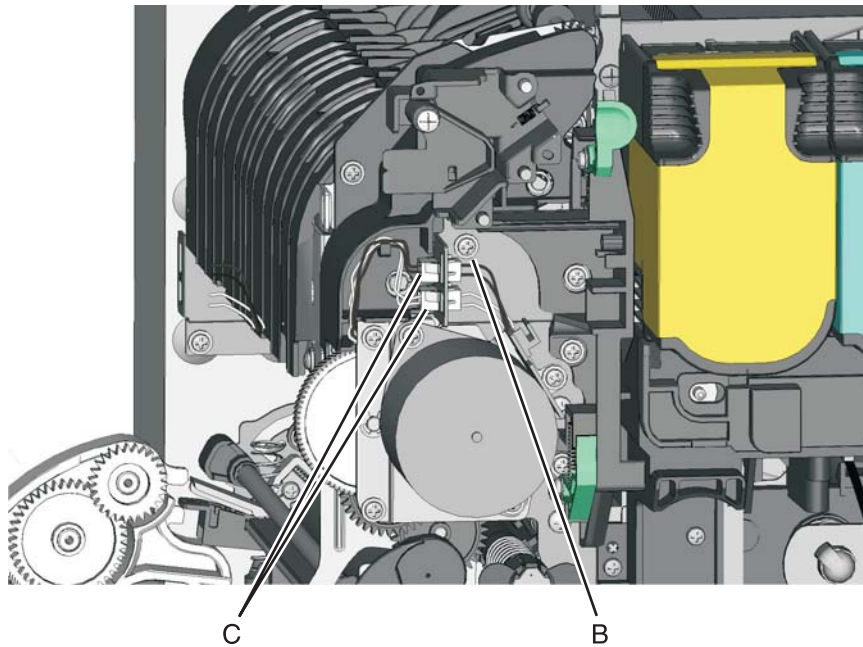
1. Open the front cover.
2. Remove the right cover assembly. See **“Right cover assembly removal” on page 4-12**.
3. Remove the left cover. See **“Left cover assembly removal” on page 4-6**.
4. Disconnect the two-wire fuser cable (A) from the LVPS.
 

**Note:** You do not have to extract the cable.



5. Remove the screw and grounding washer (B) on the right side of the frame.
 

**Note:** Be careful not to lose the grounding washer.
6. Disconnect the thermistor cables (C).



7. Disconnect the exit deflector from the fuser shaft. See **“Exit deflector and bin-full/narrow media sensor flag removal” on page 4-30**.
 

**Note:** You do not have to remove grounding screw or the bin-full/narrow media sensor flag.

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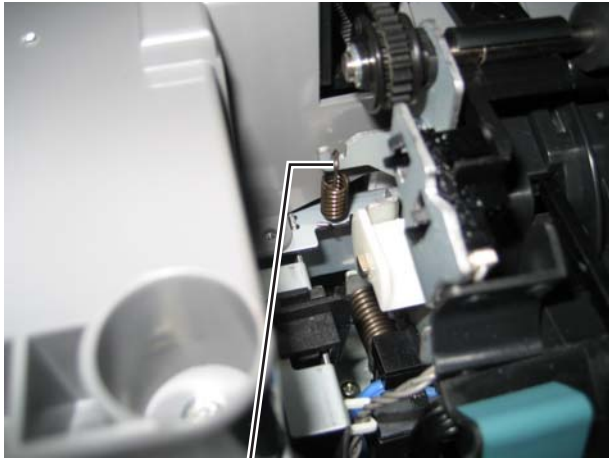
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8. Disconnect the bin full/narrow medial sensor cable, and remove the cable from the fuser frame. See **“Bin-full/narrow media sensor removal”** on page 4-18.  
**Note:** Observe the cable routing.
9. Unhook the springs (D) from both sides of the fuser.

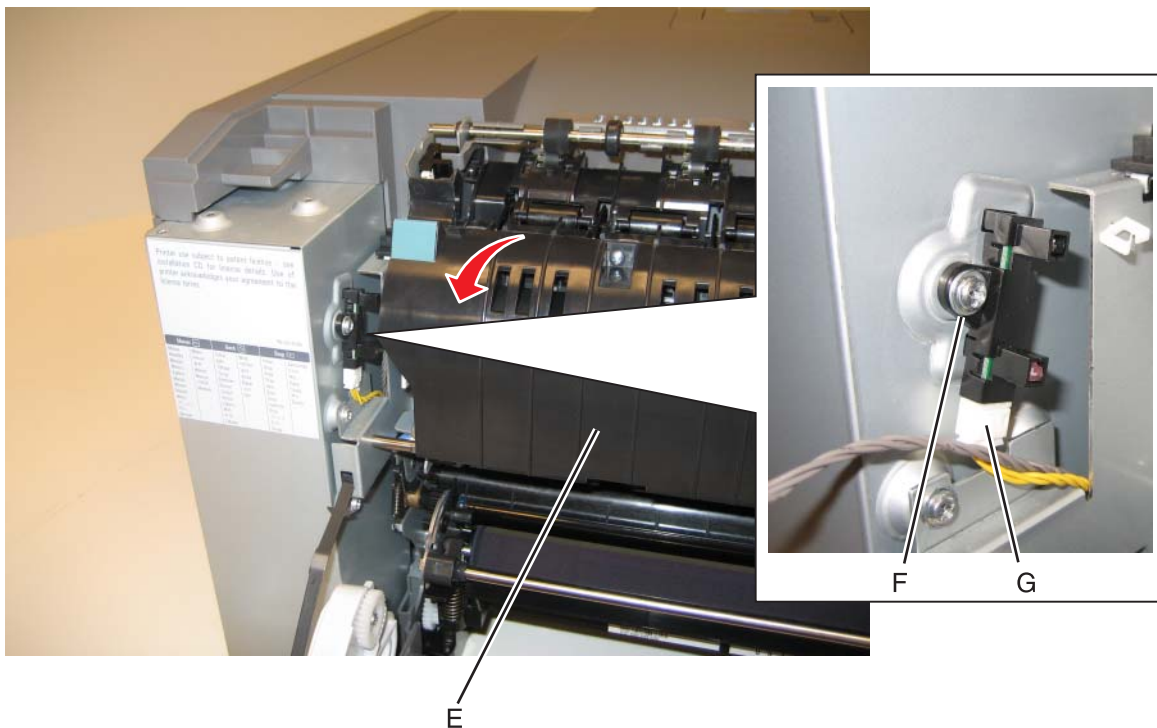


D



D

10. Rotate the fuser toward the front of the printer until the screw (E) can be accessed, and removed.
11. Disconnect the cable (G) from the fuser exit sensor.
12. Remove the screw (F) securing the fuser exit sensor.
13. Remove the lower end of the sensor with a flat blade screwdriver, and gently pull the sensor from the frame.



E

F

G

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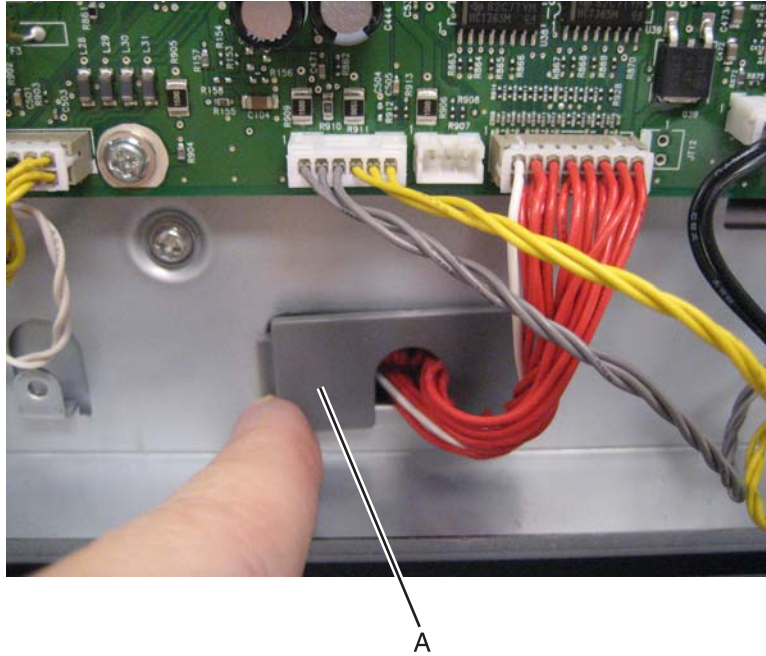
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## High-voltage power supply (HVPS) assembly removal

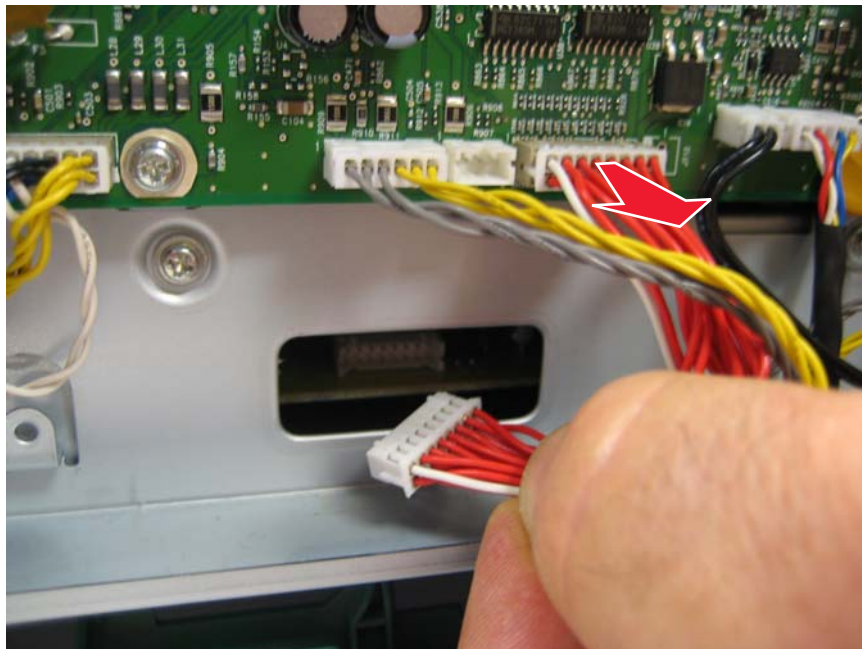
See **“High-voltage power supply” on page 7-7** for the part number.

Before you begin, unplug the printer and remove the imaging unit. See **“Imaging unit (IU) removal” on page 4-49**.

1. Remove the rear shield. See **“Rear shield removal” on page 4-11**.
2. Remove the cable cover (A).

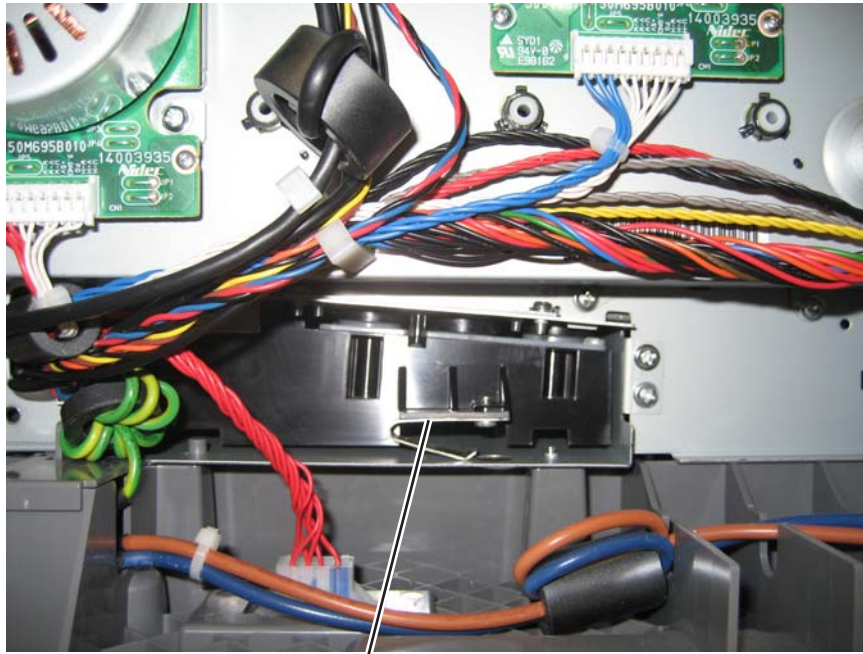


3. Disconnect the high-voltage power supply (HVPS) cable at the HVPS and at the controller board.  
**Note:** Some HVPS cards use a connector to which the cable latches. Using a tool, press down at the top of the connection while gently pulling the cable free.



## High-voltage power supply (HVPS) with or without spring

1. Remove the left cover. See **“Left cover assembly removal”** on page 4-6.
2. Is there a leaf spring (A) biasing the HVPS upward?
  - If yes, then go to **“High-voltage power supply (HVPS) with spring”** on page 4-41.



A

- If no (as shown below), then go to **“High-voltage power supply (HVPS) without spring”** on page 4-40.



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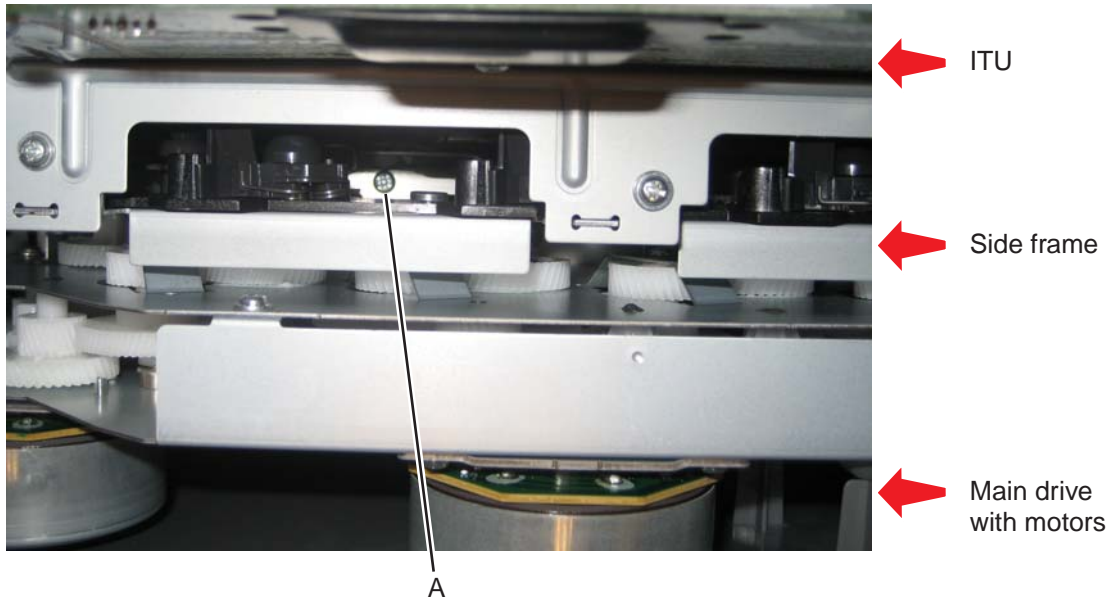


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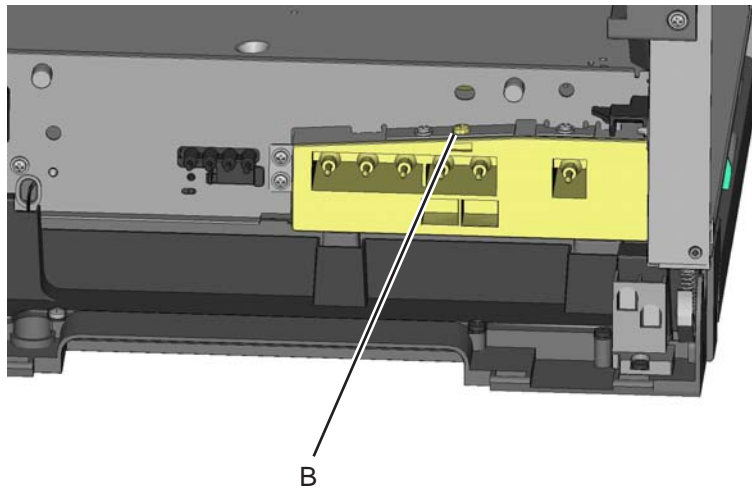
## High-voltage power supply (HVPS) without spring

**Note:** This removal requires a magnetized, long-shank Phillips screwdriver at least 8 in. or 200 mm long.

1. Remove the top cover assembly. See **“Top cover assembly removal”** on page 4-13.
2. Remove the screw (A). The screw is accessible from the top of the printer, and requires a long-shank, magnetized Phillips screwdriver. It is the only screw without a flanged head, and is about 8 inches below the top of the printer.



3. On the right side, remove the screw (B) securing the HVPS.
4. Carefully slide the HVPS out.



To install the new HVPS, go to **“Installation notes”** on page 4-42.

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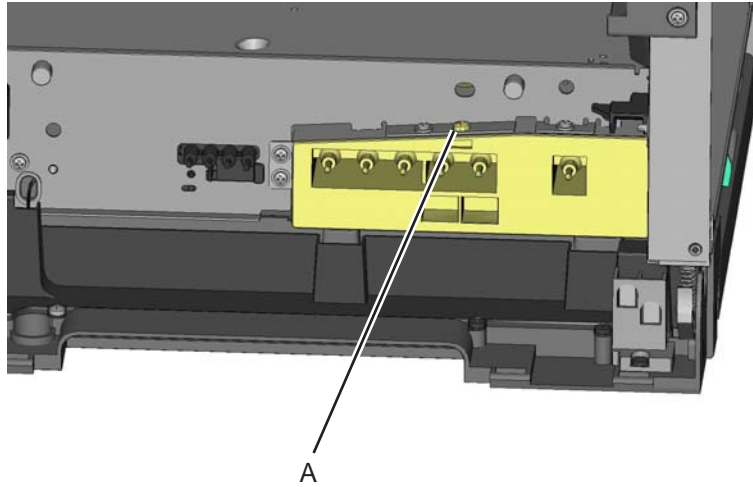
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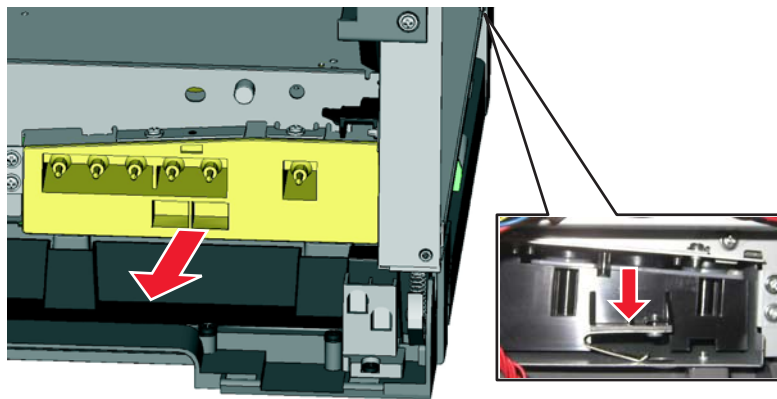
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## High-voltage power supply (HVPS) with spring

1. Remove the screw (A) securing the HVPS.



2. Press down on the spring as shown on the right below while pushing the HVPS toward the right or opposite side of the printer. After about 25mm, pull the HVPS out from the right side.



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**Installation notes:**

	<b>CAUTION</b>
After disconnecting the high-voltage power cable from the controller board, always check that the HVPS connection was not loosened. Make this check anytime you are working near the HVPS cable.	

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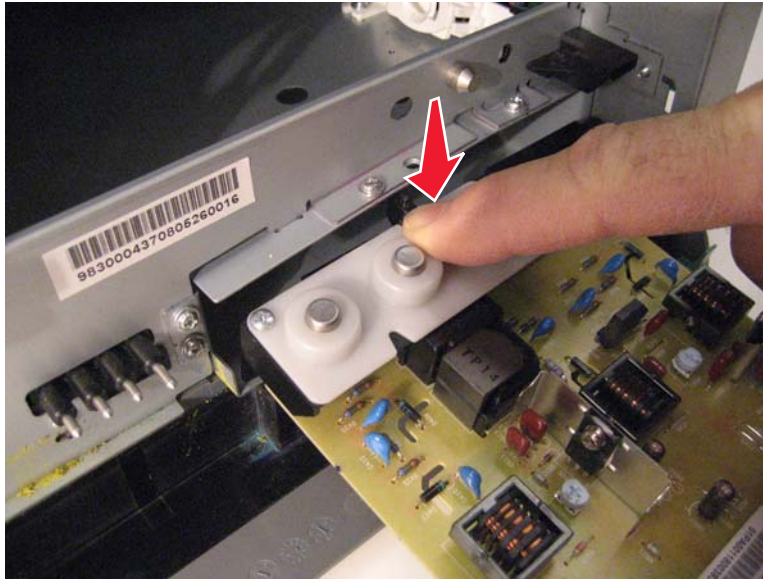


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The following procedures apply to installing the new HVPS board.

**Note:** It is recommended that the cable be attached to the HVPS before inserting the HVPS. Use a spring hook to pull the cable through the opening at the back as the HVPS is carefully slid into position.

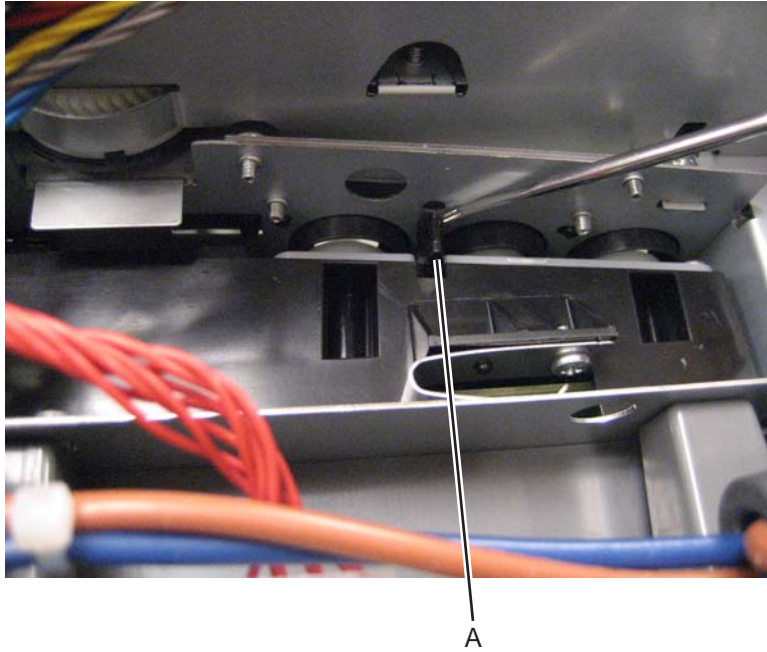
- a. Insert the spring end of the new HVPS board while compressing the spring as shown.



- b. Slide the HVPS into position while holding its sides as shown. Do not let the card flex and touch the cage.



- c.** Check the position of the card at the left side of the printer. The small vertical post (A) in the endcap has to be positioned in the hole above it as shown.



- d.** Install the new cable making sure the connector to the board is locked into position.  
**e.** Reinstall the screw to hold the HVPS on the right side of the printer.

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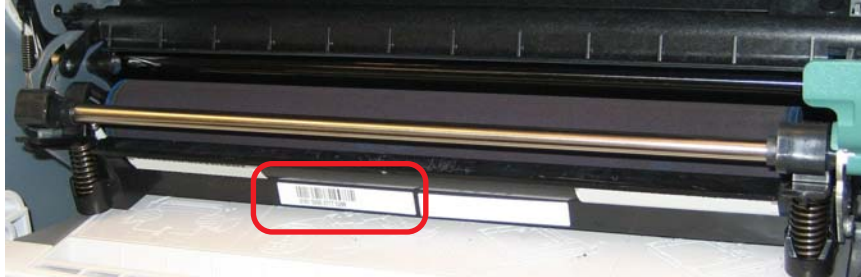


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## Image transfer unit (ITU) removal

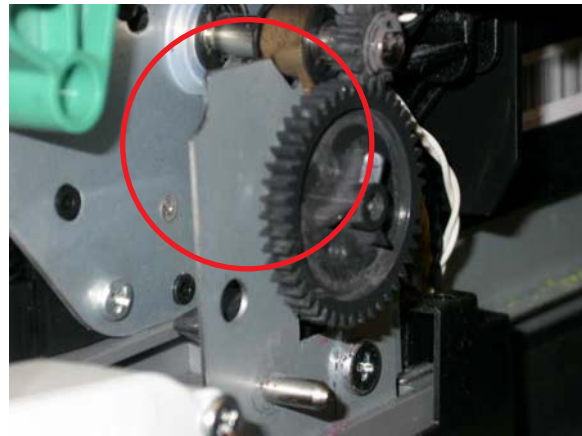
See **“Image transfer unit (ITU) assembly”** on page 7-5 for the part number.

1. Write down the number of the new ITU before installing it. You will need the 16-digit numeric value from the barcode after the installation, and it is easier to see at this point.



2. Remove the right cover assembly. See **“Right cover assembly removal”** on page 4-12.
3. Remove the waste toner bottle. See **“Waste toner bottle removal”** on page 4-84.
4. Remove the imaging unit (IU). See **“Imaging unit (IU) removal”** on page 4-49.

**Note:** The ITU FRU includes a spring clamp kit. If the printer does not have this kit installed, perform the following steps to prepare for the later installation. Continue below with **“Removal of ITU without the spring clamp kit”** on page 4-45. If the spring clamp kit is not installed, skip to **“Continuing the removal (with or without the spring clamp kit)”** on page 4-46.



