Lexmark MS410 Series

Machine Type 4514-420, -430

Service Manual

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October 17, 2012 **www.lexmark.com**

P/N 12G2879

Product information

Product name:
Lexmark MS410 Series

Machine type:
4514

Model(s):
420, 430

Edition notice

October 17, 2012

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Laser notices

Laser notice

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

Class I laser products are not considered to be hazardous. The printer contains internally a Class IIIb (3b) laser that is nominally a 7 milliwatt gallium arsenide laser operating in the wavelength of 655-675 nanometers. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

Laser-Hinweis

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

Laserprodukte der Klasse I werden nicht als gefährlich eingestuft. Der Drucker enthält im Inneren einen Laser der Klasse IIIb (3b), und zwar einen 7-Milliwatt-Gallium-Arsenid-Laser, der im Wellenlängenbereich von 655 bis 675 Nanometern arbeitet. 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.

Avis relatif à l'utilisation du laser

L'imprimante est certifiée conforme aux exigences de la réglementation des Etats-Unis relative aux produits laser (DHHS 21 CFR, Chapter I, Subchapter J for Class I (1)). Pour les autres pays, elle est certifiée conforme aux exigences des normes IEC 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), laser arséniure de gallium 7 milliwatts opérant sur une longueur d'onde de l'ordre de 655 à 675 nanomètres. Le système laser ainsi que l'imprimante ont été conçus de manière à ce que personne ne soit exposé à des rayonnements laser dépassant le niveau de classe I dans le cadre d'un fonctionnement normal, de l'entretien par l'utilisateur ou de la maintenance.

Avvertenze sui prodotti laser

La stampante è certificata negli Stati Uniti come stampante conforme ai requisiti DHHS 21 CFR, Capitolo I, Sottocapitolo J per i prodotti laser di Classe I (1), mentre in altri paesi è certificata 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 di Classe IIIb (3b), che è nominalmente un laser ad arseniuro di gallio a 7 milliwatt funzionante a una lunghezza d'onda di 655-675 nanometri. 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.

Aviso de láser

Esta impresora se ha certificado en EE. UU. de conformidad con los requisitos de DHHS 21 CFR, capítulo I, 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. La impresora contiene un láser interno de Clase IIIb (3b) que nominalmente es un láser de arseniuro de galio de 7 milivatios que funciona en una longitud de onda de 655-675 nanómetros. El sistema láser y la impresora se han diseñado para que ningún individuo acceda nunca a las radiaciones láser por encima del nivel de Clase I durante su uso normal, ni en tareas de mantenimiento o intervenciones de servicio técnico prescritas.

Aviso sobre laser

A impressora foi certificada nos EUA por estar em conformidade com os requisitos do DHHS 21 CFR, capítulo I, subcapítulo J, para produtos a laser de Classe I (1) e, nos demais países, foi certificada como 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 perigosos. A impressora contém, internamente, um laser de Classe IIIb (3b) que é um laser de arsenieto de gálio de 7 miliwatts operando no comprimento de onda de 655-675 nanômetros. O sistema do laser e a impressora foram projetados para que jamais haja acesso humano à radiação do laser acima do nível da Classe I durante a operação normal ou a manutenção pelo usuário ou sob as condições de manutenção prescritas.

Laserinformatie

Deze printer is in de Verenigde Staten gecertificeerd als een product dat voldoet aan de vereisten van DHHS 21 CFR, hoofdstuk 1, paragraaf J voor laserproducten van klasse I (1). Elders is de printer 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), een galliumarsenide laser met een nominaal vermogen van 7 milliwatt en een golflengtebereik van 655-675 nanometer. 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.

Lasererklæring

Denne printer er certificeret i USA i henhold til kravene i DHHS 21 CFR, afsnit I, underafsnit J, for Klasse I-laserprodukter (1) og certificeret andetsteds som et Klasse I-laserprodukt i henhold til kravene i IEC 60825-1.

Klasse I-laserprodukter anses ikke for at være farlige. Printeren indeholder internt en klasse IIIb (3b)-laser, der nominelt er en 7 milliwatt galliumarsenid-laser, som fungerer i bølgelængdeområdet 655-675 nanometer. Lasersystemet og printeren 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.

Laserilmoitus

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

Luokan I lasertuotteita ei pidetä haitallisina. Tulostimen sisällä on luokan IIIb (3b) laser, joka on nimellisteholtaan 7 mW:n galliumarsenidilaser ja toimii 655–675 nanometrin aallonpituuksilla. Laserjärjestelmä ja tulostin ovat rakenteeltaan sellaisia, että käyttäjä ei joudu alttiiksi luokkaa 1 suuremmalle säteilylle normaalin käytön, ylläpidon tai huollon aikana.

Lasermeddelande

Skrivaren är certifierad i USA enligt kraven i DHHS 21 CFR, avsnitt I, underavsnitt J för laserprodukter av klass I (1) och i andra länder är den certifierad som en laserprodukt av klass I som uppfyller kraven i IEC 60825-1.

Laserprodukter av klass I anses inte vara skadliga. Skrivaren innehåller en klass IIIb (3b)-laser, vilket är en 7 mW galliumarseniklaser som arbetar inom en våglängd på 655–675 nm. Lasersystemet och skrivaren är utformade så att människor aldrig utsätts för laserstrålning över klass I-nivå under normala förhållanden vid användning, underhåll eller service.

Lasermerknad

Skriveren er sertifisert i USA for samsvar med kravene i DHHS 21 CFR, kapittel I, 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 laser av klasse IIIb (3b) som nominelt er en 7 milliwatt galliumarsenid-laser, og som opererer i bølgelengder på 655-675 nanometer. Lasersystemet og skriveren er utformet slik at mennesker ikke utsettes for laserstråling utover nivået i klasse I under normal drift, vedlikehold eller foreskrevet service.

Avís sobre el làser

Als EUA, la impressora està certificada de conformitat amb els requisits del capítol I, apartat J del CFR 21 del Departament de Salut i Serveis Humans per a productes làser de classe I (1) i a la resta de països està certificada com a producte làser de classe I d'acord amb els requisits de la norma IEC 60825-1.

Els productes làser de classe I no es consideren perillosos. A l'interior de la impressora hi ha un làser de classe IIIb (3b) que nominalment es un arsenur de galió de 7 mil·liwatts que funciona a una longitud d'ona de 655-675 nanòmetres. El sistema làser y la impressora s'han dissenyat amb l'objectiu d'impedir l'accés humà de la radiació làser superior al nivell de classe I durant un funcionament normal, el manteniment per part de l'usuari o les condicions de servei prescrites.

レーザーに関する通知

本機は、米国においてクラス I（1）レーザー製品に対する DHHS 21 CFR、Chapter I、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。 本機には、クラス IIIb（3b）レーザーが内蔵されています。これは、655 ～ 675 ナノメートルの波長で動作する定格 7 ミリワットのガリウムヒ素レーザーです。 レーザーシステムとプリンタは、通常の操作、ユーザーによるメンテナンス、または所定のサービス条件の下で、ユーザーがクラス 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。

레이저 관련 공지

이 프린터는 미국에서 DHHS 21 CFR, Chapter I, Subchapter J 의 요구 사항을 준수하는 클래스 I(1) 레이저 제품으로 승인되었으며 이외 지역에서 IEC 60825-1 의 요구 사항을 준수하는 클래스 I 레이저 제품으로 승인되었습니다.

Class I 레이저 제품은 위험한 제품으로 간주되지 않습니다. 프린터에는 655-675 나노미터의 파장 영역에서 작동하는 공칭 7 밀리와트 갈륨 비소 레이저인 클래스 IIIb(3b) 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.

激光注意事项

本打印机在美国**认证**合乎 DHHS 21 CFR Chapter I，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）的激光，在操作**过**程中会**产**生**额**定 7 毫瓦的砷化**镓**激光，其波**长**范**围**在 655-675nm 之**间**。本激光系**统**及打印机的**设计**，在一般操作、使用者**维护**或**规**定内的**维**修情况下，不会使人体接触分**类** I 以上等**级**的**辐**射。

雷射聲明

本印表機係經過美國核可，符合 DHHS 21 CFR，Chapter I，Subchapter J 規定的 I (1) 級雷射**產**品激光注意事**項**；在美國以外的地區，為符合 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。本機所採用之 IIIb (3b) 級雷射只會**產**生 7 百萬分之一瓦特 (milliwatt)、波長 655 至 675 億分之一米 (nanometer) 的鎵砷放射線 (gallium arsenide laser)。使用者只要以正確的方法操作及維護保養，並依照先前所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。

Safety

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—POTENTIAL INJURY

The lithium battery in this product is not intended to be replaced. There is a danger of explosion if a lithium battery is incorrectly replaced. Do not recharge, disassemble, or incinerate a lithium battery. Discard used lithium batteries according to the manufacturer's instructions and local regulations.

Consignes de sécurité

- La sécurité de ce produit repose sur des tests et des agréations portant sur sa conception d'origine et sur des composants particuliers. Le fabricant n'assume aucune responsabilité concernant la sécurité en cas d'utilisation de pièces de rechange non agréées.
- Les consignes d'entretien et de réparation de ce produit s'adressent uniquement à un personnel de maintenance qualifié.
- Le démontage et l'entretien de ce produit pouvant présenter certains risques électriques, le personnel d'entretien qualifié devra prendre toutes les précautions nécessaires.

AVERTISSEMENT—RISQUE DE BLESSURE

La batterie lithium de ce produit n'est pas destinée à être remplacée. Il existe un risque d'explosion si une batterie lithium est placée de façon incorrecte. Ne rechargez pas, ne démontez pas et n'incinérez pas une batterie lithium. Mettez les batteries lithium usagées au rebut selon les instructions du fabricant et les réglementations locales.

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 — PERICOLO DI LESIONI

La batteria al litio presente del prodotto non deve essere sostituita. In caso di sostituzione errata della batteria al litio, potrebbe verificarsi un'esplosione. Non ricaricare, smontare o bruciare batterie al litio. Smaltire le batterie al litio usate seguendo le istruzioni del produttore e le norme locali.

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.

VORSICHT - VERLETZUNGSGEFAHR

Die Lithiumbatterie in diesem Produkt darf nicht ausgetauscht werden. Wird eine Lithiumbatterie nicht ordnungsgemäß ausgetauscht, besteht Explosionsgefahr. Lithiumbatterien dürfen auf keinen Fall wieder aufgeladen, auseinander genommen oder verbrannt werden. Befolgen Sie zum Entsorgen verbrauchter Lithiumbatterien die Anweisungen des Herstellers und die örtlichen Bestimmungen.

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: POSIBLES DAÑOS PERSONALES

La batería de litio de este producto no debe reemplazarse. Existe riesgo de explosión si se sustituye incorrectamente una batería de litio. No recargue, desmonte ni incinere una batería de litio. Deseche las baterías de litio según las instrucciones del fabricante y las normativas locales.

Informações de Segurança

- A segurança deste produto baseia-se em testes e aprovações do modelo original e de componentes específicos. O fabricante não é responsável pela segunrança, no caso de uso de peças de substituição não autorizadas.
- As informações de segurança relativas a este produto destinam-se a profissionais destes serviços e não devem ser utilizadas por outras pessoas.
- Risco de choques eléctricos e ferimentos graves durante a desmontagem e manutenção deste produto. Os profissionais destes serviços devem estar avisados deste facto e tomar os cuidados necessários.

ATENÇÃO — RISCO DE FERIMENTO

A bateria de lítio neste produto não deve ser substituída. Existe o risco de explosão se uma bateria de lítio for substituída incorretamente. Não recarregue, desmonte ou incinere uma bateria de lítio. Descarte as baterias de lítio usadas de acordo com as instruções do fabricante e regulamentos locais.

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.

ATENCIÓ

La bateria de liti d'aquest producte no ha estat dissenyada perquè es substitueixi. Hi ha perill d'explosió si no es substitueix correctament la bateria de liti. No recarregueu, desmunteu o incinereu una bateria de liti. Desfeu-vos de les bateries de liti usades d'acord amb les instruccions del fabricant i les regulacions locals.

안전 사항

- 본 제품은 원래 설계및특정 구성에 대한 테스트 결과로 안정 성이 입증된 것입니다. 따라서 무허가 교체부품을 사용하는 경 우 에는 제조업체에서 안전에 대한 책임을 지지 않습니다.
- 본 제품에 관한 유지 보수 설명 서는 전문 서비스 기술자 용으로 작성된 것이므로, 비 전문가는 사용할 수 없습니다.
- 본 제품을 해체하거나 정비할 경우, 전 기전 인 충 경 을 받거나 상 처를 입을 위험이 커집니다. 전문 서비스 기술자는 이 사실을 숙지하고, 필요한 예방조치를 취하도록 하십시오.

주의—부상 위험

이 제품에 들어 있는 리튬 배터리는 교체할 수 없습니다. 리튬 배터리를 잘못 교체하면 폭발할 위험이 있습니다. 리튬 배터리를 재충전하거나, 분해하거나, 태우지 마십시오. 제조업체의 지침과 지역 규정에 따라 다 쓴 리튬 배터리를 폐기하십시오.

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**。万一使用来**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**证**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**有所了触，并采取必要的**预**防措施。

当心一可能的伤害：

本产品中的锂电池不可更换。如果不正确更换锂电池，可能会有爆炸危险。不要再 充电、拆解或焚烧锂电池。丢弃旧的锂电池时应按照制造商的指导及当地法规进行处理。

Preface

This manual contains maintenance procedures for service personnel.

It is divided into the following chapters:

- **General information** contains a general description of the printer. Special tools and test equipment are discussed.
- **Diagnostic information** contains diagnostic aids you can use to isolate failing FRUs. These diagnostic aids include error code tables, symptom tables, and service checks.
- **Service menus** contains descriptions of the printer interface, the user and service menus.
- **Repair information** provides instructions for making printer adjustments and removing and installing FRUs.
- **Component locations** uses illustrations to identify the basic printer parts.
- **Maintenance** contains the lubrication specifications and recommendations to prevent problems.
- **Parts catalog** contains illustrations and part numbers for individual FRUs.
- **Appendix A** contains detailed specifications about the product.
- **Appendix B** contains the available options and other features of the product.
- **Appendix C** contains the theory of operation.
- **Appendix D** contains the list of acronyms in the manual and their meanings.

Service manual conventions

Note: A *note* provides additional information.

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

This service manual uses several different types of caution statements:

CAUTION—POTENTIAL INJURY: A *caution* identifies something that might cause the service technician harm.

CAUTION—SHOCK HAZARD: This type of caution indicates a danger from hazardous voltage in the area of the product where you are working. Unplug the product before you start working, or use caution if the product must receive power to perform the task.

CAUTION—HOT SURFACE: This type of caution indicates a hot surface.

General information

The Lexmark™ MS410d and MS410dn are single-function monochrome laser printers designed for small and mid-sized workgroups. All information in this service manual pertains to all models unless explicitly noted.

The printers are available in the following models:

Model	Configurations	Machine type / model
MS410d	Duplex printer	4514-420
MS410dn	Duplex printer, network capable	4514-430

The diagnostic information in this manual leads you to the correct field replaceable unit (FRU) or part. Use the error code charts, symptom index, and service checks to determine the symptom and then repair the failure. After you complete the repair, perform tests as needed to verify the repair.

To begin diagnosing a problem, go to **"Diagnostic information" on page 31**. See **"Repair information" on page 127** for information about removing and reinstalling parts. See **"Parts catalog" on page 226** to help identify parts.

Media guidelines

Paper guidelines

Selecting the correct paper or specialty media reduces printing problems. For the best print quality, try a sample of the paper or specialty media before buying large quantities.

Paper characteristics

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

Weight

The standard printer trays can automatically feed paper weights up to 90-g/m^2 (24-lb) bond grain long paper. The optional trays can automatically feed paper weights up to 120-g/m^2 (32-lb) bond grain long paper. The multipurpose feeder can automatically feed paper weights up to 163-g/m^2 (43-lb) bond grain long paper. Paper lighter than 60 g/m^2 (16 lb) might not be stiff enough to feed properly, causing jams. For best performance, use 75-g/m^2 (20-lb) bond grain long paper. For paper smaller than 182 x 257 mm (7.2 x 10.1 inches), it is recommended to use 90 g/m^2 (24 lb) or heavier paper.

Note: Two-sided printing is supported only for 60–90-g/m^2 (16–24-lb) bond 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; smoothness between 150–250 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 24–48 hours before printing. Extend the time to 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 60–90-g/m^2 (16–24-lb) bond paper, grain long paper is recommended.

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 can negatively affect paper handling.

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 or lesser than +/-2.5 mm (+/-0.10 inch), 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^2 (16 lb)
- Multiple-part forms or documents

Selecting paper

Using the appropriate paper prevents jams and helps ensure trouble-free printing.

To help avoid paper jams and poor print quality:

- *Always* use new, undamaged paper.
- Before loading paper, know the recommended printable 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 tray; 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 90 g/m^2 (16 to 24 lb) 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 230°C (446°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 230°C (446°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 percent. Most label manufacturers recommend printing in a temperature range of 18–24°C (65–75°F) with relative humidity between 40 and 60 percent.
- Store paper in cartons, 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.
- Take paper out of the carton or wrapper only when you are ready to load it in the printer. The carton and wrapper help keep the paper clean, dry, and flat.

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^2 [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).

Using specialty media

Tips on using card stock

Card stock is heavy, single-ply specialty media. Many of its variable characteristics, such as moisture content, thickness, and texture, can significantly impact print quality. Print samples on the card stock being considered for use before buying large quantities.

When printing on card stock:

- Make sure the Paper Type is Card Stock.
- Select the appropriate Paper Texture setting.
- Be aware that preprinting, perforation, and creasing may significantly affect the print quality and cause jams or other paper handling problems.
- Check with the manufacturer or vendor to ensure that the card stock can withstand temperatures up to 240°C (464°F) without releasing hazardous emissions.
- Do not use preprinted card stock manufactured with chemicals that may contaminate the printer. Preprinting introduces semi-liquid and volatile components into the printer.
- Use grain short card stock when possible.

Tips on using envelopes

Print samples on the envelopes being considered for use before buying large quantities.

- Use envelopes designed specifically for laser printers. Check with the manufacturer or vendor to ensure that the envelopes can withstand temperatures up to 230°C (446°F) without sealing, wrinkling, curling excessively, or releasing hazardous emissions.
- For best performance, use envelopes made from 90-g/m^2 (24-lb bond) paper or 25% cotton. All-cotton envelopes must not exceed 70-g/m^2 (20-lb bond) weight.
- Use only new envelopes from undamaged packages.
- To optimize performance and minimize jams, do not use envelopes that:
  - Have excessive curl or twist
  - Are stuck together or damaged in any way
  - Have windows, holes, perforations, cutouts, or embossing

  - Have metal clasps, string ties, or folding bars
  - Have an interlocking design
  - Have postage stamps attached
  - Have any exposed adhesive when the flap is in the sealed or closed position
  - Have bent corners
  - Have rough, cockle, or laid finishes
- Adjust the width guides to fit the width of the envelopes.

Note: A combination of high humidity (over 60%) and high printing temperature may wrinkle or seal envelopes.

Tips on using labels

Print samples on the labels being considered for use before buying large quantities.

Note: Use only paper label sheets. Vinyl, pharmacy, and two-sided labels are not supported.

For more information on label printing, characteristics, and design, see the *Card Stock & Label Guide* available at **http://support.lexmark.com**.

When printing on labels:

- Use labels designed specifically for laser printers. Check with the manufacturer or vendor to verify that:
  - The labels can withstand temperatures up to 240°C (464°F) without sealing, excessive curling, wrinkling, or releasing hazardous emissions.
  - Label adhesives, face sheet (printable stock), and topcoats can withstand up to 172-kPa (25-psi) pressure without delaminating, oozing around the edges, or releasing hazardous fumes.
- Do not use labels with slick backing material.
- Use full label sheets. Partial sheets may cause labels to peel off during printing, resulting in a jam. Partial sheets also contaminate the printer and the cartridge with adhesive, and could void the printer and toner cartridge warranties.
- Do not use labels with exposed adhesive.
- Do not print within 1 mm (0.04 inch) of the edge of the label, of the perforations, or between die-cuts of the label.
- Make sure the adhesive backing does not reach to the edge of the sheet. Zone coating of the adhesive should be at least 1 mm (0.04 inch) away from edges. Adhesive material contaminates the printer and could void the warranty.
- If zone coating of the adhesive is not possible, then remove a 2-mm (0.08-inch) strip on the leading and driver edge, and then use a non-oozing adhesive.
- Portrait orientation is recommended, especially when printing bar codes.

Tips on using transparencies

- Print a test page on the transparencies being considered for use before buying large quantities.
- Feed transparencies from the standard tray, or the multipurpose feeder.
- Use transparencies designed specifically for laser printers. Transparencies must be able to withstand temperatures up to 185°C (365°F) without melting, discoloring, offsetting, or releasing hazardous emissions.

  Note: If the transparency weight is set to Heavy and the transparency texture is set to Rough in the Paper menu, then transparencies can be printed at a temperature up to 195°C (383°F).
- Avoid getting fingerprints on the transparencies to prevent print quality problems.
- Before loading transparencies, flex, fan, and straighten the stack to prevent sheets from sticking together.

Supported paper sizes, types, and weights

Supported paper sizes

Note: For an unlisted paper size, select the closest *larger* listed size. For information on card stock and labels, see the *Card Stock & Label Guide*.

Paper size	Standard tray	Optional 250- or 550-sheet tray	Multipurpose feeder	Duplex mode
A4 210 x 297 mm (8.3 x 11.7 in.)	✓	✓	✓	✓
A5 148 x 210 mm (5.8 x 8.3 in.)	✓	✓	✓	X
A6 105 x 148 mm (4.1 x 5.8 in.)	✓	X	✓	X
JIS B5 182 x 257 mm (7.2 x 10.1 in.)	✓	✓	✓	X
Letter 216 x 279 mm (8.5 x 11 in.)	✓	✓	✓	✓
Legal 216 x 356 mm (8.5 x 14 in.)	✓	✓	✓	✓
Executive 184 x 267 mm (7.3 x 10.5 in.)	✓	✓	✓	X
Oficio (Mexico)[1] 216 x 340 mm (8.5 x 13.4 in.)	✓	✓	✓	✓
Folio 216 x 330 mm (8.5 x 13 in.)	✓	✓	✓	✓
Statement 140 x 216 mm (5.5 x 8.5 in.)	✓	✓	✓	X
Universal[2] 76.2 x 127 mm (3 x 5 in.) up to 216 x 356 mm (8.5 x 14 in.)	✓	✓	✓	✓
7 3/4 Envelope (Monarch) 98 x 191 mm (3.9 x 7.5 in.)	X	X	✓	X
9 Envelope 98 x 225 mm (3.9 x 8.9 in.)	X	X	✓	X

[1] This size setting formats the page for 216 x 356 mm (8.5 x 14 in.) unless the size is specified by the software application.

[2] Universal is supported only in the standard tray if the paper size is at least 105 x 148 mm (4.1 x 5.8 in.). Universal is supported only in the optional 250- or 550-sheet tray if the paper size is at least 148 x 210 mm (5.8 x 8.3 in.). Universal is only supported in duplex mode if the width is at least 210 mm (8.3 in.) and length is at least 279 mm (11 in.). The smallest supported Universal size is only supported in the multipurpose feeder.

Paper size	Standard tray	Optional 250- or 550-sheet tray	Multipurpose feeder	Duplex mode
10 Envelope 105 x 241 mm (4.1 x 9.5 in.)	X	X	√	X
DL Envelope 110 x 220 mm (4.3 x 8.7 in.)	X	X	√	X
C5 Envelope 162 x 229 mm (6.4 x 9 in.)	X	X	√	X
B5 Envelope 176 x 250 mm (6.9 x 9.8 in.)	X	X	√	X
Other Envelope 229 x 356 mm (9 x 14 in.)	X	X	√	X

[1] This size setting formats the page for 216 x 356 mm (8.5 x 14 in.) unless the size is specified by the software application.

[2] Universal is supported only in the standard tray if the paper size is at least 105 x 148 mm (4.1 x 5.8 in.). Universal is supported only in the optional 250- or 550-sheet tray if the paper size is at least 148 x 210 mm (5.8 x 8.3 in.). Universal is only supported in duplex mode if the width is at least 210 mm (8.3 in.) and length is at least 279 mm (11 in.). The smallest supported Universal size is only supported in the multipurpose feeder.

Supported paper types and weights

The standard tray supports 60–90-g/m^2 (16–24-lb) paper weights. The optional tray supports 60–120-g/m^2 (16–32-lb) paper weights. The multipurpose feeder supports 60–163-g/m^2 (16–43-lb) paper weights.

Paper type	250- or 550-sheet tray	Multipurpose feeder	Duplex mode
Plain paper	√	√	√
Card stock	X	√	X
Transparencies	√	√	X
Recycled	√	√	√
Glossy paper	X	X	X
Paper labels[1]	√	√	X
Vinyl labels	X	X	X
Bond[2]	√	√	√
Envelope	X	√	X
Rough envelope	X	√	X
Letterhead	√	√	√

Paper type	250- or 550-sheet tray	Multipurpose feeder	Duplex mode
Preprinted	√	√	√
Colored Paper	√	√	√
Light Paper	√	√	√
Heavy Paper[2]	√	√	√
Rough/Cotton	√	√	**X**

[1] One-sided paper labels designed for laser printers are supported for occasional use. It is recommended to print 20 or fewer pages of paper labels per month. Vinyl, pharmacy, and two-sided labels are not supported.

[2] Bond and Heavy Paper are supported in duplex mode up to 90-g/m^2 (24-lb) paper weight.

Data security notice

This printer contains various types of memory that are capable of storing device and network settings, information from embedded solutions, and user data. The types of memory, along with the types of data stored by each, are described below.

- Volatile memory—This device utilizes standard Random Access Memory (RAM) to temporarily buffer user data during simple print and copy jobs.
- Non-volatile memory—This device may utilize two forms of non-volatile memory: EEPROM and NAND (flash memory). Both types are used to store the operating system, device settings, network information, scanner and bookmark settings, and embedded solutions.
- Hard disk memory—Some devices have a hard disk drive installed. The printer hard disk is designed for device-specific functionality and cannot be used for long term storage for data that is not print-related. The hard disk does not provide the capability for users to extract information, create folders, create disk or network file shares, or transfer FTP information directly from a client device. The hard disk can retain buffered user data from complex print jobs, as well as form data and font data.

To erase volatile memory, turn off the printer.

To erase non-volatile memory, see the menu item under **“Configuration menu” on page 121** pertaining to this.

To erase the printer hard disk, see the menu item under **“Configuration menu” on page 121** pertaining to this.

The printer control panel and RIP/controller board contain NVRAM. After removing the old part, it must be returned to your next level of support.

Tools required for service

Flat-blade screwdrivers, various sizes
#1 Phillips screwdriver, magnetic
#2 Phillips screwdriver, magnetic
#2 Phillips screwdriver, magnetic short-blade
Needle-nose pliers
Diagonal side cutters
Spring hook

Feeler gauges
Analog or digital multimeter
Flashlight (optional)

Diagnostic information

CAUTION—SHOCK HAZARD: Remove the power cord from the electrical outlet before you connect or disconnect any cable or electronic card or assembly for personal safety and to prevent damage to the printer. Disconnect any connections between the printer and PCs/peripherals.

CAUTION—HOT SURFACE: The inside of the printer might be hot. To reduce the risk of injury from a hot component, allow the surface to cool before touching.

Troubleshooting overview

Performing the initial troubleshooting check

Before you start the troubleshooting procedures, perform the following checks:

- With the power cord unplugged from the wall outlet, check that the cord is free from breakage, short-circuits, disconnected wires, or incorrect connections.
- Make sure the printer is properly grounded. Check the power cord ground terminal.
- Make sure the power supply line voltage is within 10% of the rated line voltage.
- Make sure the machine is securely installed on a level surface in a well-ventilated area.
- Make sure the room temperature is between 16 and 32°C (60 and 90°F) and that the relative humidity is between 20 and 80%.
- Avoid sites generating ammonia gas, high temperature, high humidity (near water faucets, kettles, humidifiers), cold spaces, near open flames, and dusty areas.
- Avoid sites exposed to direct sunlight.
- Make sure the paper is the recommended paper for this printer.
- Make a trial print with paper from a newly opened package, and check the result.

Power-on Reset (POR) sequence

When you turn the printer on, it performs a POR sequence.

Check for correct POR functioning of the base printer by observing the following:

1. The control panel indicator light turns on (solid red, then solid amber).
2. A line of dots appear on the display.
3. **`[x] MB [y] MHz`** appears on the display.
4. The control panel indicator light switches from solid amber to solid green. The display resets, and then a line of dots appear.
5. The cooling fan turns on.
6. The fuser heater turns on.

   Note: The fuser takes longer to warm up from a cold start than a warm start.
7. The main drive motor turns on.

8 The EP drive assembly drives the developer shaft located in the imaging unit.

9 The exit rollers turn.

10 **Ready** appears on the display.

Understanding the printer messages

Cartridge, imaging unit mismatch [41.xy]

1 Check if the toner cartridge and imaging unit are both MICR or non-MICR supplies.

Note: For the list of supported supplies, see the "Maintaining the printer" chapter of the *User's Guide* or visit **www.lexmark.com/regions**.

2 Change the toner cartridge or imaging unit so that both are MICR or non-MICR supplies.

Notes:

- Use MICR toner cartridge and imaging unit for printing checks and other similar documents.
- Use non-MICR toner cartridge and imaging unit for regular print jobs.

Change [paper source] to [custom type name]. Load [orientation].

Try one or more of the following:

- Load the correct size and type of paper in the tray, and then press OK on the printer control panel.

  Note: Make sure the paper size and type settings are specified in the Paper menu on the printer control panel.
- Cancel the print job.

Change [paper source] to [custom string]. Load [orientation].

Try one or more of the following:

- Load the correct size and type of paper in the tray, and then press OK on the printer control panel.

  Note: Make sure the paper size and type settings are specified in the Paper menu on the printer control panel.
- Cancel the print job.

Change [paper source] to [paper size]. Load [orientation].

Try one or more of the following:

- Load the correct size and type of paper in the tray, and then press OK on the printer control panel.

  Note: Make sure the paper size and type settings are specified in the Paper menu on the printer control panel.
- Cancel the print job.

Change [paper source] to [paper type] [paper size]. Load [orientation].

Try one or more of the following:

- Load the correct size and type of paper in the tray, and then press OK on the printer control panel.

  Note: Make sure the paper size and type settings are specified in the Paper menu on the printer control panel.
- Cancel the print job.

Close front door

Close the front door of the printer.

Complex page may misprint [39]

Try one or more of the following:

- From the printer control panel, press OK to clear the message and continue printing.
- Reduce the number and size of fonts, the number and complexity of images, and the number of pages in the print job.
- Cancel the print job.
- Install additional printer memory.

Defective flash memory [51]

Try one or more of the following:

- Replace the defective flash memory card.
- From the printer control panel, press OK to ignore the message and continue printing.
- Cancel the current print job.

Insert tray [x]

Insert the indicated tray into the printer.

Load [paper source] with [custom type name] [orientation]

Try one or more of the following:

- Load the tray or feeder with the correct size and type of paper.
- From the printer control panel, press OK to clear the message and continue printing.

  Note: If the printer finds a tray that has the correct size and type of paper, then it feeds from that tray. If the printer cannot find a tray that has the correct size and type of paper, then it prints from the default paper source.
- Cancel the current job.

Load [paper source] with [custom string] [orientation]

Try one or more of the following:

- Load the indicated tray or feeder with the correct size and type of paper.
- From the printer control panel, press OK to clear the message and continue printing.

  Note: If the printer finds a tray that has the correct paper type and size, then it feeds from that tray. If the printer cannot find a tray that has the correct size and type of paper, then it prints from the default paper source.
- Cancel the current job.

Load [paper source] with [paper size] [orientation]

Try one or more of the following:

- Load the tray or feeder with the correct size of paper.
- From the printer control panel, press OK to clear the message and continue printing.

  Note: If the printer finds a tray that has the correct paper size, then it feeds from that tray. If the printer cannot find a tray that has the correct size of paper, then it prints from the default paper source.
- Cancel the current job.

Load [paper source] with [paper type] [paper size] [orientation]

Try one or more of the following:

- Load the tray or feeder with the correct size and type of paper.
- From the printer control panel, press OK to clear the message and continue printing.

  Note: If the printer finds a tray that has the correct size and type of paper, then it feeds from that tray. If the printer cannot find a tray that has the correct size and type of paper, then it prints from the default paper source.
- Cancel the current job.

Load MP feeder with [custom type name] [orientation]

Try one or more of the following:

- Load the feeder with the correct size and type of paper.
- From the printer control panel, press OK to clear the message and continue printing.

  Note: If no paper is loaded in the feeder, then the printer manually overrides the request, and then prints from an automatically selected tray.
- Cancel the current job.

Load MP feeder with [custom string] [orientation]

Try one or more of the following:

- Load the feeder with the correct size and type of paper.
- From the printer control panel, press OK to clear the message and continue printing.

  Note: If no paper is loaded in the feeder, then the printer manually overrides the request, and then prints from an automatically selected tray.
- Cancel the current job.

Load MP feeder with [paper size] [orientation]

Try one or more of the following:

- Load the feeder with the correct size of paper.
- From the printer control panel, press OK to clear the message and continue printing.

  Note: If no paper is loaded in the feeder, then the printer manually overrides the request, and then prints from an automatically selected tray.
- Cancel the current job.

Load MP feeder with [paper type] [paper size] [orientation]

Try one or more of the following:

- Load the feeder with the correct size and type of paper.
- From the printer control panel, press OK to clear the message and continue printing.

  Note: If no paper is loaded in the feeder, then the printer manually overrides the request, and then prints from an automatically selected tray.
- Cancel the current job.

Non-Lexmark [supply type], see User's Guide [33.xy]

Note: The supply type can either be a toner cartridge or imaging unit.

The printer has detected a non-Lexmark supply or part installed in the printer.

Your Lexmark printer is designed to function best with genuine Lexmark supplies and parts. Use of third-party supplies or parts may affect the performance, reliability, or life of the printer and its imaging components.

All life indicators are designed to function with Lexmark supplies and parts, and may deliver unpredictable results if third-party supplies or parts are used. Imaging component usage beyond the intended life may damage your Lexmark printer or associated components.

Warning—Potential Damage: Use of third-party supplies or parts can affect warranty coverage. Damage caused by the use of third-party supplies or parts are not covered by the warranty.

To accept any and all of these risks and to proceed with the use of non-genuine supplies or parts in your printer, press OK and  on the printer control panel simultaneously for 15 seconds to clear the message and continue printing.

If you do not wish to accept these risks, then remove the third-party supply or part from your printer, and then install a genuine Lexmark supply or part.

Note: For the list of supported supplies, see the “Ordering supplies” section of the *User's Guide* or visit **http://support.lexmark.com**.

Printer restart. Check last job.

Press OK on the printer control panel to clear the message and continue printing.

For more information, visit **http://support.lexmark.com** or contact customer support.

Bin full. Remove paper.

Remove the paper stack from the standard bin.

Parallel port disabled [56]

Try one or more of the following:

- From the printer control panel, press OK to clear the message and continue printing.

  Note: The printer discards any data received through the parallel port.
- From the printer control panel, set Parallel Buffer to Auto.

Rear USB port disabled [56]

Try one or more of the following:

- From the printer control panel, press OK to clear the message and continue printing.

  Note: The printer discards any data received through the USB port.
- From the printer control panel, set USB Buffer to Auto.

Too many trays. Remove some. [58]

1. Turn off the printer.
2. Unplug the power cord from the electrical outlet.
3. Remove the extra trays.
4. Connect the power cord to the electrical outlet.
5. Turn the printer back on.

Flash memory unformatted [53]

Try one or more of the following:

- From the printer control panel, press OK to stop the defragmentation and continue printing.
- Format the flash memory device.

Note: If the error message remains, then the flash memory device may be defective and need to be replaced.

Fixing print quality issues

The symptoms described in this chapter might 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 might need to install a toner cartridge.

Initial print quality check

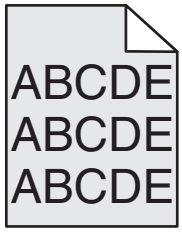
Before troubleshooting specific print problems, complete the following initial print quality check:

1. The printer must be in a location that follows the recommended operating environment specifications. See **"Operating environment" on page 241**.
2. Check the life status of all supplies. Any supply that is low should be replaced.
3. Load 20-lb plain letter or A4 paper. Make sure the paper guides are properly set and locked. From the control panel, set the paper size and type to match the paper loaded in the tray.
4. Print a Menu settings page. Be sure to keep the original Menu settings page to restore the customer's custom settings if needed.
5. Verify on the Menu settings page if the following are set to their default values:
   - Print resolution: 600 dpi
   - Toner darkness: 8
6. Inspect the transfer roll for damage. Replace if damaged.
7. Inspect the toner cartridge and imaging unit for damage. Replace if damaged.
8. Print the Print quality pages to see if the problem remains. Use Tray 1 to test print quality problems.
9. Print a Print quality test page, and then look for variations in the print from what is expected. Verify if the settings under EP Setup are set to their default values. See **"EP Defaults" on page 118**.
10. Check to ensure the correct printer driver for the installed software is being used. An incorrect printer driver for the installed software can cause problems. Incorrect characters could print, and the copy may not fit the page correctly.

Print quality checks

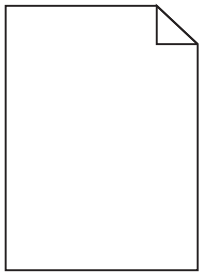
- **“Shadow images appear on prints” on page 41**
- **“Skewed print” on page 42**
- **“Streaked horizontal or vertical lines appear on prints” on page 43**
- **“Toner rubs off” on page 44**
- **“Toner specks appear on prints” on page 45**

Gray background or toner fog on prints



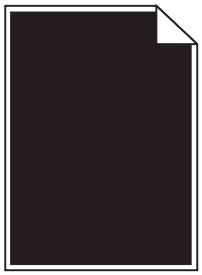
Actions	Yes	No
Step 1 Check the cartridge plunger. Is the cartridge plunger properly attached to the front door and is the spring functioning properly?	Go to step 2.	Replace the cartridge plunger. See **“Cartridge plunger removal” on page 171**.
Step 2 Remove any contamination from the CTLS contacts. Perform a print test. Does the problem remain?	Go to step 3.	The problem is solved.
Step 3 Check the CTLS for damage. Is it free of damage?	Go to step 4.	Replace the printer.
Step 4 Check the transfer roll for surface contamination or excessive wear. Is it free of contamination and wear?	Go to step 5.	Replace the transfer roll. See **“Transfer roll removal” on page 170**.
Step 5 Check the transfer roll left contact spring for damage. Is it free of damage?	Replace the power supply. See **“Power supply removal” on page 191**.	Replace the printer.

Printer is printing blank pages



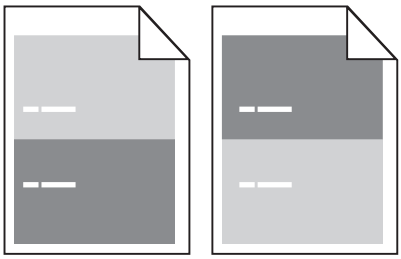
Actions	Yes	No
Step 1 Check the toner cartridge level. Is the toner level low?	Replace the toner cartridge.	Go to step 2.
Step 2 Check the cartridge plunger. Is the cartridge plunger properly attached to the front door and is the spring functioning properly?	Go to step 3.	Replace the cartridge plunger. See **"Cartridge plunger removal" on page 171**.
Step 3 Check the imaging unit for wear or damage. Is it free of wear or damage?	Go to step 4.	Replace the imaging unit.
Step 4 Check the transfer roll for surface contamination or excessive wear. Is it free of contamination and wear?	Go to step 5.	Replace the transfer roll. See **"Transfer roll removal" on page 170**.
Step 5 Check the transfer roll left contact spring for damage. Is it free of damage?	Go to step 6.	Replace the printer.
Step 6 Reseat the cables JGLV1 and JVIDEO1 or JUICC1 on the controller board. Does the problem remain?	Replace the power supply. See **"Power supply removal" on page 191**.	The problem is solved.

Printer is printing solid black pages



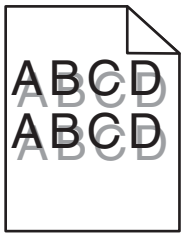
Actions	Yes	No
Step 1 Check the imaging unit for damage. Is it free of damage?	Go to step 2.	Replace the imaging unit.
Step 2 Remove any contamination from the imaging unit contacts. Does the problem remain?	Go to step 3.	The problem is solved.
Step 3 Check the imaging unit contacts for damage. Are they free of damage?	Replace the power supply. See **"Power supply removal" on page 191**.	Replace the printer.

Repeating defects



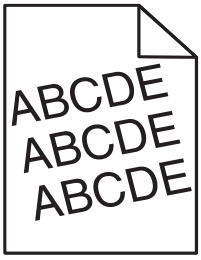
Actions	Yes	No
Step 1 Measure the distance between defects. Is the distance between defects equal to any of the following? • 3.82 in. (97 mm) • 1.85 in. (47 mm) • 1.5 in. (38 mm)	Replace the imaging unit.	Go to step 2.
Step 2 Is the distance between defects equal to 3.15 in. (80 mm)?	Replace the fuser. See **"Fuser removal" on page 211**.	Contact the next level of support.

Shadow images appear on prints



Actions	Yes	No
Step 1 Does the shadow image appear every two pages?	Go to step 2.	Go to step 3.
Step 2 Check the redrive assembly for wear or damage. Is it free of wear or damage?	Go to step 3.	Replace the redrive assembly. See **"Redrive assembly removal" on page 210**.
Step 3 Check the transfer roll for surface contamination or excessive wear. Is it free of contamination and wear?	Go to step 4.	Replace the transfer roll. See **"Transfer roll removal" on page 170**.
Step 4 Check the following fuser components for wear or damage: • Gears • Exit rollers • Belt fuser Are they free of damage?	Go to step 5.	Replace the fuser. See **"Fuser removal" on page 211**.
Step 5 **a** Turn off the printer. **b** Remove the rear door and cover. **c** Disconnect the fuser cable connected to PCN5 of the power supply. **d** Check for approximate correct resistance on the fuser cable: • 220V fuser—43 ohms • 110V fuser—10 ohms • 100V fuser—8 ohms Is the resistance equal to any of the above values?	The problem is solved.	Replace the fuser. See **"Fuser removal" on page 211**.

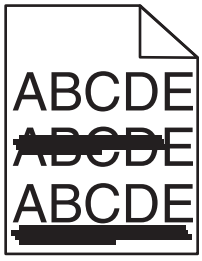
Skewed print

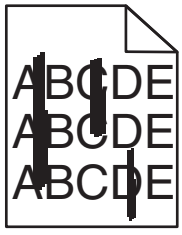


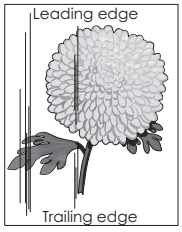
Actions	Yes	No
Step 1 **a** POR into the Diagnostics menu and perform a print test: **Diagnostics Menu** > **Print Tests** > **Tray 1** **b** Adjust the margins if necessary: **Diagnostics Menu** > **Registration** Does the error remain?	Go to step 2.	The problem is solved.
Step 2 Does the skew appear every two pages?	Go to step 9.	Go to step 3.
Step 3 **a** Check the media source. **b** If the media is from tray 1, go to step 4. If the media is from the MPF, go to step 6.		
Step 4 Make sure the pick tires are free of debris. Check for wear or damage. Are they free of wear or damage?	Go to step 5.	Replace the pick tires.
Step 5 Check the lift plate on the input tray for damage. Is it free of damage?	Go to step 11.	Replace the input tray.
Step 6 Make sure the MPF pick roller and separator pad are free of debris. Check for wear or damage. Are they free of wear or damage?	Go to step 7.	Replace the MPF pick roller and separator pad. See **"MPF pick roller removal" on page 181** and **"Separator pad removal" on page 189**.
Step 7 Check the MPF gearbox for wear or damage. Is it free of wear or damage?	Go to step 8.	Replace the MPF gearbox. See **"MPF gearbox removal" on page 151**.

Actions	Yes	No
Step 8 Make sure the front input guide rollers are free of debris. Check for wear or damage. Are they free of wear or damage?	Go to step 11.	Replace the front input guide. See **"Front input guide removal" on page 187**.
Step 9 Make sure the redrive rollers are free of debris. Check for wear or damage. Are they free of wear or damage?	Go to step 10.	Replace the redrive assembly. See **"Redrive assembly removal" on page 210**.
Step 10 **a** Remove the left cover. **b** POR into the Diagnostics menu and perform a duplex test: **Diagnostics Menu** > **Duplex Tests** **c** Observe the reverse solenoid for proper operation. Does it properly operate?	Go to step 11.	Replace the reverse solenoid. See **"Reverse solenoid removal" on page 154**.
Step 11 Make sure the input roller/deskew assembly is free of debris. Check for wear or damage. Are they free of wear or damage?	Contact the next level of support.	Replace the printer.

Streaked horizontal or vertical lines appear on prints

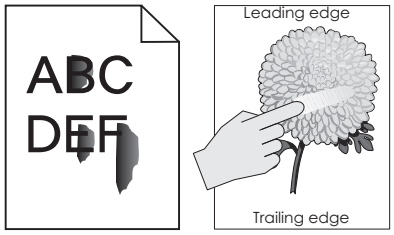






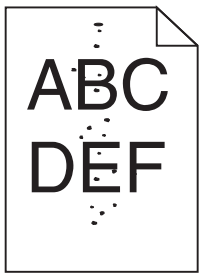
Actions	Yes	No
Step 1 Check the imaging unit for wear or damage. Is it free of wear or damage?	Go to step 2.	Replace the imaging unit.
Step 2 Make sure the paper path is free of debris or toner contamination. Does the problem remain?	Go to step 3.	The problem is solved.
Step 3 Check the transfer roll for contamination or excessive wear. Is it free of contamination or wear?	Go to step 4.	Replace the transfer roll. See **"Transfer roll removal" on page 170**.
Step 4 Remove the fuser and check for damage or debris on the rollers and belts. Is it free of damage and debris?	Go to step 5.	Replace the fuser. See **"Fuser removal" on page 211**.
Step 5 Reseat the cables JVIDEO1 and JGLV on the controller board. Does the problem remain?	Replace the LSU. See **"Laser scanning unit (LSU) removal" on page 213**.	The problem is solved.

Toner rubs off



Actions	Yes	No
Step 1 Check if the fuser screws are tightly fastened. Are they tightly fastened?	Go to step 2.	Tighten the screws.
Step 2 **a** Turn off the printer. **b** Remove the rear door and cover. **c** Disconnect the fuser cable connected to PCN5 of the power supply. **d** Check for approximate correct resistance on the fuser cable: • 220V fuser—43 ohms • 110V fuser—10 ohms • 100V fuser—8 ohms Is the resistance equal to any of the above values?	Go to step 3.	Replace the fuser. See **"Fuser removal" on page 211**.
Step 3 Check the following fuser components for wear or damage: • Gears • Exit rollers • Belt fuser Are they free of damage?	Replace the power supply. See **"Power supply removal" on page 191**.	Replace the fuser. See **"Fuser removal" on page 211**.

Toner specks appear on prints



Actions	Yes	No
Step 1 Check the imaging unit for wear or damage. Is it free of wear or damage?	Go to step 2.	Replace the imaging unit.
Step 2 Make sure the paper path is free of debris or toner contamination. Does the problem remain?	Go to step 3.	The problem is solved.

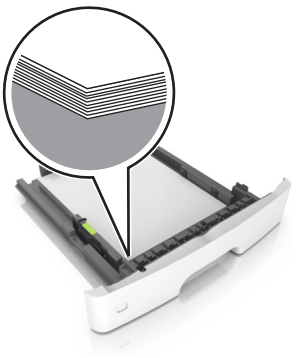
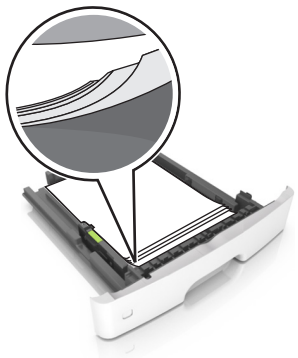
Actions	Yes	No
Step 3 Check the transfer roll for contamination or excessive wear. Is it free of contamination or wear?	Go to step 4.	Replace the transfer roll. See **"Transfer roll removal" on page 170**.
Step 4 Remove the fuser and check for damage or debris on the rollers and belts. Is it free of damage and debris?	Go to step 5.	Replace the fuser. See **"Fuser removal" on page 211**.
Step 5 Reseat the cables JVIDEO1 and JGLV on the controller board. Does the problem remain?	Replace the LSU. See **"Laser scanning unit (LSU) removal" on page 213**.	The problem is solved.

Paper jams

Avoiding jams

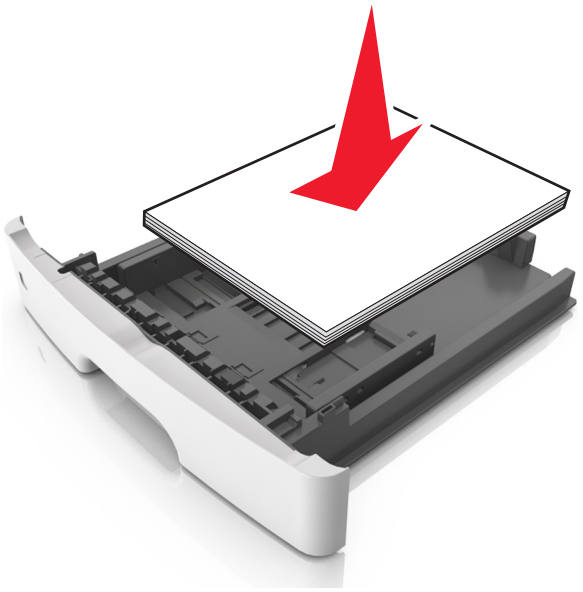
Load paper properly

- Make sure paper lies flat in the tray.

Correct loading of paper	Incorrect loading of paper
	

- Do not remove a tray while the printer is printing.
- Do not load a tray while the printer is printing. Load it before printing, or wait for a prompt to load it.
- Do not load too much paper. Make sure the stack height is below the maximum paper fill indicator.

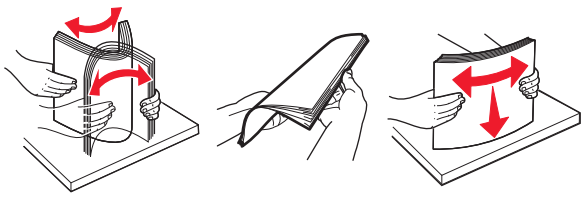
- Do not slide the paper into the tray. Load paper as shown in the illustration.



- Make sure the guides in the tray or the multipurpose feeder are properly positioned and are not pressing tightly against the paper or envelopes.
- Push the tray firmly into the printer after loading paper.

Use recommended paper

- Use only recommended paper or specialty media.
- Do not load wrinkled, creased, damp, bent, 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 tray.
- Make sure the paper size and type are set correctly on the computer or printer control panel.
- Store paper according to manufacturer recommendations.

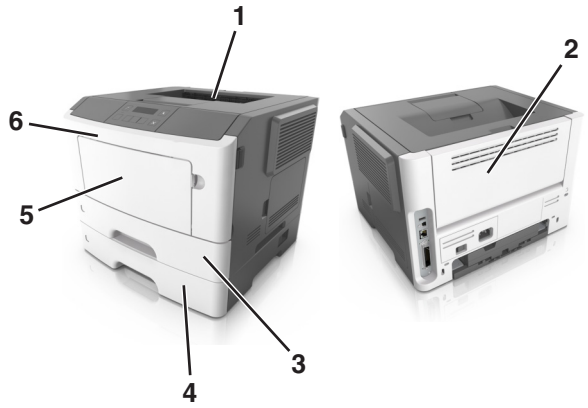
Understanding jam messages and locations

When a jam occurs, a message indicating the jam location and information to clear the jam appears on the printer display. Open the doors, covers, and trays indicated on the display to remove the jam.

Notes:

- When Jam Assist is set to On, the printer automatically flushes blank pages or pages with partial prints to the standard bin after a jammed page has been cleared. Check your printed output stack for discarded pages.

- When Jam Recovery is set to On or Auto, the printer reprints jammed pages. However, the Auto setting does not guarantee that the page will print.



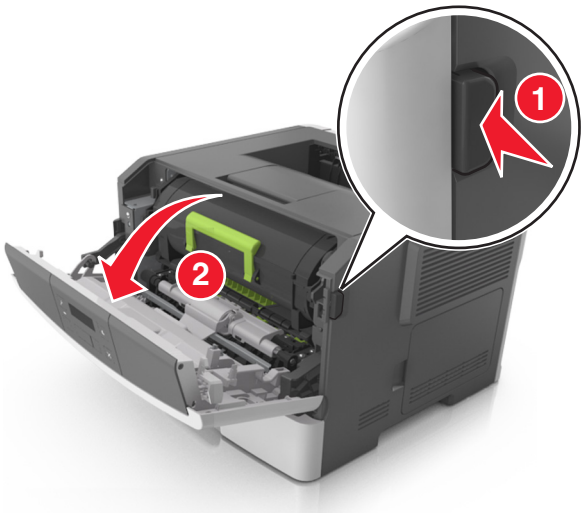
	Area	Printer control panel message	What to do
1	Standard bin	Jam, standard bin [20y.xx]	Remove the jammed paper.
2	Rear door	Jam, rear door [20y.xx]	Open the rear door, and then remove the jammed paper.
3	Tray 1	Jam, pull tray 1. Push down blue flap. [23y.xx]	Pull tray 1 completely out, then push the front duplex flap down, and then remove the jammed paper. **Note:** You may need to open the rear door to clear some 23y.xx paper jams.
4	Tray [x]	Jam, tray [x] [24y.xx]	Pull the indicated tray out, and then remove the jammed paper.
5	Multipurpose feeder	Jam, MP feeder. [250.xx]	Remove all paper from the multipurpose feeder, and then remove the jammed paper.
6	Front door	Jam, front door. [20y.xx]	Open the front door, and then remove the toner cartridge, imaging unit, and jammed paper.

200 paper jams

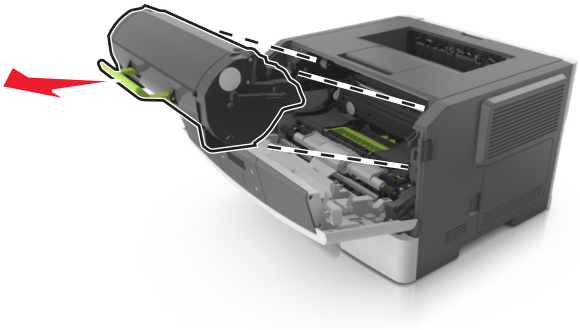
Jam, front door [20y.xx]

CAUTION—HOT SURFACE: The inside of the printer might be hot. To reduce the risk of injury from a hot component, allow the surface to cool before touching it.

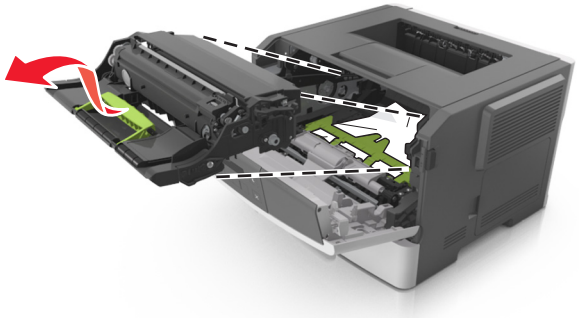
1 Press the button on the right side of the printer, and then open the front door.



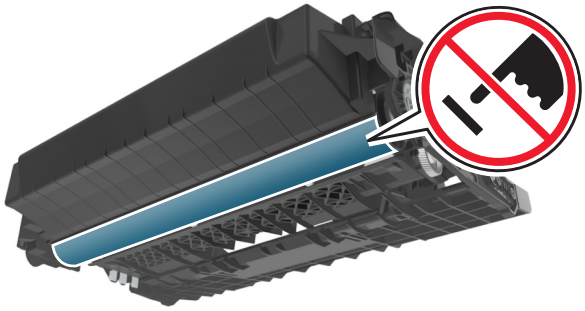
2 Pull the toner cartridge out using the handle.



3 Lift the green handle, and then pull the imaging unit out of the printer.



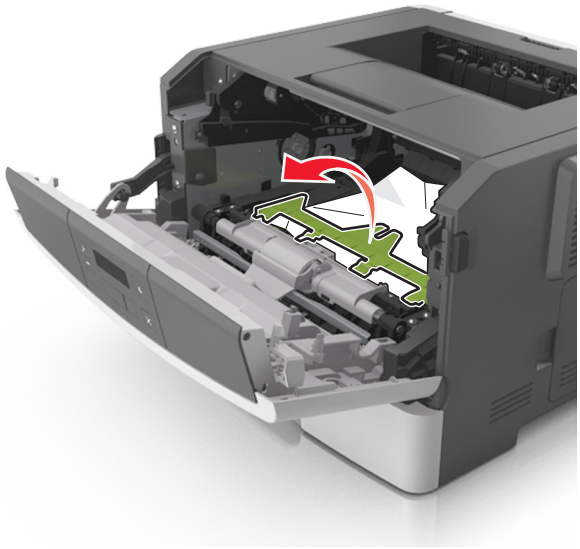
Warning—Potential Damage: Do not touch the photoconductor drum. Doing so may affect the print quality of future print jobs.



4 Place the imaging unit aside on a flat, smooth surface.

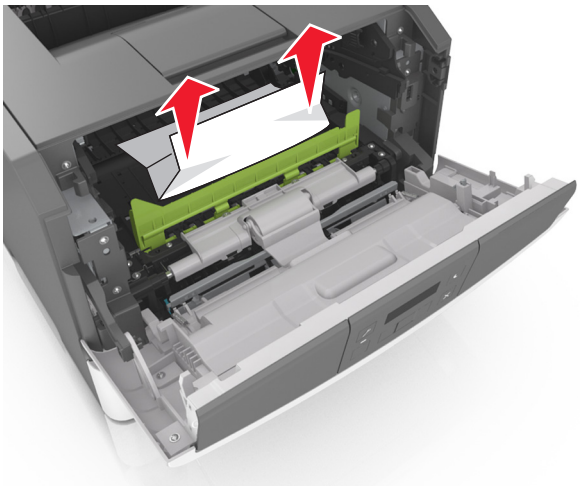
Warning—Potential Damage: Do not expose the imaging unit to direct light for more than 10 minutes. Extended exposure to light can cause print quality problems.

5 Lift the green flap in front of the printer.

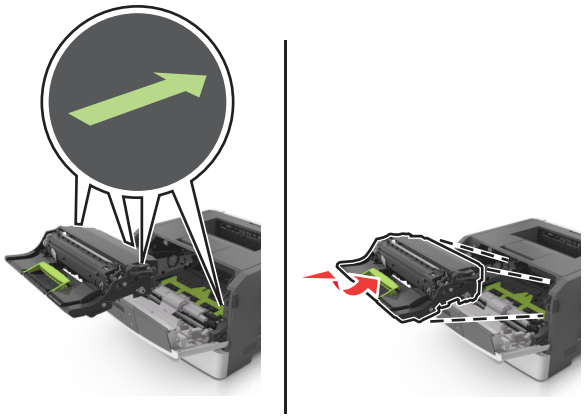


6 Firmly grasp the jammed paper on each side, and then gently pull it out.

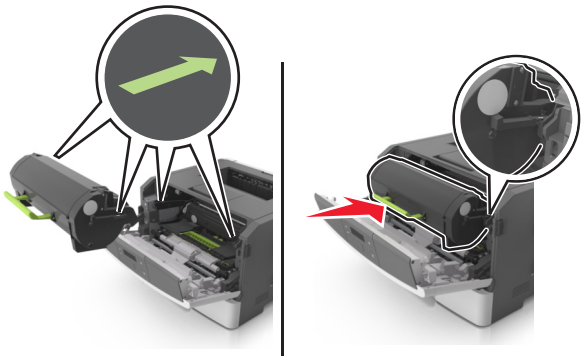
Note: Make sure all paper fragments are removed.



