



CS310, CS410, CS510, and C21312

Machine Type 5027-2x0, -4x0, -6x0, -639

Service Manual

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Product information

Product name:

Lexmark CSx10 Series

Machine type:

5027

Model(s):

210, 230, 410, 430, 610, 630

Edition notice

June 10, 2014

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Notices and safety information

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. Printerens indeholder internt en klasse IIIb (3b)-laser, der nominelt er en 7 milliwatt galliumarsenid-laser, som fungerer i bølglængdeområdet 655-675 nanometer. Lasersystemet og printerens er udviklet på en sådan måde, at der ikke er en direkte laserstråling, der overskrider Klasse I-niveauet under normal brug, brugers vedligeholdelse eller de foreskrevne servicebetingelser.

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 nimellistehoaltaan 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

Skrivaren 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 information

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

**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'incinerez 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 segurança, no caso de uso de peças de substituição não autorizadas.
- As informações de segurança relativas a este produto destinam-se a profissionais destes serviços e não devem ser utilizadas por outras pessoas.
- Risco de choques eléctricos e ferimentos graves durante a desmontagem e manutenção deste produto. Os profissionais destes serviços devem estar avisados deste facto e tomar os cuidados necessários.



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 설계 및 특정 구성에 대한 테스트 결과로 안정 성이 입증된 것입니다. 따라서 무허가 교체부품을 사용하는 경우에는 제조업체에서 안전에 대한 책임을 지지 않습니다.
- 본 제품에 관한 유지 보수 설명 서는 전문 서비스 기술자 용으로 작성된 것이므로, 비 전문가가는 사용할 수 없습니다.
- 본 제품을 해체하거나 정비할 경우, 전기전 인 충격을 받거나 상처를 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。万一使用未经许可的替换部件，制造商不对安全性负责。
- 本产品的维护信息仅供专业服务人员使用，并不打算证其他人使用。
- 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—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: Printer specifications** contains detailed specifications about the product.
- **Appendix B: Options and features** contains the available options and other features of the product.
- **Appendix C: Theory of operation** contains the theory of operation.
- **Appendix D: Acronyms** 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.



CAUTION—TIPPING HAZARD: This type of caution indicates a tipping hazard.

Change history

June 10, 2014

- Updated the Inspection guide topic in the Maintenance chapter.

May 28, 2014

- Updated the Input option hardware errors section in the Diagnostics chapter.

May 5, 2014

- Updated the fuser assembly removal topic in the repair chapter.

April 1, 2014

- Added PN 41X0001 in the parts catalog.
- Updated the Frames section in the parts catalog chapter.
- Added the Drive unit motor removal in the repair chapter.
- Removed the Transfer module removal topic from the repair chapter.

February 28, 2014

- Added the Restoring solutions, licenses, and configuration settings topic under Removal precautions.
- Updated the Restoring the printer configuration after replacing the controller board topic.
- Changed the title from eSF backup to Backing up eSF solutions and settings, and updated the topic.
- Updated the Controller board removal topic.
- Updated the Image transfer unit (ITU) removal topic.
- Editorial changes

February 13, 2014

- Editorial changes.

February 5, 2014

- Editorial changes.

January 16, 2014

- Updated the Diagnostics menu and Configurations menu sections.
- Revised the Updating the printer firmware topic.
- Added the Image transfer unit (ITU) removal topic in the Repair chapter.

December 16, 2013

- Updated the Dead printer service check topic in the Diagnostic information chapter.

November 27, 2013

- Updated the controller board removal topic in the Repair chapter.

October 17, 2013

- Replaced PN 40X7634 with PN 40X7579 in the parts catalog.
- Removed PN 40X0395 from the parts catalog.

September 16, 2013

- Updated the printer model names in the cover page.

August 19, 2013

- Updated the paper jam topics in the Diagnostics information chapter.
- Updated the installation note in the controller board removal topic.

August 8, 2013

- Updated the “Tray (x) sensor service check” topic.
- Added the 550 and 650 input option service check group and topics.
- Added the “Steps before starting the 9yy service checks” topic in the Diagnostics information chapter.
- Added PN 40X9244 in assembly 1 of the parts catalog.
- Added the “Restoring the printer configuration after replacing the controller board” topic under the Removal precautions.

July 12, 2013

- Added relocation kit (PN 40X8701) in the parts catalog.

June 5, 2013

- Added BSD model name (C2132) in the parts catalog.

May 27, 2013

- Added C2132 in the title.
- Added 5027-639 in the machine type model.
- Added description for C2132 in the General Information chapter.

April 1, 2013

- Updated the safety information topic.
- Updated the installation note in the Printhead removal topic.

February 4, 2013

- Added the model numbers in the General information chapter.
- Added the “Updating the printer firmware” topic in the Service menus chapter.

January 17, 2013

- Updated the description for PN 40X3141 in Assembly 3 of the parts catalog chapter.
- Removed “Printhead to controller board cable” in the item list under PN 40X7647 in Assembly 4 of the parts catalog chapter.
- Added an installation note in the controller board removal procedure in the Repair information chapter.

January 10, 2013

- Replaced PN 40X0259 to PN 40X4596 for the Brazil power cord in Assembly 3 of the parts catalog chapter.
- Updated the description for PN 40X1766 to Bolivia and Peru only in Assembly 3 of the parts catalog chapter.
- Added PN 40X0269 for the power cord for USA, Canada, APG, and LAD in Assembly 3 of the parts catalog chapter.
- Deleted these PNs in Assembly 6 of the parts catalog chapter: 40X1455, 40X7857, 40X7445, and 40X7567.

General information

The Lexmark™ CS310 , CS410 , and CS510 models are color network printers in compact sizes. Some models have internal duplex printing, USB-A host ports for flash drives on the operator panel, and an optional 650-sheet Duo Drawer with 550 sheets in the input tray and 100 sheets for the multipurpose feeder. The Lexmark 5027-630 has a standard 650-sheet Duo Drawer and the option to add a 550-sheet tray, which brings the input for that model up to 1,451 sheets. The Lexmark 5027-610 comes with wireless network and duplex printing. 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
CS310n	Ethernet network, DDR3 DIMM, Flash memory, optional 650-sheet duo drawer with integrated multipurpose feeder	5027-210
CS310dn	Ethernet network, duplex, DDR3 DIMM, Flash memory, optional 550-sheet tray, optional 650-sheet duo drawer with integrated multipurpose feeder	5027-230
CS410n	Ethernet network, USB-A host port for flash drives, 2.4" display and UICC card, standard 650-sheet duo drawer with integrated multipurpose feeder	5027-410
CS410dn	USB-A host port for flash drive, duplex, Ethernet network, 2.4" display and UICC card, standard 650-sheet duo drawer with integrated multipurpose feeder	5027-430
CS510de	USB-A host port for flash drive, duplex, 802.11n wireless network, Ethernet network, hard disk option, UICC card, 4.3" display, standard 250-sheet tray	5027-630
CS510dte	USB-A host port for flash drive, duplex, 802.11n wireless network, Ethernet network, hard disk option, UICC card, 4.3" display, standard 650-sheet duo drawer with integrated multipurpose feeder	5027-630
C2132	USB-A host port for flash drive, duplex, 802.11n wireless network, Ethernet network, hard disk option, UICC card, 4.3" display, standard 250-sheet tray	5027-639

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 33](#). See [“Repair information” on page 197](#) for information about removing and reinstalling parts. See [“Parts catalog” on page 316](#) to help identify parts.

Media guidelines

- [“Paper guidelines” on page 24](#)

Paper guidelines

Paper characteristics

Selecting the appropriate media for the printer can help avoid printing problems.

For detailed information about media characteristics, see the *Card Stock & Label Guide* available on the Lexmark Support Web site at <http://support.lexmark.com>.

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

Weight

The printer can automatically feed paper weights from 60 to 220 g/m² (16 to 58 lb bond) grain long. Paper lighter than 60 g/m² might not be stiff enough to feed properly, causing jams. For best performance, use 75 g/m² (20 lb bond) grain long paper. For paper smaller than 182 x 257 mm (7.2 x 10.1 in.), we recommend 90 g/m² (24 lb) or heavier paper.

Note: Duplex is supported only for 63 g/m²–170 g/m² (17 lb–45 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 was 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.

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 and 200 Sheffield points produces the best print quality.

Moisture content

The amount of *moisture* in paper affects both print quality and the ability of the printer to feed the paper correctly. Leave paper in its original wrapper until it is time to use it. This limits the exposure of paper to moisture changes that can degrade its performance. To condition paper before printing, store it in its original wrapper in the same environment as the printer for 24 to 48 hours before printing. Extend the time several days if the storage or transportation environment is very different from the printer environment. Thick paper may also require a longer conditioning period. Excessive moisture will result in curl after printing.

Grain direction

Grain refers to the alignment of the paper fibers in a sheet of paper. Grain is either *grain long*, running the length of the paper, or *grain short*, running the width of the paper. For 60 to 135 g/m² (16 to 36 lb bond) paper, use grain long paper. For papers heavier than 135 g/m², use grain short.

Fiber content

Most high-quality xerographic paper is made from 100% chemically treated wood pulp. 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 than ± 2.4 mm (± 0.9 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 176 g/m^2 weight paper.
- Use only forms and letterhead printed using an offset lithographic or engraved printing process.
- Avoid papers with rough or heavily textured surfaces.

Use papers printed with heat-resistant inks designed for use in xerographic copiers. The ink must be able to withstand temperatures up to 200°C (392°F) without melting or releasing hazardous emissions. Use inks that are not affected by the resin in toner. Inks that are oxidation-set or oil-based generally meet these requirements; latex inks might not.

When in doubt, contact the paper supplier.

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

Storing paper

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

- For best results, store paper where the temperature is 21°C (70°F) and the relative humidity is 40 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.

Supported paper sizes, types, and weights

The following tables provide information on standard and optional paper sources and the sizes, types, and weights of paper they support.

Note: For unlisted paper sizes, select the closest *larger* listed size.

Supported paper sizes

Note: Your printer model may have a 650-sheet duo tray, which consists of a 550-sheet tray and an integrated 100-sheet multipurpose feeder. The 550-sheet tray of the 650-sheet duo tray supports the same paper sizes as the optional 550-sheet tray. The integrated multipurpose feeder supports different paper sizes, types, and weights.

Paper size and dimension	Standard 250-sheet tray	Manual feeder	650-sheet duo tray		550-sheet tray	Duplex mode
			550-sheet tray	Multipurpose feeder		
A4 210 x 297 mm (8.3 x 11.7 in.)	√ ¹	√	√ ¹	√ ¹	√ ¹	√
A5 148 x 210 mm (5.83 x 8.3 in.)	√ ¹	√	√ ²	√ ¹	√ ²	X
A6 105 x 148 mm (4.1 x 5.8 in.)	X	√	X	√ ¹	X	X

¹ The paper source supports paper size without *size sensing*.

² Universal is only supported in the standard 250and optional 550sheet tray if the paper size is from 148 x 215.9 mm (5.83 x 8.5 inches) to 215.9 x 355.6 mm (8.5 x 14 inches).

³Universal is only supported in the multipurpose feeder and manual feeder if the paper size is from 76.2 x 127 mm (3 x 5 inches) to 215.9 x 359.9 mm (8.5 x 14.17 inches).

⁴Universal is only supported in duplex mode if the width is between 210 mm (8.27 inches) and 215.9 mm (8.5 inches) and length is between 279.4 mm (11 inches) and 355.6 mm (14 inches).

Paper size and dimension	Standard 250-sheet tray	Manual feeder	650-sheet duo tray		550-sheet tray	Duplex mode
			550-sheet tray	Multipurpose feeder		
JIS B5 182 x 257 mm (7.2 x 10.1 in.)	✓ ¹	✓	✓ ¹	✓ ¹	✓ ¹	X
Letter 216 x 279 mm (8.5 x 11 in.)	✓ ¹	✓	✓ ¹	✓ ¹	✓ ¹	✓
Legal 216 x 356 mm (8.5 x 14 in.)	✓ ¹	✓	✓ ¹	✓ ¹	✓ ¹	✓
Executive 184 x 267 mm (7.3 x 10.5 in.)	✓ ¹	✓	✓ ¹	✓ ¹	✓ ¹	X
Oficio (Mexico) 216 x 340 mm (8.5 x 13.4 in.)	✓ ¹	✓	✓ ¹	✓ ¹	✓ ¹	✓
Folio 216 x 330 mm (8.5 x 13 in.)	✓ ¹	✓	✓ ¹	✓ ¹	✓ ¹	✓
Statement 140 x 216 mm (5.5 x 8.5 in.)	X	✓	X	✓ ¹	X	X
Universal 76 x 127 mm (3 x 5 in.) to 216 x 356 mm (8.5 x 14 in.)	X	✓ ^{1,3}	X	✓ ^{1,3}	X	X
Universal 148 x 210 mm (5.8 x 8.3 in.) to 216 x 356 mm (8.5 x 14 in.)	✓ ^{1,2}	✓	✓ ^{1,2}	✓	✓ ^{1,2}	✓ ⁴
7 3/4 Envelope (Monarch) 98 x 191 mm (3.9 x 7.5 in.)	X	✓	X	✓ ¹	X	X

¹ The paper source supports paper size without *size sensing*.

² Universal is only supported in the standard 250 and optional 550 sheet tray if the paper size is from 148 x 215.9 mm (5.83 x 8.5 inches) to 215.9 x 355.6 mm (8.5 x 14 inches).

³ Universal is only supported in the multipurpose feeder and manual feeder if the paper size is from 76.2 x 127 mm (3 x 5 inches) to 215.9 x 359.9 mm (8.5 x 14.17 inches).

⁴ Universal is only supported in duplex mode if the width is between 210 mm (8.27 inches) and 215.9 mm (8.5 inches) and length is between 279.4 mm (11 inches) and 355.6 mm (14 inches).

Paper size and dimension	Standard 250-sheet tray	Manual feeder	650-sheet duo tray		550-sheet tray	Duplex mode
			550-sheet tray	Multipurpose feeder		
9 Envelope 98 x 225 mm (3.9 x 8.9 in.)	X	✓	X	✓ ¹	X	X
10 Envelope 105 x 241 mm (4.1 x 9.5 in.)	X	✓	X	✓ ¹	X	X
DL Envelope 110 x 220 mm (4.3 x 8.7 in.)	X	✓	X	✓ ¹	X	X
C5 Envelope 162 x 229 mm (6.4 x 9 in.)	X	✓	X	✓ ¹	X	X
B5 Envelope 176 x 250 mm (6.9 x 9.8 in.)	X	✓	X	✓ ¹	X	X
Other Envelope 98 x 162 mm (3.9 x 6.3 in.) up to 176 x 250 mm (6.9 x 9.8 in.)	X	✓	X	✓ ¹	X	X
¹ The paper source supports paper size without <i>size sensing</i> . ² Universal is only supported in the standard 250and optional 550sheet tray if the paper size is from 148 x 215.9 mm (5.83 x 8.5 inches) to 215.9 x 355.6 mm (8.5 x 14 inches). ³ Universal is only supported in the multipurpose feeder and manual feeder if the paper size is from 76.2 x 127 mm (3 x 5 inches) to 215.9 x 359.9 mm (8.5 x 14.17 inches). ⁴ Universal is only supported in duplex mode if the width is between 210 mm (8.27 inches) and 215.9 mm (8.5 inches) and length is between 279.4 mm (11 inches) and 355.6 mm (14 inches).						

Supported paper types and weights

Notes:

- Your printer model may have a 650-sheet duo tray, which consists of a 550-sheet tray and an integrated 100-sheet multipurpose feeder. The 550-sheet tray of the 650-sheet duo tray supports the same paper as the 550-sheet tray. The integrated multipurpose feeder supports different paper sizes, types, and weights.
- Labels, transparencies, envelopes, and card stock always print at reduced speed.

Paper type	250-sheet tray	Manual feeder	650-sheet duo tray		550-sheet tray	Duplex mode
			550-sheet tray	Multipurpose feeder		
Paper <ul style="list-style-type: none"> • Plain • Recycled • Glossy • Bond • Letterhead • Preprinted • Colored • Light • Heavy • Rough/Cotton • Custom Type [x] 	✓	✓	✓	✓	✓	✓
Card stock	✓	✓	✓	✓	✓	x
Transparencies	✓	✓	x	✓	x	x
Labels <ul style="list-style-type: none"> • Paper 	✓	✓	✓	✓	✓	x
Envelope	x	✓	x	✓	x	x

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/m² [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).

Data security notice

- 1 The printer contains various types of memory that store device and network settings, information from embedded solutions, and user data.

The following are the types of memory and the types of data that they store.

- **Volatile memory**—The printer uses standard Random Access Memory (RAM) to buffer user data temporarily during simple print and copy jobs.
- **Non-volatile memory**—The printer may use 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**—The printer hard disk is designed for device-specific functionality and cannot be used for the long-term storage of data that is not print-related. The hard disk can retain buffered user data from complex print jobs, form data, and font data.

To erase volatile memory, turn off the printer.

To erase the non-volatile and printer hard disk memory, see the [“Configuration menu” on page 184](#).

The following parts are capable of storing memory:

- Printer control panel
- UICC (User Interface Controller Card)
- Controller board
- Optional hard disk

Note: The control panel and controller board contain NVRAM.

- 2 After removing the old part, return it 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
- 7/32 inch (5.5 mm) open-end wrench
- 7.0 mm nut driver
- Needle-nose pliers
- Diagonal side cutters
- Spring hook
- Feeler gauges
- Analog or digital multimeter


- Parallel wrap plug 1319128
- Twinax/serial debug cable 1381963
- Coax/serial debug cable 1381964
- Flash light (optional)
- 3 mm hex wrench

Diagnostic information

- [“Troubleshooting overview” on page 33](#)
- [“Fixing print quality issues” on page 35](#)
- [“Paper jams” on page 45](#)
- [“Understanding printer messages” on page 71](#)
- [“Printer hardware errors” on page 80](#)
- [“Input option hardware errors” on page 139](#)

 **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—POTENTIAL INJURY:** The printer weight is greater than 18 kg (40 lb) and requires two or more trained personnel to lift it safely.

 **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” on page 33](#)
- [“Power-on Reset \(POR\) sequence” on page 34](#)
- [“Using Safe Mode” on page 34](#)

Performing the initial troubleshooting check

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

- With the power cord unplugged from the electrical outlet, check that the cord is free from the 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 on the printer, it performs a POR sequence.

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

- 1 The LED turns on.
- 2 The main fan turns on.
- 3 The control panel turns on.
- 4 The fuser heater turns on.
Note: The fuser takes longer to warm up from a cold start than a warm start.
- 5 The control panel LED starts blinking.
- 6 A splash screen appears on the display. The following errors or messages may appear:
 - **Close Door** or **Insert Cartridge** appears if the front access door is open or the print cartridge is missing
 - Cartridge errors, such as **Defective Cartridge** or **Missing Cartridge**
- 7 **Ready** appears on the display.
- 8 The main drive motor turns on.
- 9 The EP drive assembly drives the developer shaft located in the print cartridge.
- 10 The exit rollers turn.
- 11 The printer may begin calibration.

Using Safe Mode

Safe Mode lets the printer continue to operate in a special limited mode in which it attempts to continue offering as much functionality as possible despite known issues.

Warning—Potential Damage: Safe Mode is intended as a short-term workaround and should be used only in the case of a non-critical error when a print job must be completed before service can be arranged to repair the printer. The printer must be returned to standard operating mode before diagnostics can be run or full-function printing can continue.

You can enter Safe Mode in one of the following ways:

- Enable Safe Mode from the Configuration menu, and then POR the printer.
- For 2.4" display models, press the **Stop** and **Back** keys, and then POR the printer.
- For 4.3" and 7" display touchscreen models, press the **6** and **7** keys, and then POR the printer.

Return the printer to standard operating mode to service the printer and return to full-function printing.

Safe mode print behavior

The following table outlines the behavior for this printer model while in Safe Mode:

Safe Mode engine features	Engine behavior	Control panel behavior
Simplex printing only	Reports that duplex printing is disabled.	Duplex print option is not selectable.
Ignore duplex sensor		
Ignore standard bin full sensor	Standard bin full messages are not reported.	Standard bin full messages will not occur.
Print at narrow media operating point	Pages are printed slower.	N/A
Ignore all input options	Reports that only Tray 1 is installed.	Only Tray 1 and the MPF are selectable.
Ignore all output options	Does not any report installed finishing options.	No finishing options are selectable.
Ignore rear door sensor	Rear door open messages are not reported.	Rear door open messages do not occur.
Reduce print speed	Pages are printed slower.	N/A
Reduce time to first print	Slower time to first print.	N/A

Fixing print quality issues

- [“Initial print quality check” on page 36](#)
- [“Toner smear check” on page 36](#)
- [“Background or toner fog check” on page 37](#)
- [“Blank pages check” on page 39](#)
- [“Blurred or fuzzy print check” on page 40](#)
- [“Half-color page check” on page 40](#)
- [“Horizontal banding check” on page 41](#)
- [“Horizontal line check” on page 41](#)
- [“Missing image at edge check” on page 41](#)
- [“Toner specks check” on page 42](#)
- [“Narrow vertical line check” on page 42](#)
- [“Random marks check” on page 42](#)
- [“Residual image check” on page 43](#)
- [“Solid color pages check” on page 43](#)
- [“Vertical banding check” on page 44](#)
- [“Light print on solids check” on page 44](#)
- [“Color problems check” on page 44](#)

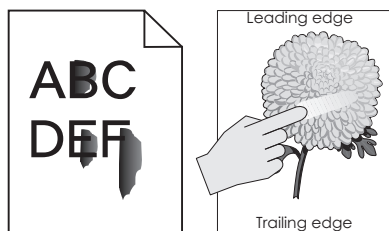
The symptoms described in this chapter might require replacement of one or more CRUs (Customer Replaceable Units) designated as supplies or maintenance items, which are the responsibility of the customer. With the customer's permission, you might need to install a developer (toner) cartridge.

Initial print quality check

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

- 1 Print a menu settings page, and then check the life status of all supplies. Any supplies that are low should be replaced. Be sure to keep the original menu page to restore the customer's custom settings if needed.
- 2 On the menu page, make sure the following settings are at the default level:
 - Color Correction: Set to Auto.
 - Print Resolution: Set to 4800 dpi (print quality problems should be checked at different resolution settings).
 - Toner Darkness: Set to 4 (default).
 - Color Saver: Set to OFF.
 - RGB Brightness, RGB Contrast, RGB Saturation: Set to 0.
 - Color Balance: Select **Reset Defaults** to zero out all colors.
 - Check the paper type, texture and weight settings against the paper that is loaded in the printer.
- 3 Inspect the image transfer unit for damage. Replace, if damaged.
- 4 Inspect the print cartridges for damage. Replace, if damaged.
- 5 If paper other than 20 lb plain letter/A4 paper is being used, load 20 lb plain letter/A4 and print the Print Quality pages to see if the problem remains. Use Tray 1 to test print quality problems.
- 6 Print the Print Quality Pages (**Settings>Help>Print Defects Guide/Color Quality**), and then look for variations in the print from what is expected.
- 7 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.
- 8 Measure all voltages from the connector to the printer ground.

Toner smear check



Actions	Yes	No
Step 1 From the Paper Menu on the printer control panel, check the paper type and paper weight settings. Is the paper tray set to the type and weight of paper in the tray?	Go to step 2.	Change the paper type and weight settings to match the paper in the tray.
Step 2 Check for paper with texture or rough finishes. Are you printing on textured or rough paper?	Change the textured or rough paper to plain paper and print again.	Go to step 3.
Step 3 Is the fuser properly installed?	Go to step 4.	Install the fuser properly.
Step 4 Replace the fuser. See “Fuser assembly removal” on page 267 . Does this solve the problem?	The problem is solved.	Go to step 5.
Step 5 Replace the LVPS. See “Low-voltage power supply (LVPS) assembly removal” on page 226 . Does this fix the problem?	The problem is solved.	Contact your next level of support.