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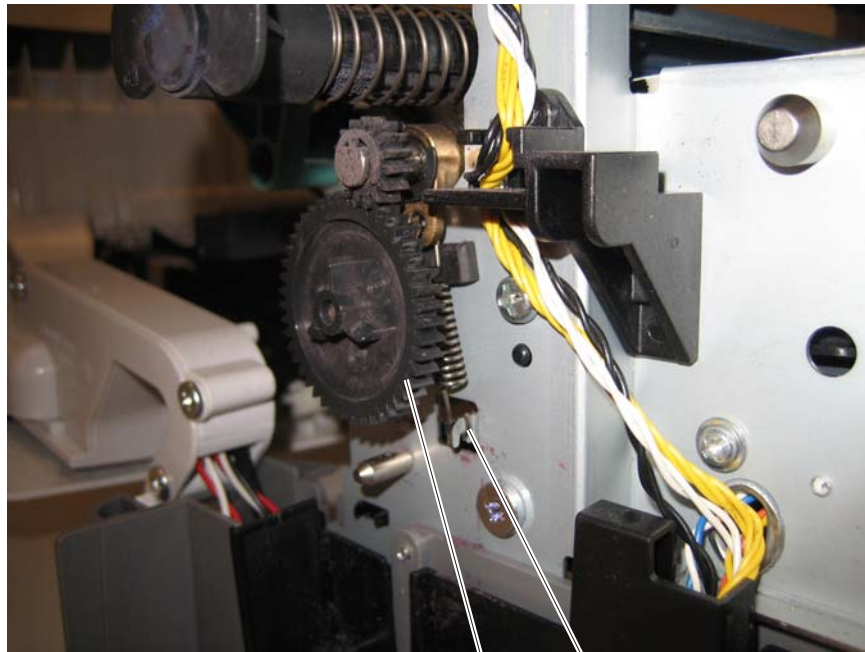


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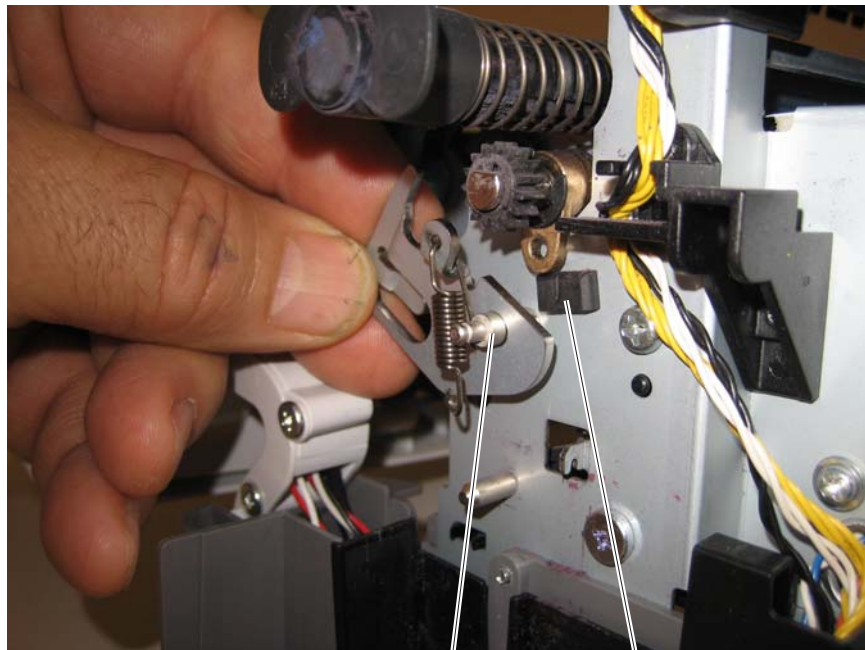
## Removal of ITU without the spring clamp kit

1. Pull the gear (A) straight out to *unsnap* it, and then discard it. A new gear is included in the spring clamp kit and must be used with the new spring clamp.



A B

2. Remove the rubber pad (C).
3. Place the spring clamp onto the shaft (D).
4. Snap the new gear onto the shaft (D). The installation is the same as the old gear.



D C

Previous



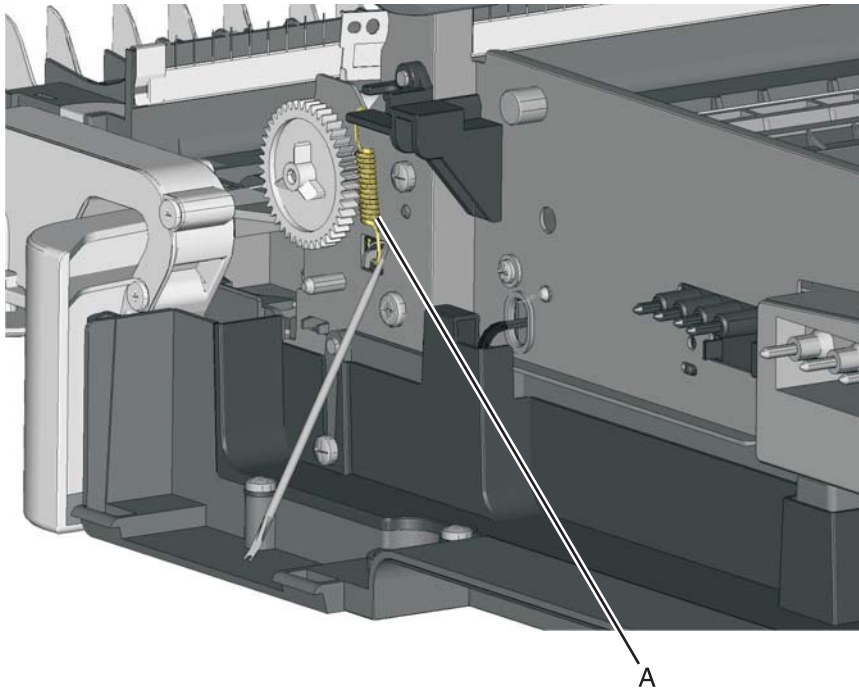
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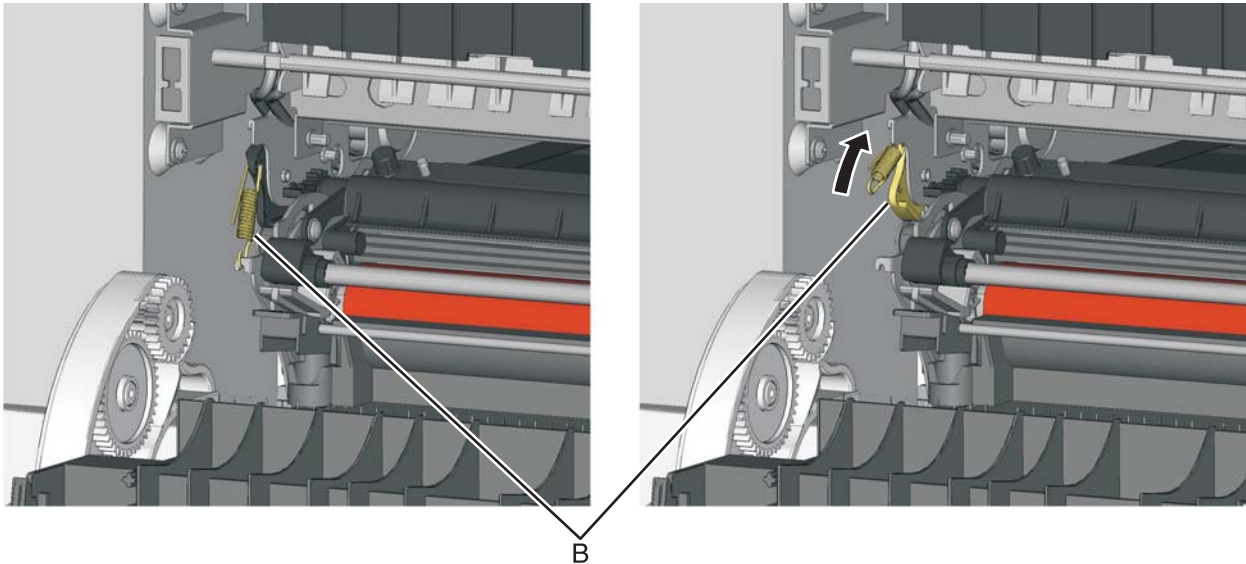
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### Continuing the removal (with or without the spring clamp kit)

1. Disconnect the two springs (A, B) from the side frames, leaving the right one (A) attached to the ITU or ITU spring clamp.



2. Rotate the left spring (B), and the cam away from the ITU so the spring is held out of the ITU path.



3. Place the tip of a flat-head screwdriver in between the release lever (C) and the frame.

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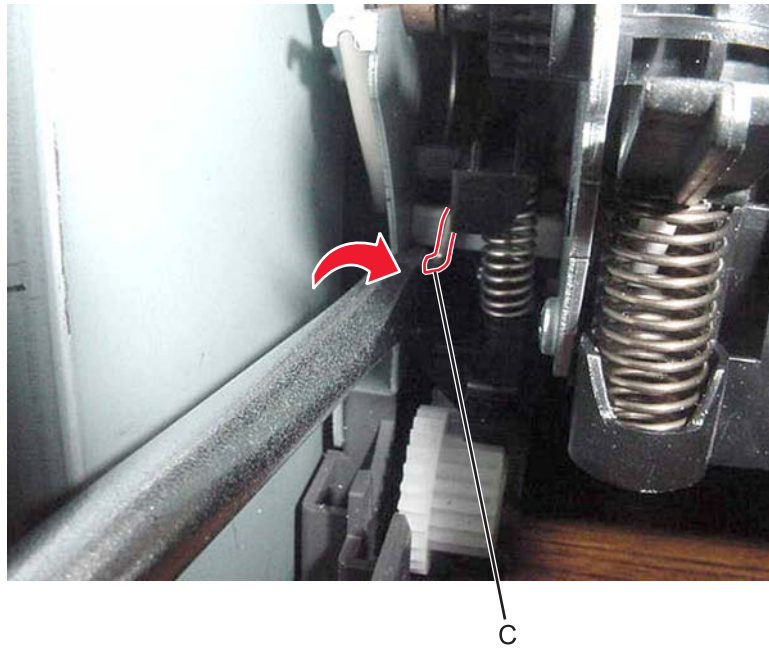


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4. Rotate the screwdriver to rotate the release lever and decouple the ITU while pulling the ITU toward the front.



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**Warning:** Make sure the lever is in the fully released position before removing the ITU drive to avoid damage.

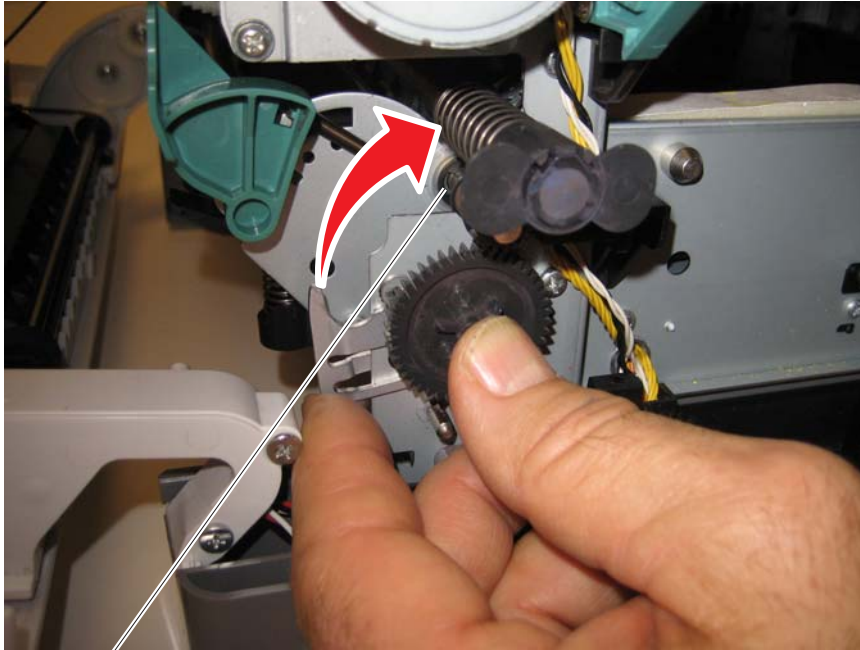


5. Hold the release lever as you pull out the ITU for the first four inches (100 mm), but a quick, firm pull should overcome the latch at this point.

**Installation notes:**

- Write down the 16-digit numeric value of the new FRU before you begin to install it.
- You may have to rotate the release lever again to install the new ITU, but a quick firm push should overcome the latch.

- Rotate the spring clamp so it hooks over the new ITU (E).  
**Note:** Position the spring on the right side of the gear shaft.



D

- When you have replaced the ITU, be sure to enter the 16-digit numeric value from the barcode on the new ITU into the printer.
  1. Enter the Diagnostics Menu:
    - a. Turn the printer off.
    - b. Press and hold ◀ and [✓].
    - c. Turn the printer on.
    - d. Release the buttons when the installed memory and processor speed displays.
  2. Select **PRINTER SETUP** from Diag Menu, and press **Select** ([✓]).
  3. Select **ITU Barcode**, and press **Select** ([✓]).
  4. To enter the 16-digit numeric value:
 

Use ◀ to decrease the leftmost digit value or ▶ to increase the value. Press **Select** ([✓]) to advance to the next digit. If a digit is already correct, press **Select** ([✓]) to accept the number and to continue. When the last number is entered, press **Select** ([✓]), and *Submitting changes...* should appear. If the entered number is incorrect, *Check Sum Does Not Match* displays. Check and reenter the number.

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## Imaging unit (IU) removal

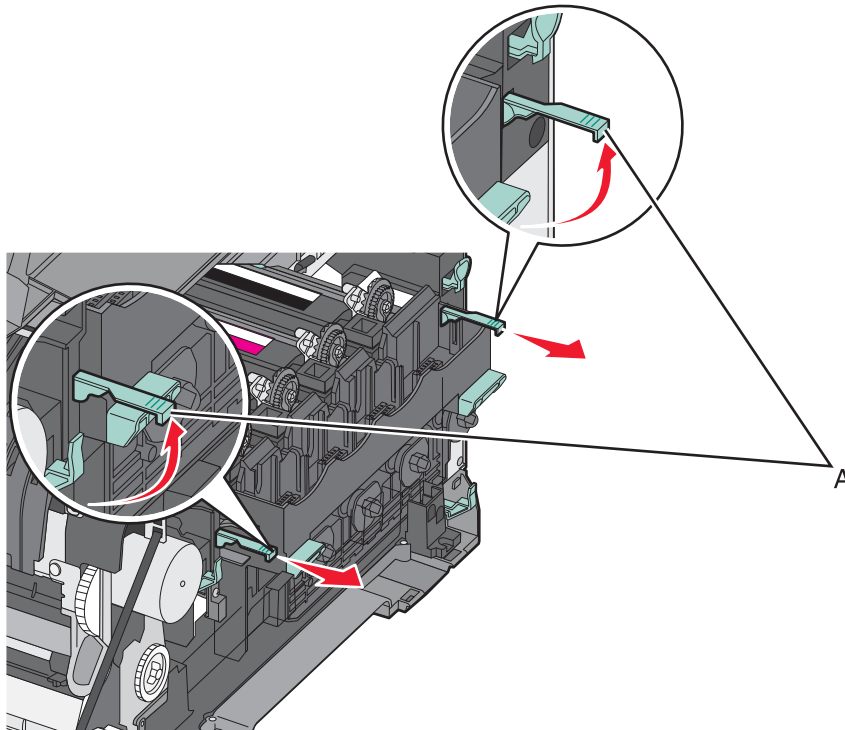
The imaging unit is customer replaceable unit and is not a FRU.

**Note:** The imaging unit contains:

- Photoconductor unit
- Developer units

To remove only the photoconductor, remove the entire imaging unit, remove the developer units, place the original developer units in the new photoconductor, and re-install the imaging unit. When you replace the imaging kit, you are replacing *both* the photoconductor and the developer units.

1. Open the front cover.
2. Lift the toner cover by sliding the latch to the left.
3. Remove the right cover assembly. See **“Right cover assembly removal” on page 4-12.**
4. Remove the waste toner bottle. See **“Waste toner bottle removal” on page 4-84.**
5. Remove the toner cartridges.
6. Lift the two latches (A) to unlock the imaging unit.



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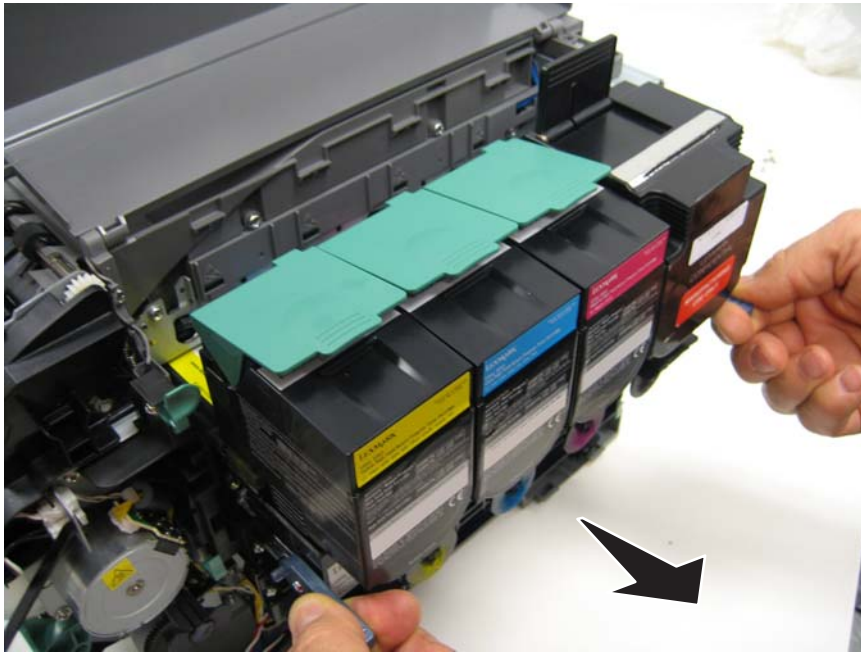


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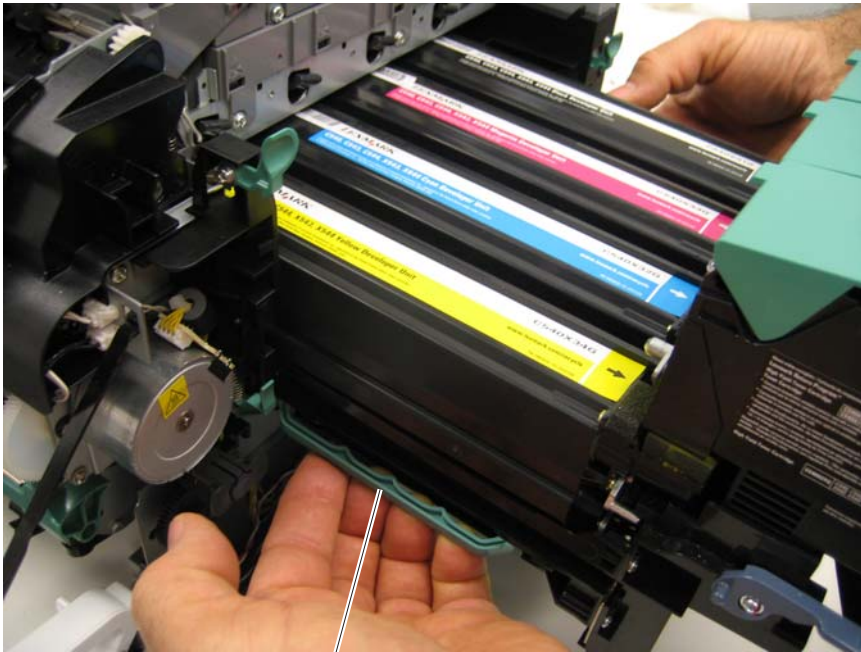


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7. Pull the two latches until the imaging unit meets resistance.



8. Press and hold the handles (B) on the right and left sides, and pull the imaging unit straight out.  
**Note:** Do not wrap your fingers around the imaging unit. Avoid touching the bottom.



B

Previous



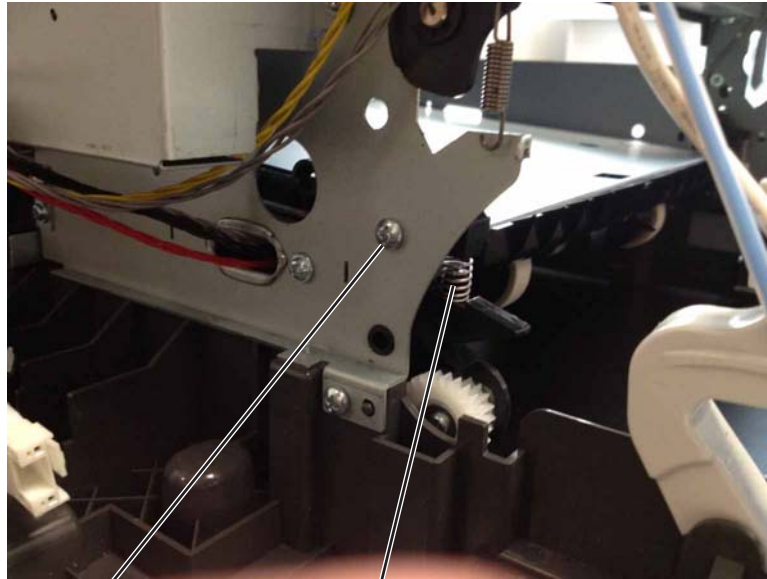
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## ITU guide removal

1. Remove the paper tray.
2. Remove the right cover. See **“Right cover assembly removal” on page 4-12.**
3. Remove the waste toner bottle. See **“Waste toner bottle removal” on page 4-84.**
4. Remove the imaging unit. See **“Imaging unit (IU) removal” on page 4-49.**
5. Remove the image transfer unit. See **“Image transfer unit (ITU) removal” on page 4-44.**
6. Remove the fuser. See **“Fuser assembly removal” on page 4-32.**
7. Remove the left cover. See **“Left cover assembly removal” on page 4-6.**
8. Remove the LVPS. See **“Low-voltage power supply (LVPS) assembly removal” on page 4-53.**
9. Remove the LVPS cage.
10. Remove the screw (A) and spring (B).

**A****B**

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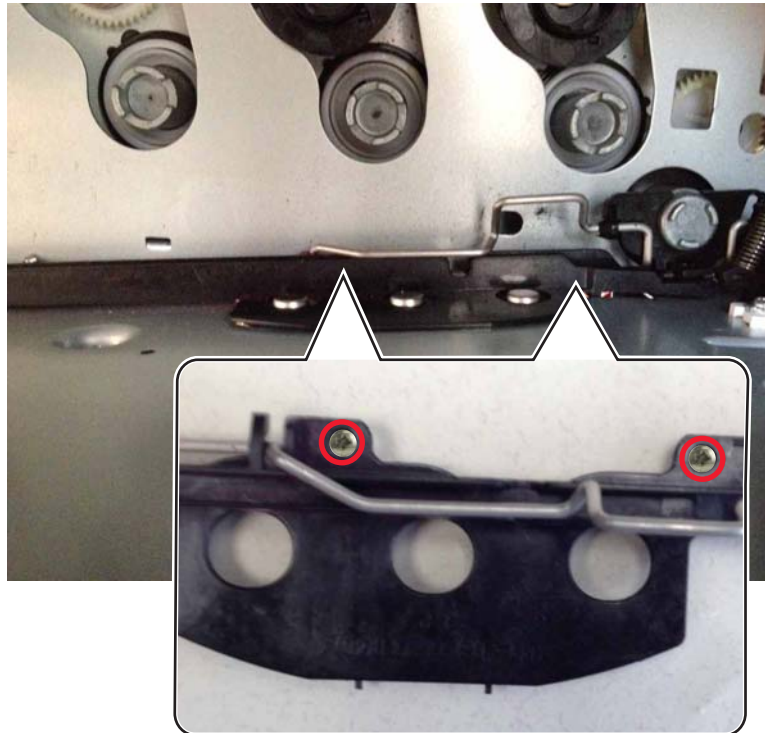
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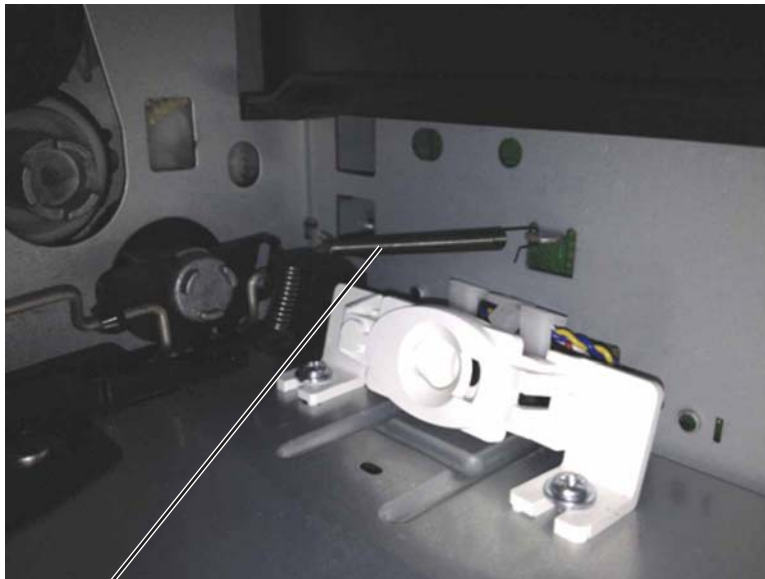
**11.** Remove the two screws securing the ITU guide to the frame.

**Note:** Use either a short #2 Phillips or a right angle screwdriver.



**12.** Remove the spring (C).

**Note:** Pay attention on how the spring is attached to the bail.



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Next



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13. Press and hold the ITU drive coupling (D) using a spring hook or screwdriver, and then tilt the ITU guide up from the side with the screw holes to remove.



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### ***Low-voltage power supply (LVPS) assembly removal***



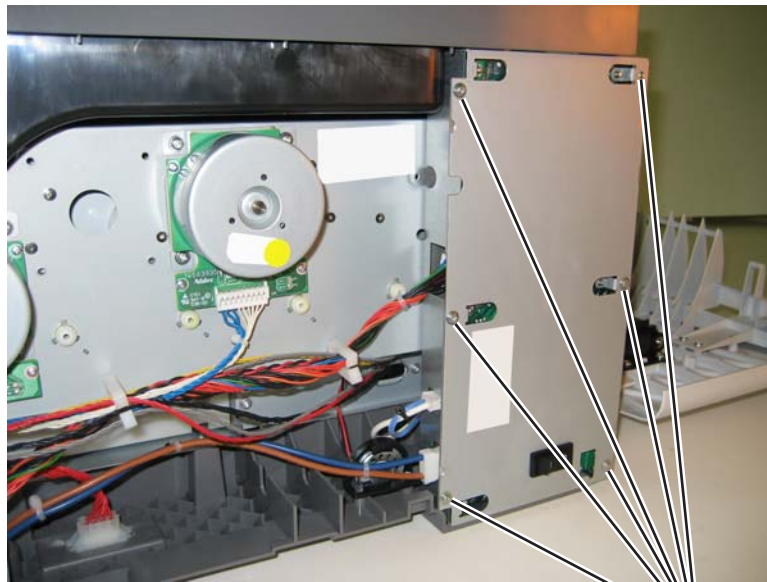
See “**Low-voltage power supply (universal power supply)**” on page 7-7 for the part number.

1. Remove the left cover. See **“Left cover assembly removal”** on page 4-6.
2. Disconnect the three cables (A) from the LVPS.



A

3. Remove the seven screws (B).



B

Previous



Next



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**4.** Remove the LVPS.

**Warning:** If you receive a new low-voltage power supply with a voltage selector switch (C), be sure to set the switch to the correct setting for your voltage requirements before installing the low-voltage power supply. The switch can be set for either 115 V or 230 V. Failure to do so could result in damage to the power supply.