7 Insert the imaging unit by aligning the arrows on the side rails of the unit with the arrows on the side rails inside the printer, and then insert the imaging unit into the printer.



8 Insert the toner cartridge by aligning the side rails of the cartridge with the arrows on the side rails inside the printer, and then insert the cartridge into the printer.



9 Close the front door.

10 From the printer control panel, press OK to clear the message and continue printing.

200 paper jam messages

Error code	Description	Action
200.01	Input sensor covered during warm-up sequence.	Go to **"Sensor (input) static jam service check" on page 53**.
200.02	Input sensor covered too quickly.	Go to **"Sensor (input) early/late arriving service check" on page 53**.
200.03	Media did not reach input sensor from MPF.	
200.05	Input sensor covered too long.	
200.07	Input sensor failed to become uncovered from sheet ahead.	
200.08	Page arrive at input senor at unexpected time.	

Error code	Description	Action
200.09	Printhead did not receive proper motor feedback to start laser servo.	Go to **"Sensor (input) image jam service check" on page 55**.
200.10	Printhead motor not locked when media reaches the input sensor.	
200.11	Printhead motor fell out of lock after page reaches the input sensor.	
200.12	Printhead was not ready for media.	
200.13	Media at input sensor is not the next media to be imaged.	
200.14	Media reached the input sensor before EP was ready.	
200.15	Image data did not start on time.	
200.16	Fuser motor stalled.	Go to **"Main drive motor control jam service check" on page 55**.
200.19	Page that was successfully picked from option tray never reached the input sensor.	Go to **"Sensor (input) early/late arriving service check" on page 53**.
200.21	No response from paper port driver while waiting for the source to deactivate the Input Source Ready flag to indicate it has initiated picking.	
200.23	Laser servo never started due to potential conflict with the transfer servo.	Go to **"Sensor (input) image jam service check" on page 55**.
200.24	Measured gap at input sensor too small to meet video delivery requirements. (Not enough time since prior image finished to start new image).	
200.29	Printhead drive control out of range due to an external event beyond what the control is designed to handle.	
200.30	Invalid printhead NVRAM.	
200.31	Paper, in the middle of a job, at input sensor before interrupt occurred.	Go to **"Sensor (input) early/late arriving service check" on page 53**.
200.32	Detected cover switch bounce.	
200.33	Input sensor covered too quickly.	
200.38	Interpage servo gap smaller than expected for galvo offset target evaluation.	Go to **"Sensor (input) early/late arriving service check" on page 53**.
200.42	Rogue sheet at ACM sensor while flushing the paper path prior to declaring tray 1 source empty.	
200.44	Page from tray 1 did not reach the input sensor (or the manual feed sensor, if present) after multiple pick attempts. Page did make it out of the tray at least as far as the ACM sensor.	
200.45	During warm up flush, sheet detected too long over input sensor.	

Sensor (input) static jam service check

Action	Yes	No
Step 1 Check the input sensor area for jammed media fragments. Is the paper path free of partially fed or jammed media?	Go to step 2.	Clear the paper path of any media fragments.
Step 2 Check the jam access cover if it is blocking the input sensor. Is it blocking the input sensor?	Replace the jam access cover. See **"Jam access cover removal" on page 182**.	Go to step 3.
Step 3 Check the input sensor cable for proper connection. Is it properly connected?	Go to step 4.	Reseat the cable.
Step 4 POR into the Diagnostics menu and perform a sensor test: **Diagnostics Menu** > **Base Sensor Test** > **Input**. Does the sensor state on the control panel display change when it is toggled?	Go to step 5.	Replace the input sensor. See **"Duplex sensor and input sensor removal" on page 194**.
Step 5 Does the error remain?	Contact the next level of support.	The problem is solved.

Sensor (input) early/late arriving service check

Action	Yes	No
Step 1 Check the paper source. Is the paper from the MPF?	Go to step 2.	Go to step 5.
Step 2 Check the MPF pick roller and separator pad for damage and contamination. Are they free of damage and contamination?	Go to step 3.	Replace the MPF pick roller and separator pad. See **"MPF pick roller removal" on page 181** and **"Separator pad removal" on page 189**.

Action	Yes	No
Step 3 Check the MPF solenoid for proper operation: **a** Remove the left cover. **b** POR into the Diagnostics menu and perform a feed test: **Diagnostics Menu** > **Input Tray Tests** > **Feed Test** > **Multipurpose feeder** **c** Check if the MPF solenoid moves when doing the feed test. Does it move when doing the feed test?	Go to step 4.	Replace the MPF solenoid. See **"MPF solenoid removal" on page 149**.
Step 4 Make sure the MPF gearbox spring is properly installed and free of damage. Check the MPF gearbox for wear or damage. Are they free of wear or damage?	Go to step 5.	Replace the MPF gearbox. See **"MPF gearbox removal" on page 151**.
Step 5 Check the input sensor area for jammed media fragments. Is the paper path free of partially fed or jammed media?	Go to step 6.	Clear the paper path of any media fragments.
Step 6 Check the jam access cover if it is blocking the input sensor. Is it blocking the input sensor?	Replace the jam access cover. See **"Jam access cover removal" on page 182**	Go to step 7.
Step 7 Check the input sensor cable for proper connection. Is it properly connected?	Go to step 8.	Reseat the cable.
Step 8 POR into the Diagnostics menu and perform a sensor test: **Diagnostics Menu** > **Base Sensor Test** > **Input** Does the sensor state on the control panel display change when it is toggled?	Go to step 9.	Replace the input sensor. See **"Duplex sensor and input sensor removal" on page 194**.
Step 9 Does the error remain?	Contact the next level of support.	The problem is solved.

Sensor (input) image jam service check

Action	Yes	No
Step 1 Check the LSU cables for proper connection. Are they properly connected?	Go to step 2.	Reseat the cables.
Step 2 Inspect the LSU cables and connectors. Are they free of damage?	Go to step 3.	Replace the LSU. See **"Laser scanning unit (LSU) removal" on page 213**.
Step 3 Check the input sensor cable for proper connection. Is it properly connected?	Go to step 4.	Reseat the cable.
Step 4 POR into the Diagnostics menu and perform a feed test: **Diagnostics Menu** > **Input Tray Tests** > **Feed Tests** > **Tray 1** Does it pass the test?	Go to step 5.	Replace the LSU. See **"Laser scanning unit (LSU) removal" on page 213**.
Step 5 POR into the Diagnostics menu and perform a sensor test: **Diagnostics Menu** > **Base Sensor Test** > **Input** Does the sensor state on the control panel display change when it is toggled?	Go to step 6.	Replace the input sensor. See **"Duplex sensor and input sensor removal" on page 194**.
Step 6 Check the controller board for any damage. Is it free of damage?	Go to step 7.	Replace the controller board. See **"Controller board removal" on page 164**.
Step 7 Does the error remain?	Contact the next level of support.	The problem is solved.

Main drive motor control jam service check

Action	Yes	No
Step 1 **a** Remove the main drive gearbox. **b** Check the main drive gearbox cable for proper connection. Is it properly connected?	Go to step 2.	Reseat the cable.

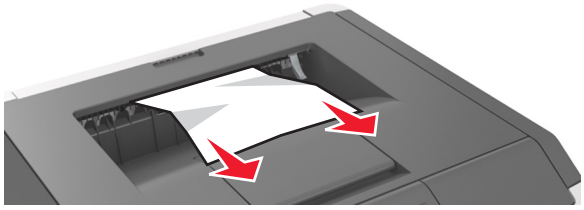
Action	Yes	No
Step 2 **a** Remove the main drive gearbox. **b** Check the gears of main drive gearbox for wear or damage. Are they free of wear or damage?	Go to step 3.	Replace the main drive gearbox. See **"Main drive gearbox removal" on page 147**.
Step 3 Check the main drive motor for proper operation: **a** Remove the main drive gearbox. **Note:** Do not disconnect the main drive gearbox cable. **b** POR into the Diagnostics menu and perform a feed test: **Diagnostics menu** > **Input Tray Tests** > **Feed Test** > Select any input source **c** Check if the main drive motor rotates when doing the feed test. Does it rotate when doing the feed test?	Go to step 4.	Replace the main drive gearbox. See **"Main drive gearbox removal" on page 147**.
Step 4 Check the fuser gear for damage or toner contamination. Is it free of damage and contamination?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the fuser. See **"Fuser removal" on page 211**.

201 paper jams

Jam, standard bin [20y.xx]

1 Firmly grasp the jammed paper on each side, and then gently pull it out.

Note: Make sure all paper fragments are removed.



2 From the printer control panel, press OK to clear the message and continue printing.

201 paper jam messages

Error code	Description	Action
201.01	Narrow media sensor is covered during warm up. Input sensor is not covered.	Go to **"Sensor (narrow media) jam service check" on page 57**.

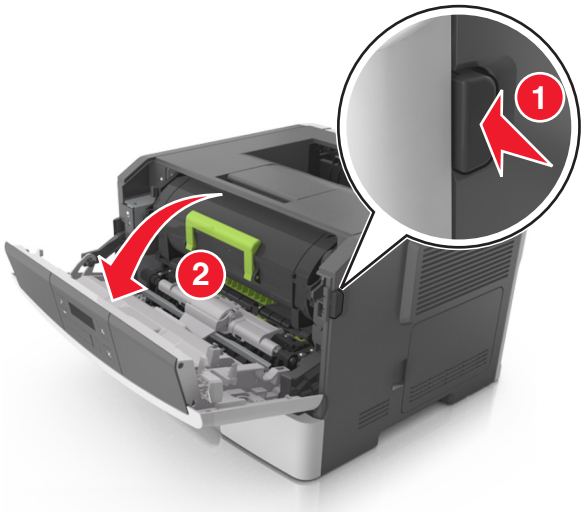
Sensor (narrow media) jam service check

Action	Yes	No
Step 1 Check the narrow media sensor cable JNRW1 for proper connection. Is it properly connected?	Go to step 2.	Reseat the cable.
Step 2 POR into the Diagnostics menu and perform a sensor test: **Diagnostics Menu** > **Base Sensor Test** > **Narrow Media** Does the sensor state on the control panel display change when it is toggled?	Go to step 3.	Replace the narrow media sensor. See **"Narrow media/bin full sensor removal" on page 208**.
Step 3 Check the redrive rollers for damage. Are they free of damage?	Go to step 4.	Replace the redrive assembly. See **"Redrive assembly removal" on page 210**.
Step 4 Does the error remain?	Contact the next level of support.	The problem is solved.

202 paper jams

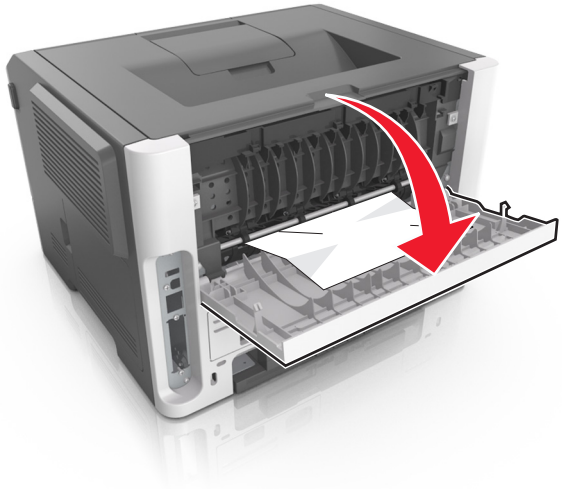
Jam, rear door [20y.xx]

1 Press the button on the right side of the printer, and then open the front door.



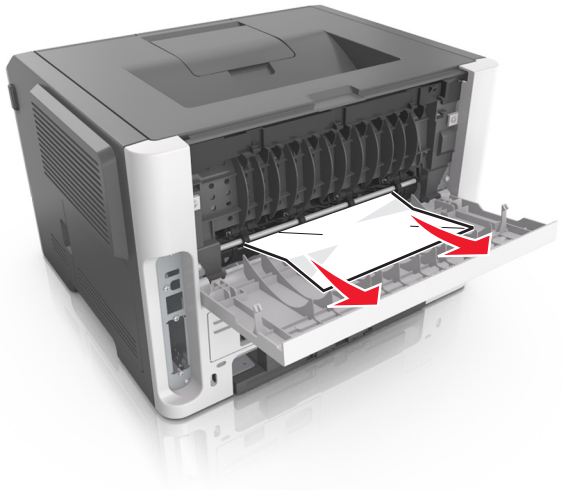
2 Gently pull down the rear door.

CAUTION—HOT SURFACE: The inside of the printer might be hot. To reduce the risk of injury from a hot component, allow the surface to cool before touching it.



3 Firmly grasp the jammed paper on each side, and then gently pull it out.

Note: Make sure all paper fragments are removed.



4 Close the rear and front doors.

5 From the printer control panel, press OK to clear the message and continue printing.

202 paper jam messages

Error code	Description	Action
202.01	Exit sensor is covered during warm up.	Go to **"Sensor (fuser exit) jam service check" on page 60**.
202.03	Media did not reach the fuser exit sensor.	
202.05	Fuser exit sensor covered too long by the current sheet.	
202.07	Fuser exit sensor covered too long by the previous sheet.	
202.13	Restart attempted after an internal jam without cover open. Close event. Likely that the jam was not actually cleared.	
202.14	Expected banner sheet (assumed wide) not detected by narrow media sensor, possible accordion jam, unsupported narrow banner media, or missing signal.	
202.16	Page at fuser nip before fuser started ramping toward desired. Indicates code may be receiving more hall interrupts than intended.	
202.17	Page at fuser nip before fuser reached acceptable operating temperature. Page arrived at fuser earlier than expected, so it was probably staged.	
202.22	Cartridge Motor - Motor Underspeed Error. Motor made it to closed loop steady state, but then detected speed was below threshold.	
202.28	Exit sensor bounce issue.	
202.32	The sheet is too long to be duplexed. The blow through is enabled.	Go to **"Duplex service check" on page 62**.
202.36	Long paper or shingled multi feed stopped before sending to duplex.	
202.43	During warm up flush, media that passed the input sensor failed to reach the exit sensor.	Go to **"Sensor (fuser exit) jam service check" on page 60**.
202.45	During warm up flush, sheet detected too long over exit sensor.	

Sensor (fuser exit) jam service check

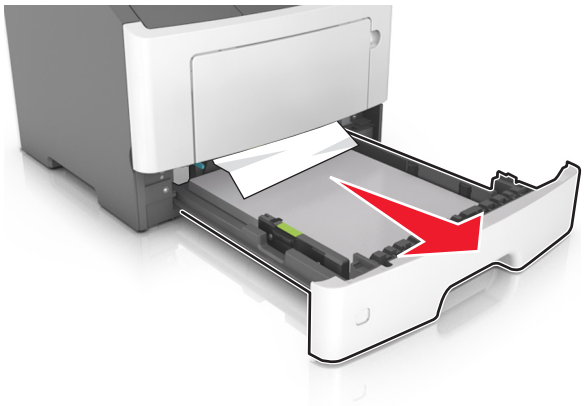
Action	Yes	No
Step 1 Check the input sensor area for jammed media fragments. Is the paper path free of partially fed or jammed media?	Go to step 2.	Clear the paper path of any media fragments.
Step 2 Check the fuser exit sensor cable JEXIT1 for proper connection. Is it properly connected?	Go to step 3.	Reseat the cable.
Step 3 POR into the Diagnostics menu and perform a sensor test: **Diagnostics Menu** > **Base Sensor Test** > **Exit** Does the sensor state on the control panel display change when it is toggled?	Go to step 4.	Replace the fuser. See **"Fuser removal" on page 211**.
Step 4 Check the fuser gears and rollers for damage. Are they free of damage?	Go to step 5.	Replace the fuser. See **"Fuser removal" on page 211**.
Step 5 Does the error remain?	Contact the next level of support.	The problem is solved.

230 paper jams

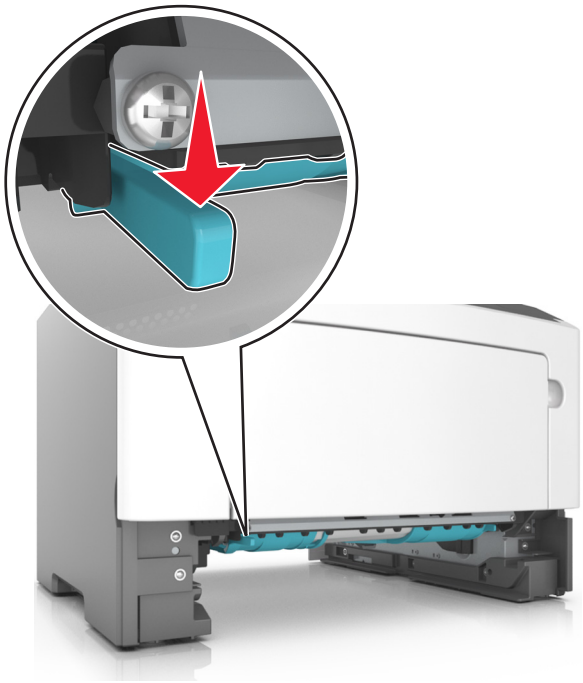
Jam, pull tray 1. Push down blue flap. [23y.xx]

CAUTION—HOT SURFACE: The inside of the printer might be hot. To reduce the risk of injury from a hot component, allow the surface to cool before touching it.

1 Pull the tray out completely.



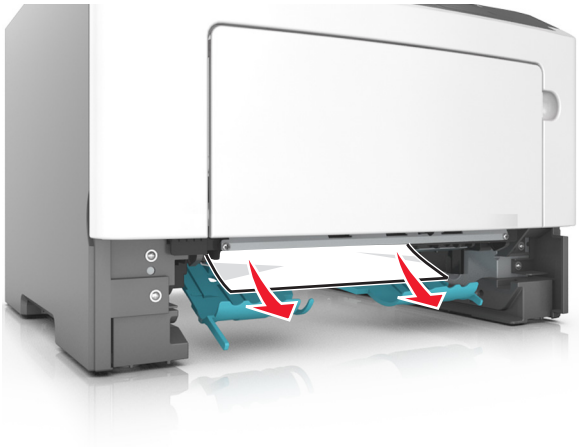
2 Locate the blue lever, and then pull it down to release the jam.



Note: If the jammed paper is not visible in the duplex area, then open the rear door, and then gently remove the jammed paper. Make sure all paper fragments are removed.

3 Firmly grasp the jammed paper on each side, and then gently pull it out.

Note: Make sure all paper fragments are removed.



4 Insert the tray.

5 From the printer control panel, press OK to clear the message and continue printing.

23y.xx paper jam messages

Error code	Description	Action
230.01	Sheet covering internal duplex sensor during warm up.	Go to **"Duplex service check" on page 62**.
230.02	Paper jam around internal duplex.	
230.03	Internal duplex sensor never made by leading edge of page.	
230.04	Page in duplexer ahead of current reversing page never staged.	
230.05	Internal duplex sensor never broke on the trailing edge of the sheet.	
230.07	Internal duplex sensor never broke from sheet ahead of page.	
230.09	Page in duplexer never picked.	
230.10	Narrow page reversing into duplexer.	
230.28	Bouncy duplex sensor never made.	
232.03	Input sensor never detected sheet from internal duplex path.	
232.10	Feed error picking from the duplexer.	

Duplex service check

Action	Yes	No
Step 1 **a** Remove the rear cover. See **"Rear door and cover removal" on page 207**. **b** Check the redrive rollers for wear or damage. Are they free of wear or damage?	Go to step 2.	Replace the redrive assembly. See **"Redrive assembly removal" on page 210**.
Step 2 **a** Remove the left cover. See **"Left cover removal" on page 146**. **b** POR into the Diagnostics menu and perform a duplex feed test: **Diagnostics Menu** > **Duplex Tests** > **Duplex Feed 1** **c** Check the reverse solenoid for proper operation. Does it function properly?	Go to step 3.	Replace the reverse solenoid. See **"Reverse solenoid removal" on page 154**.
Step 3 **a** Remove the input tray. **b** From under the printer, check the duplex gear assembly and duplex link for wear and damage. Are the they free of wear and damage?	Go to step 4.	Replace the duplex gear assembly. See **"Duplex gear assembly removal" on page 160**.

Action	Yes	No
Step 4 From under the printer, check the duplex, belt, and roller for wear and damage. Are they free of wear and damage?	Go to step 5.	Replace the duplex. See **"Duplex removal" on page 193**.
Step 5 **a** Remove the input tray. **b** POR into the Diagnostics menu and perform a duplex sensor test: **Diagnostics Menu** > **Duplex Tests** > **Sensor Test** **c** Lower the duplex jam door, and toggle the duplex sensor. Does the sensor state on the control panel display change when it is toggled?	Go to step 6.	Replace the duplex sensor. See **"Duplex sensor and input sensor removal" on page 194**.
Step 6 Does the error remain?	Contact the next level of support.	The problem is solved.

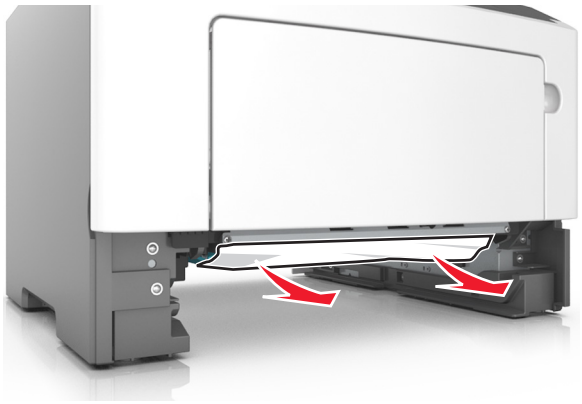
240 paper jams

Jam, tray [x] [24y.xx]

1 Pull out the tray completely.

2 Firmly grasp the jammed paper on each side, and then gently pull it out.

Note: Make sure all paper fragments are removed.



3 Insert the tray.

4 From the printer control panel, press OK to clear the message and continue printing.

24y.xx paper jam messages

Error code	Description	Action
241.01	Paper over tray 1 pass thru sensor on warmup.	Go to **"Tray 1 jam service check" on page 70**.
241.02	Sensor (input) early arriving jam.	
241.03	Tray 1 pass thru sensor never became covered when feeding a sheet from an option below.	
241.07	Option tray 1 pass thru sensor never became uncovered when feeding a sheet from an option below.	
241.13	The media is late reaching the sensor (input) within the specified time from tray 1.	
241.14	The media is late reaching the sensor (input) within the specified time from tray 1.	Go to **"Tray 1 jam service check" on page 70**.
241.15	Media tray 1, tray pulled jam.	
241.16	The engine timed out waiting for the tray 1 to report 'ready' before the 1st pick attempt.	
241.17	Page was not properly picked from tray 1. Have not exhausted all pick retry attempts as there are sheets committed to the paper path from below.	
241.18	Failed to feed from tray 1. Exhausted all pick retries. Paper present sensing indicates media is in the tray.	Go to **"Tray 1 jam service check" on page 70**.
241.20	Took too long to ramp up media feeder motor in tray 1.	
241.21	Media feeder motor stall in tray 1.	
241.22	Media feeder motor pick motor underspeed in tray 1.	

Error code	Description	Action
241.24	Media feeder motor stalled on the last pick attempt in tray 1.	Go to **"Tray 1 jam service check" on page 70**.
241.29	Tray 1 lift plate failed to make the index sensor while elevating.	
241.32	Media tray not ready.	
241.33	The media tray was pulled during the media pick process.	
241.41	Media feeder motor stall in tray 1.	Go to **"Tray 1 jam service check" on page 70**.
241.42	Media feeder motor pick motor under-speed in tray 1.	
241.43	Media feeder motor stalled on the last pick attempt in tray 1.	
241.44	Motor 2 (Separator/Passthru) motor stalled.	
241.45	Motor 2 (Separator/Passthru) motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	Go to **"Tray 1 jam service check" on page 70**.
241.46	Motor 2 (Separator/Passthru) motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
241.47	Motor 3 motor stalled.	
241.48	Motor 3 motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	
241.49	Motor 3 motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
242.01	Paper over tray 2 pass thru sensor on warmup.	Go to **"Option tray jam service check" on page 71**.
242.02	Input sensor detected late feed during a pick retry from tray 2.	
242.03	Tray 2 pass thru sensor never became covered when feeding a sheet from an option below.	
242.06	Failed to feed from tray. Paper present sensing supported and indicates media still in tray.	
242.07	Option tray 2 pass thru sensor never became uncovered when feeding a sheet from an option below.	
242.09	Tray 2 pick motor lost encoder.	Go to **"Option tray jam service check" on page 71**.
242.11	Autocomp Pick/Lift Motor—Encoder Never Detected in tray 2.	
242.12	Motor ramp up error in tray 2.	
242.13	Page to be stapled failed to feed from tray.	

Error code	Description	Action
242.14	Sheets flushed from paper path either due to feed error or cartridge error.	Go to **"Option tray jam service check" on page 71**.
242.15	One or more trays located above the source tray 2 has been pulled.	
242.16	The engine timed out waiting for the tray 2 to report ready before the 1st pick attempt.	
242.17	Page was not properly picked from tray 2. Have not exhausted all pick retry attempts as there are sheets committed to the paper path from below.	
242.19	Tray 2 fail to feed error. Detected while trying to pick a sheet, and that leading edge was not detected by tray sensor.	Go to **"Option tray jam service check" on page 71**.
242.20	Took too long to ramp up dc feed motor in tray 2.	
242.21	Pick motor stall in tray 2.	
242.22	Tray 2 pick motor underspeed.	
242.24	DC Feed autocompensator stalled on the last pick attempt in tray 2.	Go to **"Option tray jam service check" on page 71**.
242.32	Tray not ready.	
242.33	Pick received but detected a tray pulled.	
242.41	Motor 1 (Pick/Lift) Elevator motor stalled.	
242.42	Motor 1 (Pick/Lift) Elevator motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	Go to **"Option tray jam service check" on page 71**.
242.43	Motor 1 (Pick/Lift) motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
242.44	Motor 2 (Separator/Passthru) motor stalled.	
242.45	Motor 2 (Separator/Passthru) motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	
242.46	Motor 2 (Separator/Passthru) motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
242.47	Motor 3 motor stalled.	Go to **"Option tray jam service check" on page 71**.
242.48	Motor 3 motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	
242.49	Motor 3 motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
243.01	Paper over tray 3 pass thru sensor on warmup.	

Error code	Description	Action
243.02	Input sensor detected late feed during a pick retry from tray 3.	Go to **"Option tray jam service check" on page 71**.
243.03	tray 3 pass thru sensor never became covered when feeding a sheet from an option below.	
243.06	Failed to feed from tray. Paper present sensing supported and indicates media still in tray.	
243.07	Option tray 3 pass thru sensor never became uncovered when feeding a sheet from an option below.	
243.09	Tray 3 pick motor lost encoder.	Go to **"Option tray jam service check" on page 71**.
243.10	Failed to feed from tray.	
243.11	Autocomp Pick / Lift Motor - Encoder never detected in tray 3.	
243.12	Motor ramp up error in tray 3.	
243.13	Page to be stapled failed to feed from tray.	Go to **"Option tray jam service check" on page 71**.
243.14	Sheets flushed from paper path either due to feed error or cartridge error.	
243.15	One or more trays located above the source tray 3 has been pulled.	
243.16	The engine timed out waiting for the tray 3 to report 'ready' before the 1st pick attempt.	
243.17	Page was not properly picked from tray 3. Have not exhausted all pick retry attempts as there are sheets committed to the paper path from below.	Go to **"Option tray jam service check" on page 71**.
243.19	Tray 3 fail to feed error. Detected while trying to pick a sheet, and that leading edge was not detected by tray sensor.	
243.20	Took too long to ramp up dc feed motor in tray 3.	
243.21	Pick motor stall in tray 3.	
243.22	Tray 3 pick motor underspeed.	Go to **"Option tray jam service check" on page 71**.
243.24	DC Feed autocompensator stalled on the last pick attempt in tray 3.	
243.32	Tray not ready.	
243.33	Pick received but detected a tray pulled.	

Error code	Description	Action
243.41	Motor 1 (Pick/Lift) Elevator motor stalled.	Go to **"Option tray jam service check" on page 71**.
243.42	Motor 1 (Pick/Lift) Elevator motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	
243.43	Motor 1 (Pick/Lift) motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
243.44	Motor 2 (Separator/Passthru) motor stalled.	
243.45	Motor 2 (Separator/Passthru) motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	Go to **"Option tray jam service check" on page 71**.
243.46	Motor 2 (Separator/Passthru) motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
243.47	Motor 3 motor stalled.	
243.48	Motor 3 motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	
243.49	Motor 3 motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	Go to **"Option tray jam service check" on page 71**.
244.01	Paper over tray 4 pass thru sensor on warmup.	
244.02	Input sensor detected late feed during a pick retry from tray 4.	
244.03	Tray 4 pass thru sensor never became covered when feeding a sheet from an option below.	
244.06	Failed to feed from tray. Paper present sensing supported and indicates media still in tray.	Go to **"Option tray jam service check" on page 71**.
244.07	Option tray 4 pass thru sensor never became uncovered when feeding a sheet from an option below.	
244.09	Tray 4 pick motor lost encoder.	
244.11	Autocomp Pick / Lift Motor - Encoder Never Detected in tray 4.	
244.12	Motor ramp up error in tray 4.	Go to **"Option tray jam service check" on page 71**.
244.13	Page to be stapled failed to feed from tray.	
244.14	Sheets flushed from paper path either due to feed error or cartridge error.	
244.15	One or more trays located above the source tray 4 has been pulled.	

Error code	Description	Action
244.16	The engine timed out waiting for the tray 4 to report 'ready' before the 1st pick attempt.	Go to **"Option tray jam service check" on page 71**.
244.17	Page was not properly picked from tray 4. Have not exhausted all pick retry attempts as there are sheets committed to the paper path from below.	
244.19	Tray 4 fail to feed error. Detected while trying to pick a sheet, and that leading edge was not detected by tray sensor.	
244.20	Took too long to ramp up dc feed motor in tray 4.	
244.21	Pick motor stall in tray 4.	Go to **"Option tray jam service check" on page 71**.
244.22	Tray 4 pick motor underspeed.	
244.24	DC Feed autocompensator stalled on the last pick attempt in tray 4.	
244.32	Tray not ready.	
244.33	Pick received but detected a tray pulled.	Go to **"Option tray jam service check" on page 71**.
244.41	Motor 1 (Pick/Lift) Elevator motor stalled.	
244.42	Motor 1 (Pick/Lift) Elevator motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	
244.43	Motor 1 (Pick/Lift) motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
244.44	Motor 2 (Separator/Passthru) motor stalled.	Go to **"Option tray jam service check" on page 71**.
244.45	Motor 2 (Separator/Passthru) motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	
244.46	Motor 2 (Separator/Passthru) motor ramp (end ramp - did not reach speed, typical pack feed paper jam).	
244.47	Motor 3 motor stalled.	
244.48	Motor 3 motor PWM overflow error (underspeed). Motor underspeed (max PWM and motor underspeed, typical accordion jam).	
244.49	Motor 3 motor ramp - did not reach speed, typical pack feed paper jam).	

Tray 1 jam service check

Action	Yes	No
Step 1 Check the pick tires. Are they free of wear or damage?	Go to step 2.	Replace the pick tires.
Step 2 Check the tray guides and wear strips. Are they free of wear or damage?	Go to step 3.	Replace the tray insert.
Step 3 **a** POR into the Diagnostics menu and perform a feed test: **Diagnostics Menu** > **Input Tray Tests** > **Feed Tests** > **Tray 1** > **Continuous** **b** Cancel the test after five pages. Does the printer successfully feed the five pages into the output bin?	Go to step 7.	Go to step 4.
Step 4 Observe the location of the jammed paper. Are the first page fed to the output bin, the second page jammed in the rear door, and the third page jammed in the input tray?	Go to step 5.	Replace the trailing edge sensor. See **"Trailing edge sensor removal" on page 197**.
Step 5 Check the ACM assembly. Is it free of wear or damage?	Go to step 6.	Replace the ACM assembly. See **"ACM assembly removal" on page 202**.
Step 6 Check the MPF gearbox. Is it free of wear or damage?	Go to step 7.	Replace the MPF gearbox. See **"MPF gearbox removal" on page 151**.
Step 7 Check the main drive gearbox. Is it free of wear or damage?	Go to step 8.	Replace the main drive gearbox. See**"Main drive gearbox removal" on page 147**.
Step 8 Does the error remain?	Contact the next level of support.	The problem is solved.

Option tray jam service check

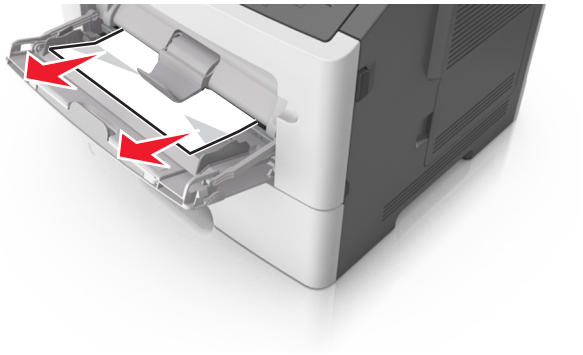
Action	Yes	No
Step 1 Restart the printer. Does it fail to complete the POST sequence and display a 242.01 error?	Replace the option tray.	Go to step 2.
Step 2 **a** POR into the Diagnostics menu and perform a feed test: **Diagnostics Menu** > **Input Tray Tests** > **Feed Test** > Select an option tray > **Continuous** **b** Cancel the test after five pages. Does the printer successfully feed the five pages into the output bin?	The problem is solved.	Go to step 3.
Step 3 Does the printer display a 242.06 error?	Replace the ACM assembly. See **"ACM assembly removal" on page 217**.	Go to step 4.
Step 4 Check the pick roller assembly. Is it free of wear or damage?	Go to step 5.	Replace the pick roller assembly. See **"Pick roller removal" on page 214**.
Step 5 Check the separator roll assembly. Is it free of wear or damage?	Go to step 6.	Replace the separator roll assembly. See **"Separator roll assembly removal" on page 215**.
Step 6 Check the tray guides and wear strips. Are they free of wear or damage?	Go to step 7.	Replace the tray insert.
Step 7 Check the ACM assembly. Is it free of wear or damage?	Go to step 8.	Replace the ACM assembly. See **"ACM assembly removal" on page 217**.
Step 8 POR into the Diagnostics menu and perform a feed test: **Diagnostics Menu** > **Input Tray Tests** > **Feed Test** > Select an option tray Does the pick/lift motor gearbox pass the test?	Go to step 9.	Replace the option tray.
Step 9 Does the error remain?	Contact the next level of support.	The problem is solved.

250 paper jams

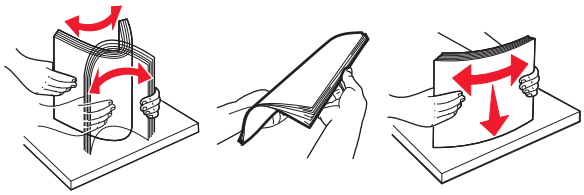
Jam, MP feeder [250.xx]

1 From the multipurpose feeder, firmly grasp the jammed paper on each side, and then gently pull it out.

Note: Make sure all paper fragments are removed.



2 Flex the sheets of paper back and forth to loosen them, and then fan them. Do not fold or crease the paper. Straighten the edges on a level surface.



3 Reload paper into the multipurpose feeder.

Note: Make sure the paper guide lightly rests against the edge of the paper.

4 From the printer control panel, press OK to clear the message and continue printing.

25y.xx paper jam messages

Error code	Description	Action
250.06	Input sensor did not detect sheet picked from MPF. No other sheets should be in the path.	Go to **"MPF service check" on page 73**.
250.10	Input sensor did not detect sheet picked from MPF. No other sheets should be in the path.	
250.13	Input sensor did not detect sheet picked from MPF. Sheet also last page of stapled job.	
250.14	Input sensor did not detect sheet picked from MPF. Other sheets should have been flushed.	
250.17	Input sensor did not detect sheet picked from MPF. No other sheets should be in the path.	
250.18	Input sensor did not detect sheet picked from MPF. Other sheets could be in the path.	

MPF service check

Action	Yes	No
Step 1 Check the springs, links, and tray guides on the MPF assembly for damage. Are they free of damage?	Go to step 2.	Replace the MPF assembly. See **"MPF assembly removal" on page 178**.
Step 2 **a** Make sure the MPF sensor cable is properly connected to the controller board. **b** POR into the Diagnostics menu and perform a sensor test: **Diagnostics Menu** > **Input Tray Tests** > **Sensor Tests** > **Multi-Purpose Feeder** Does the sensor state on the control panel display change when it is toggled?	Go to step 3.	Replace the front input guide. See **"Front input guide removal" on page 187**.
Step 3 Make sure the MPF pick roller and separator pad are free of debris. Check both for wear or damage. Are they free of damage?	Go to step 4.	Replace the MPF pick roller and separator pad. See **"MPF pick roller removal" on page 181** and **"Separator pad removal" on page 189**.

Action	Yes	No
Step 4 **a** Remove the left cover. **b** POR into the Diagnostics menu and perform a feed test: **Diagnostics Menu** > **Input Tray Tests** > **Feed Tests** > **Multi-Purpose Feeder** **c** Check the MPF solenoid for proper operation. Does it function properly?	Go to step 5.	Replace the MPF solenoid. See **"MPF solenoid removal" on page 149**.
Step 5 **a** Make sure the MPF gearbox is free of debris. **b** Check the gears and spring of the MPF gearbox for wear or damage. Are they free of damage?	Go to step 6.	Replace the MPF gearbox. See **"MPF gearbox removal" on page 151**.
Step 6 Does the error remain?	Contact the next level of support.	The problem is solved.

User attendance messages (0-99.99)

User attendance messages (0-99.99)

User attendance messages

Error code	Description	Action
31.21	Capactive Toner Level Sensing (CTLS) reading out of range.	Go to **"CTLS service check" on page 85**.
31.22	Excessive CTLS noise.	
31.23	Abrupt change detected in CTLS reading.	
31.25	CTLS calibration capacitor reading is too low	
31.40	Toner cartridge smart chip error	**1** Make sure that the toner cartridge is properly installed. **2** Check if the toner cartridge is supported. Replace with a supported toner cartridge if necessary. **3** If the problem remains, go to **"Toner cartridge smart chip contact service check" on page 77**.
31.41	Toner cartridge I2C packet timeout	
31.42	Toner cartridge I2C packet has been sent but code timed-out on receiving the data (callback)	
31.43	Toner cartridge security error in the send challenge sequence	
31.44	Toner cartridge ROM signature error	
31.45	Toner cartridge stuck busy (Status register and/or CRI Arbiter register report busy)	

Error code	Description	Action
31.46	Toner failed to replenish into the imaging unit	1 Make sure that the toner cartridge is properly installed. 2 Check if the toner cartridge is supported. Replace with a supported toner cartridge if necessary. 3 If the problem remains, go to **"Cartridge gearbox service check" on page 86**.
31.60	Imaging unit smart chip error	1 Make sure that the imaging unit is properly installed. 2 Check if the imaging unit is supported. Replace with a supported imaging unit if necessary. 3 If the problem remains, go to **"Imaging unit smart chip contact service check" on page 77**.
31.61	Imaging unit I2C packet timeout	
31.62	Imaging unit I2C packet has been sent but code timed-out on receiving the data (callback)	
31.63	Imaging unit security error in the send challenge sequence	
31.64	Imaging unit ROM signature error	
31.65	Imaging unit stuck busy (status register and/or CRI Arbiter register report busy)	
31.66	Toner failed to replenish into the imaging unit	1 Make sure that the toner cartridge is properly installed. 2 Check if the toner cartridge is supported. Replace with a supported toner cartridge if necessary. 3 If the problem remains, go to **"Cartridge gearbox service check" on page 86**.
32.01	Capacity Class/ Model compatibility mismatch. The supplies CC/MC is not compatible with the printer's CC/MC setting.	1 Check if the toner cartridge is supported. Replace with a supported toner cartridge if necessary. 2 Check if the firmware level is compatible with the printer serial number. Flash with the correct firmware level if necessary. 3 If problem remains, contact next level of support.
32.05	OEM Mismatch. The supplies OEM ID is not compatible with the printer's machine class.	
32.10	Toner cartridge smart chip compatibility error	
32.11	Imaging unit smart chip compatibility error	1 Check if the imaging unit is supported. Replace with a supported imaging unit if necessary. 2 Check if the firmware level is compatible with the printer serial number. Flash with the correct firmware level if necessary. 3 If problem remains, contact next level of support.
34	Media size mismatch (too short or too narrow)	1 Make sure the media size setting matches the paper in the tray. 2 Restore the engine settings to their defaults: **Diagnostics Menu** > **Printer Setup** > **Defaults** 3 Restore the EP setup settings to their defaults: **Diagnostics Menu** > **EP Setup** > **Defaults** 4 If the problem remains, go to **"Media size mismatch service check" on page 77**.

Error code	Description	Action
35	Res save off deficient memory	**1** Disable the Resource save feature: **Settings** > **Print Settings** > **Setup Menu** > **Resource Save** > **Off** **2** If the problem remains, go to **"Insufficient memory service check" on page 79**.
37	Insufficient collation area	
38	Memory full	
41.xy	Bottle/IU toner type mismatch	**1** Check if the toner cartridge is supported. Replace with a supported toner cartridge if necessary. **2** If the problem remains, go to **"Printer/cartridge mismatch service check" on page 78**.
42	Printer/cartridge mismatch	
52	Flash full	Format the flash memory: **Settings** > **Print Settings** > **Utilities** > **Format Flash** If the problem remains: **1** Remove the installed memory, and reset the printer. If the problem does not reoccur, replace the memory card. **2** If the problem remains, replace the controller board.
54	Network error	Make sure the printer is properly setup on the network. If the problem remains: **1** Remove the wireless network option, and reset the printer. If the problem does not reoccur, replace the wireless network option. **2** If the problem remains, replace the controller board.
80	Maintenance kit (MS510 and MS610 only)	Replace the maintenance kit, and then reset the Maintenance counter.
84	Imaging unit low	**1** Replace the imaging unit. **2** Make sure the imaging unit smart chip contact cable is properly connected to the controller board. **3** Make sure the contacts are free of debris. **4** Check the contacts for damaged pins. If damaged, replace the printer. **5** If the contacts are free of damage, contact your next level of support.
88	Toner cartridge low	**1** Make sure the toner cartridge smart chip contact cable JARW1 is properly connected to the controller board. **2** Make sure the contacts are free of debris. **3** Check the contacts for damaged pins. If damaged, replace the toner cartridge smart chip contact. **4** If the contacts are free of damage, contact your next level of support.

Toner cartridge smart chip contact service check

Action	Yes	No
Step 1 Check the cable JARW1 for proper connection to the controller board. Is it properly connected?	Go to step 2.	Reseat the cable.
Step 2 Check the toner cartridge smart chip contact for damaged pins. Is it free of damage?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the toner cartridge smart chip contact. See **"Toner cartridge smart chip contact removal" on page 165**.

Imaging unit smart chip contact service check

Action	Yes	No
Step 1 Check the cable JARW2 for proper connection to the controller board. Is it properly connected?	Go to step 2.	Reseat the cables.
Step 2 Check the imaging unit smart chip contact for damaged pins. Is it free of damage?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the printer.

Media size mismatch service check

Action	Yes	No
Step 1 Check the input tray for damage. Is it free of damage?	Go to step 2.	Replace the input tray.
Step 2 **a** Make sure the trailing edge sensor is free of debris. **b** Check it for damage. Is it free of damage?	Go to step 3.	Replace the trailing edge sensor. See **"Trailing edge sensor removal" on page 197**.
Step 3 **a** Make sure the input sensor is free of debris. **b** POR into the Diagnostics menu and perform a sensor test: **Diagnostics Menu** > **Base Sensor Test** > **Input** Does the sensor state on the control panel display change when it is toggled?	Go to step 4.	Replace the input sensor. See **"Duplex sensor and input sensor removal" on page 194**.

Action	Yes	No
Step 4 POR into the Diagnostics menu and perform a sensor test: **Diagnostics Menu** > **Base Sensor Test** > **Narrow Media** Does the sensor state on the control panel display change when it is toggled?	Go to step 5.	Replace the narrow media/bin full sensor. See **"Narrow media/bin full sensor removal" on page 208**.
Step 5 **a** Remove the main drive gearbox. **b** Check the gears for wear or damage. **c** Check the main drive motor for rotation. Are the gears free of wear or damage and does the main drive motor rotate?	Go to step 6.	Replace the main drive gearbox. See **"Main drive gearbox removal" on page 147**.
Step 6 Replace the controller board. Does the error remain?	Problem is solved.	Contact the next level of support.

Printer/cartridge mismatch service check

Action	Yes	No
Step 1 **a** Make sure the toner cartridge smart chip contact cable JARW1 is properly connected to the controller board. **b** Make sure the toner cartridge smart chip contact is free of debris. **c** Check the toner cartridge smart chip contact for damaged pins. Is it free of damage?	Go to step 2.	Replace the toner cartridge smart chip contact. See **"Toner cartridge smart chip contact removal" on page 165**.
Step 2 Check if the firmware level matches the serial number. Do they match?	Replace the controller board. See **"Controller board removal" on page 164**.	Reflash the firmware.

Insufficient memory service check

Action	Yes	No
Step 1 Check the memory card for proper installation. Is it properly installed?	Go to step 2.	Reseat the memory card.
Step 2 **a** Print the Menu settings page: **Settings** > **Reports** > **Menu Settings Page** **b** POR into the Configuration menu and reset the printer's settings to factory default: **Configuration Menu** > **Factory Defaults** > **Restore Base** **c** Remove the memory card. **d** Restart the printer. Does the error remain?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the memory card.

Printer hardware errors

1xx error messages

Error code	Description	Action
111.00	Pel clock check failed.	Go to "111.xx LSU service check" on page 83.
111.01	Downlevel ASIC detected.	
111.31	Printhead never delivered HSYNCs.	
111.32	Printhead lost HSYNCs.	
111.40	Wrong printhead installed	
111.50	Open-loop printhead error, open-loop sweep state.	
111.51		
111.52	Open-loop printhead error, check prelim amp state.	
111.53	Open-loop printhead error, enable amp Kp state.	
111.54	Closed-loop printhead error, amp Kp failed to converge.	
111.55	Closed-loop printhead error while waiting for amp Kp to converge.	
111.56	Closed-loop printhead error, amp Ki failed to converge.	
111.57	Closed-loop printhead error while waiting for amp Ki to converge.	
111.58	Closed-loop printhead error, load scan regs state.	
111.59	Closed-loop printhead error, forward and reverse capture times differ by too much.	
111.60	Closed-loop printhead sweep error, check sweep accuracy state.	
111.61	Printhead drive control out of range due to an external event beyond what the control is designed to handle.	
111.62	Closed-loop printhead error, off-resonant PI effort state.	
111.63	Timed out on POR sweep.	
111.64	Attempted to exceed open loop drive limits.	
111.65		
111.66	Failed alignment of printhead.	
111.67		
111.68	Too many fake HSYNCs while aligning printhead.	
111.69		

Error code	Description	Action
121.07	Fuser has been on for more than allowed after a gap blowout, and the temperature is still too cold.	1 Restore the engine settings to their defaults: **Diagnostics Menu** > **Printer Setup** > **Defaults** 2 Restore the EP setup settings to their defaults: **Diagnostics Menu** > **EP Setup** > **Defaults** 3 If the problem remains, go to **"Fuser service check" on page 83**.
121.08	Fuser was under temp when page was in fuser.	
121.20	Fuser undertemp during steady state control. Can ocurr in printing or standby modes.	
121.22	Fuser did not warm enough to start line voltage detection.	
121.23	Fuser took too long to heat to line detection temp.	
121.24	Fuser never reached detection temperature.	
121.25	After line voltage detection, control did not roll over to steady state control in time.	
121.26	Failed to reach temperature during warm up.	
121.28	Failed to reach EP warm up temperature in time.	
121.29	Fuser failed to reach pre-heat temperature for motor start during warm up.	
121.30	Fuser failed to reach printing temperature by the time a page reached the fuser.	
121.31	Fuser is too hot. Global overtemp check.	
121.32	Open fuser main thermistor.	
121.33	Open fuser edge thermistor.	
121.34	Open fuser backup roll thermistor.	
121.35	Attempting to POR after receiving a 121.34.	
121.36	Fuser did not heat to allow compression jog.	
121.37	Fuser heated faster than allowed during line voltage detection.	
126.01	Line frequency outside operating range of device.	1 Check the power cord for continuity. Replace if necessary. 2 Make sure the nominal voltage source is within specification. See **"Electrical specifications" on page 239**. 3 If the problem remains, go to **"LVPS service check" on page 84**.
126.02	No line frequency detected.	

Error code	Description	Action
132.01	TDS baseline too low.	Go to **"Toner density sensor service check" on page 84**.
132.02	TDS baseline too high.	
132.03	TDS baseline excessive range.	
132.16	TDS calibration at maximum.	
132.17	TDS calibration too low.	
132.18	TDS calibration too close to baseline.	
132.32	PC drum measurement too high.	
132.33	PC drum measurement too different from calibration.	
132.34	PC drum measurement too close to baseline.	
133.05	CTLS reading above maximum expected value.	Go to **"CTLS service check" on page 85**.
133.06	CTLS reading below minimum expected value.	
133.08	Excessive CTLS noise.	
140.10	Transport motor halls not detected.	Go to **"Main drive gearbox service check" on page 85**.
140.20	Transport motor took too long to stop.	
140.30	Transport motor unable to lock (before motor ID).	
140.40	Transport motor overspeed detected.	
140.60	Transport motor unable to lock (after motor ID).	
140.70	Transport motor out of lock detected.	
140.80	Transport motor excessive PWM or overtemp.	
155.00	No encoder received from auger motor.	Go to **"Cartridge gearbox service check" on page 86**.
171.03	Fuser fan error.	Go to **"Cooling fan service check" on page 99**.
171.04		
171.05		
171.06		
171.07		

111.xx LSU service check

Action	Yes	No
Step 1 Check the LSU cables JVIDEO1 and JGLV1 for proper connection. Are they properly connected?	Go to step 2.	Reseat the cables.
Step 2 Inspect the LSU cables and connectors. Are they free of damage?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the LSU. See **"Laser scanning unit (LSU) removal" on page 213**.

Fuser service check

Action	Yes	No
Step 1 • Check the fuser cables JTHERM1 and JEXIT for proper connection to the controller board. • Check the cable PCN5 for proper connection to the power supply. Are they properly connected?	Go to step 2.	Reseat the cables.
Step 2 Are the cables JTHERM1, JEXIT and PCN5 free of damage?	Go to step 3.	Replace the fuser. See **"Fuser removal" on page 211**.
Step 3 **a** Turn off the printer. **b** Remove the rear door and cover. **c** Disconnect the fuser cable connected to PCN5 of the power supply. **d** Check for approximate correct resistance on the fuser cable: • 220V fuser—43 ohms • 110V fuser—10 ohms • 100V fuser—8 ohms Is the resistance equal to any of the above values?	Perform an LVPS service check. See **"LVPS service check" on page 84**.	Replace the fuser. See **"Fuser removal" on page 211**.
Step 4 Check the fuser rollers, belts and gears for damage and debris. Are they free of damage and debris?	Perform a cooling fan service check and LVPS service check. See **"Cooling fan service check" on page 99** and **"LVPS service check" on page 84**.	Replace the fuser. See **"Fuser removal" on page 211**.

LVPS service check

Action	Yes	No
Step 1 Check if the power supply cable is properly connected to the controller board. Is it properly connected?	Go to step 2.	Reseat the cables.
Step 2 **a** Turn off the printer. **b** Remove the power cord. **c** Measure the resistance between terminals A and D of the power supply socket. Is the resistance approximately 30 ohms?	Contact your next level of support.	Replace the power supply. See **"Power supply removal" on page 191**.

Toner density sensor service check

Action	Yes	No
Step 1 Remove the transfer roll, and check for loose toner blocking the toner density sensor. Is it free of loose toner?	Go to step 2.	Clean the sensor.
Step 2 Check the toner density sensor for proper operation: **a** Lower the ACM assembly. **b** Move the toner density sensor wiper from left to right. Does it move freely?	Go to step 3.	Reinstall the wiper properly. If it still cannot move freely, replace the toner density sensor. See **"Toner density sensor removal" on page 196**.
Step 3 Check the toner density sensor cable for proper connection to the controller board. Is it properly connected?	Go to step 4.	Reseat the cable.
Step 4 Check the toner density sensor cable for damage and pinch points. Is it free of damage?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the toner density sensor. See **"Toner density sensor removal" on page 196**.

CTLS service check

Action	Yes	No
Step 1 Check for loose toner blocking the CTLS. Is it free of any loose toner?	Go to step 2.	Clean the CTLS.
Step 2 • Check the cable PCN3 for proper connection to the power supply. • Check the CTLS cable for proper connection to the controller board. Are they properly connected?	Go to step 3.	Reseat the cables.
Step 3 Check the cable PCN3 and CTLS cable for damage. Are they free of damage?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the printer.

Main drive gearbox service check

Action	Yes	No
Step 1 Remove the main drive gearbox and check for any debris. Is it free of debris?	Go to step 2.	Remove the debris.
Step 2 Check the gears of main drive gearbox for wear or damage. Are they free of wear or damage?	Go to step 3.	Replace the main drive gearbox. See **"Main drive gearbox removal" on page 147**.
Step 3 Check the main drive motor for proper operation: **a** Remove the main drive gearbox. **Note:** Do not disconnect the main drive gearbox cable. **b** POR into the Diagnostics menu and perform a feed test: **Diagnostics Menu** > **Input Tray Tests** > **Feed Test** > Select any input source **c** Check if the main drive motor rotates when doing the feed test. Does it rotate when doing the feed test?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the main drive gearbox. See **"Main drive gearbox removal" on page 147**.

Cartridge gearbox service check

Action	Yes	No
Step 1 Check the gear on the toner cartridge for wear or damage. Is it free of wear or damage?	Go to step 2.	Replace the toner cartridge.
Step 2 Check the gears on the cartridge gearbox for proper rotation and for wear or damage. Does it rotate properly and is it free of wear or damage?	Go to step 3.	Replace the cartridge gearbox. See **"Cartridge gearbox removal" on page 160**.
Step 3 Check the cartridge gearbox cable for proper connection to the controller board. Is it properly connected?	Go to step 4.	Reseat the cable.
Step 4 Check the cartridge gearbox cable for damage. Is it free of damage?	Replace the controller board. See **"Controller board removal" on page 164**.	Replace the cartridge gearbox. See **"Cartridge gearbox removal" on page 160**.

9xx error messages

Error code	Description	Action
900.xx	RIP firmware errors	Go to **"System software error service check" on page 89**.
912.xx	Unrecoverable Engine firmware error	POR the machine. If the error re-occurs, then update the firmware. If the error continues occurring, then replace the controller board. Go to **"Controller board removal" on page 164**.
940.xx	RIP to engine communication failure—the zero crossing signal used for fuser control in the low voltage (LV) power supply has failed, or the wrong low voltage power supply has been installed.	Check the LVPS. Go to **"LVPS service check" on page 84**.
948.xx	Failed engine card—pel clock check failed.	Replace the controller board. Go to **"Controller board removal" on page 164**.
949.xx	Failed engine card—delay line calibration failure.	

Error code	Description	Action
950.xx	NVRAM mismatch failure—mismatch between controller board EEPROM and control panel mirror. ".xx" codes: • 00-29— mismatch between system and mirror • 30-60—mismatch between secure and system	**Warning—Potential Damage:** When replacing any of the following components: • Control panel assembly • Controller board assembly Replace only one component at a time. Replace the required component and perform a POR before replacing a second component listed above. If this procedure is not followed, the printer will be rendered inoperable. Never replace two or more of the components listed above without a POR after installing each one or the printer will be rendered inoperable. Never install and remove components listed above as a method of troubleshooting components. Once a component has been installed in a machine, it can not be used in another machine. It must be returned to the manufacturer. Go to **"NVRAM mismatch failure service check" on page 94**.
952.xx	A recoverable NVRAM Cyclic Redundancy Check (CRC) error occurred—n is the offset at which the error occurred.	POR the printer.
953.xx	NVRAM chip failure with mirror part	Replace the controller board. Go to **"Controller board removal" on page 164**.
954.xx	NVRAM chip failure with system part	
955.xx	The Code ROM or NAND flash failed the Cyclic Redundancy Check (CRC) or the NAND experienced an uncorrectible multi-bit failure.	
956.xx	RIP card failure—processor failure	
956.01	Processor Overtemp	
957.xx	RIP card failure—ASIC failure	
958.xx	Controller Board NAND Failure—printer has performed more than 100 shift and reflash operations as a result of ECC bit corrections.	
959.01	Controller verification failure of pensive boot code	Upgrade firmware. If that fails, replace the controller board. Go to **"Controller board removal" on page 164**.
959.02	Failure to authenticate Signature Verification Code	
959.03	Signature Verification Code failed to authenticate a code partition	
959.04	Jump to unverified address	
959.05	Unknown Boot Failure	
959.20	Pensive hardware failure	Replace the controller board. Go to **"Controller board removal" on page 164**.

Error code	Description	Action
959.21	Pensive did not respond to command request	Replace the controller board. Go to **"Controller board removal" on page 164**.
959.22	Challenge Secret Failure	
959.23	Pensive self test failed during initialization	
959.24	EEPROM Retention Error (Write failure)	
959.25	Insufficient device space during HW prog	
959.26	Incremental counter reset exceeds maximum value	
959.27	Increment count failed due to max value limit	
959.28	Invalid SP Memory Configuration	
959.30	Pensive library flagged an invalid argument(s)	Replace the controller board. Go to **"Controller board removal" on page 164**.
959.31	Pensive library flagged an invalid device address	
959.32	Failure to init physical interface	
959.33	Unknown/unexpected Error	
959.34	System Pensive Bus Busy Error	
959.35	Transmission Error	
959.36	Pensive command is invalid due to unlocked device status	
959.37	Pensive command is invalid due to locked device status	
959.38	Incremental counter id(s) are invalid	
959.39	Invalid NV address	
959.40	Invalid Pensive command	Replace the controller board. Go to **"Controller board removal" on page 164**.
960.xx	RAM Memory Error—RAM soldered on the card is bad	
961.xx	RAM Memory Error—optional DRAM is bad	Replace the bad memory card.
964.xx	Download Emulation Cyclic Redundancy Check (CRC) Error—checksum failure detected in the emulation header or emulation file.	1 Disable the Download Emulation. 2 Program the download emulation into the firmware card again. 3 If the above steps do not resolve the problem, then replace the firmware card and download the emulation again.
975.xx	Network Error—unrecognizable network port	Call the next level of support.
976.xx	Network Error—unrecoverable software error in network port	
978.xx	Network Error—bad checksum while programming network port	
979.xx	Network Error—flash parts failed while programming network port	

Error code	Description	Action
980.xx	Engine experiencing unreliable communication with the specified device	Call the next level of support.
981.xx	Engine protocol violation detected by the specified device	
982.xx	Communications error detected by the specified device—device can be: • Engine, Duplex, Tray x, Env Feeder • Output Bin x (Note: Used for single bin devices) • Bins x to y (Note: Used for multiple bin devices)	
983.xx	Invalid command received by the specified device	
984.xx	Invalid command parameter received by the specified device	
990.xx	An equipment check condition has occurred in the specified device, but the device is unable to identify the exact component failure—device can be: • Engine, Duplex, Tray x, Env Feeder • Output Bin x (Note: Used for single bin devices) • Bins x to y (Note: Used for multiple bin devices)	Call the next level of support.
991.xx	The specified device has detected an equipment check in its controller board—device can be: • Engine, Duplex, Tray x, Env Feeder • Output Bin x (Note: Used for single bin devices) • Bins x to y (Note: Used for multiple bin devices)	

System software error service check

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 of 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.