Background or toner fog check

Actions	Yes	No
Step 1 Read the current status of the imaging unit from the customer menus. To view the status of the photoconductor units: a In Ready mode, press Menus b Select Reports , and press Select c Select Device Statistics , and press Select It is possible a new imaging unit was installed, but the counter was not reset. Has the imaging unit been recently replaced?	Reset the value. To reset this value: <ol style="list-style-type: none"> 1 In Ready mode, press Menus 2 Select Supplies Menu, and press Select 3 Select Replace Supply, and press Select 4 Select the imaging unit you want to change, and press Select 5 Select Yes, and press Select If this does not fix the problem, then go to step 2.	Go to step 2.

Actions	Yes	No
Step 2 Is the background only one of the primary colors; yellow, cyan, magenta, or black?	Go to step 3.	Go to step 4.
Step 3 Replace the developer unit. Did replacing the developer unit correct the problem?	Problem is solved.	Go to step 4.
Step 4 Replace the photoconductor unit. Did this fix the problem?	Problem is solved.	Go to step 5.
Step 5 Check the high-voltage contact from the HVPS to the image transfer unit (ITU). Is a problem found?	Replace the failing part: <ul style="list-style-type: none"> Image transfer unit. See “Image transfer unit (ITU) removal” on page 243. High-voltage power supply (HVPS). See “High-voltage power supply (HVPS) removal” on page 239. 	Go to step 6.
Step 6 With the printer off, reset the cable in the JHVPS1 connector. Does this fix the problem?	Problem is solved.	Go to step 7.
Step 7 Replace the HVPS. See “High-voltage power supply (HVPS) removal” on page 239. Does this fix the problem?	Problem is solved.	Go to step 8.
Step 8 Clean the printhead. Does this fix the problem?	Problem is solved.	Replace the printhead. See “Printhead removal” on page 299.

Blank pages check

Check	Yes	No
Step 1 Is all the packing material for the imaging unit in question removed?	Go to step 2.	Remove the packing material.
Step 2 Print a document that requires all four colors with just a few characters to verify if one specific color is a problem. For example, print the Print Quality Test Pages: a Enter Diagnostic mode. For CS310 models, turn the printer off, press and hold Down and Right , turn the printer on, and then release the buttons when the installed memory and processor speed displays. For CS410 and CS510 models, turn the printer off, press and hold 3 and 6 , turn the printer on, and then release the buttons when the installed memory and processor speed displays. b Select PRINT TESTS , and press Select c Select Prt Qual pgs , and press Select Is only one color missing?	Replace the developer unit for the missing color.	Go to step 3.
Step 3 Replace the imaging unit. See Imaging unit (IU) removal. Does this fix the problem?	Problem resolved.	Go to step 4.
Step 4 a Remove the image unit and waste toner bottle. b Replace the right cover and close the front door. c Enter the Diagnostics Menu, and run the appropriate cartridge drive motor test for the missing color. d Select MISC TESTS in the Diag menu, and press Select . e Select Motor Detect. Remove Cartridge. Press Select appears. Note: Do not press Select yet. f Remove all toner cartridges and the imaging unit. g Close the front cover. If you press Select before closing the front cover, then a message appears: Close cover. Press Select . h Press Select. Motor Detection In Progress... appears. The motor detection process takes about 10 seconds, and stops automatically. Detect Complete. Rebooting... appears, and the printer performs a POR (Power On Reset). Did the motor run?	Go to step 5.	Replace the main drive gear assembly. See Main drive gear assembly with motor removal.

Check	Yes	No
Step 5 Remove the developer unit. See Developer unit removal. Check the developer cartridge contacts from the HVPS to the IU. Are all the toner cartridge contacts clean on both the Pin and IU?	Go to step 6..	Clean the developer cartridge contacts. See Developer unit removal.
Step 6 Are all the spring-loaded Pins in the HVPS free to move in and out with an equal amount of spring force.	Go to step 7.	Replace the HVPS. See High-voltage power supply (HVPS) assembly removal.
Step 7 Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290 . Check the continuity between the spring-loaded Pin and the JSC1 connector on the controller board. Are all conductors continuous?	Go to step 8.	Replace the cable.
Step 8 Replace the printhead. See Printhead removal. Did this fix the problem?	Problem resolved.	Replace the controller board. See Controller board removal.

Blurred or fuzzy print check

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

- 1 Enter the Diagnostics Menu.
For CS310 models, turn the printer off, and press and hold **Down** and **Right**.
For CS410 and CS510 models, turn the printer off, and press and hold **3** and **6**.
- 2 Select **Reset Color Cal**, and press **Select**.
- 3 Select **Reset Color Cal**, and press **Select**. **Resetting** appears. When the reset is complete, the screen is automatically returned to TPS Setup.

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

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

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

Half-color page check

A photoconductor unit is not properly seated. Reset the specific photoconductor unit.

Horizontal banding check

Actions	Yes	No
Step 1 Measure the distance between repeating bands. Is the distance between bands either 34.6 or 94.2 mm?	Replace the photoconductor unit. Remove the imaging unit and remove the original developer units, and then put them back into the new photoconductor unit, and reinstall the imaging unit. See “Imaging unit (IU) removal” on page 246.	Go to step 2.
Step 2 Does the distance measure 95 mm or 108 mm?	Replace the fuser. See “Fuser assembly removal” on page 267.	Go to step 3.
Step 3 Does the distance measure 37.7, 55, or 78.5 mm?	Replace the ITU. See “Image transfer unit (ITU) removal” on page 243..	Go to step 4.
Step 4 Does the distance measure 43.9 mm or 45.5?	Replace the developers that match the missing color (black, cyan, magenta, or yellow.) See Developer unit removal.	Check the various rollers in the printer for debris.

Horizontal line check

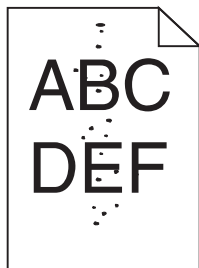
Either the photoconductor unit or one of the developer units that make up the imaging unit is defective. Remove and inspect the imaging unit. Replace the damaged part of the imaging unit. See Imaging unit (IU) removal.

Missing image at edge check

Remove and reset the following:

- Toner cartridge
- Imaging unit
- Developer units

Toner specks check



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

Narrow vertical line check

Actions	Yes	No
Replace the photoconductor unit. Does this solve the problem?	The problem is solved.	Replace the developer unit.

Random marks check

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

Actions	Yes	No
Step 1 Is there any loose or foreign material on the imaging unit?	Inspect the imaging unit by looking at the individual developers and photoconductors. Clean or replace the faulty unit. See “Imaging unit (IU) removal” on page 246.	Go to step 2.
Step 2 Is there any loose or foreign material on the developer roll?	Replace the developer unit.	Go to step 3.
Step 3 Is there any loose or foreign material on the transfer belt?	Replace the ITU. See “Image transfer unit (ITU) removal” on page 243.	Contact your next level of support.

Residual image check

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

Actions	Yes	No
Step 1 Check the condition of the imaging unit using the customer menus (administration menus): a At the Ready prompt, press Menu . b Select Supplies Menu , and press Select . c Select Imaging Kit , and press Select . Does the display indicate OK?	Go to step 2.	Replace the imaging unit or the photoconductor unit. See “Imaging unit (IU) removal” on page 246 .
Step 2 Measure the distance from the original image to the same point on the residual image. Is the distance 43.9 mm?	Replace the developer corresponding to the color of the image. See “Developer unit removal” on page 238 .	Replace the imaging unit or the photoconductor unit. See “Imaging unit (IU) removal” on page 246 .
Step 3 Is the distance between the original image and the residual image 94.2 mm?	Replace the photoconductor.I.	Go to step 4.
Step 4 Run the Menu Setting Page twice to clear any debris. a Press Menu on the control panel. b Select Reports from the Admin Menu, and press Select . c Select Imaging Kit , and press Select . Is there still any toner contamination on the fuser assembly?	Replace the fuser. See “Fuser assembly removal” on page 267 .	Contact your next level of support.

Solid color pages check

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

Actions	Yes	No
Step 1 Replace the photoconductor unit (part of the imaging unit). Remove the imaging unit and remove the developers. Place the original developers in the new photoconductor, and then replace the imaging unit. See “Imaging unit (IU) removal” on page 246 . Does this solve the problem?	Problem is solved.	Go to step 2.
Step 2 A faulty printhead can cause the problem. To test the printhead for solid colors, place a narrow strip of paper over the gap between the developers. Make sure the paper stays in place when you replace the imaging unit. This will block the laser from discharging the photoconductors. Select the Print Quality Page . Does the uniform color page have a white vertical band?	Replace the printhead. See “Printhead removal” on page 299 .	Go to step 3.
Step 3 Check the high-voltage contact from the HVPS to the photoconductor charge roll. Ensure the contact springs are properly mounted and that the charge roll contact spring is making good contact with the HVPS spring that runs through the left printer frame. See “Toner cartridge contacts removal” on page 248 to view the proper mounting and for removal procedures. Are the springs defective?	Replace the transfer contact assembly. See “Toner cartridge contacts removal” on page 248 .	Go to step 4.
Step 4 Turn the printer off, and check the continuity of the HVPS cable. Is there continuity?	Go to step 5.	Replace the cable assembly.
Step 5 Replace the HVPS. See “High-voltage power supply (HVPS) removal” on page 239 . Does this solve the problem?	Problem is solved.	Replace the controller board. See “Controller board removal” on page 291 .

Vertical banding check

Replace the developer cartridge.

Light print on solids check

Light print can be caused by incorrect media. For more information, see [“Media guidelines” on page 23](#).

Color problems check

For more information on non-mechanical color issues, see [“Color theory” on page 350](#).

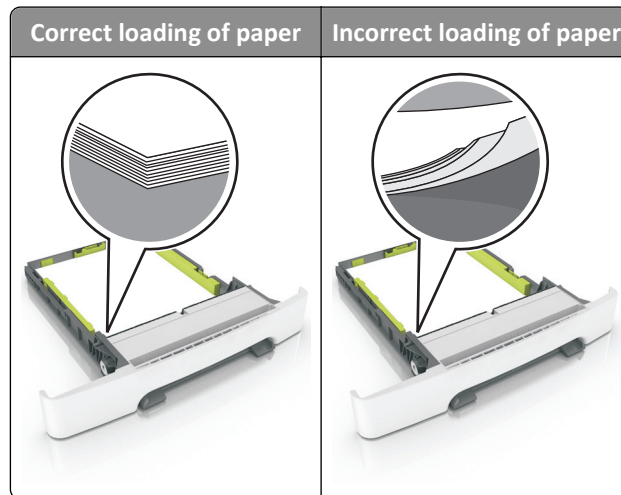
Paper jams

- “Avoiding jams” on page 45
- “Understanding jam messages and locations” on page 47
- “200 paper jams” on page 48
- “202 paper jams” on page 52
- “23y paper jams” on page 57
- “24y paper jams” on page 64
- “25y paper jams” on page 68

Avoiding jams

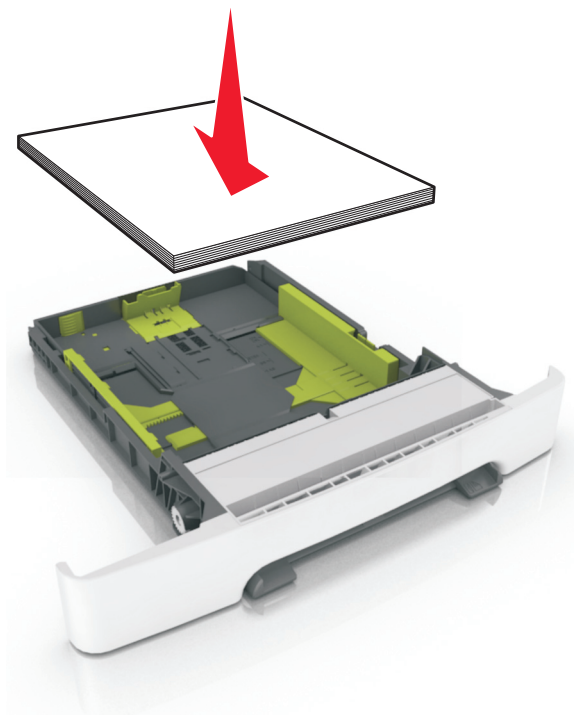
Load paper properly

- Make sure paper lies flat in the tray.



- 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.

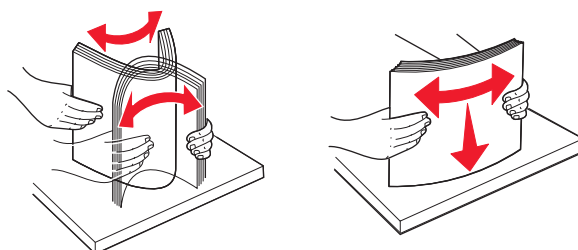
- Do not slide the paper into the tray. Load paper as shown in the illustration.



- 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.

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



#	Jam location	Message on the display	What to do
1	Standard bin	[x]-page jam, clear standard bin. [203.xx]	Remove the jammed paper.
2	Fuser	[x]-page jam, open front door to clear fuser. [202.xx]	Open the front door, pull the tab and hold the fuser cover down, and then remove the jammed paper.
3	Front door	[x]-page jam, open front door. [20y.xx]	Open the front door, and then remove the jammed paper.
4	Duplex	[x]-page jam, open front door to clear duplex. [23y.xx]	Open the front door, and then remove the jammed paper.
5	Tray [x]	[x]-page jam, open tray [x]. [24y.xx]	Pull the indicated tray out, and then remove the jammed paper.
6	Manual feeder	[x]-page jam, clear manual feeder. [251.xx]	Remove the jammed paper.
7	Multipurpose feeder	[x]-page jam, clear multipurpose feeder. [250.xx]	Push the paper release lever to lift the paper rollers, and then remove the jammed paper.

200 paper jams

200 paper jams

- 1 Pull tray 1 out.



- 2 Firmly grasp the jammed paper, and then gently pull it out.

Note: Make sure all paper fragments are removed.



- 3 Push tray 1 back in.
- 4 From the operator panel, touch **Continue, jam cleared**.

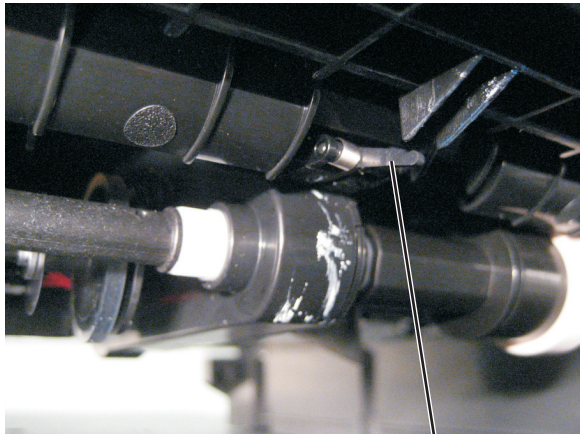
200 paper jam messages

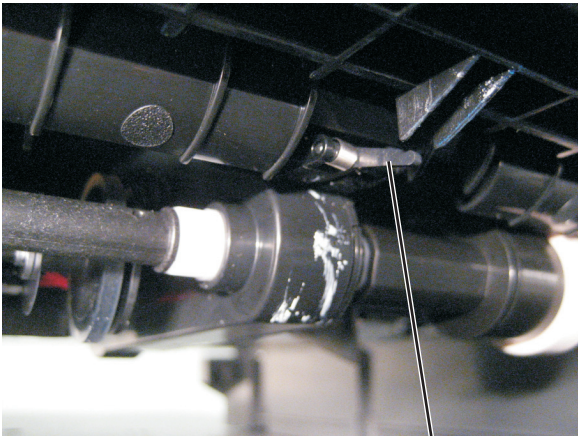
Error code	Description	Action
200.xx	A single page of media jam at the input (S2) sensor. Multiple pages of media are jammed at the input sensor.	Go to “Input sensor (S2) jam service check” on page 49.
200.01	The input (S2) sensor is obstructed.	Go to “Input sensor (S2) jam service check” on page 49.
200.02	The input (S2) sensor was made early.	Go to “Input sensor (S2) jam service check” on page 49.
200.03	The input (S2) sensor did not make.	Go to “Input sensor (S2) jam service check” on page 49.
200.05	The input (S2) sensor did not break.	Go to “Input sensor (S2) jam service check” on page 49.
200.20	The staging motor has an error.	Go to “Paper pick motor drive assembly service check” on page 96.
200.21	The staging motor has an error.	Go to “Paper pick motor drive assembly service check” on page 96.
200.22	The staging motor has an error.	Go to “Paper pick motor drive assembly service check” on page 96.
201.xx	A software induced stoppage has occurred. This should not happen in the field.	POR the printer.

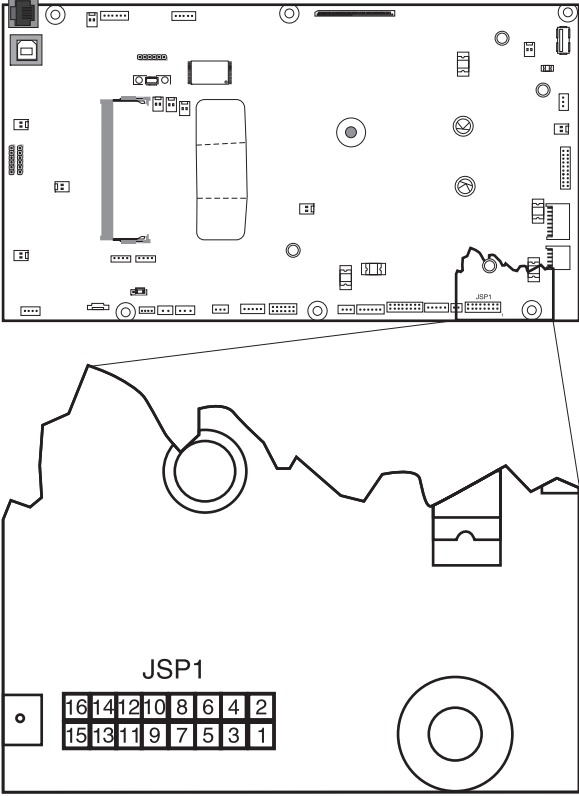
Input sensor (S2) jam service check

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

Actions	Yes	No
Step 1 a Pull out tray 1. b Remove the jammed page(s). Does the error clear?	Problem resolved.	Go to step 2.

Actions	Yes	No
<p>Step 2</p> <p>Remove tray 1.</p> <p>Is the input S2 sensor flag (A) damaged?</p> <div data-bbox="253 369 829 800">A close-up photograph of a mechanical assembly. A thin, light-colored flag, labeled 'A' with a leader line, is attached to a rotating shaft. The shaft is part of a larger assembly with various metal components and a black plastic housing. The background is dark and out of focus.</div> <div data-bbox="677 821 696 846">A</div>	<p>Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.</p>	<p>Go to step 3.</p>

Actions	Yes	No
<p>Step 3</p> <p>Enter Diagnostics Menu.</p> <p>For CS310 models, turn the printer on, press and hold Down and Right, and release the buttons with the installed memory and processor speed displays.</p> <p>For CS410 and CS510 models, turn the printer on, press and hold 3 and 6, and release the buttons with the installed memory and processor speed displays.</p> <p>Perform the Base Sensor Test. See “BASE SENSOR TEST” on page 176.</p> <ul style="list-style-type: none"> a Select Base Sensor Test, and press Select. b Select S2 Sensor, and press Select. c Pull tray 1 out, and rotate the S2 sensor flag (A). (The S2 sensor is located in the front of the center paper pick motor drive assembly housing.) It should rotate freely and return to its original position.  <p style="text-align: center;">A</p> <ul style="list-style-type: none"> d Watch the display while pushing up on the flag. <p>Does the display indicate Media Clean and Media Present?</p>	<p>Problem resolved.</p>	<p>Go to step 4.</p>

Actions	Yes	No
<p>Step 4</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Is the JSP1 cable connector properly connected to the controller board?</p> 	<p>Go to step 5.</p>	<p>Reseat the connector.</p>
<p>Step 5</p> <p>Turn the printer on, and check the voltage at JSP1 pin 15.</p> <p>Is the voltage approximately +5 V dc?</p>	<p>Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

202 paper jams

202 paper jams

Paper jam in the standard exit bin

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

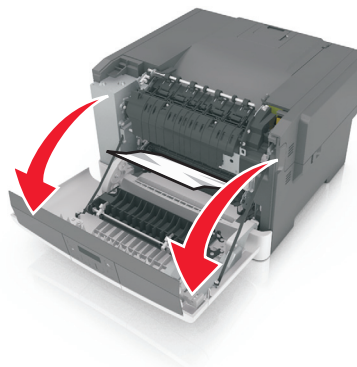
Note: Make sure all paper fragments are removed.



- 2 From the operator panel, touch **Continue, jam cleared**.

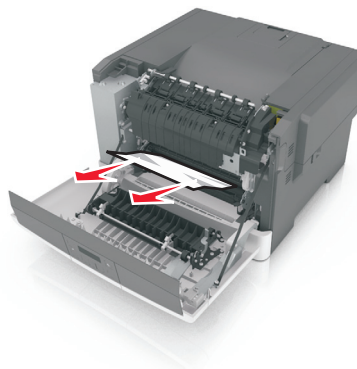
Paper jam in the fuser

- 1 Open the front door.
- 2 Open the fuser cover.



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

Note: Make sure all paper fragments are removed.


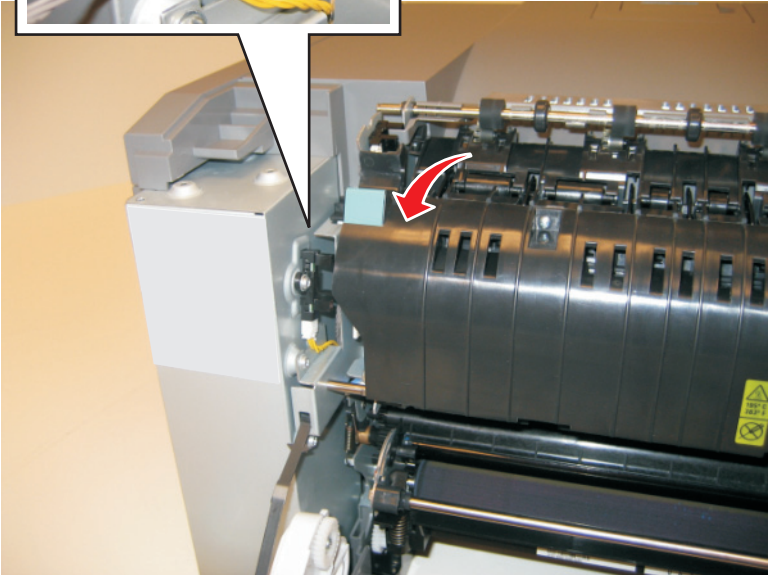


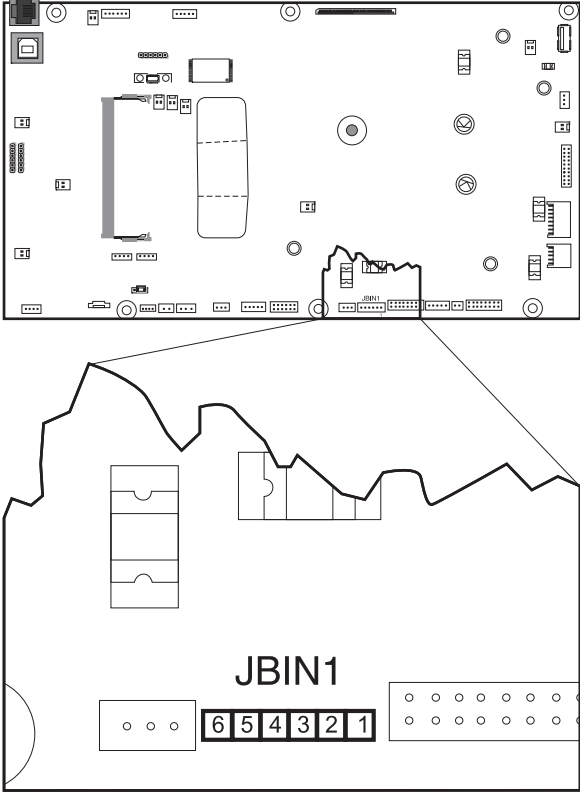
- 4 Close the front door.
- 5 From the operator panel, touch **Continue, jam cleared**.