**Note:** If there is no switch, the LVPS automatically senses the line voltage.



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## Lower frame removal, right and left

See **“Lower left frame and lower right frame with cable cover”** on page 7-5 for the part number.

The right and left lower frames are in the same FRU.

### Left lower frame

1. Remove the media tray, and remove the screw (A) in front.



A

2. Open the front cover.
3. Remove the waste toner bottle. See **“Waste toner bottle removal”** on page 4-84.
4. Remove the imaging unit. See **“Imaging unit (IU) removal”** on page 4-49.
5. Remove the low-voltage power supply. See **“Low-voltage power supply (LVPS) assembly removal”** on page 4-53.

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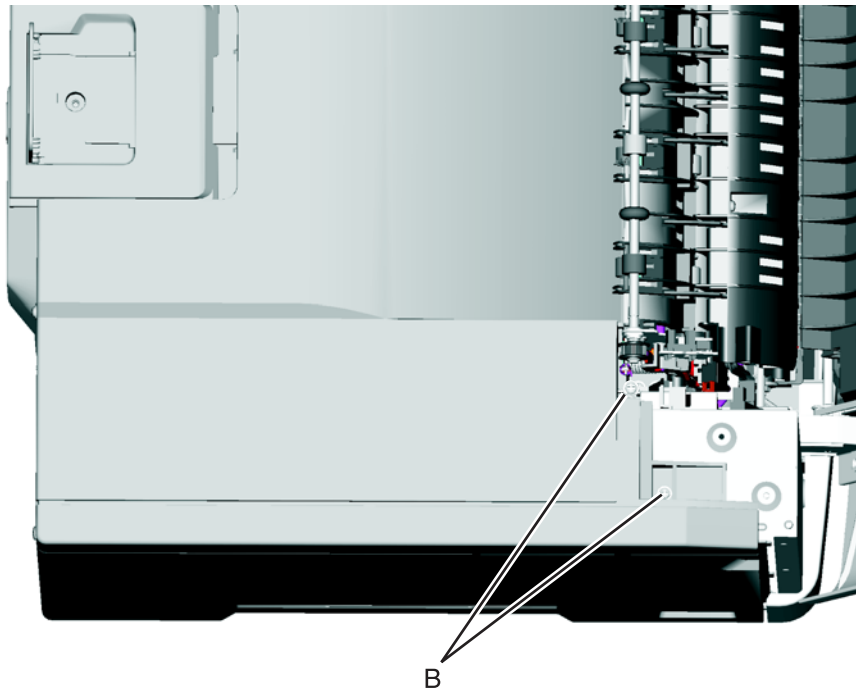


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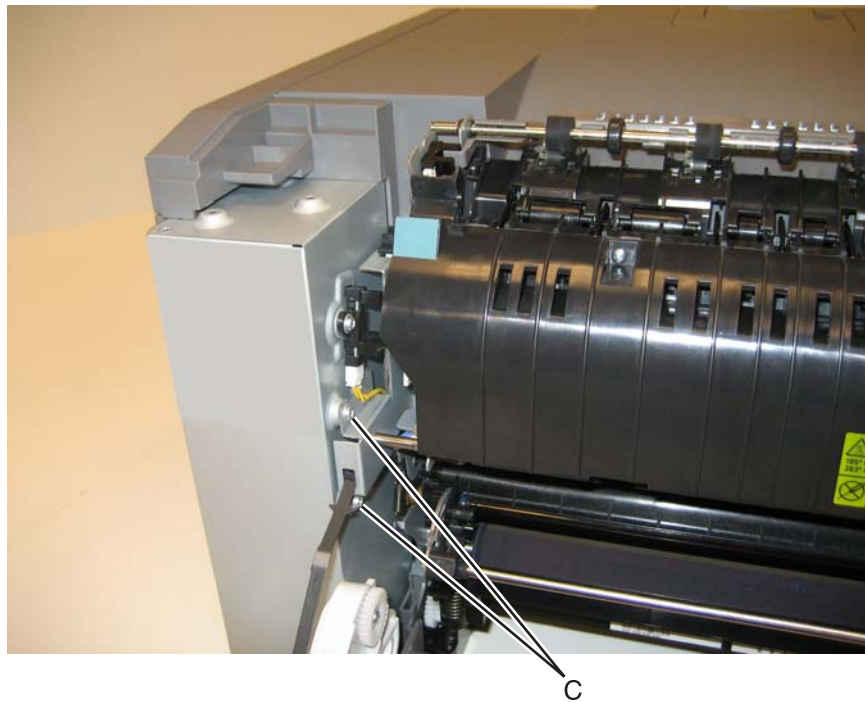


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6. Remove the two top screws (B) near the front holding the top cover to the LVPS shield.



7. Remove the two screws (C).



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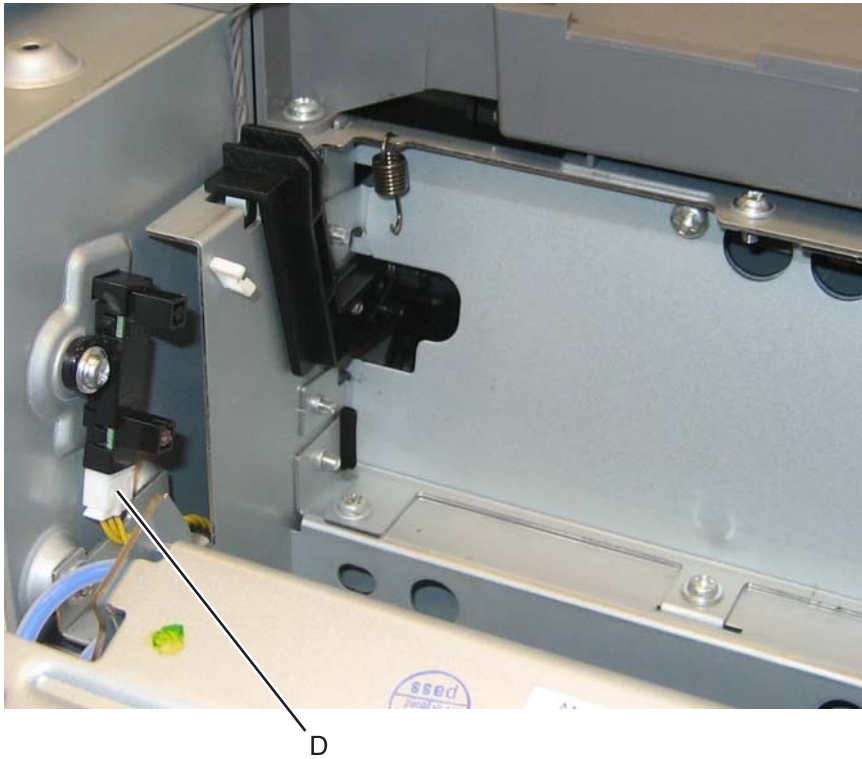


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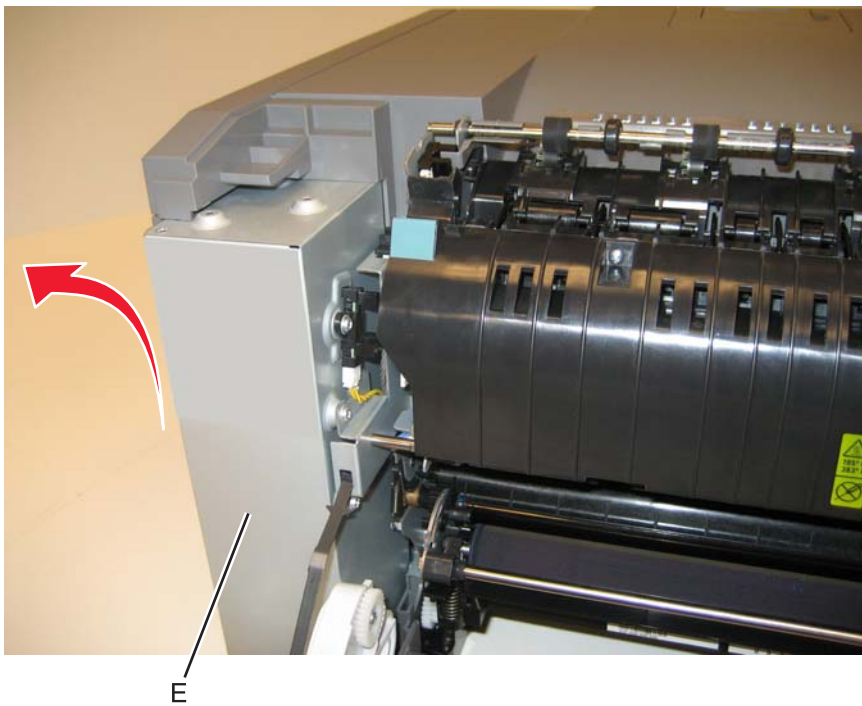
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8. Disconnect the fuser exit sensor cable (D).



9. Lift the front left corner of the top cover, and pull the LVPS cage (E) out. There are two posts at the bottom of the cage on the left side that need to be disengaged.

**Note:** Be careful with the fuser exit sensor which remains with the cage.



10. Place the printer on the right side.

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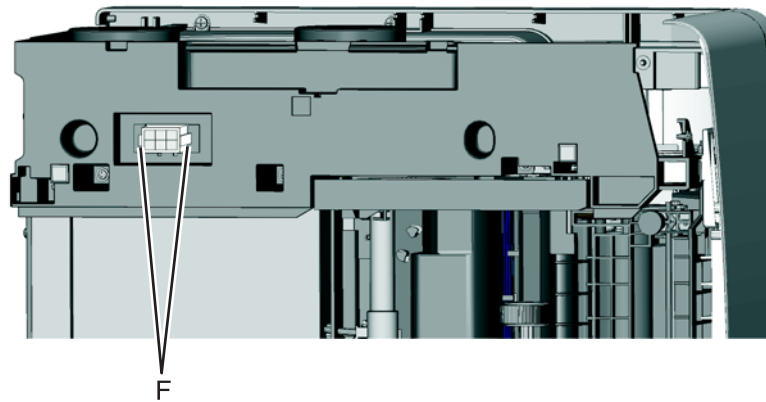


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11. Remove the tray 2 connector (F) by pinching the tabs together and pushing the connector into the printer.



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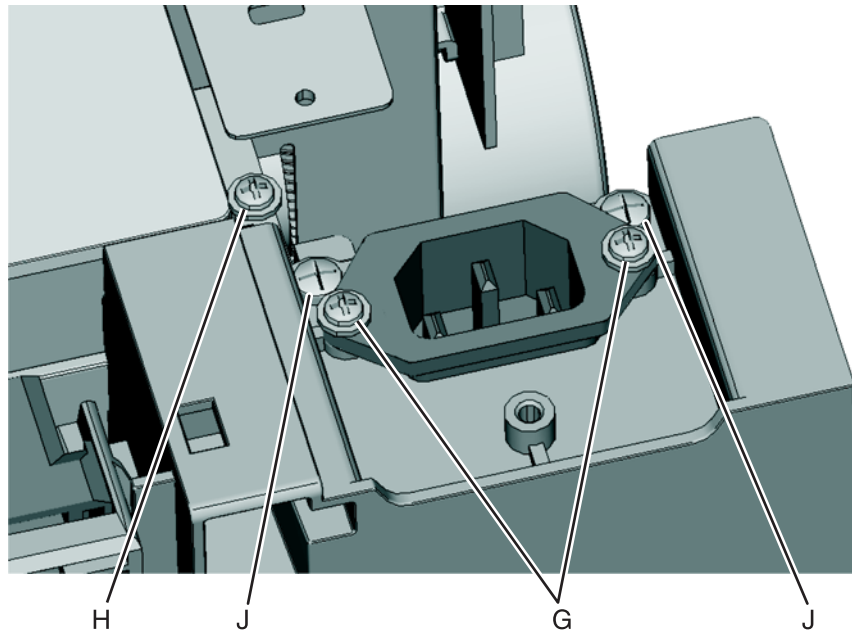


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12. At the rear of the printer, remove the two screws (G) from the AC receptacle, and the ground screw (H).  
13. Remove the two screws (J) holding the plastic shield.



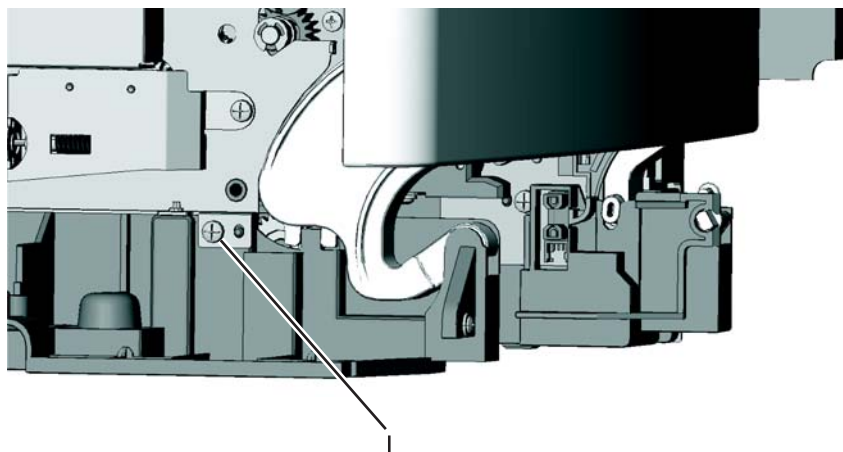
14. Remove the AC receptacle from the left lower frame.

15. Remove the three screws (K) securing the left lower frame.



K

16. Remove the screw (L) above the frame.



L

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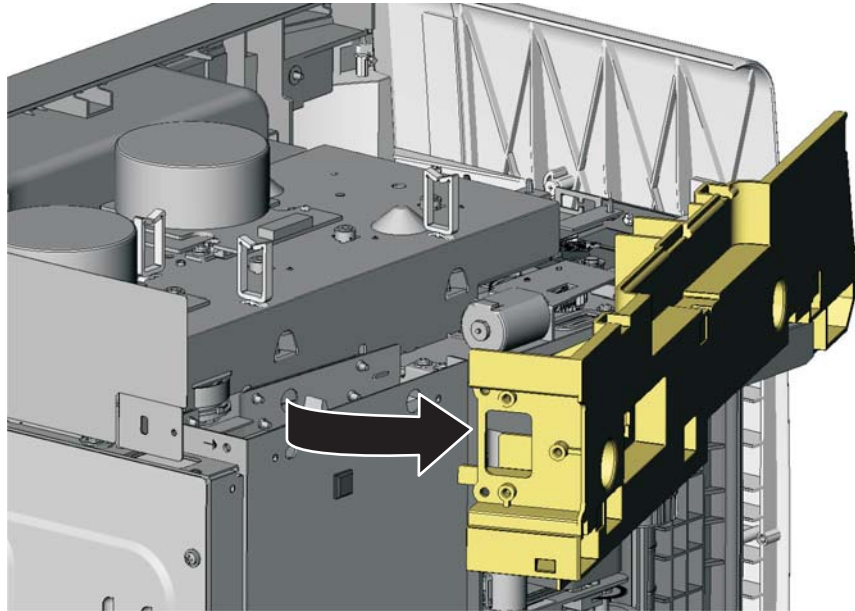
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17. Swing the left lower frame away from the printer, and remove.



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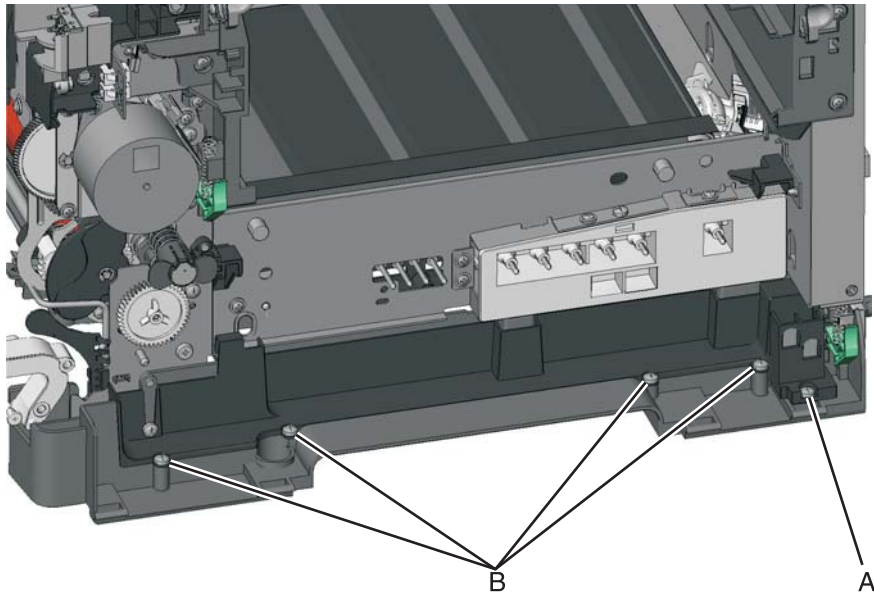
## Right lower frame

**Note:** Remove the duplex sensor, the tray present sensor, the spring, spring holder, and the wireless antenna plate which are not part of the right and left lower frames. The cable cover is part of the FRU.

**Note:** To properly reinstall the duplex sensor and the tray present sensor, also order two photo sensors, see [page 7-7](#), and replace the sensor retaining plates.

1. Open the front cover.
2. Remove the right cover assembly. See [“Right cover assembly removal” on page 4-12](#).
3. Remove the waste toner bottle. See [“Waste toner bottle removal” on page 4-84](#).
4. Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 4-49](#).
5. Remove the rear screw (A) in the waste toner bottle sensor contact to allow access to the cable cover.  
**Note:** The waste toner bottle sensor contact does not need to be unplugged.
6. Remove the four screws (B) securing the cable cover.

**Note:** The cable cover is part of the right lower frame FRU.



7. Carefully place the printer on its left side.

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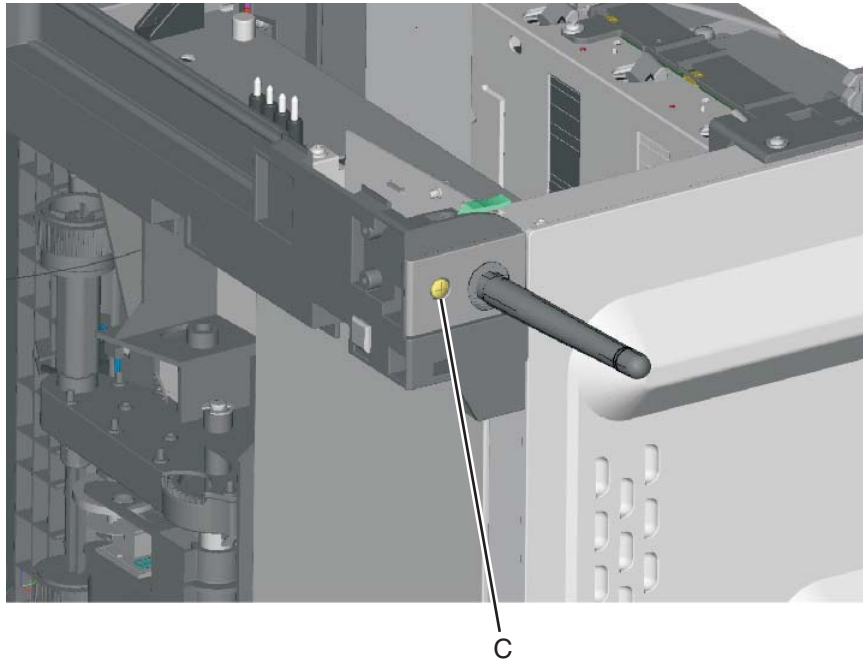


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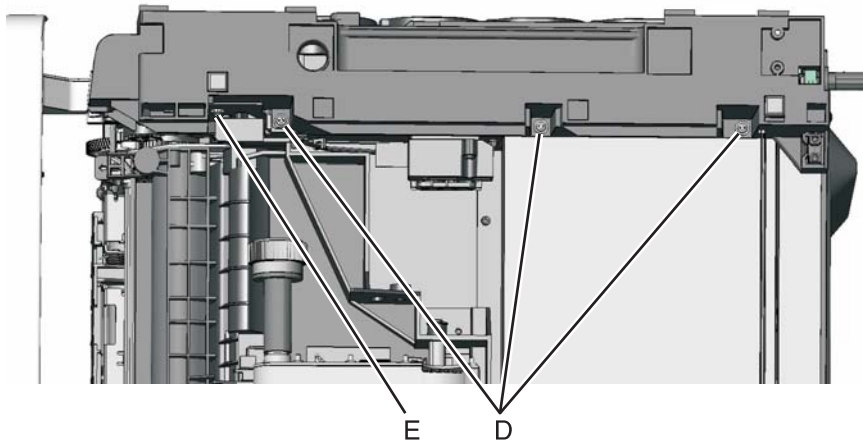


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- For wireless models—Remove the screw (C) and leave the plate and antenna attached to the wireless card.



- Remove the duplex sensor. See **“Duplex sensor removal”** on page 4-28.
- Remove the three screws (D) securing the lower right frame to the printer.
- Remove the screw (E) closer to the front of the printer



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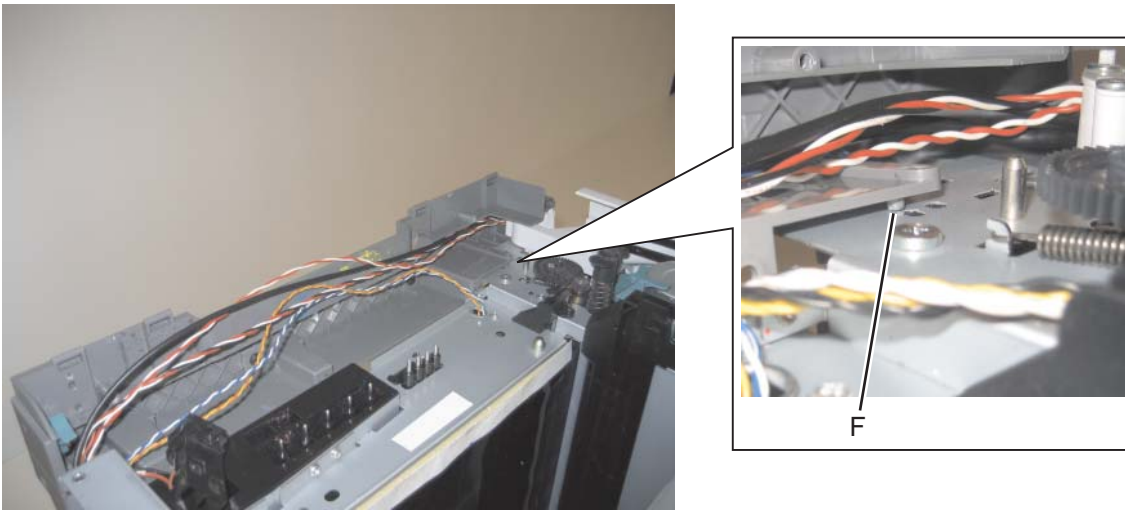


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12. Next to screw (E), lift the right lower frame pin (F) out of the hole in the printer frame.



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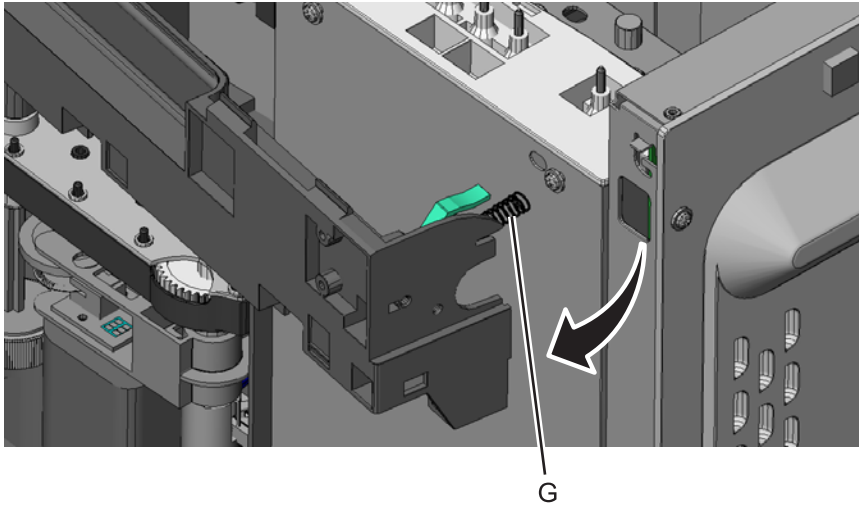


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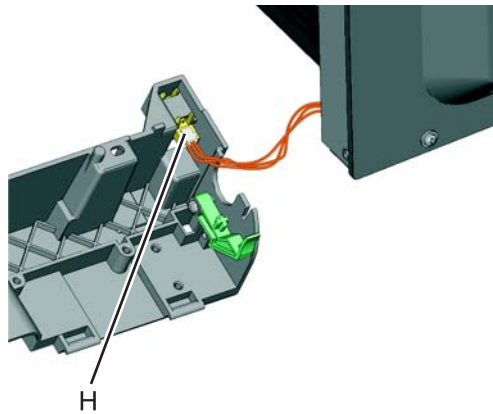


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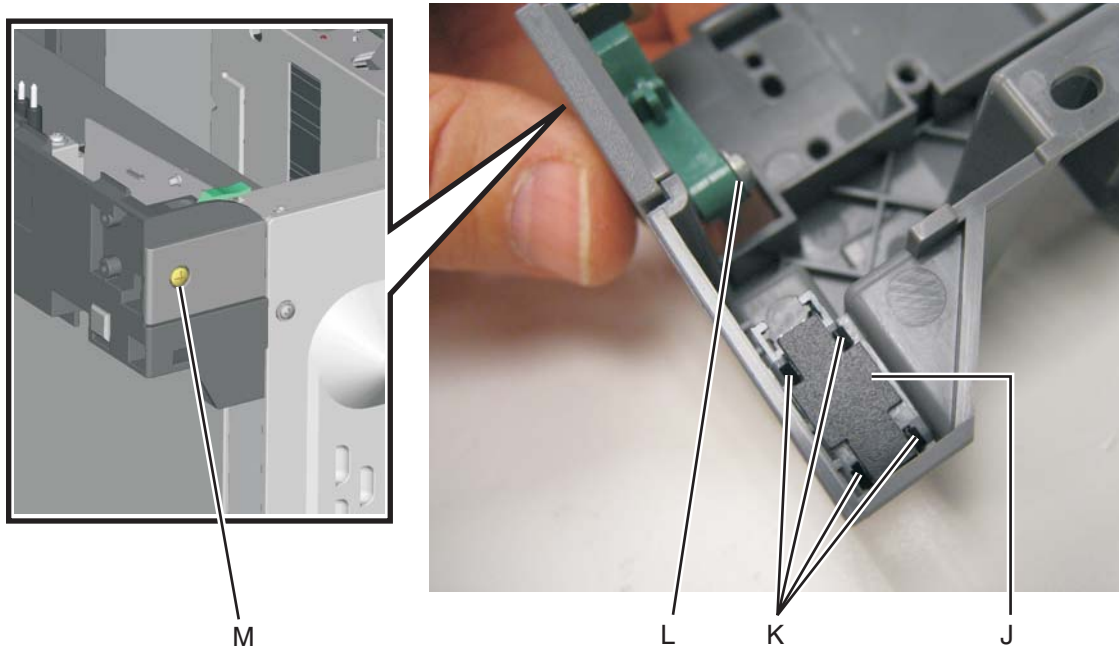
13. Swing the rear part away from the printer to access the spring (G), and remove the spring (G) from the right lower frame.