Action	Yes	No
Step 1 POR the printer. Does the error remain?	Go to step 2.	The problem is solved.
Step 2 **a** Write down the exact 900.xx error code displayed on the device. **b** Turn off the printer. **c** Clear the print queues. **d** Disconnect all communication cables, and remove all memory options. **e** Remove any installed ISP. **f** POR the printer into the Diagnostics menu. Does the error remain during startup?	Go to step 3.	Go to step 6.
Step 3 Check all the cables connected to the controller board for proper connectivity. Are the cables properly connected?	Go to step 5.	Go to step 4.
Step 4 **a** Properly connect the cables to the controller board. **b** POR the printer into the Diagnostics menu. Does the error remain during startup?	Go to step 5.	Go to step 6.
Step 5 **a** Replace the controller board. **b** POR the printer. Does the error remain during startup? **Note:** If an error different from the original 900.xx is displayed, consult the service check for that error.	Go to step 31.	The problem is solved.
Step 6 Print the following: • Error log • Menu settings page • Network settings page Does the error remain while these pages were printing?	Go to step 31.	Go to step 7.

Action	Yes	No
Step 7 **Note:** Before performing this step, write down the following information about the file being sent to the printer: • Application used • Operating system • Driver type • File type (PCL, PostScript, XPS, etc.) **a** Reattach the communications cable. **b** POR the printer. **c** Send the printer a print job. Does the error remain?	Go to step 8.	Go to step 10.
Step 8 **a** POR the printer. **b** Send a different print job to the printer. Does the error remain?	Go to step 9.	Go to step 10.
Step 9 **a** Upgrade the firmware. **Note:** Contact your next level of support for the correct firmware level to use. **b** POR the printer. **c** Send the printer a print job. Does the error remain?	Go to step 31.	Go to step 10.
Step 10 Is the device an MFP?	Go to step 11.	Go to step 13.
Step 11 Run a copy job. Does the error remain?	Go to step 31.	Go to step 12.
Step 12 Run a scan to PC job. Does the error remain?	Go to step 31.	Go to step 13.
Step 13 Is there optional memory installed?	Go to step 14.	Go to step 16.
Step 14 **a** Reinstall the memory. **b** Send a print job to the printer. Does the error remain?	Go to step 15.	Go to step 16.

Action	Yes	No
Step 15 **a** Install a Lexmark recommended memory option. **b** Send a print job to the printer. Does the error remain?	Go to step 31.	The problem is solved.
Step 16 Is there a modem installed?	Go to step 17.	Go to step 21.
Step 17 **a** Reinstall the modem. **b** POR the printer. Does the error remain?	Go to step 18.	Go to step 20.
Step 18 **a** Upgrade the firmware if it was not upgraded in a previous step. **Note:** Contact your next level of support for the correct firmware level to use. **b** POR the printer. **c** Send the printer a print job. Does the error remain?	Go to step 19.	The problem is solved.
Step 19 **a** Replace the modem. **b** POR the printer. Does the error remain?	Go to step 31.	The problem is solved.
Step 20 Run a fax job. Does the error remain?	Go to step 31.	Go to step 21.
Step 21 Is there an ISP option installed?	Go to step 22.	The problem is solved.
Step 22 **a** Reinstall the first ISP option. **b** POR the printer. Does the error remain?	Go to step 24.	Go to step 23.
Step 23 Run a job to test the option. Does the error remain?	Go to step 24.	Go to step 26.

Action	Yes	No
Step 24 **a** Upgrade the firmware if it was not upgraded in a previous step. **Note:** Contact your next level of support for the correct firmware level to use. **b** POR the printer. **c** Send the printer a print job. Does the error remain?	Go to step 25.	The problem is solved.
Step 25 **a** Replace the faulty ISP option. **b** POR the printer. Does the error remain?	Go to step 31.	Go to step 26.
Step 26 Are there any more ISP options to install?	Go to step 27.	The problem is solved.
Step 27 **a** Install the next ISP option. **b** POR the printer. Does the error remain?	Go to step 29.	Go to step 28.
Step 28 Run a job to test the option. Does the error remain?	Go to step 29.	Go to step 26.
Step 29 **a** Upgrade the firmware if it was not upgraded in a previous step. **Note:** Contact your next level of support for the correct firmware level to use. **b** POR the printer. **c** Send the printer a print job. Does the error remain?	Go to step 30.	Go to step 26.
Step 30 **a** Replace the faulty ISP option. **b** POR the printer. Does the error remain?	Go to step 31.	Go to step 26.

Action	Yes	No
Step 31 Contact your next level of support. You will need the following information: • Exact 900.xx error digits and complete error message • Printed menu settings page • Printed network settings page • Device error log • A sample print file if the error appears to be isolated to a single file • File/Application used if the error is related to specific print file • Device operating system • Driver used (PCL/PS) • Frequency of the occurrence of the error		

NVRAM mismatch failure service check

Warning—Potential Damage: When replacing any of the following components:

- Control panel assembly
- Controller board assembly

Replace only one component at a time. Replace the required component and perform a POR before replacing a second component listed above. If this procedure is not followed, the printer will be rendered inoperable. Never replace two or more of the components listed above without a POR after installing each one or the printer will be rendered inoperable.

Warning—Potential Damage: These components can be used as a method of troubleshooting as long as the machine is booted into diagnostic mode or is operating in diagnostic mode. Once a component has been installed in a machine and powered up into user mode, it cannot be used in another machine. It must be returned to the manufacturer.

Action	Yes	No
Step 1 Check the control panel assembly. Was the control panel assembly recently replaced?	Go to step 3.	Go to step 2.
Step 2 Check the controller board assembly. Was the controller board assembly recently replaced?	Go to step 4.	Contact next level of support.
Step 3 Replace the current control panel assembly with the control panel assembly. Go to **“Control panel assembly removal” on page 175**. Does the error remain?	Go to step 5.	The problem is solved.

Action	Yes	No
Step 4 Replace the current controller board assembly with the original controller board assembly. Go to **"Controller board removal" on page 164**. Does the problem continue?	Go to step 6.	The problem is solved.
Step 5 Replace the original control panel assembly with a new and not previously installed control panel assembly. Does the error continue?	Contact the next level of support.	The problem is solved.
Step 6 Replace the original control panel assembly with a new and not previously installed control panel door assembly. Does the error continue?	Contact the next level of support.	The problem is solved.

Input option errors

3xx error messages

Error code	Description	Action
321.51	Motor 1 (Pick/Lift) motor no first encoder	Go to **"Option tray pick/lift motor service check" on page 96**.
321.52	Motor 1 (Pick/Lift) motor stop error	
321.53	Motor 1 (Pick/Lift) PWM underflow (motor overspeed)	
322.54	Motor 2 (Separator/Passthru) motor no first encoder	Go to **"Option tray separator/passthrough motor service check" on page 97**.
322.55	Motor 2 (Separator/Passthru) motor stop error	
322.56	Motor 2 (Separator/Passthru) PWM underflow (motor overspeed)	
324.57	Motor 3 motor no first encoder	Go to **"Option tray ACM motor service check" on page 98**.
324.58	Motor 3 motor stop error	
324.59	Motor 3 PWM underflow (motor overspeed)	
325.60	Hardware error—Board ID unknown	Go to **"Option tray controller card service check" on page 98**.
325.61	Hardware error—Option type unknown	
325.62	Hardware error—Product ID unknown	
325.63	Hardware error—Sensors are not plugged on the board.	

Error code	Description	Action
331.51	Motor 1 (Pick/Lift) motor no first encoder	Go to **"Option tray pick/lift motor service check" on page 96**.
331.52	Motor 1 (Pick/Lift) motor stop error	
331.53	Motor 1 (Pick/Lift) PWM underflow (motor overspeed)	
332.54	Motor 2 (Separator/Passthru) Motor no first encoder	Go to **"Option tray separator/passthrough motor service check" on page 97**.
332.55	Motor 2 (Separator/Passthru) motor stop error	
332.56	Motor 2 (Separator/Passthru) PWM underflow (motor overspeed)	
334.57	Motor 3 motor no first encoder	Go to **"Option tray ACM motor service check" on page 98**.
334.58	Motor 3 motor stop error	
334.59	Motor 3 PWM underflow (motor overspeed)	
335.60	Hardware error—Board ID unknown	Go to **"Option tray controller card service check" on page 98**.
335.61	Hardware error—Option type unknown	
335.62	Hardware error—Product ID unknown	
335.63	Hardware error—Sensors are not plugged on the board.	
341.51	Motor 1 (Pick/Lift) motor no first encoder	Go to **"Option tray pick/lift motor service check" on page 96**.
341.52	Motor 1 (Pick/Lift) motor stop error	
341.53	Motor 1 (Pick/Lift) PWM underflow (motor overspeed)	
342.54	Motor 2 (Separator/Passthru) motor no first encoder	Go to **"Option tray separator/passthrough motor service check" on page 97**.
342.55	Motor 2 (Separator/Passthru) motor stop error	
342.56	Motor 2 (Separator/Passthru) PWM underflow (motor overspeed)	
344.57	Motor 3 motor no first encoder	Go to **"Option tray ACM motor service check" on page 98**.
344.58	Motor 3 motor stop error	
344.59	Motor 3 PWM underflow (motor overspeed)	

Option tray pick/lift motor service check

Action	Yes	No
Step 1 **a** Remove the option tray insert. **b** Check the lift plate and gears for proper operation by moving the metal plate. Do the lift plate and gears move freely, and are they free of wear or damage?	Go to step 2.	Replace the tray insert.

Action	Yes	No
Step 2 Check the pick/lift motor for the following: • Gear tooth breakage • Freedom of rotation Is it free of wear or damage?	Go to step 3.	Replace the tray.
Step 3 Check the cable J11 on the option tray controller card. Is it properly connected and free of damage?	Contact the next level of support.	Replace the tray.

Option tray separator/passthrough motor service check

Action	Yes	No
Step 1 **a** Remove the option tray insert. **b** Check the separator roll assembly gear under the tray base for the following: • Gear tooth breakage • Freedom of rotation Does it move freely, and is it free of wear or damage?	Go to step 2.	Replace the tray.
Step 2 Check the cable J10 on the option tray controller card. Is it properly connected and free of damage?	Go to step 3.	Replace the tray.
Step 3 Check the separator roll assembly for wear or damage. Is it free of wear or damage?	Contact the next level of support.	Replace the separator roll assembly. See **"Separator roll assembly removal" on page 215**.

Option tray ACM motor service check

Action	Yes	No
Step 1 Check the cable J11 on the option tray controller card. Is it properly connected?	Go to step 2.	Reseat the cable.
Step 2 **a** Remove the option tray insert and bypass the tray present sensor. **b** POR into the Diagnostics Menu and perform a feed test: **Diagnostics Menu** > **Feed Test** > choose an option tray **c** Check the ACM for proper operation. Does the ACM freely rotate three times before displaying a jam message?	Go to step 3.	Replace the ACM assembly. See **"ACM assembly removal" on page 217**.
Step 3 Is the ACM gear free of wear or damage?	Contact the next level of support.	Replace the ACM assembly. See **"ACM assembly removal" on page 217**.

Option tray controller card service check

Action	Yes	No
Step 1 Check all connections to the option tray controller card. Are the properly connected?	Go to step 2.	Reseat the cables.
Step 2 Check printer's firmware level. Is it up to date?	Go to step 3.	Update the firmware.
Step 3 Replace the option tray. Does the error remain?	Contact the next level of support.	The problem is solved.

Symptoms

Base printer symptoms

Symptom	Action
Buttons on the control panel failed to respond	Go to **"Control panel button service check" on page 101**.
• Fan does not come on • Fan noisy	Go to **"Cooling fan service check" on page 99**.
No display	Go to **"Control panel service check" on page 102**.
Printer not communicating with host	Go to **"USB print service check" on page 103**.
Machine does not POR (no power)	**1** Check the power cord for continuity. Replace if necessary. **2** Make sure the nominal voltage source is within specification. See **"Electrical specifications" on page 239**. **3** If the problem remains, go to **"Dead machine service check" on page 100**.
Toner starvation and 31.4x error code is displayed	Go to **"Toner starvation service check" on page 102**.
Print job not printing on network attached printer	Go to **"Network service check" on page 104**.
Network attached printer offline	

Cooling fan service check

Action	Yes	No
Step 1 **a** Make sure that the cable JFAN1 is properly connected to the controller board. **b** Check if the cooling fan is rotating properly. Is it rotating properly?	Go to step 2.	Replace the cooling fan. See **"Cooling fan removal" on page 163**.
Step 2 **a** Turn off the printer, and disconnect JFAN1 from the controller board. **b** Turn on the printer, and measure the voltage across JFAN1. Is the voltage approximately 24 V?	Go to step 3.	Replace the controller board. See **"Controller board removal" on page 164**.
Step 3 Is the fan idle?	Replace the cooling fan. See **"Cooling fan removal" on page 163**.	The problem is solved.

Dead machine service check

Action	Yes	No
Step 1 Check if the power supply cable is properly connected to the controller board. Are they properly connected?	Go to step 2.	Reseat the cables.
Step 2 **a** Turn off the printer. **b** Remove the power cord. **c** Measure the resistance between terminals A and D of the power supply socket. Is the resistance approximately 30 ohms?	Go to **"Controller board service check" on page 100**	Replace the power supply. See **"Power supply removal" on page 191**.

Controller board service check

Service checks which involve measuring voltages on the power supply should be performed with the printer positioned on its rear side.

Note: When making voltage readings, always use frame ground unless another ground is specified. See the wiring diagram in the back of the book for more information.

Warning—Potential Damage: Do not replace the control panel and controller board at the same time. Each card contains the printer settings. When either of these cards is new, it obtains some of the settings from the other card. Settings are lost when both are new and replaced at the same time.

Action	Yes	No
Step 1 POR the machine. Did the control panel , fuser, fan and drive motor function at startup?	Go to step 2.	Go to step 3.
Step 2 Run some print jobs. Does the error remain?	Go to step 3.	The problem is solved.
Step 3 Check all cables on the controller board. Are they connected properly?	Go to step 5.	Go to step 4.
Step 4 Properly connect all the cables on the controller board. Does the error remain?	The problem is solved.	Go to step 5.

Action	Yes	No
Step 5 Unplug the cable JPS1 from the controller board, and verify the following voltages from the cable: • +5 V at pins 11, 12, 13, 14, 15, 16 • GND at pins 18, 20 Are the voltages correct?	Go to step 7.	Go to step 6.
Step 6 Replace the power supply. Does the error remain?	The problem is solved.	Contact the next level of support.
Step 7 Is the control panel functioning properly?	Go to step 9.	Go to control panel service check. Go to **"Control panel service check" on page 102**
Step 8 Perform the control panel service check. Go to **"Control panel service check" on page 102**. Does the error remain?	Go to step 9.	The problem is solved.
Step 9 Is the LED on the bottom of the controller board illuminating?	Go to step 6.	Replace the controller board. Go to **"Controller board removal" on page 164**.

Control panel button service check

Action	Yes	No
Step 1 Are the control panel display and control panel indicator light illuminated?	Go to step 2.	Perform a control panel service check. Go to **"Control panel service check" on page 102**.
Step 2 POR into the Diagnostics menu and perform a button test: **Diagnostics Menu** > **HARDWARE TESTS** > **Button Test** Did the printer pass the test?	Go to step 4.	Go to step 3.
Step 3 Replace the UICC. Go to **"UICC removal" on page 177**. Did this fix the problem?	The problem is solved.	Go to step 4.

Action	Yes	No
Step 4 Replace the controller board. Go to **"Controller board removal" on page 164**. Did this fix the problem?	The problem is solved.	Contact the next level of support.

Control panel service check

Warning—Potential Damage: Do not replace the operator panel and controller board at the same time. Each card contains the printer settings. When either of these cards is new, it obtains some of the settings from the other card. Settings are lost when both are new and replaced at the same time.

Action	Yes	No
Step 1 Check the UICC cable for proper connection to the UICC and to the controller board. Are they properly connected?	Go to step 2.	Reseat the cable.
Step 2 Is the control panel display blank?	Go to step 3.	The problem is solved.
Step 3 Replace the UICC. Go to **"UICC removal" on page 177**. Did this fix the problem?	The problem is solved.	Replace the controller board. Go to **"Controller board removal" on page 164**.

Toner starvation service check

Action	Yes	No
Step 1 Check the cartridge plunger. Is the cartridge plunger properly attached to the front door and is the spring functioning properly?	Go to step 4.	Go to step 2.
Step 2 **a** Install a new cartridge plunger and spring. See **"Cartridge plunger removal" on page 171**. **b** Print some pages. Did this fix the problem?	The problem is solved.	Go to step 3.
Step 3 Did a 201.22 error display?	Go to step 4.	Go to step 5.

Action	Yes	No
Step 4 Try a different toner cartridge. Did this fix the problem?	The problem is solved.	Go to step 5.
Step 5 Check the connections between the cartridge gearbox and the controller board. Is the cable properly connected to the cartridge gearbox and to the controller board?	Go to step 7.	Go to step 6.
Step 6 Reconnect the cable to the cartridge gearbox and to the controller board. Did this fix the problem?	The problem is solved.	Go to step 7.
Step 7 Replace the cartridge gearbox. See **"Cartridge gearbox removal" on page 160**. Did this fix the problem?	The problem is solved.	Contact the next level of support.

USB print service check

Action	Yes	No
Step 1 Enter Diagnostic mode and perform a print test to make sure the printer prints correctly. Verify that the indicator light is on, then print the Menu Settings Page, navigate to: **Reports** > **Menu Settings Page** Are the internal pages printing?	Go to step 2.	Go to step 7.
Step 2 Verify if the user's applications are setup correctly. Are they setup correctly?	Go to step 4.	Go to step 3.
Step 3 Try a different application to run a print job. Did the output print?	This is not a printer issue.	Go to step 4.
Step 4 Check the print driver. Is the correct driver being used and properly setup?	Go to step 6.	Go to step 5.

Action	Yes	No
Step 5 Use a different driver. Did this fix the issue?	The problem is solved.	Go to step 6.
Step 6 Try a different USB cable. Did this fix the issue?	The problem is solved.	Go to step 7.
Step 7 Replace the controller board. Go to **"Controller board removal" on page 164**. Did this fix the issue?	The problem is solved.	Contact the next level support

Network 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, then 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.

Actions	Yes	No
Step 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, then go to step 3.	Go to step 2.
Step 2 Connect the Ethernet cable. Does this fix the problem.	The problem is solved.	Go to step 3.
Step 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 Ready state?	Go to step 5.	Go to step 4.
Step 4 Change the printer status to online. Did this fix the issue?	The problem is solved.	Go to step 5.

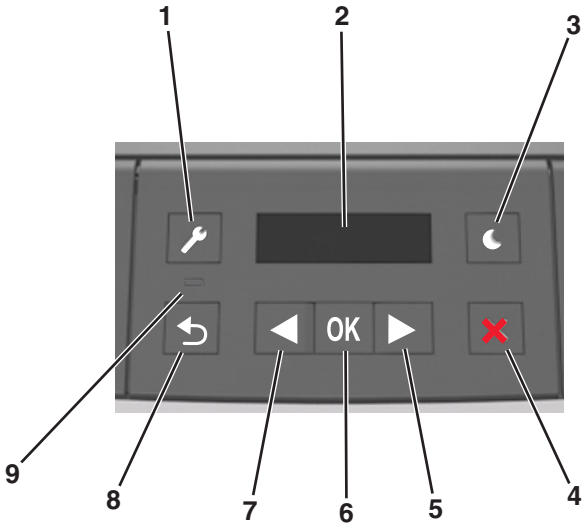
Actions	Yes	No
Step 5 Does the IP address displayed on the network settngs page match the IP address in the port of the drivers using the printer?	Go to step 10.	Go to step 6.
Step 6 Does the LAN use DHCP? **Note:** A printer should use a static IP address on a network.	Go to step 7.	Go to step 9.
Step 7 Are the first two segments of the IP address 169.254	Go to step 8.	Go to step 9.
Step 8 POR the printer. Did this resolve the issue?	The problem is solved.	Go to step 10.
Step 9 Reset the address on the printer to match the IP address on the driver. Did this resolve the issue?	The problem is solved.	Go to step 10.
Step 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.
Step 11 Using the subnet address supplied by the network administrator, assign a unique IP address to the printer. **Note:** The printer IP address should match the IP address on the printer driver. Did this fix the problem?	The problem is solved.	Go to step 12.
Step 12 Is the device physically connected (Ethernet cable) to the network?	Go to step 13.	Go to step 15.
Step 13 Try using a different Ethernet cable. Did this fix the problem?	The problem is solved.	Go to step 14.
Step 14 Have the network administrator check the network drop for activity. Is the network drop functioning properly?	Replace the controller board. See **"Controller board removal" on page 164**.	Contact the network administrator.
Step 15 Is the printer on the same wireless network as the other devices?	Go to step 17.	Go to step 16.

Actions	Yes	No
Step 16 Assign the correct wireless network to the printer. Did this fix the problem?	The problem is solved.	Go to step 17.
Step 17 Are the other devices on the wireless network communicating properly?	Go to step 18.	Contact the network administrator.
Step 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.
Step 19 Properly reseat the wireless card. Did this fix the problem?	The problem is solved.	Go to step 20.
Step 20 If there is an attached antenna, is the antenna damaged?	Go to step 22.	Go to step 21.
Step 21 Replace the antenna. Did this fix the problem?	The problem is solved.	Go to step 22.
Step 22 Verify that the antenna is properly connected to the wireless card. Is it connected correctly?	Go to step 24.	Go to step 23.
Step 23 Properly connect the antenna. Did this fix the problem?	The problem is solved.	Go to step 24.
Step 24 Replace the wireless card. Did this fix the problem?	The problem is solved.	Go to step 25.
Step 25 Replace the controller board. See **“Controller board removal” on page 164**. Did this fix the problem?	The problem is solved.	Contact the next level of support.

Service menus

Understanding the control panel and menus

Using the printer control panel



	Use the	To
1	Menus button	Open the menus. **Notes:** • The menus are available only when the printer is in the Ready state. • Pressing the button while navigating within the menus returns the printer control panel to the top-level menu screen.
2	Display	View printing options as well as status and error messages.
3	Sleep button	Enable Sleep mode or Hibernate mode. **Notes:** • Pressing any hard button will cause the printer to wake from Sleep mode. • Pressing the Sleep button or the power switch will cause the printer to wake from Hibernate mode.
4	Stop button	• Exit the menus and return to the Ready state. • Stop printer activities, such as printing or downloading fonts.
5	Right arrow button	• Scroll through menus or to move between screens and menu options. • Scroll through settings or text. For menus with numeric values, press and hold an arrow button to scroll through the settings. Release the button when the value you want appears.

	Use the	To
6	Select button	• Open a menu. • Display available values or settings for a menu. The current default setting is indicated by an asterisk (*). • Save the displayed value as the new user default setting.
7	Left arrow button	• Scroll through menus or to move between screens and menu options. • Scroll through settings or text. For menus with numeric values, press and hold an arrow button to scroll through the settings. Release the button when the value you want appears.
8	Back button	Return to the previous screen.
9	Indicator light	Determine the status of the printer.

Understanding the colors of the indicator and Sleep button lights

The colors of the indicator and Sleep button lights on the printer control panel signify a certain printer status or condition.

Indicator light color and its corresponding printer status

Indicator light	Printer status
Off	The printer is off or in Hibernate mode.
Blinking green	The printer is warming up, processing data, or printing.
Solid green	The printer is on, but idle.
Blinking red	The printer requires user intervention.

Sleep button light color and its corresponding printer status

Sleep button light	Printer status
Off	The printer is idle or in Ready state.
Solid amber	The printer is in Sleep mode.
Blinking amber	The printer is waking from or entering Hibernate mode.
Blinking amber for 0.1 second, then goes completely off for 1.9 seconds in pulsing pattern	The printer is in Hibernate mode.

Menus list

Paper Menu

Default Source
Paper Size/Type
Configure MP
Substitute Size
Paper Texture
Paper Weight
Paper Loading
Custom Types
Universal Setup

Reports

Menu Settings Page
Device Statistics
Network Setup Page[1]
Profiles List
Print Fonts
Print Directory
Asset Report

Network/Ports[3]

Active NIC
Standard Network[2]
Reports
Network card
TCP/IP
IPv6
Wireless
AppleTalk
Standard USB
SMTP Setup

Security

Security Audit Log
Set Date and Time

Settings

General Settings
Print Settings

[1] Depending on the printer setup, this menu item appears as Network Setup Page or Network [x] Setup Page.

[2] Depending on the printer setup, this menu item appears as Standard Network or Network [x].

[3] The menu items in this menu appear only in network printers or printers connected to print servers.

Diagnostics menu

The Diagnostics menu group consists of menus, settings, and operations that are used to diagnose printer problems.

Entering the Diagnostics menu

1. Turn off the printer.
2. Press and hold ◀ and **OK**.
3. Turn on the printer.
4. Release the buttons when a line of dots appears.

Registration

These settings adjust the margins of the black plane.

To set the Registration:

1. Print a Quick test page.
   a. From the Diagnostics menu, navigate to:
   Registration > **Quick Test**
   b. Retain this page to determine the changes you need to make to the margin settings. The alignment diamonds in the margins should touch the margins of the page.

The Quick test page contains the following information:

- Printer registration settings
- Code levels
- Alignment diamonds at the top, bottom, and each side
- Horizontal lines for skew adjustment
- General printer information, including current page count, installed memory, processor speed, serial number, engine ID, and system card ID

2 Change the value of any of the margin settings.

Top Margin	-16 to +16	Increasing the value moves the image down the page. Always adjust the top before the bottom margin.
Bottom Margin	-20 to +20	Increasing the value moves the image toward the top of the page.
Left Margin	-25 to +25	Increasing the value moves the image toward the right margin. Always adjust the left before the right margin.
Right Margin	-30 to +30	Use this to adjust the printhead.

Note: The alignment of the left margin positions the black plane to the right or left. The alignment of the right margin does not alter the margins and should only be used to adjust the printhead.

Print Tests

These tests determine if the printer can print on media from any of the paper input sources. Each of the installed sources is available within the Print tests menu.

The content of the test page varies depending on the media in the selected input source:

- If the selected source contains paper, then a page similar to the Quick test page is printed, but without the print registration diamonds.
- If the selected source contains envelopes, then an envelope print test pattern is printed. This pattern contains only text, which consists of continuous prints of each character in the selected symbol set. If Continuous is selected, then the envelope print test pattern is printed on the first envelope; the rest are blank.

The Print test page always prints single-sided, regardless of the duplex setting or the presence of the duplex option.

To run the Print test:

1 From the Diagnostics menu, navigate to **Print Tests**.

2 Choose the paper source.

3 Choose any of the following:

- Single—Prints a single Print test page
- Continuous—Continuously prints the Print test pages until **X** is pressed

Print Quality Pages

This enables the user to view the values of the printer settings and to test its ability to generate acceptable printed output.

The report consists of four pages. The printer always uses media from Tray 1 to print this report. It will not prompt for a change in media regardless of the media type in Tray 1.

Note: This test cannot be canceled after it has begun. If duplex is activated, then the report is printed in duplex.

To print the Print quality pages:

From the Diagnostics menu, navigate to **Print Tests** > **Print Quality Pages**.

Hardware Tests

If the hardware test fails, replace the failing part.

Panel Test

This test verifies the control panel display function.

To run the Panel test:

1. From the Diagnostics menu, navigate to:

   Hardware Tests > **Panel Test**
2. Press **X** to exit the test.

Button Test

This verifies the control panel button function except for the Sleep button.

To run the Button test:

1. From the Diagnostics menu, navigate to:

   Hardware Tests > **Button Test**
2. **`Press count:`** **0** appears.
3. Press each control panel button one at a time. Each time a button is pressed, the press count increments by 1.
4. Press **X** to exit the test.

DRAM Test

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

To run the DRAM test:

1. From the Diagnostics menu, navigate to:

   Hardware Tests > **DRAM Test**
2. **`Testing`**... appears, followed by **`Resetting the Printer`**.
3. After the printer resets, the results of the test appear: **`DRAM Test [x] P:###### F:######`**.
   - **`[x]`**—Represents the size of the installed DRAM.
   - **`P:######`**—Represents the number of times the memory test has passed and finished successfully, with the maximum pass count being 999,999.

- **F:#####**—Represents the number of times the memory test has failed and finished with errors, with the maximum fail count being 999,999.

4 After the maximum pass count or fail count is reached, or when all the DRAM has been tested, the test stops and the final results appear.

USB HS Test Mode

1 From the Diagnostics menu, navigate to:

Hardware Tests > **USB HS Test Mode**

2 Choose the desired port, and then choose the desired test.

Ports	Tests
Port 0 Port 1 Port 2 Port 3	Test J Test K Test SEO NAK Test Packet Test Force Enable
Single Step Get Device Single Step Set Feature	

3 To exit the test, POR the printer.

4 If the test fails, replace the failing USB cable.

Duplex Tests

Quick Test

The Duplex quick test determines if the top margin at the back of a duplexed page is set correctly. This test prints a duplexed version of the Quick test page that can be used to adjust the duplex top margin. Use either Letter or A4 paper.

To run the Duplex quick test:

1 From the Diagnostics menu, navigate to:

Duplex Tests > **Quick Test**

2 Choose any of the following:

- Single—Prints a single Quick test page.
- Continuous—Continuously prints the Quick test pages until **X** is pressed.

The printer attempts to print the Quick test page from the default paper source. If the default paper source supports only envelopes, then the page is printed from Tray 1.

The Quick test page contains the following information:

- Printer registration settings
- Code levels
- Alignment diamonds at the top, bottom, and each side

- Horizontal lines for skew adjustment
- General printer information, including current page count, installed memory, processor speed, serial number, engine ID, and controller board ID

3 Check the Quick test page for the correct offset between the placement of the first scan line on the front and back side of a duplexed sheet.

4 If adjustment is necessary, the top margin in the Registration menu must be adjusted first. The duplex top margin offset may be adjusted next. A positive offset moves the text down the page and widens the top margin, while a negative offset moves the text up the page and narrows the top margin.

Top Margin

This setting controls the offset between the placement of the first scan line on the front and back side of a duplex sheet.

Note: If adjustment is necessary, the top margin in the Registration menu must be adjusted first. The duplex top margin may be adjusted next.

To adjust this setting:

1 From the Diagnostics menu, navigate to:

Duplex Tests > **Top Margin**

2 Change the margin value.

Changing the value by 1 unit moves the margin by 1/100 in. A positive value moves the text down the page and widens the top margin. A negative value moves the text up the page and narrows the top margin.

3 Press **OK** to save the desired margin value.

Left Margin

This setting allows the user to shift the position of the left margin of the back side of a duplexed page to the left or right. The default margin is 1/4 in.

To adjust this setting:

1 From the Diagnostics menu, navigate to:

Duplex Tests > **Left Margin**

2 Change the margin value.

Each increment corresponds to 4 pels at 600 dpi (0.00666 in. or 0.1693 mm). A more positive offset moves the margin to the right, and a more negative offset moves the margin to the left.

3 Press **OK** to save the desired margin value.

Sensor Test

Use this test to determine if the duplex sensor and switches are working properly.

To run this test:

1. From the Diagnostics menu, navigate to:

   Duplex Tests > **Sensor Test**

2. **`Testing...`** appears while the printer is verifying the state of the sensor.

   The control panel displays the current state of the sensor.

3. Manually actuate the sensor to make it toggle between **`Open`** and **`Closed`**. If the sensor does not toggle, then it is malfunctioning.

4. Press **X** to exit the test.

Duplex Feed 1

This test feeds a blank sheet of paper from Tray 1 to the duplex paper stop position 1. This test can be run using any of the supported paper sizes.

To run this test:

1. From the Diagnostics menu, navigate to:

   Duplex Tests > **Duplex Feed 1**

   The power indicator blinks while the paper is feeding, and **`Duplex Feed 1 Feeding...`** appears. This test cannot be canceled. The panel displays **`Duplex Feed 1 Clear Paper`** when the paper reaches the duplex paper stop position 1.

2. Remove the sheet of paper from the duplex unit, and shut the duplex door.

3. Press **X** to clear the message.

Input Tray Tests

Feed Tests

This test feeds blank pages through the paper path. It can run using any of the paper or envelope sizes supported by the printer.

To run the Feed test:

1. From the Diagnostics menu, navigate to:

   Input Tray Tests > **Feed Tests**

2. Choose the input source. All installed sources appear.

3. Choose any of the following:
   - **Single**—Feeds a single page.
   - **Continuous**—Continuously feeds pages until **X** is pressed.

Sensor Test

Use this test to determine if the input tray sensors are working correctly.

1. From the Diagnostics menu, navigate to:

   Input Tray Tests > **Sensor Test**

2. Select the input source. All installed sources appear.

   Not all sensors appear for all trays. The following table indicates which tray sensors are available for each input source:

Input source	Tray empty sensor	Pass through sensor
Optional 250-/550-sheet tray	✓	✓
Multipurpose feeder	✓	

3. Manually actuate each sensor. The tray empty sensor can be actuated by hand; however, a sheet of paper can be used to cover the pass through sensor.

4. Press **X** to exit the test.

Output Bin Tests

Feed Tests

This test verifies that media can be fed to a specific output bin. No information is printed on the media.

To run this test:

1. From the Diagnostics menu, navigate to:

   Output Bin Tests > **Feed Tests**

2. Select the output bin into which you want the paper to exit. All installed output bins appear.

3. Select one of the following:
   - Single—Feeds a single page.
   - Continuous—Continuously feeds pages until **X** is pressed.

Sensor Test

This test verifies that the output bin sensors are working correctly.

To run this test:

1. From the Diagnostics menu, navigate to:

   Output Bin Tests > **Sensor Test** > **Standard Bin**

   `Testing...` appears while the printer is verifying the state of the sensor.

   The control panel displays the current state of the sensor.

2. Manually actuate the sensor to make it toggle between **`empty`** and **`full`**. If the sensor does not toggle, then the sensor is malfunctioning.

3. Press **X** to exit the test.

Base Sensor Test

Use the Base sensor test to verify that the sensors located inside the printer are working correctly.

The following sensors can be checked using this test:

- Input
- Exit
- Narrow Media
- Front Door

CAUTION—SHOCK HAZARD: The sensor may be electrically energized. To avoid the risk of injury use a non-conductive implement to toggle the sensors.

To run the Base sensor test:

1. From the Diagnostics menu, navigate to **Base Sensor Test**.
2. Choose a sensor.
3. Manually actuate the sensor to verify that it toggles. If the sensor does not toggle, then it is malfunctioning.

Sensor	Values
Input Exit Front Door	Open Closed
Narrow Media	Narrow Wide

4. Press **X** to exit the test.

Device Tests

Flash Test

This test verifies the condition of the flash device by writing data to it and then reading data from it.

Warning—Potential Damage: This test deletes all data on the flash device.

1. From the Diagnostics menu, navigate to:

   DEVICE TESTS > **Flash Test**
2. `Files will be lost. Go/Stop?` appears.
3. Do any of the following:
   - Press **OK** to continue.
   - Press **X** to cancel.
4. When the test starts, `Flash Test Testing...` appears. The test cannot be stopped or canceled after it has begun.
5. After the test is complete, a message appears indicating a pass or fail result.

6 Press **X** to return to the Device tests menu.

7 Reformat the flash device using the Flash format setting in the Utilities menu.

Printer Setup

Defaults

Warning—Potential Damage: Modification of the printer setting defaults causes the NVRAM space to be restored to the printer factory settings.

This setting is used by the printer to determine whether US or non-US factory default values should be used. The following printer settings have different US and non-US values:

Printer default values	US value	Non-US value
Paper sizes setting in the General settings menu	U.S.	Metric
Default paper size (paper feeding sources which do not have hardware size-sensing capabilities)	Letter	A4
Default envelope size (envelope feeding sources which do not have hardware size-sensing capability)	10 Envelope	DL Envelope
Fax media size	Letter	A4
PCL symbol set	PC-8	PC-850
PPDS code page	437	850
Universal units of measure	Inches	Millimeters

To change this setting:

1 From the Diagnostics menu, navigate to:

Printer Setup > **Defaults**

2 Choose U.S. or Non-U.S.

3 Do any of the following:

- Press **OK** to save any changes.
- Press **X** to return to the Printer setup menu.

Page Count

The value of this setting gauges the amount of usage on the printer. The value of the Page count setting will equal the values of the Picked sides meter.

Note: The value of the setting cannot be changed.

Perm Page Count

The value of this setting indicates the total amount of pages that have been printed.

Note: The value of this setting cannot be changed.

Processor ID

This is a 16-digit hexadecimal value representing the ID of the processor on the controller card.

Engine Setting [x]

These settings are used by Engine code ECs to fix field problems. The value of [x] is any value from 1 to 16.

Edge to Edge

When set to On, this shifts all four margins (top, bottom, left, and right) to the physical edge of the page (printable area of a supported paper size).

Par 1 Strobe Adj

This enables the user to adjust the amount of time the strobe is sampled to determine if valid data is available on the parallel port.

Each time this value is increased by 1, the strobe is sampled 50 ns longer. Each time this value is decreased by 1, the strobe is sampled 50 ns less. When the value of this setting is 0, the factory default value is used to determine the amount of time the strobe is sampled.

Available options: -4 to 1

EP Setup

EP Defaults

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

To restore the EP defaults:

1. From the Diagnostics menu, navigate to:

   EP Setup > **EP Defaults**

2. Select **Restore**.

Fuser Temp

This setting adjusts the fuser temperature to solve problems with paper curl on low grade paper and/or melting of letterhead on some papers.

To adjust this setting:

1. From the Diagnostics menu, navigate to:

   EP Setup > **Fuser Temp**

2. Press **OK** to save any changes.

Transfer Adjust

This setting controls the transfer roll algorithm.

To adjust this setting:

1. From the Diagnostics menu, navigate to:

   EP Setup > **Transfer Adjust**

2. Press **OK** to save any changes.

Print Contrast

This setting controls the developer voltage offset.

To adjust this setting:

1. From the Diagnostics menu, navigate to:

   EP Setup > **Print Contrast**

2. Press **OK** to save any changes.

Charge Roll

This setting controls the charge roll voltage.

To adjust this setting:

1. From the Diagnostics menu, navigate to:

   EP Setup > **Charge Roll**

2. Press **OK** to save any changes.

Gap Adjust

This setting adjusts the minimum gap between sheets. Increasing this value may reduce curl of some printed media and eliminate some output bin stacking problems. However, increasing this value also results in slower overall performance, measured in pages per minute.

The range of values is 0 to 255, and the default value is 0.

To adjust this setting:

1. From the Diagnostics menu, navigate to:

   EP Setup > **Gap Adjust**

2. Press **OK** to save any changes.

Auto Dark Adj

When activated, this setting attempts to optimize the amount of toner used when printing with a specific operating point.

Each time this setting executes, the printer performs the following:

- Calibrates its toner density sensor
- Measures the reflectivity of its bare drum
- Prints patches on the drum and measures the reflectivity of the drum through the patches
- Cleans the transfer roll

- Calculates reflectivity ratios and operating points to attain the darkness target of each operating point
- Modifies the EP mechanism as necessary to adjust toner darkness

The cartridge smart chip controls how often this process executes.

Note: No messages are displayed on the control panel to give any indication that this test is running. The device stores the results of its most recent process in the Auto dark adj field on the Menu settings page report.

When deactivated, the printer disables and never executes this process.

To adjust this setting:

1. From the Diagnostics menu, navigate to:

   EP Setup > **Auto Dark Adj**
2. Choose **Enable** or **Disable**.
3. Press **OK** to save any changes.

Reports

Menu Settings Page

This prints the Menu settings page which contains the Diagnostics menu settings and their current values.

Event Log

Display Log

This version of the Event log displays the panel text that appeared when the event occurred.

To view the Event log:

1. From the Diagnostics menu, navigate to:

   Event Log > **Display Log**
2. Use the arrow buttons to navigate through the entries.

Print Log

Additional diagnostic information is available when the event log is printed. The first page of the report shows the general device information.

The specific events that appear in the report vary depending on the operational history of the printer. Logs may be printed from the following events:

- Job accounting log failures
- NV reset failures
- NV mirror entries
- 9xx and 1xx (print engine) service error entries
- Programming error entries
- Maintenance count reset entries
- Clear log entries

- Paper jam entries
- Firmware update entries
- JFFS2 partition format entries
- USB setup pkt info entries
- Supply event entries

To print the Event log:

From the Diagnostics menu, navigate to **Event Log** > **Print Log**.

Clear Log

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

To clear the event log:

1. From the Diagnostics menu, navigate to:

   Event Log > **Clear Log**

2. Choose any of the following:
   - Yes—To clear the Event log
   - No—To exit the Clear log menu

EXIT DIAGNOSTICS

Select this to exit the Diagnostics menu. The printer performs a POR and restarts in normal mode.

Configuration menu

The Configuration menu group consists of menus, settings, and operations that are used to configure a printer for operation.

Entering the Configuration menu

1. Turn off the printer.
2. Press and hold **OK** and ▶.
3. Turn on the printer.
4. Release the buttons when a line of dots appears.

Prt Quality Pgs

This prints a report that contains a limited set of the information that appears in the Diagnostics menu version of the Print quality pages report.

Reports

Menu Settings Page

This prints the Menu settings page which contains the Configuration menu settings and their current values.

Event Log

Additional diagnostic information is available when the event log is printed. The first page of the report shows the general device information.

The specific events that appear in the report vary depending on the operational history of the printer. Logs may be printed from the following events:

- Job accounting log failures
- NV reset failures
- NV mirror entries
- 9xx and 1xx (print engine) service error entries
- Programming error entries
- Maintenance count reset entries
- Clear log entries
- Paper jam entries
- Firmware update entries
- JFFS2 partition format entries
- USB setup pkt info entries
- Supply event entries

To print the Event log:

From the Configuration menu, navigate to **Reports** > **Event Log**.

Panel Menus

This enables or disables the control panel menus.

Available options:

- On—Menus enabled
- Off—Menus disabled

Demo Mode

Demo mode is often used in retail environments to highlight printer capabilities. The printer stores demonstration files in the resident demo file of the base RIP firmware and in any supported optional memory devices.

When this mode is activated, the printer ignores all print jobs sent to it other than the demo file selected by the user. Each demo file consists of one or more printed pages.

Available options:

- Activate—The printer boots into Demo mode after each power cycle.
- Deactivate—The printer boots into normal mode.

To print a demo file:

1. Activate Demo mode, and then POR the printer.
2. Select a demo file from the displayed list, and then press **OK** to print.

Factory Defaults

This restores the printer's settings to the network settings (on network models only) or to the base printer settings.

Restore Base

Warning—Potential Damage: This operation cannot be undone.

This restores all non-critical base device NVRAM settings to their factory default settings.

Restore STD NET

Warning—Potential Damage: This operation cannot be undone.

This restores all network NVRAM settings. The printer immediately performs a POR and restores the appropriate settings to their factory default values. This option is available only on models with an integrated network adapter.

Energy Conserve

This affects the values that appear in the Power saver setting in General settings menu.

Available options:

- Off—The Power saver menu displays a Disabled setting. When selected, it disables the Power saver feature.
- On—Disabled does not appear in the Power saver menu. The user cannot disable the Power saver feature.

Wipe All Settings

This makes any sensitive information that may exist on the volatile or non-volatile storage of the device completely indecipherable. When selected, the printer performs a non-critical NVRAM reset and then reboots.

Font Density

This creates microscopic holes in all black text. The holes save toner by reducing overlapping toner.

Available options: 1 to 5

Font Sharpening

This allows a user to set a text point-size value below which the high-frequency screens will be used when printing font data.

Available options:

- Off
- On

Reduced Curl

When on, this setting significantly reduces throughput and should be activated only as a last resort to solve paper curl problems. The printer uses this mode only when the media type is set to Paper.

Available options:

- Off
- On

A5 Loading

This determines the orientation used when printing on A5 paper.

Available options:

- Long Edge—The printer will print A5-size paper in the long-edge feed orientation from all trays.
- Short Edge—The printer will print A5-size paper in the short-edge feed orientation from all trays.

USB Speed

This setting is used to set the throughput of the USB port on the printer.

Available options:

- Auto
- Full—Forces the USB port to run at full speed and also disables its high-speed capabilities.

USB PnP

In some cases, the USB port at the back of the printer may be incompatible with the chipset in a user's PC. This setting lets the user change the USB driver mode to improve its compatibility with these PCs.

Available options:

- 1
- 2

Exit Config Menu

Select this to exit the Configuration menu. The printer performs a POR and restarts into normal mode.

Entering Invalid engine mode

This mode is used if the printer has an invalid code and needs the correct code loaded. After entering this mode, the firmware code can be updated.

1. Turn off the printer.
2. Press and hold ◀, **OK**, and ▶.
3. Turn on the printer.
4. Release the buttons when a line of dots appears.

Entering Recovery mode

This mode will allow the printer to boot from a secondary set of instructions to allow a code flash to the printer. Code can be flashed from a PC using a USB connection.

1. Turn off the printer.
2. Press and hold the **Back** button and **OK**.
3. Turn on the printer.
4. Release the buttons when a line of dots appears.

Service engineer menu

Accessing the service engineer (SE) menu

From a Web browser on a host PC, add **/se** to the printer IP address.

Service engineer (SE) menu

This menu should be used as directed by the next level of support.

Top level menu	Intermediate menu
Print SE Menus	
General	Copyright — Displays copyright information
Code Revision Info	• Network code level — Displays network code level • Network Compile Info — Displays network compile information • Printer Code Level — Displays printer code information • Printer Compile Info — Displays compile information
History	• Print History • Mark History • History Mode

Top level menu	Intermediate menu
MAC	• Set Card Speed • LAA • Keep Alive
NVRAM	• Dump NVRAM • Reinit NVRAM
TCP/IP	• netstat-r • arp-a • Allow SNMP Set • MTU • Meditech Mode • RAW LPR Mode • Gather Debug • Enable Debug

Repair information

Removal precautions

CAUTION—SHOCK HAZARD: For personal safety and to prevent damage to the printer, remove the power cord from the electrical outlet before you connect or disconnect any cable, electronic board, or assembly. Disconnect any connections between the printer and the PCs/peripherals.

Data security notice

This printer contains various types of memory that are capable of storing device and network settings, information from embedded solutions, and user data. The types of memory, along with the types of data stored by each, are described below.

- Volatile memory—This device utilizes standard Random Access Memory (RAM) to temporarily buffer user data during simple print and copy jobs.
- Non-volatile memory—This device may utilize two forms of non-volatile memory: EEPROM and NAND (flash memory). Both types are used to store the operating system, device settings, network information, scanner and bookmark settings, and embedded solutions.
- Hard disk memory—Some devices have a hard disk drive installed. The printer hard disk is designed for device-specific functionality and cannot be used for long term storage for data that is not print-related. The hard disk does not provide the capability for users to extract information, create folders, create disk or network file shares, or transfer FTP information directly from a client device. The hard disk can retain buffered user data from complex print jobs, as well as form data and font data.

To erase volatile memory, turn off the printer.

To erase non-volatile memory, see the menu item under **“Configuration menu” on page 121** pertaining to this.

To erase the printer hard disk, see the menu item under **“Configuration menu” on page 121** pertaining to this.

The printer control panel and RIP/controller board contain NVRAM. After removing the old part, it must be returned to your next level of support.

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 while working with ESD-sensitive parts when cold-weather heating is used, because low humidity increases static electricity.

RIP board/operator panel replacement

This procedure should be followed only if both the RIP board and the operator panel fail. If you need to replace only one of the FRUs, follow the startup procedure described in the FRU's removal procedure.

CAUTION—POTENTIAL INJURY

The lithium battery in this product is not intended to be replaced. There is a danger of explosion if a lithium battery is incorrectly replaced. Do not recharge, disassemble, or incinerate a lithium battery. Discard used lithium batteries according to the manufacturer's instructions and local regulations.

Warning—Potential Damage: If the operator panel and the RIP board are being replaced at the same time, replace the parts in this order to avoid damage to the machine.

1. Replace the RIP card.

   Note: Do not replace the new operator panel and RIP card in the machine at the same time.

2. After installing the new RIP card, and before installing the new operator panel, start the printer into diagnostics mode.
3. After the printer has completed startup, turn off the printer and replace the operator panel.

   Note: If the operator panel display has failed, the printer's startup cycle is complete when the driver motor and fans shut down, and the machine is quiet.

4. After installing the new operator panel, start the printer into diagnostics mode, and allow the printer to go through a complete startup cycle and the display to go to Ready.
5. If the problems persist, leave the new operator panel in the machine, place the old RIP card back in the machine, and start it up. After the machine startup, shut down the machine, and install the new RIP card. After installing the new RIP card, restart the machine, and let it go through the startup cycle.

After this procedure is completed successfully, there is no need to adjust any settings.

If the above procedure fails, you must contact the technical support center for further instructions.

Ribbon cable connectors

Zero Insertion Force (ZIF) connectors

Zero Insertion Force (ZIF) connectors are used on the boards and cards used in this printer. Before inserting or removing a cable from these connectors, read this entire section. Great care must be taken to avoid damaging the connector or cable when inserting or removing the cable.

Warning—Potential Damage: Do not insert the cable so that the contacts are facing the locking actuator. The contacts always face away from the actuator.

Warning—Potential Damage: Do not insert the cable diagonally into the ZIF socket. This can cause damage to the contacts on the cable.

Warning—Potential Damage: Avoid using a fingernail, or sharp object to open the locking mechanism. This could damage the cable.

Warning—Potential Damage: Avoid pressing against the cable when opening the locking mechanism. This can also damage the cable.

These are the types of ZIF connectors used in this printer:

- Horizontal top contact connector
- Horizontal bottom contact connector
- Vertical mount contact connector
- Horizontal sliding connector

Horizontal top contact connector

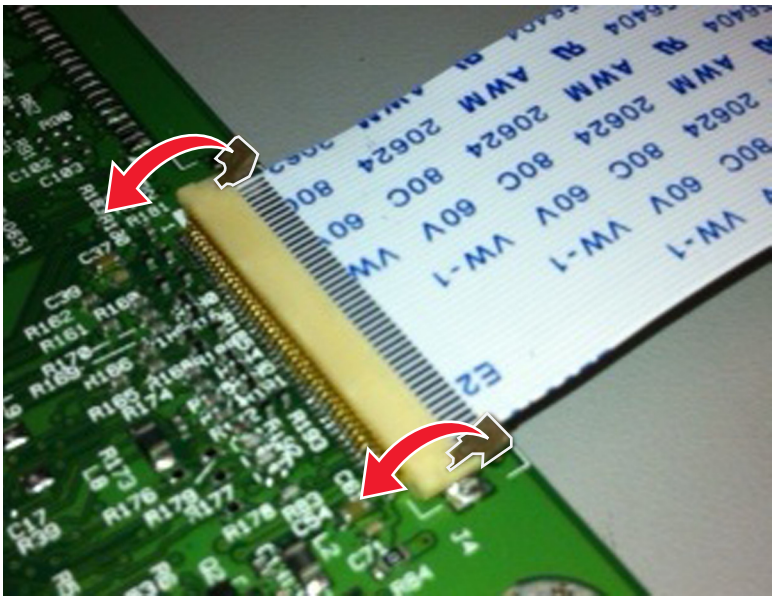
This FRU contains a horizontal top contact cable connector. Read the instructions before proceeding.

The horizontal top contact connector uses a back flip locking actuator to lock the ribbon cable into the Zero Insertion Force (ZIF) connector. The cable is inserted horizontally into the connector.

Warning—Potential Damage: When opening or closing this type of actuator, gently lift or close the two tabs located on each end of the actuator. The two tabs should be moved simultaneously. Do not close the actuator from the center of the actuator.

Removing a cable from the horizontal top contact connector

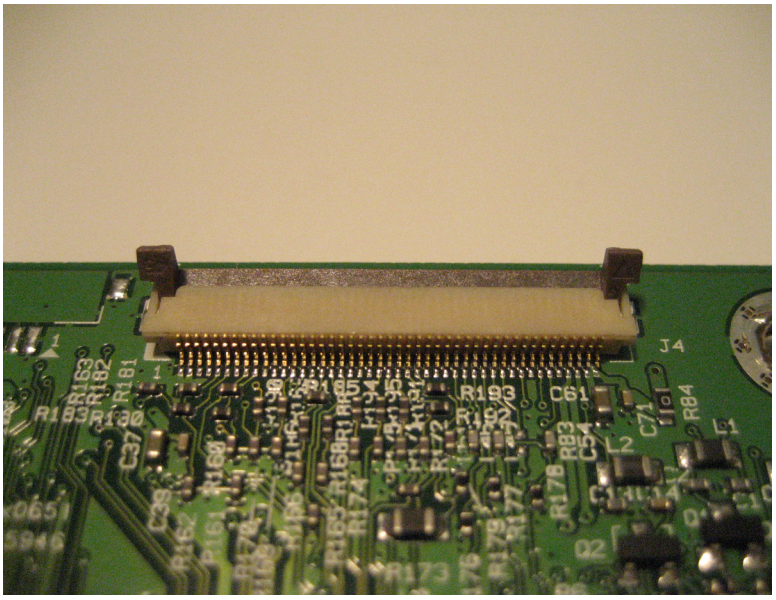
1 Place a finger at each end of the locking actuator, and then gently lift the actuator to the unlocked position.



2 Slide the cable out of the connector.

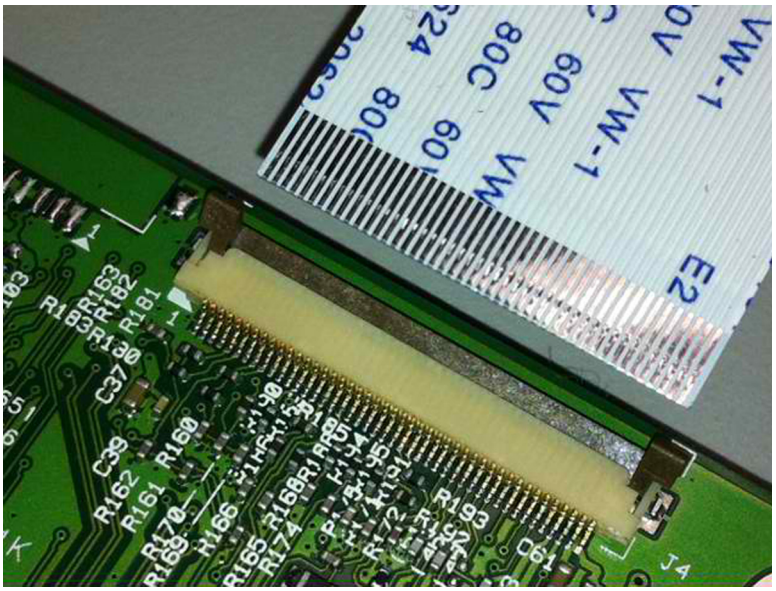
Inserting a cable into the horizontal top contact connector

1 When installing the cable, check the locking actuator to ensure it is in the unlocked position. The tabs on the ends of the actuator are vertical when the actuator is unlocked.

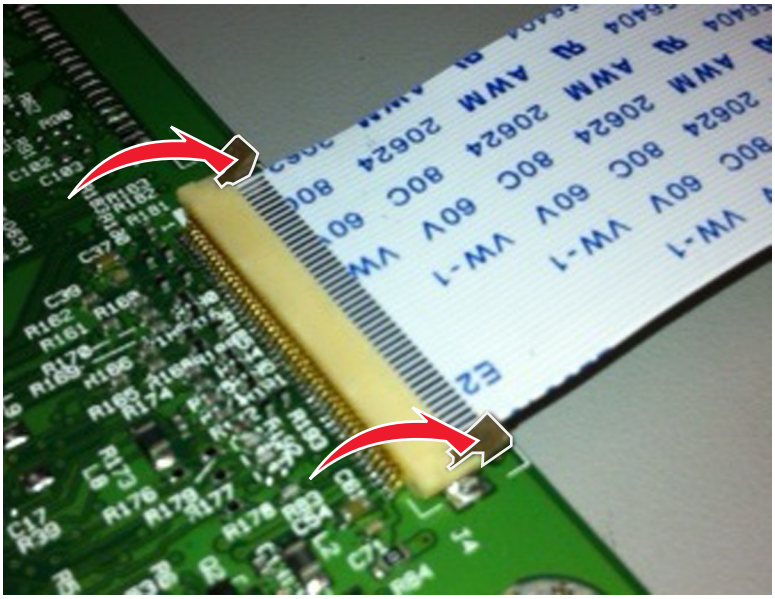


2 Insert the cable with the contacts on the cable facing up. Insert the cable on top of the actuator.

Note: Verify that the cable is installed squarely into the connector. If the cable is not squarely installed, then intermittent failures could occur.



3 Rotate the locking actuator to the locked position. The cable should not move while this step is performed. If the cable moves, open the actuator, reposition the cable, and then close the actuator to the down position.



Horizontal bottom contact connector

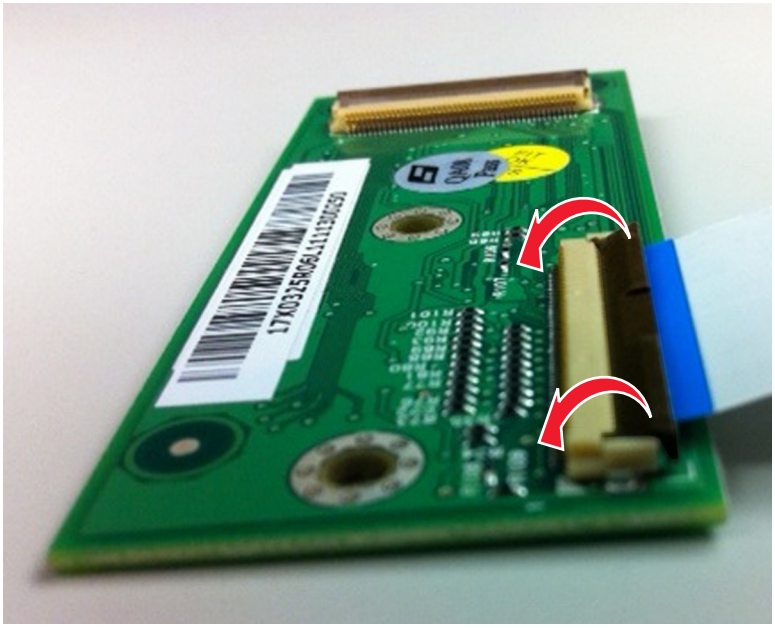
This FRU contains a horizontal bottom contact cable connector. Read the instructions before proceeding.

The horizontal bottom contact connector uses a flip locking actuator to lock the ribbon cable into the Zero Insertion Force (ZIF) connector. The cable is inserted horizontally into the connector.