202 paper jam messages

Error code	Description	Action
202.xx	A single page of media is jammed at the exit sensor. Multiple pages of media are jammed at the exit sensor.	Go to “Fuser exit sensor service check” on page 55.
202.01	The exit sensor is obstructed.	Go to “Fuser exit sensor service check” on page 55.
202.02	The exit sensor was made early.	Go to “Fuser exit sensor service check” on page 55.
202.03	The exit sensor did not make.	Go to “Fuser exit sensor service check” on page 55.
202.04	The exit sensor broke early.	Go to “Fuser exit sensor service check” on page 55.
202.05	The exit sensor did not break.	Go to “Fuser exit sensor service check” on page 55.
202.51	The exit sensor is obstructed. The fuser is past end of life.	Go to “Fuser exit sensor service check” on page 55.
202.52	The exit sensor was made early. The fuser is past end of life.	Go to “Fuser exit sensor service check” on page 55.
202.53	The exit sensor did not make. The fuser is past end of life.	Go to “Fuser exit sensor service check” on page 55.
202.54	The exit sensor broke early. The fuser is past end of life.	Go to “Fuser exit sensor service check” on page 55.
202.55	The exit sensor did not break. The fuser is past end of life.	Go to “Fuser exit sensor service check” on page 55.

Fuser exit sensor service check

Actions	Yes	No
<p>Step 1 Open the front cover.</p>   <p>Is the sensor dislodged or damaged?</p>	<p>Replace the fuser exit sensor. See “Fuser exit sensor removal” on page 228.</p>	<p>Go to step 2.</p>
<p>Step 2 Enter Diagnostics Menu. For CS310 models, turn the printer off, press and hold Down and Right, turn the printer on, and then release the buttons when the installed memory and processor speed displays. For CS410 and CS510 models, turn the printer off, press and hold 3 and 6, turn the printer on, and then release the buttons when the installed memory and processor speed displays) Perform the Base Sensor Test. See “BASE SENSOR TEST” on page 176.</p> <ul style="list-style-type: none"> a Select Base Sensor Test, and press Select. b Select Fuser Exit Sensor, and press Select. c Watch the display while rotating the flag in and out of the sensor. <p>Did the sensor go from closed to open?</p>	<p>Problem solved.</p>	<p>Go to step 4.</p>

Actions	Yes	No
<p>Step 3</p> <p>Turn the printer off, and then remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Is the cable correctly connected to JBIN1 on the controller board and to the sensor?</p> 	Go to step 5.	Reconnect the cable.
<p>Step 4</p> <p>Turn the printer on, and check the values at JBIN1:</p> <ul style="list-style-type: none"> Pin 4: 0 V dc (+5 V dc during cycle) Pin 5: +0 V dc (unblocked), +3.3 V dc (blocked) Pin 6: Ground <p>Are the values correct?</p>	Replace the fuser exit sensor. See “Fuser exit sensor removal” on page 228 .	Replace the controller board. See “Controller board removal” on page 291 .

23y paper jams

23y paper jams

- 1 Pull tray 1 out.



- 2 Firmly grasp the jammed paper, and then gently pull it out.

Note: Make sure all paper fragments are removed.



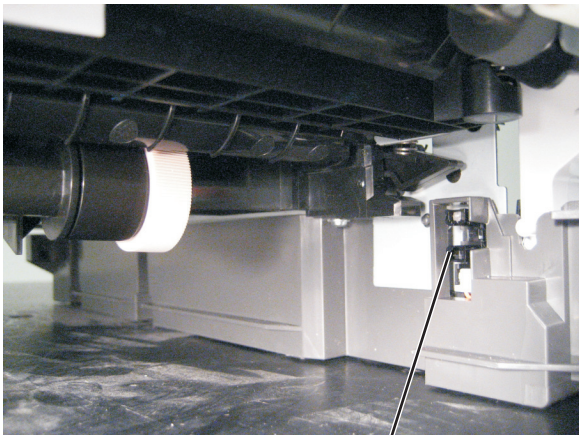
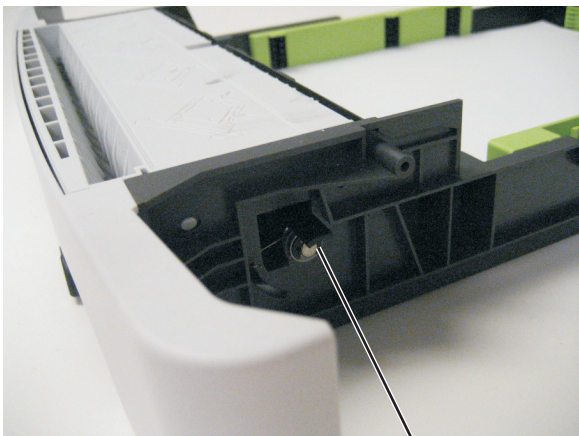
- 3 Push tray 1 back in.
- 4 From the operator panel, touch **Continue, jam cleared**.

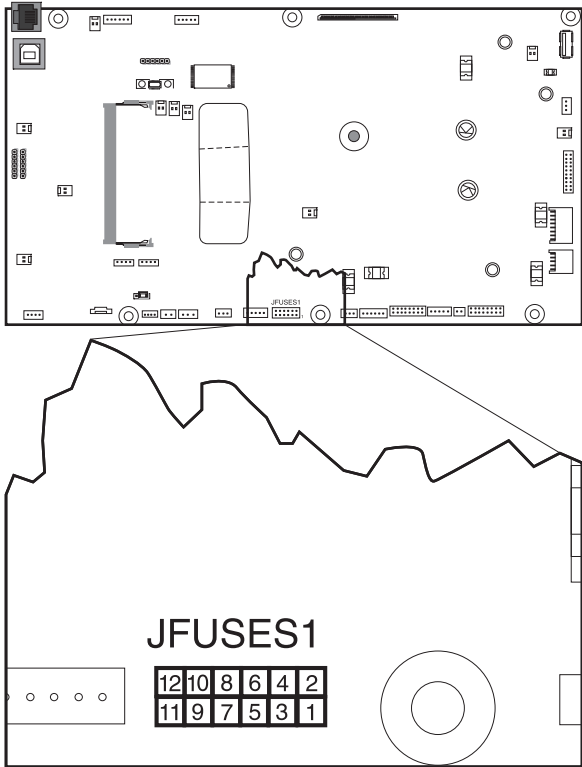
23y paper jam messages

Error code	Description	Action
230.xx	A single page of media is jammed at the inner door. Multiple pages of media are jammed at the inner door.	Go to “Duplex/manual feed sensor (S1) service check” on page 58.
230.01	The Duplex (S1) sensor is obstructed.	Go to “Duplex/manual feed sensor (S1) service check” on page 58.
230.02	The Duplex (S1) sensor was made early.	Go to “Duplex/manual feed sensor (S1) service check” on page 58.
230.03	The Duplex (S1) sensor did not make.	Go to “Duplex/manual feed sensor (S1) service check” on page 58.
230.06	No media in duplexer.	Go to “Duplex/manual feed sensor (S1) service check” on page 58.
232.xx	Paper jam at input sensor.	Go to “Duplex/manual feed sensor (S2) service check” on page 60.
232.02	The input (S2) sensor was made early while duplexing.	Go to “Duplex/manual feed sensor (S2) service check” on page 60.
232.03	The input (S2) sensor did not make while duplexing.	Go to “Duplex/manual feed sensor (S2) service check” on page 60.
232.05	The input (S2) sensor did not break while duplexing.	Go to “Duplex/manual feed sensor (S2) service check” on page 60.

Duplex/manual feed sensor (S1) service check

Actions	Yes	No
Step 1 Is the printer setting on a hard, flat surface?	Go to step 2.	Make sure the printer is setting on a level, flat surface
Step 2 Enter Diagnostics Menu. For CS310 models, turn the printer off, press and hold Down and Right , turn the printer on, and then release the buttons when the installed memory and processor speed displays. For CS410 and CS510 models, turn the printer off, press and hold 3 and 6 , turn the printer on, and then release the buttons when the installed memory and processor speed displays). Perform the Base Sensor Test. See “BASE SENSOR TEST” on page 176. a Select Base Sensor Test, and press Select . b Select S1, and press Select . c Install tray 1. Does the display indicate InputS1-Media Clear... ?	Go to step 3.	Go to step 5.

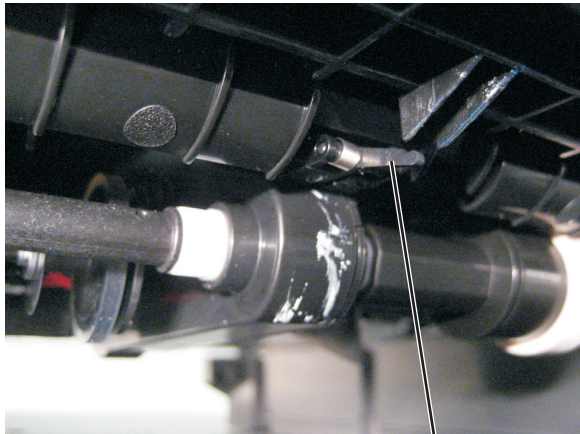
Actions	Yes	No
Step 3 Pull tray 1 out. Does the display indicate InputS1-Media Present... ?	The sensor is functioning correctly.	Go to step 4.
Step 4 Remove the tray, and inspect the sensor (A).  A Is there something obstructing the sensor?	Remove the obstruction, and restart the test.	Go to step 5.
Step 5 Inspect the spring-loaded shaft/flag (B) in the tray.  B The flag portion of the shaft intercepts the sensor, except when a sheet is being staged for duplexing. Does the shaft rotate freely and return to home position (flag at top of rotation?)	Go to step 6.	Replace the tray with a new one.
Step 6 is the flag on the shaft broken?	Replace the tray.	Go to step 7.

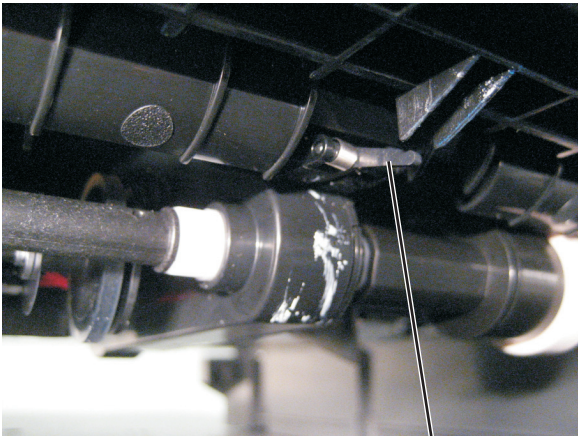
Actions	Yes	No
<p>Step 7</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Verify the cable is correctly connected to JFUSES1 on the controller board and to the sensor.</p>  <p>Is the sensor cable properly connected?</p>	Go to step 8.	Reconnect the cable. If the problem persists, then go to step 8.
<p>Step 8</p> <p>Turn the printer on, and check the values at JFUSES1:</p> <p>Pin 8: Ground</p> <p>Pin 9: +3.3 V dc</p> <p>Are the values approximately correct?</p>	Replace the duplex sensor. See “Duplex sensor removal” on page 284 .	Replace the controller board. See “Controller board removal” on page 291 .

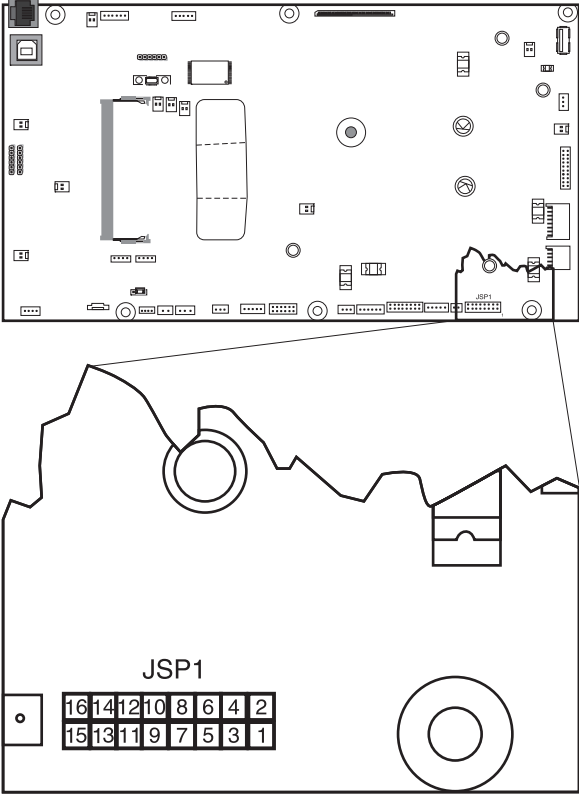
Duplex/manual feed sensor (S2) service check

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

Actions	Yes	No
<p>Step 1</p> <p>a Open the front door to access the jam area.</p> <p>b Remove the jammed page(s).</p> <p>Does the error clear?</p>	Problem resolved.	Go to step 2.

Actions	Yes	No
<p>Step 2</p> <p>Remove tray 1.</p> <p>Is the input S2 sensor flag (A) damaged?</p> <div data-bbox="253 369 829 800">A close-up photograph of a mechanical assembly. A thin, light-colored flag, labeled 'A' with a leader line, is attached to a rotating shaft. The shaft is part of a larger assembly with various metal components and a black plastic housing. The background is dark and out of focus.</div> <div data-bbox="677 821 696 846">A</div>	<p>Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.</p>	<p>Go to step 3.</p>

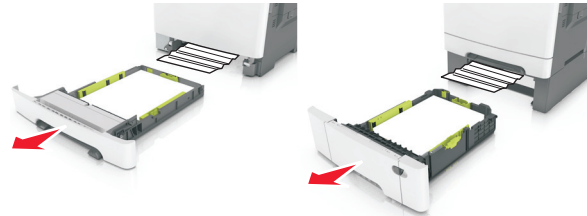
Actions	Yes	No
<p>Step 3</p> <p>Enter Diagnostics Menu.</p> <p>For CS310 models, turn the printer on, press and hold Down and Right, and release the buttons with the installed memory and processor speed displays.</p> <p>For CS410 and CS510 models, turn the printer on, press and hold 3 and 6, and release the buttons with the installed memory and processor speed displays.</p> <p>Perform the Base Sensor Test. See “BASE SENSOR TEST” on page 176.</p> <ul style="list-style-type: none"> a Select Base Sensor Test, and press Select. b Select S2 Sensor, and press Select. c Pull tray 1 out, and rotate the S2 sensor flag (A). (The S2 sensor is located in the front of the center paper pick motor drive assembly housing.) It should rotate freely and return to its original position.  <p style="text-align: center;">A</p> <ul style="list-style-type: none"> d Watch the display while pushing up on the flag. <p>Does the display indicate Media Clean and Media Present?</p>	<p>Problem resolved.</p>	<p>Go to step 4.</p>

Actions	Yes	No
<p>Step 4</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Is the JSP1 cable connector properly connected to the controller board?</p> 	Go to step 5.	Reseat the connector.
<p>Step 5</p> <p>Turn the printer on, and check the voltage at JSP1 pin 15.</p> <p>Is the voltage approximately +5 V dc?</p>	<p>Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

24y paper jams

24y paper jams

1 Pull tray 1 out.



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



Note: Make sure all paper fragments are removed.

3 Push tray 1 back in.

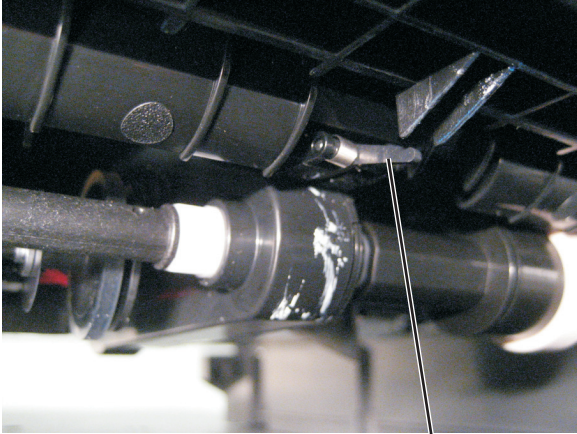
4 From the operator panel, touch **Continue, jam cleared**.

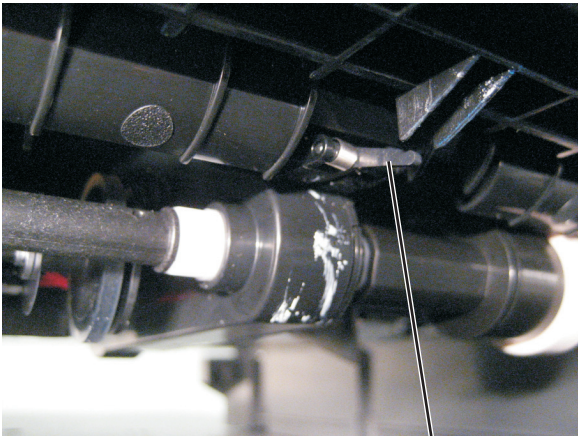
24y paper jam messages

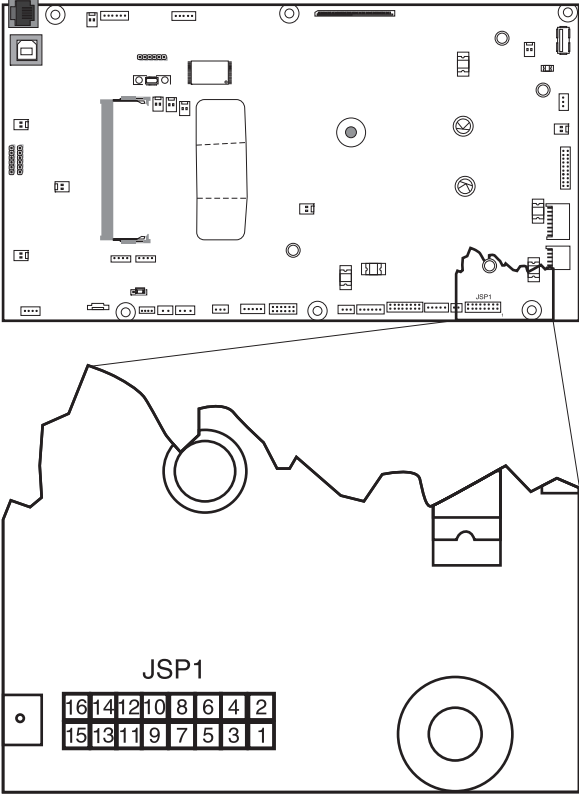
Error code	Description	Action
242.xx	A single or multiple page media jam in the 650-sheet Duo Drawer (tray 2). Multiple pages of media are jammed in the 650-sheet Duo Drawer (tray 2).	Go to “Tray X input sensor (S2) jam service check” on page 65.
243.xx	A single or multiple page media jam in the 550-sheet Duo Drawer (tray 3). Multiple pages of media are jammed in the 550-sheet Duo Drawer (tray 3).	Go to “Tray X input sensor (S2) jam service check” on page 65.

Tray X input sensor (S2) jam service check

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

Actions	Yes	No
<p>Step 1</p> <ul style="list-style-type: none"> a Clear paper path. b Fan the media. c Verify the proper tray settings for the media. d Check the condition of the pick tires. e Make sure the tray is fully inserted <p>Does the error clear?</p>	<p>Problem resolved.</p>	<p>Go to step 2.</p>
<p>Step 2</p> <p>Remove tray 1.</p> <p>Is the input S2 sensor flag (A) damaged?</p> 	<p>Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.</p>	<p>Go to step 3.</p>

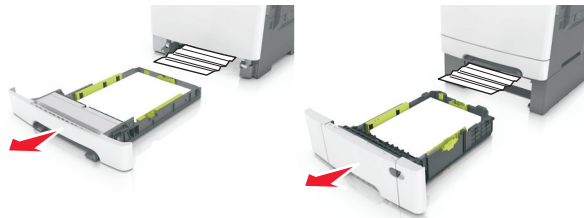
Actions	Yes	No
<p>Step 3</p> <p>Enter Diagnostics Menu.</p> <p>For CS310 models, turn the printer on, press and hold Down and Right, and release the buttons with the installed memory and processor speed displays.</p> <p>For CS410 and CS510 models, turn the printer on, press and hold 3 and 6, and release the buttons with the installed memory and processor speed displays.</p> <p>Perform the Base Sensor Test. See “BASE SENSOR TEST” on page 176.</p> <ul style="list-style-type: none"> a Select Base Sensor Test, and press Select. b Select S2 Sensor, and press Select. c Pull tray 1 out, and rotate the S2 sensor flag (A). (The S2 sensor is located in the front of the center paper pick motor drive assembly housing.) It should rotate freely and return to its original position.  <p style="text-align: center;">A</p> <ul style="list-style-type: none"> d Watch the display while pushing up on the flag. <p>Does the display indicate Media Clean and Media Present?</p>	<p>Problem resolved.</p>	<p>Go to step 4.</p>

Actions	Yes	No
<p>Step 4</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Is the JSP1 cable connector properly connected to the controller board?</p> 	<p>Go to step 5.</p>	<p>Reseat the connector.</p>
<p>Step 5</p> <p>Turn the printer on, and check the voltage at JSP1 pin 15.</p> <p>Is the voltage approximately +5 V dc?</p>	<p>Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

25y paper jams

25y paper jams

1 Pull tray 1 out.



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

Note: Make sure all paper fragments are removed.



3 Push tray 1 back in.

4 From the operator panel, touch **Continue, jam cleared**.

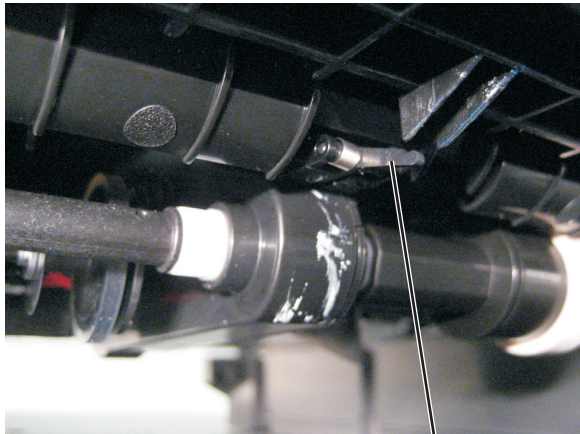
25y paper jam messages

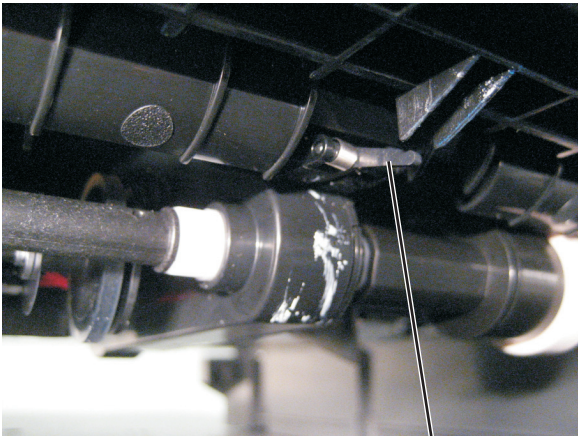
Error code	Description	Action
250.xx	A single page of media is jammed in the multipurpose feeder.	Go to “Multipurpose feeder input sensor (S2) jam service check” on page 68 .