14. Disconnect the cable (H) from the tray present sensor.



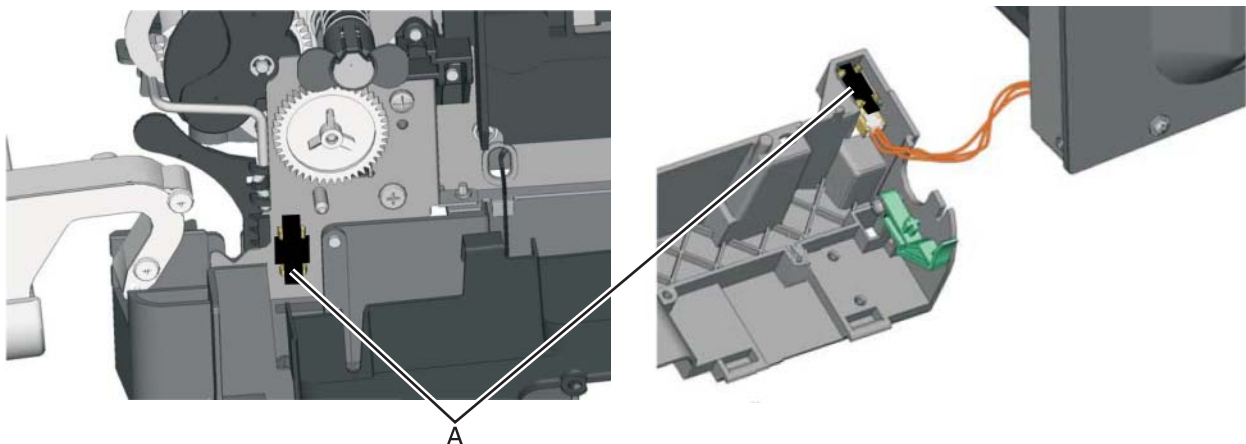
15. Swing the rear of the lower frame away from the printer, and remove the right lower frame.  
**Note:** There are parts in the right lower frame that are not included in the frame. The following instructions show how to remove them.
16. Remove the sensor retaining plate (J), and pinch the latches (K) together to remove the tray present sensor.
17. Remove the screw (L) and remove the spring bracket.  
**Note: For non-wireless models**—Remove the screw (M), and remove plate from your printer if it does not have a wireless antenna.



#### Installation notes:

1. Reinstall the spring bracket, and the wireless antenna plate (or the blank plate).
2. Clean the contact surface where you removed the sensor retaining plates, or where you need to install the new ones.
3. Install the sensors.
4. Remove the backing from the new plate, and place the plates (A) on the surfaces between the sensor mounting posts.

**Note:** Make sure the clips on the posts latch to the metal frame.



5. Connect the cable to the tray present sensor and place the spring in place before installing the right lower frame.

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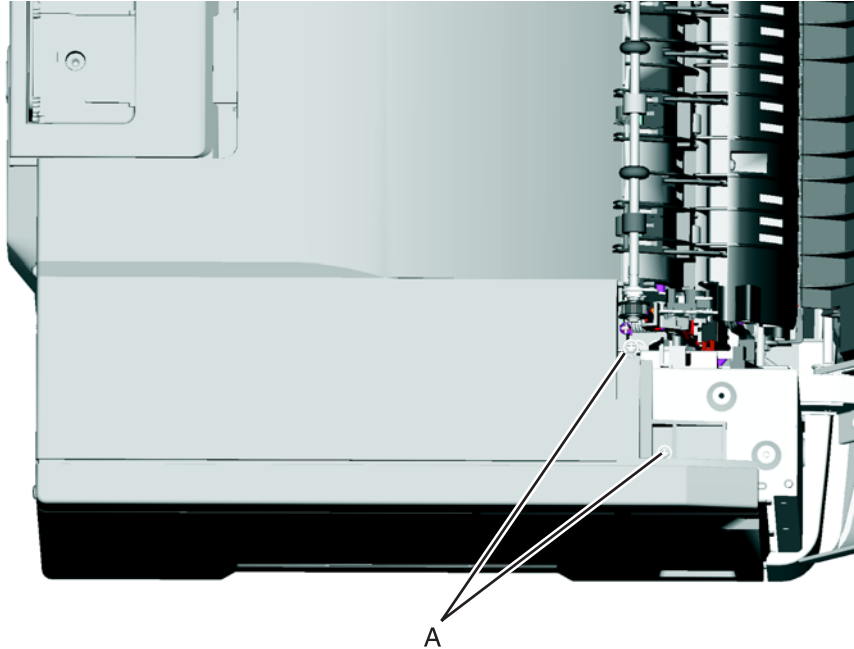
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## Main drive gear assembly removal



See **“Main drive gear assembly, with motors”** on page 7-5 for the part number.

1. Remove the left cover. See **“Left cover assembly removal”** on page 4-6.
2. Remove the LVPS shield. See **“Left lower frame”** on page 4-56 for instructions on removing the LVPS shield.
3. Remove the screws (A) on the top cover.



4. Disconnect the cable from the fuser exit sensor.
5. Unplug the cables from the motors (C), and remove all cables from the retainer (D).  
**Note:** Observe the cable routing for reinstallation.

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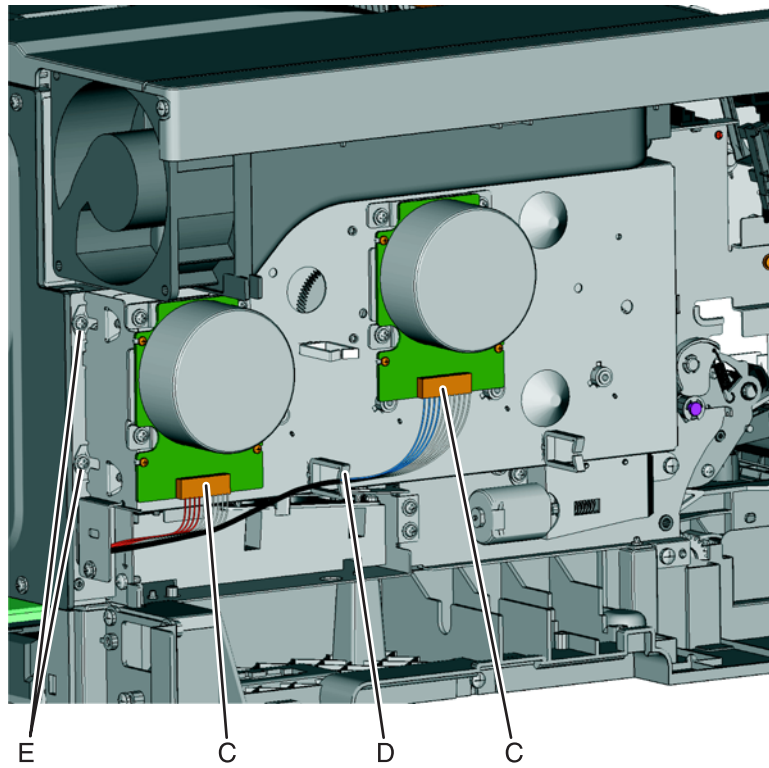


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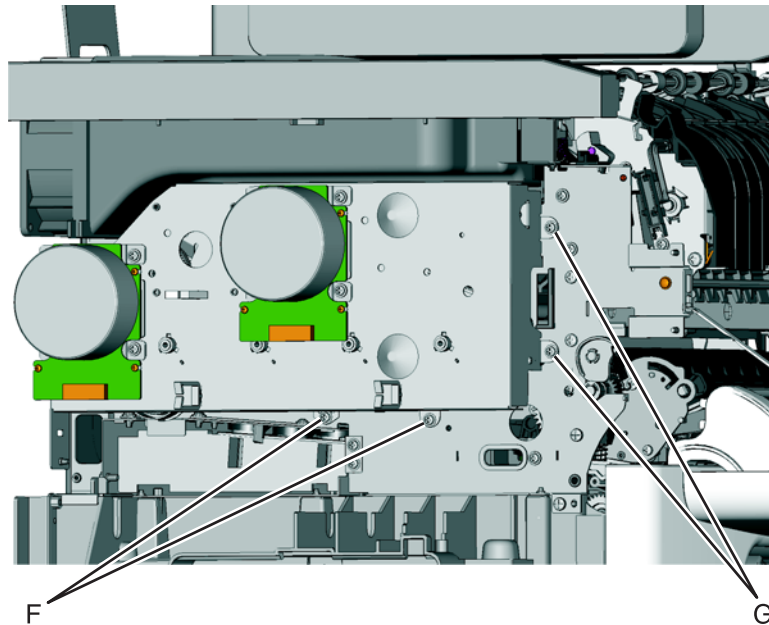


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6. Remove the two screws (E) from the rear.



7. Remove the two screws (F) from below the main drive gear assembly.
8. Remove the two screws (G) on the right of the main drive gear assembly



9. Lift the main drive gear assembly, and remove.

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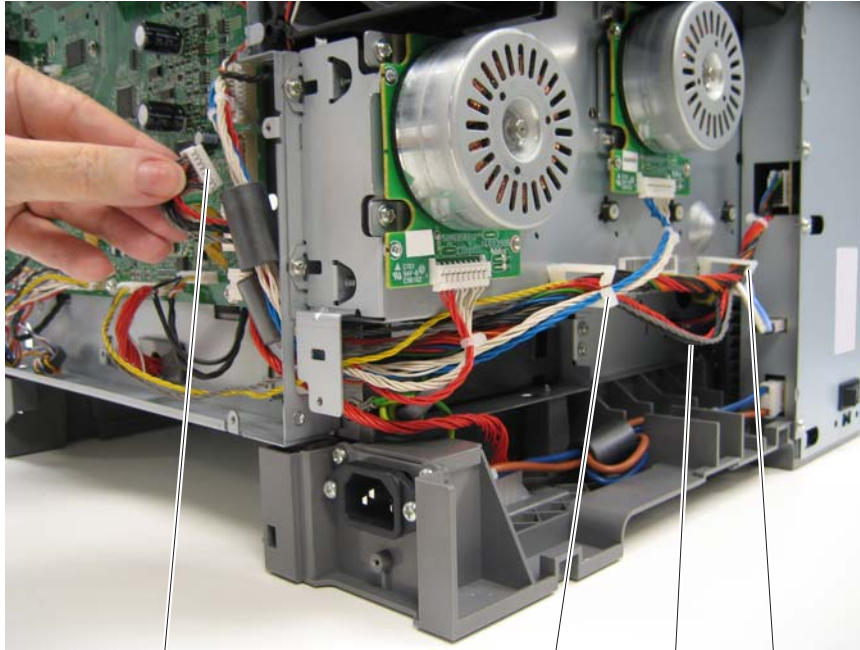


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## Paper pick motor drive assembly removal—standard tray

See “**Paper pick motor drive assembly—standard tray**” on page 7-5 for the part number.

1. Remove the toner cartridges, the waste toner bottle, and the imaging unit (IU). See “**Waste toner bottle removal**” on page 4-84, and see “**Imaging unit (IU) removal**” on page 4-49.
2. Remove the left cover. See “**Left cover assembly removal**” on page 4-6.
3. Remove the rear shield. See “**Rear shield removal**” on page 4-11.
4. Disconnect the paper pick motor drive assembly cable connector (A) from JSP1 on the controller board.
5. Pull the cable (B) through the opening, and free the cables from the retainers (C) on the left side.



A

C

B

C

6. Partially reinstall the rear shield to protect the controller board, and turn the printer so the rear shield rests on the table and the bottom is facing you.

**Warning:** For models with a wireless antenna, use supports to prevent the antenna from taking the weight of the printer.

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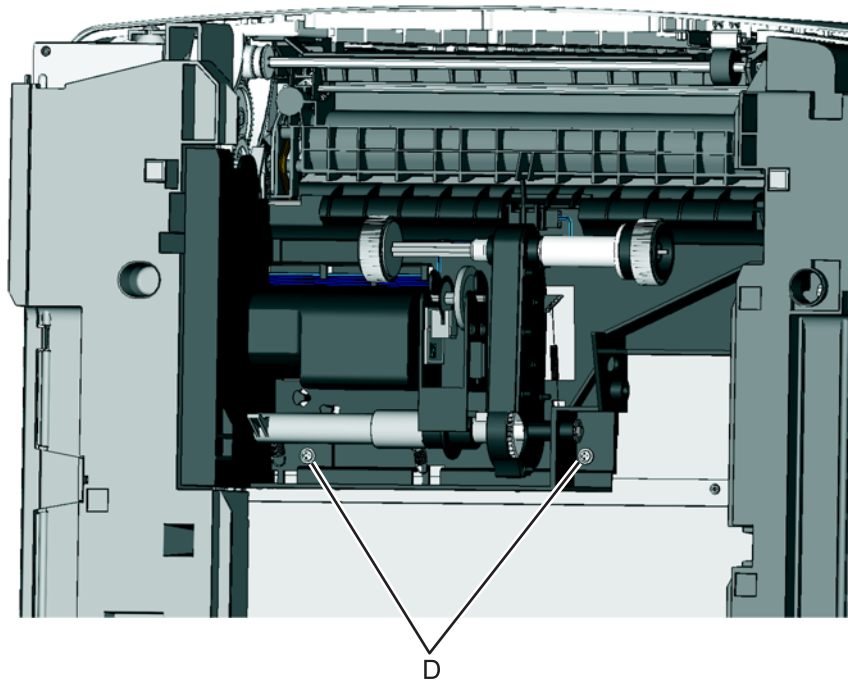
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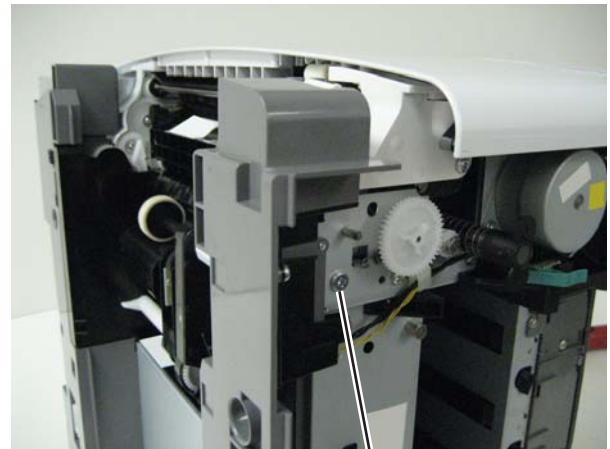
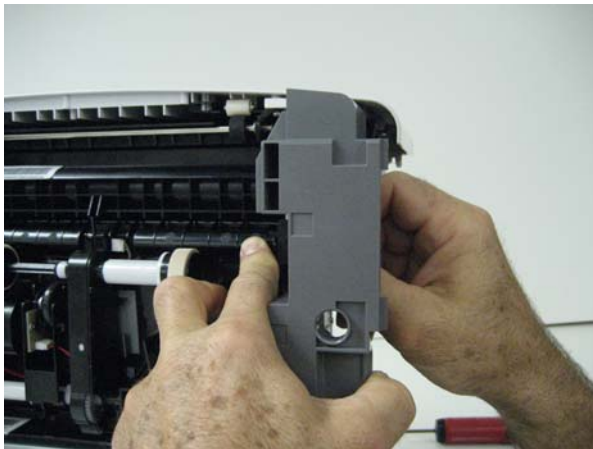
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7. Remove the two screws (D) on the bottom.



8. On the right side, loosen the screw (E) with a screwdriver, and hold the ACM in place as you use your fingers to remove the screw.



9. Move the right side of the ACM out to free the shaft from the hole in the frame.  
**Note:** Observe the location of the shaft and hole for reinstallation.
10. Remove the ACM.

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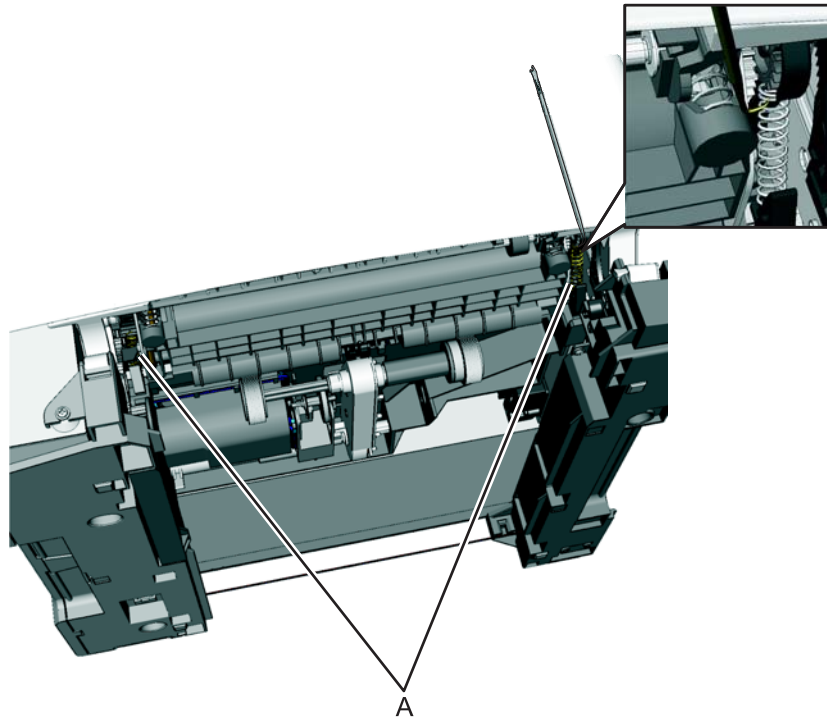
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**Installation notes:**

1. Place the left side of the ACM in the printer. Make sure the shaft on the left side aligns with the hole in the frame.
2. Install the two springs.



3. Reinstall the three screws holding the ACM to the printer.
4. Turn the printer to the proper upright position.
5. Reroute the cable, making sure to place the cables into the two retainers on the left side.
6. Remove the rear shield, and reconnect the cable.
7. Replace the rear shield.

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## Pick tires removal

See **“Pick tires” on page 7-11** for the part number.

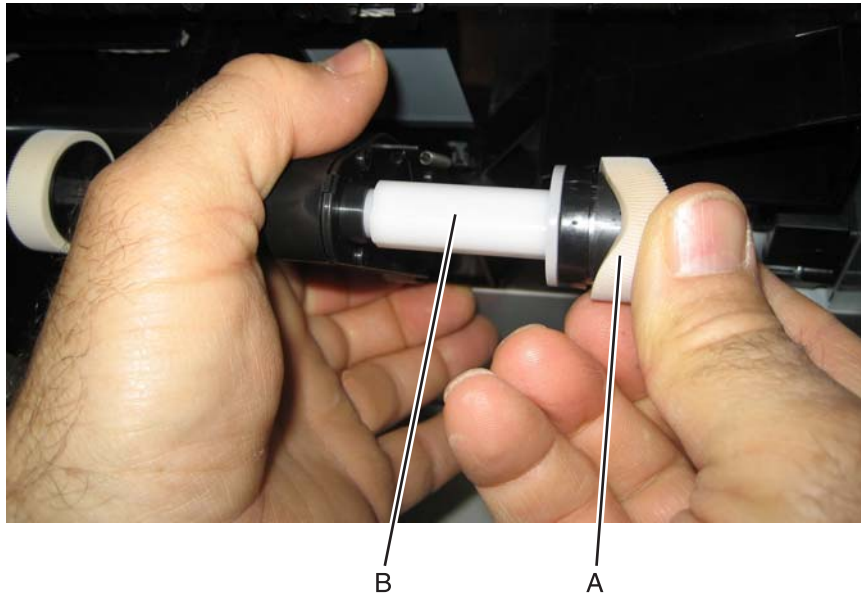
**Note:** You will need to have a soft, padded work surface.

**Warning:** Remove only the rubber tires and not the paper pick tire assembly to avoid losing small parts.

The paper pick tires for the standard media tray are located in the base printer. There are also tires in the optional 650-sheet Duo Drawer/MP feeder and the optional 550-sheet drawer. If you have one or both of these additional options, and you are having problems with media picking, replace these tires also. Always replace the paper pick tires in pairs. The tires come in a package of two.

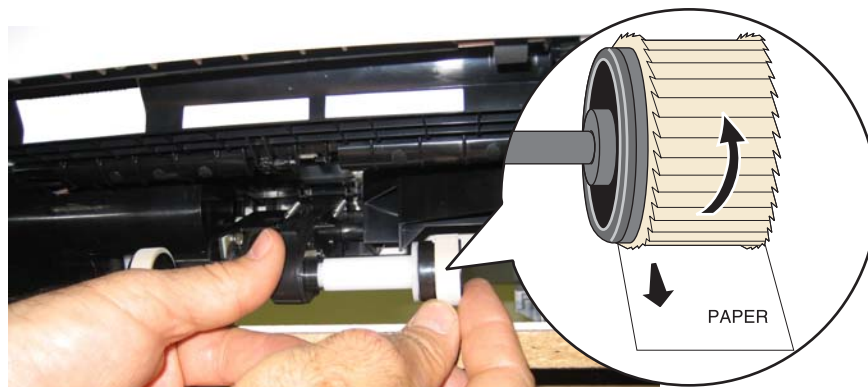
1. Remove the media tray.
2. Place the printer so the front edge extends over the edge of the table or desk.
3. Lower the paper pick motor drive assembly.
4. Remove the rubber tire (A) from the pick roll assembly (B). Repeat for the other tire.

**Warning:** Be very careful **not** to unlatch the right side hub, or the clutch may be damaged. If the ball bearings come out of the clutch, it will have to be reassembled on a flat surface, and may be very difficult.



### Installation notes:

Install the new rubber tires with the surface texture turning in the direction as shown.



**Note:** Feel each rubber surface to verify it turns properly in the direction shown. The smoother surface pushes the paper toward the front of the printer.

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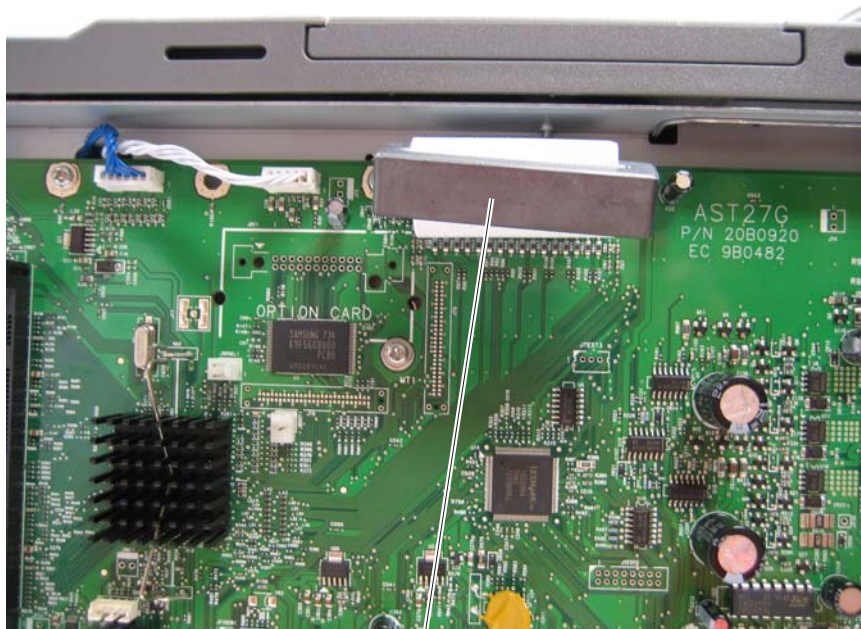


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## Printhead removal

See **“Printhead” on page 7-5** for the part number.

1. Remove the top cover. See **“Top cover assembly removal” on page 4-13**.
2. Disconnect the cables from the controller board.  
**Note:** Be very careful disconnecting handling the ribbon cable.
3. Remove the toroid (A) from the ribbon cable.



A

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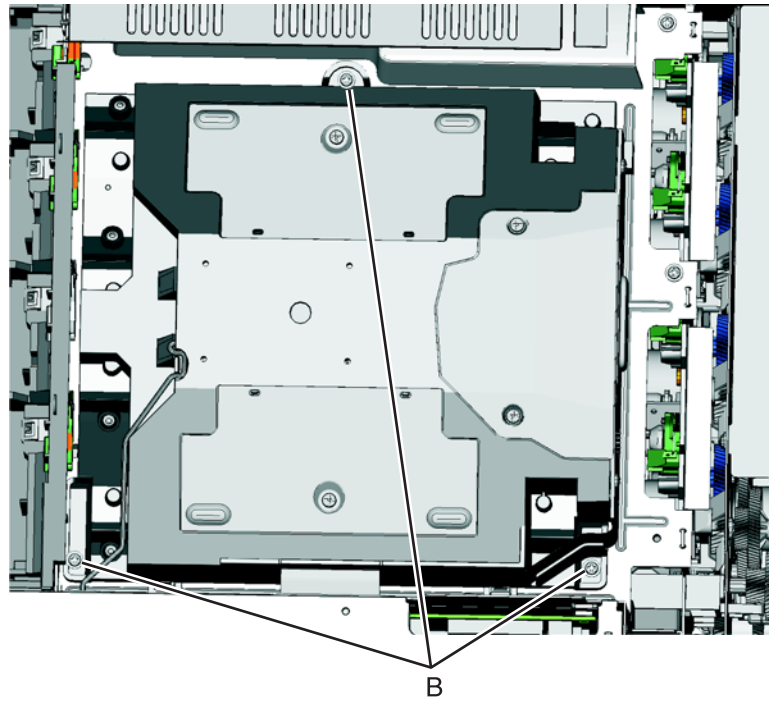


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4. Remove the three screws (B).



5. Remove the printhead.

**Installation note:**

- When the printhead is replaced, perform the registration (black planes) and alignment (color planes). See **“Registration” on page 3-4** and **“Alignment” on page 3-7**.
- Be sure to replace the toroid on the cable when you reinstall the printhead, and push the toroid between the connector and the top frame so that the weight is not supported by the cable.