Warning—Potential Damage: When opening or closing this type of actuator, gently lift the center of the actuator using your finger. Do not use a fingernail or screwdriver to open the actuator. This could damage the ribbon cable. Do not close the actuator from the ends of the actuator.

Removing a cable from the horizontal bottom contact connector

1 Place two fingers towards each end of the locking actuator, and then gently lift the actuator to the unlocked position.



2 Slide the cable out of the connector.

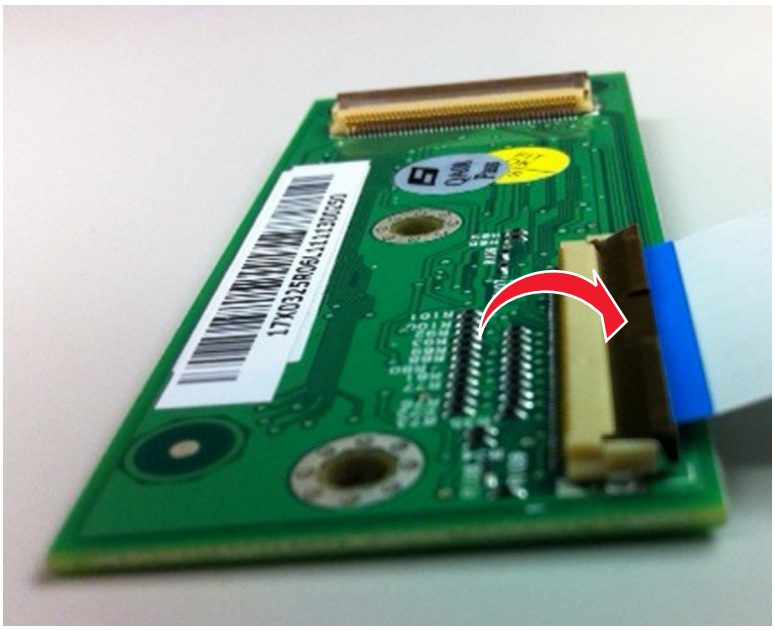
Inserting a cable into the horizontal bottom contact connector

1 Check the actuator to verify it is in the open position.

2 Insert the cable into the ZIF connector with the contacts facing downward and away from the locking actuator. The cable needs to be inserted below the actuator.

Note: Verify that the cable is installed squarely into the connector. If the cable is not squarely installed, then intermittent failures could occur.

3 Place your finger in the middle of the actuator, and then rotate the locking actuator to the locked position.



Vertical mount contact connector

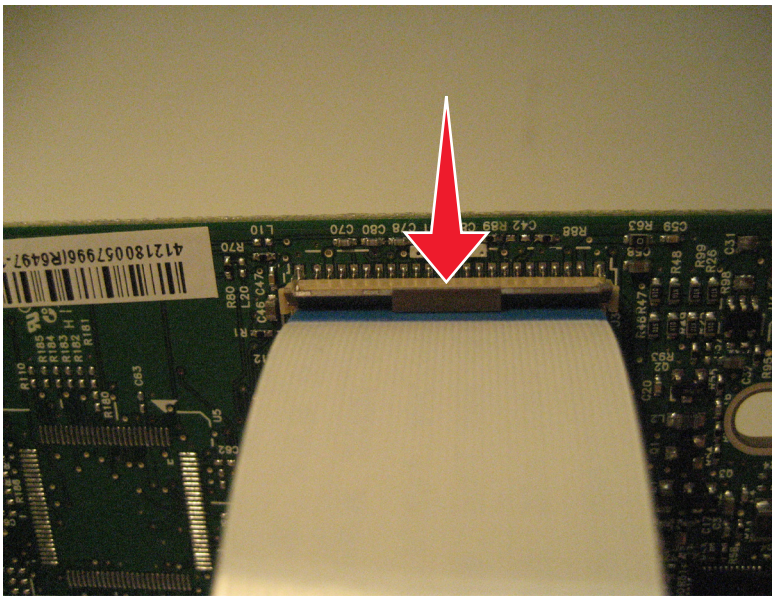
This FRU contains a vertical mount contact connector. Read the instructions before proceeding.

The vertical mount contact connector uses a back flip locking actuator to lock the ribbon cable into the Zero Insertion Force (ZIF) connector. The cable is inserted vertically into the connector.

Warning—Potential Damage: When opening or closing this type of actuator, gently lift the center of the actuator using your finger. Do not use a fingernail or screwdriver to open the actuator. This could damage the ribbon cable. Do not close the actuator from the ends of the actuator.

Removing a cable from the vertical mount contact connector

1. Gently rotate the locking actuator from the center of the actuator to the unlocked position.



2. Slide the cable out of the connector.

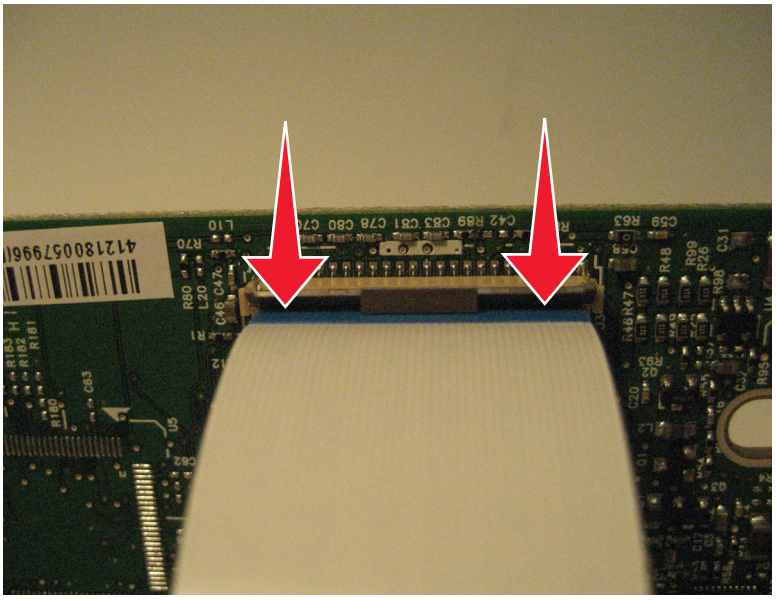
Inserting a cable into the vertical mount contact connector

1 When installing the cable, check the locking actuator to verify it is in the open position.

2 Insert the cable with the contacts on the cable away from the locking actuator. Insert the cable on top of the actuator.

Note: Verify that the cable is installed squarely into the connector. If the cable is not squarely installed, then intermittent failures could occur.

3 Rotate the locking actuator to the locked position by pressing down on both ends of the actuator. The cable should not move when this step is performed. If the cable moves, open the actuator, reposition the cable, and then close the actuator to the down position.



Horizontal sliding contact connector

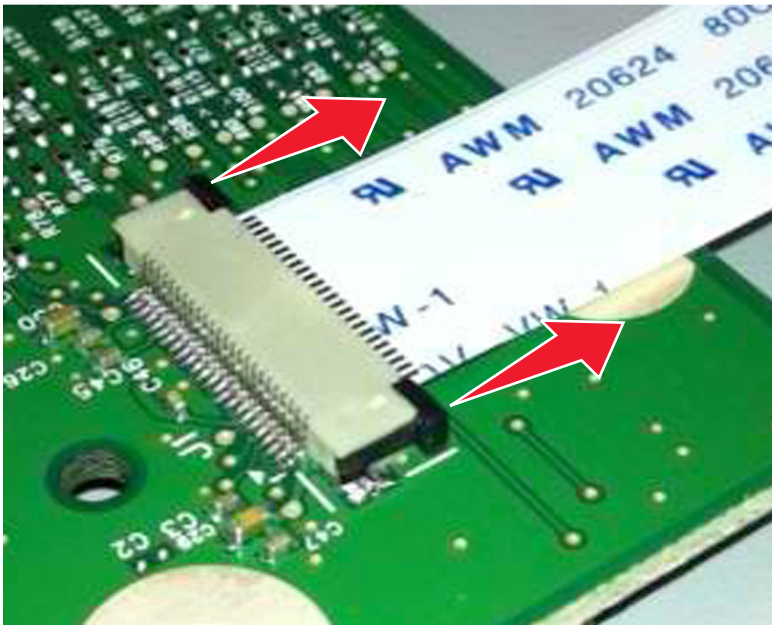
This FRU contains a horizontal sliding contact connector. Read the instructions before proceeding.

The horizontal sliding contact connector uses a slide locking actuator to lock the ribbon cable into the Zero Insertion Force (ZIF) connector. The cable is inserted horizontally into the connector.

Warning—Potential Damage: When opening or closing this type of actuator, gently push or pull the two tabs located on each end of the actuator. Do not close the actuator from the center of the actuator. Do not use a screwdriver to open or close the actuator. Damage to the cable or connector could occur.

Removing a cable from the horizontal sliding contact connector

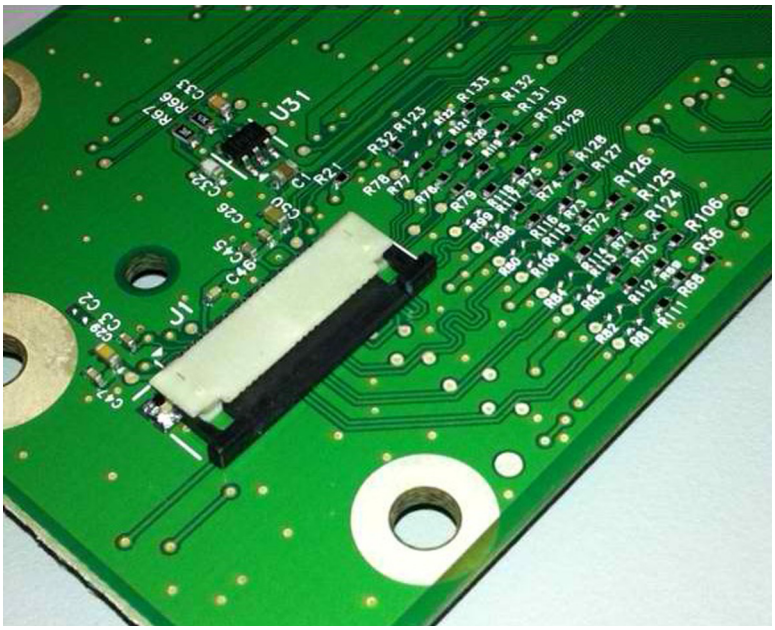
1 Simultaneously slide the two tabs located on the ends of the locking actuator away from the connector.



2 Slide the cable out of the connector.

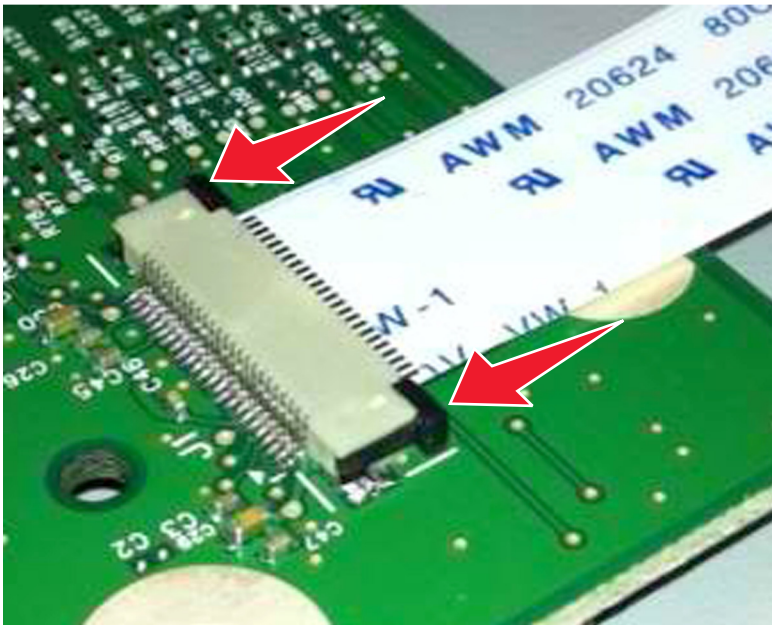
Inserting a cable into the horizontal sliding contact connector

1 When installing the cable, check the locking actuator to verify it is in the open position. If you are opening the connector, pull back on both end tabs using equal force to avoid breaking the connector.



2 Insert the cable with the contacts on the cable facing away from the locking actuator. Insert the cable on top of the actuator.

3 Slide the locking actuator towards the connector, locking the cable into place. The cable should not move when this step is performed. If the cable moves, open the actuator, reposition the cable, and then close the actuator to the down position.



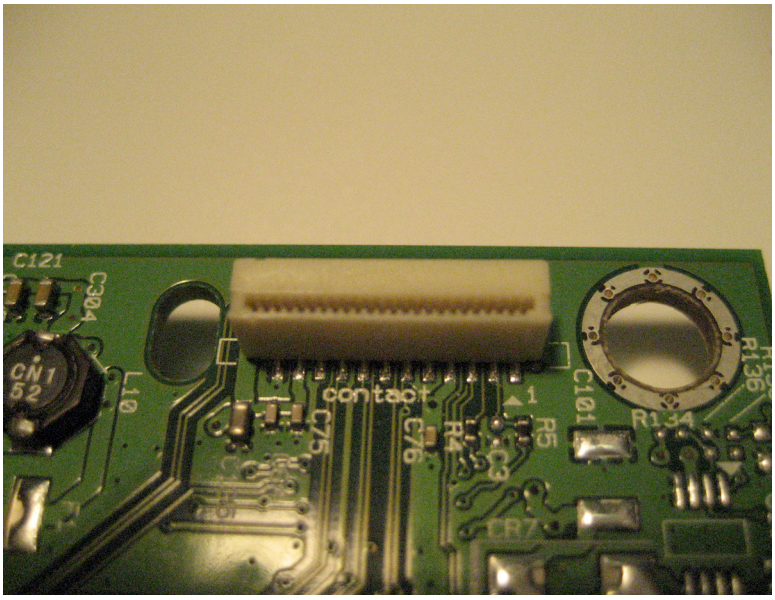
Low Insertion Force (LIF) connector

This FRU contains a Low Insertion Force (LIF) connector. Read the instructions before proceeding.

Warning—Potential Damage: When installing a cable into an LIF connector, care must be taken to avoid bending the edges of the cables and damaging the contacts on the cables.

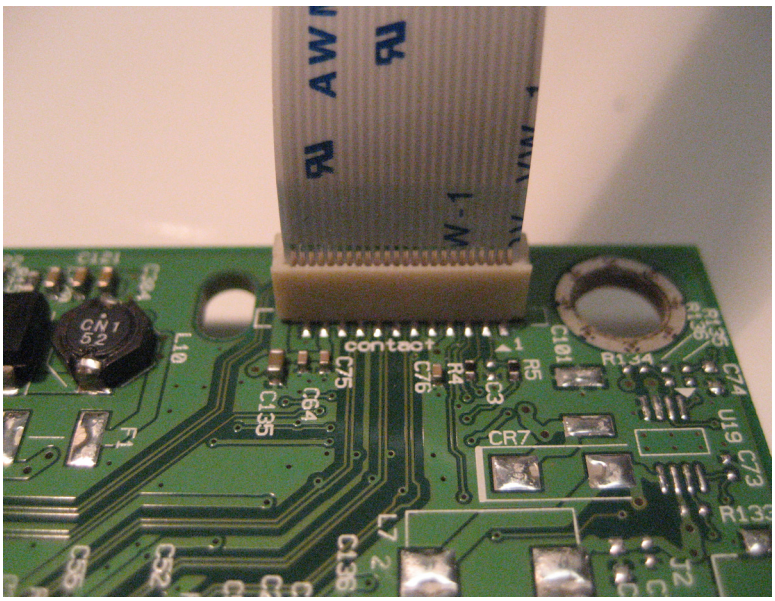
Inserting a cable into the LIF connector

1. Looking at the connector, take note on which side the contacts are located. Many boards will have the word "contacts" stamped on them to indicate which side of the LIF has the contacts. When looking at the board, take note that the contacts from the board to the connector are located on the side of the connector with the contacts.



2. Insert the cable squarely into the connector.

   Note: Verify that the cable is installed straight into the connector. If the cable is not installed properly, then intermittent failures could occur.

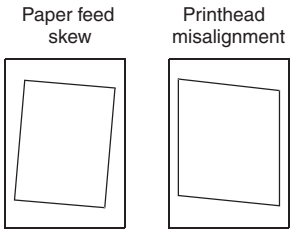


Printhead assembly adjustments

Printhead assembly mechanical adjustment

A printhead needs to be correctly positioned after it has been removed. Use a pencil to mark the screw locations of the old printhead on the metal frame. Align the new printhead relative to the location of the old printhead.

Note: Skew is caused by a sheet being fed through the printer while misaligned. The entire image is rotated relative to the sheet edges. However, a mechanically misaligned printhead causes the horizontal lines to appear skewed, while the vertical lines remain parallel to the vertical edges. There are no adjustments for skew. Check the pick tires for wear, the paper path for obstructions, the fuser for proper setting, and the tray paper guides for fit to the media.

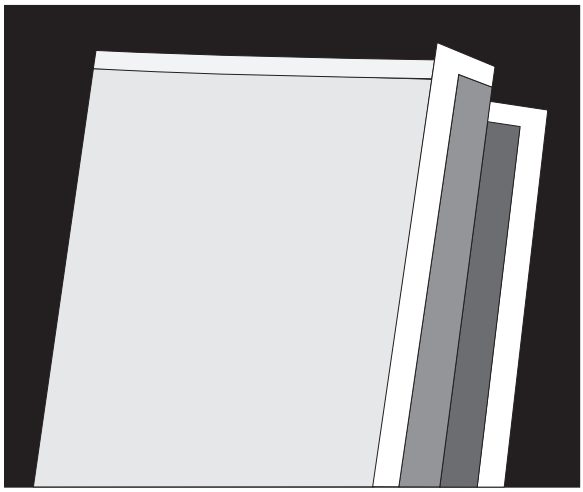


To adjust the printhead:

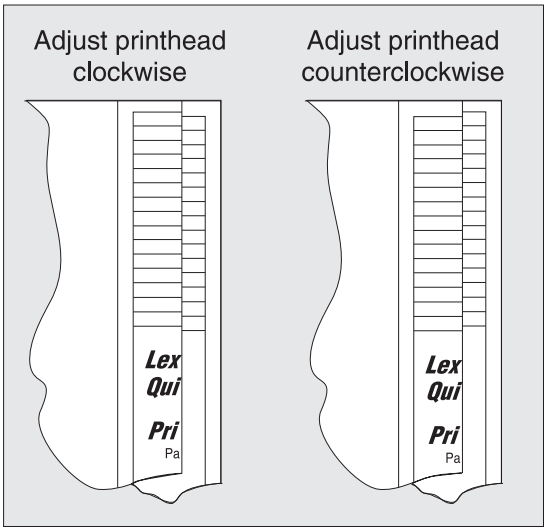
1. POR into the Diagnostics menu, and print a Quick test page:

   Diagnostics Menu > **Print Tests** > **Tray 1** > **Single**

2. Fold the printed test page on the left side so that a few millimeters of grid lines wrap around the outside of the fold.
3. Fold a second vertical fold near the center so that the left side top edge aligns with the right side top edge.



4 If the grid lines of the right flap align below the corresponding lines on the left flap, then adjust the printhead clockwise relative to the printer, and recheck. If the grid lines of the left flap align below the corresponding lines of the right side, then adjust the printhead counterclockwise.



5 Print another Quick test page, and check if adjustments are still needed.

6 After obtaining a properly adjusted image on the paper, tighten all the screws.

7 Align the printhead electronically.

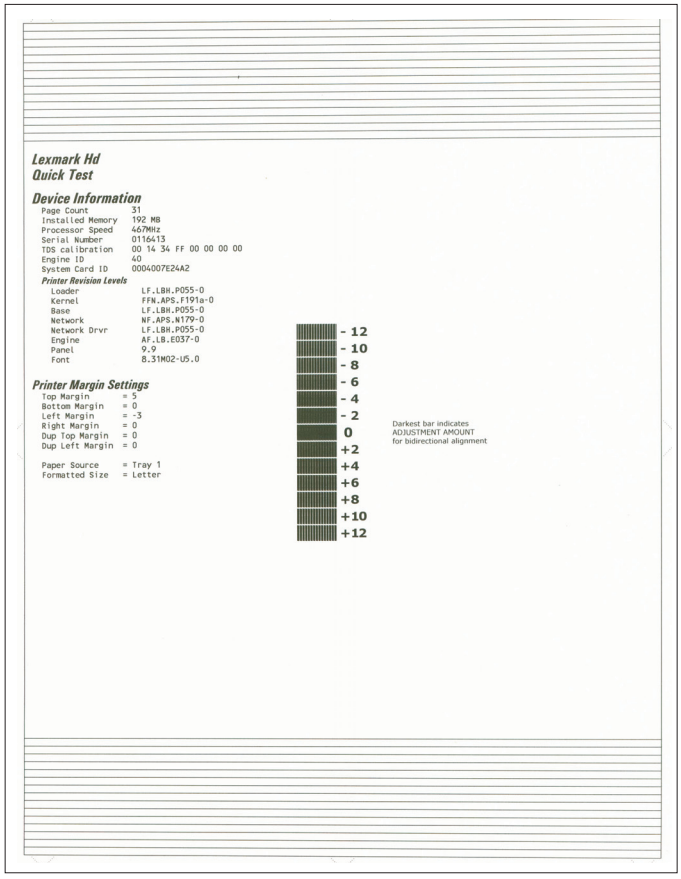
Printhead assembly electronic adjustment

Note: Before aligning the printhead electronically, first align the printhead mechanically.

1 POR into the Diagnostics menu, and print a Quick test page:

Diagnostics Menu > **Registration** > **Quick Test**

Sample Quick test page. Use the actual sheet.



2 From the Registration menu, select the Right margin setting:

Diagnostics Menu > **Registration** > **Right Margin**

3 To determine the Right margin setting:

a Choose the value of the darkest bar on the right side of the Quick test page.

b Add that value to the current Right margin setting found on the left side of the Quick test page.

For example, if the current Right margin setting is -2, and the darkest bar is at +3, then the right margin setting will be equal to +1 (-2+3=+1).

4 Choose and save the desired Right margin setting.

5 Print again a Quick test page and check if the darkest bar is at zero. If it is, then check to see if the left, top, and bottom margins are detected. If the darkest bar is not at zero, then repeat steps 3 and 4.

Note: The alignment of the left margin positions the black plane to the right or left. The alignment of the right margin does not alter the margins and should only be used to adjust the printhead.

Removal procedures

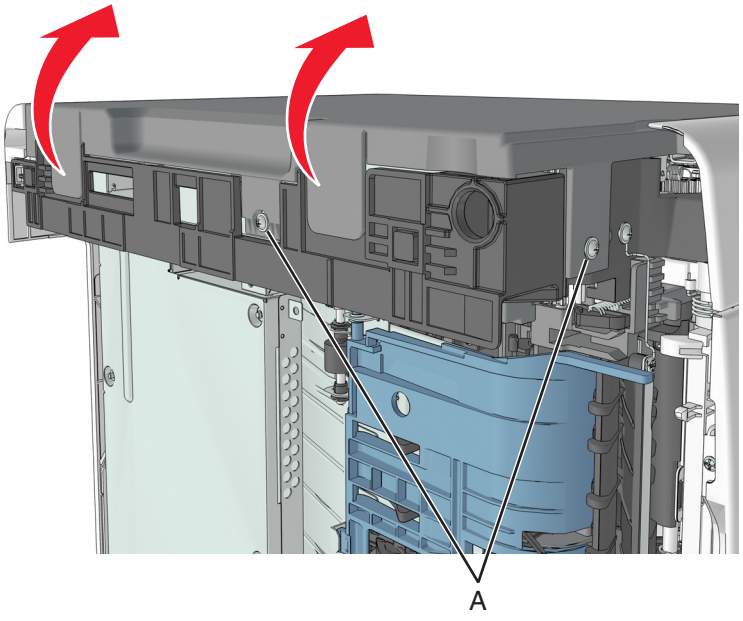
Keep the following tips in mind as you replace parts:

- 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.
- Remove the toner cartridge, 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 device.
- Disconnect all external cables from the printer to prevent possible damage during service.
- Unless otherwise stated, reinstall the parts in reverse order of removal.
- When reinstalling a part held with several screws, start all screws before the final tightening.

Left side removals

Left cover removal

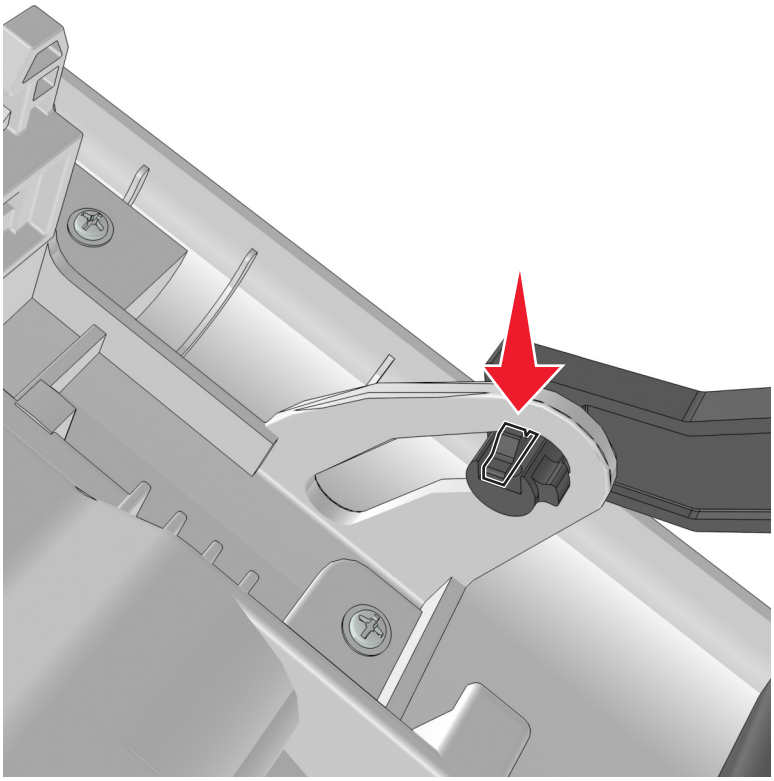
1. Position the printer so that it sits on its right side.
2. Open the front door.
3. Remove the two screws (A) securing the left cover.
4. Release the latches, and swing the left cover upward to remove.



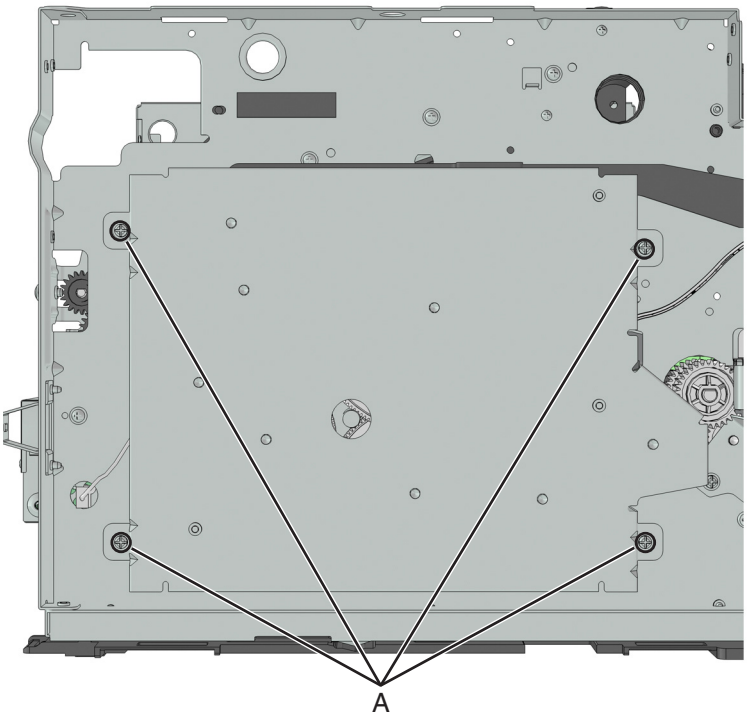
Main drive gearbox removal

1 Remove the left cover. See **“Left cover removal” on page 146**.

2 Squeeze the latch, and then detach the link from the front door.

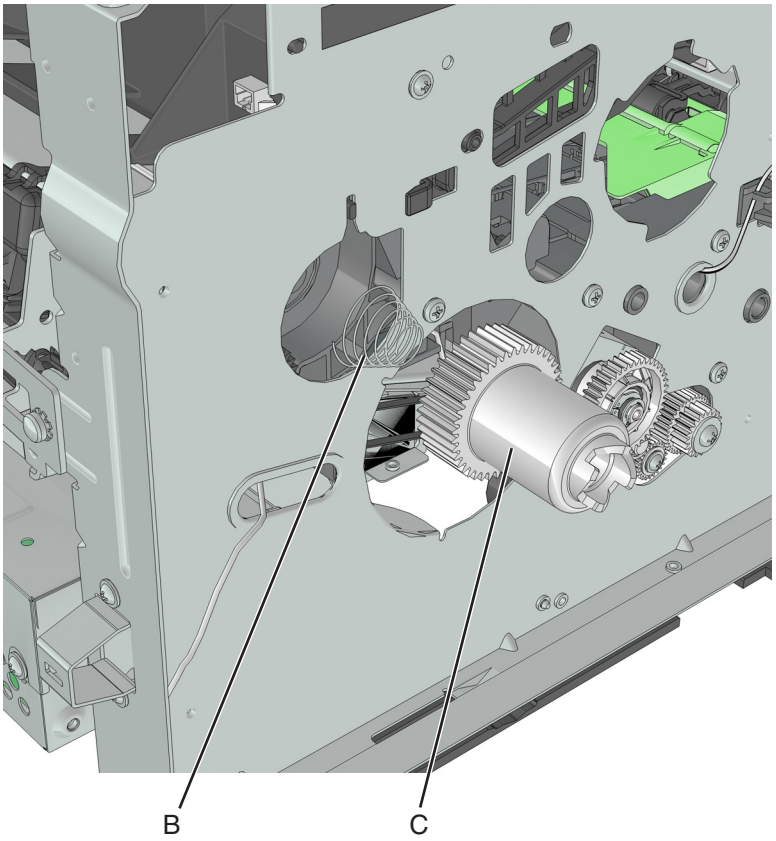


3 Remove the 4 screws (A), and then remove the main drive gearbox.



4 Disconnect the cable from the main drive gearbox.

5 Remove the spring (B) and the fuser gear (C).



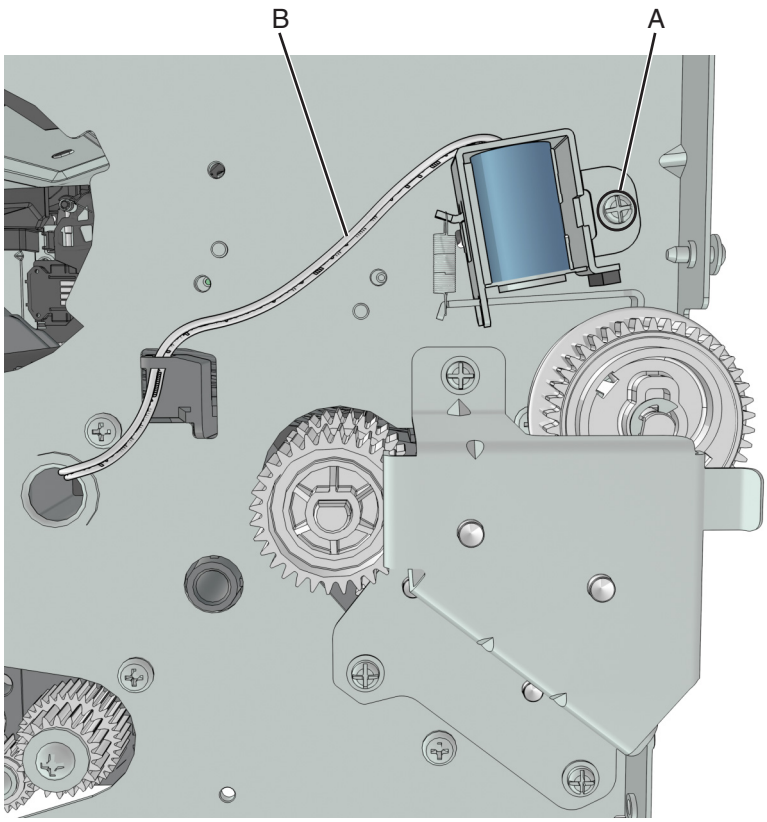
MPF solenoid removal

1 Remove the left cover. See **“Left cover removal” on page 146**.

2 Remove the main drive gearbox. See **“Main drive gearbox removal” on page 147**.

3 Remove the screw (A).

4 Cut the cable (B) not less than 1 inch from the solenoid.



Installation notes:

a Cut the replacement solenoid cable not less than 1 inch from the solenoid.

b Strip a 1/8-in. length of insulation from the ends of all cables.

c Insert a wire from the printer into one end of the insulated displacement connector (IDC).

Note: Make sure the stripped end of the wire is positioned under the contact element.

d Insert a wire of the same color from the solenoid into the other end of the IDC.

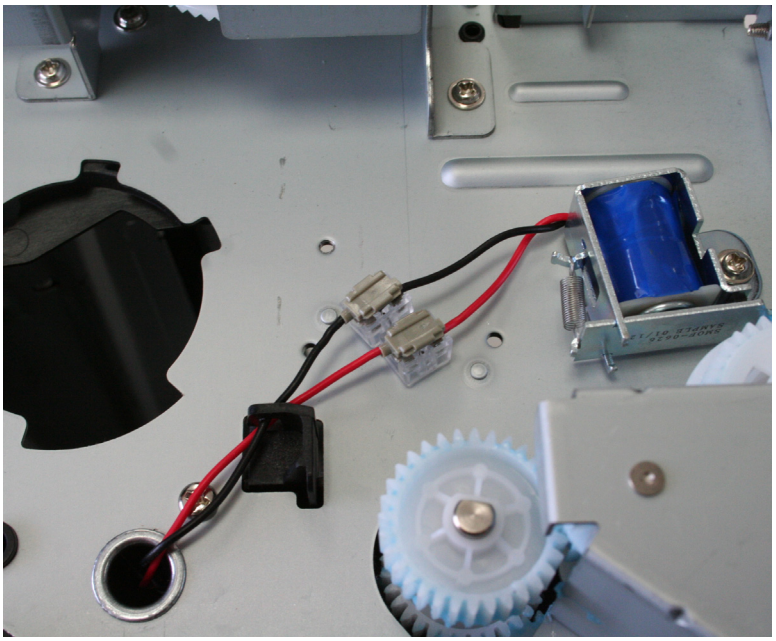
Note: Make sure the stripped end of the wire is positioned under the contact element.

e Squeeze the IDC to partially lock the wires in place, and then use a pair of pliers to crimp the IDC.

f Repeat steps c–e for the other wire.

g Reinstall the MPF solenoid.

h Secure the cable to the holder.



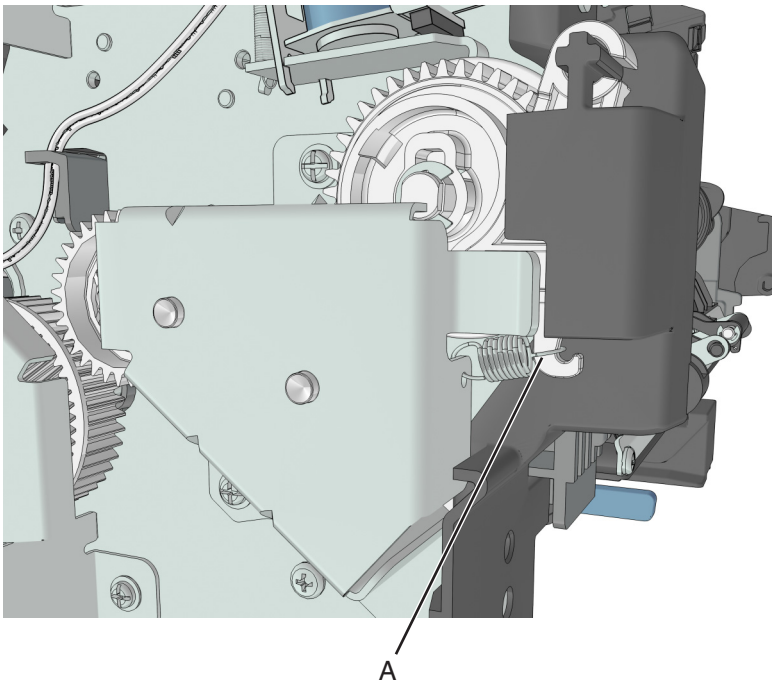
MPF gearbox removal

1 Remove the left cover. See **“Left cover removal” on page 146**.

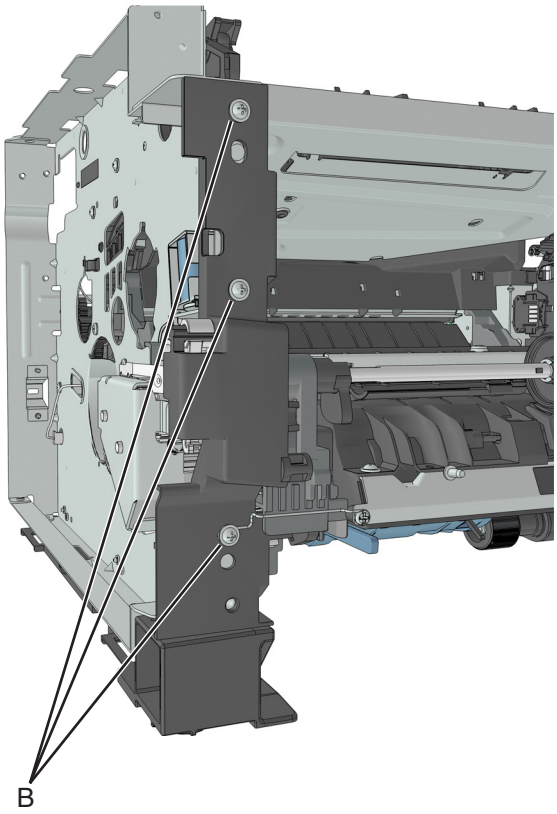
2 Remove the main drive gearbox. See **“Main drive gearbox removal” on page 147**.

3 Remove the front door. See **“Front door removal” on page 183**.

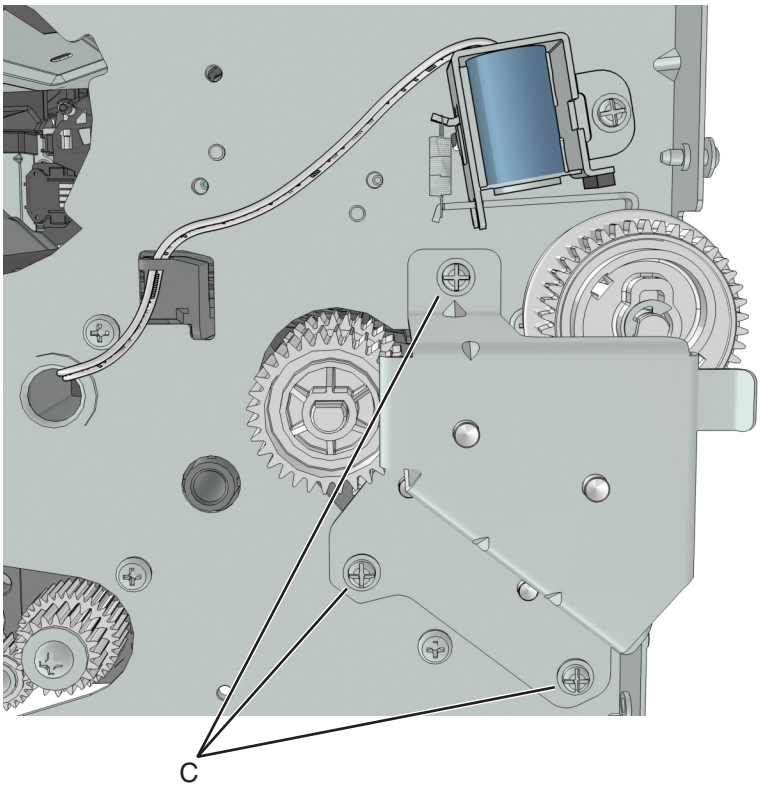
4 Disconnect the spring from the printer (A).



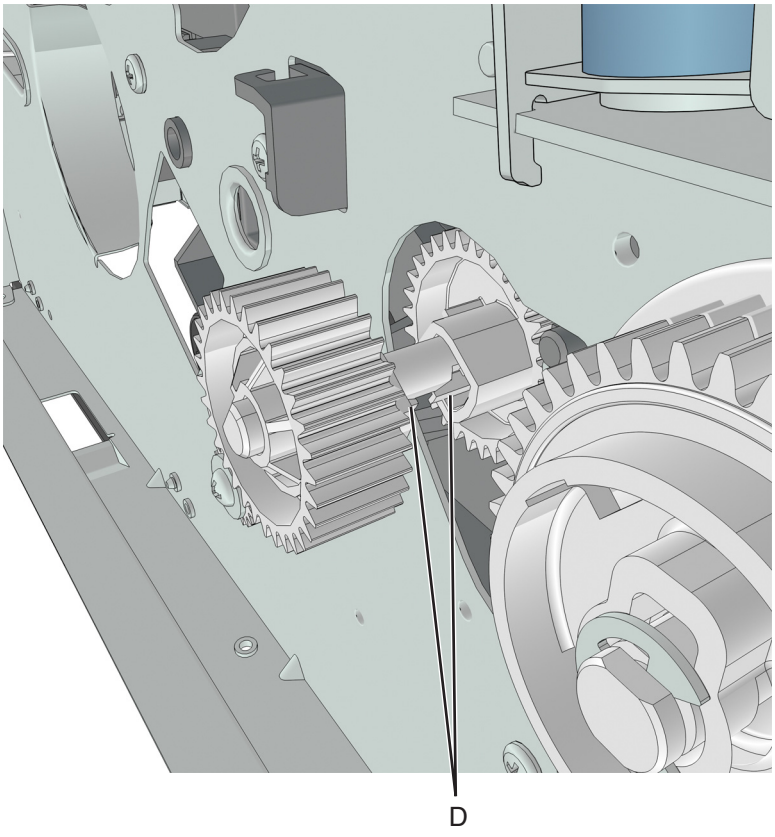
5 Remove the three screws (B), and then remove the left front mount.



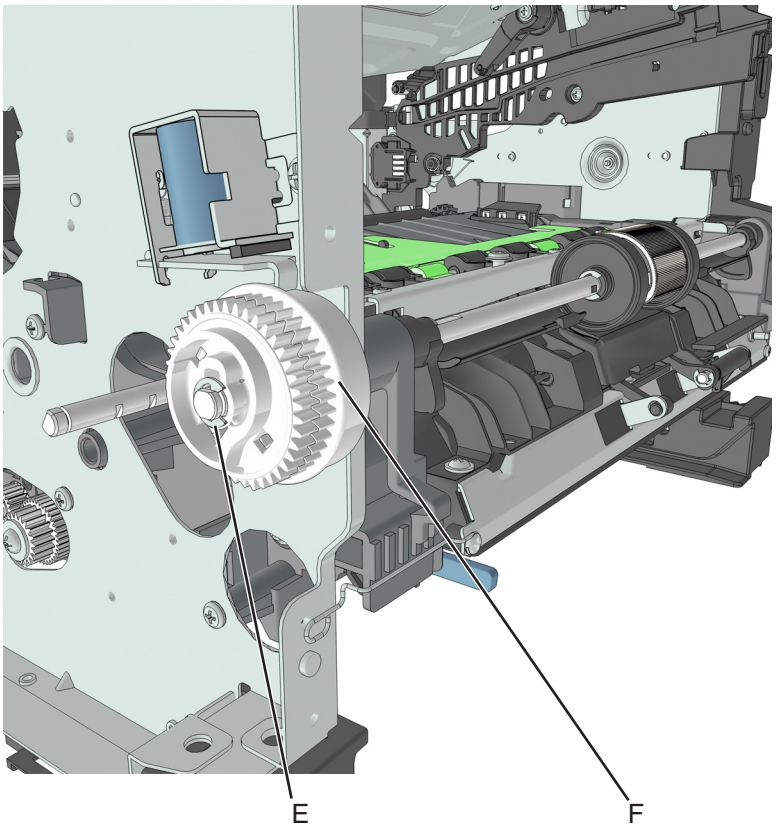
6 Remove the three screws (C), and then remove the MPF gearbox.



7 Release the two latches (D), and then remove the main input drive gears.



8 Remove the E-clip (E), and then remove the MPF sector gear (F).



Reverse solenoid removal

1 Remove the right cover. See **“Right cover removal” on page 162**.

2 Remove the left cover. See **“Left cover removal” on page 146**.

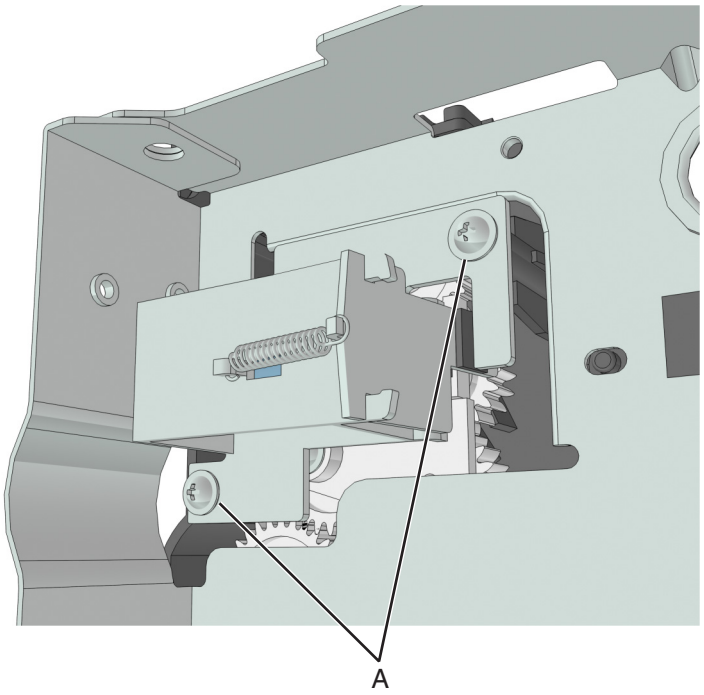
3 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

4 Remove the top cover. See **“Top cover removal” on page 212**.

5 Remove the cooling fan. See **“Cooling fan removal” on page 163**.

6 Disconnect cable JDRSOL1 from the controller board.

7 Remove the two screws (A) securing the reverse solenoid.



ACM clutch removal

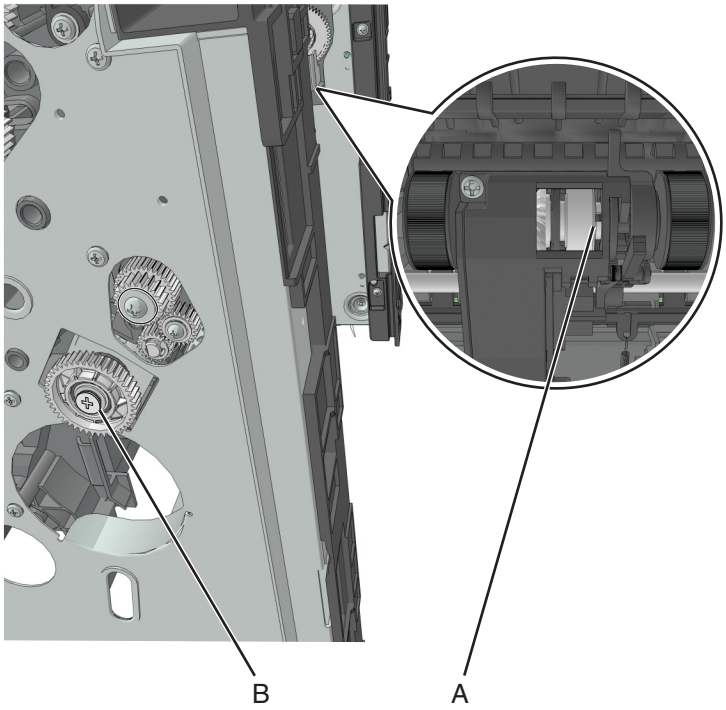
1 Remove the left cover. See **“Left cover removal” on page 146**.

2 Remove the main drive gearbox. See **“Main drive gearbox removal” on page 147**.

3 Position the printer on its rear.

4 Use a small flat-head screwdriver to block the roller (A) and prevent the shaft from rotating.

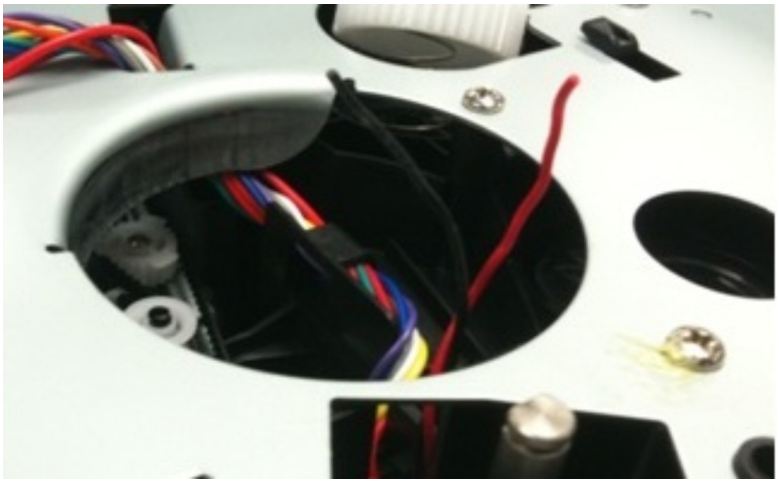
5 While blocking the roller, remove the screw (B).



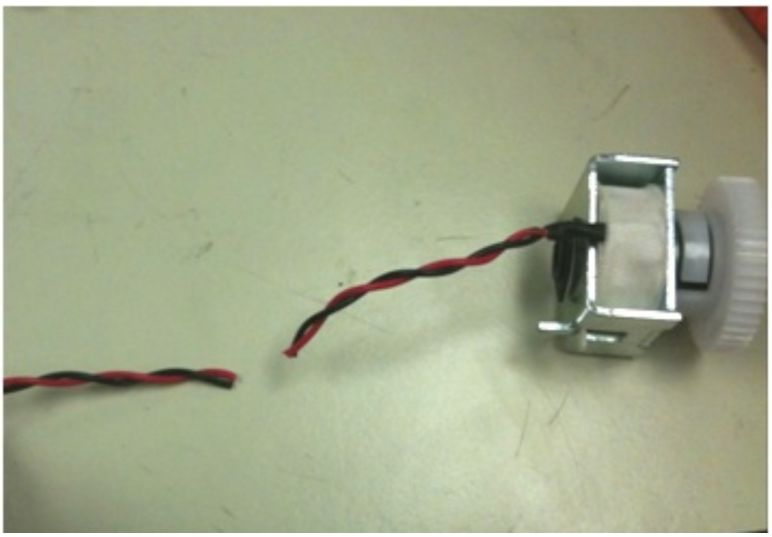
6 Pull out the ACM clutch, and cut cable close to the clutch to detach it.

Installation notes:

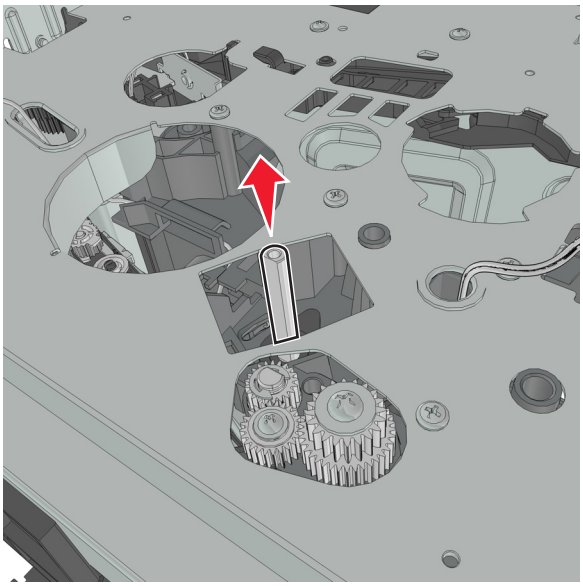
a Pull the cable to remove any slack, and remove any shrink tubing holding the wires together.



b On the replacement clutch, measure 4 inches from the clutch, and then cut the cable.



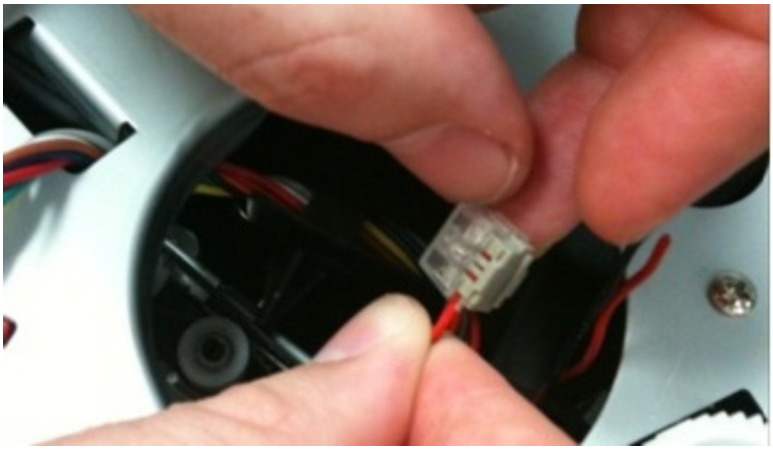
c Pull out the shaft.



d Install the replacement clutch on the shaft.

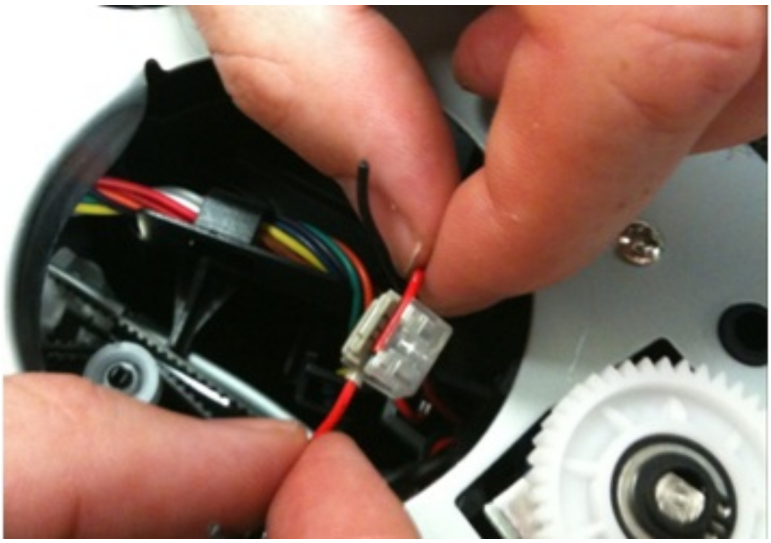
e Insert the red wire from the printer into the insulated displacement connector (IDC).

Note: Make sure that the wire is positioned under the contact element.

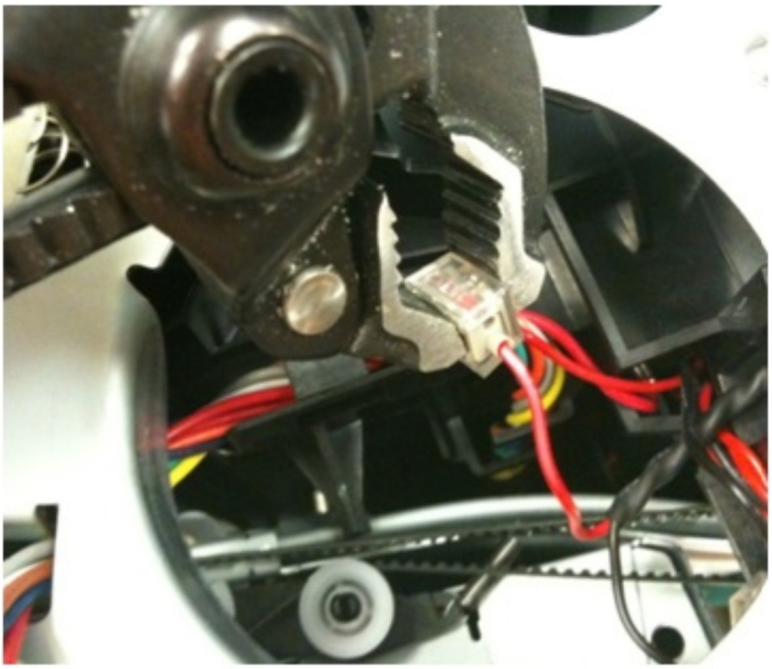


f Insert the red wire from the clutch into the IDC.

Note: Make sure that the wire is positioned under the contact element.



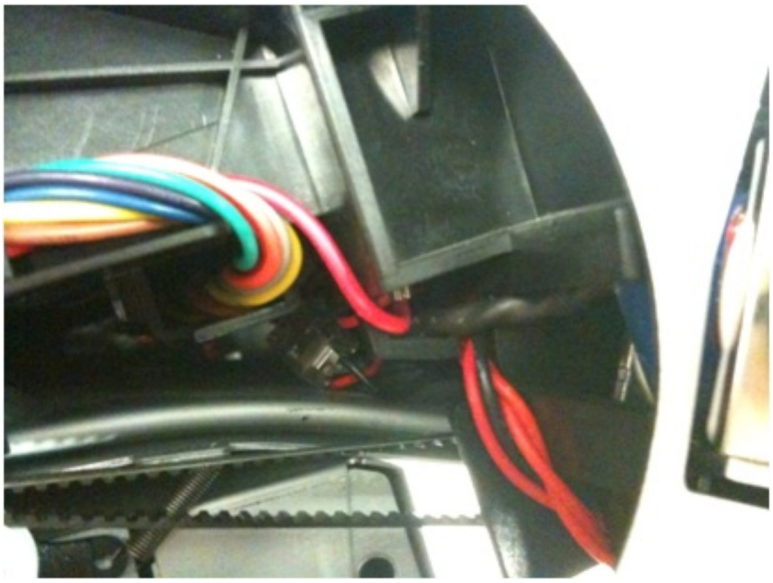
g Squeeze the IDC to partially lock the wires in place, and then use a pair of pliers to crimp the IDC.



h Repeat steps e–g for the black wire.

i Tuck the IDCs securely above the duplex.

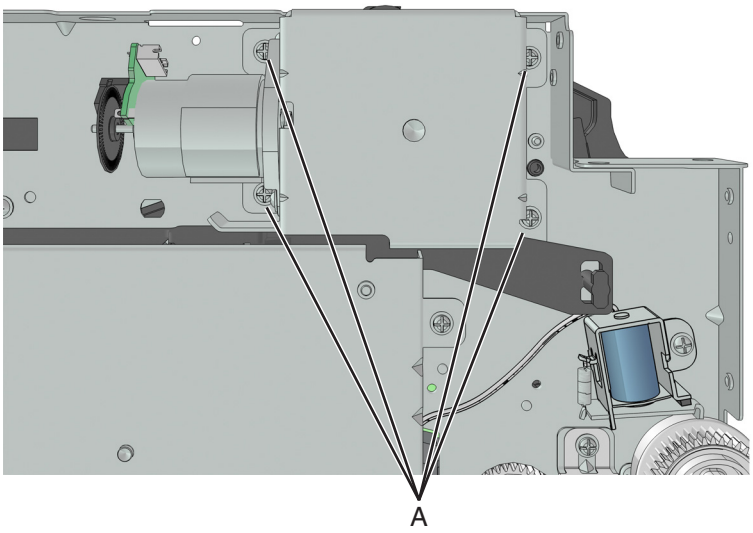
Note: If needed, use a cable tie to secure the cable in place. Make sure cable tie does not obstruct the paper path.



j Print the menu pages to test the printer.