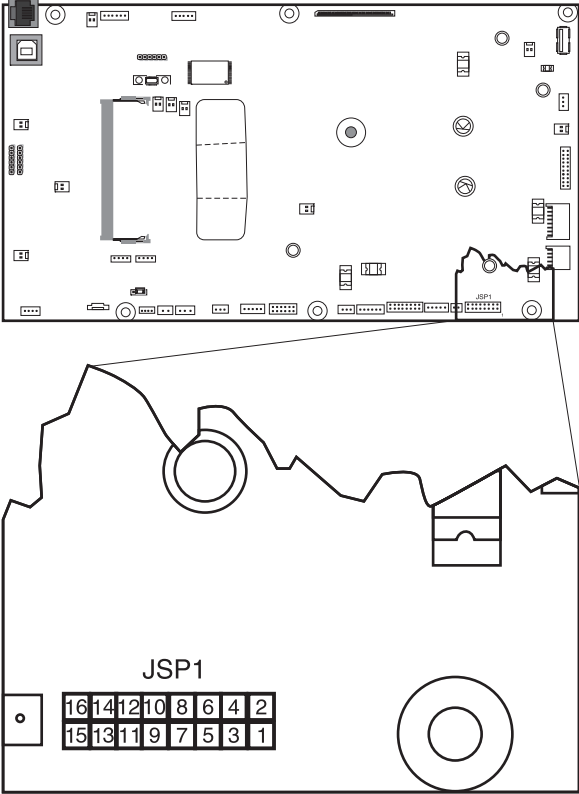
Multipurpose feeder input sensor (S2) jam service check

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

Actions	Yes	No
Step 1 a Open tray 2 to access the jam area, and remove the jammed page. b Fan the media. c Verify the proper tray settings for the media. d Check the condition of the pick tires. Does the error clear?	Problem resolved.	Go to step 2.

Actions	Yes	No
<p>Step 2</p> <p>Remove tray 1.</p> <p>Is the input S2 sensor flag (A) damaged?</p> <div data-bbox="253 369 829 800">A close-up photograph of a mechanical assembly. A thin, light-colored flag, labeled 'A' with a leader line, is positioned near a dark, cylindrical component. The background shows various mechanical parts, including a metal frame and a black plastic component.</div> <div data-bbox="677 821 696 846">A</div>	<p>Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.</p>	<p>Go to step 3.</p>

Actions	Yes	No
<p>Step 3</p> <p>Enter Diagnostics Menu.</p> <p>For CS310 models, turn the printer on, press and hold Down and Right, and release the buttons with the installed memory and processor speed displays.</p> <p>For CS410 and CS510 models, turn the printer on, press and hold 3 and 6, and release the buttons with the installed memory and processor speed displays.</p> <p>Perform the Base Sensor Test. See “BASE SENSOR TEST” on page 176.</p> <ul style="list-style-type: none"> a Select Base Sensor Test, and press Select. b Select S2 Sensor, and press Select. c Pull tray 1 out, and rotate the S2 sensor flag (A). (The S2 sensor is located in the front of the center paper pick motor drive assembly housing.) It should rotate freely and return to its original position.  <p style="text-align: center;">A</p> <ul style="list-style-type: none"> d Watch the display while pushing up on the flag. <p>Does the display indicate Media Clean and Media Present?</p>	<p>Problem resolved.</p>	<p>Go to step 4.</p>

Actions	Yes	No
<p>Step 4</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Is the JSP1 cable connector properly connected to the controller board?</p> 	<p>Go to step 5.</p>	<p>Reseat the connector.</p>
<p>Step 5</p> <p>Turn the printer on, and check the voltage at JSP1 pin 15.</p> <p>Is the voltage approximately +5 V dc?</p>	<p>Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

Understanding printer messages


- [“Understanding the printer messages” on page 72](#)

Understanding the printer messages

Message	Action
Adjusting color	Wait for the process to complete.
Change [paper source] to [custom type name]	Try one or more of the following: <ul style="list-style-type: none"> Load the correct size and type of paper in the tray, and then select Finished changing paper on the printer control panel to clear the message and continue printing. For non-touch-screen models, press OK to confirm. Note: Make sure the paper size and type are specified in the Paper menu on the printer control panel. Cancel the job.
Change [paper source] to [custom string]	
Change [paper source] to [paper type] [paper size]	
Close door	Make sure the right side cover is installed, and then close the front and top doors to clear the message.
[Color] cartridge low [88.xy]	You may need to order a toner cartridge. If necessary, select Continue to clear the message and continue printing. For non-touch-screen models, press OK to confirm.
[Color] cartridge nearly low [88.xy]	If necessary, select Continue to clear the message and continue printing. For non-touch-screen models, press OK to confirm.
[Color] cartridge very low [88.xy]	You may need to replace the toner cartridge very soon. If necessary, select Continue to clear the message and continue printing. For non-touch-screen models, press OK to confirm.
Black and color imaging kit low [84.xy]	You may need to order an imaging kit. If necessary, select Continue to clear the message and continue printing. For non-touch-screen models, press OK to confirm.
Black and color imaging kit nearly low [84.xy]	If necessary, select Continue to clear the message and continue printing. For non-touch-screen models, press OK to confirm.
Black and color imaging kit very low [84.xy]	You may need to replace the imaging kit very soon. If necessary, select Continue to clear the message and continue printing. For non-touch-screen models, press OK to confirm.
Complex page, some data may not have printed [39]	Try one or more of the following: <ul style="list-style-type: none"> From the printer control panel, select Continue to ignore the message and continue printing. For non-touch-screen models, press OK to confirm. Cancel the current job. For non-touch-screen models, press OK to confirm. Install additional printer memory.

Message	Action
Configuration change, some held jobs were not restored [57]	<p>Held jobs are invalidated because of any of the following possible changes in the printer:</p> <ul style="list-style-type: none"> • The printer firmware has been updated. • The tray for the print job is removed. • The print job is sent from a flash drive that is no longer attached to the USB port. • The printer hard disk contains print jobs that were stored when the hard disk was installed in a different printer model. <p>From the printer control panel, select Continue to clear the message. For non-touch-screen models, press OK to confirm.</p>
Defective flash detected [51]	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • Replace the defective flash memory card. • From the printer control panel, select Continue to ignore the message and continue printing. For non-touch-screen models, press OK to confirm. • Cancel the current print job.
Error reading USB drive. Remove USB.	An unsupported USB device is inserted. Remove the USB device, and then insert a supported one.
Error reading USB hub. Remove hub.	An unsupported USB hub has been inserted. Remove the USB hub, and then install a supported one.
Incompatible tray [x] [59]	Remove, and then reinstall the indicated tray to clear the message.
Incorrect paper size, open [paper source] [34]	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • Load the correct size of paper in the tray. • From the printer control panel, select Continue to clear the message and print using a different tray. For non-touch-screen models, press OK to confirm. • Check the tray length and width guides and make sure the paper is loaded properly in the tray. • Make sure the correct paper size and type are specified in the Printing Preferences or in the Print dialog. • Make sure the paper size and type are specified in the Paper menu on the printer control panel. • Make sure that the paper size is correctly set. For example, if MP Feeder Size is set to Universal, then make sure the paper is large enough for the data being printed. • Cancel the print job.
Insert Tray [x]	Insert the indicated tray into the printer.
Insufficient memory for Flash Memory Defragment operation [37]	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • From the printer control panel, select Continue to stop the defragmentation and continue printing. For non-touch-screen models, press OK to confirm.

Message	Action
Insufficient memory, some Held Jobs were deleted [37]	The printer deleted some held job to process current job. Select Continue to clear the message. For non-touch-screen models, press OK to confirm.
Insufficient memory to collate job [37]	Try one or more of the following: <ul style="list-style-type: none"> From the printer control panel, select Continue to print the part of the job already stored and begin collating the rest of the print job. For non-touch-screen models, press OK to confirm. Cancel the current print job.
Insufficient memory to support Resource Save feature [35]	Install additional printer memory or select Continue on the printer control panel to disable Resource Save, clear the message, and continue printing. For non-touch-screen printer models, press OK to confirm.
Insufficient memory, some held jobs will not be restored [37]	Try one or more of the following: <ul style="list-style-type: none"> From the printer control panel, select Continue to clear the message. For non-touch-screen printer models, press OK to confirm. Delete other held jobs to free up additional printer memory.
Load [paper source] with [custom type name]	Try one or more of the following: <ul style="list-style-type: none"> Load the tray or feeder with the correct size and type of paper. To use the tray with the correct paper size or type, select Finished loading paper on the printer control panel. For non-touch-screen printer models, press OK to confirm. Note: If the printer detects a tray that has the correct paper type and size, then it feeds from that tray. If the printer cannot detect a tray that has the correct paper type and size, then it prints from the default paper source. Cancel the current job.
Load [paper source] with [custom string]	
Load [paper source] with [paper size]	
Load [paper source] with [paper type] [paper size]	
Load Manual Feeder with [custom string]	Try one or more of the following: <ul style="list-style-type: none"> Load the feeder with the correct size and type of paper. Depending on your printer model, touch Prompt each page, paper loaded or press OK on the printer control panel to clear the message and continue printing. Cancel the current job.
Load Manual Feeder with [custom type name]	
Load Manual Feeder with [paper size]	
Load Manual Feeder with [paper type] [paper size]	
Maintenance kit low [80.xy]	You may need to order a maintenance kit. For more information, contact customer support at http://support.lexmark.com or your service representative. If necessary, select Continue to clear the message and continue printing. For non-touch-screen printer models, press OK to confirm.

Message	Action
Maintenance kit nearly low [80.xy]	For more information, contact customer support at http://support.lexmark.com or your service representative. If necessary, select Continue to clear the message and continue printing. For non-touch-screen printer models, press OK to confirm.
Maintenance kit very low [80.xy]	You may need to replace the maintenance kit very soon. For more information, contact customer support at http://support.lexmark.com or your service representative. If necessary, select Continue to clear the message and continue printing. For non-touch-screen printer models, press OK to confirm.
Memory full [38]	Try one or more of the following: <ul style="list-style-type: none"> • From the printer control panel, select Cancel job to clear the message. For non-touch-screen printer models, press OK to confirm. • Turn off the printer, wait for about 10 seconds, and then turn the printer back on. • Update the network firmware in the printer or print server. For more information, contact customer support.
Network [x] software error [54]	Try one or more of the following: <ul style="list-style-type: none"> • From the printer control panel, select Continue to continue printing. For non-touch-screen printer models, press  to confirm. • Turn off the printer, wait for about 10 seconds, and then turn the printer back on. • Update the network firmware in the printer or print server. For more information, visit the Lexmark support Web site at http://support.lexmark.com.
Not enough free space in flash memory for resources [52]	Try one or more of the following: <ul style="list-style-type: none"> • From the printer control panel, select Cancel job to clear the message. For non-touch-screen printer models, press OK to confirm. • Delete fonts, macros, and other data stored in the flash memory. • Upgrade to a larger capacity flash memory card. <p>Note: Downloaded fonts and macros that are not previously stored in the flash memory are deleted.</p>

Message	Action
<p>Non-Lexmark [color] [supply type], see User's Guide [33.xy]</p>	<p>Note: The supply type can be toner cartridge or the imaging kit.</p> <p>The printer has detected a non-Lexmark supply or part installed in the printer.</p> <p>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.</p> <p>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 its associated components.</p> <p>Warning—Potential Damage: Potential Damage - Use of third-party supplies or parts can affect warranty coverage. Damage caused by the use of third-party supplies or parts may not be covered by 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 and hold Cancel and # on the printer control panel simultaneously for 15 seconds. For non-touch-screen printer models, press OK and Cancel 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.</p> <p>Note: For the list of supported supplies, see the "Ordering supplies" section of the User's Guide or visit http://support.lexmark.com.</p>
<p>PPDS font error [50]</p>	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • From the printer control panel, select Continue to clear the message and continue printing. For non-touch-screen printer models, press OK to confirm. • If the printer cannot find the requested font, then from the printer control panel, navigate to: PPDS menu > Best Fit > On <p>The printer will find a similar font and reformat the affected text.</p> <ul style="list-style-type: none"> • Cancel the job.
<p>Reinstall missing or unresponsive [color] cartridge [31.xy]</p>	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • Install the missing toner cartridge. For more information, see the "Replacing supplies" section of the <i>User's Guide</i>. • Remove the unresponsive cartridge, and then reinstall it. <p>Note: If the message appears after reinstalling the supply, then the cartridge may be defective. Replace the cartridge.</p>

Message	Action
Reinstall missing or unresponsive black and color imaging kit [31.xy]	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • Install the missing imaging kit. For more information, see the "Replacing supplies" section of the <i>User's Guide</i>. • Remove the unresponsive imaging kit, and then reinstall it. <p>Note: If the message appears after reinstalling the supply, then the imaging kit may be defective. Replace the imaging kit.</p>
Reload printed pages in Tray [x]	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • From the printer control panel, select Continue to clear the message and continue printing the second side of the sheet. For non-touch-screen printer models, press OK to confirm.
Remove packaging material, [area name]	<ol style="list-style-type: none"> 1 Remove any remaining packing material from the indicated location. 2 From the printer control panel, touch Continue to clear the message. For non-touch-screen printer models, press OK to confirm.
Remove paper from standard output bin	Remove the paper stack from the standard bin.
Replace [color] cartridge, 0 estimated pages remain [88.xy]	<p>Replace the indicated toner cartridge to clear the message and continue printing. For more information, see the instruction sheet that came with the supply.</p> <p>Note: If you do not have a replacement cartridge, then see the "Ordering supplies" section of the <i>User's Guide</i> or visit http://support.lexmark.com.</p>
Replace [color] cartridge, printer region mismatch [42.xy]	<p>Install a toner cartridge that matches the region number of the printer. <i>x</i> indicates the value of the printer region. <i>y</i> indicates the value of the cartridge region. <i>x</i> and <i>y</i> can have the following values:</p> <ul style="list-style-type: none"> • 0: Global • 1: United States, Canada • 2: European Union (EU), European Economic Area (EEA), Switzerland • 8: Rest of the world • 9: Invalid <p>Notes:</p> <ul style="list-style-type: none"> • The <i>x</i> and <i>y</i> values are the .xy of the error code shown on the printer control panel. • The <i>x</i> and <i>y</i> values must match for printing to continue.

Message	Action
Replace [type] imaging kit, 0 estimated pages remain [84.xy]	<p>Replace the indicated imaging kit to clear the message and continue printing. For more information, see the instruction sheet that came with the supply.</p> <p>Note: If you do not have a replacement imaging kit, then see the "Ordering supplies" section of the <i>User's Guide</i> or visit http://support.lexmark.com.</p>
Replace defective [color] cartridge [31.xy]	<p>Replace the defective toner cartridge to clear the message. For more information, see the instruction sheet that came with the supply.</p> <p>Note: If you do not have a replacement toner cartridge, then see the "Ordering supplies" section of the <i>User's Guide</i> or visit http://support.lexmark.com.</p>
Replace defective black and color imaging kit [31.xy]	<p>Replace the defective imaging kit to clear the message and continue printing. For more information, see the instruction sheet that came with the supply.</p> <p>Note: If you do not have a replacement imaging kit, then see the "Ordering supplies" section of the <i>User's Guide</i> or visit http://support.lexmark.com.</p>
Replace maintenance kit, 0 estimated pages remain [80.xy]	Contact customer support at http://support.lexmark.com or your service representative, and then report the message. The printer is scheduled for maintenance.
Replace missing [color] cartridge [31.xy]	Install the indicated toner cartridge to clear the message. For more information, see the "Replacing supplies" section of the <i>User's Guide</i> .
Replace missing black and color imaging kit [31.xy]	Install the indicated imaging kit to clear the message. For more information, see the "Replacing supplies" section of the <i>User's Guide</i> .
Replace waste toner bottle [82.xy]	Replace the waste toner bottle to clear the message.
Replace unsupported [color] cartridge [32.xy]	<p>Remove the toner cartridge, and then install a supported one to clear the message.</p> <p>Note: If you do not have a replacement cartridge, then see the "Ordering supplies" section of the <i>User's Guide</i> or visit http://support.lexmark.com.</p>
Replace unsupported black and color imaging kit [32.xy]	<p>Remove the indicated imaging kit, and then install a supported one to clear the message.</p> <p>Note: If you do not have a replacement imaging kit, then see the "Ordering supplies" section of the <i>User's Guide</i> or visit http://support.lexmark.com.</p>
Replace missing waste toner bottle [82.xy]	Install the missing waste toner bottle to clear the message. For more information, see the instruction sheet that came with the supply.

Message	Action
Restore held jobs?	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • Select Restore on the printer control panel to restore all held jobs stored in the printer hard disk. For non-touch-screen printer models, press OK to confirm. • Select Do not restore if you do not want any print jobs to be restored. For non-touch-screen printer models, press OK to confirm.
SMTP server not set up. Contact system administrator.	<p>From the printer control panel, touch Continue to clear the message.</p> <p>Note: If the message appears again, then contact your system support person</p>
Some held jobs were not restored	<p>From the printer control panel, select Continue to clear the message. For non-touch-screen printer models, press OK to confirm.</p> <p>Note: Held jobs that are not restored remain in the printer hard disk and are inaccessible.</p>
Standard network software error [54]	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • From the printer control panel, select Continue to continue printing. For non-touch-screen printer models, press OK to confirm. • Turn off the printer and then turn it back on. • Update the network firmware in the printer or print server. For more information, contact customer support.
Standard USB port disabled [56]	<p>From the printer control panel, select Continue to clear the message. For non-touch-screen printer models, press OK to confirm.</p> <p>Notes:</p> <ul style="list-style-type: none"> • The printer discards any data received through the USB port. • Make sure the USB Buffer menu is not set to Disabled.
Supply needed to complete job	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • From the printer control panel, touch Prompt for supplies to view all error messages that indicate what supplies are needed to continue processing the current job. For non-touch-screen printer models, press OK to clear the message and continue printing. <ol style="list-style-type: none"> 1 Order the missing supply immediately. 2 Install the supply. For more information, see the instruction sheet that came with the supply. • Cancel the print job, then install the missing supply, and then resent the print job.

Message	Action
Too many flash options installed [58]	<ol style="list-style-type: none"> 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 properly grounded electrical outlet. 5 Turn the printer back on.
Too many trays attached [58]	<ol style="list-style-type: none"> 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 a properly grounded electrical outlet. 5 Turn the printer back on.
Unformatted flash detected [53]	<p>Try one or more of the following:</p> <ul style="list-style-type: none"> • From the printer control panel, select Continue to continue printing. For non-touch-screen printer models, press OK to confirm. • Format the flash memory. <p>Note: If the error message remains, then the flash memory may be defective and need to be replaced.</p>
Waste toner bottle nearly full [82.xy]	<p>You may need to order a waste toner bottle. If necessary, select Continue on the printer control panel to clear the message and continue printing. For non-touch-screen printer models, press OK to confirm.</p>
Weblink server not set up. Contact system administrator.	<p>An error occurred on the SMTP server, or the SMTP server is not configured properly.</p> <p>From the printer control panel, touch Continue to clear the message.</p> <p>Note: If the message appears again, then contact your system support person.</p>

Printer hardware errors

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- “121 errors” on page 84
- “126 errors” on page 90
- “133 errors” on page 90
- “141 errors” on page 93
- “147 errors” on page 95
- “171 errors” on page 97
- “Steps before starting the 9yy service checks” on page 98
- “900 errors” on page 100
- “91y errors” on page 106

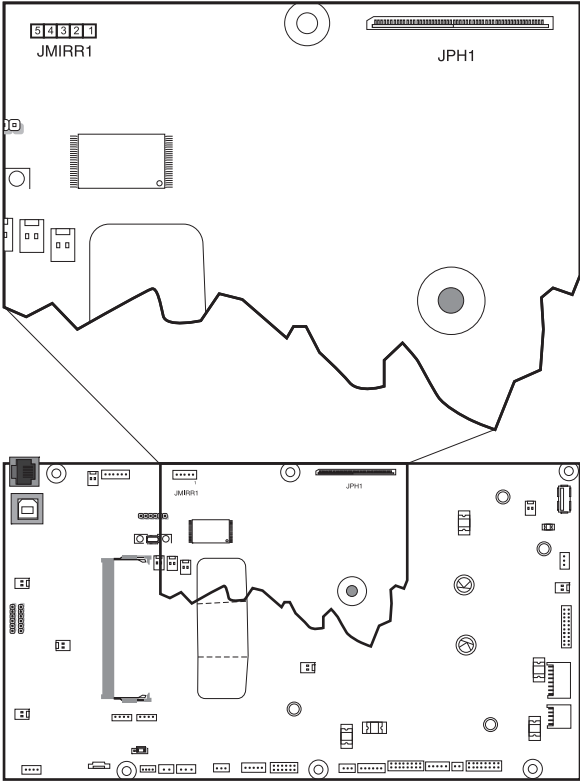
- “938 errors” on page 106
- “95y errors” on page 107
- “96y errors” on page 110
- “97y errors” on page 111
- “982 errors” on page 112
- “990 errors” on page 112
- “Base printer symptoms” on page 114
- “Bin-full/narrow media sensor service check” on page 115
- “Toner meter cycle (TMC) card service check” on page 117
- “Dead printer service check” on page 117
- “Front door sensor or switches service check” on page 119
- “Operator panel (display is dim and unchanging) service check” on page 123
- “Operator panel (displays all diamonds, no beeps, or five beeps) service check” on page 127
- “Operator panel (display blank) service check” on page 131
- “Operator panel (one or more operator panel buttons fail) service check” on page 135
- “Operator panel USB cable service check” on page 136
- “USB service check” on page 137
- “Network service check” on page 137

110 errors

110 error messages

Error code	Description	Action
110.xx	The printhead <color> error.	Go to “Printhead service check” on page 83.
110.01	The printhead <color> lost HSYNC	
110.02	The printhead <color> failed to complete servo.	
110.03	The printhead <color> mirror motors lost motor lock.	
110.04	The printhead <color> mirror motors lost motor lock.	
110.05	Failure reading NVRAM from printhead	
110.06	The printhead <color> thermistor is open.	
110.07	The printhead <color> thermistor is shorted.	
110.08	The printhead <color> laser showed bad in testing.	
110.09	The printhead <color> SOS EOS measurement did not complete.	
110.10	The printhead <color> has bad SOS EOS measurement.	
110.11	Failure writing data to the printhead.	
110.12	Failure reading data from the printhead.	
110.13	Printhead declared error.	