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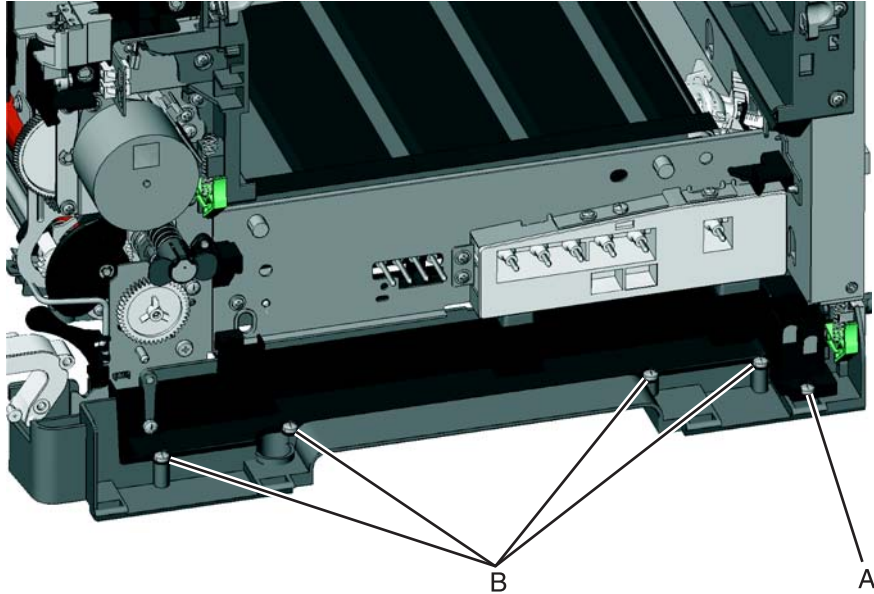
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## Toner cartridge contacts

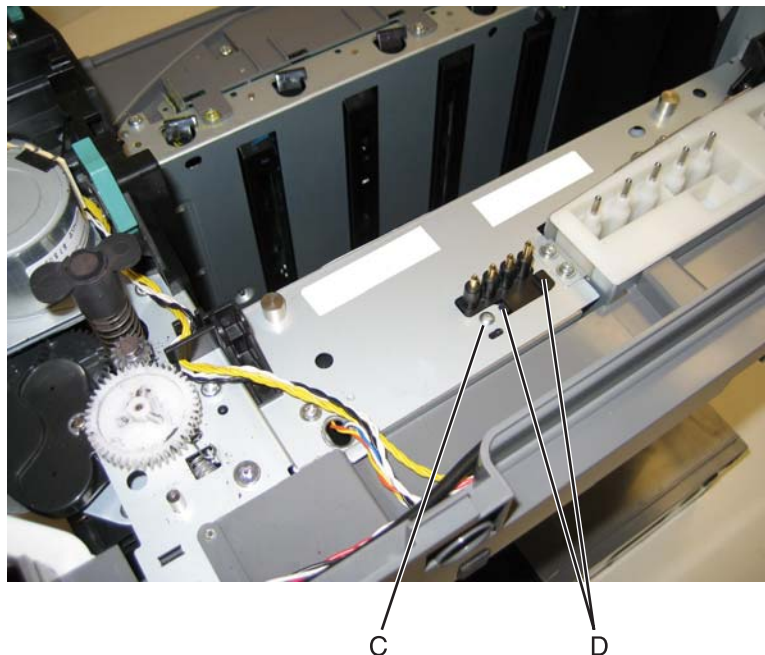
See **“Toner cartridge contacts (Pogo pin)”** on page 7-9 for the part number.

1. Remove the right cover assembly. See **“Right cover assembly removal”** on page 4-12.
2. Remove the waste toner bottle. See **“Waste toner bottle removal”** on page 4-84.
3. Remove the imaging unit. See **“Imaging unit (IU) removal”** on page 4-49.
4. Remove the rear shield. See **“Top cover assembly removal”** on page 4-13.
5. Remove the rear screw (A) in the waste toner bottle sensor contact to allow access to the cable cover.
 

**Note:** The waste toner bottle sensor contact does not need to be unplugged or removed.
6. Remove the four screws (B) securing the cable cover, and remove the cable cover.



7. Rotate the printer to view the right side.
8. Remove the screw (C) securing the spring contacts.
9. Release the tabs (D) on the spring contact to release the spring contacts.



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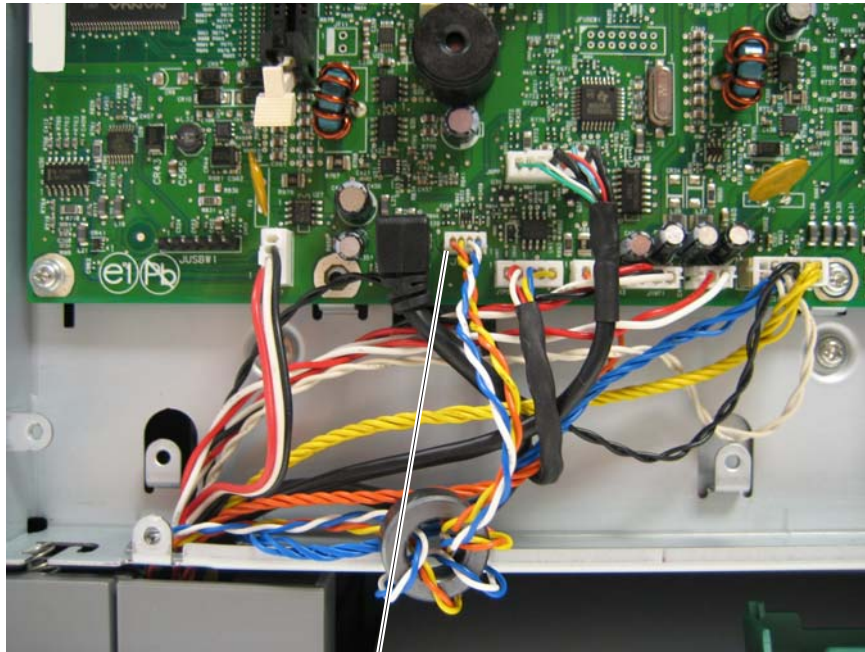


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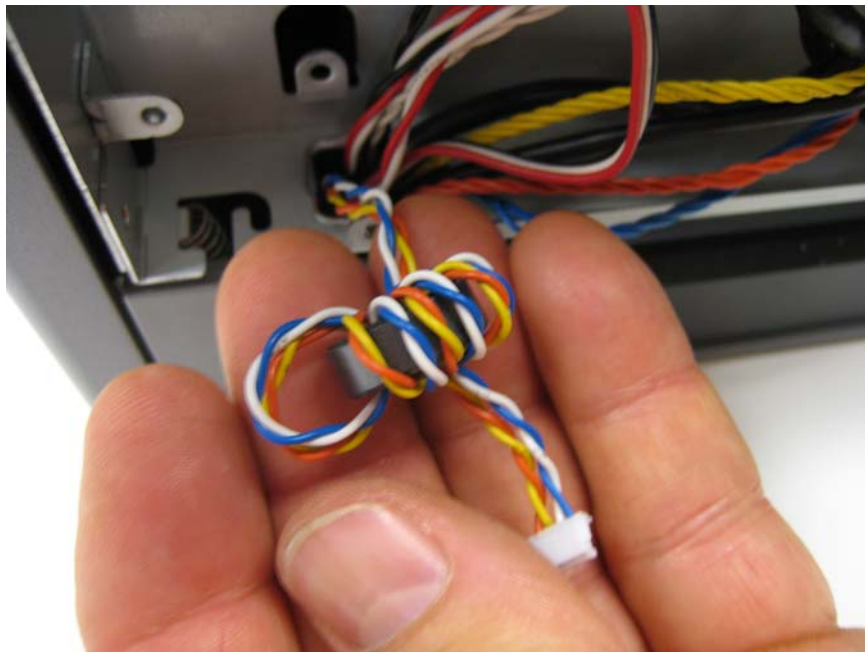
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10. Disconnect the cable (E) from the controller board at JSC1.



E

11. Remove the cable from the retainer on the bottom of the printer.
12. Extract the cable through the frame, and remove the cable with the spring contacts.  
**Note:** To remove the cable, be sure to unwrap the toroid. When you re-install, be sure to wrap the toroid five times as shown.



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## Toner density sensor (TDS) removal—left or right sensor

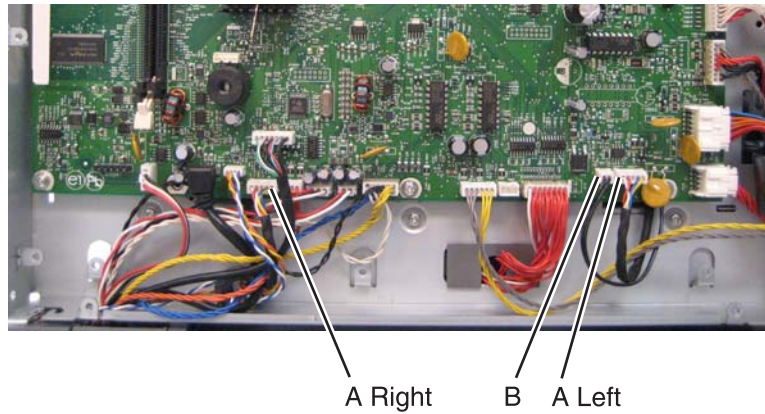
See **“Toner density sensors, left or right (one in package)”** on page 7-9 for the part number.

**Note:** The toner density sensor is also called the toner patch sensor (TPS).

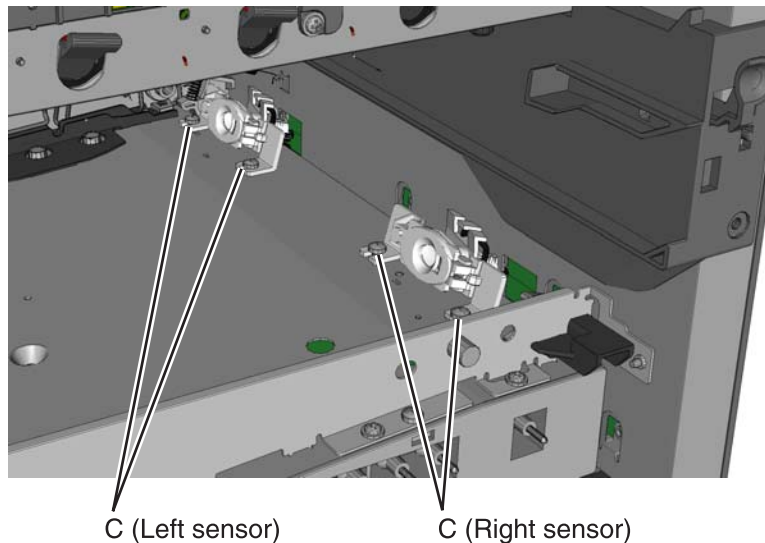
The toner density sensors are the same, but the left sensor has a thermistor attached which needs to be removed when you install a new TDS on the left side. Reinstall the thermistor on the new TDS.

1. Remove the ITU. See **“Image transfer unit (ITU) removal”** on page 4-44.
2. Remove the rear shield. See **“Top cover assembly removal”** on page 4-13.
3. Disconnect the toner density sensor cable from JTDS1 connector (A Right) or JTDS2 connector (A Left) on the controller board. If you are removing the left toner density sensor, also disconnect the thermistor from JFUSES1 connector (B) on the controller board.

**Note:** Observe the routing of the cable(s) for reinstallation.



4. Remove the two screws (C) securing each sensor.



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## Installation notes

- Before beginning the installation of the new left or right toner density sensor, note the 32-digit TPS value printed on the barcode on the new FRU.
- After installation, perform the TPS Setup. Enter the factory preset alignment number.
  1. Enter the Diagnostics Menu:
    - a. Turn the printer off.
    - b. Press and hold ◀ and ✓.
    - c. Turn the printer on.
    - d. Release the buttons when the installed memory and processor speed displays.
  2. Select **TPS SETUP** from Diag Menu, and press **Select** (✓).
  3. Select **Right** or **Left**, and press **Select** (✓).  
TPS Right 1-16 or TPS Left 1-16 appears above a blinking 0 in the left position.
  4. To enter a character or digit:
    - a. Press ◀ to decrease or ▶ to increase the blinking value.
    - b. Pause for several seconds without pressing any buttons. The blinking value becomes solid.  
If the value is incorrect, use **Back** (↵) to go back and reenter the number.
    - c. Continue until the last value is reached.
    - d. When the last of the 16 values is entered and becomes solid, TPS Right 17-32 or TPS Left 17-32 appears.
    - e. Continue entering and pausing.
  5. After the 32nd number is entered and becomes solid, the number is automatically entered.
    - If the number is incorrect, **Checksum does not match** appears, and the original screen appears to reenter the value.
    - If the number is correct, **Saving changes to NVRAM** appears.

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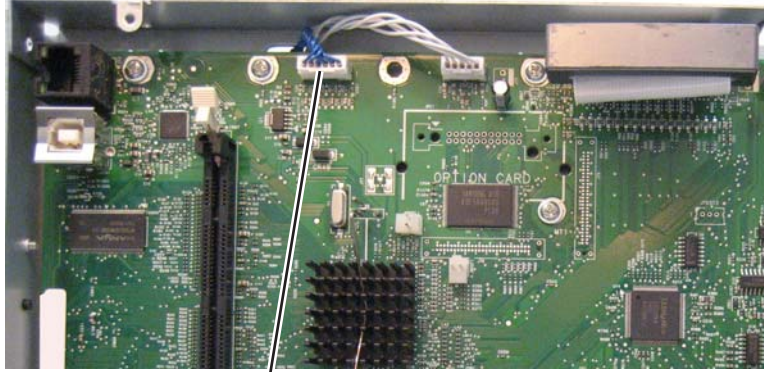
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## Toner meter cycle (TMC) card removal

See **“Toner meter cycle card assembly” on page 7-7** for the part number.

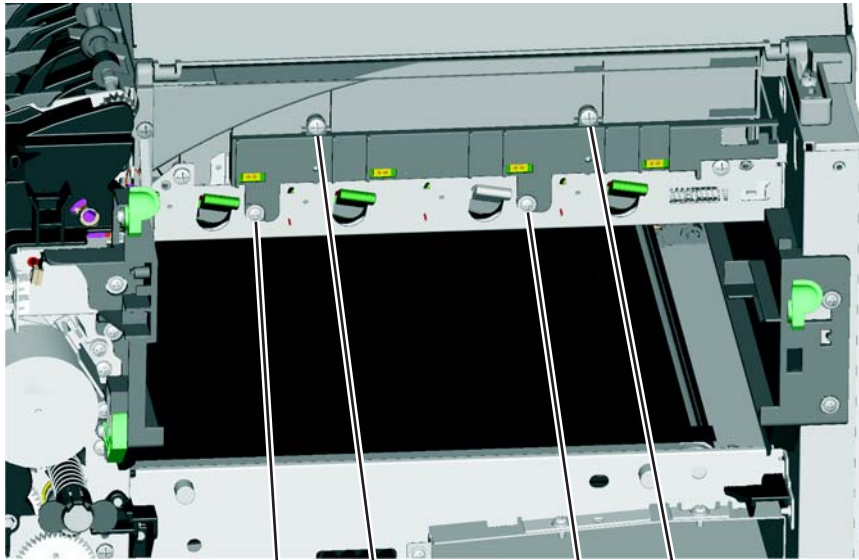
1. Remove the rear shield. See **“Top cover assembly removal” on page 4-13**.
2. Remove the right cover assembly. See **“Right cover assembly removal” on page 4-12**.
3. Remove the waste toner bottle. See **“Waste toner bottle removal” on page 4-84**.
4. Remove the imaging unit (IU). See **“Imaging unit (IU) removal” on page 4-49**.
5. Disconnect the TMC cable from JCTM1 connector (A), and push the toner meter cycle card cable through the frame opening.

**Note:** Observe the routing for reinstallation.



A

6. Remove the two plastic screws (B), the two metal screws (C), and remove the card.



C

B

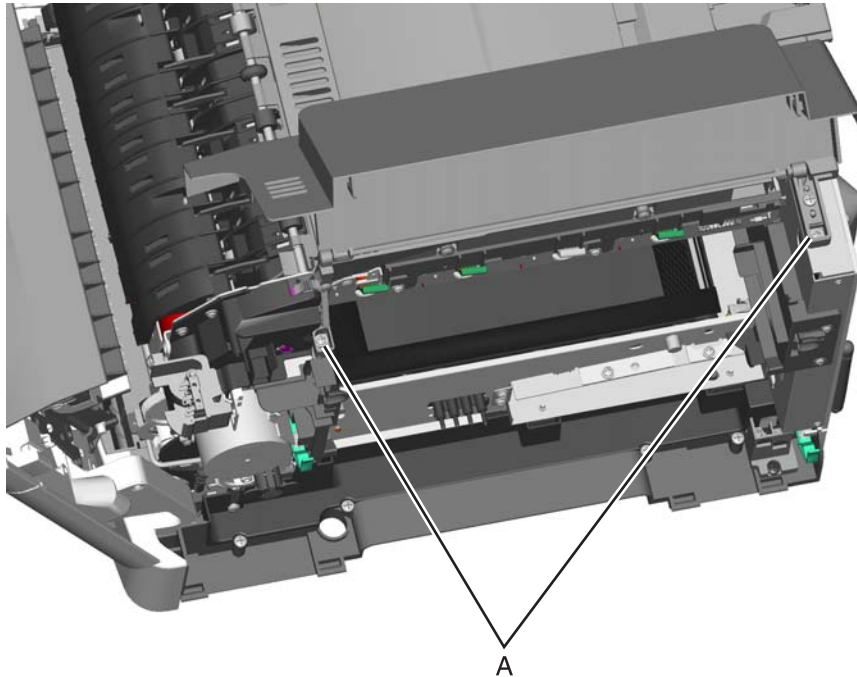
C

B

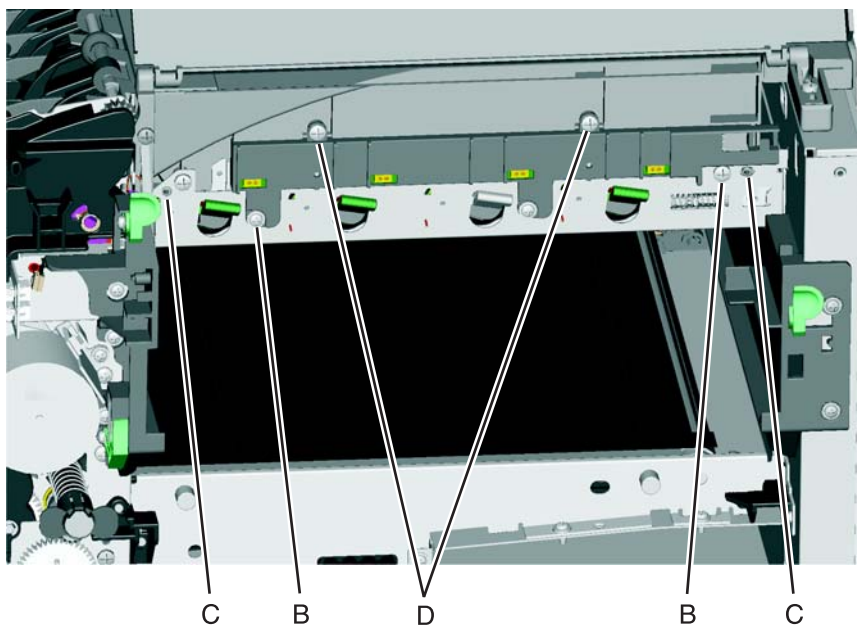


**Installation notes:**

- Be sure the cable runs through the retainer.
- The toner meter cycle card is a tight fit. Insert the bottom edge inside the frame, and then push down on the top edge to clear the top cover.
- In some cases, the top cover will have to be loosened so the right edge of the top cover can be lifted to get the toner meter cycle card back into position.
  1. Remove the two machine screws (A).



2. Push in on the cover above the locating pins (C) while lifting to disengage the cover. Carefully lift the cover just enough for clearance for the toner meter cycle card.
3. Position the toner meter cycle card.
4. Replace the two screws (B).
5. Replace the screws (D), and replace the top cover.



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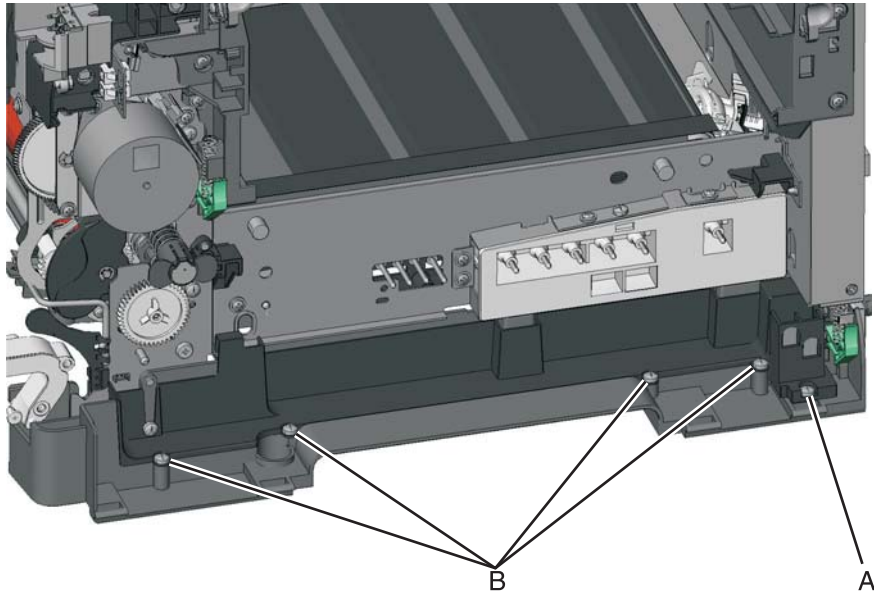


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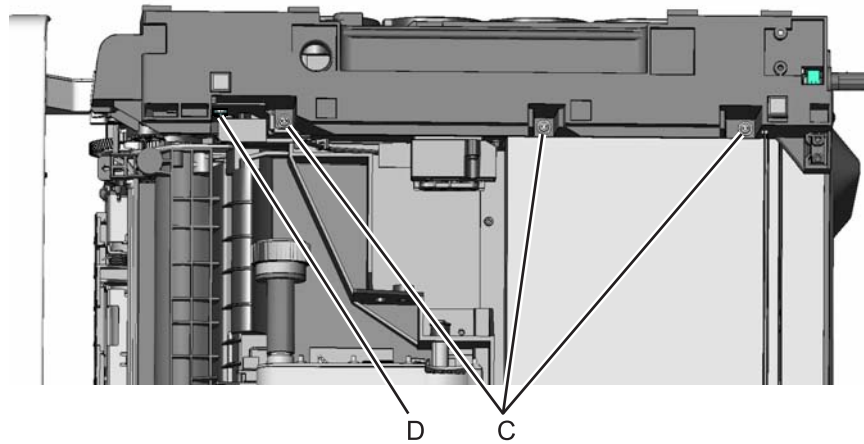
## Tray present sensor removal

See “photo sensors” on [page 7-7](#) for the part number.

1. Remove the media tray.
2. Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 4-49](#).
3. Remove the rear screw (A) in the waste toner bottle sensor contact to allow access to the cable cover.  
**Note:** The waste toner bottle sensor contact does not need to be unplugged or removed.
4. Remove the four screws (B) from the cable cover, and remove the cable cover.



5. Carefully place the printer on its left side.
6. Remove the three screws (C) securing the lower right frame to the printer.
7. Remove the screw (D) closer to the front of the printer.



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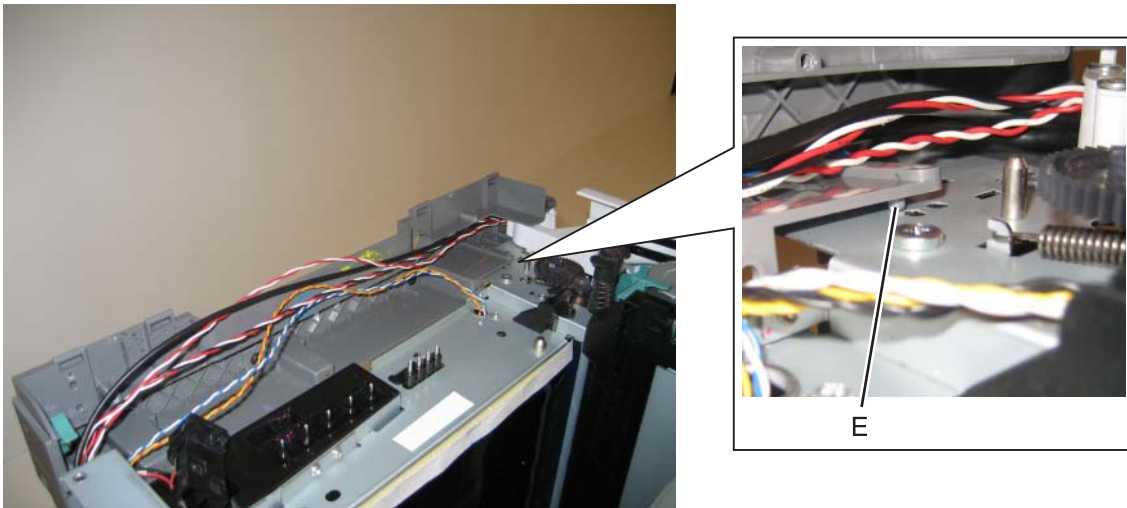


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- Next to screw (D), lift the right lower frame pin (E) out of the hole in the printer frame.