Cartridge gearbox removal

1. Remove the left cover. See **“Left cover removal” on page 146**.
2. Remove the four screws (A) securing the cartridge gearbox.

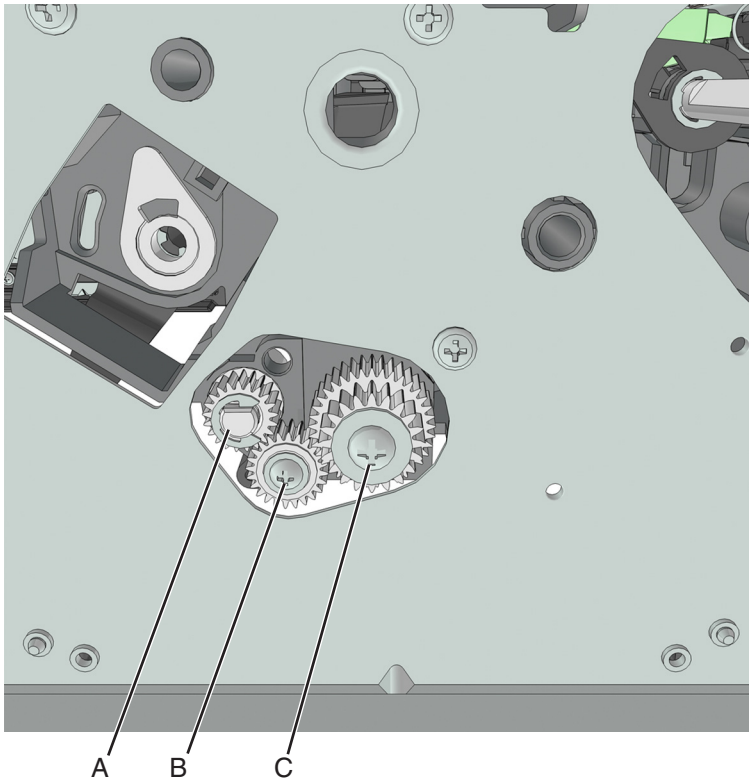


3. Disconnect the cable from the cartridge gearbox.

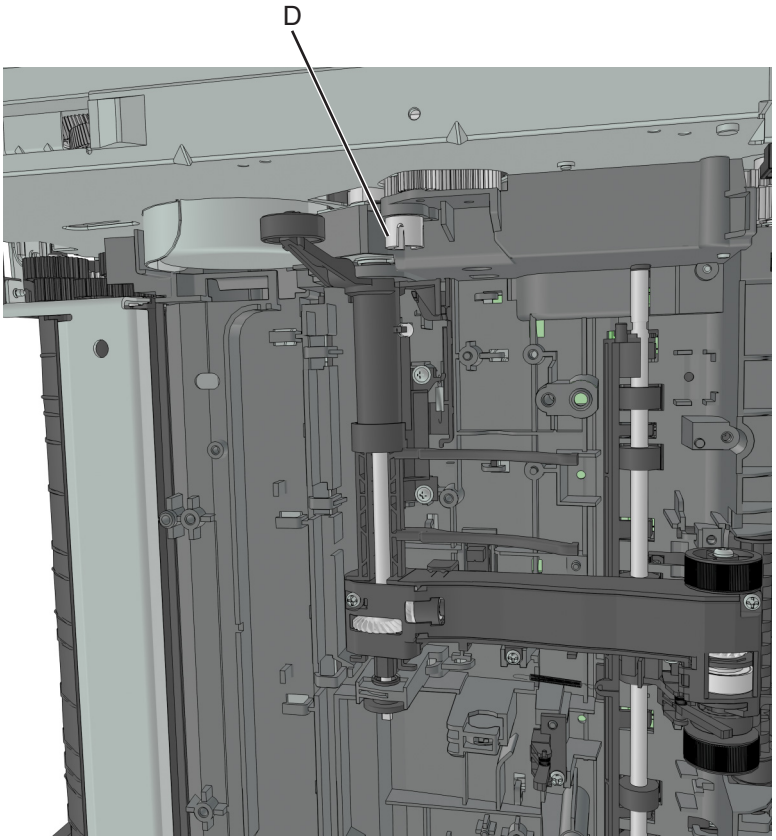
Duplex gear assembly removal

1. Remove the left cover. See **“Left cover removal” on page 146**.
2. Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.
3. Remove the power supply. See **“Power supply removal” on page 191**.
4. Remove the power supply shield. See **“Power supply shield removal” on page 192**.
5. Remove the duplex. See **“Duplex removal” on page 193**.
6. Position the printer so that it sits on its right side.
7. Remove the E-clip (A).
8. Remove the screw (B).
9. Remove the screw (C).

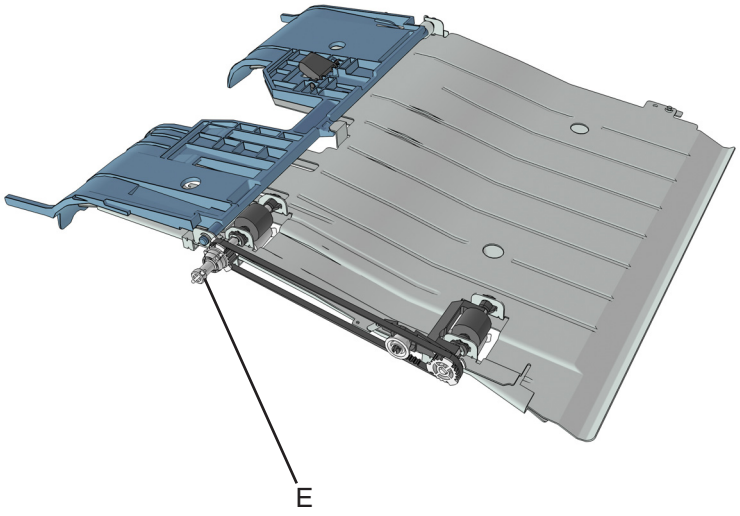
10 Remove the three gears.



11 From behind the three gears, remove the duplex coupling (D).



12 Remove the duplex link (E) from the duplex.



Right side removals

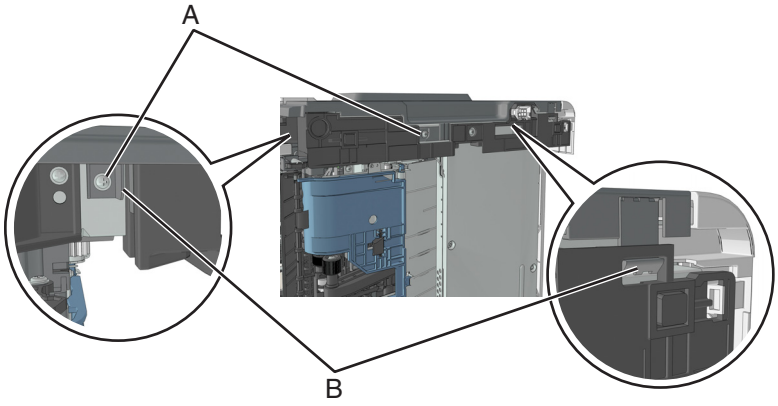
Right cover removal

1 Open the front door.

2 Position the printer so that it sits on its left side.

3 Remove the two screws (A) securing the right cover.

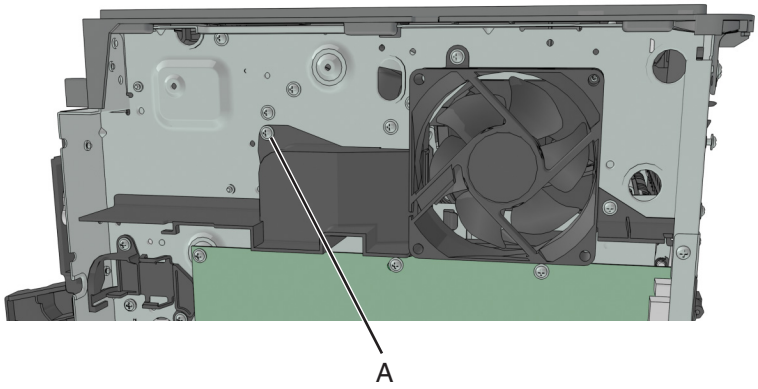
4 Release the latches (B) to remove the right cover.



Cooling fan duct removal

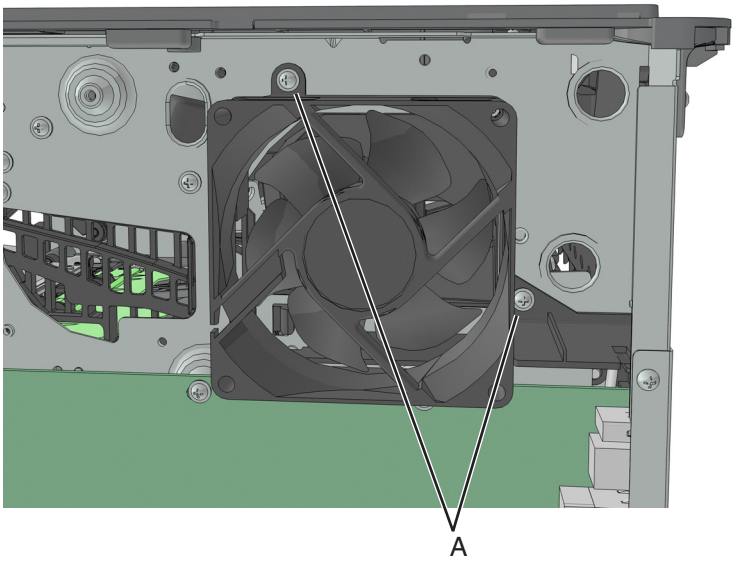
Note: This is not a FRU.

1. Remove the right cover. See **"Right cover removal" on page 162**.
2. Remove the screw (A), and then remove the cooling fan duct.

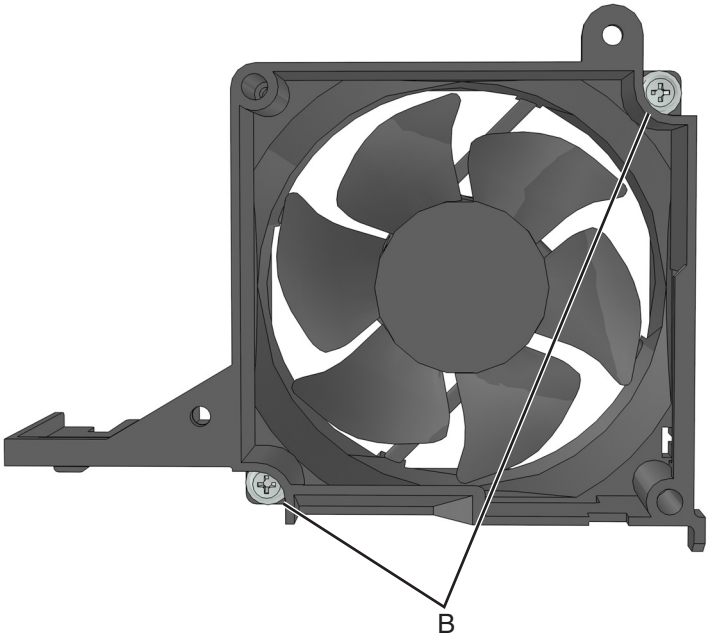


Cooling fan removal

1. Remove the right cover. See **"Right cover removal" on page 162**.
2. Remove the cooling fan duct. See **"Cooling fan duct removal" on page 163**.
3. Disconnect the cable JFAN1 or JFAN2 from the controller board.
4. Remove the two screws (A) securing the fan mount to the printer.



5 Remove the two screws (B) securing the fan to the fan mount.

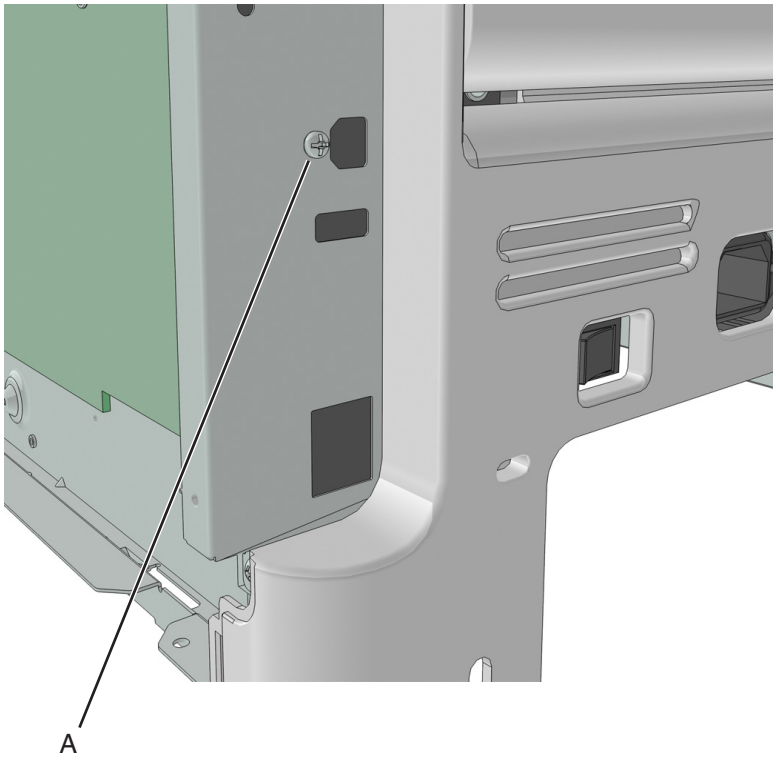


Controller board removal

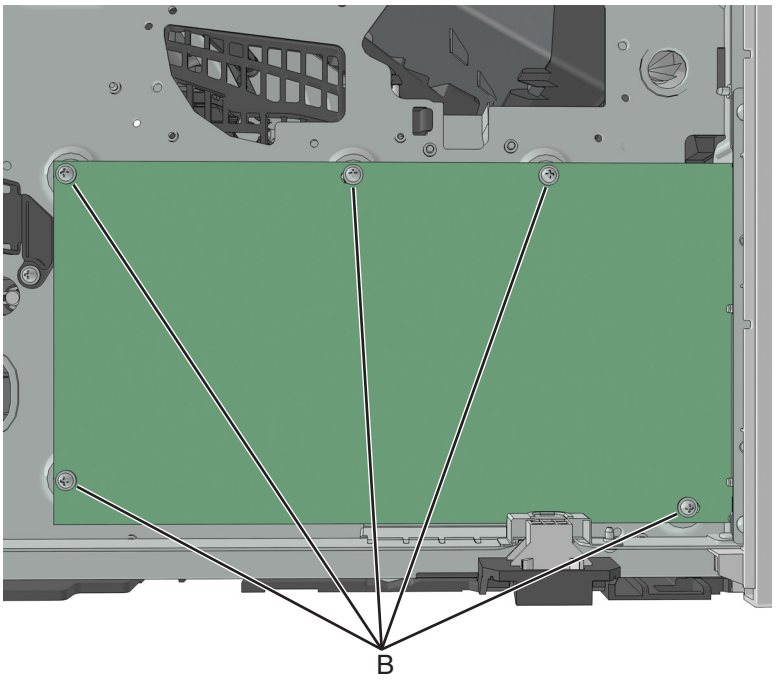
1 Remove the right cover. See **“Right cover removal” on page 162**.

2 Disconnect all cables from the controller board.

3 Remove the screw (A) from the rear side of the printer.



4 Remove the five screws (B) securing the controller board.

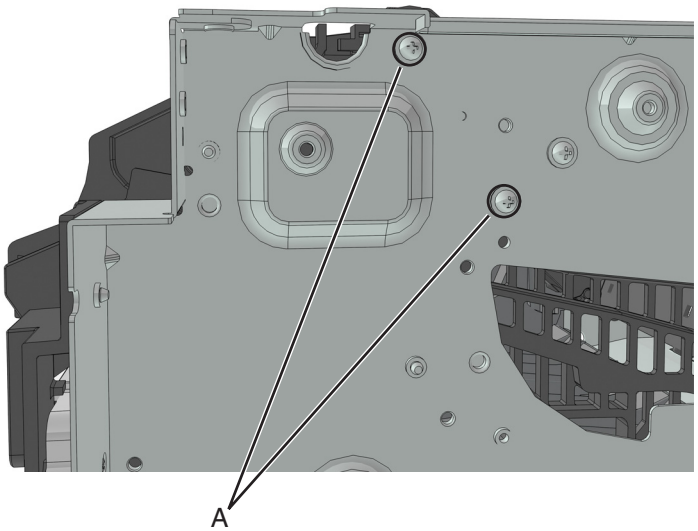


Toner cartridge smart chip contact removal

1 Remove the right cover. See **“Right cover removal” on page 162**.

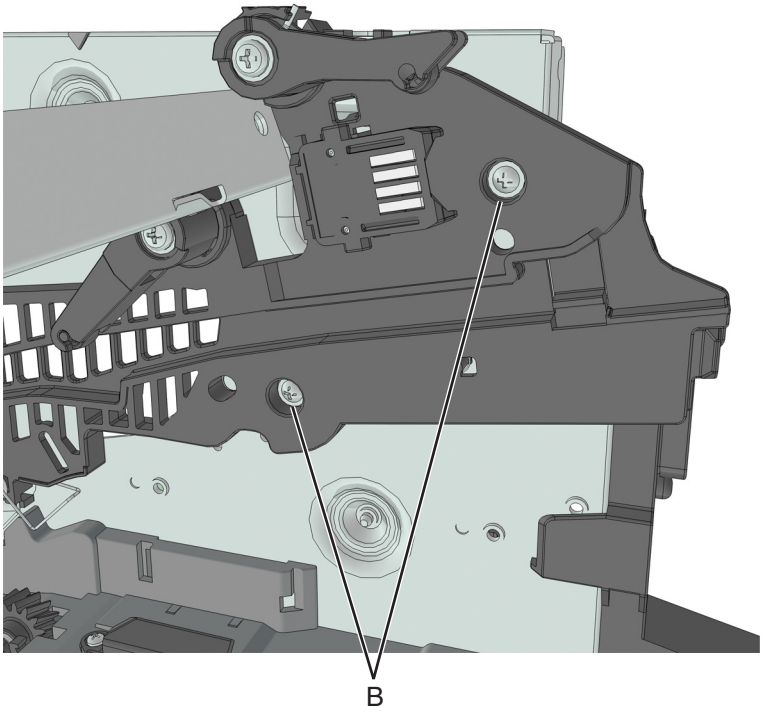
2 Disconnect the cable JARW1 from the controller board.

3 Remove the two screws (A).



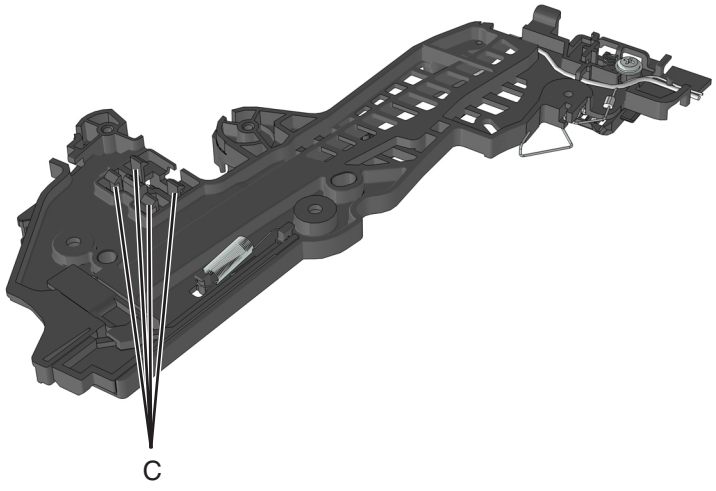
4 Remove the two screws (B), and then detach the right cartridge guide.

Warning—Potential Damage: Do not cut or disconnect the cable at the rear of the right cartridge guide. Leave the right cartridge guide dangling while performing the rest of the steps.



5 From behind the right cartridge guide, release the 4 latches (C) to detach the toner cartridge smart chip contact.

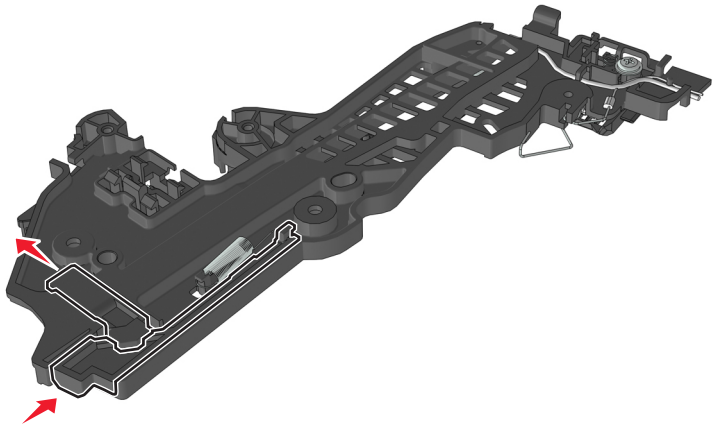
Note: Pay attention to the original position of the spring and the actuators.



Installation notes:

a Test for proper installation of the spring and the actuators.

b Press the cartridge actuator. The cartridge lock should move up.



c Release the cartridge actuator. The cartridge lock should move back to its original position.

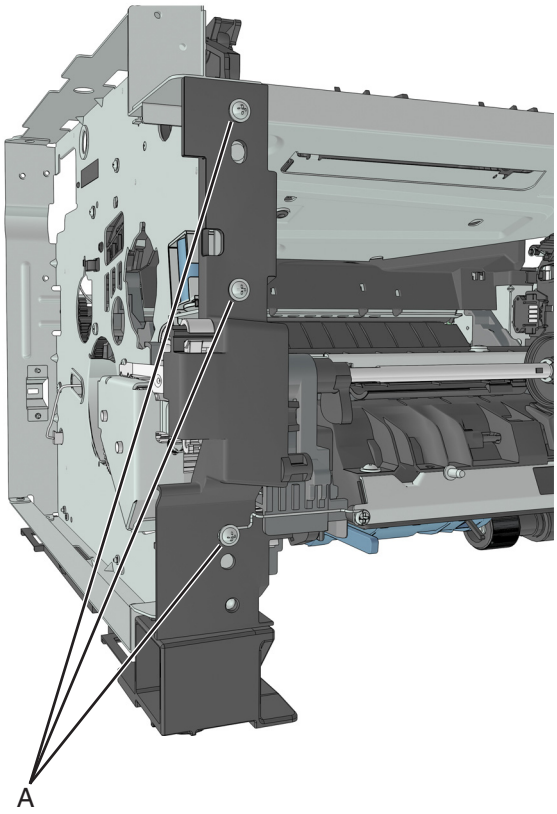
Front removals

Left front mount removal

1 Remove the left cover. See **“Left cover removal” on page 146**.

2 Remove the front door. See **“Front door removal” on page 183**.

3 Remove the three screws (A), and then remove the left front mount.



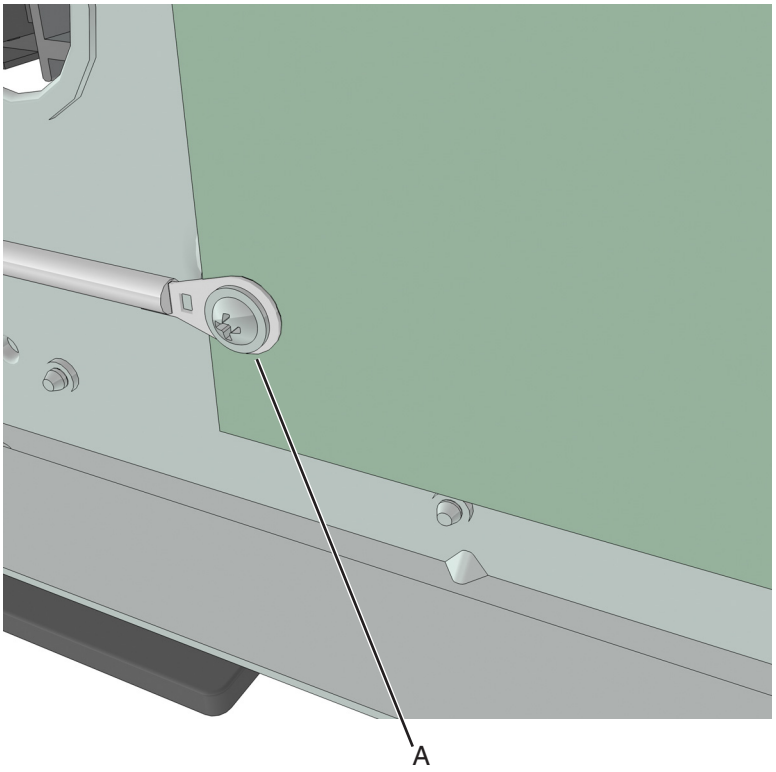
Right front mount removal

1 Remove the right cover. See **“Right cover removal” on page 162**.

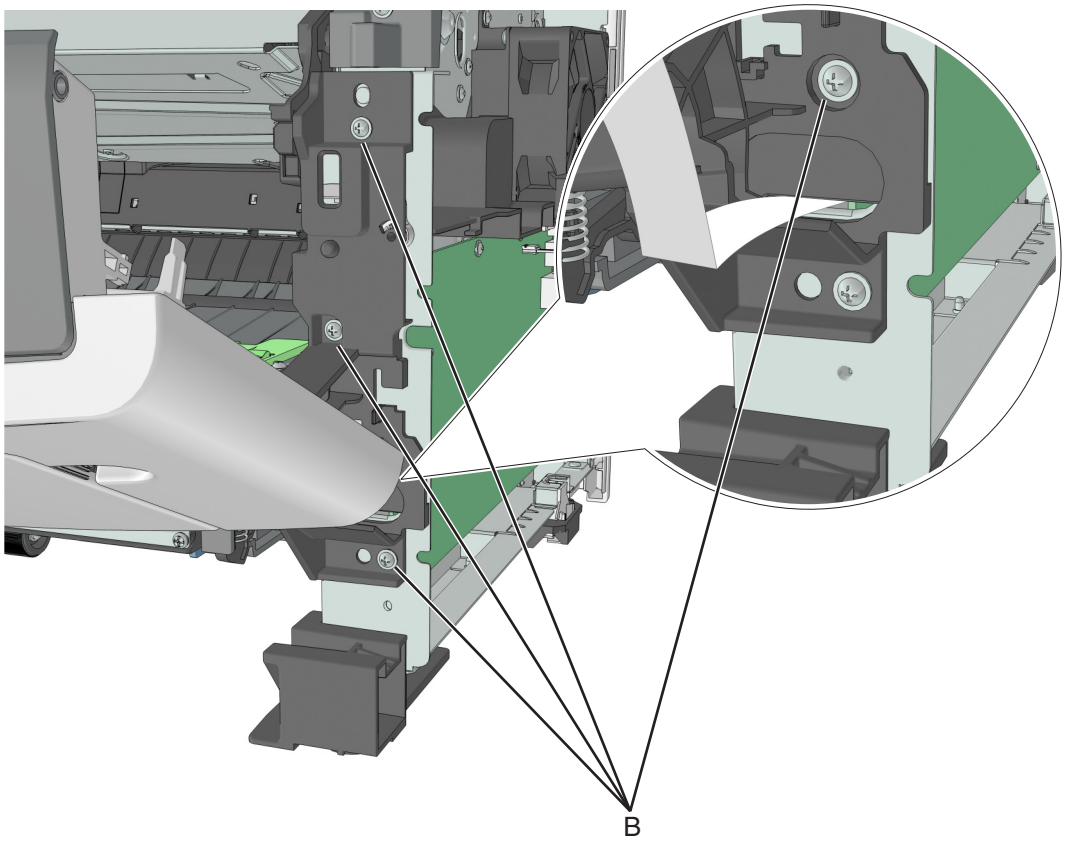
2 Disconnect all control panel cables from the controller board.

3 Disconnect the cable JCVR1 from the controller board.

4 Remove the screw (A) to disconnect the ground wire.



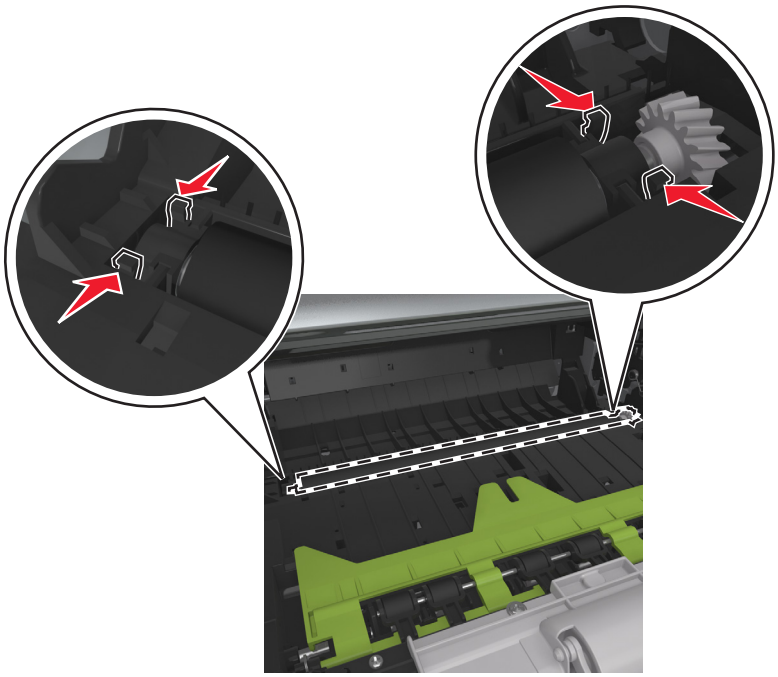
5 Remove the four screws (B), and then remove the right front mount.



Transfer roll removal

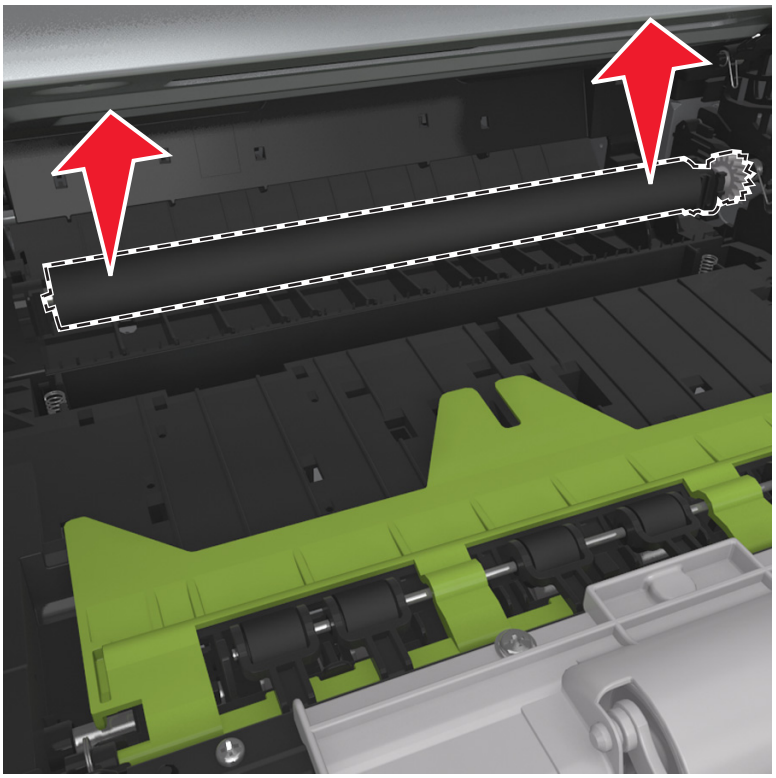
Warning—Potential Damage: Do not touch the transfer roll with bare hands. Oil from the skin can damage it.

1 Squeeze the latches at each end of the transfer roll.



2 Lift to remove the transfer roll.

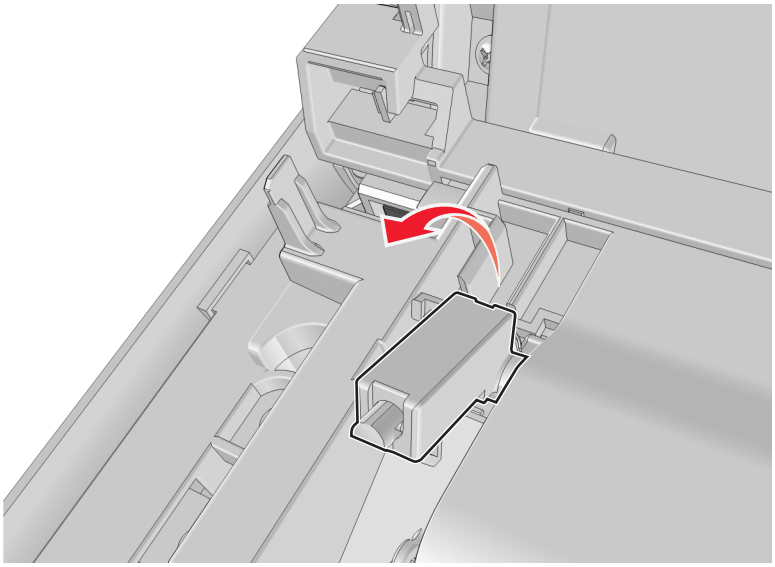
Warning—Potential Damage: Do not remove the spring under the left latch. Doing so will damage the printer.



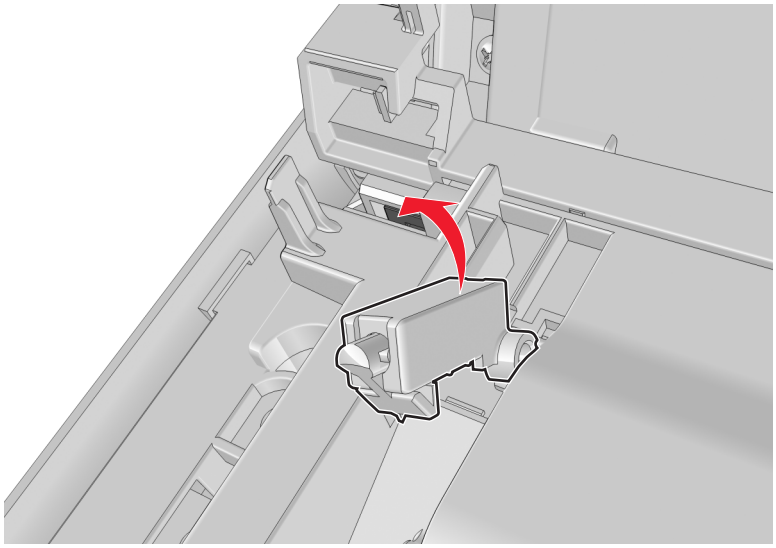
Cartridge plunger removal

1 Open the front door.

2 Tilt the cartridge plunger.

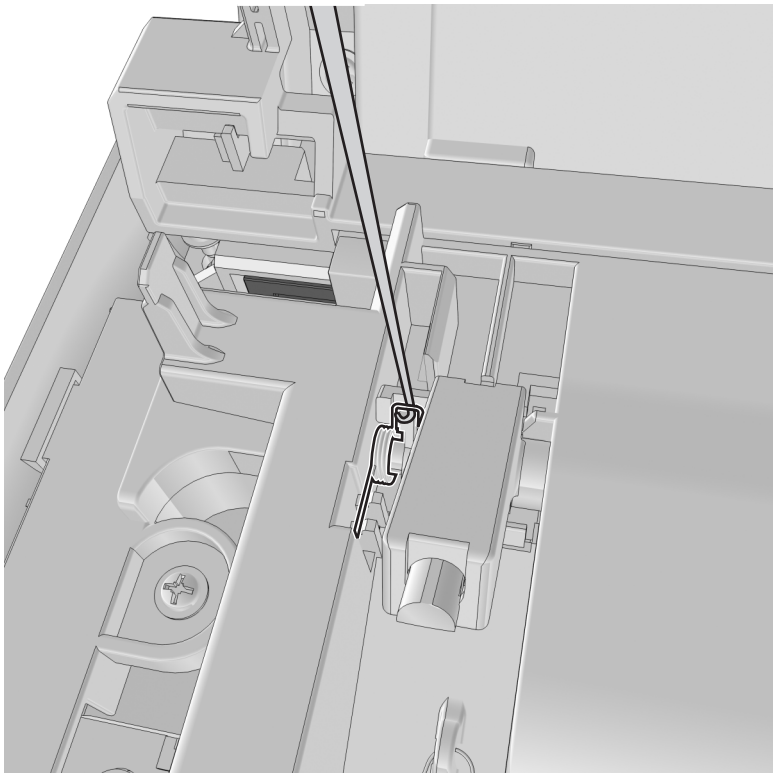


3 Twist and then remove the cartridge plunger.

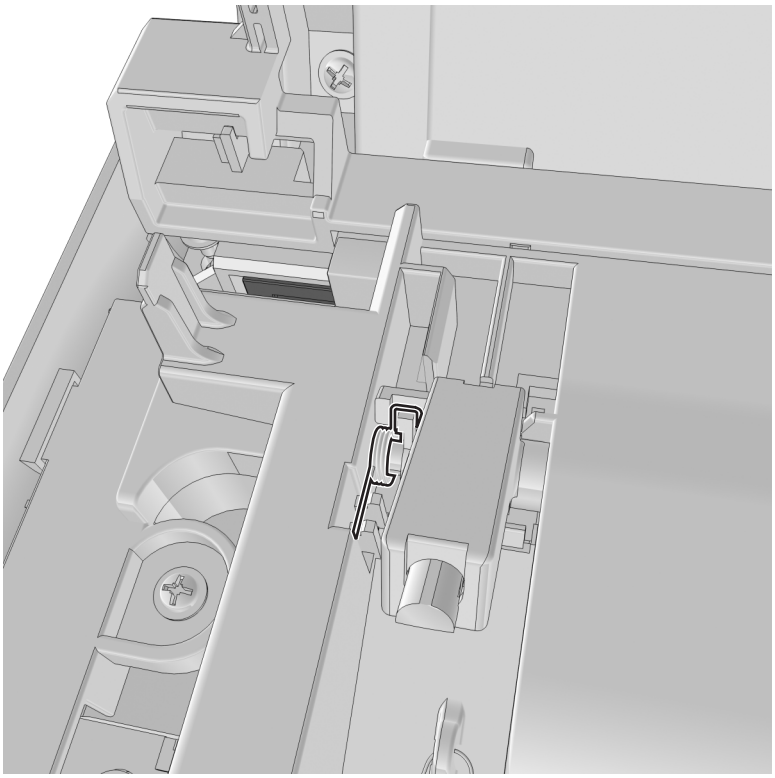


Installation notes:

a Use a spring hook to hold the spring, and then reinstall the cartridge plunger.

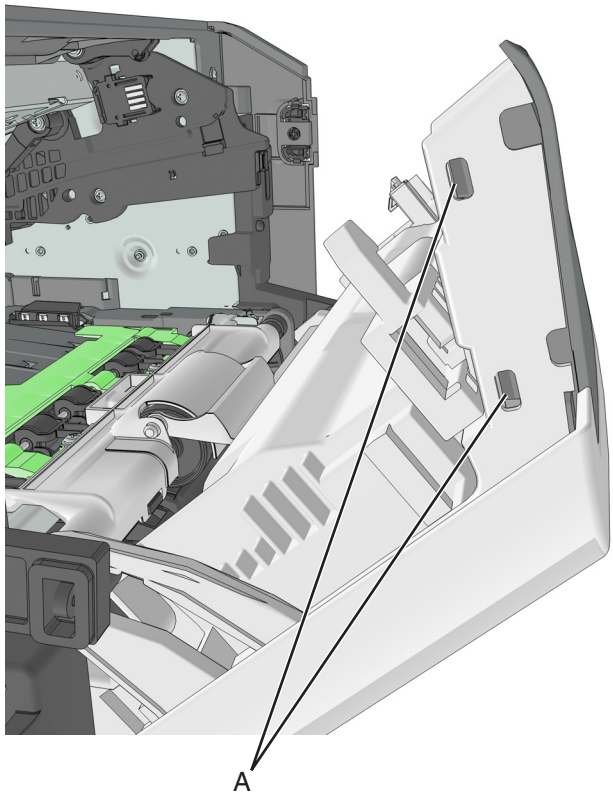


b Set the spring over the plunger.



Bezel removal

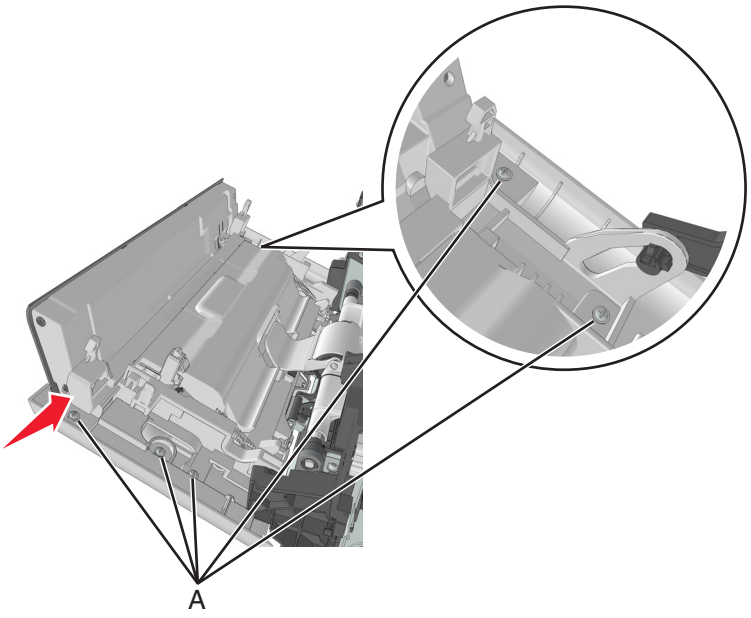
1. Open the front door.
2. Push the latches (A) at the left side to remove the bezel.



Nameplate removal

1 Open the front door.

2 Remove five screws (A) securing the nameplate.



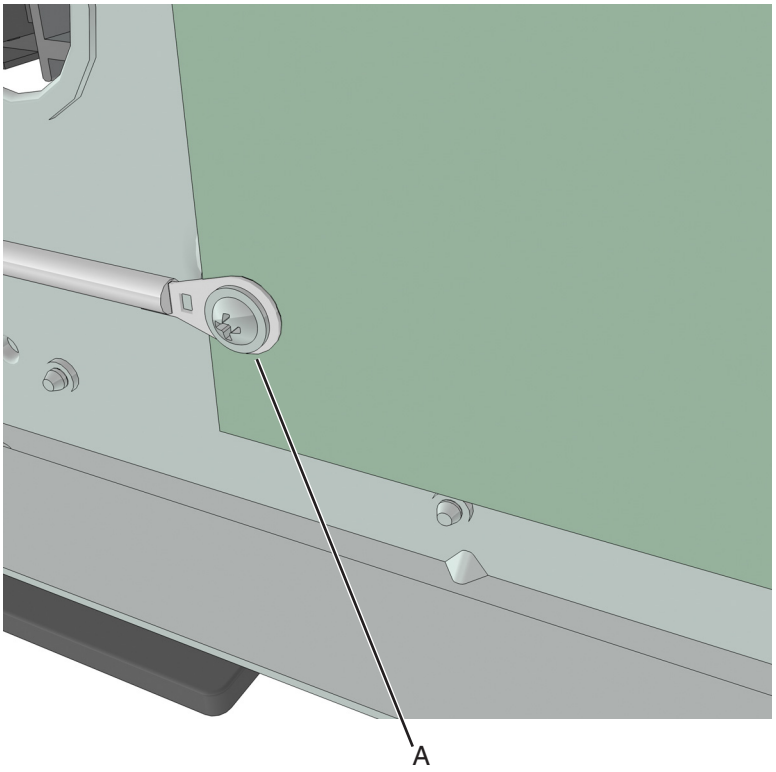
Control panel assembly removal

1 Remove the right cover. See **“Right cover removal” on page 162**.

2 Remove the nameplate. See **“Nameplate removal” on page 175**.

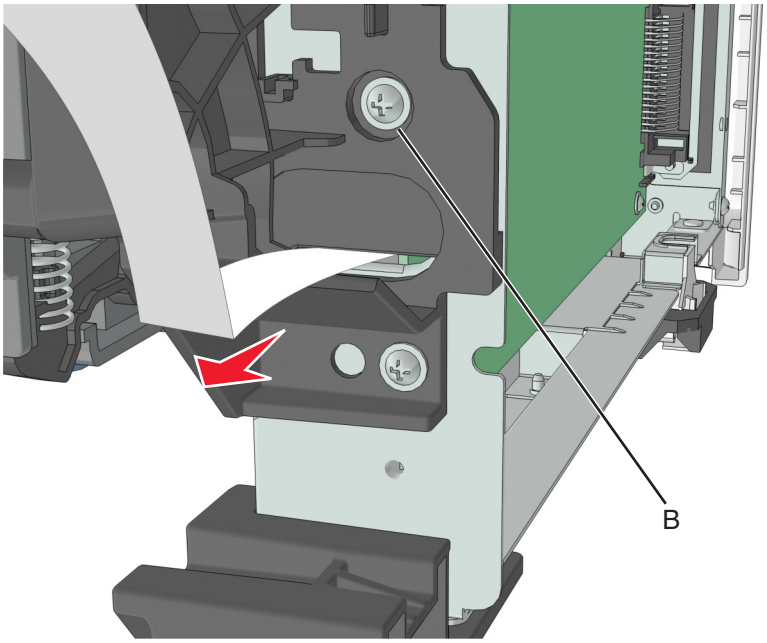
3 Remove the bezel. See **“Bezel removal” on page 174**.

4 Remove the screw (A) securing the ground connector to the controller board.

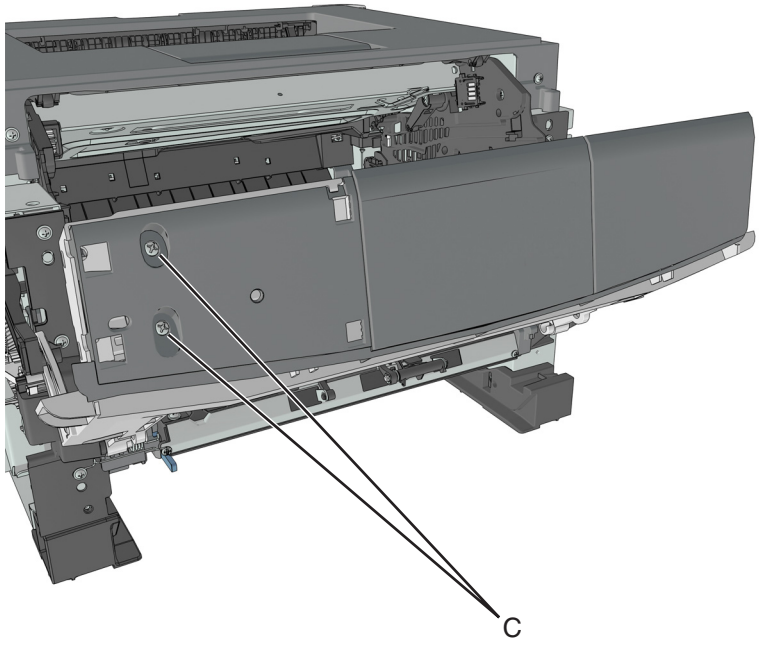


5 Disconnect the cable JOPP1 or JOPP2 from the controller board.

6 Remove the screw (B) from the right front mount, and route the cable through the slot.



7 Remove the two screws (C) securing the control panel assembly.



8 Route all cables off the printer to completely remove the control panel assembly.

UICC removal

1 Remove the right cover. See **“Right cover removal” on page 162**.

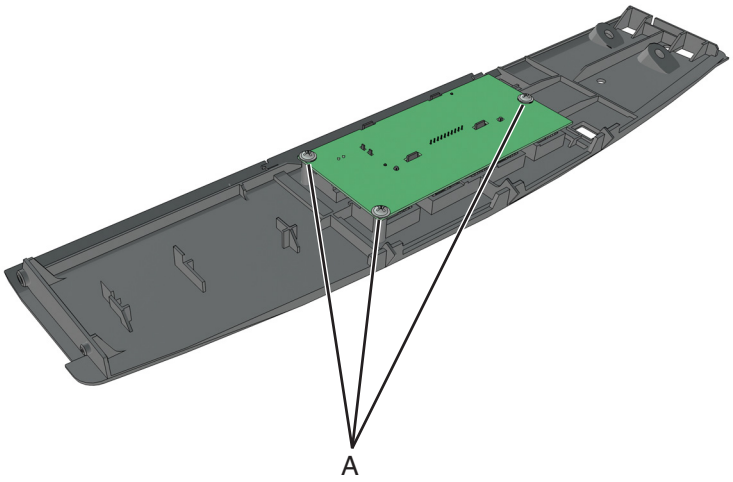
2 Remove the nameplate. See **“Nameplate removal” on page 175**.

3 Remove the bezel. See **“Bezel removal” on page 174**.

4 Remove control panel assembly. See **“Control panel assembly removal” on page 175**.

5 Remove the three screws (A), and then remove the UICC.

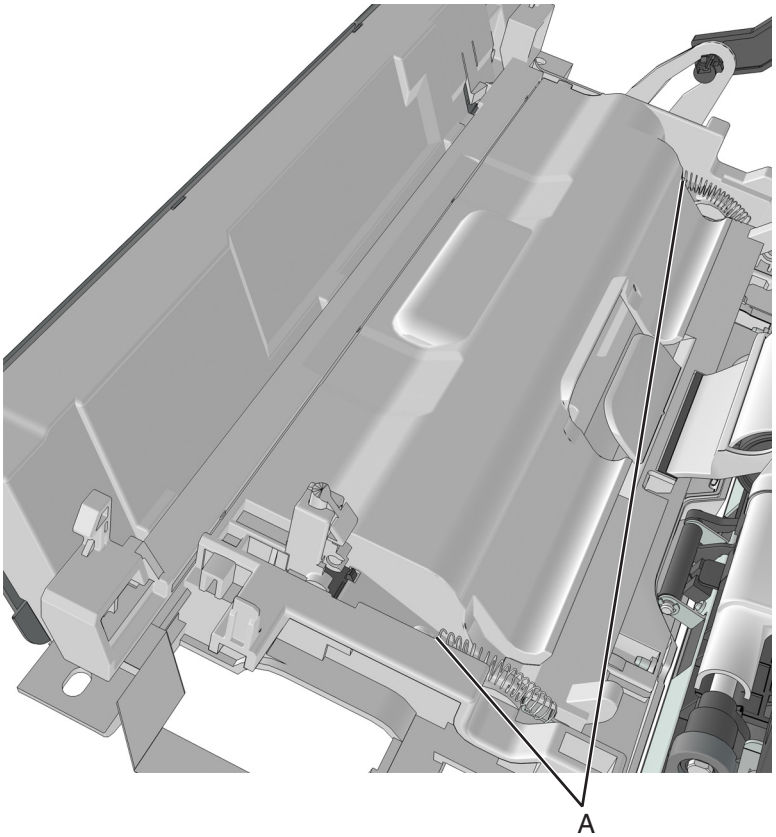
Note: The control panel buttons and light pipe must remain with the control panel assembly.



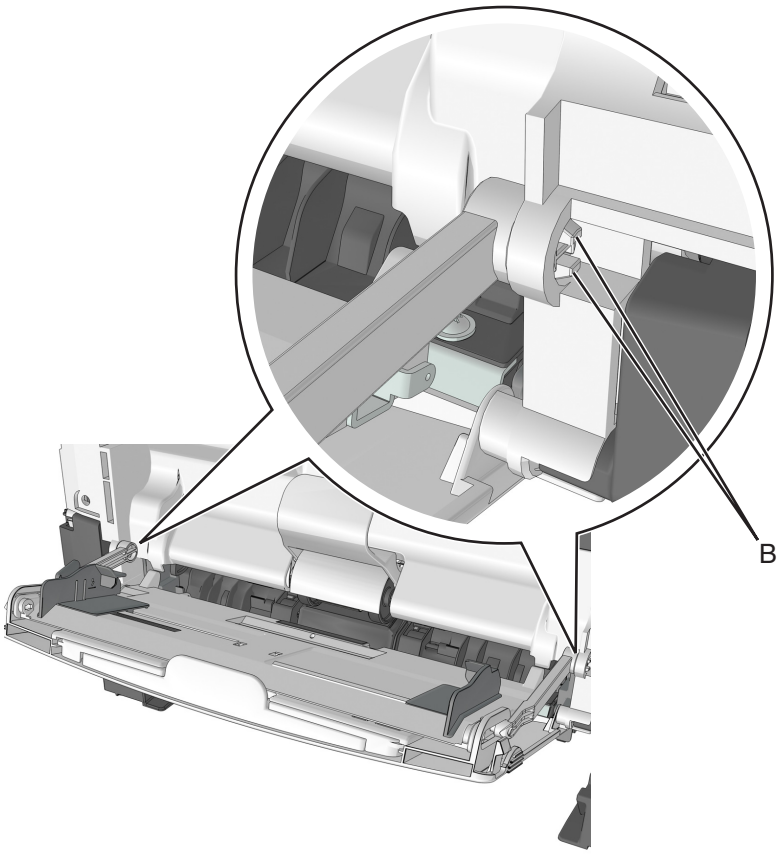
MPF assembly removal

1 Remove the nameplate. See **“Nameplate removal” on page 175**.

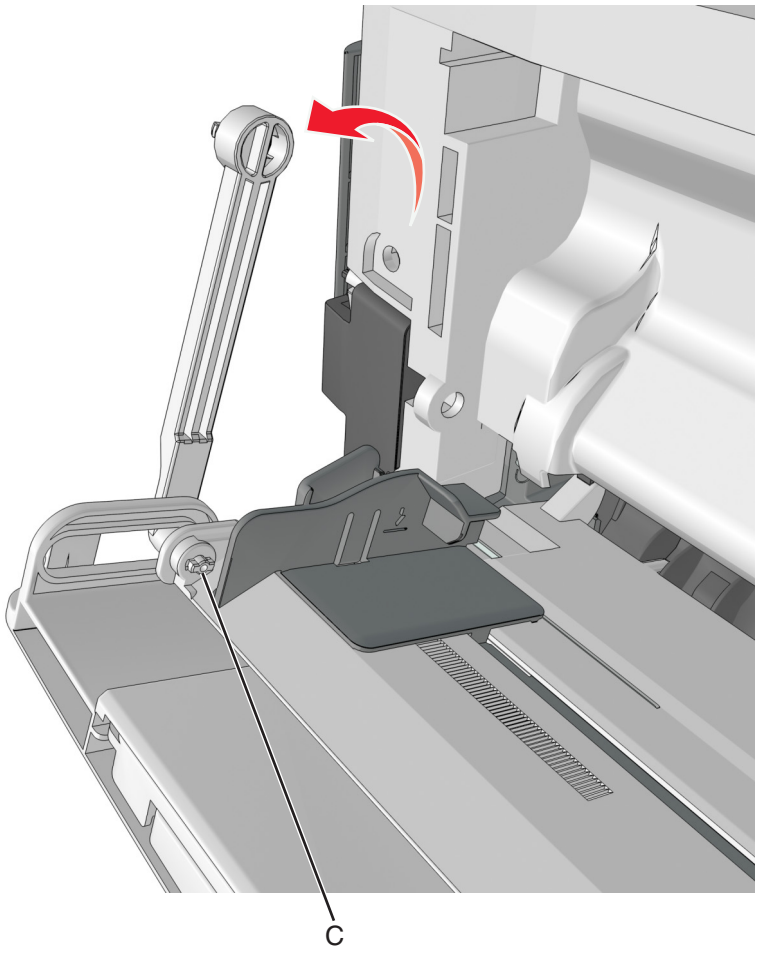
2 Remove the two springs (A).



3 Squeeze the latches (B) to release the left and right links.

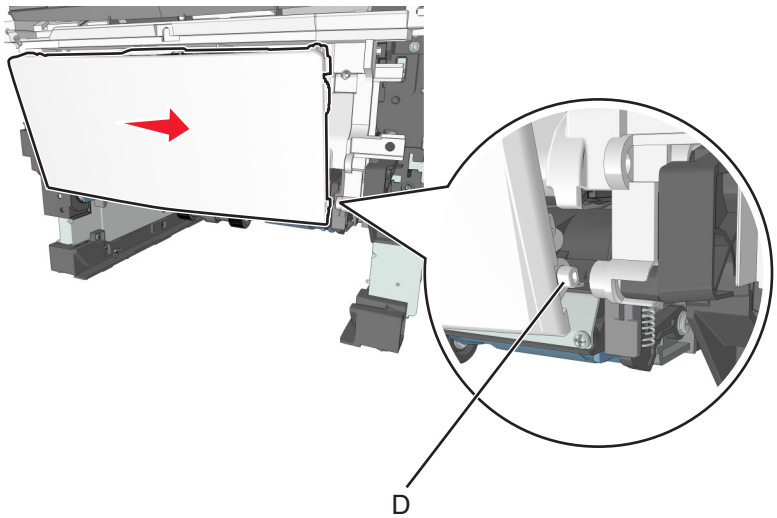


4 Release the lock (C) remove the MPF link. Do the same on the other MPF link.



5 Release the right tab (D) of the MPF.

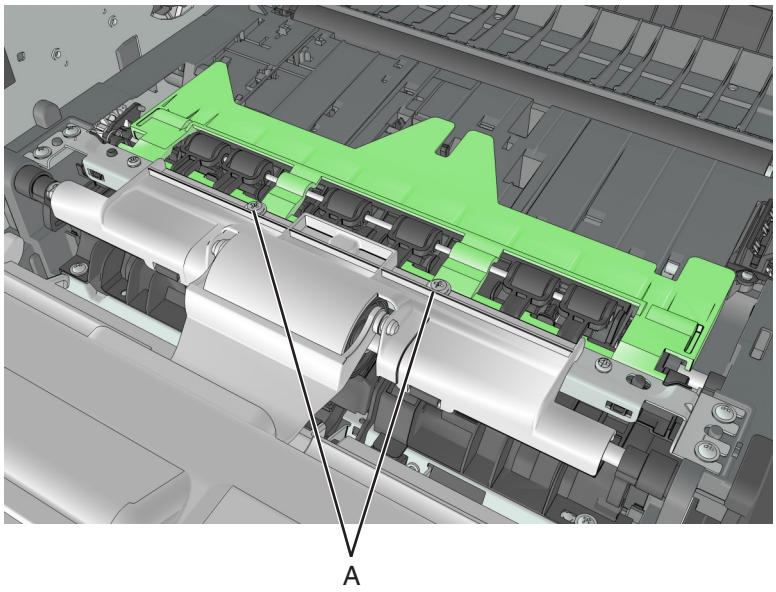
6 Slide the MPF assembly to remove.