Printhead service check

Actions	Yes	No
<p>Step 1</p> <p>POR the printer.</p> <p>Does this solve the problem?</p>	The problem is solved.	Go to step 2.
<p>Step 2</p> <p>Turn the printer off, and then remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Check the cables at JMIRR1 and JPH1 on the controller board for proper connection, the printhead cable for pinch points, and the cable or connector for any other damage.</p> <p>Is the cable damaged?</p> 	<p>Replace the printhead. See “Printhead removal” on page 299.</p>	Go to step 3.
<p>Step 3</p> <p>Turn the printer on, and then wait until the printer posts an error. Using a voltmeter, check the following values at JMIRR1:</p> <ul style="list-style-type: none"> Pin 1: +5 V dc Pin 2: +3.3 V dc Pin 3: +5 V dc Pin 4: Ground Pin 5: +24 V dc <p>Are the values approximately correct?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	<p>Replace the printhead. See “Printhead removal” on page 299.</p>

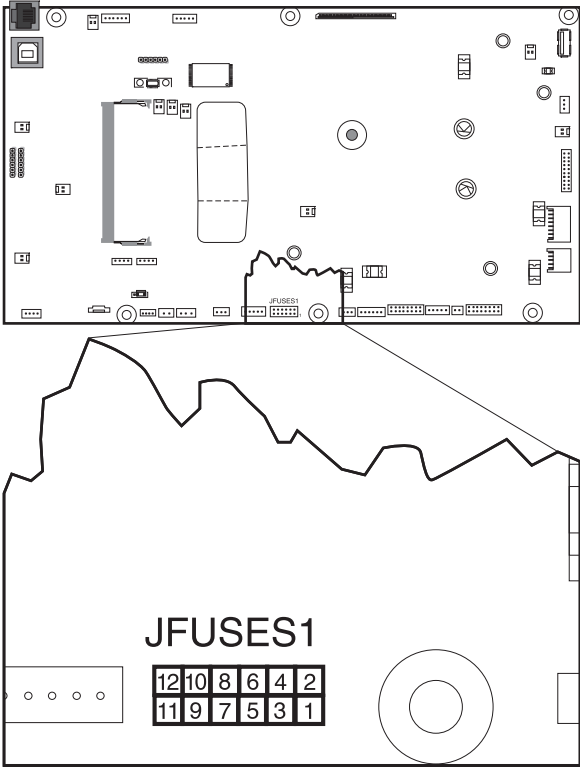
121 errors

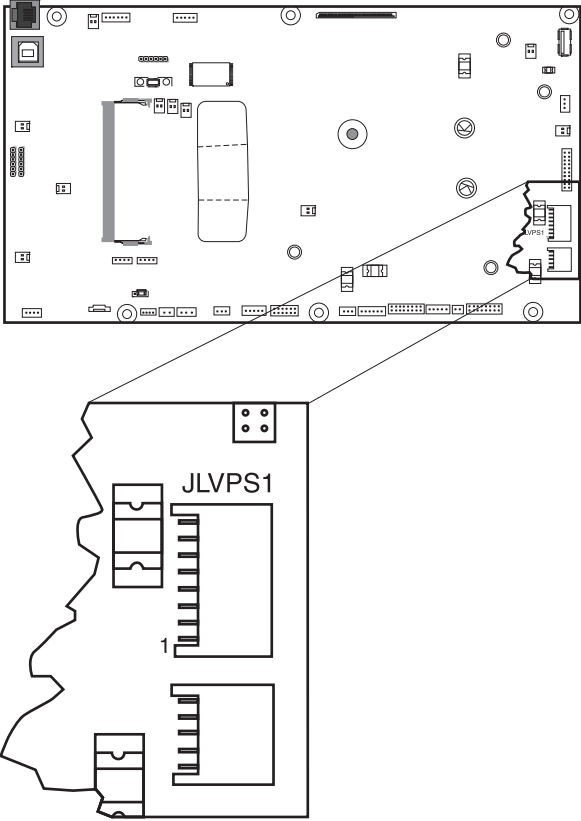
121 error messages

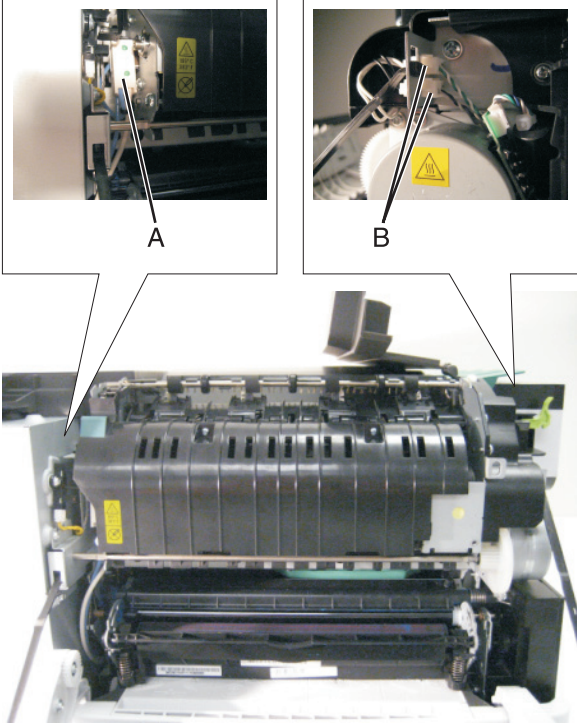
Error code	Description	Action
121.xx	Fuser error	Go to “Fuser service check” on page 86.
121.01	Attempting to print with estimated power at or below minimum power.	
121.02	Fuser is over temperature.	
121.03	Fuser open thermistor check failed.	
121.04	Attempting to print with estimated power at or above minimum power.	
121.05	Fuser failed to reach final temperature in time.	
121.06	Attempting to print when the estimated power is too low.	
121.07	Timed out waiting for home sensor event	
121.08	Wrong lamp bit is set in NVRAM.	
121.10	Fuser failed to warm up.	
121.11	Fuser under temperature error while in standby.	Go to “Fuser service check” on page 86.
121.12	Fuser under temperature error while printing.	
121.13	Fuser open thermistor check failed for second thermistor.	
121.14	Fuser shorted thermistor check failed for hot roll thermistor.	
121.15	Fuser shorted thermistor check failed for second thermistor.	
121.16	Estimated power is at or above the maximum power.	
121.17	Total failure to close fuser nip.	
121.26	Attempting to print with estimated power at or below minimum power.	
121.27	Fuser over temperature.	
121.28	Fuser open thermistor check failed.	

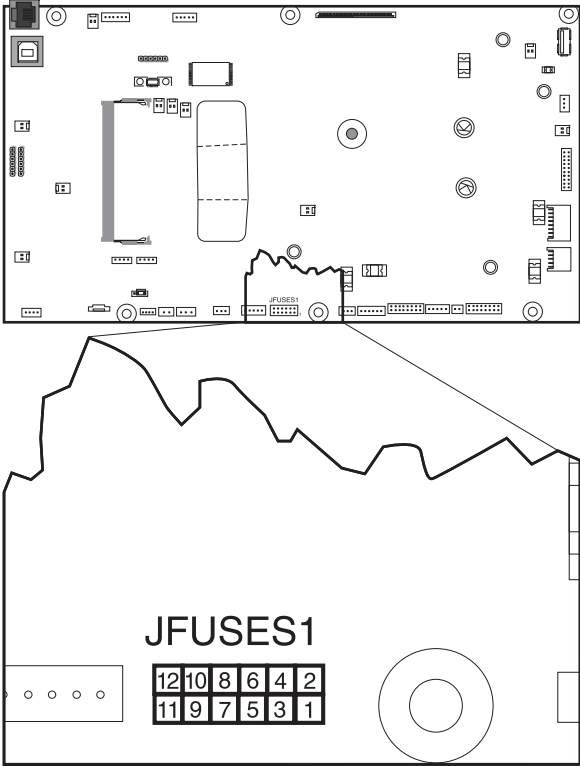
Error code	Description	Action
121.29	Attempting to print with estimated power at or above minimum power.	Go to “Fuser service check” on page 86.
121.30	Fuser failed to reach final temperature in time.	
121.31	Fuser power is below minimum.	
121.36	Fuser under temperature in standby.	
121.37	Fuser under temperature while printing.	
121.38	Fuser open thermistor.	
121.39	Fuser shorted thermistor.	
121.40	Fuser shorted thermistor.	
121.42	Fuser power above maximum.	
121.5x	Fuser is past life and has an error.	Go to “Fuser assembly removal” on page 267.
121.6x	Fuser is past life and has an error.	
121.7x	Fuser is past life and has an error.	
121.8x	Fuser is past life and has an error.	
121.9x	Fuser is past life and has an error.	

Fuser service check

Actions	Yes	No
<p>Step 1</p> <p>Some of these errors are caused by a faulty component on the LVPS. Check the history file in the printer to verify other occurrences. If there are others, then replace the LVPS. See “Low-voltage power supply (LVPS) assembly removal” on page 226.</p> <p>Does this solve the problem?</p>	<p>The problem is solved.</p>	<p>Go to step 2.</p>
<p>Step 2</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Check the cable at JFUSES1 for proper connection to the controller board, the cable for pinch points, and the cable or connector for any other damage.</p>  <p>Is the cable damaged?</p>	<p>Replace the fuser cable.</p>	<p>Go to step 3.</p>

Actions	Yes	No
<p data-bbox="147 205 224 233">Step 3</p> <p data-bbox="147 243 938 338">Check the connector JLVPS1 for proper connection to the controller board, the cable for pinch points, and the cable or connector for any other damage.</p> <div data-bbox="256 367 833 1182"></div> <p data-bbox="147 1230 394 1257">Is the cable damaged?</p>	<p data-bbox="954 205 1200 264">Repair or replace the LVPS cable.</p>	<p data-bbox="1222 205 1365 233">Go to step 4.</p>

Actions	Yes	No
<p>Step 4</p> <p>Open the front cover, and check the power cable (A) on the left side of the fuser.</p> <p>Remove the right cover assembly. See “Right cover assembly removal” on page 232.</p> <p>Check the thermistor cables and connections (B) on the right side of the fuser.</p> <div data-bbox="256 478 829 1199">  <p>The diagram illustrates the internal components of a printer's fuser assembly. It includes two inset images: the left inset shows a power cable labeled 'A' connected to the fuser, and the right inset shows thermistor cables labeled 'B' connected to the fuser. The main image shows the entire fuser assembly with callout lines pointing to the locations of cables A and B.</p> </div> <p>Are the cables or connectors damaged?</p>	<p>Repair the cables. If the cables cannot be repaired, then replace the fuser. See “Fuser assembly removal” on page 267.</p>	<p>Go to step 5.</p>

Actions	Yes	No
<p>Step 5</p> <p>Check the following values at JFUSES1:</p> <ul style="list-style-type: none"> Pin 1: +24 V dc (door closed) Pin 2: +24 V dc (doors closed) Pin 3: +24 V dc (doors closed) Pin 4: +24 V dc (doors closed) Pin 5: Between 0.6 and 3.28 V dc Pin 6: Ground Pin 8: Ground Pin 10: Between -3 and +3.3 V dc Pin 11: Ground (no wire)  <p>Are the values correct?</p>	<p>Go to step 6.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>
<p>Step 6</p> <p>Replace the fuser. See “Fuser assembly removal” on page 267.</p> <p>Does the error clear?</p>	<p>The problem is solved.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

126 errors

126 error messages

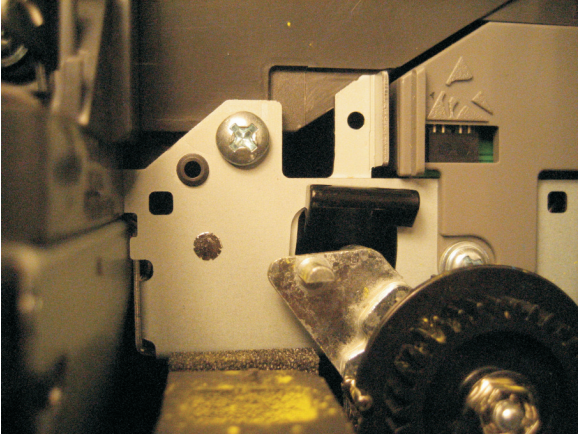
Error code	Description	Action
126.xx	Low voltage power supply did not detect zero crossing.	Go to “Low-voltage power supply (LVPS) assembly removal” on page 226.
126.01	Low voltage power supply did not detect zero crossing.	Go to “Low-voltage power supply (LVPS) assembly removal” on page 226.

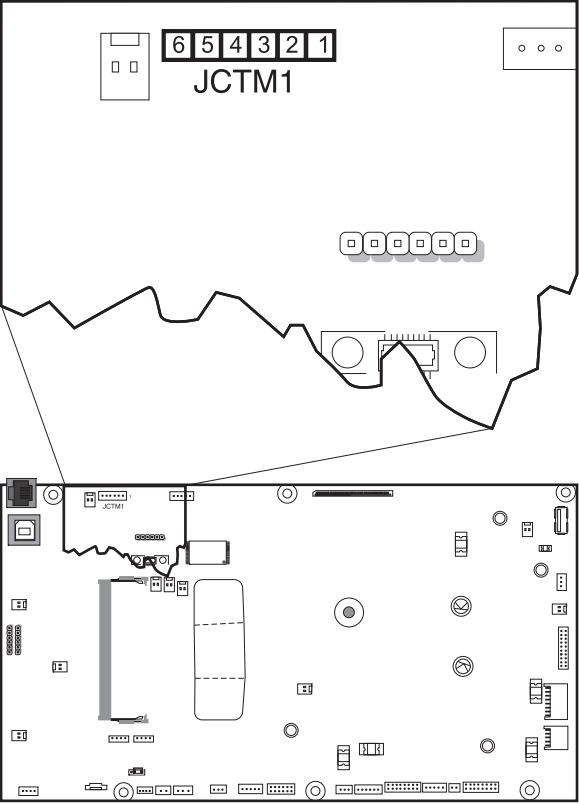
133 errors

133 error messages

Error code	Description	Action
133.1x	The black cartridge toner meter cycle (TMC) switch error: <ul style="list-style-type: none"> • .11 recoverable • .12 nonrecoverable 	Go to “Toner meter sensors (Y, C, M, K) on TMC card service check” on page 91.
133.2x	The cyan cartridge toner meter cycle (TMC) switch error: <ul style="list-style-type: none"> • .21 recoverable • .22 nonrecoverable 	
133.3x	The magenta cartridge toner meter cycle (TMC) switch error: <ul style="list-style-type: none"> • .31 recoverable • .32 nonrecoverable 	
133.4x	The yellow cartridge toner meter cycle (TMC) switch error: <ul style="list-style-type: none"> • .41 recoverable • .52 nonrecoverable 	

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

Actions	Yes	No
<p>Step 1</p> <p>Remove the toner cartridge, and inspect the lenses on the toner meter cycle (TMC) card.</p>  <p>Are the lenses blocked, damaged, or dirty?</p>	<p>Repair or replace the TMC card. See “Toner meter cycle (TMC) card removal” on page 234.</p>	<p>Go to step 2.</p>

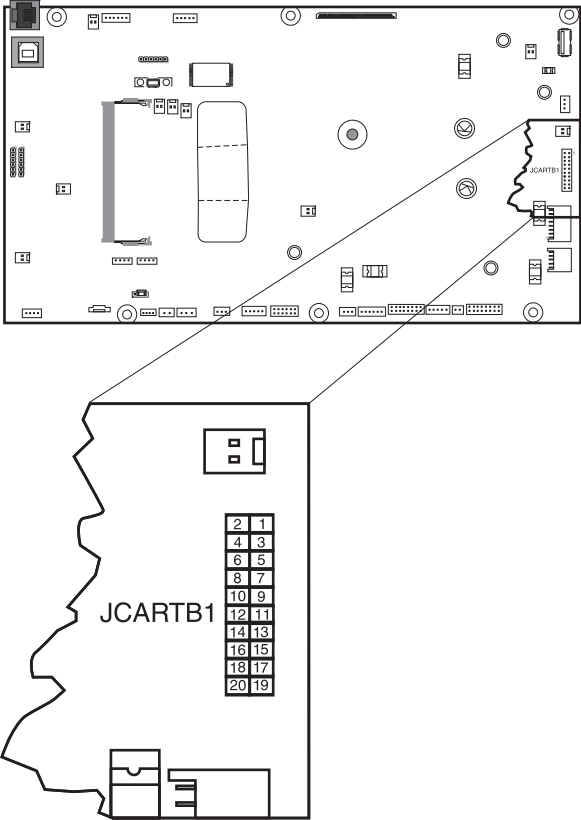
Actions	Yes	No
<p>Step 2</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Turn the printer on, and measure the values below at JCTM1 during POR:</p> <p>Pin 1: +5 V dc</p> <p>Pin 2: +3.3 V dc</p> <p>Pin 3: +3.3 V dc</p> <p>Pin 4: +3.3 V dc</p> <p>Pin 5: +3.3 V dc</p> <p>Pin 6: Ground</p>	<p>Replace the controller board. “Controller board removal” on page 291.</p>	<p>Replace the TMC card. See “Toner meter cycle (TMC) card removal” on page 234.</p>
		
<p>Are any of the values incorrect?</p>		

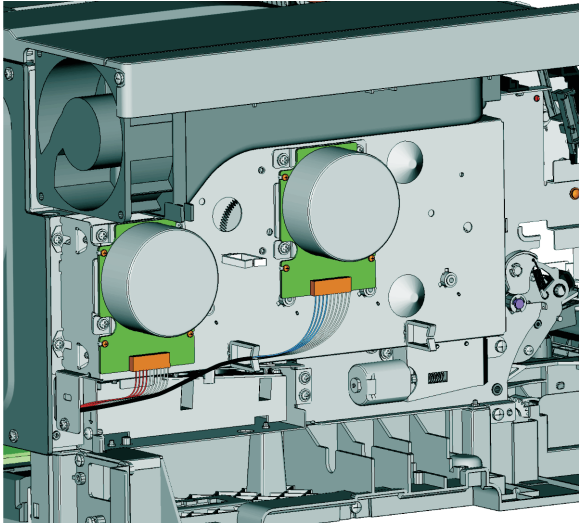
141 errors

141 error messages

Error code	Description	Action
141.0x	Cartridge motor error	Go to “Cartridge motor error service check” on page 94.
141.01	Failed to achieve lock for motor within allotted time.	
141.02	Time out waiting for SAP BLDC motor to reach valid FG speed.	
141.03	Time out waiting for MP_NUM_INITIAL_SAP_HALLS .	
141.05	Lost lock for motor.	
141.06	Excessive SAP BLDC PWM.	
141.07	Motor stalled in timebased communication.	
141.2x	Cyan/magenta/yellow cartridge motor error.	
141.21	Failed to achieve lock for motor within allotted time.	
141.22	Time out waiting for SAP BLDC motor to reach valid FG speed.	
141.23	Time out waiting for MP_NUM_INITIAL_SAP_HALLS .	
141.24	Time out waiting for SAP BLDC motor.	
141.25	Lost lock for motor.	
141.26	Excessive SAP BLDC PWM.	
141.27	Motor stalled in timebased communication.	

Cartridge motor error service check

Action	Yes	No
<p>Step 1</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Check the cable JCARTB1 for proper connection to the system board.</p>  <p>Is the cable properly connected?</p>	<p>Go to step 2.</p>	<p>Reseat the cable.</p>
<p>Step 2</p> <p>Check the cable for damage.</p> <p>Is the cable damaged?</p>	<p>Replace the BLDC K image transfer unit cable. See “Image transfer unit (ITU) removal” on page 243.</p>	<p>Go to step 3.</p>

Action	Yes	No
<p>Step 3</p> <p>Remove the left cover assembly. See “Left cover assembly removal” on page 219.</p> <p>Check the cables connected to the cartridge motor assembly.</p>  <p>Is the cable connected properly?</p>	Go to step 4.	Reseat the cable.
<p>Step 4</p> <p>Replace the EP drive assembly. See “EP drive assembly removal” on page 221.</p> <p>Does the problem remain?</p>	Replace the controller board. See “Controller board removal” on page 291 .	The problem is solved.

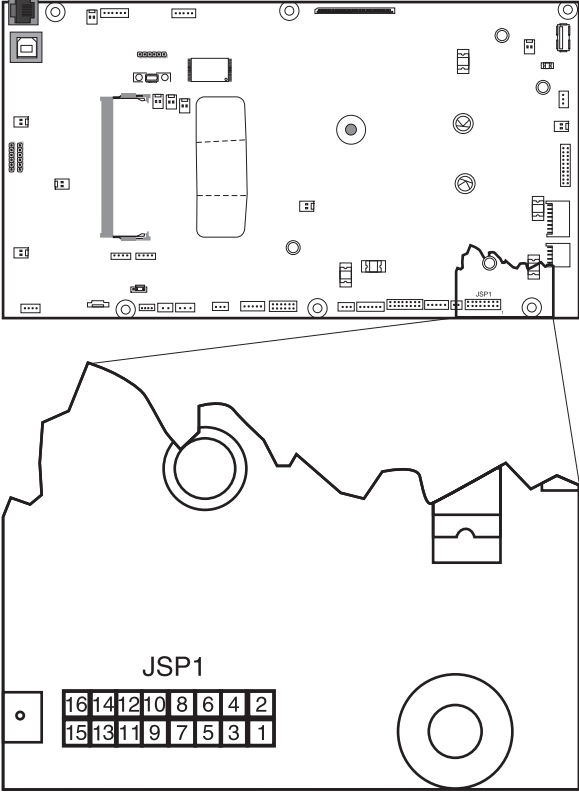
147 errors

147 error messages

Error code	Description	Action
147.xx	Staging motor error	Go to “Paper pick motor drive assembly service check” on page 96 .
147.01	Staging motor has exceeded the ramp up table.	
147.02	Staging motor has exceeded number of encoders at minimum PWM.	
147.03	Staging motor has exceeded number of encoders at maximum PWM.	
147.04	Motor encoder count did not change between interrupts.	
147.05	Staging motor has encountered a stall time out.	

Paper pick motor drive assembly service check

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

Actions	Yes	No
<p>Step 1</p> <p>Check the condition of the pick tires, and replace if necessary. See “Pick tire removal” on page 303.</p> <p>Does this solve the problem?</p>	The problem is solved.	Go to step 2.
<p>Step 2</p> <p>Turn the printer off, and then remove the rear cover. See “Rear cover removal” on page 290. Check the table at JSP1 on the controller board for proper connection.</p>  <p>Is the cable properly connected?</p>	Go to step 4.	<p>Properly connect the cables, and POR the printer.</p> <p>Go to step 3.</p>
<p>Step 3</p> <p>Did the printer function correctly after reconnecting the cables?</p>	The problem is solved.	Go to step 4.

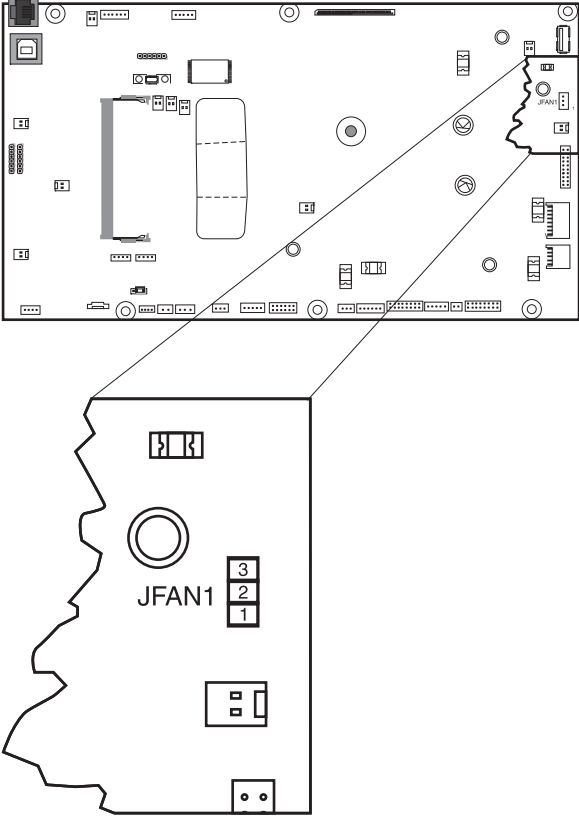
Actions	Yes	No
Step 4 Turn the printer on, and then verify the following approximate values at JSP1: Pin 2: +24 V dc Pin 4: +24 V dc Pin 5: +5 V (when paper is picked) Pin 7: Ground Pin 8: Ground Pin 10: +5 V dc Pin 12: _5 V dc (when paper is picked) Pin 15: +5 V dc Pin 16: Ground Are the values approximately correct?	Replace the paper pick motor drive assembly. See “Paper pick motor drive assembly standard tray removal” on page 287.	Replace the controller board. See “Controller board removal” on page 291.

171 errors

171 error messages

Error code	Description	Action
171.01	The printer fan has stalled.	Go to “Fan error service check” on page 98.

Fan error service check

Actions	Yes	No
<p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Turn the printer on, and check the fan cable at JFAN1 for the following values:</p> <p>Pin 1: +3.3 V dc</p> <p>Pin 2: Ground</p> <p>Pin 3 0 (fan off)</p>  <p>Are the measured values correct?</p>	<p>Replace the fan.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

Steps before starting the 9yy service checks

Before starting the service checks in this section, you will need to retrieve certain information. This will aid your next level of support in diagnosing the problem before replacing the controller board.

Warning—Potential Damage: Do not replace the controller board unless directed by your next level of support.

- 1 Collect the history information and firmware logs (Fwdebug and logs.tar.gz) from the SE menu.
- 2 Collect the settings from the menu settings page.
- 3 Collect information from the user.

Note: Not all of the items can be retrieved from the printer you are working on.

A. Collecting the history information from the SE menu

Note: Make sure your printer is connected to a network or to a print server.

- 1 From a Web browser, type **http://printer_IP_address/se**, and then press **Enter**.

Notes:

- **printer_IP_address** is the TCP/IP address of the printer
- **se** is required to access the printer diagnostic information

- 2 Click **History Information**, copy all information, and then save it as a text file.
- 3 E-mail the text file to your next level of support.