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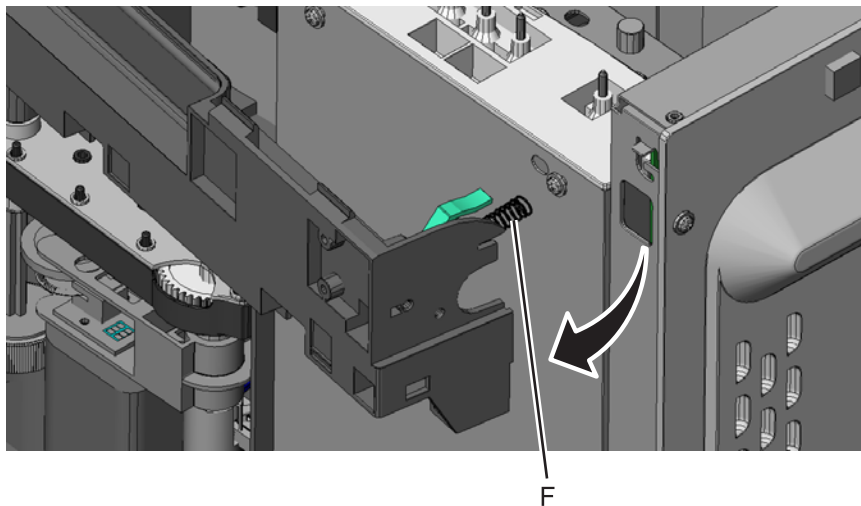


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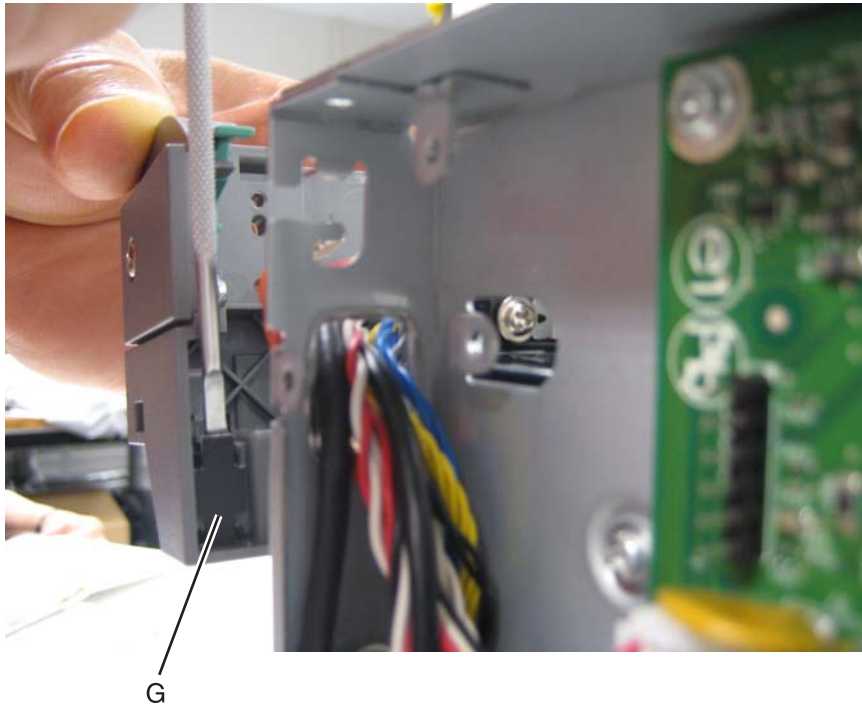
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- Swing the rear of the lower frame away from the printer to access the tray present sensor latches.
- Remove and secure the spring (F) from the right lower frame.  
**Note:** The spring easily gets lost.



- Disconnect the tray present sensor cable.

12. Remove the sensor retaining plate (G), and then pinch the latches together to remove the tray present sensor.



**Installation notes:**

1. Clean the contact surface where you removed the sensor retaining plate, or where you need to install the new one.
2. Install the sensor.  
**Note:** Make sure the clips on the posts latch to the frame.
3. Remove the backing from the new plate, and place the plate on the surface between the sensor mounting posts.
4. Connect the cable to the tray present sensor.
5. Replace the spring.

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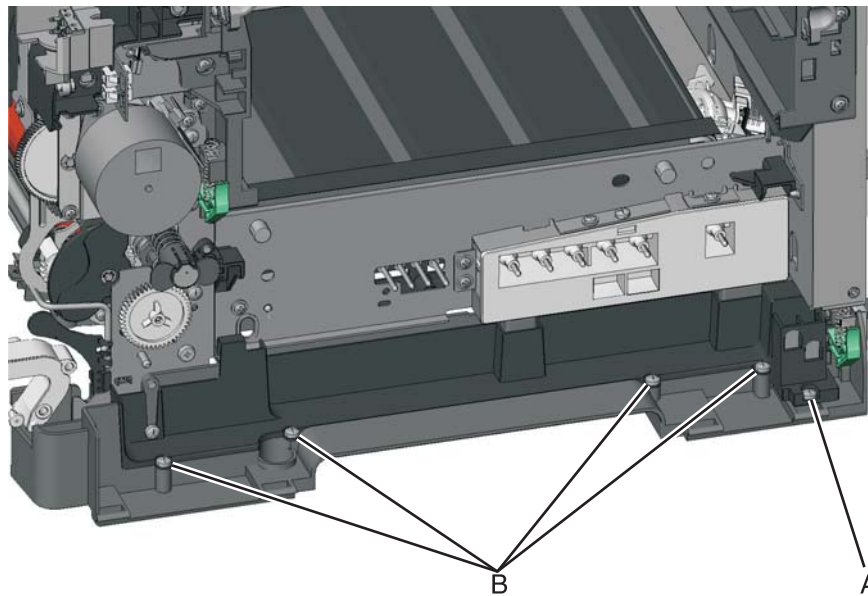
## USB port connector removal

See **“USB port and cable (for portable flash drive)”** on page 7-9 for the part number.

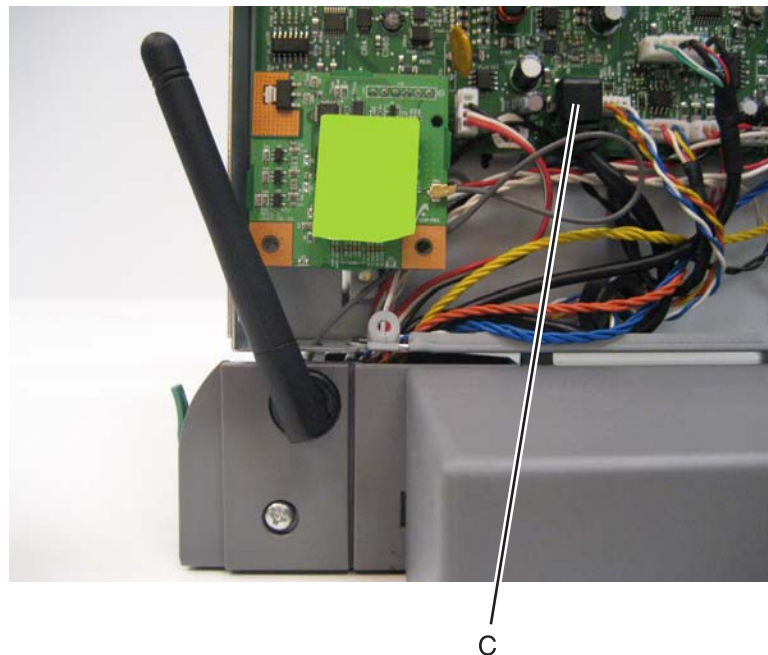
The FRU includes the USB port connector and cable.

1. Remove the operator panel. See **“Operator panel logo plate”** on page 4-9.
2. Remove the right cover assembly. See **“Right cover assembly removal”** on page 4-12.
3. Remove the waste toner bottle. See **“Waste toner bottle removal”** on page 4-84.
4. Remove the rear shield. See **“Top cover assembly removal”** on page 4-13.
5. Remove the rear screw (A) in the waste toner bottle sensor contact to allow access to the cable cover.
 

**Note:** The waste toner bottle sensor contact does not need to be unplugged or removed.
6. Remove the four screws (B) from the cable cover.



7. Disconnect the USB port cable (C) from the controller board.



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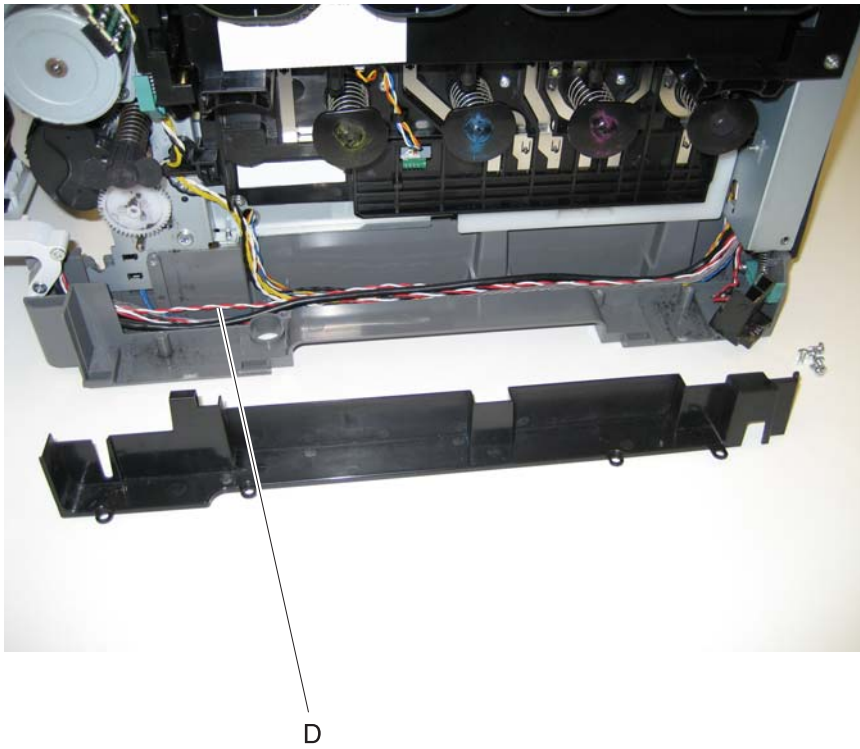


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8. Remove the USB port cable from the cable channel on the right side.



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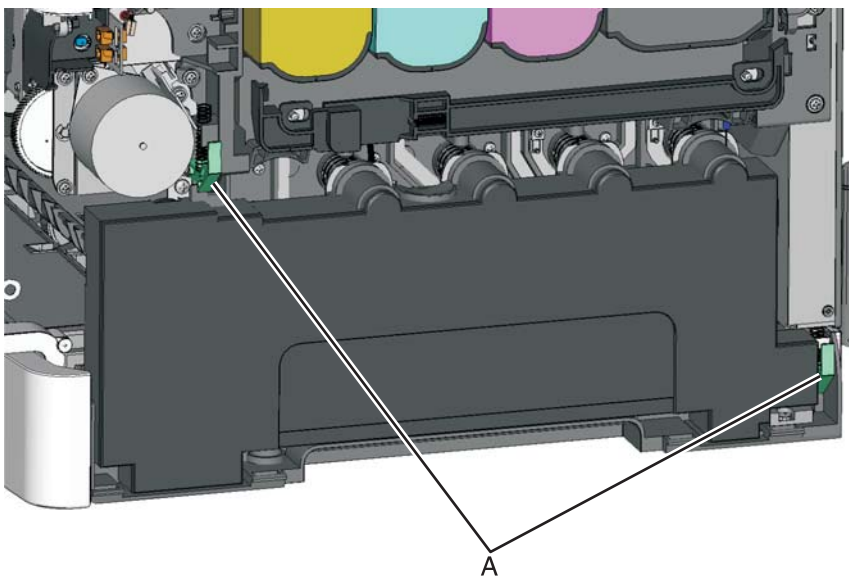


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### ***Waste toner bottle removal***

The waste toner bottle is not a FRU.

1. Open the front cover.
2. Lift the toner cover by sliding the latch to the left.
3. Remove the right cover assembly. See **“Right cover assembly removal” on page 4-12.**
4. Press the two tabs (A) to release the waste toner bottle, and remove it.

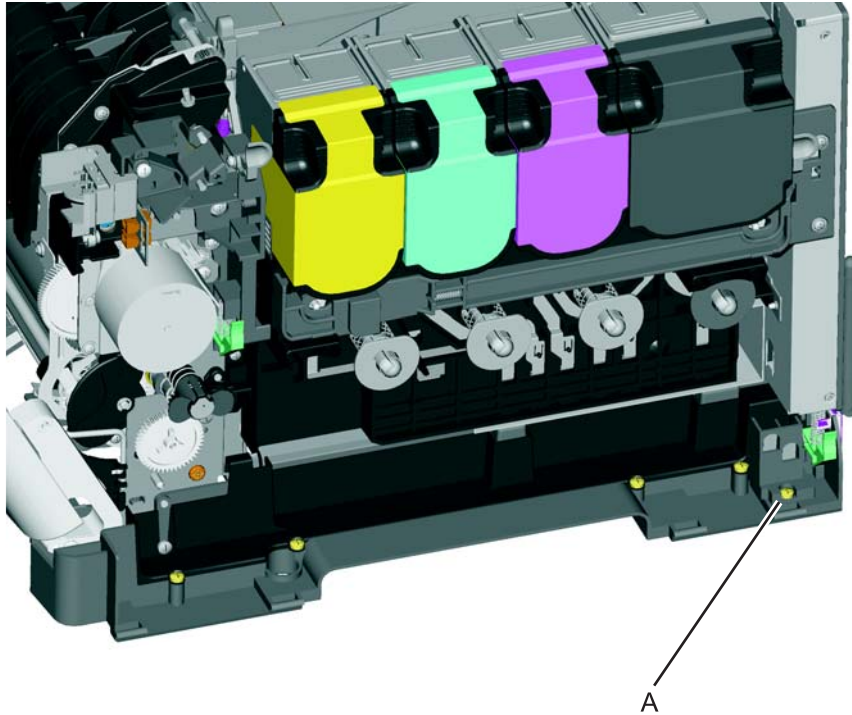




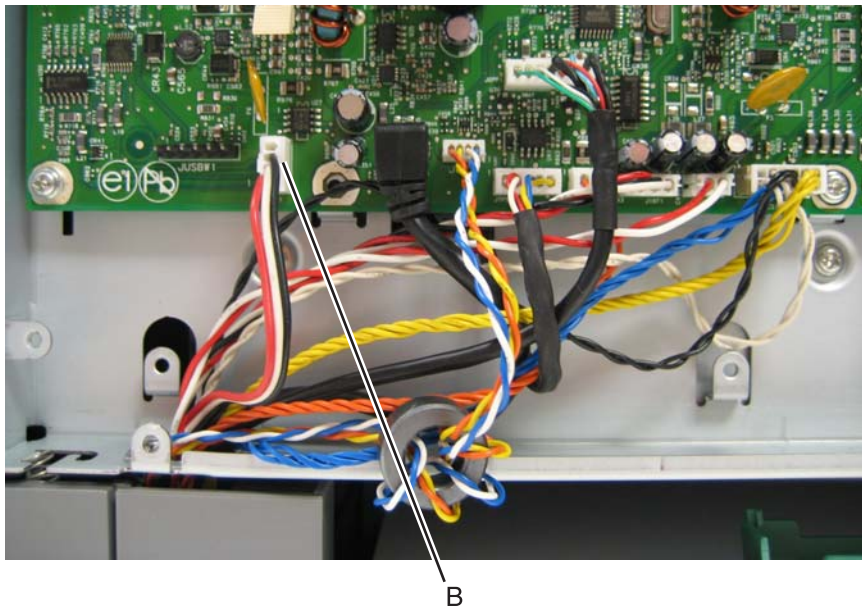
## Waste toner bottle contact block removal

See the on **“Waste toner bottle contact block”** on page 7-9 for the part number.

1. Open the front cover.
2. Remove the right cover assembly. See **“Right cover assembly removal”** on page 4-12.
3. Remove the waste toner bottle. See **“Waste toner bottle removal”** on page 4-84.
4. Remove the screw (A) from the back of the waste toner bottle contact block.



5. Remove the rear shield. See **“Top cover assembly removal”** on page 4-13.
6. Disconnect the waste toner bottle contact block cable (B) from the controller board.



7. Remove the waste toner bottle contact block.

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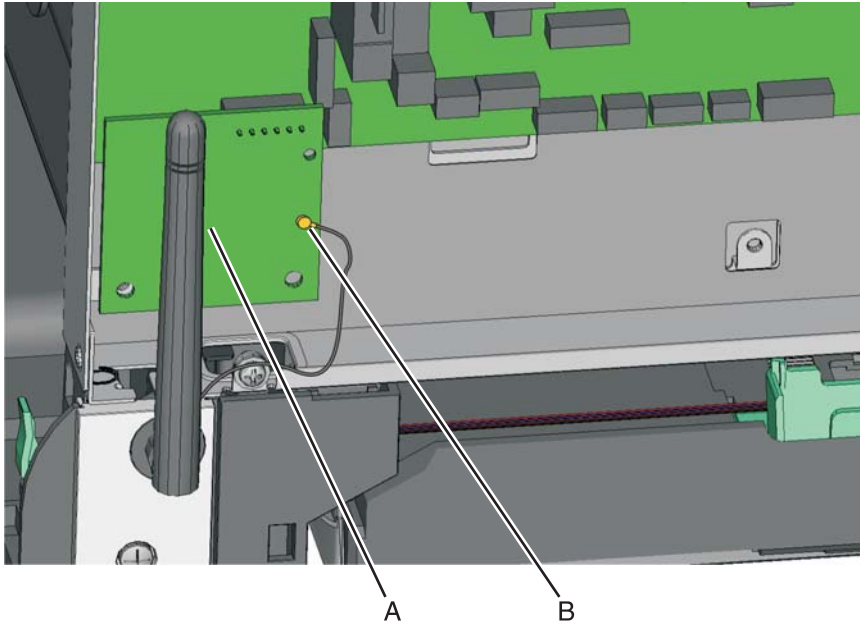


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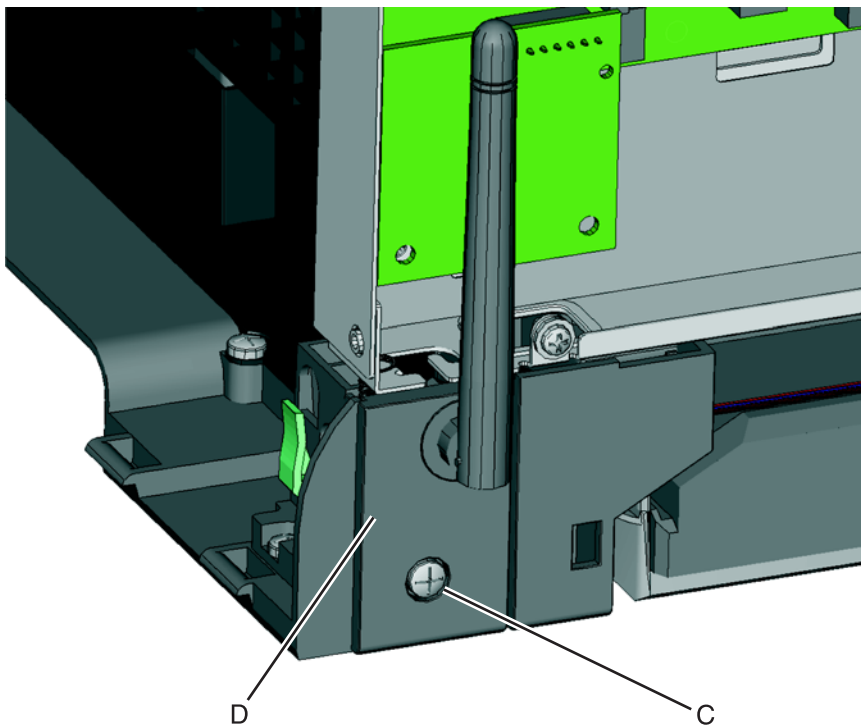
## Wireless network antenna removal

See **“Antenna for wireless card—C544dw only” on page 7-7** for the part number.

1. Remove the rear shield. See **“Top cover assembly removal” on page 4-13**.
2. Lift to disconnect the wireless card (A) from the controller board.
3. Carefully disconnect the antenna cable (B) from the wireless card at the card.



4. Remove the screw (C) that secures the antenna cover (D) to the frame, and remove the antenna cover and antenna.



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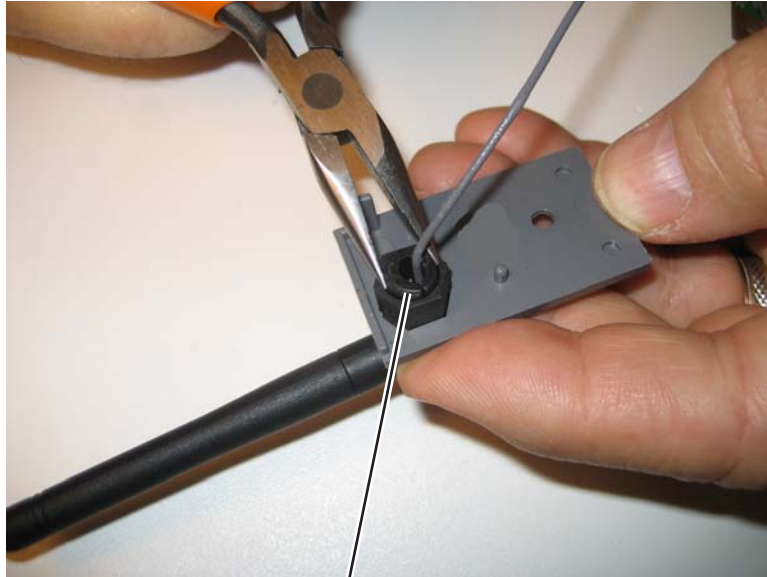


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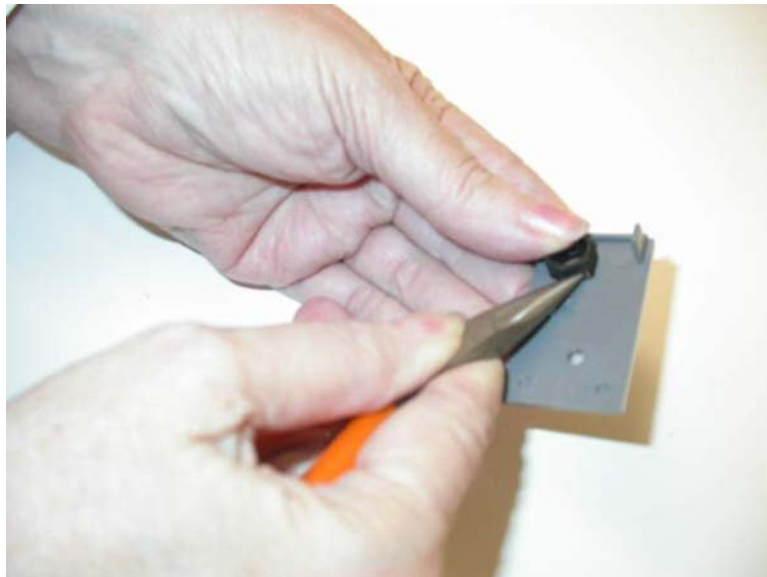
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5. Gently squeeze the fastener (E) with needlenose pliers. Slide the antenna cable and cable through the hole in the bracket.



E

6. If the bushing is damaged, remove it by pressing the tabs on each side.  
**Note:** Take note of the orientation of the bushing. When reinstalling, place the cover upright, bend the antenna as it would be positioned, and make sure the antenna can move about 30° in each direction from the vertical.



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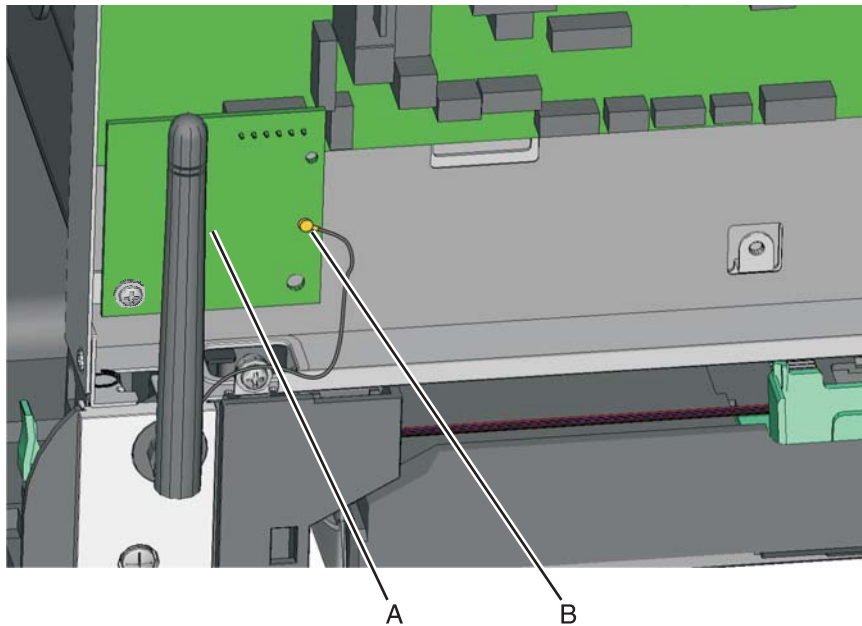


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## Wireless network card

See **“Wireless network card assembly—C544dw only”** on page 7-7 for the part number.

1. Remove the rear shield. See **“Top cover assembly removal”** on page 4-13.
2. Lift to remove the wireless card (A) from the controller board.
3. Carefully disconnect the antenna cable (B) from the wireless card at the card.