MPF pick roller cover removal

1 Open the front door.

2 Remove the two screws (A), and then remove the MPF pick roller cover.

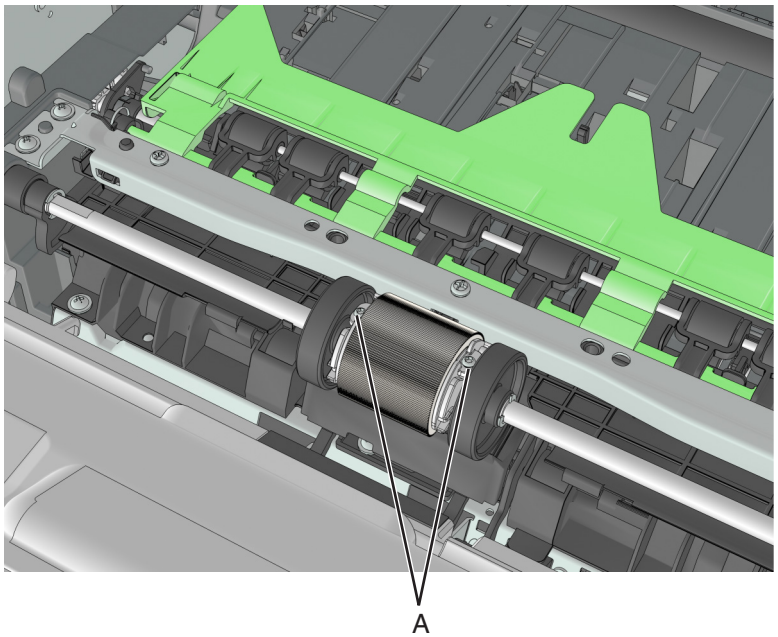


MPF pick roller removal

1 Remove the MPF pick roller cover. See **“MPF pick roller cover removal” on page 181**.

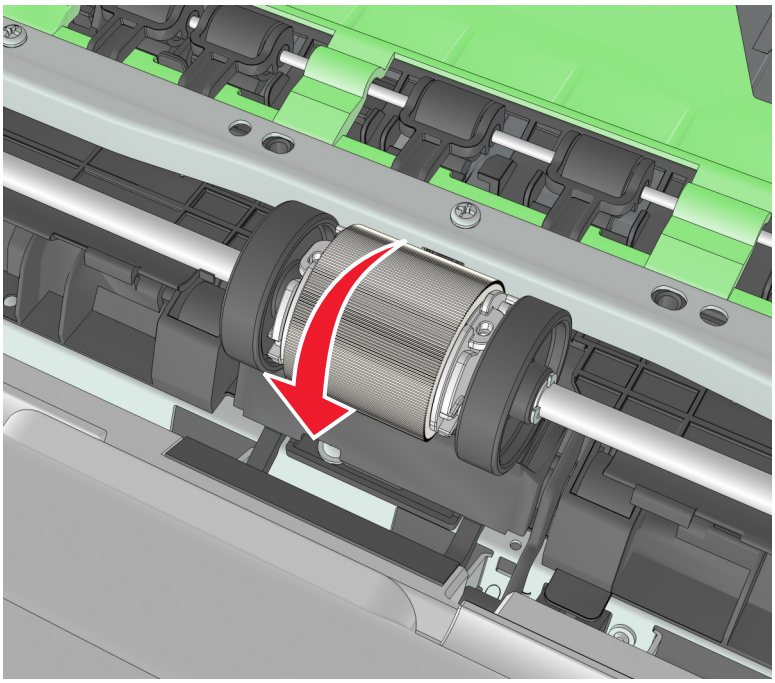
2 Remove the two screws (A).

Note: Use a #1 Phillips screwdriver.



3 Pull the MPF pick roller outward to remove.

Warning—Potential Damage: Do not touch the pick tire with bare hands, as this can damage the pick roller.

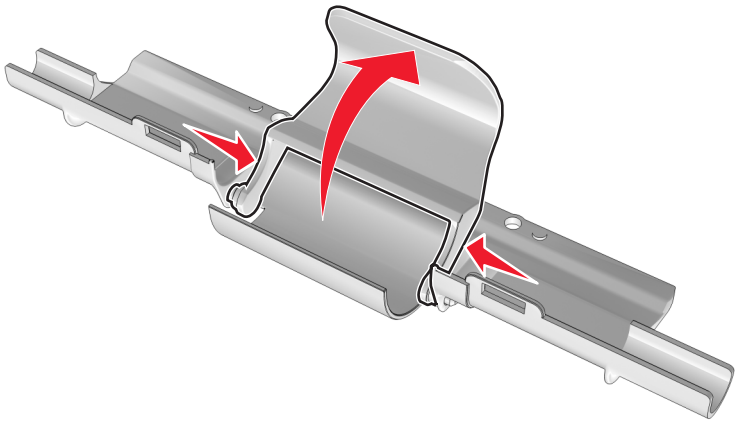


Bail removal

1 Remove the MPF pick roller cover. See **"MPF pick roller cover removal" on page 181**.

2 Rotate the bail.

3 Squeeze the latches, and then remove the bail.

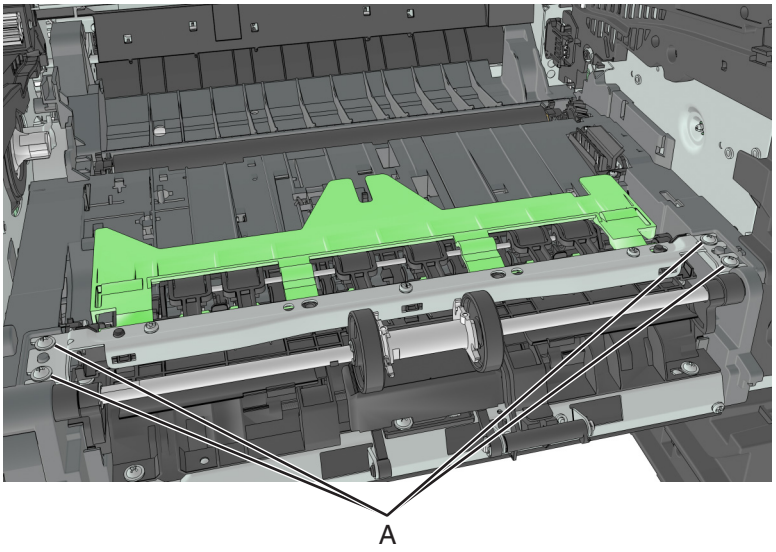


Jam access cover removal

1 Remove the MPF pick roller cover. See **"MPF pick roller cover removal" on page 181**.

2 Remove the MPF pick roller. See **"MPF pick roller removal" on page 181**.

3 Remove the four screws (A), and then remove the jam access cover.



Front door removal

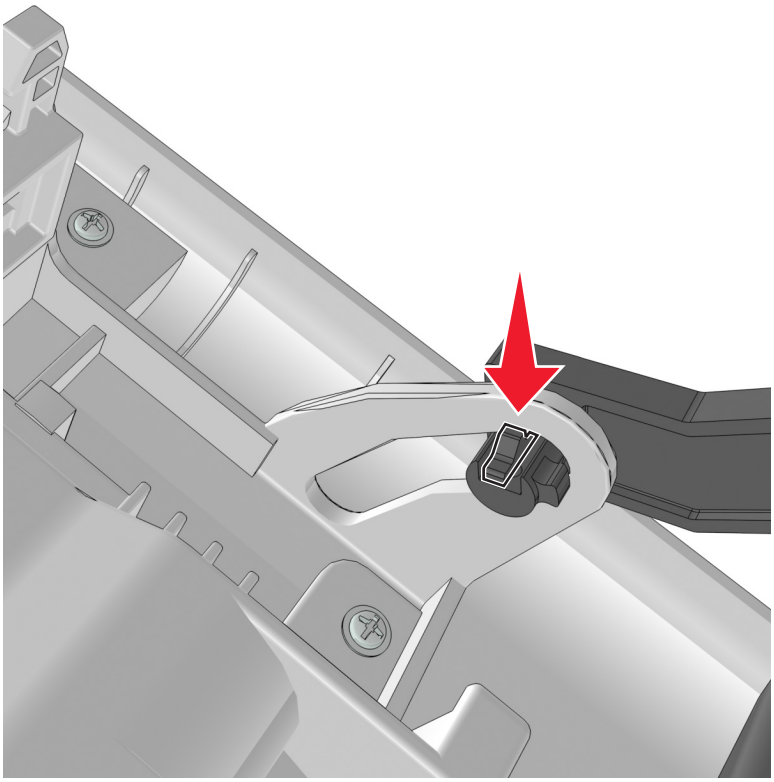
Note: This is not a FRU.

1 Remove the right cover. See **"Right cover removal" on page 162**.

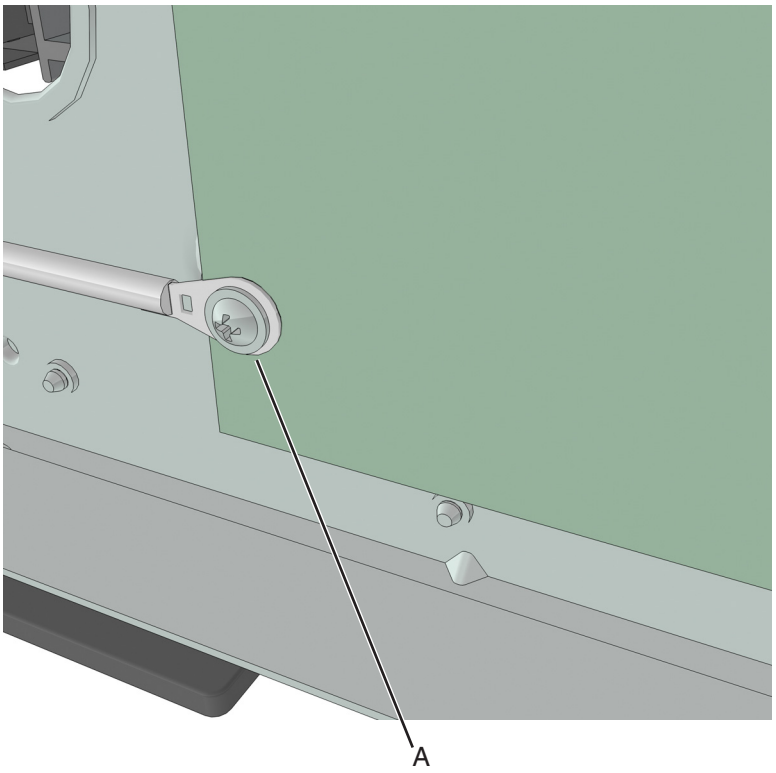
2 Disconnect the cable JOPP1 or JOPP2 from the controller board.

3 Disconnect the cable JCVR1 from the controller board.

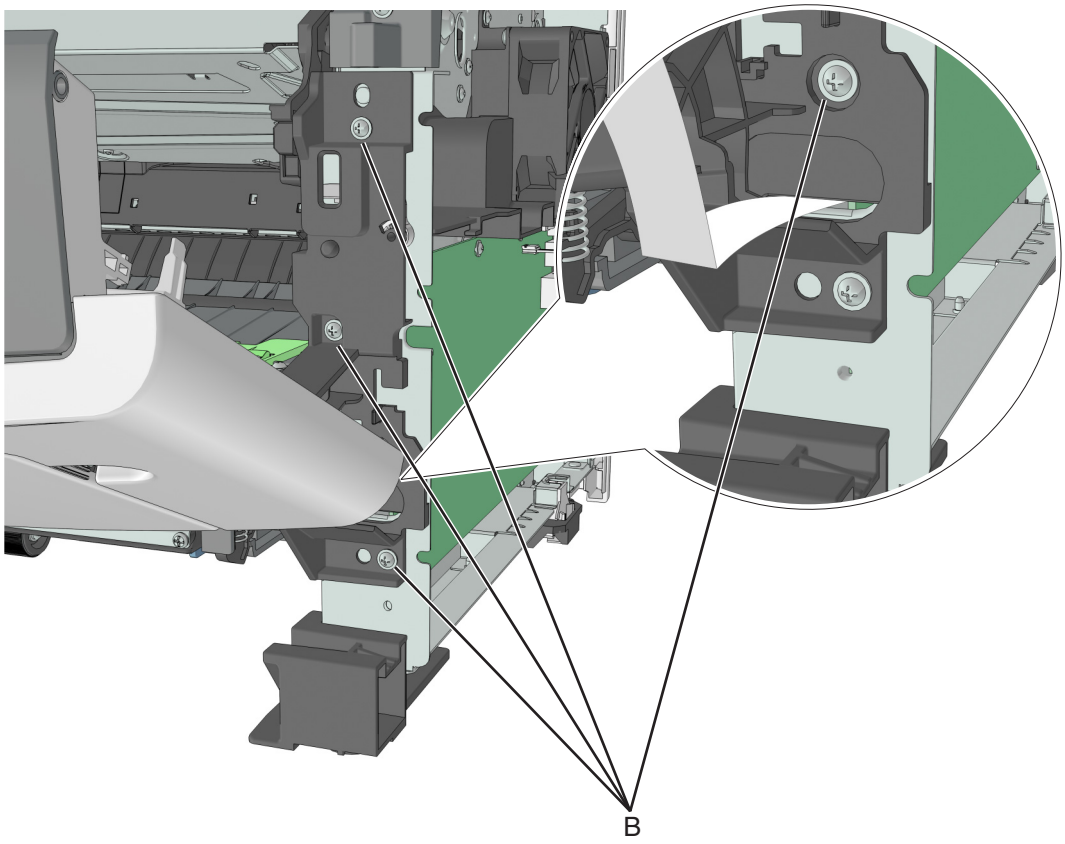
4 Squeeze the latch, and then detach the link from the front door.



5 Remove the screw (A) to disconnect the ground wire.

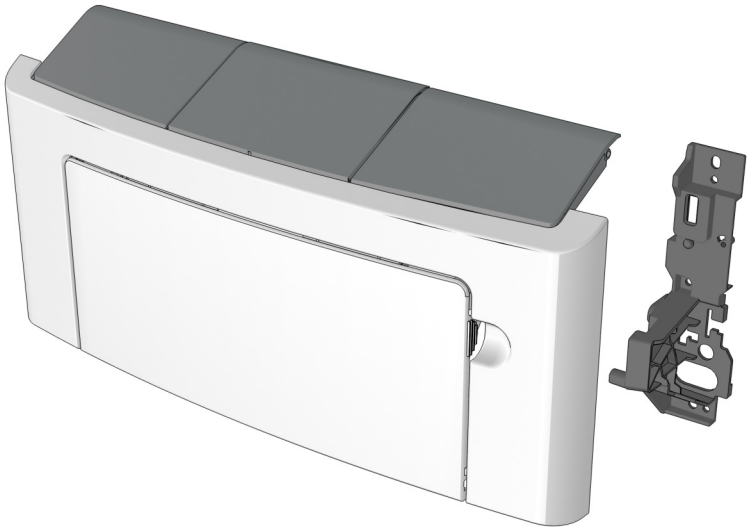


6 Remove the four screws (B).



7 Remove the right front mount, and then remove the front door.

Below are the front door and the right front mount.



Installation notes:

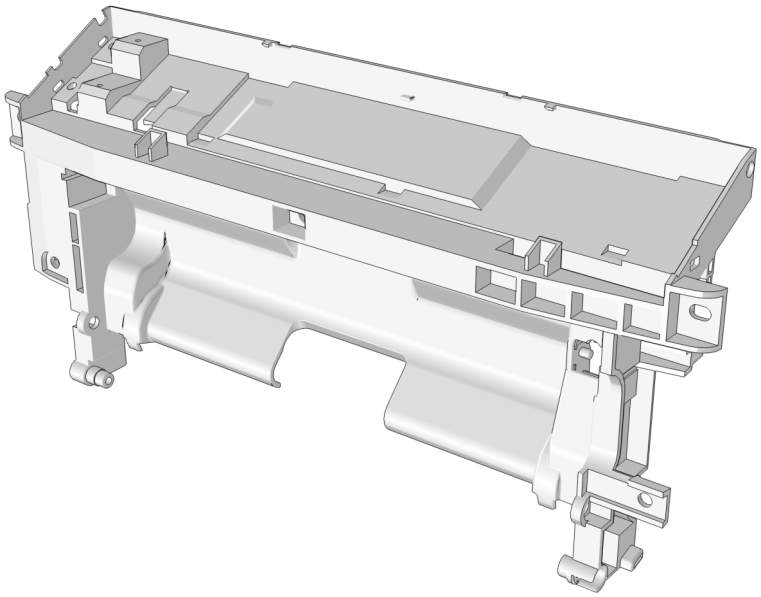
a Mount the left side of the front door to the printer.

b Attach the right front mount to the front door.

c Install the right front mount to the printer.

Front access cover removal

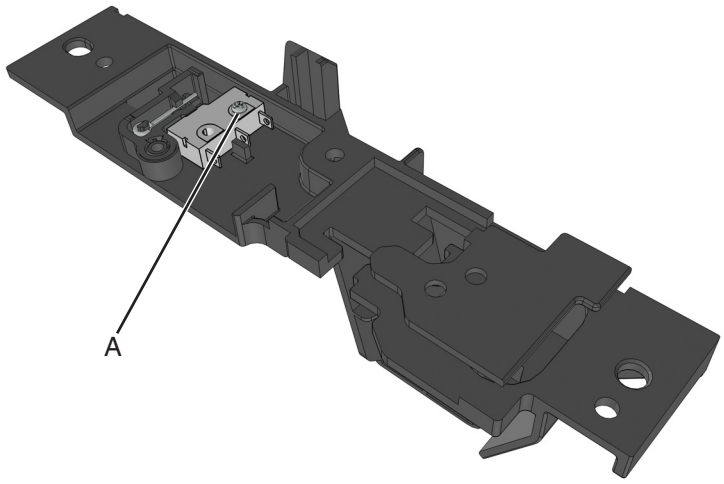
1. Remove the right cover. See **“Right cover removal” on page 162**.
2. Remove the front door. See **“Front door removal” on page 183**.
3. Remove the nameplate. See **“Nameplate removal” on page 175**.
4. Remove the MPF assembly. See **“MPF assembly removal” on page 178**.
5. Remove the bezel. See **“Bezel removal” on page 174**.
6. Remove the control panel assembly. See **“Control panel assembly removal” on page 175**.
7. The front access cover remains.



Front door sensor removal

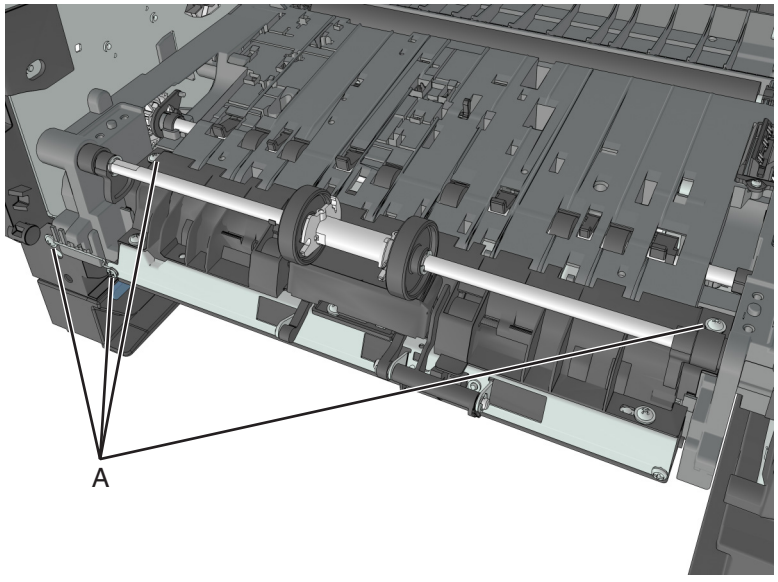
1. Remove the front door. See **“Front door removal” on page 183**.
2. From under the right front mount, remove the screw (A).

   Note: Use a #1 Phillips screwdriver.



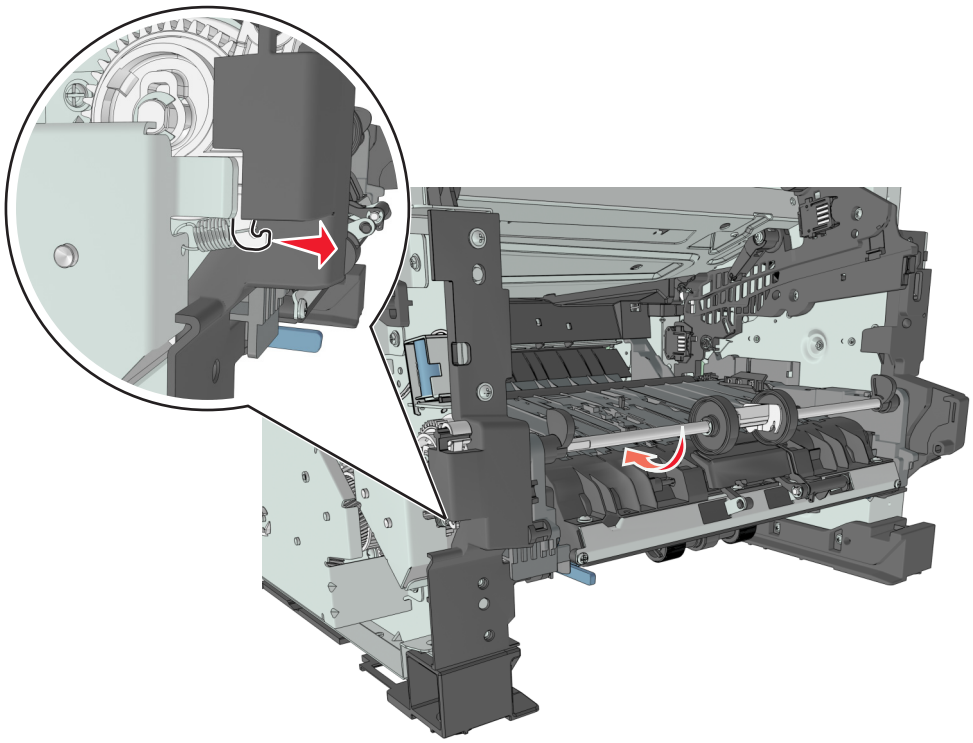
Front input guide removal

1. Remove the right cover. See **“Right cover removal” on page 162**.
2. Remove the front door. See **“Front door removal” on page 183**.
3. Remove the MPF pick roller cover. See **“MPF pick roller cover removal” on page 181**.
4. Remove the MPF pick roller. See **“MPF pick roller removal” on page 181**.
5. Remove the jam access cover. See **“Jam access cover removal” on page 182**.
6. Disconnect cable JMPF1 from the controller board.
7. Remove the four screws (A).



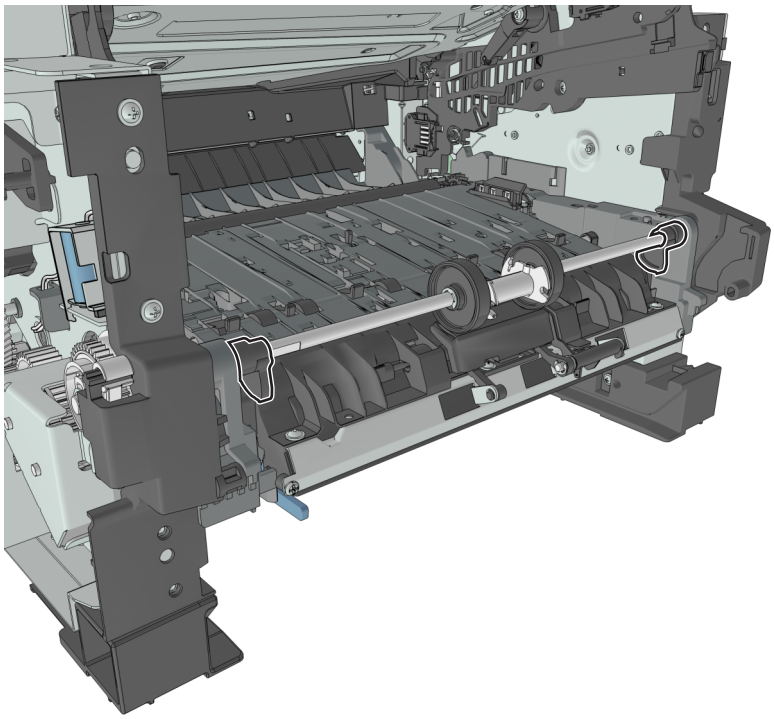
8. Push and hold the cam restraint to release the MPF shaft.

9 Rotate the MPF shaft inward so that the cams at each end point up.



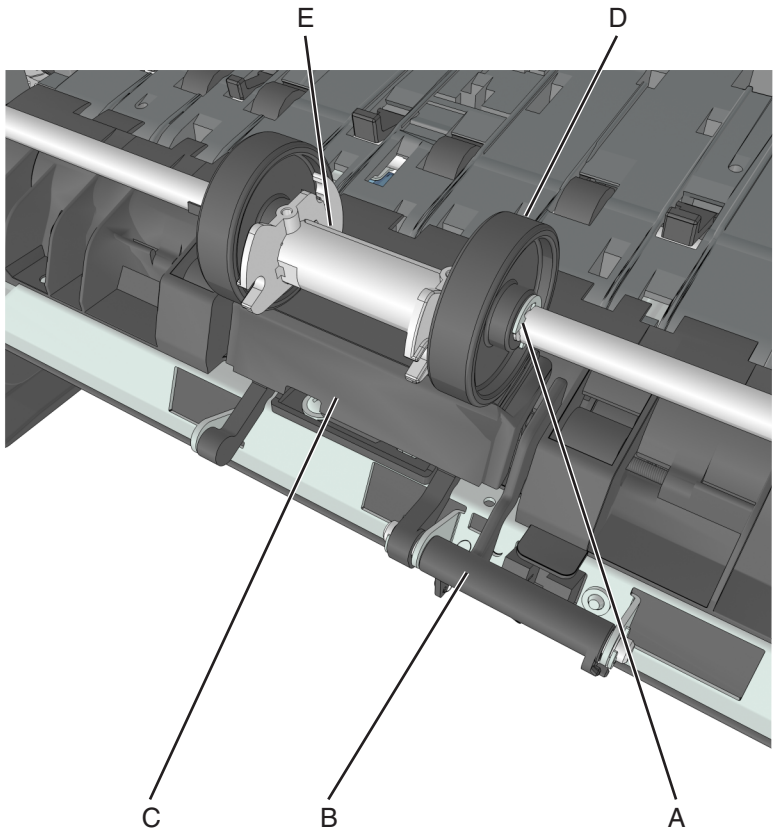
10 Release the front guide from the guides at each end.

Installation note: The cams at each end of the MPF shaft must point down.



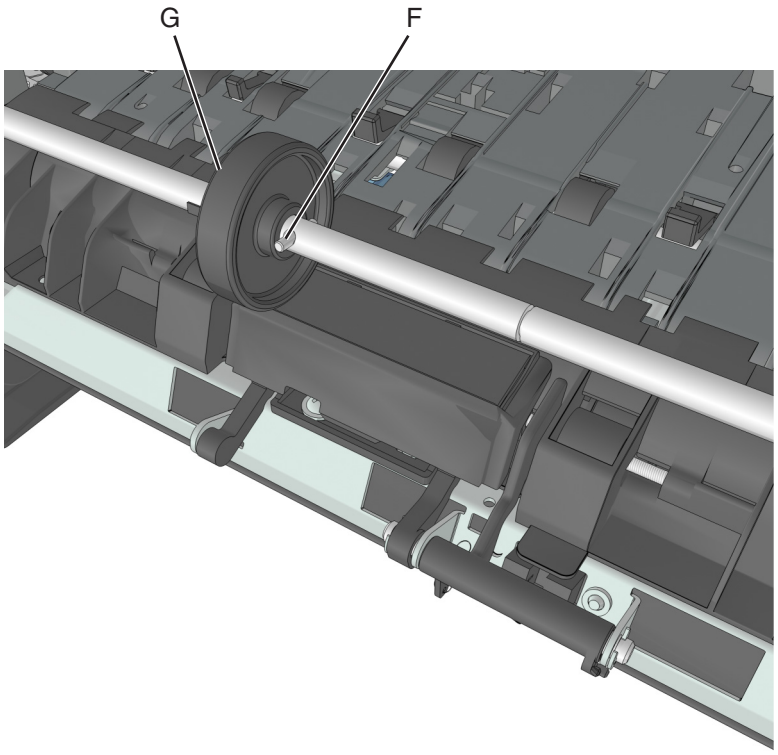
Separator pad removal

1. Remove the right cover. See **“Right cover removal” on page 162**.
2. Remove the front door. See **“Front door removal” on page 183**.
3. Remove the MPF pick roller cover. See **“MPF pick roller cover removal” on page 181**.
4. Remove the MPF pick roller. See **“MPF pick roller removal” on page 181**.
5. Remove the jam access cover. See **“Jam access cover removal” on page 182**.
6. Remove the E-clip (A).
7. While pressing down the MPF sensor flag (B) and separator pad (C), move the restraint roller (D) and MPF pick roller hub (E) to the right.

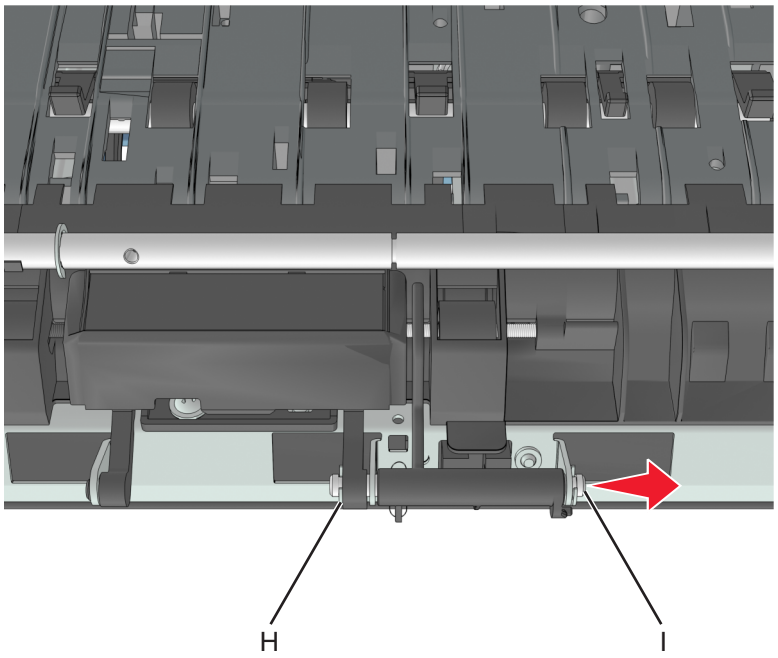


8. Remove the pin (F).

9 While pressing down the MPF sensor flag and separator pad, move the restraint roller (G) to the right.



10 Remove the E-clip (H), and then move the shaft (I) to the right.



11 Remove the separator pad and the spring underneath.

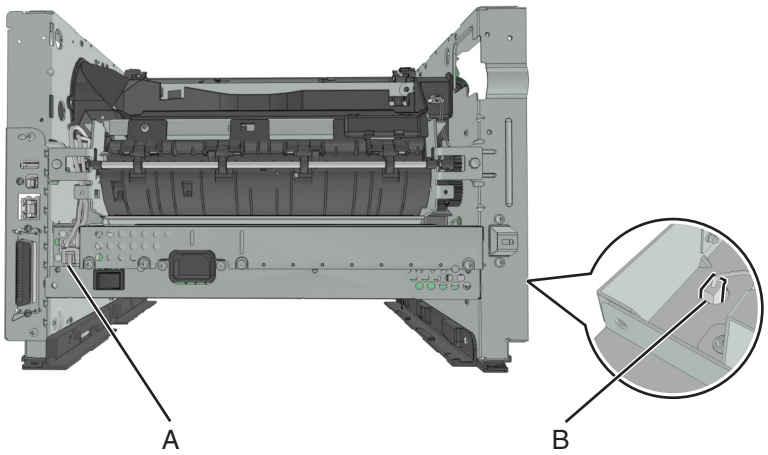
Bottom removals

Power supply removal

1 Remove the left cover. See **“Left cover removal” on page 146**.

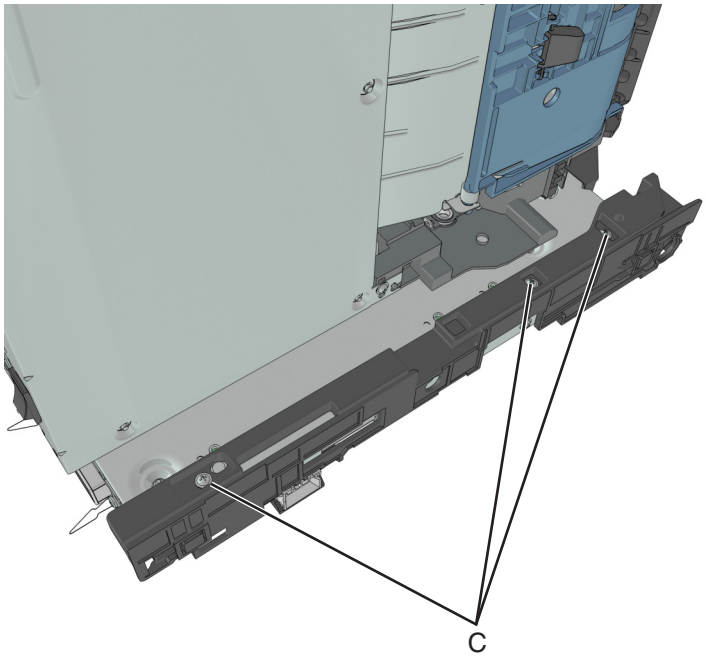
2 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

3 Disconnect the cable (A) from the rear, and disconnect the cable (B) from the left side.

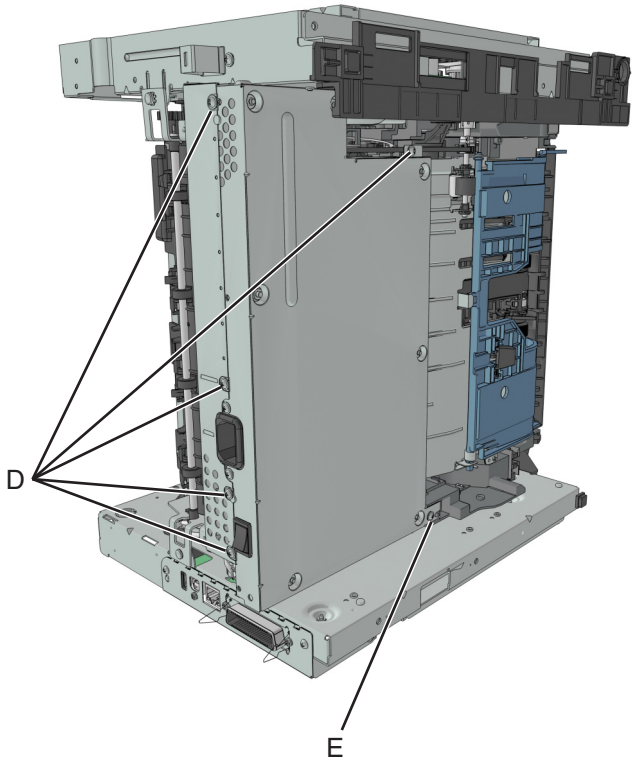


4 Position the printer so that it sits on its right side.

5 Remove the three screws (C), and then remove the right tray guide.



6 Remove the five metal screws (D) and the plastic screw (E) securing the power supply.



7 Remove the power supply, and then disconnect all cables from the power supply.

Power supply shield removal

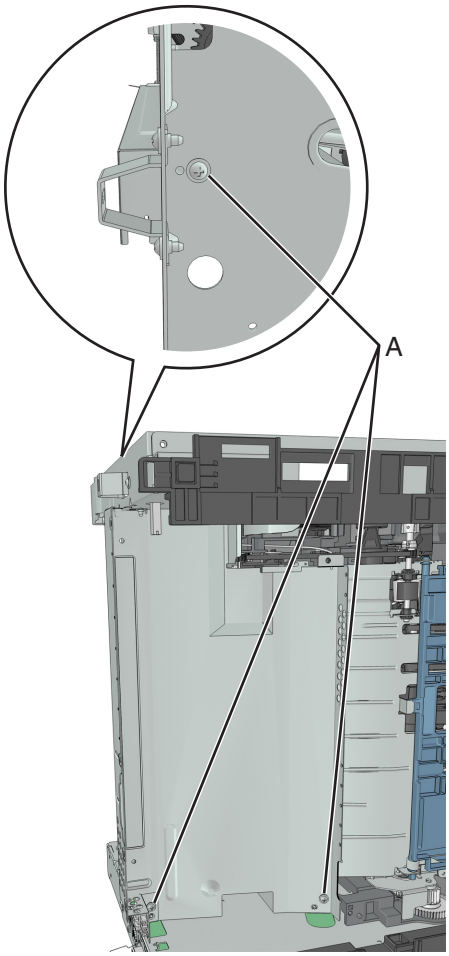
1 Remove the left cover. See **“Left cover removal” on page 146**.

2 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

3 Remove the power supply. See **“Power supply removal” on page 191**.

4 Position the printer so that it sits on its right side.

5 Remove the three screws (A), and then remove the power supply shield.



Duplex removal

1 Remove the left cover. See **“Left cover removal” on page 146**.

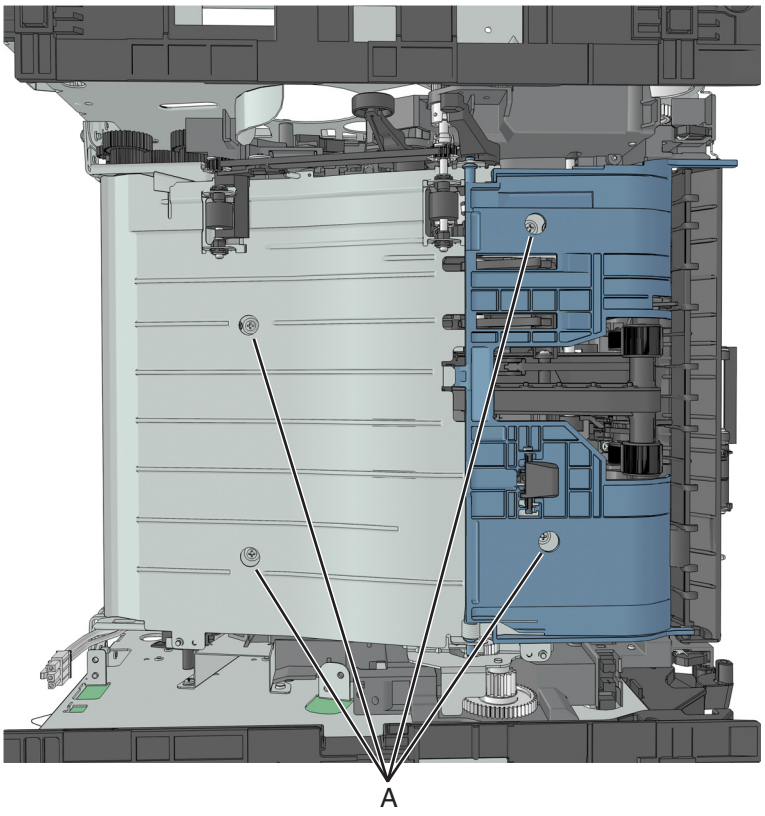
2 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

3 Remove the power supply. See **“Power supply removal” on page 191**.

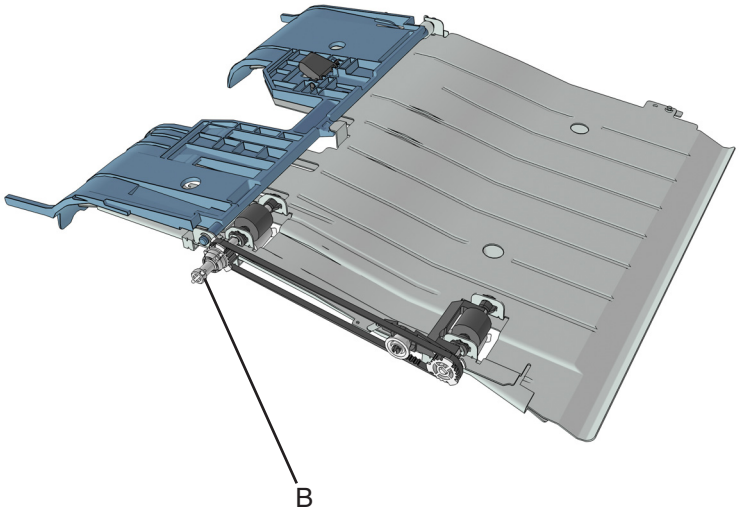
4 Remove the power supply shield. See **“Power supply shield removal” on page 192**.

5 Position the printer so that it sits on its right side.

6 Remove the four screws (A) securing the duplex.



Note: The duplex link (B) is part of the FRU.



Duplex sensor and input sensor removal

1 Remove the left cover. See **“Left cover removal” on page 146**.

2 Remove the right cover. See **“Right cover removal” on page 162**.

3 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

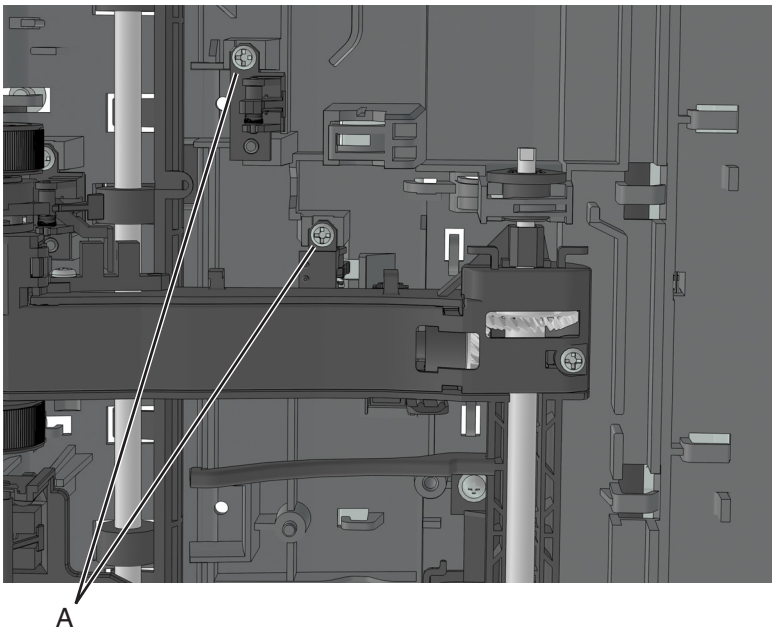
4 Remove the power supply. See **“Power supply removal” on page 191**.

5 Remove the power supply shield. See **“Power supply shield removal” on page 192**.

6 Remove the duplex. See **“Duplex removal” on page 193**.

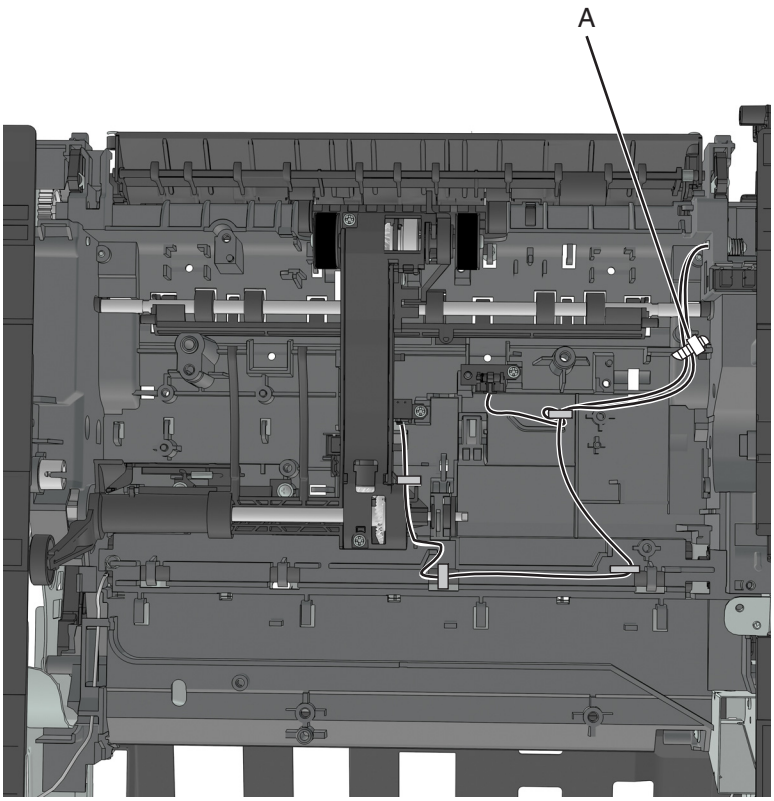
7 Disconnect the cable JDUPPI 1 from the controller board.

8 Remove the two screws (A), and cut the cable near the frame to detach the sensors.



9 Remove the other half of the cable from the printer.

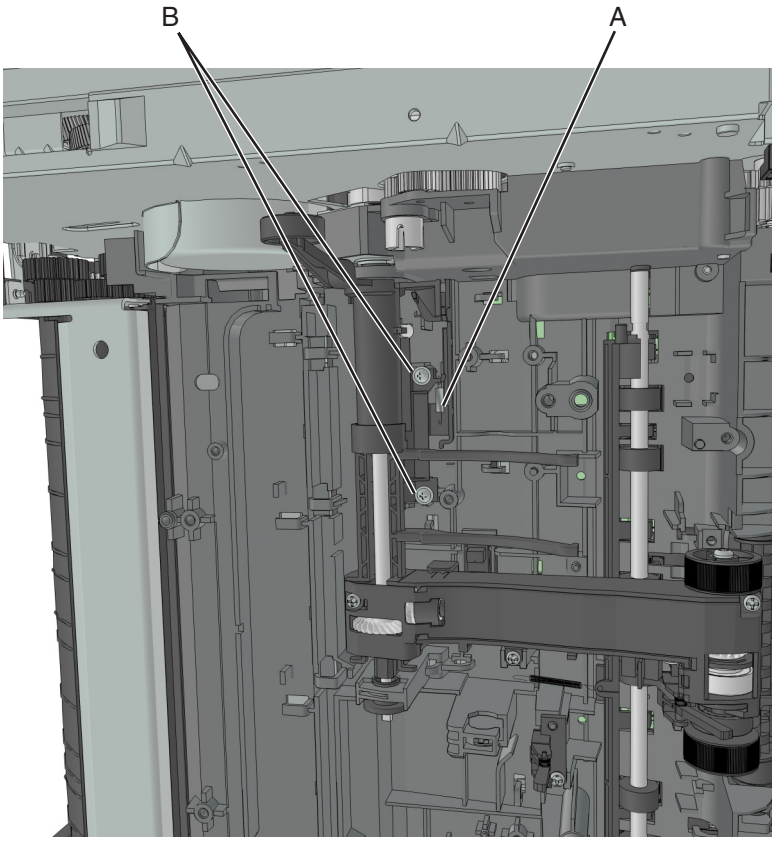
Installation note: Route the cable using the new path, and secure it with a cable tie (A).



Toner density sensor removal

1. Remove the left cover. See **“Left cover removal” on page 146**.
2. Remove the main drive gearbox. See **“Main drive gearbox removal” on page 147**.
3. Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.
4. Remove the power supply. See **“Power supply removal” on page 191**.
5. Remove the power supply shield. See **“Power supply shield removal” on page 192**.
6. Remove the duplex. See **“Duplex removal” on page 193**.
7. Disconnect the spring (A) from the printer.

8 Remove the two screws (B), and then remove the sensor.



9 Disconnect the cable from the sensor.

Trailing edge sensor removal

1 Remove the left cover. See **“Left cover removal” on page 146**.

2 Remove the right cover. See **“Right cover removal” on page 162**.

3 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

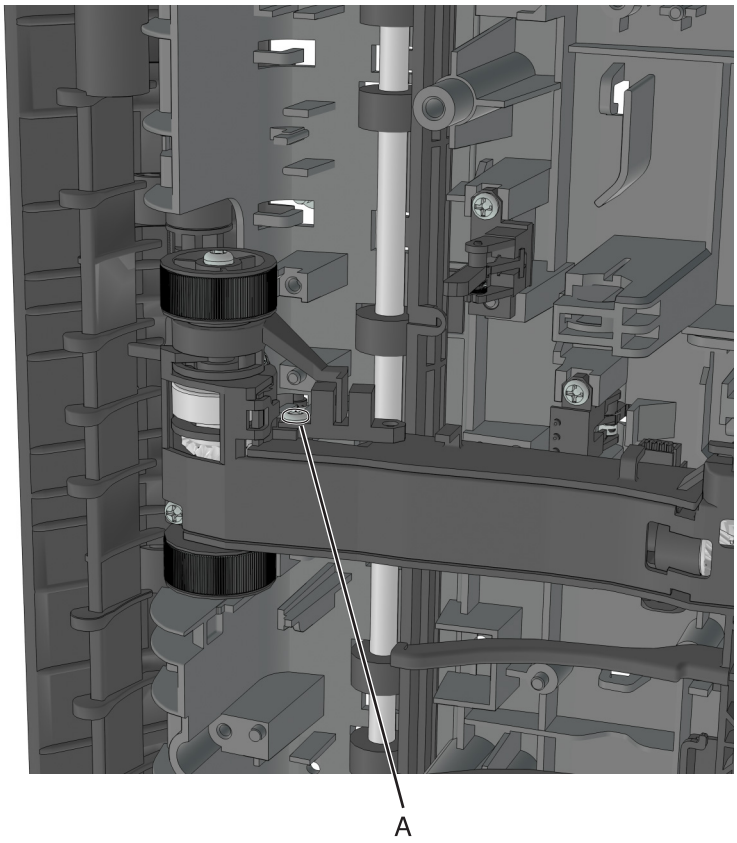
4 Remove the power supply. See **“Power supply removal” on page 191**.

5 Remove the power supply shield. See **“Power supply shield removal” on page 192**.

6 Remove the duplex. See **“Duplex removal” on page 193**.

7 Disconnect the cable JACM1 from the controller board, and cut it near the frame.

8 Remove the screw (A), and then remove the sensor.



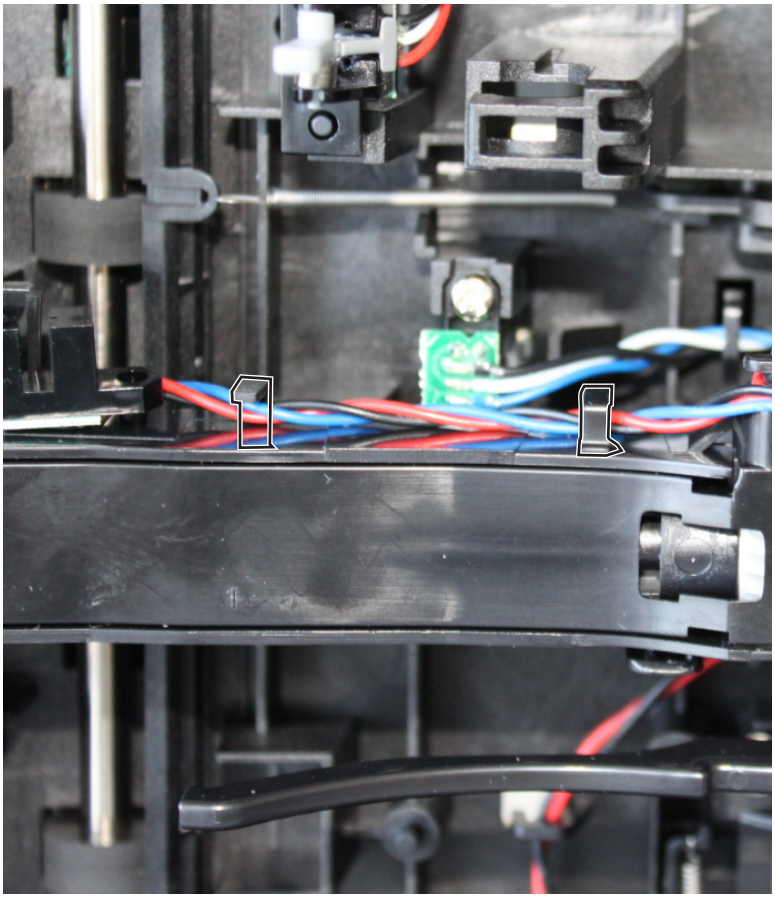
9 Remove the other half of the cable from the printer.

Installation notes:

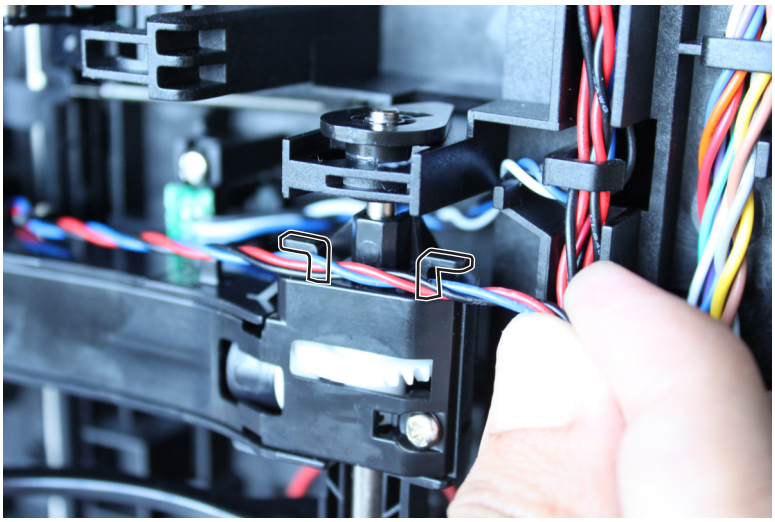
a Install the sensor to the ACM.

b Route the cable along the two cable holders on the side of the ACM.

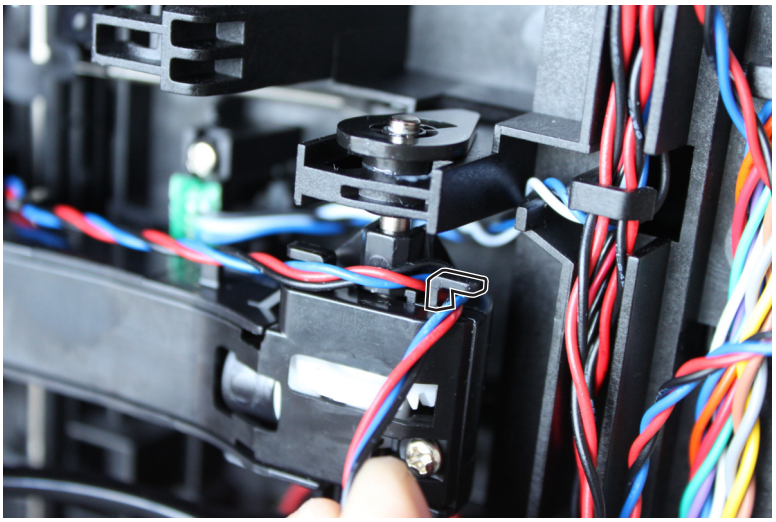
Note: Make sure that the cable is not loose.



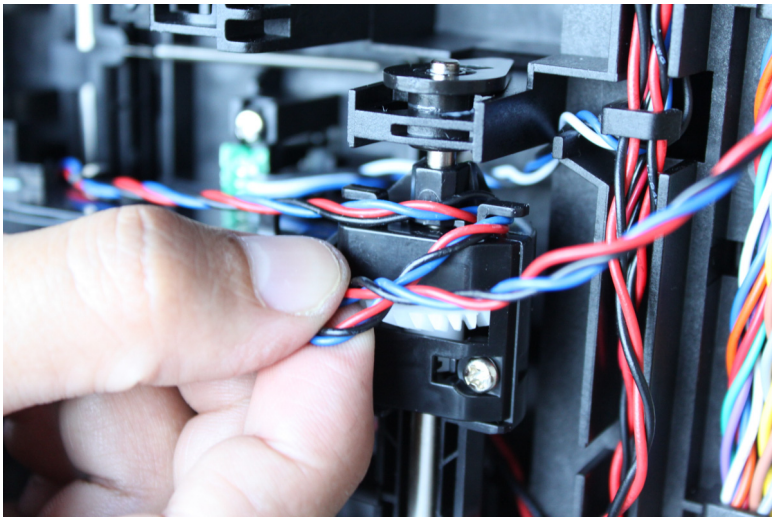
c Bring the cable in front of the two cable holders near the ACM shaft.



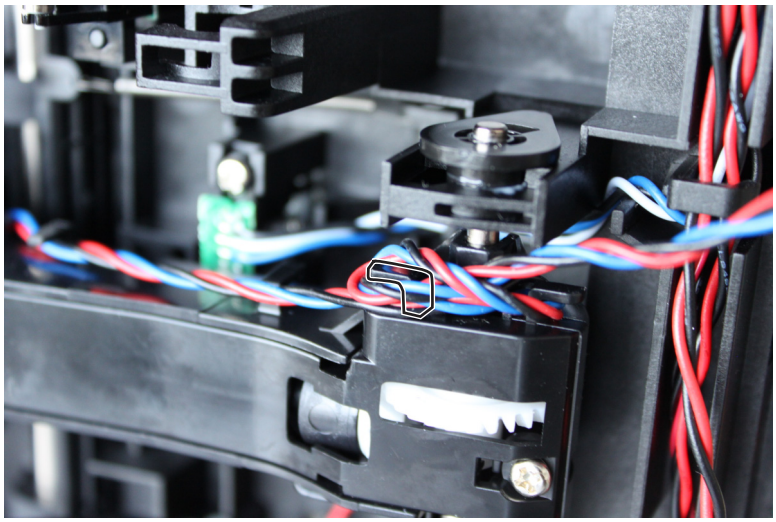
d Loop the cable behind the right cable holder.



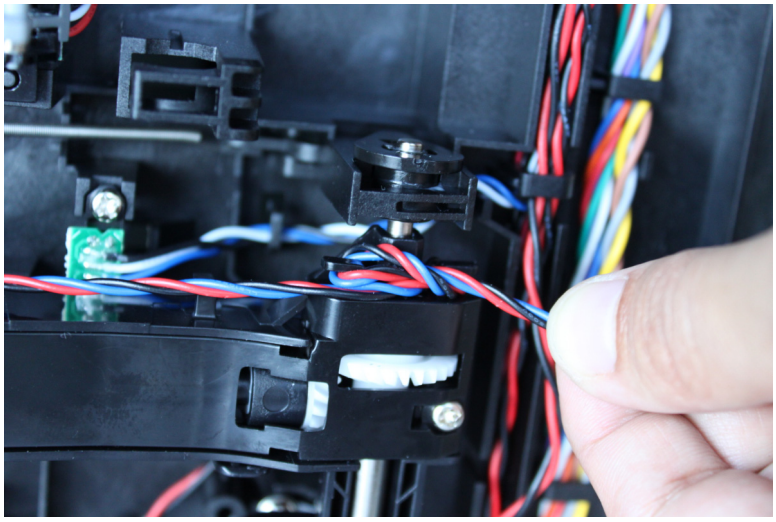
e Twist the cable so that it forms a loop.