B. Collecting the firmware logs (Fwdebug and logs.tar.gz) from the SE menu

Notes:

- Make sure your printer is connected to a network or to a print server.
- Some printers are designed to restart automatically after a 9yy error. On these printers, you can retrieve the secondary crash code information using the SE menu.
- Fwdebugs can also be referred to as LBtrace. If FWEdebugs does not appear in the list, then look for LBtrace. Multiple LBtrace logs can appear in the list of links referred to in step 2.

- 1 From a Web browser, type **http://printer_IP_address/se**, and then press **Enter**.
- 2 Click **List Fwdebugs captured during reboots**. This will provide you a list of the secondary crash codes retrieved from prior reboots.

Note: If there are Fwdebugs listed, click **Dump Fwdebug log0**, **Dump Fwdebug log1**, and **Dump Fwdebug log2**. Clicking these links will dump the debug logs to the computer. Take note of the destination folder where the logs are saved.

- 3 E-mail the logs to your next level of support.

Note: Some machine SE menus give you the option of clicking **Logs Gzip Compressed**. If this option is shown in the menu, then click it and retrieve the compressed log file. Take note of the destination folder where the log file is saved.

C. Collecting the settings from the menu settings page

Note: The menu settings page is different for each printer. For more information see the *User's Guide*. Your next level of support will tell you which page they want to see.

Copying the menu settings page from the Embedded Web Server (EWS)

Note: Make sure your printer is connected to a network or to a print server.

- 1 From a Web browser, type **http://printer_IP_address**, and then press **Enter**.
- 2 Click **Settings**, and then select one of the settings page from the links shown on the page.
- 3 Copy all information, and then save it as a text file.
- 4 E-mail the text file to your next level of support.

Printing the menu settings page

- 1 From the home screen, navigate to **Reports > Menu Settings Page**.
- 2 Print the menu settings page, and then use Scan to E-mail to send it to your next level of support.

D. Collecting information from the user

Ask the user for information about the following:

- Print job being run
- Operating system used
- Print driver used
- Other information on what was happening when the 9yy error occurred.

900 errors

900 error messages

Error code	Description	Action
900.xx	Unrecoverable RIP software error/illegal trap.	Go to “System software error service check” on page 101 .

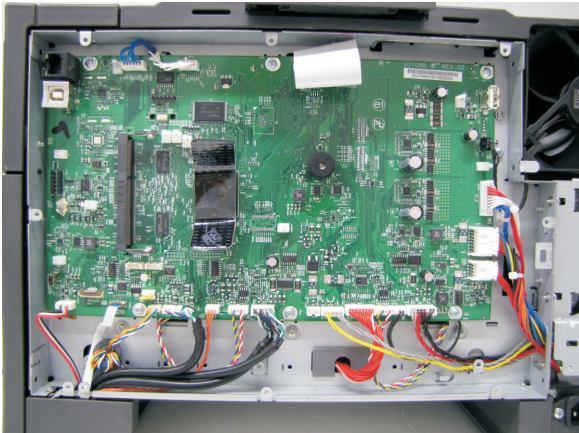
System software error service check

Note: Make sure to perform the [“Steps before starting the 9yy service checks” on page 98](#) before proceeding.

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 of ISP (Internal Solutions Port). The communication and software aspects should be checked first. Determine if the problem is constant or intermittent. use the troubleshooting procedure below to isolate the issue. Take any notes as instructed. You will need that information in the event you need to contact your next level support.

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

Actions	Yes	No
Step 1 POR the printer. Does the error occur?	Go to step 2.	Problem resolved.
Step 2 a Write down the exact 900.xx error code displayed on the device. b Turn the device off. c Clear the print queues. d Disconnect all communication cables, and remove all memory options. e Remove all ISP and modem cards. f Restart the device into diagnostic mode. For CS310 models, turn the printer off, press and hold Down and Right , turn the printer on, and then release the buttons when the installed memory and processor speed displays. For CS410 and CS510 models, turn the printer off, press and hold 3 and 6 , turn the printer on, and then release the buttons when the installed memory and processor speed displays) Does the 900.xx error occur during startup?	Go to step 3.	Go to step 6.
Step 3 Check all the cables connected to the RIP board for proper connectivity. Are the cables properly connected?	Go to step 5.	Go to step 4.

Actions	Yes	No
<p>Step 4 Properly connect the cables to the RIP board. Restart the device into diagnostic mode.</p>  <p>Does the 900.xx error reoccur during startup?</p>	Go to step 5.	Go to step 6.
<p>Step 5 Replace the RIP board, and restart the device.</p> <p>Does this fix the problem?</p> <p>Note: If an error, different from the original 900.xx, is displayed, then consult the service check for that error.</p>	Problem resolved.	Go to step 31.
<p>Step 6 Print the following:</p> <ul style="list-style-type: none"> • Error log • Menu settings page • Network settings page <p>Does the 900.xx error reoccur while these pages are printing?</p>	Go to step 31.	Go to step 7.
<p>Step 7 Reattach the communications cable. Restart the printer to operating mode. Send the printer a print job.</p> <p>Does the 900.xx error reoccur?</p> <p>Note: Before performing this step, write down this information about the file being sent to the printer:</p> <ul style="list-style-type: none"> • Application used • Operating system • Driver type • File type (PCL, PostScript, XPS, etc.) 	Go to step 8.	Go to step 10.

Actions	Yes	No
Step 8 Restart the printer to operating mode. Send a different print job to the device. Does the 900.xx error reoccur?	Go to step 9.	Go to step 10.
Step 9 Upgrade the firmware. Contact your next level of support for the correct firmware level to use. Restart the printer to operating mode. Send the printer a print job. Does the 900.xx error reoccur?	Go to step 31.	Go to step 10.
Step 10 Is the device a Multi Function Printer?	Go to step 11.	Go to step 13.
Step 11 Run a copy job. Does the 900.xx error reoccur?	Go to step 31.	Go to step 12.
Step 12 Run a scan to PC job. Does the 900.xx error reoccur?	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 Reinstall the memory, and send the print job to the device. Does the 900.xx error reoccur?	Go to step 15.	Go to step 16.
Step 15 Install a Lexmark recommended memory option, and send a print job to the device. Does the 900.xx error reoccur?	Go to step 31.	Problem resolved.
Step 16 Is there a modem installed on the device?	Go to step 17.	Go to step 21.
Step 17 Reinstall the modem, and restart the device. Does the 900.xx error reoccur?	Go to step 18.	Go to step 20.

Actions	Yes	No
Step 18 Upgrade the firmware if it has not been upgraded in any previous step. Contact your next level of support for the correct firmware level to use. Restart the printer to operating mode. Send the printer a print job. Does the 900.00 error reoccur?	Go to step 19.	Problem resolved.
Step 19 Replace the modem. Restart the device. Does the 900.xx error reoccur?	Go to step 31.	Problem resolved.
Step 20 Replace the modem, and restart the device. Does the 900.xx error reoccur?	Go to step 31.	Problem resolved.
Step 21 Run a fax job. Does the 900.xx error reoccur?	Go to step 31.	Go to step 21.
Step 22 Are there any ISP (internal solutions port) options installed?	Go to step 22.	Problem resolved.
Step 23 Upgrade the firmware if it has not been upgraded in any previous step. Reinstall the first ISP option, and restart the device. Does the 900.xx error reoccur?	Go to step 24.	Go to step 26.
Step 24 Upgrade the firmware if it has not been upgraded in any previous step. Contact your next level of support for the correct firmware level to use. Restart the printer to operating mode. Does the 900.xx error reoccur?	Go to step 25.	Problem resolved.
Step 25 Replace the faulty ISP option, and restart the device. Does the 900.xx error reoccur?	Go to step 31.	Go to step 26.
Step 26 Are there anymore ISP options to install?	Go to step 27.	Problem resolved.
Step 27 Install the next ISP option, and restart the device. Does the 900.xx error occur?	Go to step 29.	Go to step 28.

Actions	Yes	No
Step 28 Run a job to test the option. Does the 900.xx error reoccur?	Go to step 29.	Go to step 26.
Step 29 Upgrade the firmware. Contact your next level of support for the correct firmware level to use. Restart the printer to operating mode. Does the 900.xx error occur?	Go to step 30.	Go to step 26.
Step 30 Replace the faulty ISP option, and restart the device. Does the 900.xx error reoccur?	Go to step 31.	Go to step 26.
Step 31 Contact your next level of support. You will need the following information for them: <ul style="list-style-type: none"> • Exact 900.xx error digits and complete error message • Printed menu settings pag • Printed network settings page • Device error log • A sample print file if error appears to be isolated to a single file • File/Application used if error is related to specific print file • Device Operating System • Driver used (PCL/PS) • Frequency of the occurrence of the error 		

91y errors

91y error messages

Error code	Description	Action
910.xx	A general engine software error.	Go to “Engine software service check” on page 106.
911.xx	A general engine software error.	
912.xx	A general engine software error.	
913.xx	A general engine software error.	
914.xx	A general engine software error.	
915.xx	A general engine software error.	
916.xx	A general engine software error.	
917.xx	A general engine software error.	
918.xx	A general engine software error.	
919.xx	A general engine software error.	

Engine software service check

Actions	Yes	No
<p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Check the cable connections. See “Controller board removal” on page 291 for proper disconnecting and connecting of cables from controller board.</p> <p>Are all cable connections secure?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	<p>Secure all connections. POR the printer.</p>

938 errors

938 error messages

Error code	Description	Action
938.01	Board level was not obtained.	Go to “Controller board removal” on page 291.
938.02	Time out waiting for bullet serial data to be updated.	
938.03	NVM_OK was not received from NV2 server for successfully submitted request.	
938.04	Over temperature condition detected.	

95y errors

95y error messages

Error code	Description	Action
950.xx	<p>There is a mismatch between controller EEPROM and mirror.</p> <ul style="list-style-type: none"> 950.00 through 950.29 codes: mismatch between controller and mirror 950.30 through 950.60 codes: mismatch between secure and controller 	Go to “NVRAM failure service check” on page 109.
951.xx	Error NV part on system board.	Go to “Controller board removal” on page 291.
952.xx	A recoverable MVRAM Cyclic Redundancy Check (CRC) error occurred. <i>n</i> is the offset at which the error occurred.	Performing a POR will clear this error.
953.xx	<p>(CS310) NVRAM chip failure with mirror.</p> <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, replace the UICC card. 	Go to “Operator panel removal (for CS310 models only)” on page 254.
953.xx	<p>(CS410) NVRAM chip failure with mirror.</p> <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, replace the UICC card. 	Go to “Operator panel removal (for CS410 models only)” on page 256.
953.xx	<p>(CS510) NVRAM chip failure with mirror.</p> <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, replace the UICC card. 	Go to “Operator panel removal (for CS510 models only)” on page 259.

Error code	Description	Action
954.xx	<p>The NVRAM chip failure with controller part.</p> <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, then replace the controller board. 	Go to “Controller board removal” on page 291.
955.xx	<p>The Code ROM or NAND flash failed the Cyclic Redundancy Check (CRC) check or the NAND experienced an uncorrectable multi-bit failure. <loc> indicates the source of the failure and has one of the following values:</p> <ul style="list-style-type: none"> • CRC Failure: The source is a failing package indicated by Pn where n is the package number. This error could occur on a controller with ROM or NAND flash and could occur as a result of the CRC check done when the machine is powered on. The range of package numbers is from 0 to 15. • Error Correction Code (ECC) Failure: The source is a failing page indicated by Bn where “n” is the page number. This error occurs only if a multi-bit failure is detected during the ECC execution. Single bit failures will be corrected automatically and will not result in a service error. The range of page numbers is from 0 to 1023. <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, then replace the controller board. 	
956.xx	<p>Controller board failure. Processor failure.</p> <p>Check on .02 for fan error.</p> <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, then replace the controller board. 	
957.xx	<p>Controller board failure. ASIC failure.</p> <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, then replace the controller board. 	
958.xx	<p>Printer has performed more than 100 “shift and reflash” operations as a result of ECC bit corrections.</p> <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, then replace the controller board. 	

Error code	Description	Action
959.xx	Controller verification failure of system boot code. <ol style="list-style-type: none"> 1 Update the firmware. 2 POR the printer. 3 If the problem persists, then replace the controller board. 	Go to “Invalid firmware/controller board service check” on page 110.
959.0x	System hardware failure. <ol style="list-style-type: none"> 1 POR the printer. 2 If the problem persists, then replace the controller board. 	Go to “Controller board removal” on page 291.

NVRAM failure service check

Warning—Potential Damage: When replacing any of the following components, replace only one component at a time or the printer will be rendered inoperable:

For CS310 models:

- Controller board
- Operator panel with UICC card

For CS410 and CS510 models:

- Controller board
- UICC card

Replace the required component, bring the printer up in Diagnostics mode (See [“Diagnostics menu” on page 166](#)), and verify that the problem is fixed before performing a POR.

This error indicates a mismatch between the operator panel assembly and the system board.

Actions	Yes	No
Step 1 For CS310 models, has the operator panel with UICC card been replaced recently? For CS410 and CS510 models, has the UICC card been replaced recently?	Replace the operator panel assembly with a new, and not previously installed, UICC card.	Go to step 2.
Step 2 Has the controller board been replaced recently?	Replace the controller board with a new, and not previously installed, controller board. See “Controller board removal” on page 291.	Go to step 3.
Step 3 Turn the printer power off for ten or more seconds. Then, turn the printer back on (POR the printer). Is the error gone, and can the printer print?	Problem solved.	Go to step 4.

Actions	Yes	No
Step 4 Clear the NVRAM of the printer: a Turn the printer power off. b With the printer off, press and hold 6,7, and 8 on the keypad. c Turn the printer on. d When Restoring Factory Defaults appears, release the buttons. Note: If the printer looks up on the Restoring Factory Defaults, then wait two minutes, and then turn the printer power off. After ten seconds or more, turn the printer power back on without holding down any buttons. Does the error message still appear?	Go to step 5.	Problem solved.
Step 5 For CS310 models replace the operator panel with UICC card. For CS410 and CS510 models, replace the UICC card. Does the error message still appear?	Replace the controller board. See “Controller board removal” on page 291.	Problem solved.

Invalid firmware/controller board service check

Action	Yes	No
Update the firmware. Note: Contact the next level of support for the correct firmware level. Does the error remain?	Replace the controller board. See “Controller board removal” on page 291.	The problem is solved.

96y errors

96y error messages

Error code	Description	Action
960.xx	RAM memory error: RAM soldered on the board is bad. 1 POR the printer. 2 If the problem persists, then replace the controller board.	Go to “Controller board removal” on page 291.
961.xx	RAM memory error: slot 1 RAM is bad. 1 Check RAM in slot 2. 2 If RAM is ok, then POR the printer. 3 If the problem persists, then replace the controller board.	Go to “Controller board removal” on page 291.

Error code	Description	Action
962.xx	RAM memory error: slot 2 RAM is bad. <ol style="list-style-type: none"> 1 Check RAM in slot 1. 2 If RAM is ok, then POR the printer. 3 If the problem persists, then replace the controller board. 	Go to “Controller board removal” on page 291.
964.xx	Download emulation cyclic redundancy check (CRC) failure has occurred. A checksum failure detected in the emulation header or emulation file.	The following actions may be taken: <ol style="list-style-type: none"> 1 Disable the Download Emulation. 2 Program the download emulation into the code overlay SIMM again. 3 If the problem is not resolved replace the code overlay SIMM, and download emulation again

97y errors

97y error messages

Error code	Description	Action
975.xx	Network error: unrecognizable network port.	Replace the standard network card or the card in the specified slot.
976.xx	Unrecoverable software or error in network or network card x. If unable to clear the error message, then check the following: <ul style="list-style-type: none"> • If installed, then check network card for correct installation. • If correctly installed, then replace the network card. • If a network card is not installed, then replace the controller board. 	Go to “Controller board removal” on page 291.
978.xx	Bad checksum while programming Standard Network or Network Card x port. Check the following: <ul style="list-style-type: none"> • Make sure you have downloaded the code in binary mode, not ASCII. • Reprogram the Network card. • If the problem persists, and if installed, then check the network card for correct installation. • If correctly installed, then replace the network card. • If a network card is not installed, then replace the controller board. 	Go to “Controller board removal” on page 291.

Error code	Description	Action
979.xx	Flash parts failed while programming the Standard Network or Network Card x port. Check the following: <ul style="list-style-type: none"> • If installed, then check the network card for correct installation. • If correctly installed, then replace the network card. • If a network card is not installed, then replace the controller board. 	Go to “Controller board removal” on page 291 .

982 errors

982 error messages

Error code	Description	Action
982.xx	Communications error detected by the specified device. Note: <device> can be one of the following: <ul style="list-style-type: none"> • Tray 2 • Tray 3 	Call the next level of support.

990 errors

990 error messages

Error code	Description	Action
990.xx	This error message indicates that an equipment check condition has occurred in the specified device. Go to the service check for the device indicated. Note: <device> can be one of the following: <ul style="list-style-type: none"> • Tray 2 • Tray 3 	Go to “Trays 2 and 3 (optional) service check” on page 112 .

Trays 2 and 3 (optional) service check

Actions	Yes	No
Step 1 Are two option trays being used?	Go to step 2.	Go to step 4.
Step 2 If two option trays are being used, then is the 550-sheet tray on the bottom?	Go to step 4.	Go to step 3.

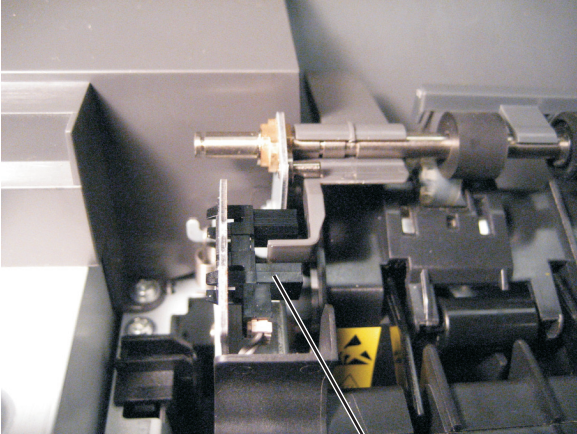
Actions	Yes	No
Step 3 Switch the order of the trays so that the 55-sheet tray is on the bottom, and then print a page from both trays. Did the pages print from both trays?	Problem resolved.	Go to step 4.
Step 4 Inspect the paperfeed pick tires on the tray that fails to pick. Do they appear worn or damaged?	Go to step 5.	Go to step 6.
Step 5 Replace the pick tires on the faulty tray, and then print a page with media from the affected tray. See “Pick tire removal” on page 303 . Did the page print?	Problem resolved.	Go to step 6.
Step 6 Remove the rear cover. See “Rear cover removal” on page 290 . Check the option cable connected to JOPT1 for continuity. Is the cable properly seated? Is there continuity?	Go to step 8.	Go to step 7.
Step 7 Replace the cable, and print from both option trays. Did the pages print from both trays?	Problem resolved.	Go to step 8.
Step 8 Print a menu settings page. If two option trays are used, then the 650-sheet tray will appear as tray 2, and the 550-sheet tray will appear as tray 3. Are all of the attached option trays listed on the first page of the menu settings pages?	Go to step 9.	If the 550-sheet option failed to appear, then go to step 9. If the 650-sheet tray failed to appear, then go to step 10.
Step 9 Remove the 650-sheet tray from the printer. Attach the 550-sheet tray directly to the printer. Print a page from the 550-sheet tray. Did the page print?	Go to step 11.	Replace the 550-sheet tray.
Step 10 With only the 650-sheet tray attached to the printer, print a page from the 650 sheet tray. Did the page print?	Go to step 11.	Replace the 650-sheet tray.

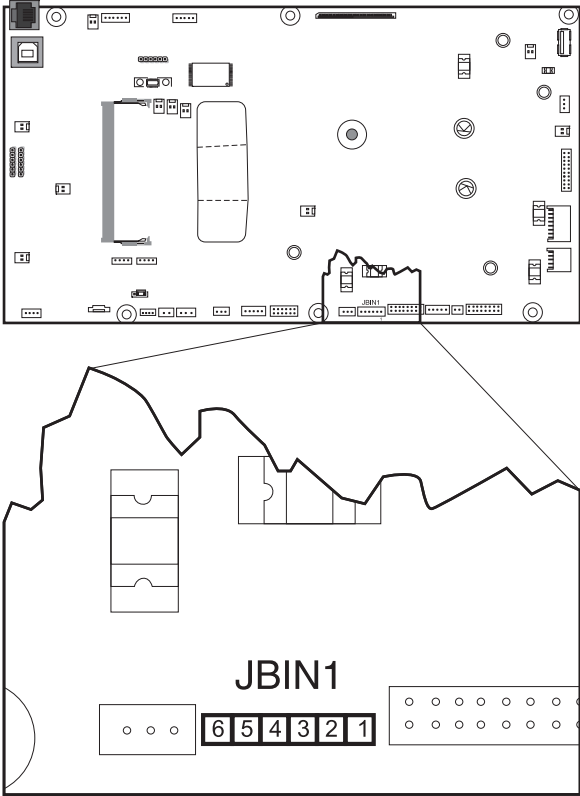
Actions	Yes	No
Step 11 a Turn off the printer. b Remove the rear cover. See “Rear cover removal” on page 290. c Disconnect the cable at JOPT1 on the controller board. d Turn the printer on. e Measure to voltages below: JOPT1: Pin 2: Ground Pin 3: Ground Pin 5: +24 V dc Pin 6: Ground Pin 7: +5 V dc Pin 9: Ground Pin 10: Ground Are the voltages correct?	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291.

Base printer symptoms

Symptom	Action
Dead printer service check	Go to “Dead printer service check” on page 117.
Front door sensor or switches service check	Go to “Front door sensor or switches service check” on page 119.
Operator panel (display is dim and unchanging) service check	Go to “Operator panel (display is dim and unchanging) service check” on page 123
Operator panel (displays all diamonds, no beeps, or five beeps) service check	Go to “Operator panel (displays all diamonds, no beeps, or five beeps) service check” on page 127.
Operator panel (display blank) service check	Go to “Operator panel (display blank) service check” on page 131.
Operator panel (one or more operator buttons fail) service check	Go to “Operator panel (one or more operator panel buttons fail) service check” on page 135.
Operator panel USB cable service check	Go to “Operator panel (one or more operator panel buttons fail) service check” on page 135.
USB service check	Go to “USB service check” on page 137.
Network service check	Go to “Network service check” on page 137.

Bin-full/narrow media sensor service check

Actions	Yes	No
<p>Step 1</p> <p>Open the front cover, and inspect the bin-full/narrow media sensor (A) located towards the front of the top cover assembly.</p>  <p style="text-align: center;">A</p> <p>Is the bin-full/narrow media sensor dislodged or damaged?</p>	<p>Repair or replace the bin-full/narrow media sensor. See “Bin-full/narrow media sensor removal” on page 297.</p>	<p>Go to step 2.</p>
<p>Step 2</p> <p>Does the flag rotate freely?</p>	<p>Go to step 3.</p>	<p>Reposition or replace the flag. See “Bin-full/narrow media sensor removal” on page 297.</p>

Actions	Yes	No
<p>Step 3</p> <p>Enter Diagnostics Menu.</p> <p>For CS310 models, turn the printer off, press and hold Down and Right, turn the printer on, and then release the buttons when the installed memory and processor speed displays.</p> <p>For CS410 and CS510 models, turn the printer off, press and hold 3 and 6, turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Base Sensor Test. See “BASE SENSOR TEST” on page 176.</p> <ul style="list-style-type: none"> a Select Base Sensor Test, and press Select. b Select Fuser Exit Sensor, and press Select. c Open the close the front door, and inspect the fuser exit sensor located on the LVPS shield. <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Turn the printer on, and then click the values below at JBIN1:</p> <p>Pin 1: 0 V dc (+5 V dc during cycle)</p> <p>Pin 2: +3.3 V dc beam blocked 0 V dc unblocked</p> <p>Pin 3: Ground</p>  <p>Are the values correct?</p>	<p>Problem resolved.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

Toner meter cycle (TMC) card service check


Actions	Yes	No
<p>Perform the Base Sensor Test:</p> <p>a Enter Diagnostics menu.</p> <p>For CS310 models, turn the printer off, press and hold Down and Right, turn the printer on, and release the buttons when the installed memory and processor speed displays.</p> <p>For CS410 and CS510 models, turn the printer off, press and hold 3 and 6, turn the printer on, and release the buttons when the installed memory and processor speed displays.</p> <p>b Select Base Sensor Test, and press Select.</p> <p>c Select the sensor you want to test, open the toner door, remove the corresponding toner cartridge, and press Select.</p> <p>d Note whether the operator panel shows a change in state.</p> <p>Note: If the reflective disk is not showing on the cartridge, then rotate the gear clockwise to expose the reflective surface.</p> <p>For additional information about the Base Sensor Test, see “BASE SENSOR TEST” on page 176.</p> <p>Does the operator panel display a change of state?</p>	<p>Replace the toner cartridge.</p>	<p>Replace the toner meter cycle (TMC) card. See “Toner meter cycle (TMC) card removal” on page 234.</p>

Dead printer service check

A dead printer is one which, when powered on from a known good electrical outlet, displays no indication of power to the printer by changes to the LCD, LED, or any movement of the fan or motors. If the printer appears dead but makes a *beeping* sound, check the operator panel. See [“Operator panel \(displays all diamonds, no beeps, or five beeps\) service check” on page 127](#).