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## 5. Connector locations

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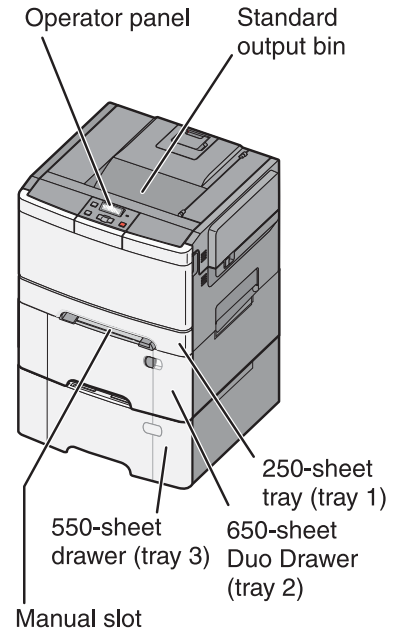
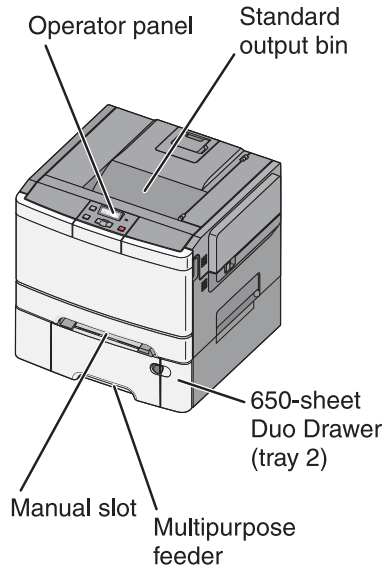
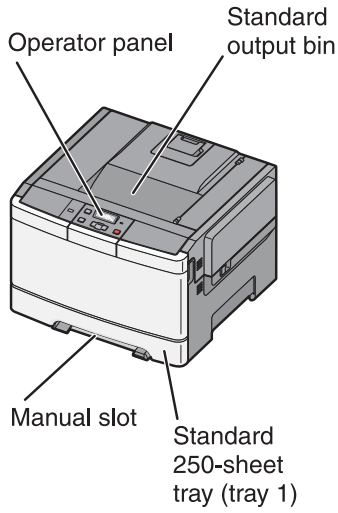


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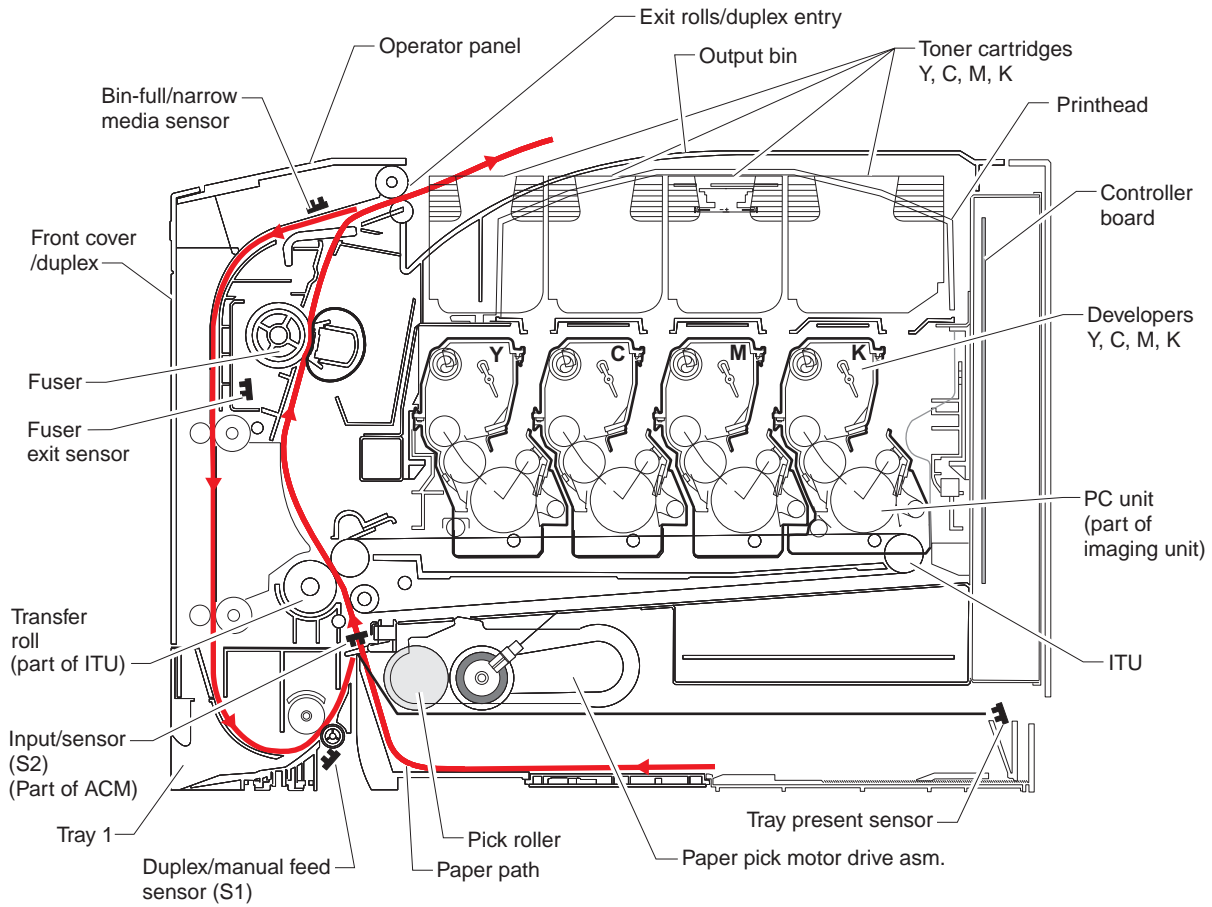


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### Locations



Note the paper path shown in red.



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## Connectors

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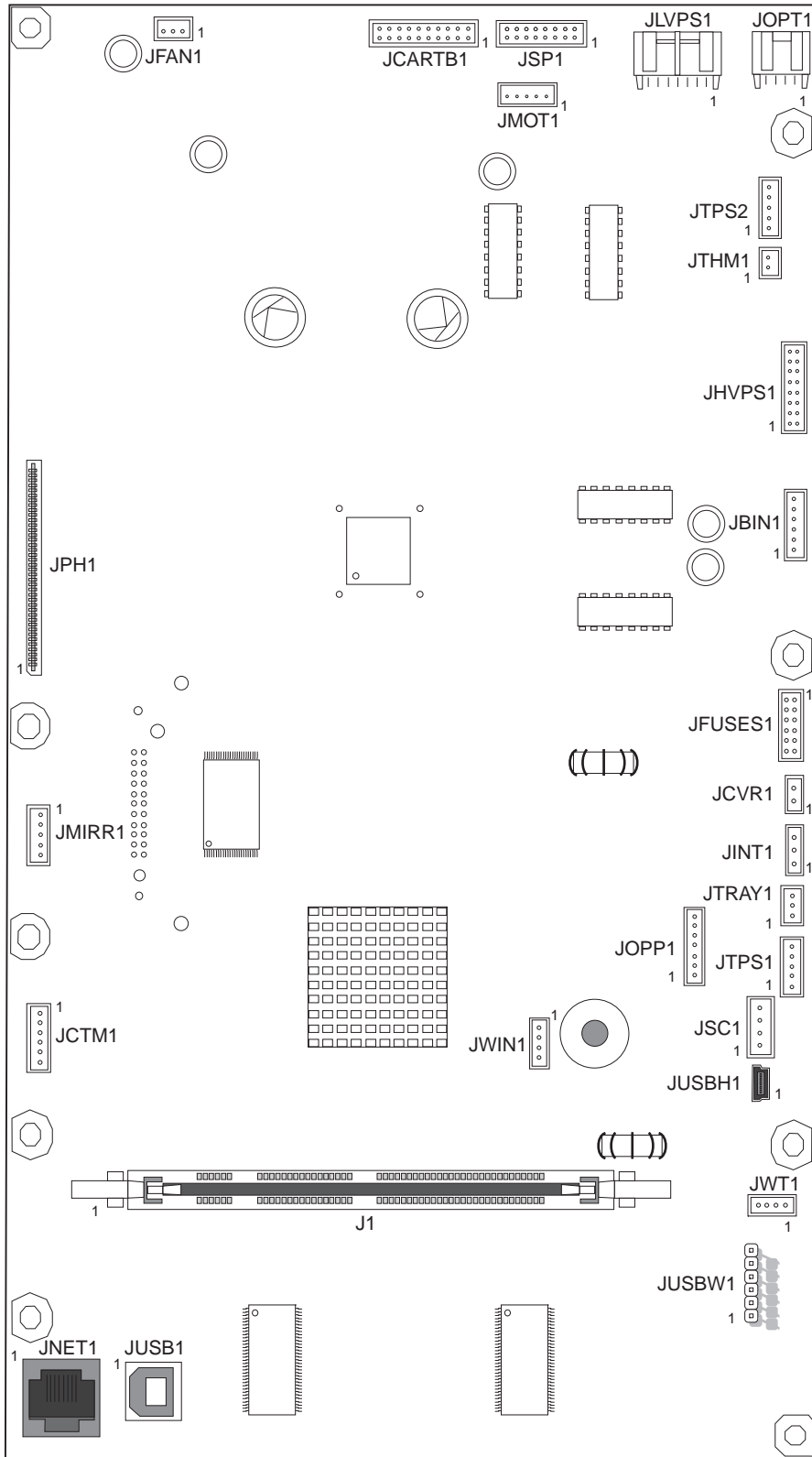


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### Controller board diagram



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### Controller board connectors

**Note:** SW indicates voltage is switched on during a print cycle, otherwise voltages are taken with printer at Ready state (door closed) and cables plugged in.

Connector	Pin no.	Signal
<b>JBIN1</b> Bin-full/narrow media sensor and fuser exit sensor <ul style="list-style-type: none"> <li>• Bin-full/narrow media—pins 1–3</li> <li>• Fuser exit sensor—pins 4–6</li> </ul>	1	V_BF
	2	S_BIN_FB, +3.3 V dc
	3	Ground
	4	V_BIN_4
	5	FUSER_EXIT_SNSR, +3.3 V dc
	6	Ground
<b>JCARTB1</b> Drive motor for cartridges <ul style="list-style-type: none"> <li>• Black drive motor (rear motor) even pin numbers 2–20.</li> <li>• CMY (color) drive motor odd pin numbers 1–19.</li> </ul>	1	CART1_HALL_U
	2	NC_CARTB1_2
	3	+CART1_HALL_V
	4	V_CART2_WING_W, +24 V dc
	5	CART1_HALL_W
	6	V_CART2_WING_V, +24 V dc
	7	CART1_PG
	8	V_CART2_WIND_U, +24 V dc
	9	Ground
	10	+5 V dc_SW
	11	+5V dc_SW
	12	Ground
	13	V_CARTR1_WIND_U, +24 V dc
	14	CART2_FG
	15	V_CARTR1_WIND_V, +24 V dc
	16	CART2_HALL_W
	17	V_CARTR1_WIND_W, +24 V dc
	18	CART2_HALL_V
	19	NC_JCARTB1_19
	20	CART2_HALL_U
<b>JCTM1</b> Toner meter connector	1	+5V_SW
	2	CART_METER_C_IN
	3	CART_METER_M_IN
	4	CART_METER_Y_IN
	5	CART_METER_K_IN
	6	Ground
<b>JCVR1</b> Cover open switch	1	V_24V_CVR, +24 V dc
	2	COVER_OPEN (cover open +0 V dc; cover closed +24 V dc)

**Controller board connectors (continued)**

**Note:** SW indicates voltage is switched on during a print cycle, otherwise voltages are taken with printer at Ready state (door closed) and cables plugged in.

Connector	Pin no.	Signal
JFAN1 System fan	1	FAN_FG, +3.3 V dc
	2	Ground
	3	V_FAN_P3
JFUSES1 Fuser Motor pins—1–4 Thermistor—black wire 5–6 Duplex sensor (S1)—7–9. Thermistor—white wire 10–11	1	V_FUSER_PHA+, +24 V dc (doors closed)
	2	V_FUSER_PHA–, +24 V dc (doors closed)
	3	V_FUSER_PHB+, +24 V dc (doors closed)
	4	V_FUSER_PHB–, +24 V dc (doors closed)
	5	FUSER_HQ_THM, +2.3 V dc
	6	FUSER_HK_THM_RTN, ground
	7	+5V_SW, +5 V dc
	8	Ground
	9	S1_MPF_SNS, +3.3 V dc
	10	BUR_THM, +2.5 V dc
	11	FUSER_BUR_THM_RTN, ground
	12	Ground, (no wire)
JHVPS1 Developer/transfer HVPS	1	M_DEV_PWM_OUT
	2	K_DEV_PWM_OUT
	3	C_DEV_PWM_OUT
	4	CMY_CHG)PWM_OUT
	5	Y_DEV_PWM_OUT
	6	K_CHG_PWM_OUT
	7	CMY_SRVO_OUT, +3.3 V dc
	8	ITM_TX_PWM_OUT
	9	CMY_TX_PWM_OUT
	10	ITM_SRVO_OUT, +3.3 V dc
	11	K_SRVO_OUT, +3.3 V dc
	12	K_TX_PWM_OUT
	13	+24 V dc
	14	Ground
	15	5V_HVPS_REF
	16	Ground
JINT1 +5V safety interlock connector	1	VS_JINT–1, +5 V dc
	2	Ground
	3	VS_INT, +5 V dc (door closed), 0 V dc (open)

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**Controller board connectors (continued)**

**Note:** SW indicates voltage is switched on during a print cycle, otherwise voltages are taken with printer at Ready state (door closed) and cables plugged in.

Connector	Pin no.	Signal
JLVPS1 Low-voltage power supply	1	+5 V dc
	2	Ground
	3	+5 V dc
	4	Ground
	5	+5 V dc
	6	Ground
	7	+24 V dc
	8	Ground
	9	+24 V dc
	10	Ground
	11	+24 V dc
	12	Ground
	13	RELAY_DRIVE
	14	ZERO_XING_IN
	15	HEAT1_ON
	16	Ground
JMIRR1 Mirror motor connector	1	MM_REFR
	2	MM_LOCK, +3.3 V dc
	3	MM_START
	4	Ground
	5	+24 V dc
JOPP1 Operator panel connector	1	I2C_DATA
	2	V_PANEL+5 V, +5 V dc
	3	I2C_CLK
	4	Ground
	5	OP_IRQ_N, +4–5 V dc
	6	+3.3 V dc
	7	Ground

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**Controller board connectors (continued)**

**Note:** SW indicates voltage is switched on during a print cycle, otherwise voltages are taken with printer at Ready state (door closed) and cables plugged in.

Connector	Pin no.	Signal
JOPT1 Optional—Tray(s)	1	TXD_PP
	2	Ground
	3	Ground
	4	RXD_PP
	5	+24 V dc
	6	Ground
	7	+5V_OPTIONS, +5 V dc
	8	S2
	9	Ground
	10	Ground
JPH1 Printhead flat cable connector	1	VDO_HSYNC1_C, +5 V dc
	2	VDO_PH_OK, +3.3 V dc
	3	VDO_HSYNC0, +5 V dc
	4	VDO_LEN0, +3.3 V dc
	5	VDO_BOOST3
	6	+3.3 V dc
	7	VDO_BOOST1
	8	-5V_PH, +5 V dc
	9	VDO_BOOST2 (Shade B)
	10	+5_PH, +5 V dc
	11	VDO_BOOST0
	12	Ground
	13	D_VDO_7+
	14	D_VDO_7-, +1.5 V dc
	15	Ground
	16	D_VDO_3+, +1.5 V dc
	17	D_VDO_3-
	18	Ground
	19	D_VDO_6+
	20	D_VDO_6-
	21	Ground

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**Controller board connectors (continued)**

**Note:** SW indicates voltage is switched on during a print cycle, otherwise voltages are taken with printer at Ready state (door closed) and cables plugged in.

Connector	Pin no.	Signal
JPH1 Printhead flat cable connector (continued)	22	D_VDO_2+
	23	D_VDO_2-
	24	Ground
	25	D_VDO_5+
	26	D_VDO_5-
	27	Ground
	28	D_VDO_1+
	29	D_VDO_1-
	30	Ground
	31	D_VDO_4+
	32	D_VDO_4-
	33	Ground
	34	D_VDO_0+
	35	D_VDO_0-
	36	Ground
	37	I2CCLK_PH
	38	VDO_LADJ1, +3.3 V dc
39	I2CDATA_PH	
40	VDO_LADJ0, +3.3 V dc	
JSC1 SC cartridge	1	+3.3 V dc
	2	DATA_SC, +3.3 V dc
	3	SCK_SC
	4	Ground

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**Controller board connectors (continued)**

**Note:** SW indicates voltage is switched on during a print cycle, otherwise voltages are taken with printer at Ready state (door closed) and cables plugged in.

Connector	Pin no.	Signal
<b>JSP1</b> Smart pick drive (paper pick motor drive assembly) <ul style="list-style-type: none"> <li>• Encoder—pins 1, 3, 5, 7, and 9</li> <li>• Smart pick—pins 2, 4</li> <li>• Motor—pins 6, 8, 10, 12</li> <li>• Input (S2) sensor—pins 13–16</li> </ul>	1	ANODE (no wire)
	2	M1_OUT1, +24 V dc (0 V dc with door open)
	3	Ground (no wire)
	4	M1_OUT2, +24 V dc (0 V dc with door open)
	5	VCC, 5 V_SW
	6	Ground (no wire)
	7	Ground
	8	CATHODE
	9	VOUTA
	10	+5 V dc
	11	VOUTB
	12	5 V_SW
	13	Ground (no wire)
	14	ANODE
	15	+5 V dc
	16	Ground
<b>JTHM1</b> TPS therm connector	1	TPS_THERM_SNS, +1.5 V dc
	2	TPS_SNS_RTN, ground
<b>JTPS1</b> TPS1 connector	2	ANODE
	1	CATHODE
	3	Ground (no wire)
	4	+5V_SW
	5	Ground
<b>JTPS2</b> TPS2 connector	1	ANODE
	2	CATHODE
	3	Ground (no wire)
	4	+5 V_SW
	5	Ground
<b>JTRAY1</b> Bottle sensors	1	+5V_SW
	2	DUPLEX_ENT, +5 V dc
	3	Ground
<b>JUSB1 Port</b> USB connector	G2	Ground
	1	USB +5 V dc
	2	USB D–
	3	USB D+
	4	Ground
G1	Ground	

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**Controller board connectors (continued)**

**Note:** SW indicates voltage is switched on during a print cycle, otherwise voltages are taken with printer at Ready state (door closed) and cables plugged in.

Connector	Pin no.	Signal
JUSBW1 USB wireless connector	1	Ground
	2	USB_HST_VP
	3	USB_HST_VM
	4	Ground
	5	+5 V dc
	6	+3.3 V dc
JWT1 Waste toner detection	1	SENSE
	2	VREF
	3	+1.5 V dc
	4	Ground (no wire)

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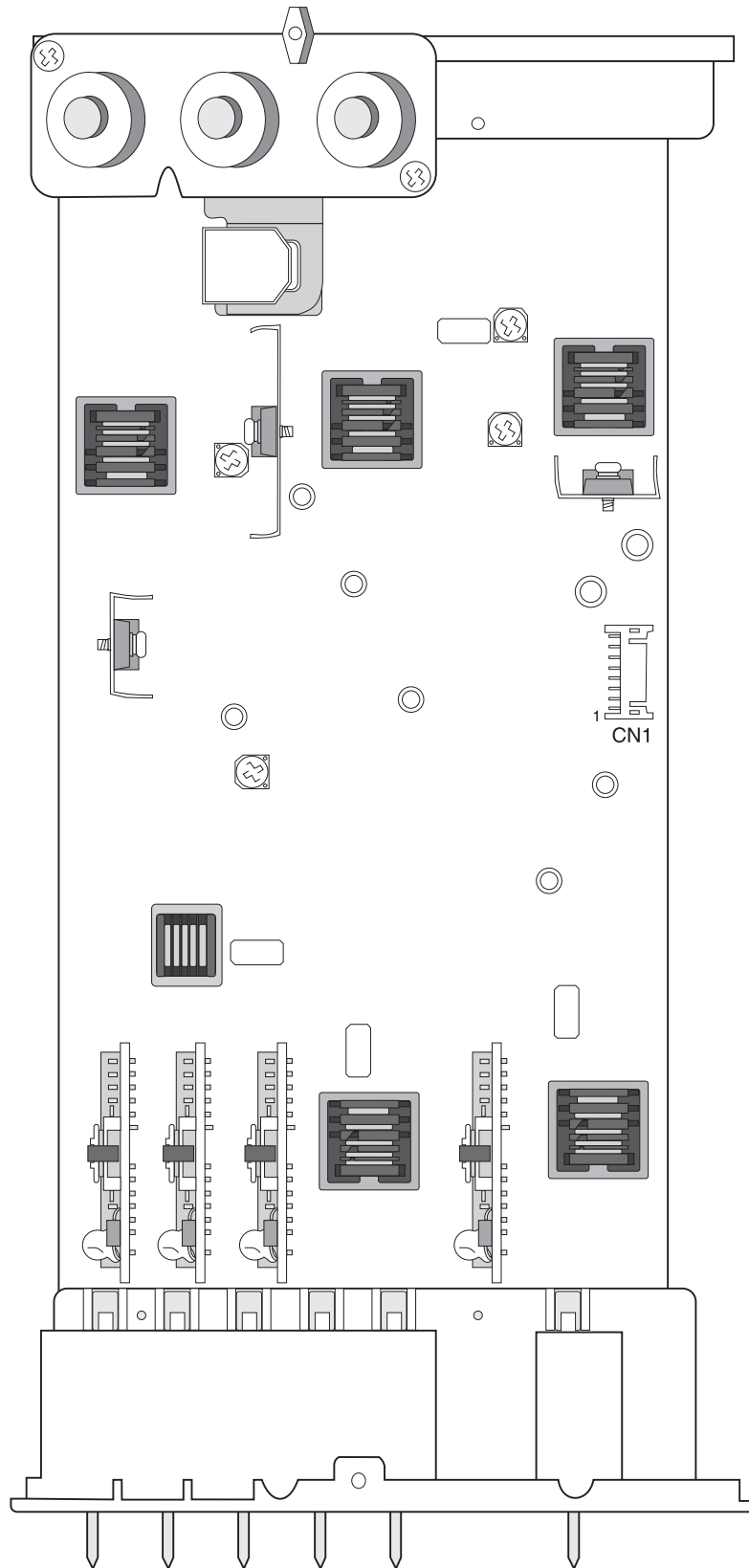


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### High-voltage power supply (HVPS) diagram



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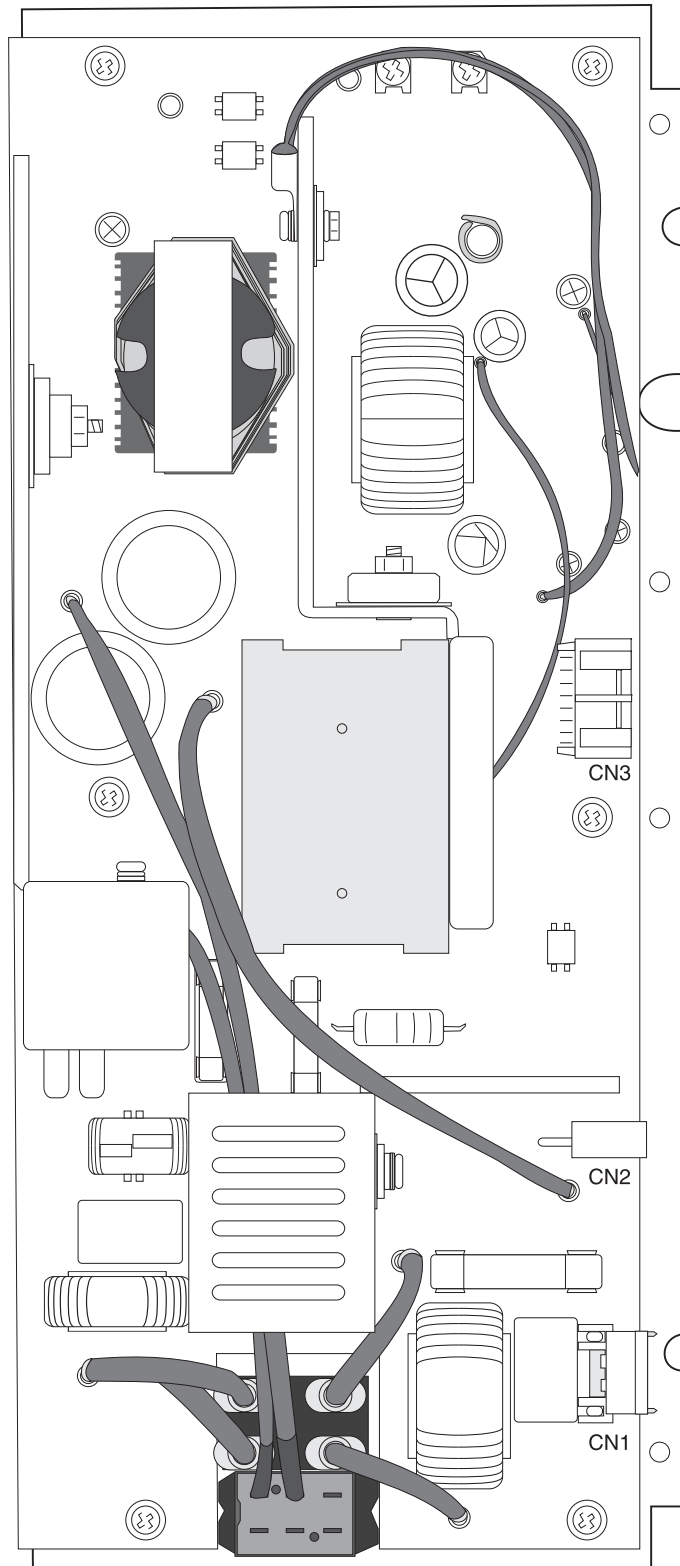
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**Low-voltage power supply (LVPS) diagram**



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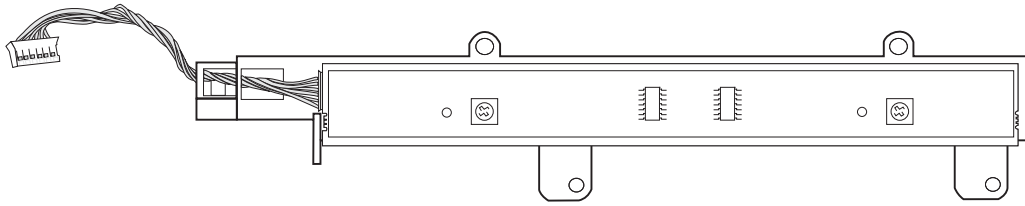


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### Toner meter cycle (TMC) card



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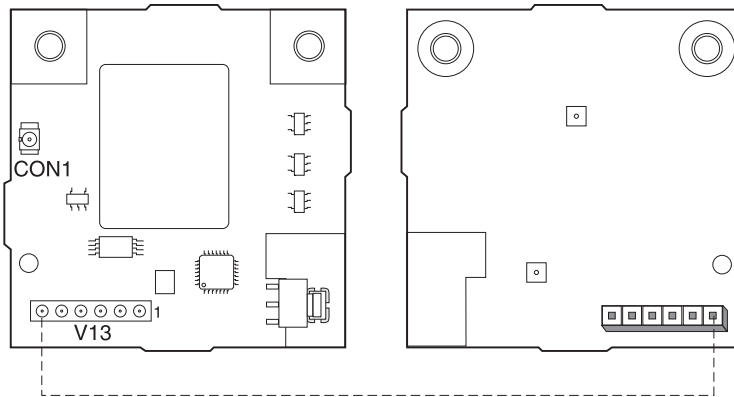


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### Wireless network card

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## 6. Preventive maintenance

This chapter describes procedures for printer preventive maintenance. Follow these recommendations to help prevent problems and maintain optimum performance.

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### Safety inspection guide

The purpose of this inspection guide is to aid you in identifying unsafe conditions.

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

Check the following items:

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

### Lubrication specifications

Lubricate only when parts are replaced or as needed, not on a scheduled basis. Use of lubricants other than those specified can cause premature failure. Some unauthorized lubricants may chemically attack polycarbonate parts. Use IBM no. 10 oil, P/N 1280443 (Approved equivalents: Mobil DTE27, Shell Tellus 100, Fuchs Renolin MR30), IBM no. 23 grease (Approved equivalent Shell Darina 1), and grease, P/N 99A0394 to lubricate appropriate areas. Use Nyogel type 774 to lubricate the Fuser Drive Assembly and Nyogel 744 to lubricate the ITU and Cartridge Drive assemblies.