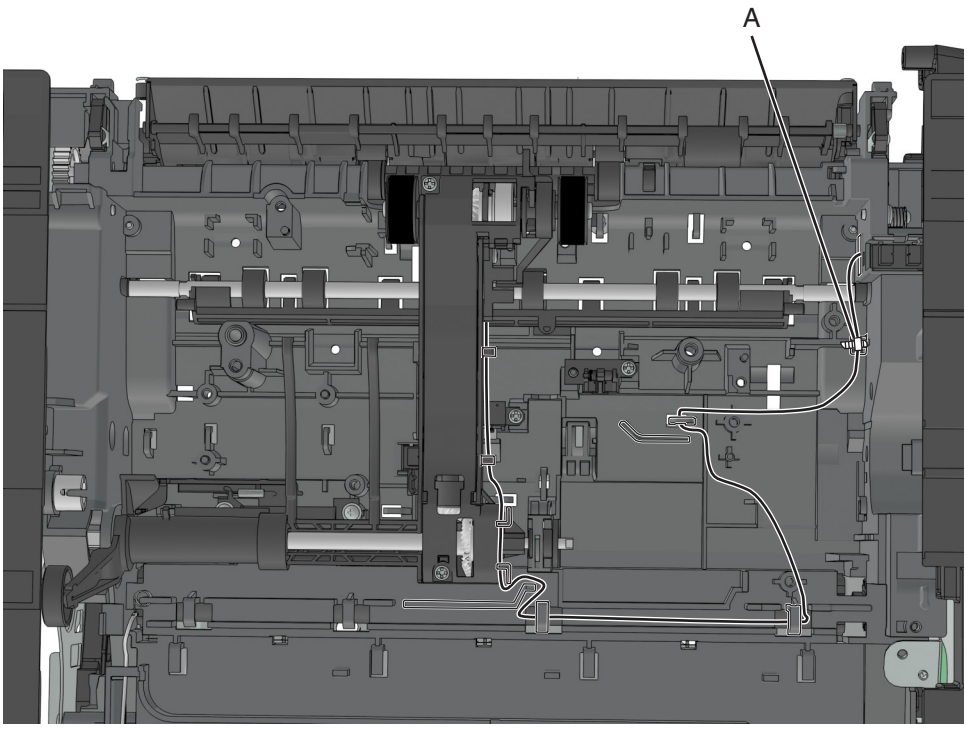
f Place the loop over the left cable holder.



g Pull the free end to make sure that the cable is tightly looped around the cable holders.



h Route the cable using the new path, and secure it with a cable tie (A).

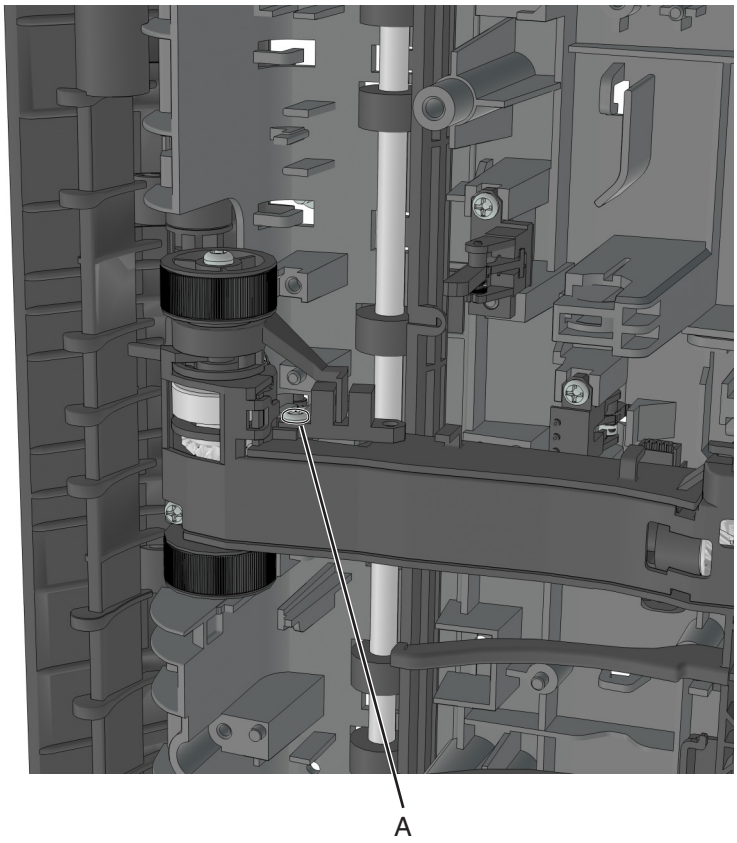


ACM assembly removal

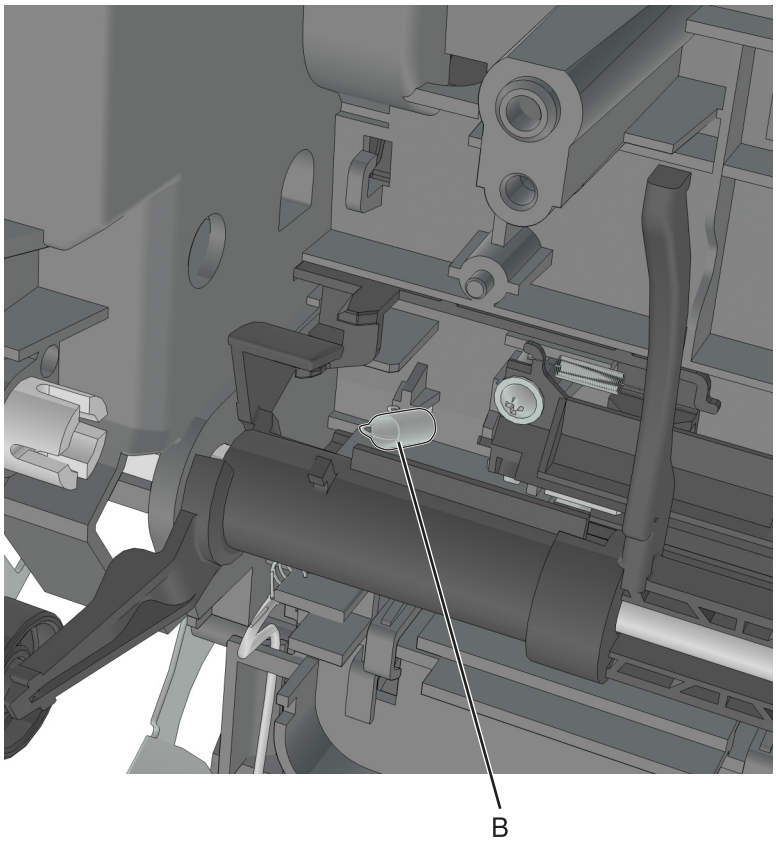
1. Remove the left cover. See **“Left cover removal” on page 146**.
2. Remove the main drive gearbox. See **“Main drive gearbox removal” on page 147**.
3. Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.
4. Remove the power supply. See **“Power supply removal” on page 191**.
5. Remove the power supply shield. See **“Power supply shield removal” on page 192**.
6. Remove the duplex. See **“Duplex removal” on page 193**.
7. Remove the ACM clutch. See **“ACM clutch removal” on page 155**.

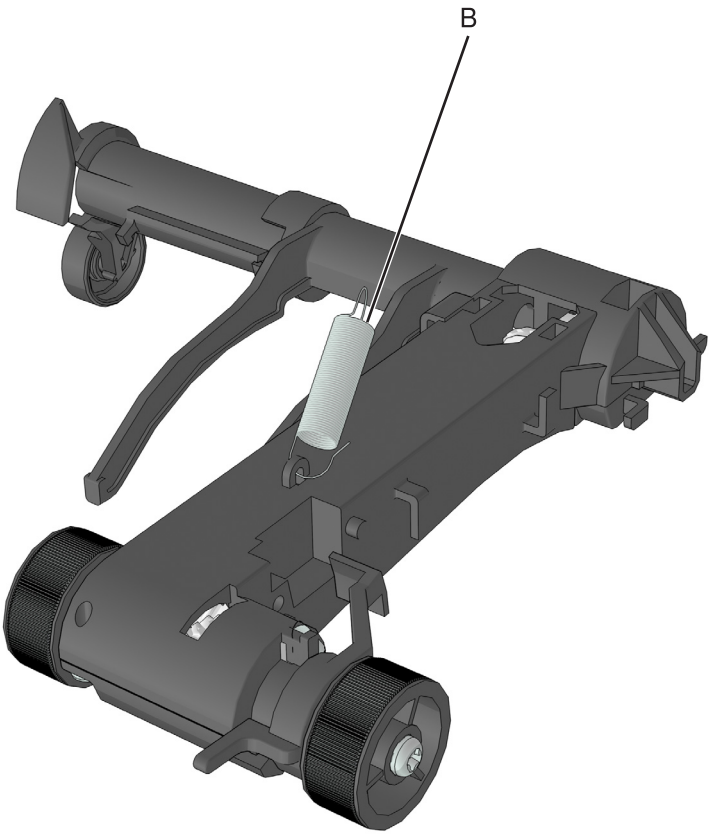
   Warning—Potential Damage: Do not cut the cable (leave the ACM clutch hanging).

8 Remove the screw (A) and then detach the trailing edge sensor.



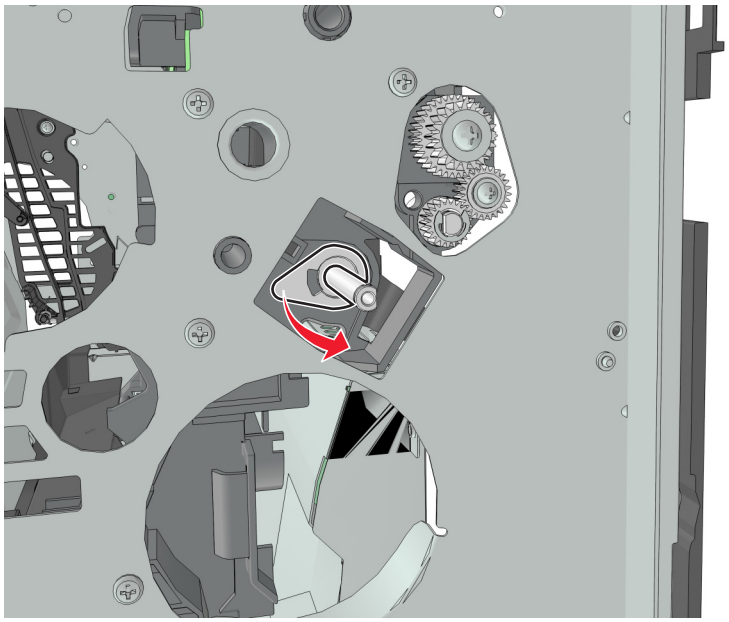
9 Disconnect the two springs (B).





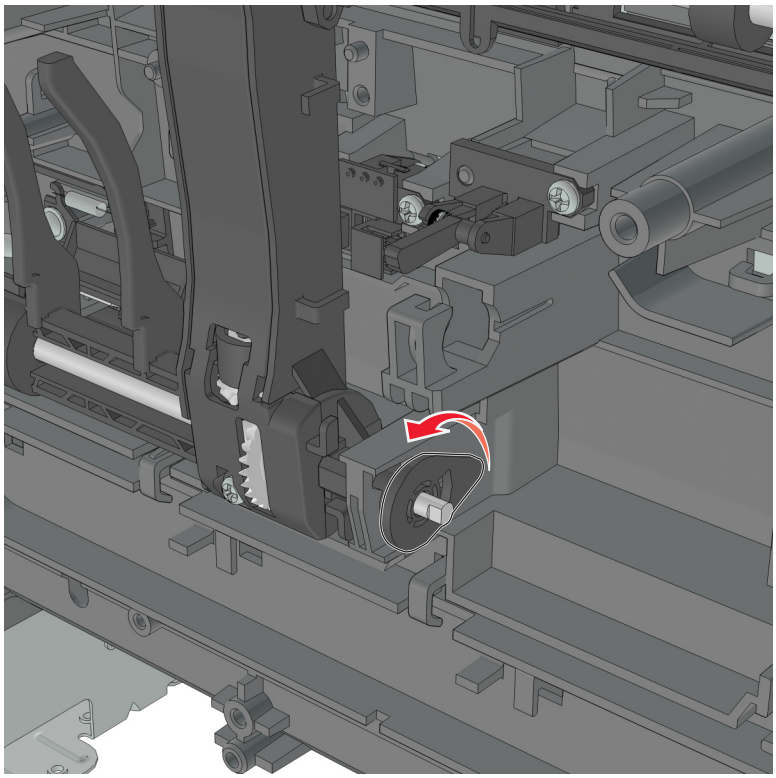
10 Pry the pointed end of the ACM bushing to release the locking pin underneath.

11 Rotate, and then remove the ACM bushing.



12 Pry the pointed end of the 2nd pickup pushing to release the locking pin underneath.

13 Rotate, and then remove the 2nd pickup bushing.



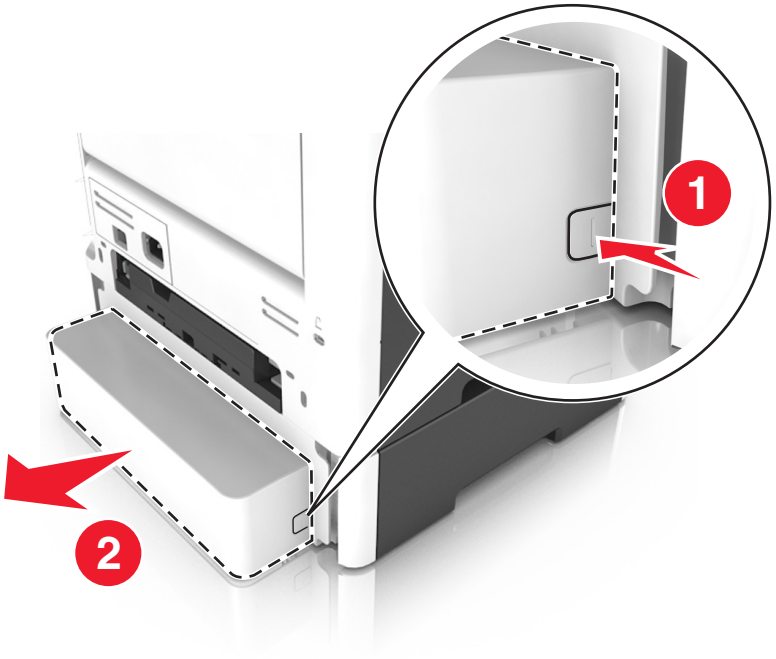
14 Pull out the shaft, and remove the ACM.

Rear side removals

Dust cover removal

1 Press the latches on each side of the dust cover.

2 Remove the dust cover.

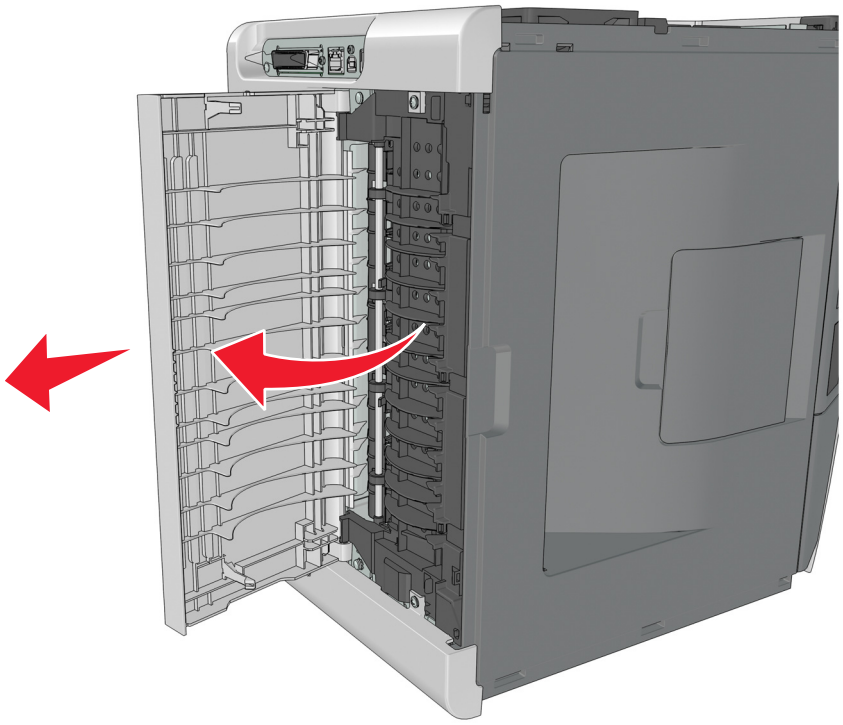


Rear door and cover removal

1 Position the printer so that it sits on either its left or right side.

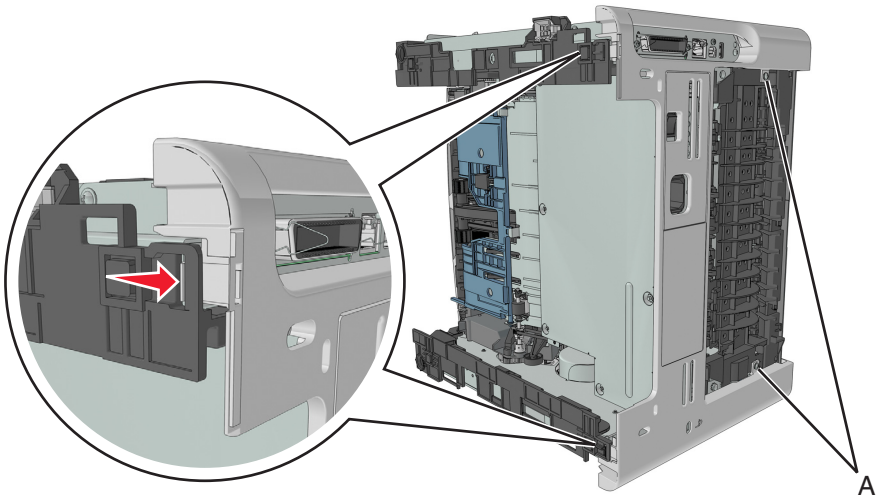
2 Open the rear door at an angle of 45 degrees.

3 Pull the rear door to remove.



4 Remove the two screws (A) securing the rear cover.

5 Press the two latches to release the rear cover.



Narrow media/bin full sensor removal

1 Remove the right cover. See **“Right cover removal” on page 162**.

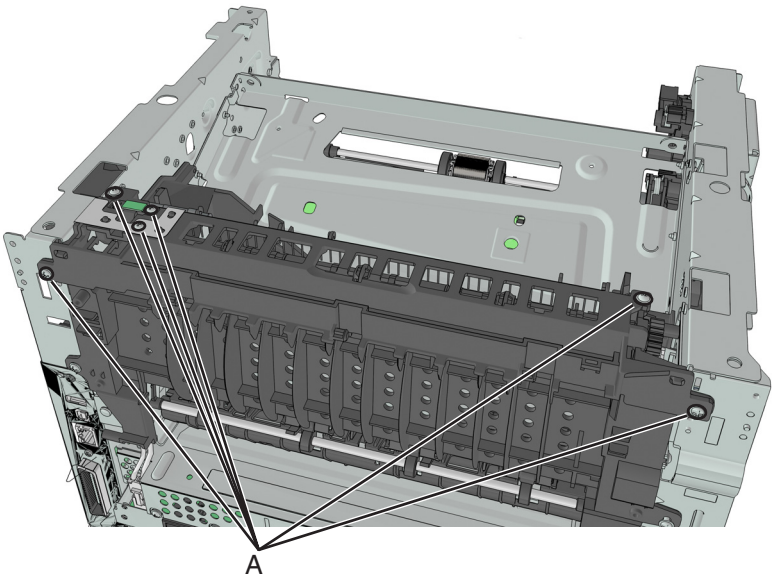
2 Remove the left cover. See **“Left cover removal” on page 146**.

3 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

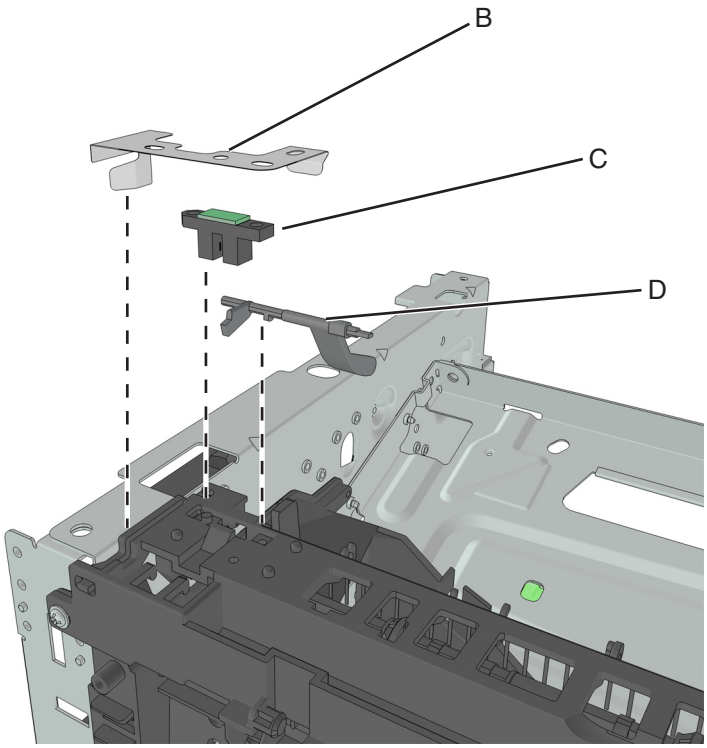
4 Remove the top cover. See **"Top cover removal" on page 212**.

5 Disconnect the cable JNRW1 from the controller board.

6 Remove the six screws (A) securing the sensor and upper exit guide to the redrive assembly.



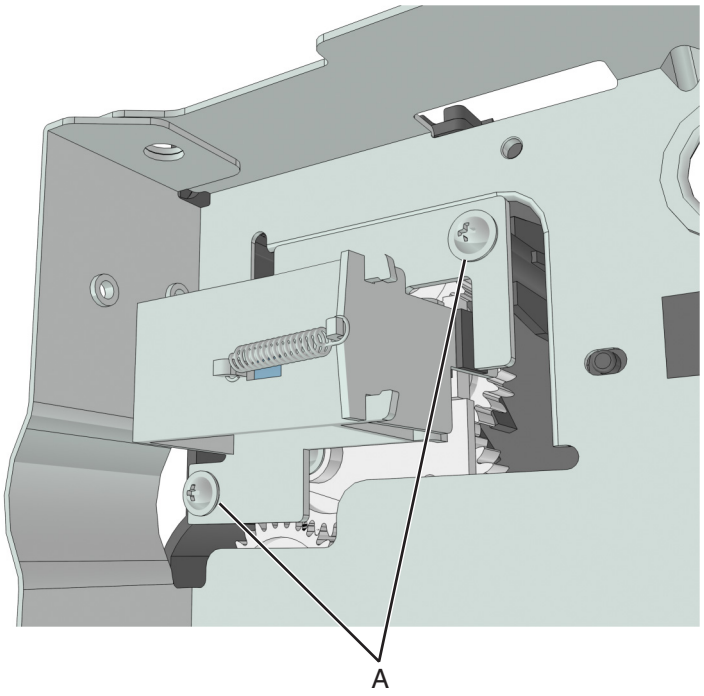
7 Remove the ground (B), sensor (C), and sensor flag (D).



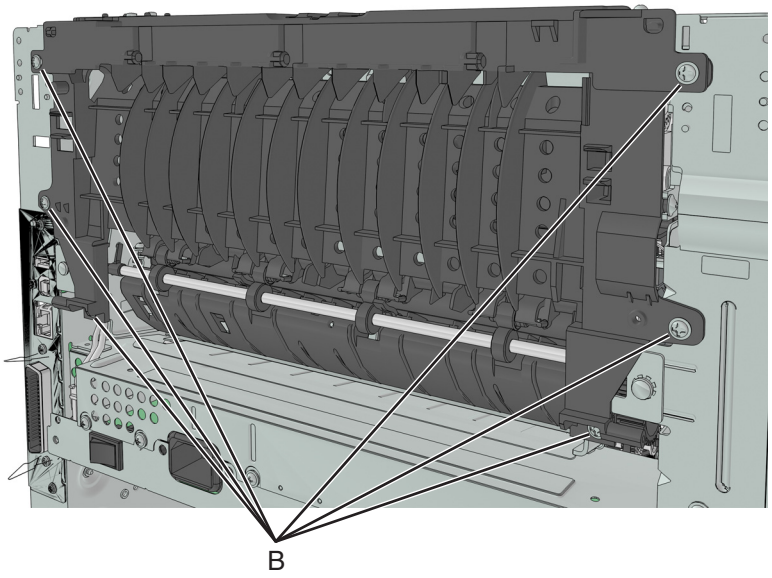
Redrive assembly removal

1. Remove the right cover. See **“Right cover removal” on page 162**.
2. Remove the left cover. See **“Left cover removal” on page 146**.
3. Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.
4. Remove the top cover. See **“Top cover removal” on page 212**.
5. Disconnect the cable JNRW1 from the controller board.
6. Remove the two screws (A), and then detach the reverse solenoid.

   Note: Do not disconnect the reverse solenoid cable from the controller board.



7 Remove the six screws (B) securing the redrive assembly.



Fuser removal

1 Remove the right cover. See **“Right cover removal” on page 162**.

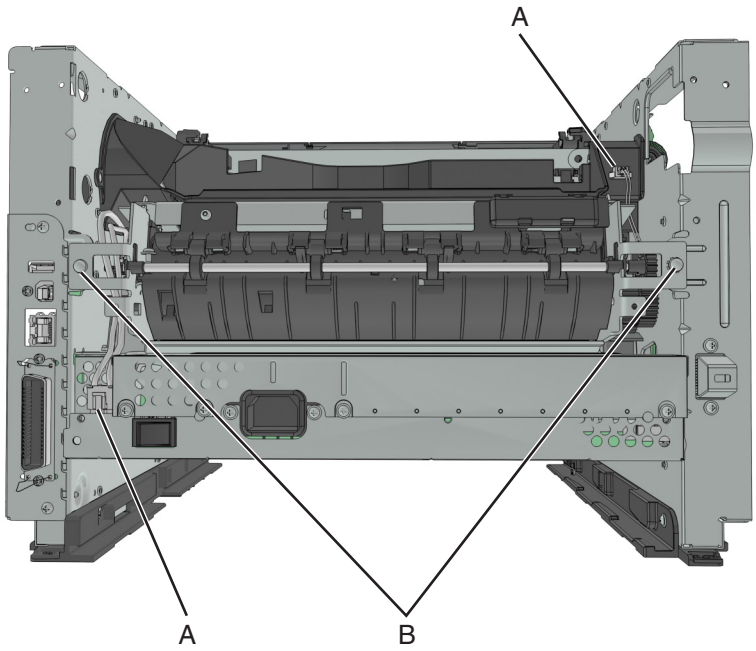
2 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

3 Remove the redrive assembly. See **“Redrive assembly removal” on page 210**

4 Disconnect the cable JEXIT1 from the controller board.

5 Disconnect the two cables (A).

6 Remove the two screws (B) securing the fuser.



Top side removals

Top cover removal

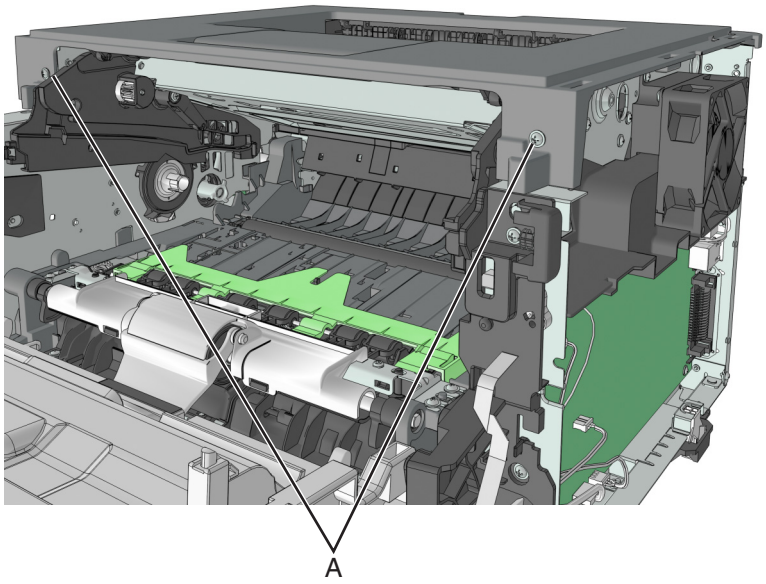
1 Remove the right cover. See **“Right cover removal” on page 162**.

2 Remove the left cover. See **“Left cover removal” on page 146**.

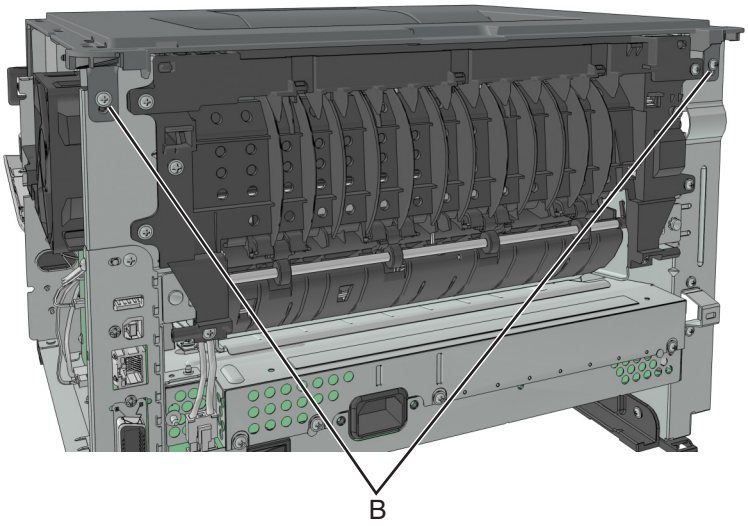
3 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

4 Open the front door.

5 Remove the two screws (A) in front.



6 Remove the two screws (B) at the rear.



7 Lift the top cover to remove.

Laser scanning unit (LSU) removal

1 Remove the right cover. See **“Right cover removal” on page 162**.

2 Remove the left cover. See **“Left cover removal” on page 146**.

3 Remove the rear door and cover. See **“Rear door and cover removal” on page 207**.

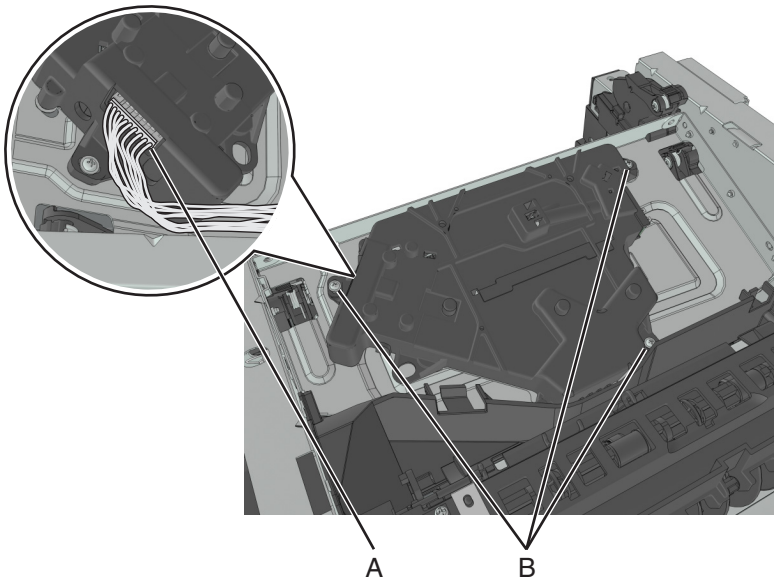
4 Remove the top cover. See **“Top cover removal” on page 212**.

5 Remove the cooling fan. See **“Cooling fan removal” on page 163**.

6 Disconnect the cable (A) from the LSU.

7 Disconnect the cable JGLV1 or J6 from the controller board.

8 Remove the three screws (B) securing the LSU.

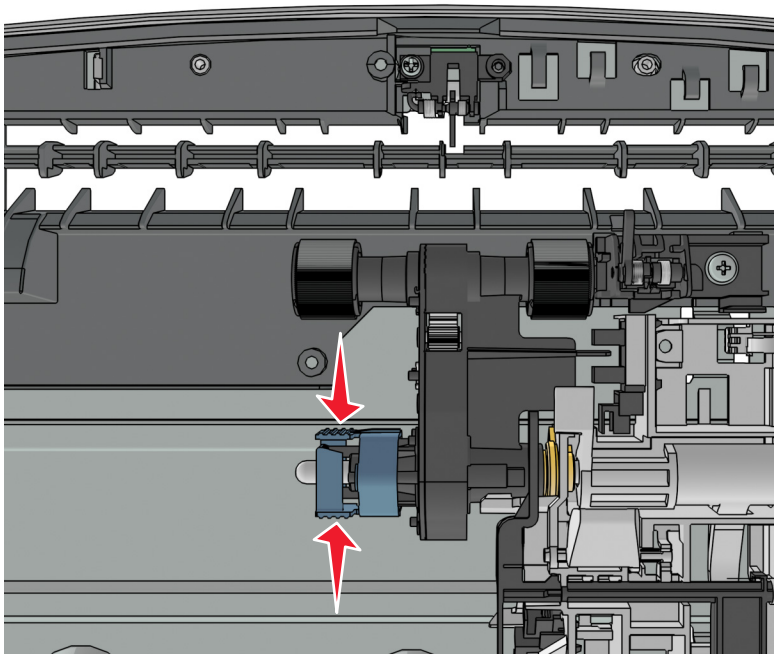


9 Align the printhead. See **“Printhead assembly adjustments” on page 143**.

250/550-sheet option tray removals

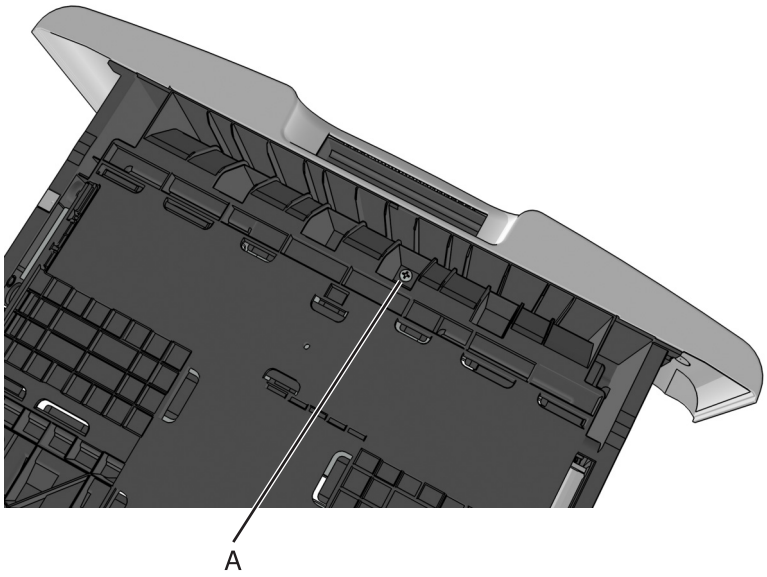
Pick roller removal

Press the latches, and then remove the pick roller.

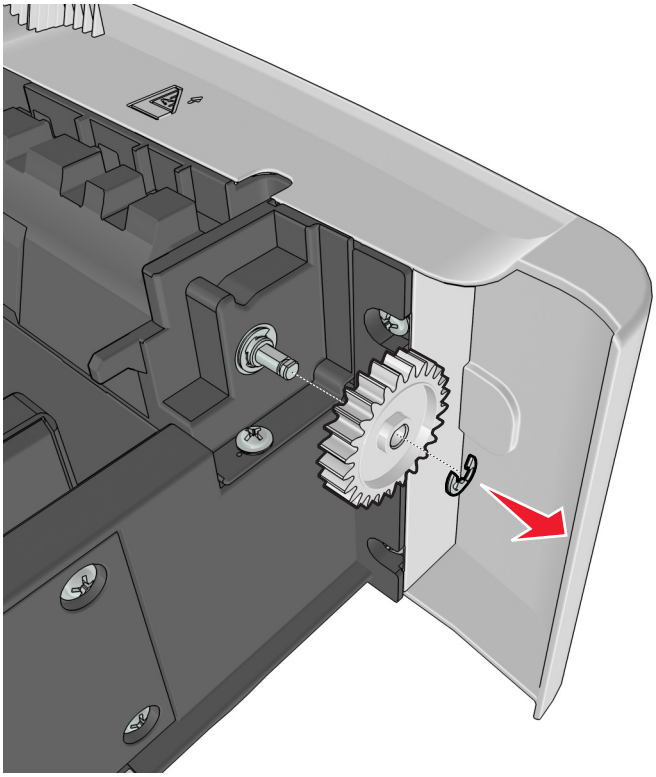


Separator roll assembly removal

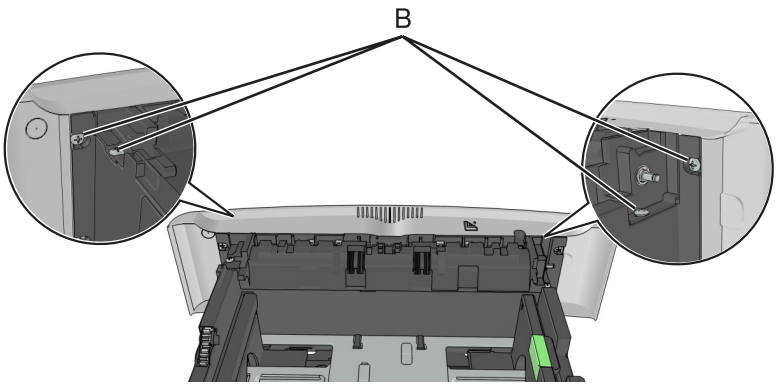
1 Remove the screw (A) from under the tray insert.



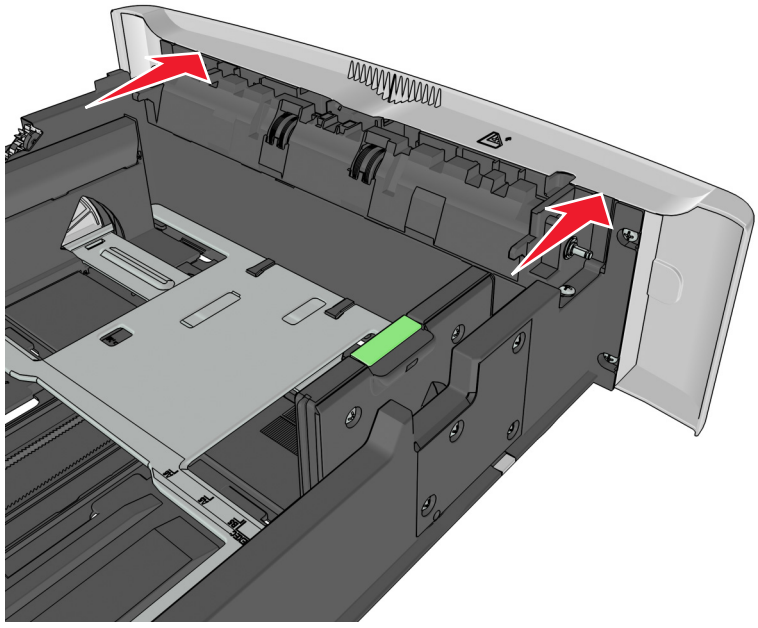
2 Remove the E-clip, and then remove the gear.



3 Remove the four screws (B).

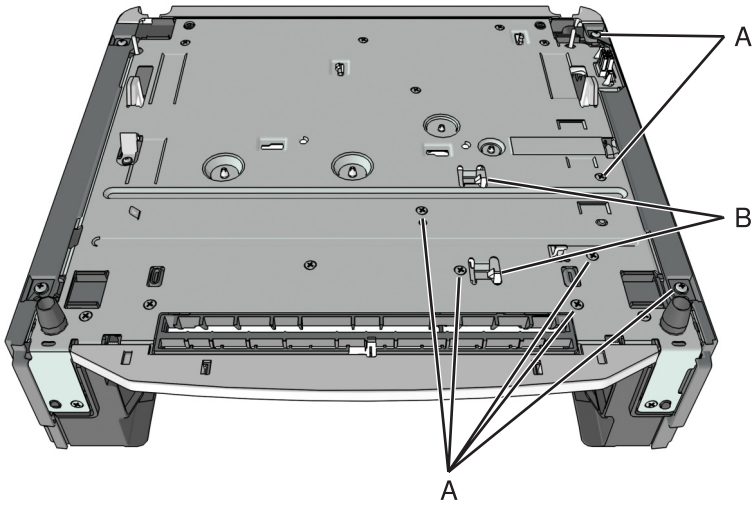


4 Push out the top part of the drawer cover, and then remove the separator roll assembly.

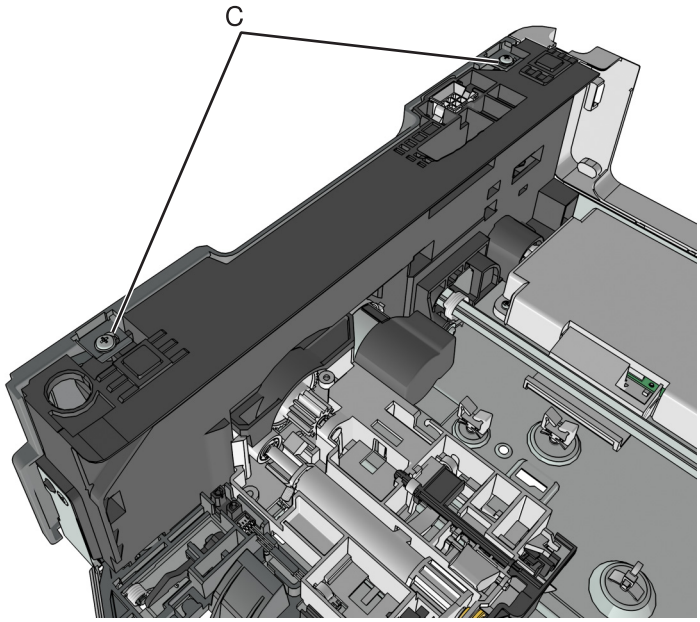


ACM assembly removal

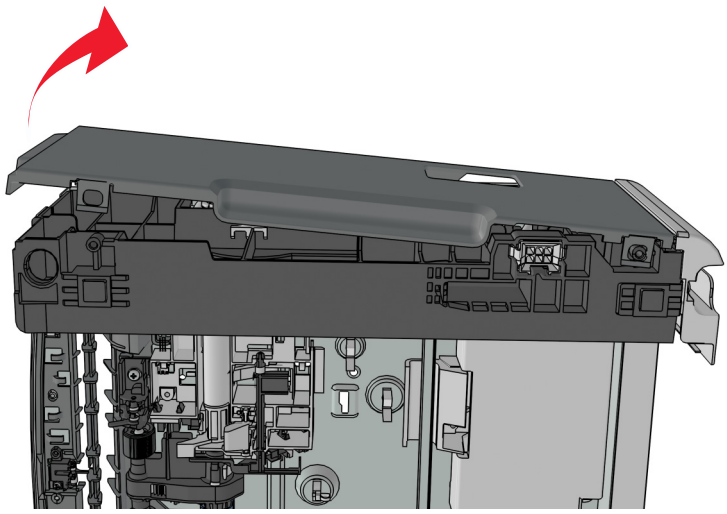
1 Remove the seven screws (A), and release the two latches (B) from the top of the drawer.



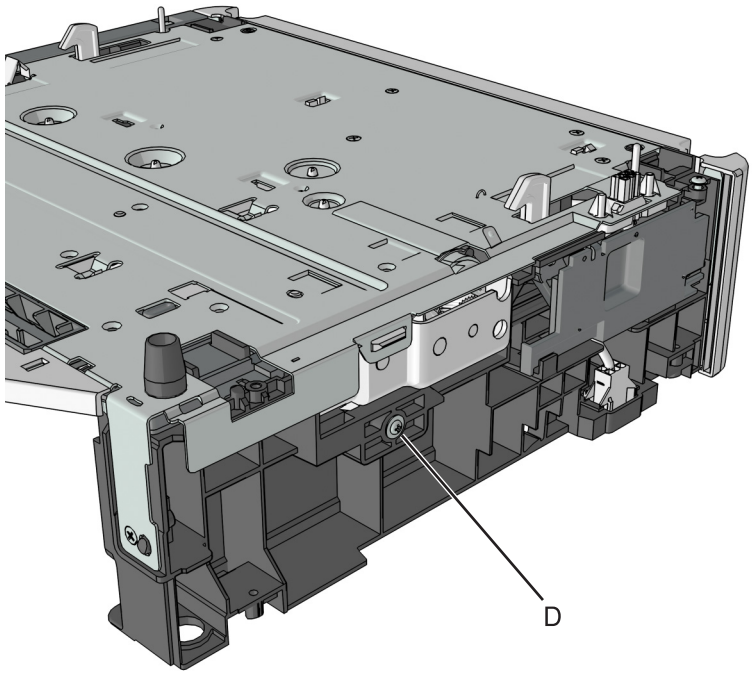
2 Remove the two screws (C), and then release the two latches under the screws.



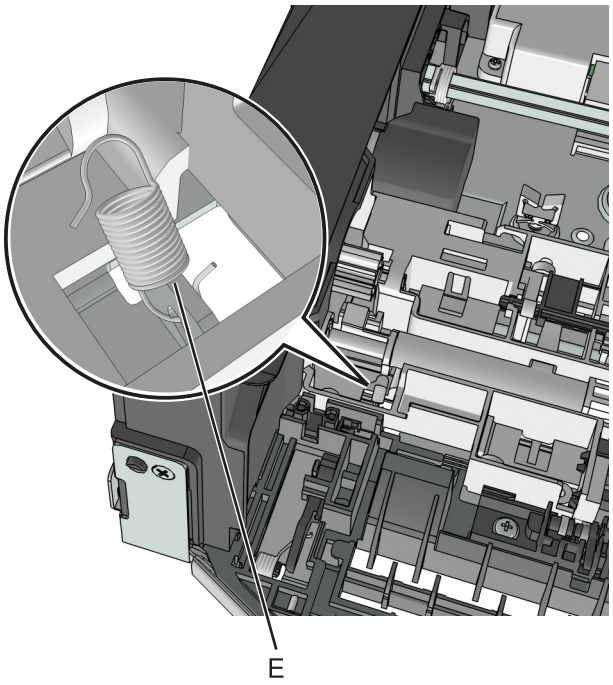
3 Swing the right cover backward to remove.



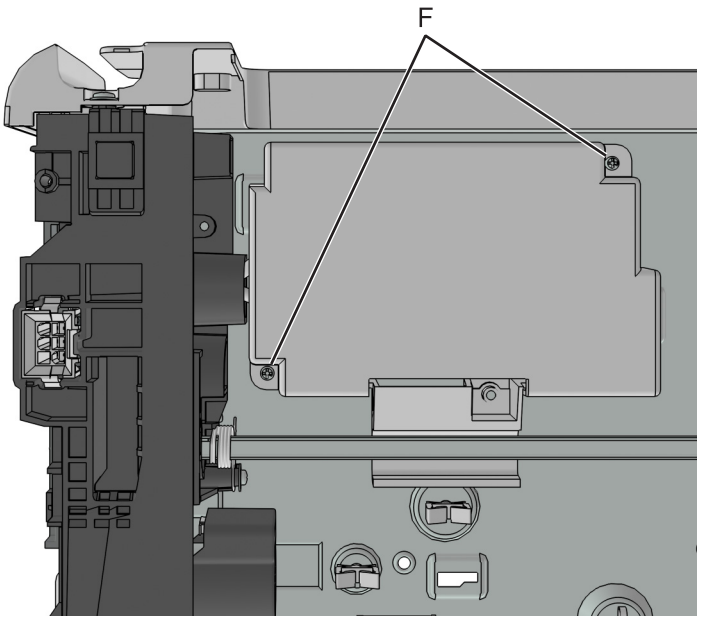
4 Remove the screw (D).



5 Disconnect the spring (E).



6 Remove the two screws (F), and then remove the controller card cover.



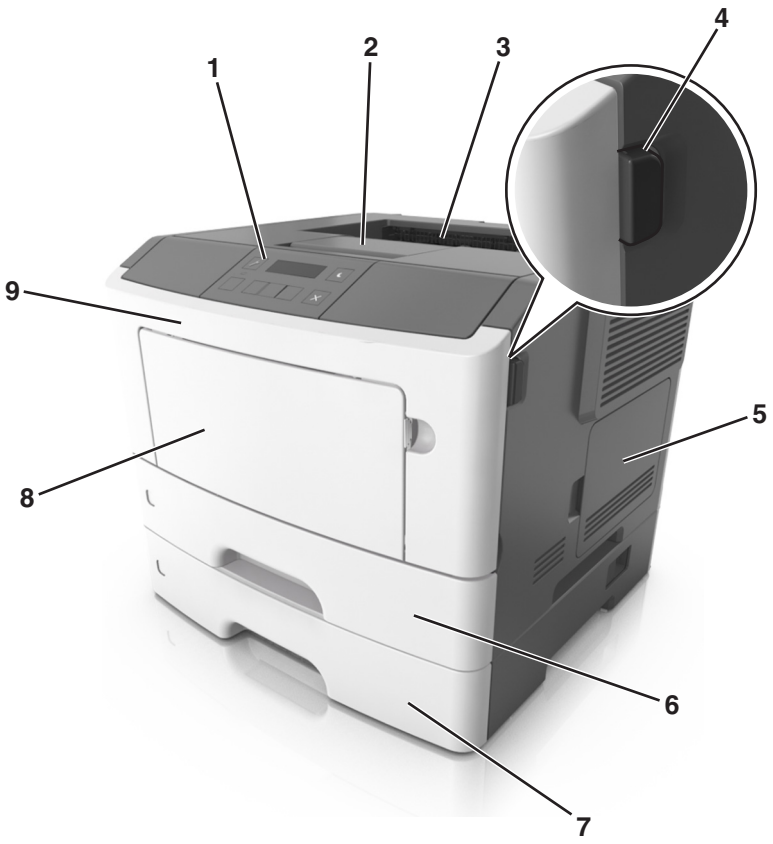
7 Disconnect the cable J11 from the controller card.

8 Unroute the cable, and then remove the ACM assembly.

Component locations

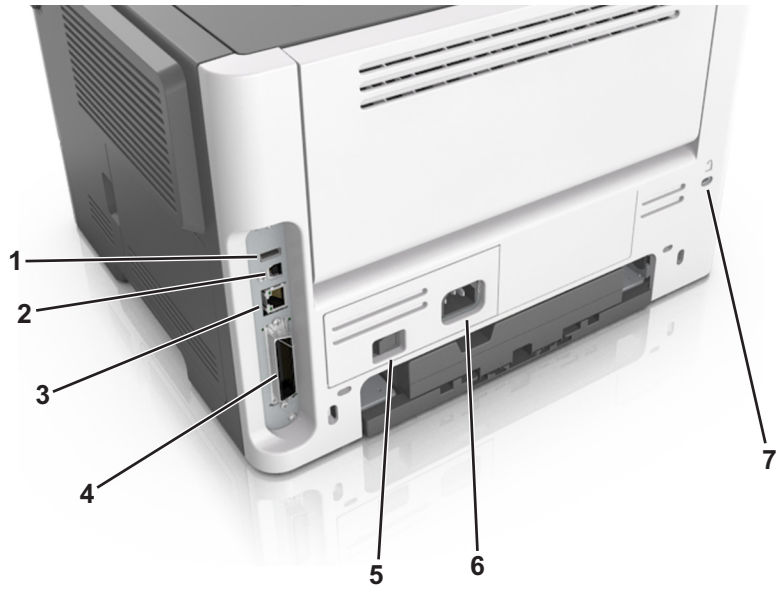
Exterior locations

Front view



	Part name
1	Control panel
2	Paper stop
3	Standard bin
4	Front door release button
5	Controller board access door
6	Standard 250-sheet tray
7	Optional 250- or 550-sheet tray
8	50-sheet multipurpose feeder
9	Front door

Rear view



	Part name
1	USB port*
2	USB printer port
3	Ethernet port*
4	Parallel port*
5	Power switch
6	Power cord socket
7	Security slot

* These ports are available only in select printer models.

Maintenance

Inspection guide

The purpose of this inspection guide is to aid you in identifying the intervals, based on page count, at which parts must be inspected (for visible physical damage), cleaned, or replaced.

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

As you service the machine, check for the following:

- 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

Use the following table to determine when specified parts should be inspected:

	EVERY SERVICE CALL	EVERY 100K	EVERY 200K	NOTES
MEDIA TRAY—ALL				
Tray insert	Inspect	Inspect	Replace	
Media side guides	Inspect	Inspect		Check for correct positioning.
Media end guide	Inspect	Inspect		Check for correct positioning.
Separation pad	Inspect	Clean		Damp cloth
MEDIA FEEDERS—ALL				
Pick roller	Inspect	Inspect	Replace	Verify page count before replacing.
MPF feed rollers	Inspect	Inspect	Replace	
Sensor		Clean	Clean	Brush or blower brush
TRANSFER ROLL				
Transfer roll	Inspect	Inspect	Replace	
FUSER				
Fuser	Inspect	Inspect	Replace	
Sensor (fuser exit)		Clean	Clean	Blower brush
REDRIVE ASSEMBLY				
Redrive assembly		Inspect	Replace	

Lubrication specification

Lubricate only when parts are replaced or as needed, not on a scheduled basis. Use of lubricants other than those specified in this service manual can cause premature failure. Some unauthorized lubricants might chemically attack polycarbonate parts. Use Grease P/N 99A0394 Nyogel 744.

Cleaning the printer

Note: You may need to perform this task after every few months.

Warning—Potential Damage: Damage to the printer caused by improper handling is not covered by the printer warranty.

1. Make sure that the printer is turned off and unplugged from the electrical outlet.

   CAUTION—SHOCK HAZARD: To avoid the risk of electrical shock when cleaning the exterior of the printer, unplug the power cord from the electrical outlet and disconnect all cables from the printer before proceeding.

2. Remove paper from the standard bin and multipurpose feeder.
3. Remove any dust, lint, and pieces of paper around the printer using a soft brush or vacuum.
4. Dampen a clean, lint-free cloth with water, and use it to wipe the outside of the printer.

   Warning—Potential Damage: Do not use household cleaners or detergents to prevent damage to the exterior of the printer.

5. Make sure all areas of the printer are dry before sending a new print job.

Parts catalog

Legend

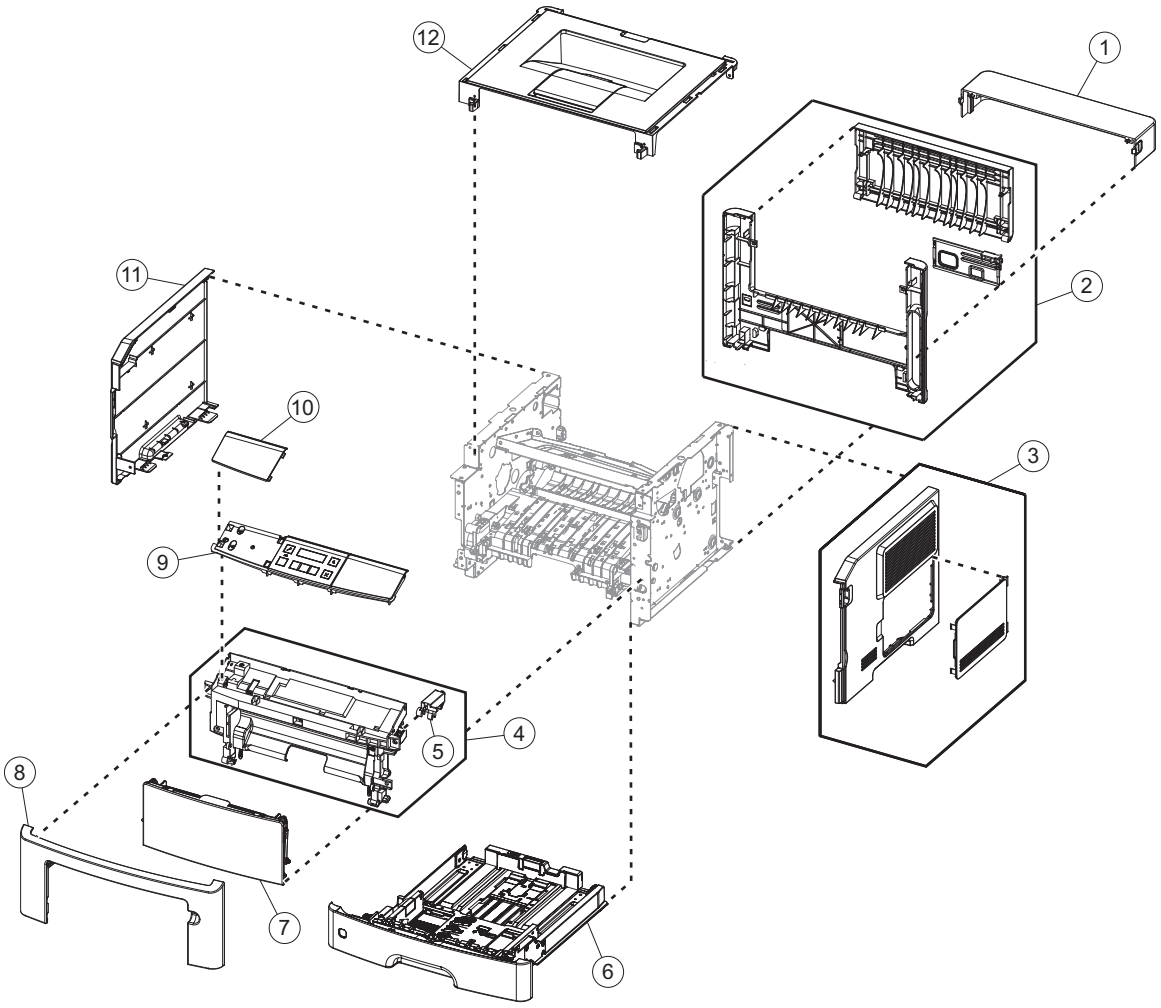
The following column headings are used in the parts catalog:

- **Asm-index**—Identifies the item in the illustration.
- **Part number**—Identifies the unique number that correlates with the part.
- **Units/mach**—Refers to the number of units actually used in the base machine or product.
- **Units/FRU**—Refers to the number of units in a particular FRU.
- **Description**—A brief description of the part.

The following abbreviations are used in the parts catalog:

- **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 Description column indicates that the part is contained in a parts packet.