### Scheduled maintenance

#### Maintenance kit

[After 60,000 printed pages \(sides\) a maintenance kit may be required.](#)

It is necessary to replace the fuser assembly, ITU, and duplex reference plate to maintain the print quality and reliability of the printer. The parts are available as a maintenance kit with the following part numbers:

#### Maintenance kits

Description	Part number
115 V Maintenance kit (115 V fuser, ITU, duplex reference edge)	40X2254
230 V Maintenance kit (230 V fuser, ITU, duplex reference edge)	40X2255
100 V Maintenance kit (100 V fuser, ITU, duplex reference edge)	40X2261

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## 7. Parts catalog

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### How to use this parts catalog

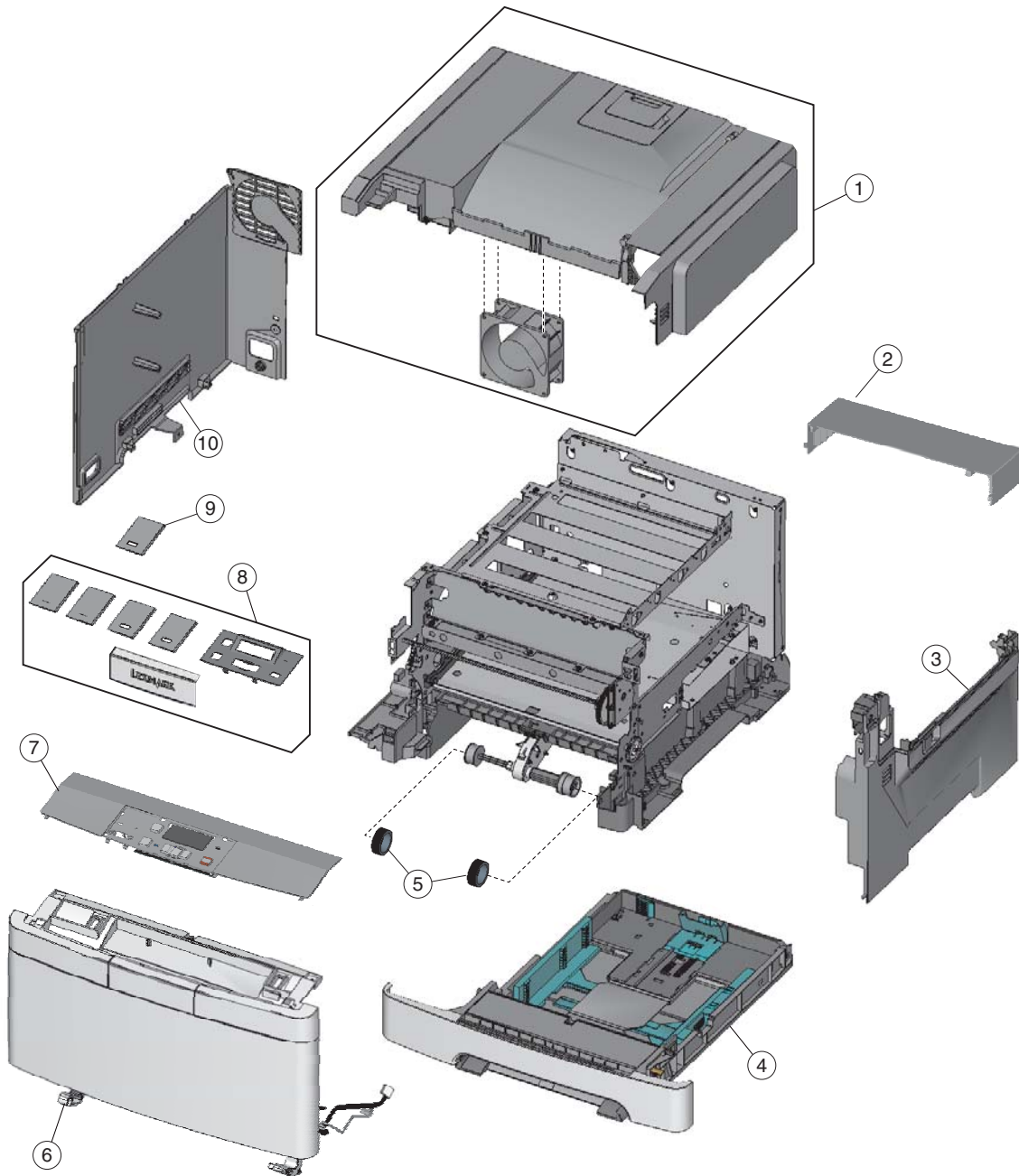
The following legend is used in the parts catalog:

Asm-index	Part number	Units/mach	Units/FRU	Description
-----------	-------------	------------	-----------	-------------

- **Asm-index:** Identifies the assembly and the item in the diagram. For example, 3-1 indicates Assembly 3 and item number 1 in the table.
- **Part number:** Identifies the unique number that identifies this FRU.
- **Units/mach:** Refers to the number of units actually used in the base machine or product.
- **Units/FRU:** 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.
- **PP:** (Parts Packet) in the parts description column indicates the part is contained in a parts packet.
- Model information used in the parts catalog:

Model name	Machine type/model	Description
Lexmark C540n	5025-210	Ethernet network
Lexmark C543dn	5025-230	Ethernet network, duplex
Lexmark C544n	5025-410	Ethernet network, USB-A host port for flash drives
Lexmark C544dn	5025-430	USB-A host port for flash drive, duplex, Ethernet network
Lexmark C544dw	5025-43W	802.11n network wireless network, duplex, ethernet, USB-A host port for flash.
Lexmark C546dtn	5025-439	USB-A host port for flash drive, duplex, Ethernet network, 650-sheet Duo Drawer.

# Assembly 1: Covers



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## Assembly 1: Covers

Asm-Index	Part number	Units/mach	Units/FRU	Description
1—1	40X5418	1	1	Top cover assembly
2	40X5441	1	1	Dust cover
3	40X5416	1	1	Right cover assembly
4	40X5419	1	1	250-sheet tray assembly
5	40X5168	2	2	Pick tires
6	40X5430	1	1	Front cover assembly (including duplex and USB port cable)—C543dn, C544dn, C544n, C546dtn
6	40X5420	1	1	Front cover assembly (excluding duplex and USB port cable)—C540n
7	40X5431	1	1	Operator panel and display assembly
7	40X5436	1	1	Operator panel (DBCS) and display assembly
8	40X5432	1	1	Operator panel bezel and name plates, including: <ul style="list-style-type: none"> <li>• Bezel (1)</li> <li>• Name plates (4)</li> <li>• Logo plate (1)</li> </ul>
9	40X2867	1	1	Name plate, C546dtn only
9	40X6741	1	1	Name plate, CV450n, and CV546dtn only
10	40X5417	1	1	Left cover assembly

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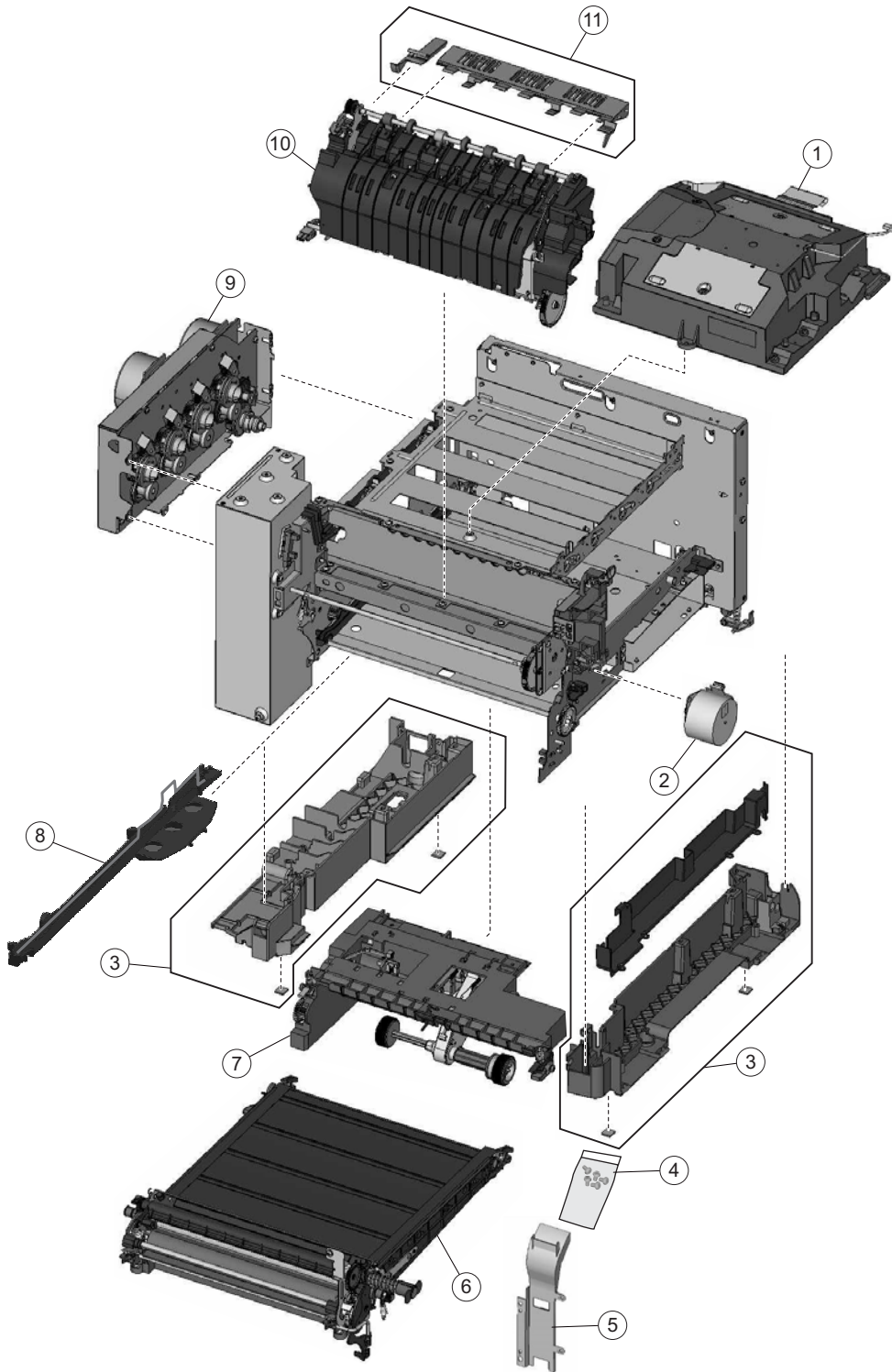


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## Assembly 2: Frames



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## Assembly 2: Frames

Asm-Index	Part number	Units/mach	Units/FRU	Description
2—1	40X5411	1	1	Printhead
2	40X5415	1	1	Fuser drive motor assembly
3	40X5422	1	1	Lower left frame and lower right frame with cable cover
4	40X5424	1	1	Screw packet, miscellaneous screws <ul style="list-style-type: none"> <li>• TAPTITE M3 L6 panhead (4)</li> <li>• Tray Bias (2)</li> <li>• Fuser Latch (2)</li> <li>• ITU Front Hold Down (1)</li> <li>• Front Cover Latch Spring (2)</li> <li>• M3 x 6 panhead (2)</li> <li>• M3 x 6 Shoulder (1)</li> <li>• M3.5 X 5 flathead Plastite (1)</li> <li>• METAL ROLN M3.5 8L (2)</li> <li>• PLAST ROLN 2.9 8L (2)</li> <li>• PLAST ROLN 3.5 6L (4)</li> </ul>
5	40X5803			Duplex reference edge
6	40X5403	1	1	Image transfer unit (ITU) assembly
7	40X1557	1	1	Paper pick motor drive assembly—standard tray
8	41X0580	1	1	ITU guide
9	40X5412	1	1	Main drive gear assembly, with motors
10	40X7562	1	1	Fuser assembly, 115 V
10	40X7563	1	1	Fuser assembly, 230 V
10	40X7564	1	1	Fuser assembly 100 V
11	40X5433	1	1	Exit deflector and bin-full/narrow media sensor flag
NS	40X8674	1	1	Front toner-door pivot

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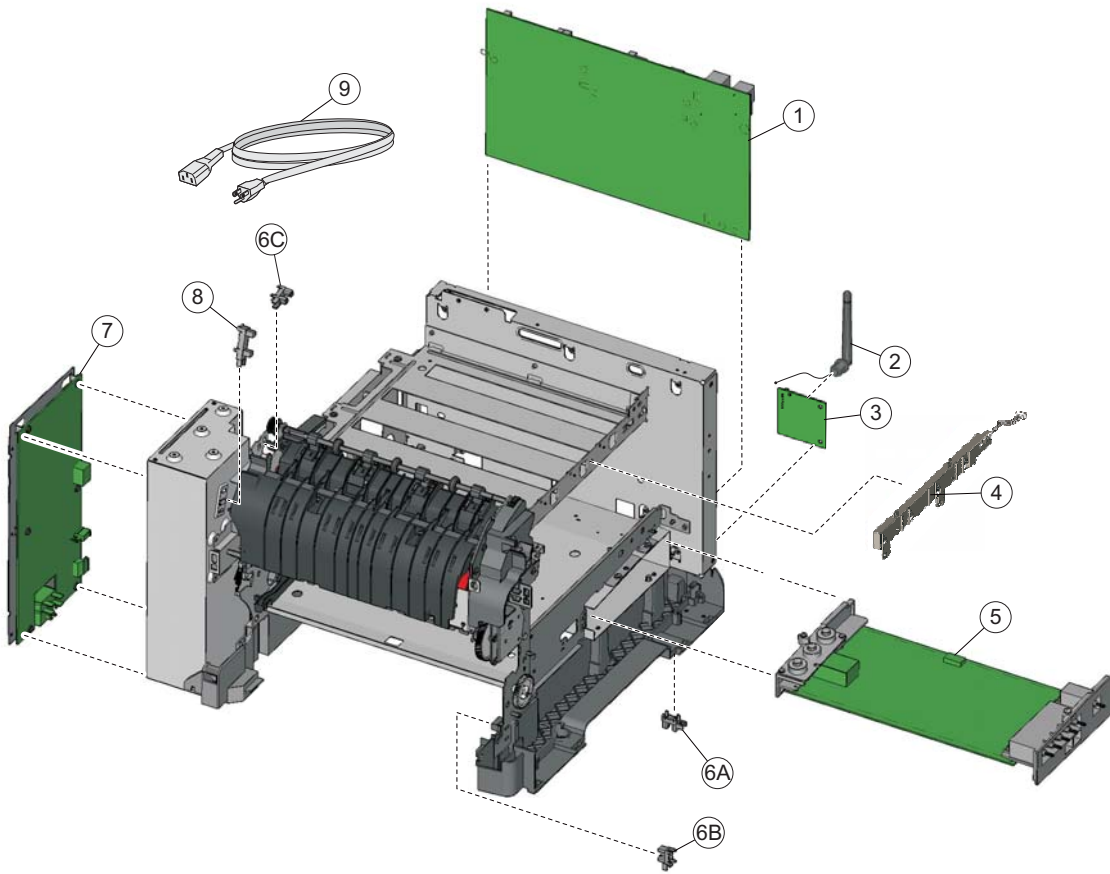


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## Assembly 3: Electronics



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### Assembly 3: Electronics

Asm-Index	Part number	Units/mach	Units/FRU	Description
3—1	40X1525	1	1	Controller board—C544n, C544dn, C544dw
1	40X7096	1	1	Controller board—C540n, C543dn, C540dw
1	40X2268	1	1	Controller board—C546dn only
2	40X5319	1	1	Antenna for wireless card—C544dw only
3	40X5036	1	1	Wireless network card assembly—C544dw only
4	40X5404	1	1	Toner meter cycle card assembly
5	40X8395	1	1	High-voltage power supply
6	40X5426	3	1	Photo sensor and retainer (one per package), used for: A Tray present B Duplex C Bin-full/narrow media sensor
7	40X5409	1	1	Low-voltage power supply (universal power supply)
8	40X5413	1	1	Fuser exit sensor
9	40X0269	1	1	Power cord, 2.5 m (straight)—USA, Canada, Bolivia, Peru (shown)
9	40X0288	1	1	Power cord, 2.5 m (straight)—Argentina
9	40X0301	1	1	Power cord, 2.5 m (straight)—Australia
9	40X4596	1	1	Power cord, 2.5 m (straight)—Brazil
9	40X0273	1	1	Power cord, 2.5 m (straight)—Chile, Uruguay, Italy
9	40X1774	1	1	Power cord, 2.5 m (straight)—Denmark
9	40X0275	1	1	Power cord, 2.5 m (straight)—Israel
9	40X0270	1	1	Power cord, 2.5 m (straight)—Japan
9	40X1792	1	1	Power cord, 2.5 m (straight)—Korea
9	40X3141	1	1	Power cord, 2.5 m (straight)—Paraguay
9	40X0303	1	1	Power cord, 2.5 m (straight)—PRC
9	40X1773	1	1	Power cord, 2.5 m (straight)—South Africa
9	40X1772	1	1	Power cord, 2.5 m (straight)—Switzerland
9	40X1791	1	1	Power cord, 2.5 m (straight)—Taiwan
9	40X0271	1	1	Power cord, 2.5 m (straight)—United Kingdom

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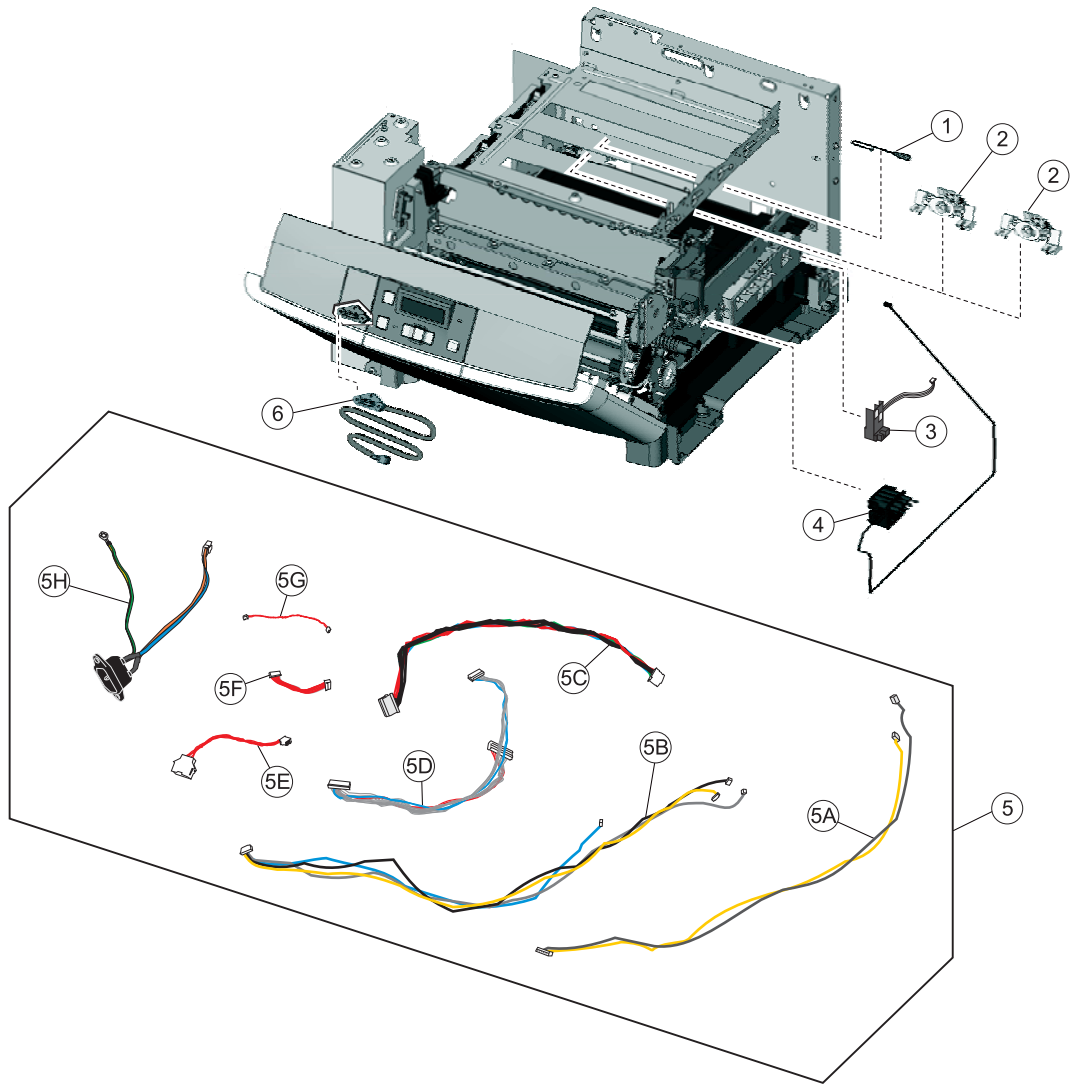


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## Assembly 4: Cables



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**Assembly 4: Cables**

Asm-Index	Part number	Units/mach	Units/FRU	Description
4—1	40X5429	1	1	ITU paper path thermistor
2	40X5414	2	1	Toner density sensors, left or right (one in package)
3	40X7046	1	1	Waste toner bottle contact block
4	40X5421	4	4	Toner cartridge contacts (Pogo pin)
5	40X5423	1	1	Cable packet, used for: A Fuser exit/narrow media to controller board B Fuser motor, thermistor, and duplex sensor to controller board C LVPS to controller board D CMY/K motors to controller board E Tray 2 to controller board F HVPS to controller board G Tray present sensor to controller board H AC power to LVPS
6	40X5425	1	1	USB port and cable (for portable flash drive)

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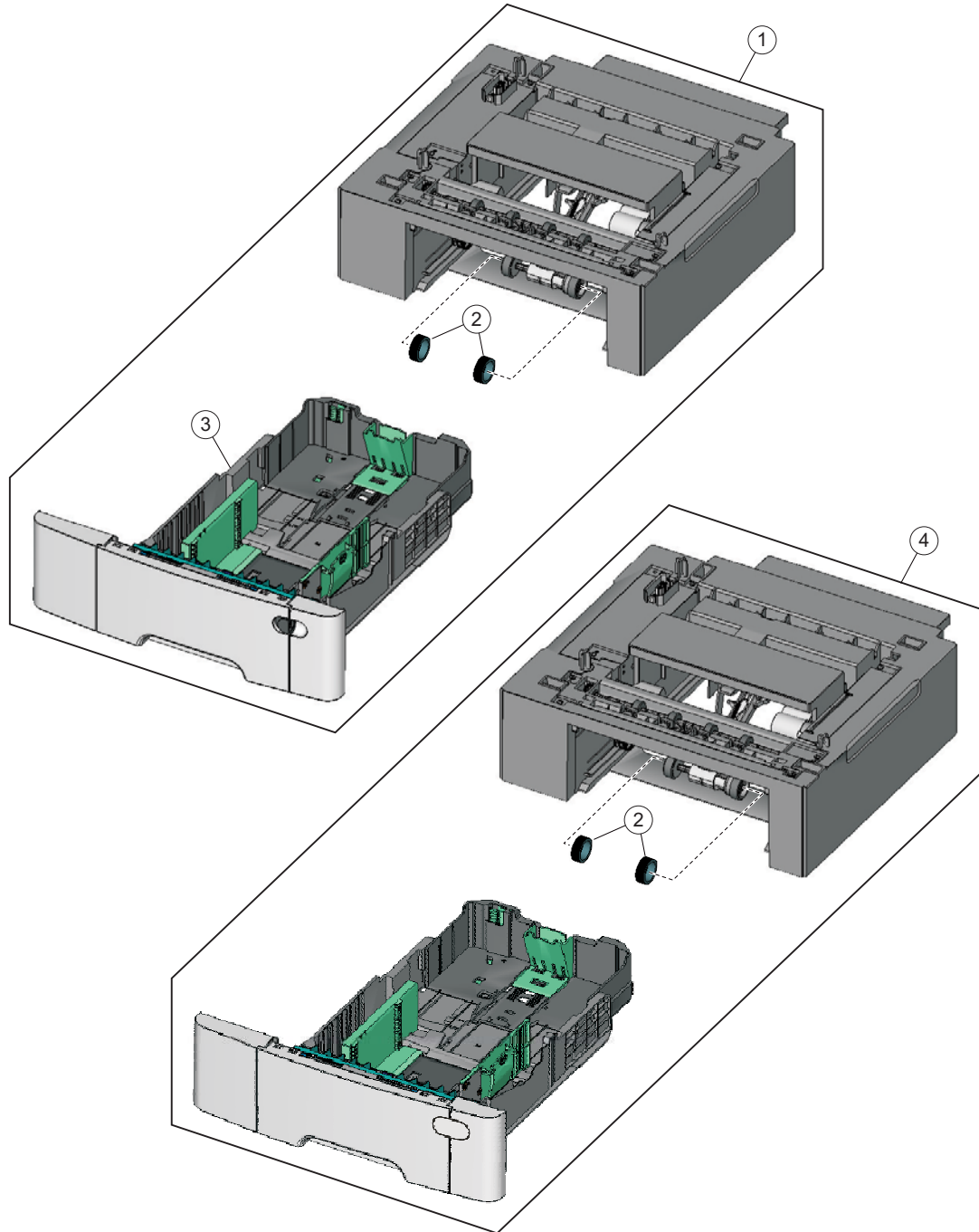


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**Assembly 5: Media drawers and trays**

Asm-Index	Part number	Units/opt.	Units/FRU	Description
5—1	40X6997	1		Optional 650-sheet Duo Drawer (complete)— (includes 100-sheet MPF)
2	40X5168	2	2	Pick tires
3	40X2285	1	1	650-sheet Duo Drawer <b>tray assembly</b>
4	40X8341	1	1	Optional 550-sheet drawer (complete)—C546dtn only

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## Assembly 6: Options and miscellaneous

Asm-Index	Part number	Units/opt.	Units/FRU	Description
6—NS	40X2254	1	1	115 V Maintenance kit (fuser, ITU, duplex reference edge)
NS	40X2255	1	1	230 V Maintenance kit (fuser, ITU, duplex reference edge)
NS	40X2261	1	1	100 V Maintenance kit (fuser, ITU, duplex reference edge)
NS	40X5937	1	1	128MB DDR DRAM DIMM card assembly
NS	40X5938	1	1	256MB DDR DRAM DIMM card assembly
NS	40X5939	1	1	512MB DDR DRAM DIMM card assembly
NS	40X1455	1	1	64MB Flash card assembly
NS	40X5969	1	1	Korean font card assembly
NS	40X5970	1	1	Simplified Chinese font card assembly
NS	40X5971	1	1	Traditional Chinese font card assembly
NS	40X5972	1	1	Japanese font card assembly
NS	40X1368	1	1	USB cable, packaged (2 m)
NS	40X0395	1	1	Field relocation package assembly

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