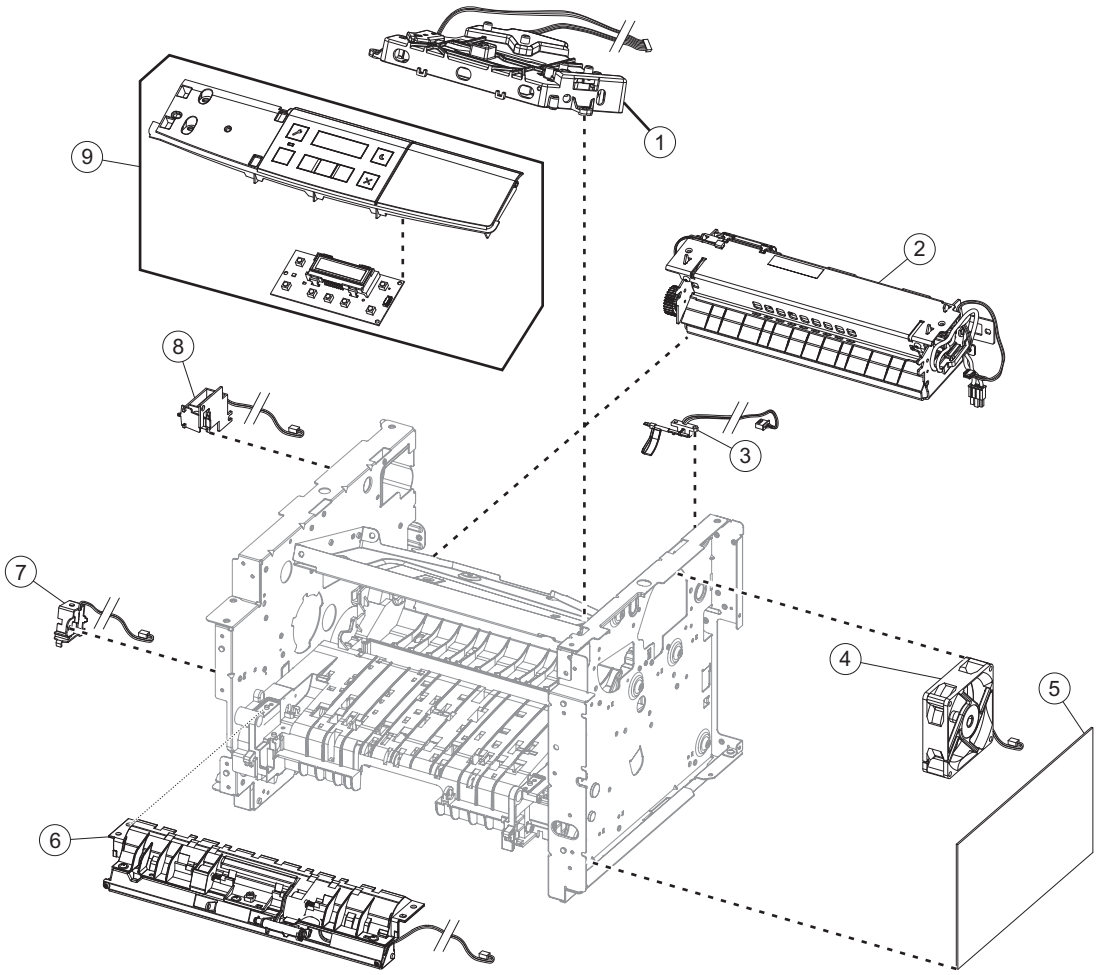
Assembly 1: Covers



Assembly 1: Covers

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
1	40X8520	1	1	Dust cover (250-sheet tray)	“Dust cover removal” on page 207
2	40X8054	1	1	Rear door and cover	“Rear door and cover removal” on page 207
3	40X8052	1	1	Right cover	“Right cover removal” on page 162
4	40X8056	1	1	Front access cover	“Front access cover removal” on page 186
5	40X9148	1	1	Cartridge plunger	“Cartridge plunger removal” on page 171
6	40X8303	1	1	250-sheet tray	N/A
7	40X8302	1	1	MPF assembly (50 sheets)	“MPF assembly removal” on page 178
8	40X8051	1	1	Nameplate	“Nameplate removal” on page 175
9	40X8059	1	1	Control panel assembly **Note:** Does not include the UICC.	“Control panel assembly removal” on page 175 “UICC removal” on page 177
10	40X8064	1	1	Bezel (MS410d)	“Bezel removal” on page 174
10	40X8065	1	1	Bezel (MS410dn)	“Bezel removal” on page 174
11	40X8053	1	1	Left cover	“Left cover removal” on page 146
12	40X8055	1	1	Top cover	“Top cover removal” on page 212l

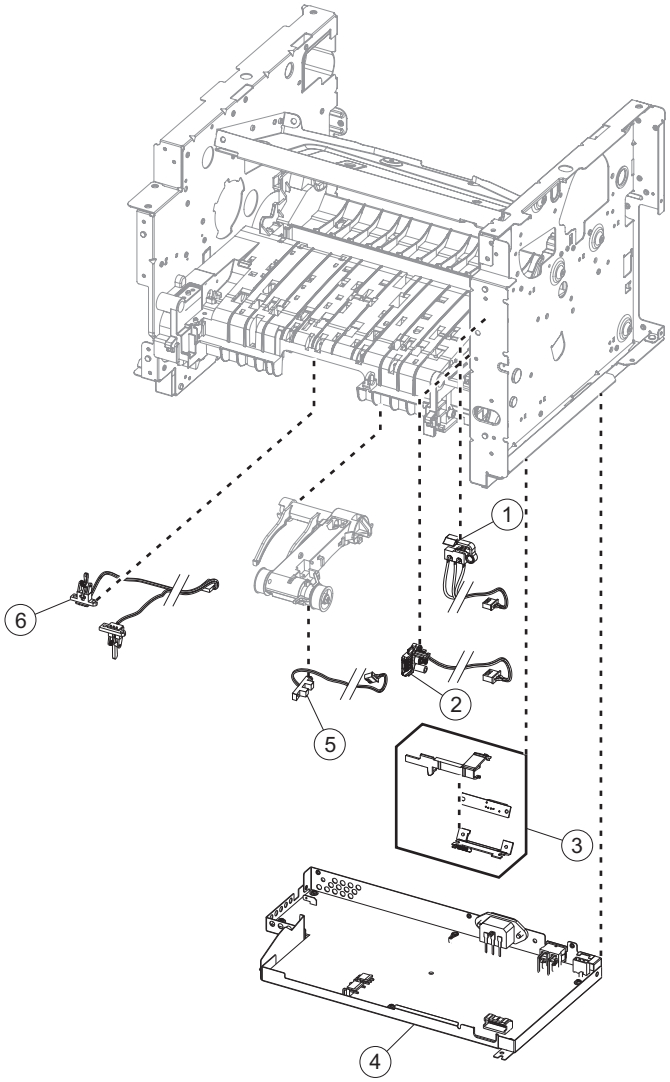
Assembly 2: Electronics 1



Assembly 2: Electronics 1

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
1	40X8081	1	1	Laser scanning unit	“Laser scanning unit (LSU) removal” on page 213
2	40X8343	1	1	Fuser, 100 V	“Fuser removal” on page 211
2	40X8023	1	1	Fuser, 110 V	“Fuser removal” on page 211
2	40X8024	1	1	Fuser, 220 V	“Fuser removal” on page 211
3	40X8050	1	1	Narrow media/bin full sensor	“Narrow media/bin full sensor removal” on page 208
4	40X8276	1	1	Cooling fan	“Cooling fan removal” on page 163
5	40X8027	1	1	Controller board (MS410d)	“Controller board removal” on page 164
5	40X8028	1	1	Controller board (MS410dn)	“Controller board removal” on page 164
6	40X8280	1	1	Front input guide	“Front input guide removal” on page 187
7	40X8300	1	1	MPF solenoid	“MPF solenoid removal” on page 149
8	40X8301	1	1	Reverse solenoid	“Reverse solenoid removal” on page 154
9	40X8291	1	1	Control panel assembly	“Control panel assembly removal” on page 175 “UICC removal” on page 177

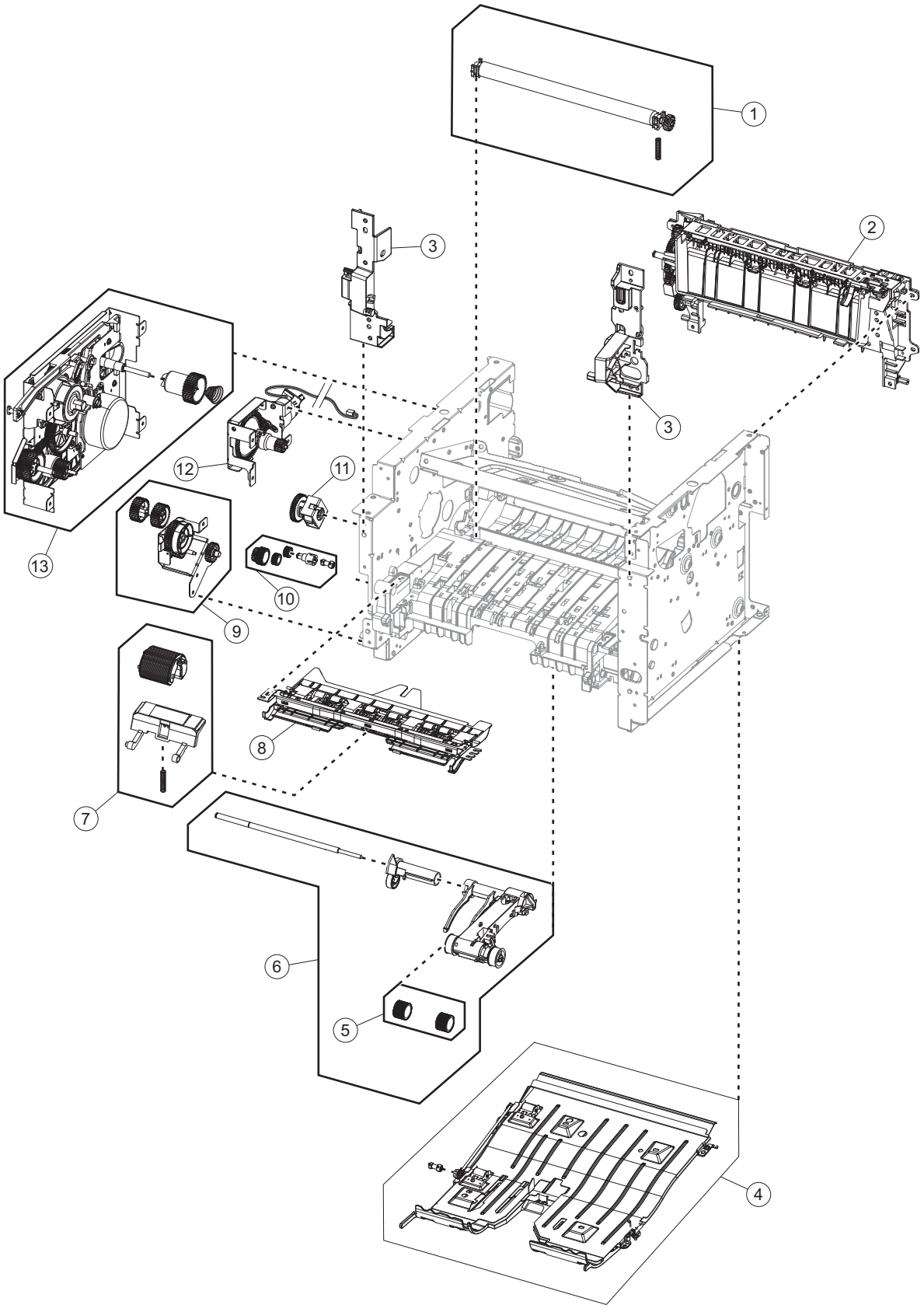
Assembly 3: Electronics 2



Assembly 3: Electronics 2

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
1	40X8048	1	1	Front door sensor	“Front door sensor removal” on page 186
2	40X8266	1	1	Toner cartridge smart chip contact	“Toner cartridge smart chip contact removal” on page 165
3	40X8046	1	1	Toner density sensor	“Toner density sensor removal” on page 196
4	40X7795	1	1	Power supply, 100 V/110 V	“Power supply removal” on page 191
4	40X7796	1	1	Power supply, 220 V	“Power supply removal” on page 191
5	40X8047	1	1	Trailing edge sensor	“Trailing edge sensor removal” on page 197
6	40X8043	1	1	Duplex sensor and input sensor	“Duplex sensor and input sensor removal” on page 194

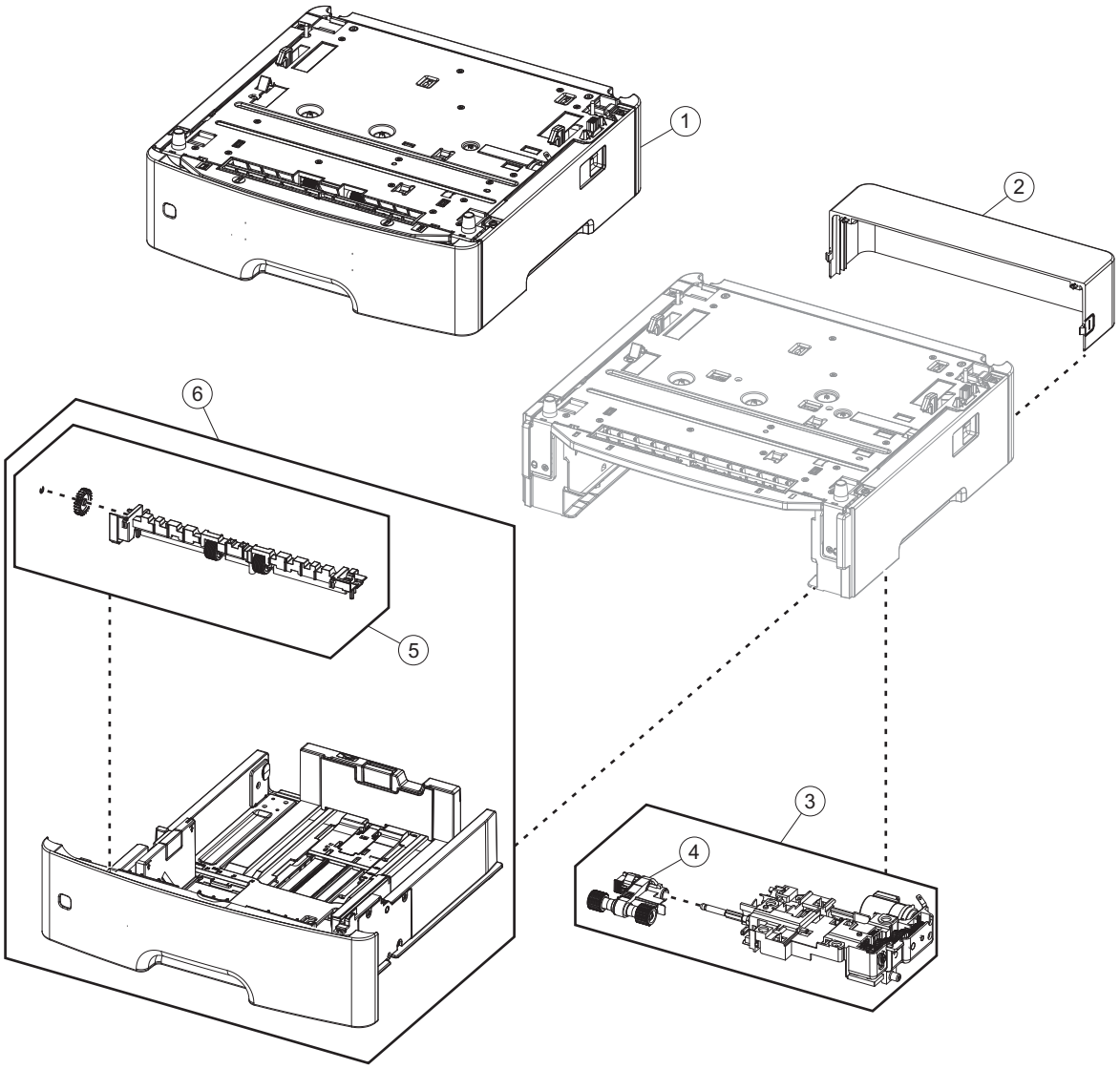
Assembly 4: Frame



Assembly 4: Frame

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
1	40X8393	1	1	Transfer roll	“Transfer roll removal” on page 170
2	40X8298	1	1	Redrive assembly	“Redrive assembly removal” on page 210
3	40X8299	1	1	Front mounts	“Left front mount removal” on page 167 “Right front mount removal” on page 168
4	40X8275	1	1	Duplex assembly	“Duplex removal” on page 193
5	40X8296	2	1	Pick tire	N/A
6	40X8260	1	1	ACM assembly	“ACM assembly removal” on page 202
7	40X8295	1	1	MPF pick roller and Separator pad	“MPF pick roller removal” on page 181 “Separator pad removal” on page 189
8	40X8279	1	1	Jam access cover	“Jam access cover removal” on page 182
9	40X8278	1	1	MPF gearbox	“MPF gearbox removal” on page 151
10	40X8277	1	1	Duplex gear assembly	“Duplex gear assembly removal” on page 160
11	40X8265	1	1	ACM clutch	“ACM clutch removal” on page 155
12	40X8083	1	1	Cartridge gearbox	“Cartridge gearbox removal” on page 160
13	40X8085	1	1	Main drive gearbox	“Main drive gearbox removal” on page 147
NS	40X8394	1	1	Screw kit	N/A

Assembly 5: Option trays



Assembly 5: Option trays

Asm-index	P/N	Units/opt	Units/FRU	Description	Removal procedure
1	40X8287	1	1	250-sheet tray	N/A
1	40X8286	1	1	550-sheet tray	N/A
2	40X8520	1	1	Dust cover, 250-sheet tray	**“Dust cover removal” on page 207**
2	40X8521	1	1	Dust cover, 550-sheet tray	**“Dust cover removal” on page 207**
3	40X8262	1	1	ACM assembly	**“ACM assembly removal” on page 217**
4	40x8443	1	1	Pick roller assembly	**“Pick roller removal” on page 214**
5	40X8444	1	1	Separator roll assembly	**“Separator roll assembly removal” on page 215**
6	40X8305	1	1	250-sheet tray insert	N/A
6	40X8086	1	1	550-sheet tray insert	N/A

Assembly 6: Power cords

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
NS	40X0269	1	1	Power cord, 2.5 m (straight)—USA, Canada	N/A
NS	40X3141	1	1	Power cord, 2.5 m (straight)—Europe and others	N/A
NS	40X0288	1	1	Power cord, 2.5 m (straight)—Argentina	N/A
NS	40X0271	1	1	Power cord, 2.5 m (straight)—United Kingdom	N/A
NS	40X0275	1	1	Power cord, 2.5 m (straight)—Israel	N/A
NS	40X1772	1	1	Power cord, 2.5 m (straight)—Switzerland	N/A
NS	40X1773	1	1	Power cord, 2.5 m (straight)—South Africa	N/A
NS	40X0273	1	1	Power cord, 2.5 m (straight)—Traditional Italy	N/A
NS	40X1774	1	1	Power cord, 2.5 m (straight)—Denmark	N/A
NS	40X4596	1	1	Power cord, 2.5 m (straight)—Brazil	N/A
NS	40X0303	1	1	Power cord, 2.5 m (straight)—China	N/A
NS	40X0270	1	1	Power cord, 2.5 m (straight)—Japan	N/A
NS	40X1792	1	1	Power cord, 2.5 m (straight)—Korea	N/A
NS	40X1791	1	1	Power cord, 2.5 m (straight)—Taiwan	N/A
NS	40X0301	1	1	Power cord, 2.5 m (straight)—Australia	N/A

Appendix A: Printer specifications

Product power consumption

The following table documents the power consumption characteristics of the product.

Note: Some modes may not apply to your product.

Mode	Description	Power consumption (Watts)
Printing	The product is generating hard-copy output from electronic inputs.	560
Copy	The product is generating hard-copy output from hard-copy original documents.	NA
Scan	The product is scanning hard-copy documents.	NA
Ready	The product is waiting for a print job.	8
Sleep Mode	The product is in a high-level energy-saving mode.	5
Hibernate	The product is in a low-level energy-saving mode.	1
Off	The product is plugged into an electrical outlet, but the power switch is turned off.	0

The power consumption levels listed in the previous table represent time-averaged measurements. Instantaneous power draws may be substantially higher than the average.

Values are subject to change. See **www.lexmark.com** for current values.

Electrical specifications

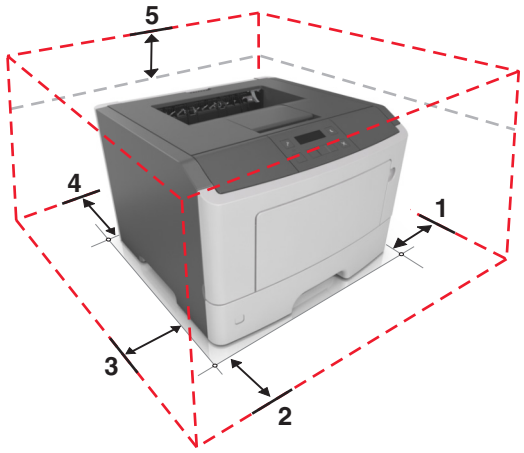
Low-voltage models

- 100 to 127 V ac at 47 to 63 Hz nominal
- 90 to 137 V ac, steady state operational extremes

High-voltage models

- 220 to 240 V ac at 47 to 63 Hz nominal (not available in all countries)
- 198 to 254 V ac, steady state operational extremes

Operating clearances



1	Right	305 mm (12 in.)
2	Front	508 mm (20 in.)
3	Left	203 mm (8 in.)
4	Rear	203 mm (8 in.)
5	Top	305 mm (12 in.)
Allow additional clearance around the printer for adding the optional input trays.		

Acoustics

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

Acoustic measurements

Status	1 meter average sound pressure dBA	Declared sound power level (Bels)
Idle (Standby)	Inaudible	Inaudible
Quiet Mode	50 dBA	6.4 Bels
Simplex Printing	53 dBA	6.8 Bels
Sleep/Hibernate Mode	Inaudible	Inaudible
Measurements apply to 300 dpi, 600 dpi and 1200 dpi printing.		

Operating environment

Environment		Specification
Printer operating	Temperature	60 to 90 °F (16 to 32 °C)
	Relative humidity	8 to 80%
	Maximum wet bulb temperature	73 °F (23 °C)
Printer off	Temperature	50 to 110 °F (10 to 43 °C)
	Relative humidity	8 to 80%
	Maximum wet bulb temperature	80 °F (27 °C)
Ambient operating environment*	Temperature	60 to 90 °F (16 to 32 °C)
	Relative humidity	8 to 80%
Storage and shipping (packaged printer) with or without print cartridge	Temperature	-40 to 110 °F (-40 to 43 °C)
Altitude		10,000 ft (0 to 3,048 m)
Atmospheric pressure		74.6 kPa
Tilt		2°

*In some cases, performance specifications (such as paper OCF, EP cartridge usage) are measured at an ambient condition.

Appendix B: Options and features

Available internal options

Memory cards

- Printer memory
- Flash memory
- Fonts

Media handling options

Note: Only one optional tray can be installed.

- 250-sheet tray
- 550-sheet tray

Appendix C: Theory of operation

POR sequence

At power on, the engine code goes through a series of tests to verify hardware integrity. If a hardware failure is detected, it will be reported to the printer. If the POR sequence cannot be completed successfully, the printer may post an error message identifying service may be needed.

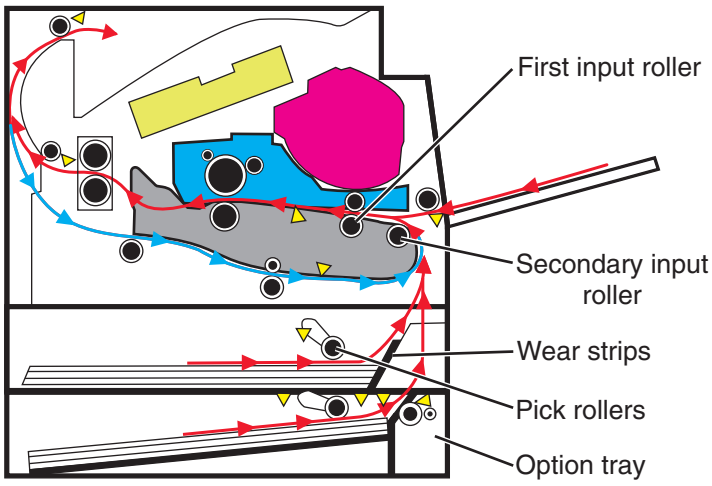
Printer control

The printer uses a single processor for both RIP and engine functions. The raster image processor (RIP) code performs system responsibilities such as PC connection, LAN, ISP attachments, and bitmap generation. The engine code performs tasks related to the operation of the electrical and mechanical device systems such as motors, lasers, power supplies, and fusers. The NVRAMs are located on the controller board and control panel, replacement of either the controller board or control panel will pull or mirror NVRAM data from each other.

Paper path information

Input tray

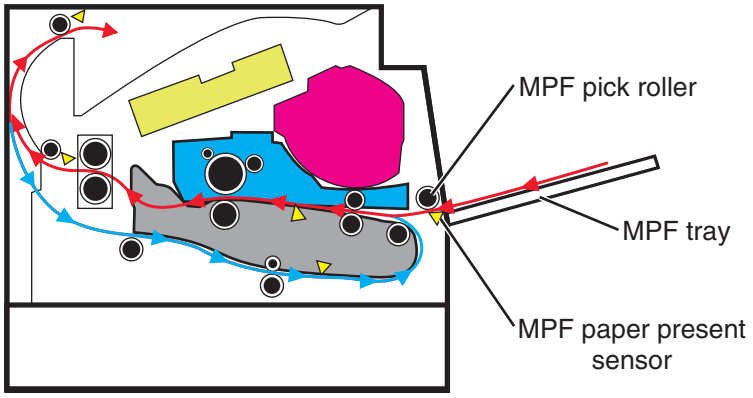
When feeding media, the ACM lowers to come into contact with the media. The pick rollers on the ACM rotate to push the media to the wear strips at the front of the tray. The wear strips provide a fixed resistance to ensure that sheets are fed one at a time. The media is then fed to the secondary input roller and then to the first input roller.



Multipurpose feeder (MPF)

The driving force from the main drive motor is transmitted through the MPF gearbox. When the MPF solenoid activates, it allows the MPF sector gear linked to the MPF gearbox to rotate. The MPF pick roll shaft is connected to the MPF sector gear.

The MPF can be accessed by opening the MPF tray on the front door. In an MPF paper feed, the MPF paper present sensor detects the media. The instant the MPF pick roll shaft rotates, the cams on each end of the shaft disengage the MPF tray. Each side of the tray is connected to the front access cover by springs. When disengaged from the shaft, the springs pull the tray causing the media to come into contact with the MPF pick roller. At the same time the pick roller rotates, pushing the media to the separator pad. The media does not pass through the secondary input roller, but directly to the first input roller.

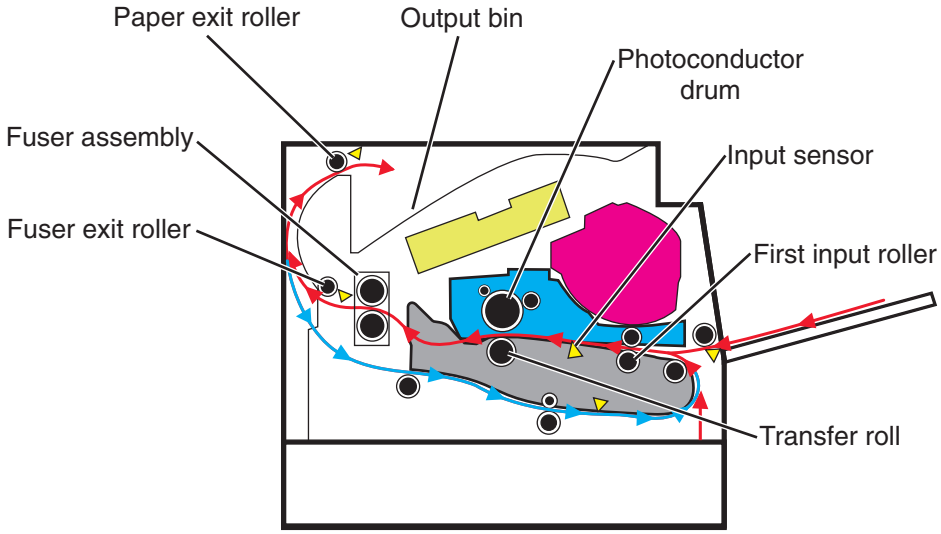


Simplex printing

Situated along the first input roller, is the deskew shutter. It subjects the media to a deskewing force based on the media width. The direction of the force is transverse to the feed direction. The leading edge of the media then passes though the input sensor.

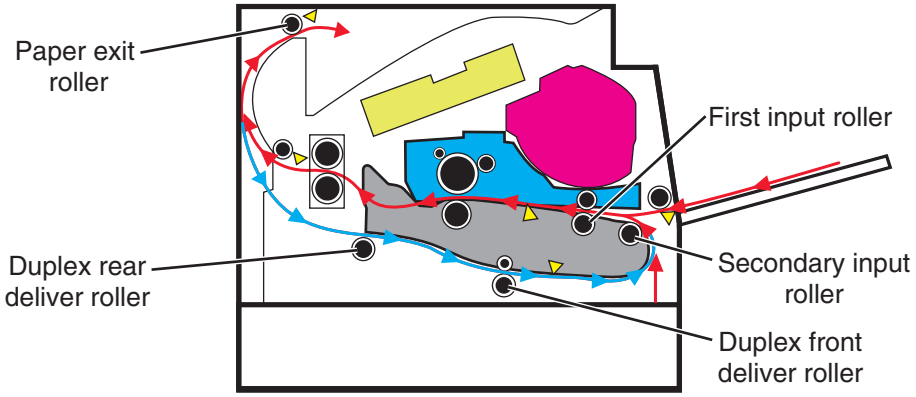
After the edge of the media is aligned, the first input roller feeds the media to the transfer roll for toner transfer. At this point, the toner image is already on the photoconductor drum surface. As the media passes between the photoconductor drum and transfer roll, the toner image is transferred to the media.

The media with the embedded toner image goes through the fuser assembly to permanently bond the toner to the media. When it passes between the heat belt and pressure roll of the fuser assembly, the combination of heat and pressure fuses the toner image to the media. The fuser exit roller feeds the media to the paper exit roller and then to the output bin.



Duplex printing

After the first side of the media has been printed on and is partially fed out to the output bin, the duplex solenoid activates. This causes the exit roller to reverse its rotation and feed the media, with its trailing edge first, back into the redrive assembly and then to the duplex paper path. The duplex front and rear deliver rollers move the media through the duplex paper path, the diverter, the first input roller, and back to the primary paper path. The same process for printing on the first side of the media repeats, this time for the second side of the media.



Media handling components

Main drive gearbox

The gearbox supplies all mechanical power requirements of the printer. Its motor, through several gears, transfers power to following paths: photoconductor drum, transfer roll, fuser, paper exit, input, duplex, and MPF.

Aside from providing rotational motion to rollers and feeders, the gearbox must also ensure that the print image is not distorted during the whole process. It must also provide easy and effective means to cut or break the transfer of motion when taking the cartridge unit out of the machine, or when clearing jammed sheets through its linkage system.

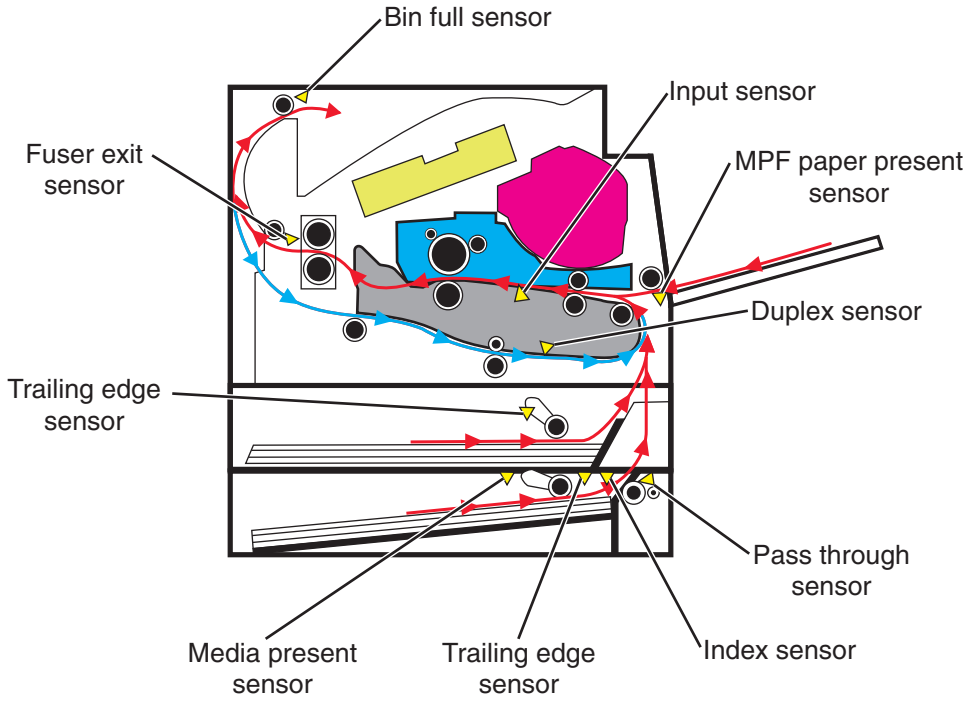
Autocompensator mechanism (ACM)

The fundamental function of the ACM is to pick and feed a single sheet of media and accurately deliver it to the downstream paper path. The pick arm is counterbalanced to provide a priming force throughout the entire range of paper levels in the tray. When media is picked, a subsequent sheet is not picked until the previous sheet's trailing edge is detected by the trailing edge sensor. Once the trailing edge of the media is detected, and the minimum interpage gap is satisfied, the next sheet will be picked.

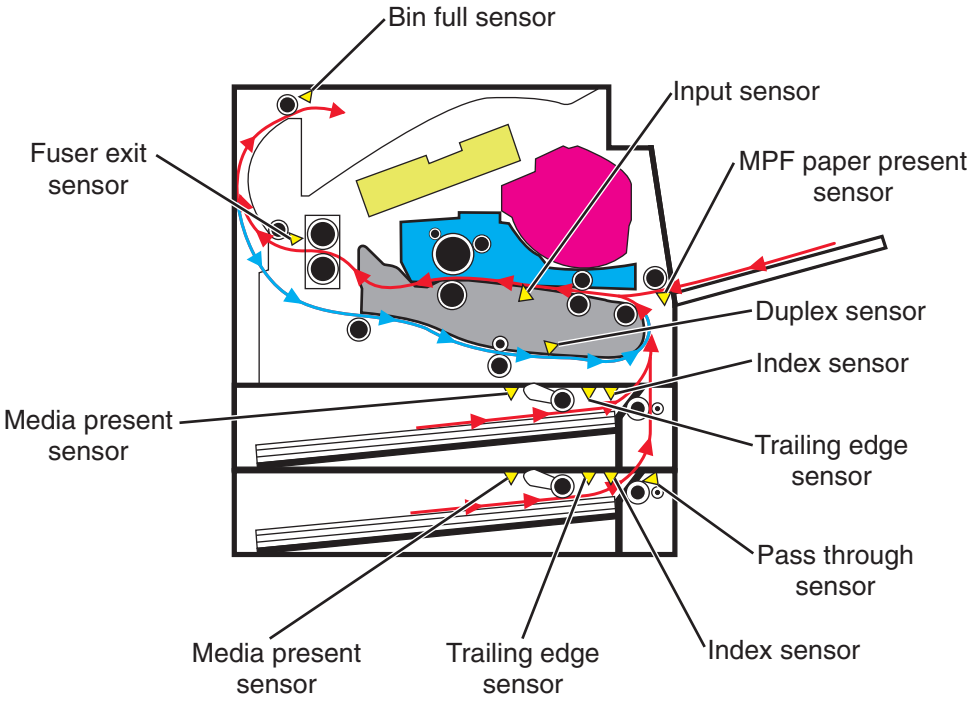
Key components

Sensors

MS310/MS410 sensors



MS510/MS610 sensors



Trailing edge sensor

Detects the media's trailing edge as it passes the pick tires. Among other capabilities, this sensor can be used to determine the paper size sensor and the media stack height.

MPF sensor

Detects the presence of media in the MPF tray.

Media present sensor

Detects the presence of media in the tray.

Tray present sensor

Detects the presence of the tray in the printer.

Bin full sensor

Detects whether the standard bin is full by moving the actuator up and down.

Toner density sensor

Detects a pre-placed toner patch and image on the photoconductor (drum) and outputs pulses when the central line of the patch image aligns with the central line of the detector. The sensor outputs pulses at the timing the patch image passes the sensor. Therefore, observing changes of intervals at which pulses are output leads to toner density detection.

Pass through sensor (option tray)

Detects when the media from the option tray passes. This will trigger the pick roller to pick the next media.

Capactive Toner Level Sensor (CTLS)

Detects the amount of toner in the imaging unit. If the toner level is low, the cartridge auger motor is triggered to add toner from the toner cartridge to the imaging unit.

Front door sensor

Is a safety switch that cuts off a 5 V DC supply from the controller board to the LSU to prevent the laser from activating when the front door is opened.

Other key components

Cooling fan

Discharges air from the printer to prevent excessive temperature increase.

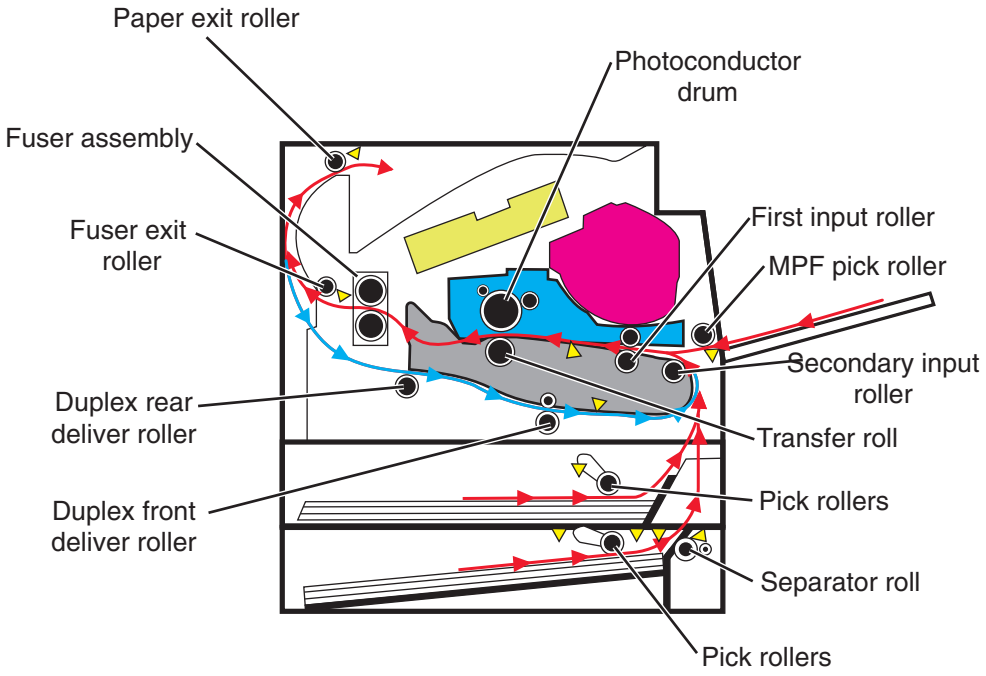
Power supply

The power supply has two main sections: the HVPS and LVPS. The HVPS card assembly generates AC power and feeds it to the developer roll, the transfer roll assembly and the charge roll assembly. The LVPS card assembly generates low voltages: 5 V DC for logic circuits, 5 V DC for laser diodes and 24 V DC for cooling fans.

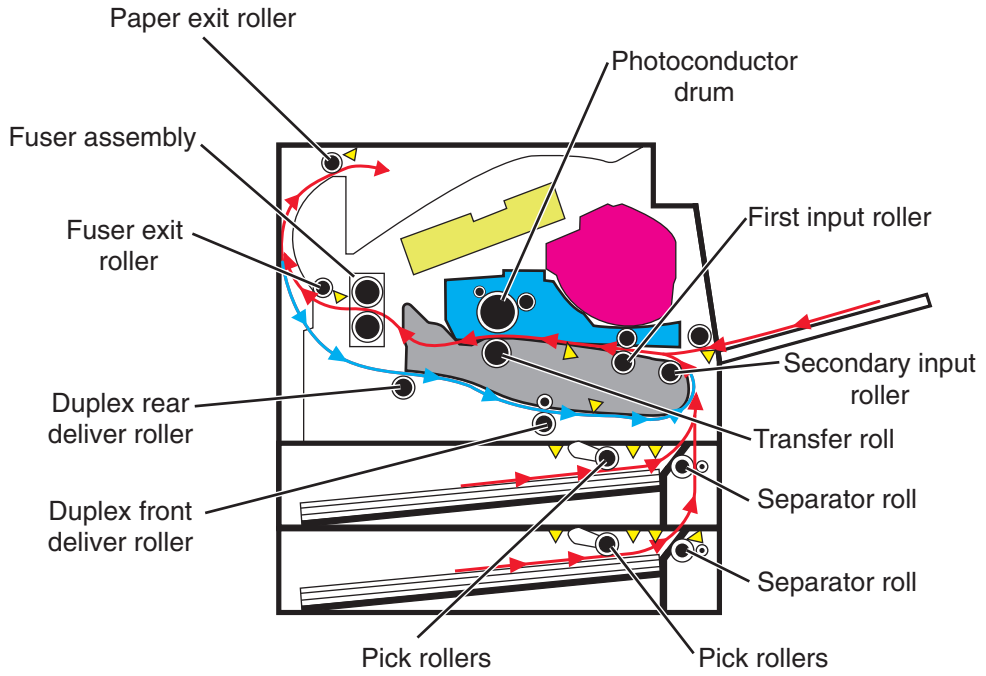
Controller board

Controls the printing operation based on the communication with the RIP controller and optional peripherals. It also controls the fuser, toner dispensing, sensor switch feedback, drive motors, clutches and solenoids

MS310/MS410 rollers



MS510/MS610 rollers



Electrophotographic process (EP process)

Printhead

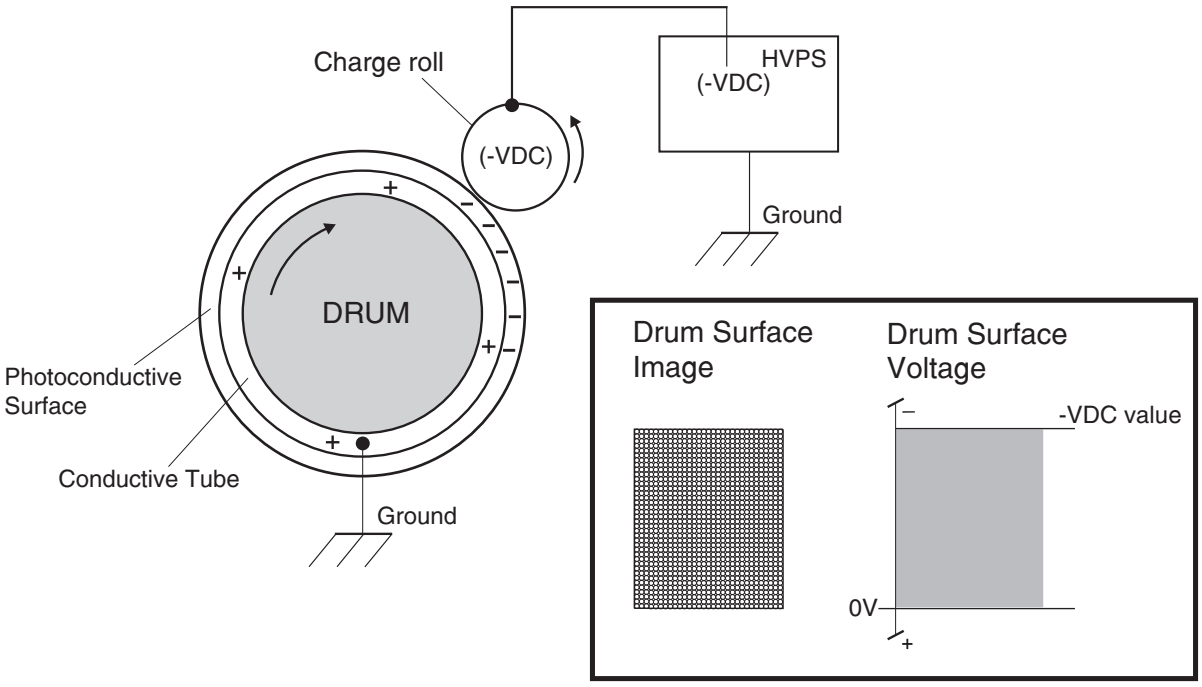
The printhead scans the photo conductor drum surface with a laser beam. It consists of the following components:

- Laser diode (LD) card assembly
- Oscillator
- Start of scan card assembly

When a laser beam is scanned across the photoconductor drum surface from one end to the other while turning on and off the beam, one line of latent image is created. If the scanning by the laser beam is repeated while rotating the drum, a two-dimensional image is created. The resolution in the scanning direction (from right to left) is determined by the rotational speed of the printhead motor, depending on how quickly the laser is adjusted. The resolution in the process direction (from top to bottom) is determined by the rotational speed of the printhead motor. The higher the scanning speed becomes, the sooner the scanning of the next row can be started.

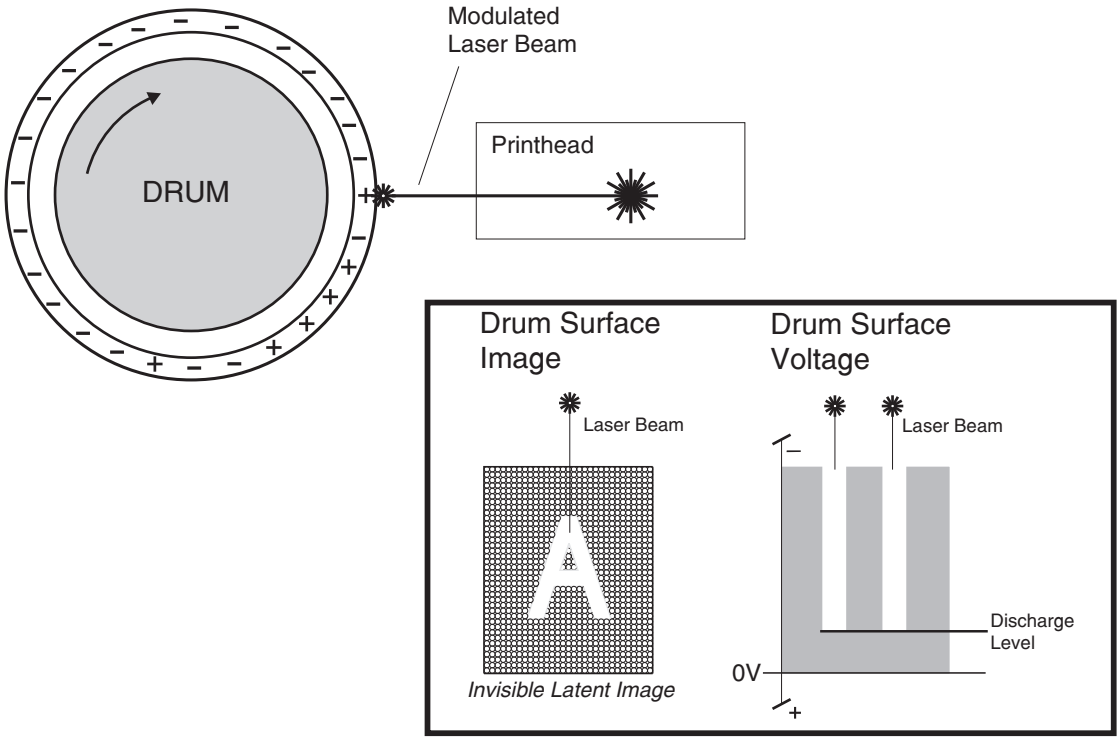
Step 1: Charge

During the charge step, voltage is sent from the HVPS to the charge roll beside the photoconductor. The charge roll applies a uniform negative charge over the entire surface of the photoconductor to prepare it for the laser beam.



Step 2: Expose

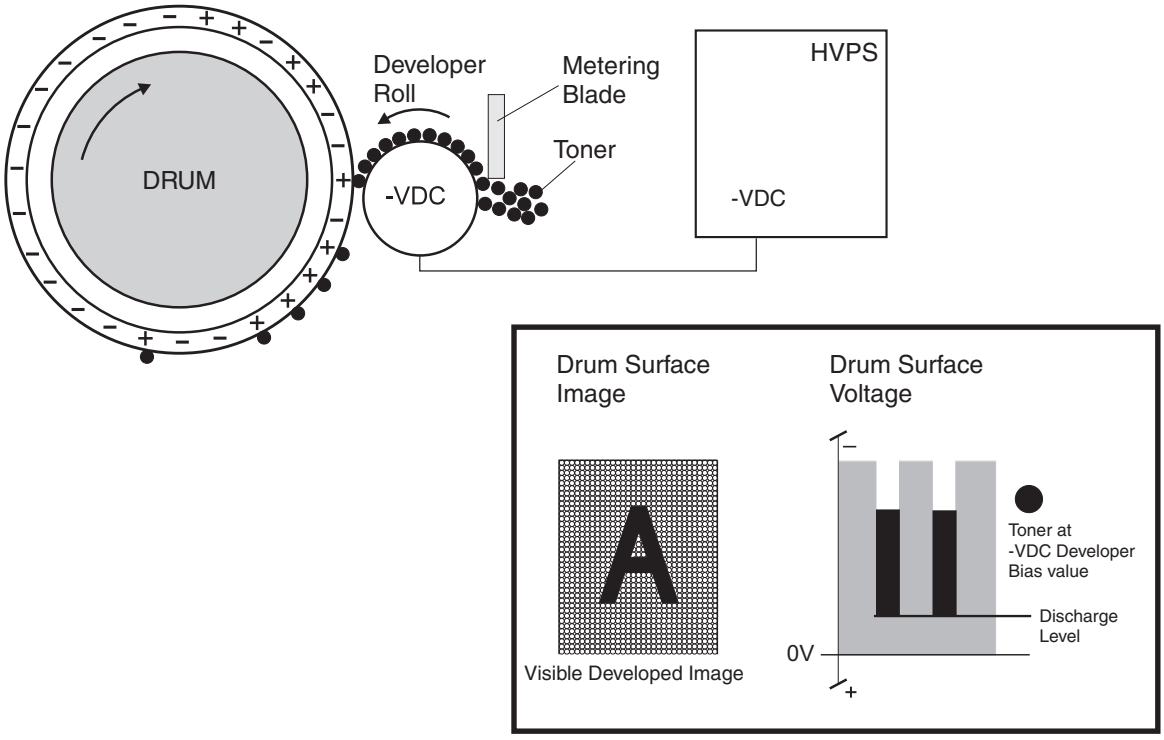
The laser fires a focused beam of light at the surface of the photoconductor and writes an invisible image, called a latent image. The laser beam only discharges the surface where the beam hits the photoconductor. This creates a difference in charge potential between the exposed area and the rest of the photoconductor surface.



Step 3: Develop

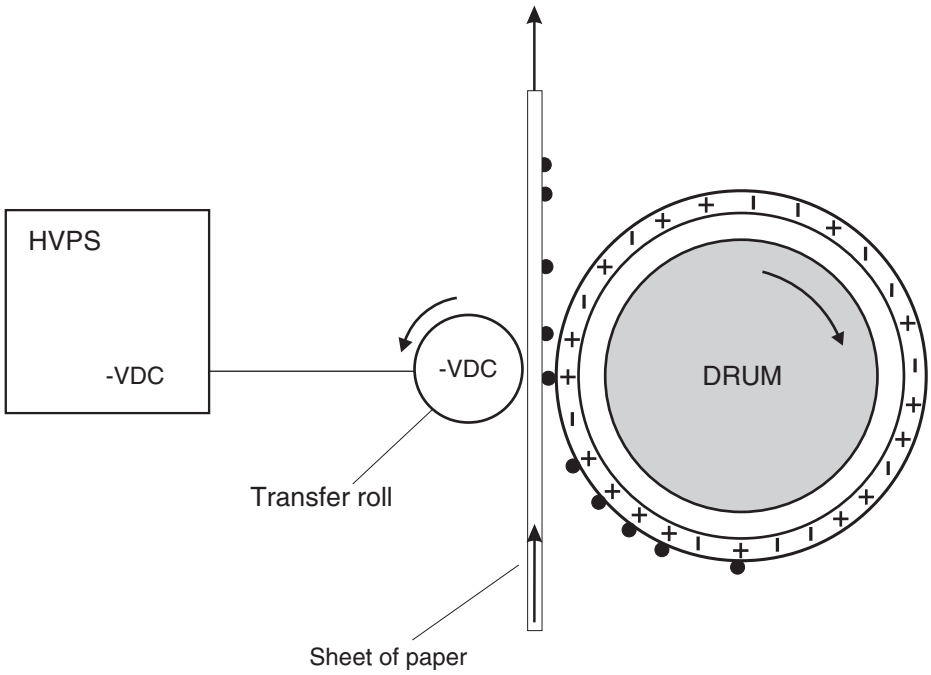
Once the laser exposes the photoconductor, the HVPS sends charge to the developer roll. Because of the charge difference between the toner on the developer roller and the electrostatic image created by the laser, the toner is attracted to areas of the photoconductor surface exposed by the laser.

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 not to the rest of the can.



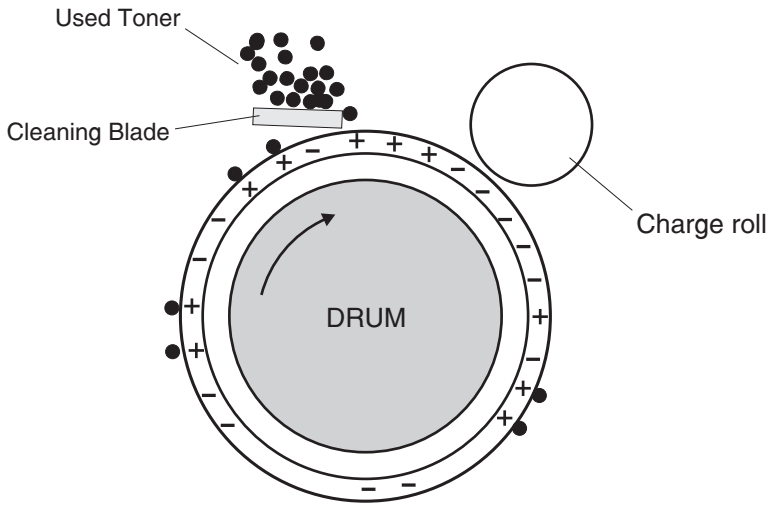
Step 4: Transfer

As the paper travels between the transfer roll and the photoconductor, the transfer roll applies a positive charge to the back of the media. This positive charge attracts the negatively charged toner image from the photoconductor to the top surface of the media.



Step 5: Clean

The cleaning blade removes any toner that remains on the photoconductor after the transfer process. The toner removed is collected inside the imaging unit.



Appendix D: Acronyms

Acronyms

ASIC	Application-Specific Integrated Circuit
BLDC	Brushless DC Motor
BOR	Black Only Retract
C	Cyan
CCD	Charge Coupled Device
CCP	Carbonless Copy Paper
CRC	Cyclic Redundancy Check
CSU	Customer Setup
CTLS	Capacitance Toner Level Sensing
DIMM	Dual Inline Memory Module
DRAM	Dynamic Random Access Memory
EDO	Enhanced Data Out
EP	Electrophotographic Process
EPROM	Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FRU	Field Replaceable Unit
GB	Gigabyte
HCF	High-Capacity Feeder
HCIT	High-Capacity Input Tray
HCOF	High-Capacity Output Finisher
HVPS	High Voltage Power Supply
ITU	Image Transfer Unit
K	Black
LCD	Liquid Crystal Display
LDAP	Lightweight Directory Access Protocol
LED	Light-Emitting Diode
LVPS	Low Voltage Power Supply
M	Magenta
MB	Megabyte
MFP	Multi-Function Printer
MPF	Multipurpose Feeder
MROM	Masked Read Only Memory

MS	Microswitch
NVM	Nonvolatile Memory
NVRAM	Nonvolatile Random Access Memory
OEM	Original Equipment Manufacturer
OPT	Optical Sensor
PC	Photoconductor
pel, pixel	Picture element
POR	Power-On Reset
POST	Power-On Self Test
PSD	Position Sensing Device
PWM	Pulse Width Modulation
RIP	Raster Imaging Processor
ROM	Read Only Memory
SDRAM	Synchronous Dual Random Access Memory
SIMM	Single Inline Memory Module
SRAM	Static Random Access Memory
TPS	Toner Patch Sensing
UPR	Used Parts Return
V ac	Volts alternating current
V dc	Volts direct current
VTB	Vacuum Transport Belt
Y	Yellow

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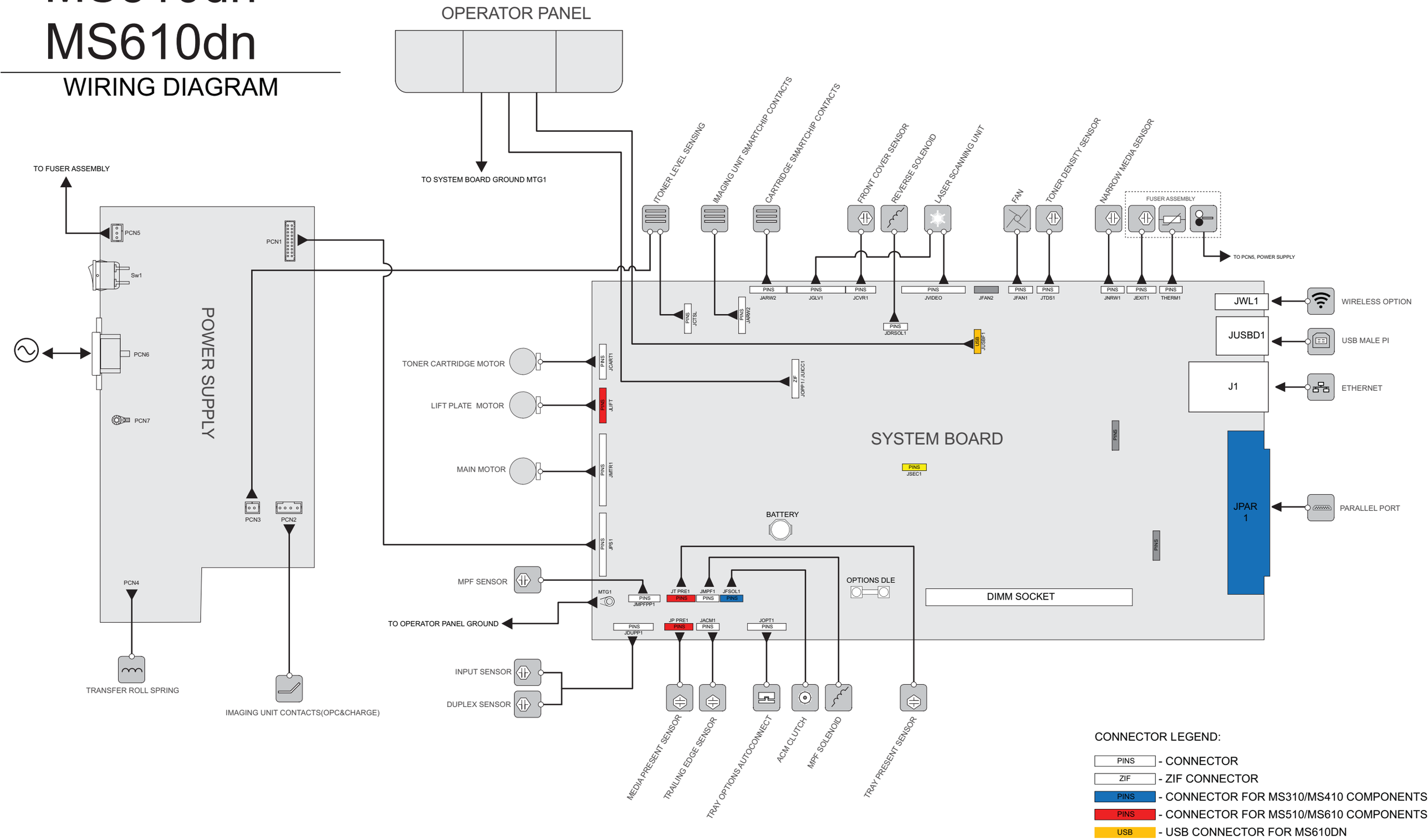
S

Part number index

Part name index

MS310d/dn
MS410d/dn
MS510dn
MS610dn

WIRING DIAGRAM



CONNECTOR LEGEND:

- PINS - CONNECTOR
- ZIF - ZIF CONNECTOR
- PINS - CONNECTOR FOR MS310/MS410 COMPONENTS
- PINS - CONNECTOR FOR MS510/MS610 COMPONENTS
- USB - USB CONNECTOR FOR MS610DN
- PINS - NOT IN USE