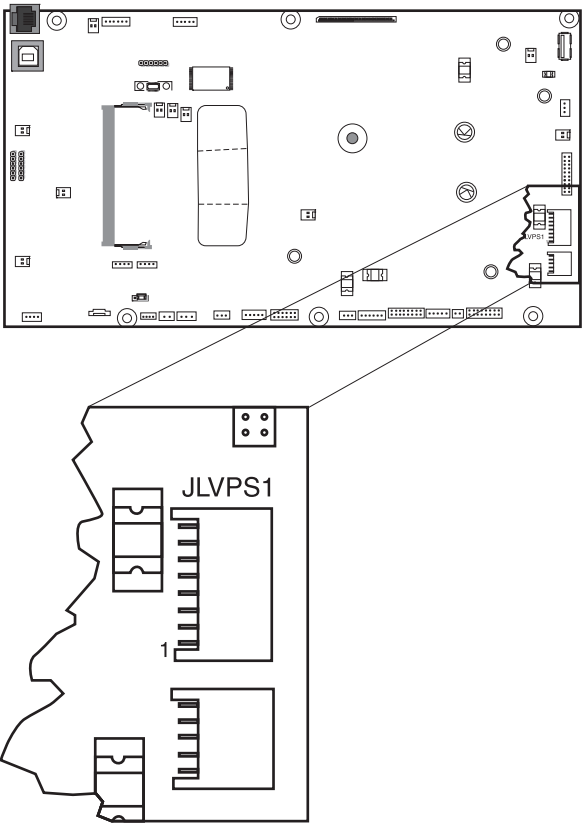
If a 650-sheet Duo Drawer is installed, then remove the option and check the base printer for correct operation. If the base printer operates correctly, replace the 650-sheet Duo Drawer.

Warning—Potential Damage: Observe all necessary ESD precautions when removing and handling the controller board or any installed option cards or assemblies.

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

Note: Remove any input paper-handling options from the printer.

Actions	Yes	No
<p>Step 1</p> <p>Check the AC power voltage.</p> <p>Is the line voltage correct?</p>	<p>Go to step 2.</p>	<p>There may be issues with the line voltage. Inform the customer.</p>
<p>Step 2</p> <p>Is the AC power cord damaged?</p>	<p>Replace the power cord.</p>	<p>Go to step 3.</p>

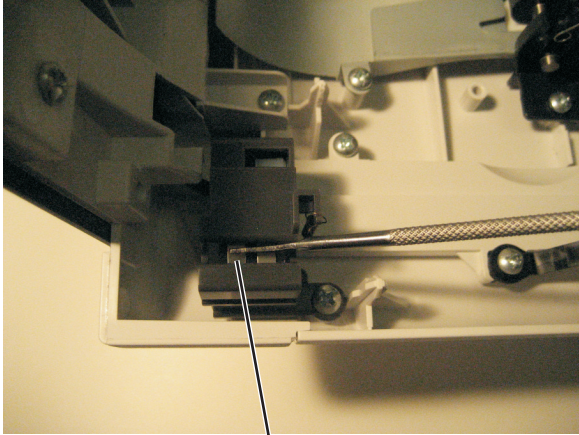
Actions	Yes	No
<p>Step 3</p> <p>Are the USB ground contacts attached to the USB connections on the controller board and controller board cage?</p>	Go to step 5.	Go to step 4.
<p>Step 4</p> <p>Install the USB ground contacts in the controller board.</p> <p>Did this fix the problem?</p>	Problem solved.	Go to step 5.
<p>Step 5</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290.</p>  <p>The diagram consists of two parts. The top part is a top-down view of the printer's rear cover, showing various components like screws, hinges, and internal connectors. A dashed line indicates the removal of the cover. The bottom part is a detailed view of the JLVP1 connector on the controller board, showing the cable being connected to the pins. The connector is labeled 'JLVP1' and '1'.</p> <p>Is the LVPS cable correctly connected at JLVP1 on the controller board?</p>	Go to step 6.	Reconnect the cable at JLVP1, and then go to step 6.
<p>Step 6</p> <p>Turn the printer off, and then on.</p> <p>Does the problem persist?</p>	Go to step 7.	Problem solved.

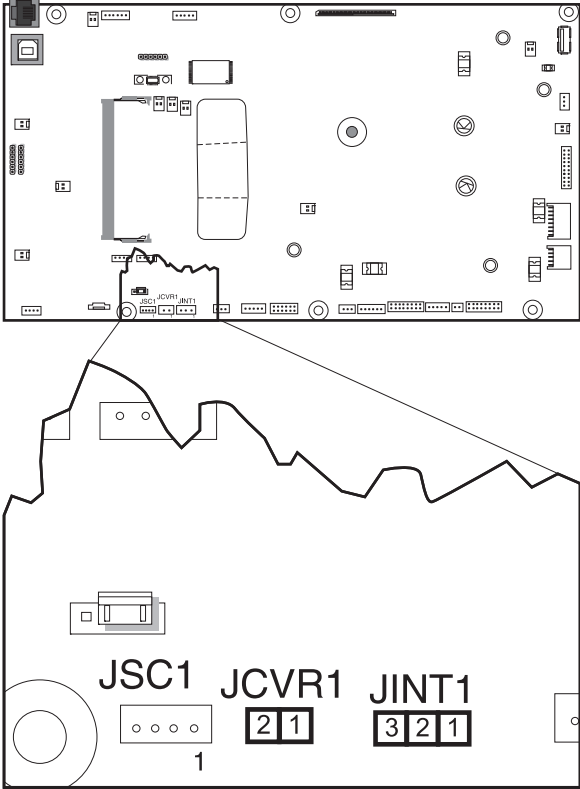
Actions	Yes	No
<p>Step 7</p> <p>Damage to the printer is possible. Be careful to touch only one conductor at a time. Rest the probe against the connector to steady it.</p> <p>With the printer on, verify the following values at JLVPS1:</p> <ul style="list-style-type: none"> Pin 1: +5 V dc Pin 2: Ground Pin 3: +5 V dc Pin 4: Ground Pin 5: +5 V dc Pin 6: Ground Pin 7: +24 V dc Pin 8: Ground Pin 9: +24 V dc Pin 10: Ground Pin 11: +24 V dc Pin 12: Ground Pin 16: Ground <p>Are the values approximately correct?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	<p>Replace the LVPS. See “Low-voltage power supply (LVPS) assembly removal” on page 226.</p>

Front door sensor or switches service check

Actions	Yes	No
<p>Step 1</p> <p>Enter Diagnostics Menu.</p> <p>For CS310 models, turn the printer off, press and hold Down and Right, turn the printer on, and then release the buttons when the installed memory and processor speed displays.</p> <p>For CS410 and CS510 models, turn the printer off, press and hold 3 and 6, turn the printer on, and then release the buttons when the installed memory and processor speed displays.</p> <p>Perform the Base Sensor Test. See “BASE SENSOR TEST” on page 176.</p> <ul style="list-style-type: none"> a Select Base Sensor Test, and press Select. b Select Front Door, and press Select. c Open and close the front door, and observe the display. <p>Does the display indicate Value Closed with the door closed, and Value Opened with the door open?</p>	<p>Sensor, toner door, and right doors are okay.</p>	<p>Go to step 2.</p>

Actions	Yes	No
<p>Step 2</p> <p>Open the front door, and check the thin, tall, plastic web (pivot plate) (A) at the top right of the printer. With the other covers in place and closed, the web interacts with switches in the door.</p>  <p style="text-align: center;">A</p> <p>Open the toner cover, and check the motion of the web. Is the web loose, damaged, or missing?</p>	<p>Replace the right cover assembly. See “Right cover assembly removal” on page 232.</p>	<p>Go to step 3.</p>
<p>Step 3</p> <p>Open the toner door, and inspect the vertical web that pushes and rotates the pivot plate.</p>  <p style="text-align: center;">B</p> <p>Is it damaged?</p>	<p>Replace the top cover assembly. See “Top cover assembly removal” on page 294.</p>	<p>Go to step 4.</p>

Actions	Yes	No
<p>Step 4</p> <p>With the front cover open, inspect the two switches. Using a tool, such as a spring hook, push the metal arms (C) to check the movement.</p>  <p>C</p> <p>Is there any damage to the switches or the surrounding area?</p>	<p>Replace the right cover assembly. See “Right cover assembly removal” on page 232.</p>	<p>Go to step 5.</p>

Actions	Yes	No
<p>Step 5</p> <p>Turn the printer off, and remove the rear cover. See “Rear cover removal” on page 290. Turn the printer on, and verify the following values at JINT1 and JCVR1.</p> <p>JINT1</p> <p>Pin 1: +5 V dc</p> <p>Pin 2: Ground</p> <p>JCVR1</p> <p>Pin 1: +24 V dc</p>  <p>Are the values approximately correct?</p>	<p>Go to step 6.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>
<p>Step 6</p> <p>Close the front cover and the toner door. Be sure that the right cover is in place. Turn the printer off, and then disconnect the cables at JINT1 and JCVR1.</p> <p>Test continually at the connector under the following conditions:</p> <ul style="list-style-type: none"> • With the front cover and toner door closed: Test pin 1 and pin 3 at JINT1 cable end, and pin 1 and pin 2 at JCVR1 cable end. • With one or both doors open: Pin 2 and 3 at JINT1 cable end should indicate continuity, but pins 1 and 2 at JCVR1 should have no continuity. <p>Are the tests verified?</p>	<p>Contact your next level or support.</p>	<p>Replace the front cover assembly. See “Front cover assembly removal” on page 252.</p>

Operator panel (display is dim and unchanging) service check

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

For CS310 models:

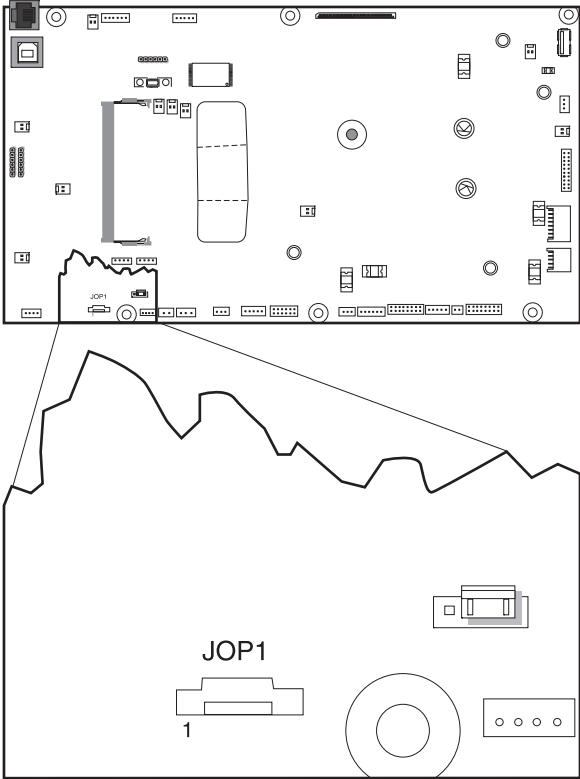
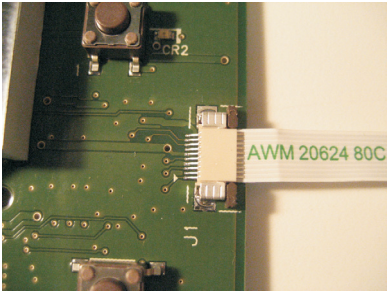
- Controller board
- Operator panel with UICC card

For CS410 and CS510 models:

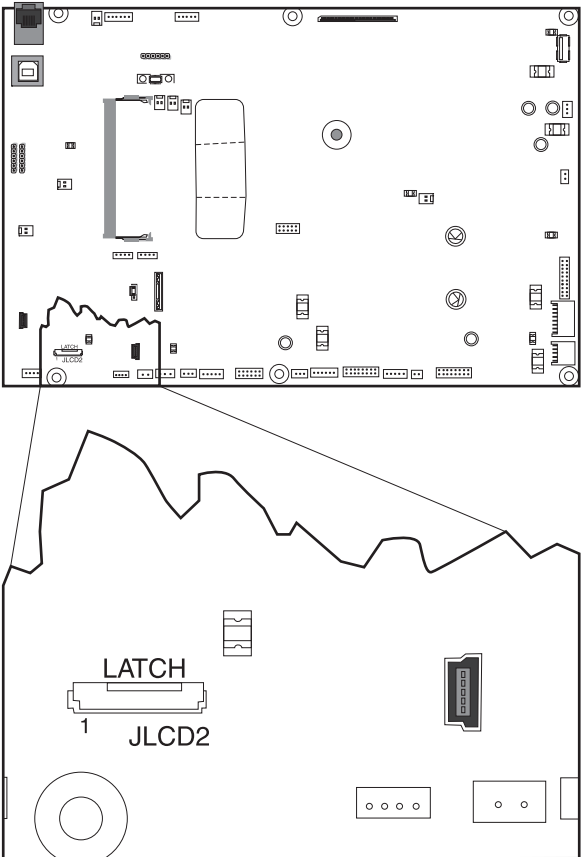

- Controller board
- UICC card

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

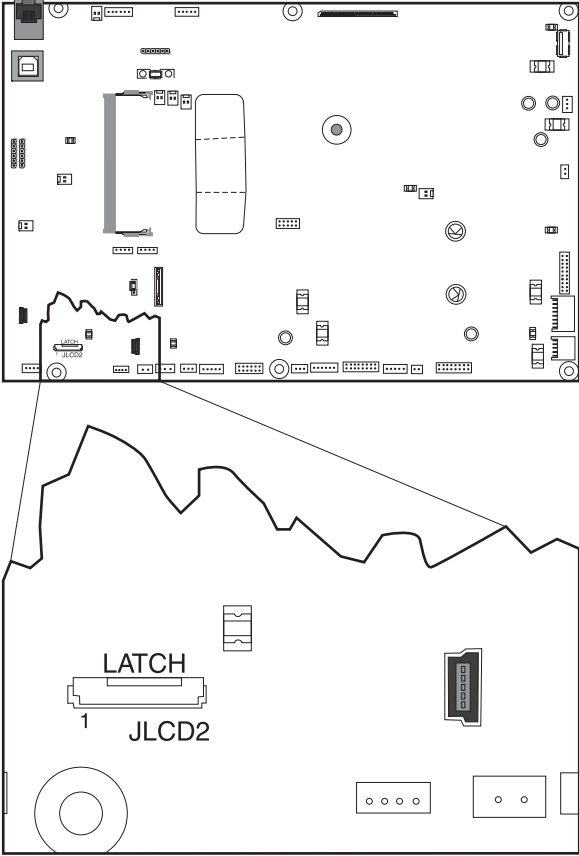
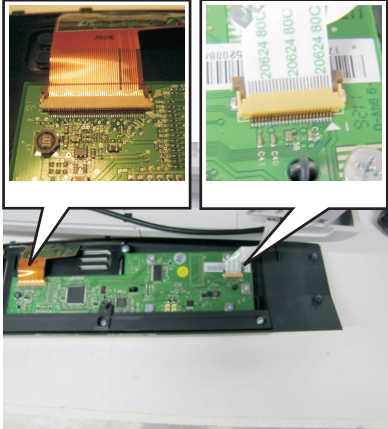
For CS310 models:

Actions	Yes	No
<p>Step 1</p> <p>Enter the Diagnostics Menu (turn the printer off, press and hold Up and Down, turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Panel Test. See “Panel Test” on page 172.</p> <p>Did all the pixels come on?</p>	Go to step 2.	<p>Replace the operator panel. See “Operator panel removal (for CS310 models only)” on page 254.</p>
<p>Step 2</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS310 models only)” on page 254.</p> <p>Is the operator panel cable properly installed at JOP1 on the controller board and the operator panel assembly?</p> 	<p>Go to step 3.</p> 	Reinstall the cable.
<p>Step 3</p> <p>Replace the operator panel. See “Operator panel removal (for CS310 models only)” on page 254.</p> <p>Is the operator panel still dim and unchanging?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	Problem resolved.

For CS410 models:

Actions	Yes	No
<p>Step 1</p> <p>Enter the Diagnostics Menu (turn the printer off, press and hold 3 and 6, turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Panel Test. See “Panel Test” on page 172.</p> <p>Did all the pixels come on?</p>	Go to step 2.	<p>Replace the display and UICC card. See “Operator panel removal (for CS410 models only)” on page 256.</p>
<p>Step 2</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS410 models only)” on page 256.</p> <p>Is the operator panel cable properly installed at JLCD2 on the controller board and the operator panel assembly?</p>  <p>The diagram shows the operator panel assembly with various components labeled. A callout points to a specific area labeled 'LATCH' and '1 JLCD2'.</p>	Go to step 3.	<p>Reinstall the cable.</p>  <p>The photograph shows the operator panel assembly with a callout pointing to the cable connection. The callout shows a green circuit board with a gold-colored connector and a white cable.</p>
<p>Step 3</p> <p>Replace the UICC card with display. See “Operator panel removal (for CS410 models only)” on page 256.</p> <p>Is the operator panel still dim and unchanging?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	Problem resolved.

For CS510 models:

Actions	Yes	No
<p>Step 1</p> <p>Enter the Diagnostics Menu (turn the printer off, press and hold 3 and 6, turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Panel Test. See “Panel Test” on page 172.</p> <p>Did all the pixels come on?</p>	Go to step 2.	Go to step 4.
<p>Step 2</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS510 models only)” on page 259.</p> <p>Is the operator panel cable properly installed at JLCD2 on the controller board and the operator panel assembly?</p>  <p>The diagram shows the top of the controller board with various components. A callout line points from the JLCD2 connector area to a detailed view of the connector. The detailed view shows a latch mechanism and the JLCD2 label.</p>	Go to step 3.	<p>Reinstall the cable.</p>  <p>The photographs show the operator panel cable being inserted into the JLCD2 connector on the controller board. The top photo shows the cable being inserted, and the bottom photo shows the cable fully seated in the connector.</p>
<p>Step 3</p> <p>Check the UICC card to display cable.</p> <p>Is the display cable installed at the UICC card correctly?</p>	Go to step 4.	Reinstall the cable.

Actions	Yes	No
Step 4 Replace the display. See “Operator panel removal (for CS510 models only)” on page 259. Is the operator panel still dim and unchanging?	Go to step 5.	Problem resolved.
Step 5 Replace the UICC card. See “Operator panel removal (for CS510 models only)” on page 259. Is the operator panel still dim and unchanging?	Replace the controller board. See “Controller board removal” on page 291.	Problem resolved.

Operator panel (displays all diamonds, no *beeps*, or five *beeps*) service check

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

For CS310 models:

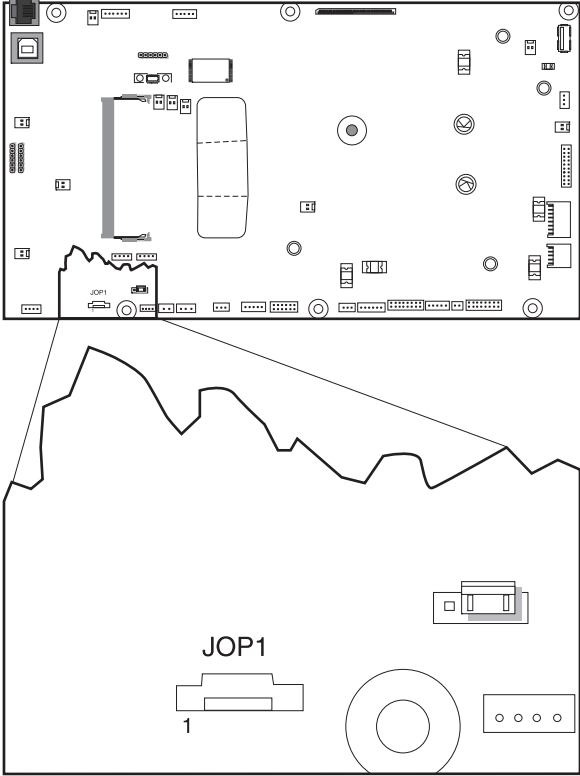

- Controller board
- Operator panel with UICC card

For CS410 and CS510 models:

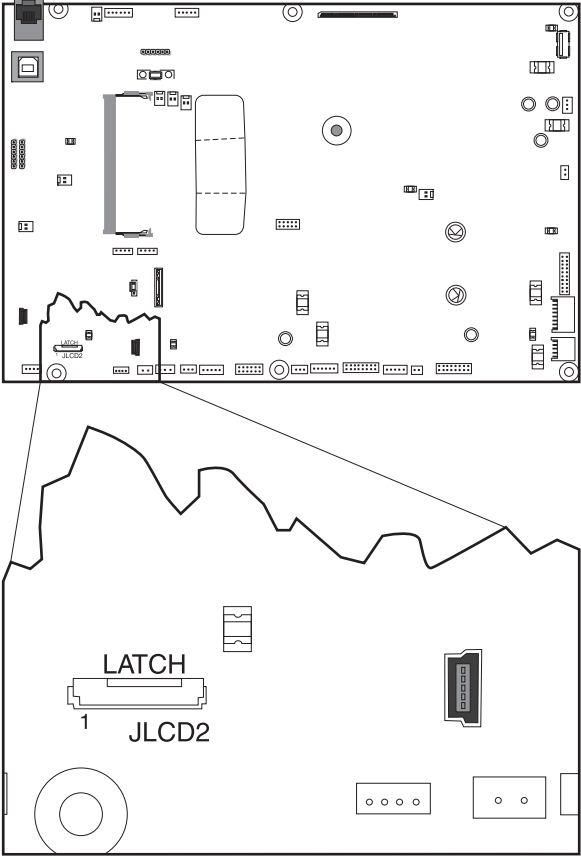

- Controller board
- UICC card

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

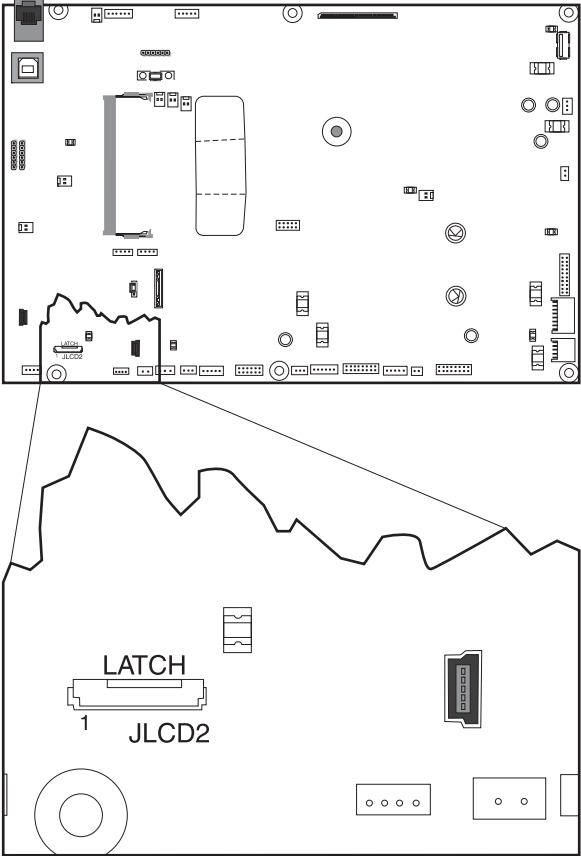
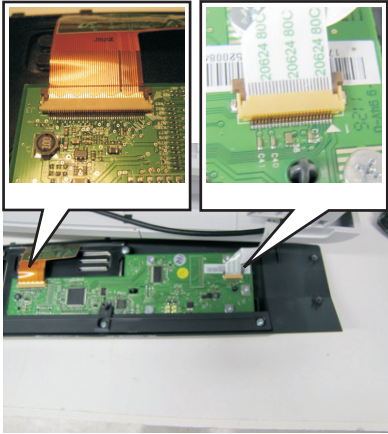
For CS310 models:

Actions	Yes	No
<p>Step 1</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS310 models only)” on page 254.</p> <p>Is the operator panel cable properly installed at JOP1 on the controller board and the operator panel assembly?</p> 	<p>Go to step 2.</p> 	<p>Reinstall the cable.</p>
<p>Step 2</p> <p>Replace the operator panel assembly. See “Operator panel removal (for CS310 models only)” on page 254.</p> <p>Does the operator panel display all diamonds?</p>	<p>Problem solved.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

For CS410 models:

Actions	Yes	No
<p>Step 1</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS410 models only)” on page 256.</p> <p>Is the operator panel cable properly installed at JLCD2 on the controller board and the operator panel assembly?</p> 	<p>Go to step 2.</p> 	<p>Reinstall the cable.</p>
<p>Step 2</p> <p>Replace the UICC card with display. See “Operator panel removal (for CS410 models only)” on page 256.</p> <p>Does the operator panel display all diamonds?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	<p>Problem resolved.</p>

For CS510 models:

Actions	Yes	No
<p>Step 1</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS510 models only)” on page 259.</p> <p>Is the operator panel cable properly installed at JLCD2 on the controller board and the operator panel assembly?</p>  <p>The diagram shows the back of the controller board with various components. A callout box provides a magnified view of the JLCD2 connector, which is labeled 'LATCH' and '1'. It shows a cable being inserted into the connector.</p>	<p>Go to step 2.</p>  <p>The photograph shows the operator panel cable being inserted into the JLCD2 connector on the controller board. Two callout boxes provide a magnified view of the cable and the connector.</p>	<p>Reinstall the cable.</p>
<p>Step 2</p> <p>Check UICC card to display cable.</p> <p>Is the display cable installed at the UICC card correctly?</p>	<p>Go to step 3.</p>	<p>Reinstall the cable.</p>
<p>Step 3</p> <p>Replace the UICC card with display. See “Operator panel removal (for CS510 models only)” on page 259.</p> <p>Does the operator panel display all diamonds?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	<p>Problem resolved.</p>

Operator panel (display blank) service check

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

For CS310 models:

- Controller board
- Operator panel with UICC card

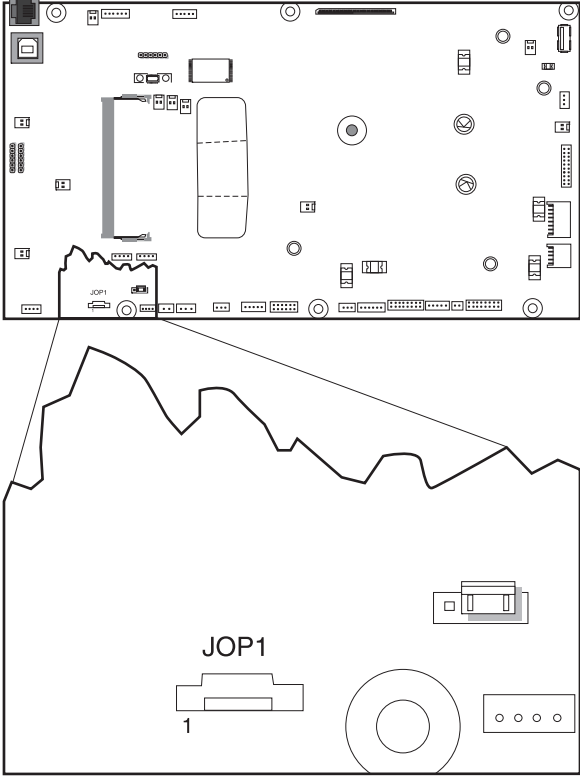
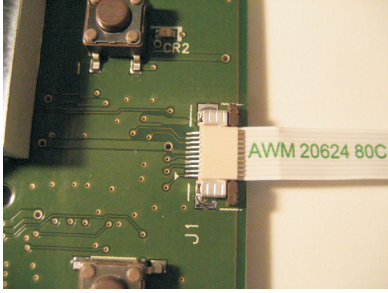
For CS410 and CS510 models:

- Controller board
- UICC card

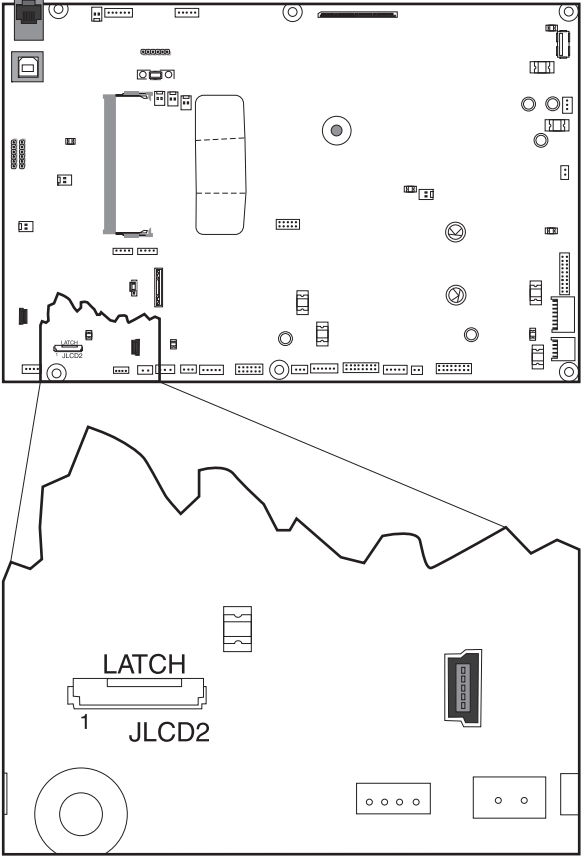

Warning—Potential Damage: Never install and remove components listed above as a method of troubleshooting components. Once a component has been installed in a printer, and the printer is powered on, it cannot be used in another printer. It must be returned to the manufacturer.

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

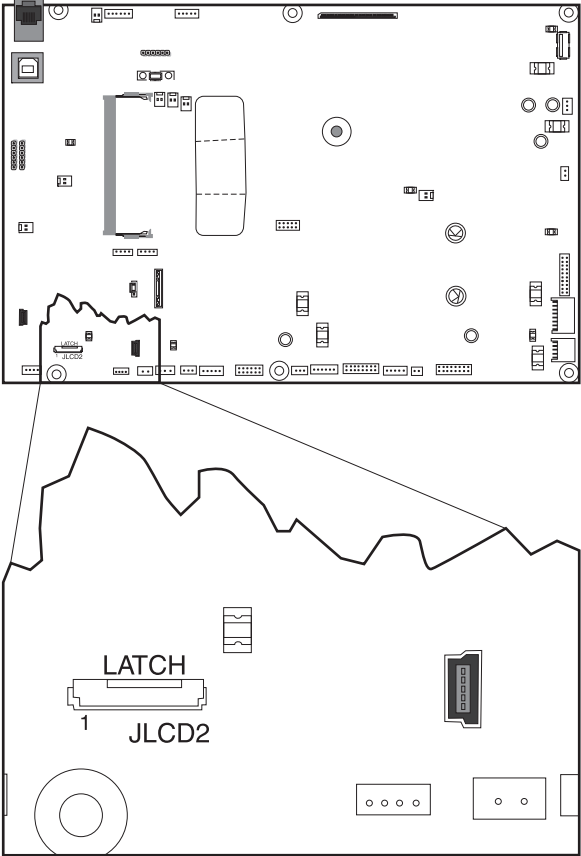
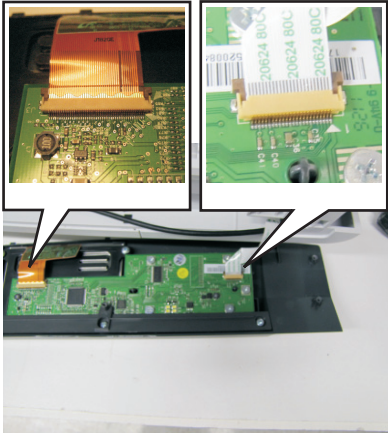
For CS310 models:

Actions	Yes	No
<p>Step 1</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS310 models only)” on page 254.</p> <p>Is the operator panel assembly cable properly installed at JOP1 on the controller board and the operator panel assembly?</p> 	<p>Go to step 2.</p> 	<p>Reinstall the cable.</p>
<p>Step 2</p> <p>Replace the operator panel assembly. See “Operator panel removal (for CS310 models only)” on page 254.</p> <p>Is the operator panel still blank?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	<p>Problem resolved.</p>

For CS410 models:

Actions	Yes	No
<p>Step 1</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS410 models only)” on page 256.</p> <p>Is the operator panel assembly cable properly installed at JLCD2 on the controller board and the operator panel assembly?</p> 	<p>Go to step 2.</p> 	<p>Reinstall the cable.</p>
<p>Step 2</p> <p>Replace the UICC card with display. See “Operator panel removal (for CS410 models only)” on page 256.</p> <p>Is the operator panel still blank?</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>	<p>Problem resolved.</p>

For CS510 models:

Actions	Yes	No
<p>Step 1</p> <p>Turn the printer off.</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Remove the operator panel. See “Operator panel removal (for CS510 models only)” on page 259.</p> <p>Is the operator panel assembly cable properly installed at JLCD2 on the controller board and the operator panel assembly?</p> 	<p>Go to step 2.</p> 	<p>Reinstall the cable.</p>
<p>Step 2</p> <p>Replace the UICC card to display cable.</p> <p>Is the display cable installed at the UICC card correctly?</p>	<p>Go to step 3.</p>	<p>Reinstall the cable.</p>
<p>Step 3</p> <p>Replace the display. See “Operator panel removal (for CS510 models only)” on page 259.</p> <p>Is the operator panel still blank?</p>	<p>Go to step 4.</p>	<p>Problem resolved.</p>

Actions	Yes	No
Step 4 Replace the UICC card. See “Operator panel removal (for CS510 models only)” on page 259 . Is the operator panel still blank?	Replace the controller board. See “Controller board removal” on page 291 .	Problem resolved.

Operator panel (one or more operator panel buttons fail) service check

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

For CS310 models:

- Controller board
- Operator panel with UICC card

For CS410 models and CS510 models:

- Controller board
- UICC card

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

For CS310 models:

Actions	Yes	No
Enter Diagnostics Menu (turn the printer off, press and hold Up and Down , turn the printer on, and then release the buttons when the installed memory and processor speed displays). Perform the Panel Test. See “Panel Test” on page 172 . The Panel Test should show alternating display of all pixels on, and all pixels off. Press Stop to end the test. Did the test show errors on the display?	Replace the operator panel assembly. See “Operator panel removal (for CS310 models only)” on page 254 .	Problem resolved.

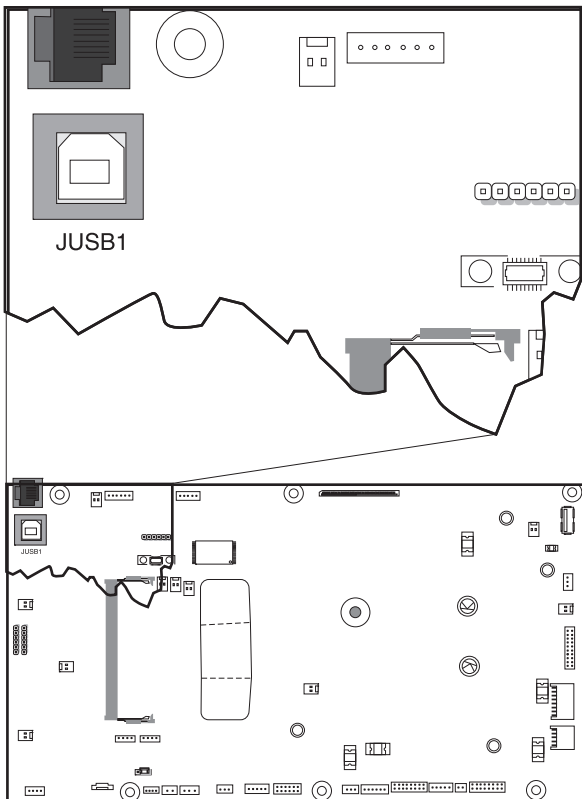
For CS410 models:

Actions	Yes	No
Enter Diagnostics Menu (turn the printer off, press and hold 3 and 6 , turn the printer on, and then release the buttons when the installed memory and processor speed displays). Perform the Button Test. See “Button Test” on page 172 in the Diagnostics menu. Did any of the buttons fail the test?	Replace the UICC card with display. See “Operator panel removal (for CS410 models only)” on page 256 .	Problem resolved.

For CS510 models:

Actions	Yes	No
<p>Enter Diagnostics Menu (turn the printer off, press and hold 3 and 6, turn the printer on, and then release the buttons when the installed memory and processor speed displays).</p> <p>Perform the Button Test. See “Button Test” on page 172 in the Diagnostics menu.</p> <p>Did any of the buttons fail the test?</p>	<p>Replace the UICC card. See “Operator panel removal (for CS510 models only)” on page 259.</p>	<p>Problem resolved.</p>

Operator panel USB cable service check

Actions	Yes	No
<p>Step 1</p> <p>Remove the rear cover. See “Rear cover removal” on page 290.</p> <p>Is the cable properly seated in the controller board?</p> 	<p>Go to step 2.</p>	<p>Reseat the USB cable.</p>
<p>Step 2</p> <p>Replace the USB cable. See “USB port connector removal” on page 263.</p> <p>Is the problem fixed?</p>	<p>Problem resolved.</p>	<p>Replace the controller board. See “Controller board removal” on page 291.</p>

USB service check

Actions	Yes	No
Step 1 Is the USB cable properly connected to the printer and host PC?	Go to step 2.	Properly connect the cable at both ends.
Step 2 Try a different USB cable. Does this fix the issue?	Issue fixed.	Go to step 3.
Step 3 Connect a different device to the USB cable. Did the host PC see the device?	Replace the controller board. See “Controller board removal” on page 291.	There is an issue with the host machine.

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?	Problem 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?	Problem resolved.	Go to step 5.
Step 5 Does the IP address displayed on the network settings page match the IP address in the port of the drivers using the printer?	Go to step 10.	Go to step 6.

Actions	Yes	No
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?	Problem resolved.	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?	Problem fixed.	Go to step 10.
Step 10 Have the network administrator 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?	Problem resolved.	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?	Problem 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 291.	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.
Step 16 Assign the correct wireless network to the printer. Did this fix the problem?	Problem resolved.	Go to step 17.

Actions	Yes	No
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 reseal the wireless card. Did this fix the problem?	Problem resolved.	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?	Problem resolved.	Go to step 22.
Step 22 Verify that the antenna is properly connected to the wireless card. Is it connected correctly?	Problem resolved.	Go to step 24.
Step 23 Properly connect the antenna. Did this fix the problem?	Problem resolved.	Go to step 24.
Step 24 Replace the wireless card. Did this fix the problem?	Problem resolved.	Go to step 25.
Step 25 Replace the controller board. See “Controller board removal” on page 291 . Did this fix the problem?	Problem resolved.	Contact your next level of support.

Input option hardware errors

- [“550-sheet and 650-sheet trays input option symptoms” on page 140](#)
- [“Tray \(x\) sensor service check” on page 140](#)
- [“Option and media size not recognized service check” on page 142](#)
- [“Double feed and printout skewed service check” on page 144](#)
- [“Failed to load/feed from multipurpose feeder service check” on page 147](#)

- “Failed to feed from option tray and leading edge damaged service check” on page 149
- “Tray 2 or tray 3 not detected service check” on page 152
- “Tray 2 or tray 3 missing service check” on page 154
- “Tray 2 or tray 3 empty service check” on page 157
- “Incompatible tray 3 service check” on page 159

550-sheet and 650-sheet trays input option symptoms

Symptom	Action
Printer fails to recognize the option is installed.	Go to “Option and media size not recognized service check” on page 142.
Tray X does not recognize the media size loaded.	Go to “Option and media size not recognized service check” on page 142.
Tray missing message appears even if media tray is installed. Media tray does not fit in the drawer.	Go to “Tray (x) sensor service check” on page 140.
Double feed	Go to “Double feed and printout skewed service check” on page 144.
Printout is skewed.	Go to “Double feed and printout skewed service check” on page 144.
Failed to feed from input option tray.	Go to “Failed to feed from option tray and leading edge damaged service check” on page 149.
Leading edge damaged.	Go to “Failed to feed from option tray and leading edge damaged service check” on page 149.
Failed to feed from multipurpose feeder.	Go to “Failed to load/feed from multipurpose feeder service check” on page 147.
Load multipurpose feeder with plain paper letter.	Go to “Failed to load/feed from multipurpose feeder service check” on page 147.
Paper input tray missing (tray 2 or tray 3).	Go to “Tray 2 or tray 3 missing service check” on page 154.
Tray 2 or tray 3 not detected.	Go to “Tray 2 or tray 3 not detected service check” on page 152.
Input option tray 2 or 3 empty.	Go to “Tray 2 or tray 3 empty service check” on page 157.
Incompatible tray 3.	Go to “Incompatible tray 3 service check” on page 159.

Tray (x) sensor service check

Actions	Yes	No
Step 1 a POR the printer. b Reseat the printer from the input option. Make sure it is installed correctly. c Make sure the input option configuration is supported for that printer. Refer to the <i>Input Option Configuration Guide</i> . Does the error remain?	Go to step 2.	Problem resolved.

Actions	Yes	No
Step 2 When the printer is in Ready state, pull the standard tray out. The display should indicate Tray (x) Missing . Reinsert the tray. Does the message remain on the display?	Go to step 3.	Go to step 5.
Step 3 Check the vertical wall at the right rear of the tray for damage. Is the tray damaged?	Replace the tray.	Go to step 4.
Step 4 Check for a dislodged tray present sensor. Is the sensor dislodged?	Replace the option tray present sensor. <ul style="list-style-type: none"> • If the 650-sheet tray is affected, then replace the 650-sheet drawer assembly. • If the 550-sheet drawer assembly is affected, then replace the entire 550-sheet drawer assembly. 	Contact the next level of support.
Step 5 Does the message Tray (x) Missing fail to appear when the tray is pulled out?	Go to step 6.	Problem resolved.
Step 6 <ol style="list-style-type: none"> Turn off the printer. Remove the rear cover. See “Rear cover removal” on page 290. Disconnect the cable at JTRAY1 connector for tray 1 or JOPT1 for tray 2 and 3 on the controller board. Turn the printer on, and measure the following voltages: For tray 1, check JTRAY1 on the controller board for +5 Vdc on pin 1, +5 Vdc on pin 2, and GND on pin 3. For tray 2 or 3, check JOPT1 on the controller board for GND on pin 2, GND on pin 3, and +24 Vdc on pin 5. Are the voltage values approximately correct?	Problem resolved.	Replace the controller board. See “Controller board removal” on page 291 .

Option and media size not recognized service check

Action	Yes	No
Step 1 a POR the printer. b Reseat the printer from the input option and make sure it is installed correctly. c Make sure the input option configuration is supported for that printer. Refer to the <i>Input Option Configuration Guide</i> . Does the error remain?	Go to step 2.	Problem resolved.
Step 2 Is the machine using both 650 and 550 input option tray?	Go to step 3.	Go to step 4.
Step 3 a Make sure the sequence of the input option trays is correct. The 650 option tray should be in tray 2, and the 550 option tray should be in tray 3. b Bring the printer into the Diagnostics Menu . c Navigate to Feed Test > Tray # > Single Feed Test . d Run a continuous feed test (feed at least 5 pages). Does the feed test run successfully on each option?	Go to step 8.	Go to step 4.
Step 4 Isolate the problem. Verify the problem by installing only one input option to the printer at a time. a Bring the printer into the Diagnostics Menu . b Navigate to Feed Test > Tray # > Single Feed Test . Does the feed test run successfully on each option?	Go to step 8.	Go to step 5.

Action	Yes	No
<p>Step 5</p> <p>Check the following for any damage:</p> <p>For 550 input option:</p> <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads <p>For 650 input option:</p> <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads • MPF gear • MPF pick assembly • MPF tray <p>Is the input option tray assembly free of damage?</p>	Go to step 6.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
<p>Step 6</p> <p>Check the pick tires for wear, damage, contamination, and if they are installed correctly.</p> <p>Is the pick tire free of wear and damaged?</p>	Go to step 7.	Replace the pick tire assembly. See “Pick tire removal” on page 303 .
<p>Step 7</p> <p>Check the input option drawer and the following for any damage or contamination:</p> <ul style="list-style-type: none"> • Top and bottom autoconnector • Pass-through sensors • Feed rollers • Input option pick assembly (if it can go down every time the paper input tray is inserted) <p>Is the option drawer assembly free of damage or contamination?</p>	Go to step 8.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
<p>Step 8</p> <p>a Turn off the printer.</p> <p>b Remove the printer from the input option trays.</p> <p>c Remove the rear shield.</p> <p>d Reseat the JOPT1 cable on the system board.</p> <p>e Check the JOPT1 cable for any damage.</p> <p>f Position the printer to partially hang on the side of a table, and check the autoconnect/option tray cable for damage.</p> <p>Is the tray 2 to controller board cable damaged?</p>	<ul style="list-style-type: none"> • If the printer autoconnector is damaged, then replace the tray 2 to controller board cable. • If the option tray autoconnector is damaged, then go to step 8. 	Go to step 9.

Action	Yes	No
Step 9 <ul style="list-style-type: none"> For 550 input option, replace the optional 550-sheet drawer. For 650 input option, replace the optional 650-sheet duo drawer. <p>Does this fix the problem?</p>	Problem resolved.	Go to step 10.
Step 10 <p>a Turn off the printer.</p> <p>b Remove the rear cover. See</p> <p>c Disconnect the cable at JOPT1 on the controller board.</p> <p>d Turn the printer on.</p> <p>e Measure the voltages below:</p> <p>JOPT1:</p> <ul style="list-style-type: none"> Pin 2: Ground Pin 3: Ground Pin 5: +24 V dc Pin 6: Ground Pin 7: +5 V dc Pin 9: Ground Pin 10: Ground <p>Are the voltages correct?</p>	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291.

Double feed and printout skewed service check

Action	Yes	No
Step 1 <p>a Fan the media.</p> <p>b Verify the proper tray settings for the media.</p> <p>c Check the condition of the multipurpose feeder pick tires.</p> <p>d Make sure the tray is fully inserted.</p> <p>e Make sure the paper tray guides are set correctly.</p> <p>Does the error remain?</p>	Go to step 2.	Problem resolved.
Step 2 <p>Is the machine using both 650 and 550 input option tray?</p>	Go to step 3.	Go to step 4.

Action	Yes	No
Step 3 a Make sure the sequence of the input option trays is correct. The 650 option tray should be in tray 2, and the 550 option tray should be in tray 3. b Bring the printer into the Diagnostics Menu . c Navigate to Feed Test > Tray # > Single Feed Test . d Run a continuous feed test (feed at least 5 pages). Does the feed test run successfully on each option?	Go to step 8.	Go to step 4.
Step 4 Isolate the problem. Verify the problem by installing only one input option to the printer at a time. a Bring the printer into the Diagnostics Menu . b Navigate to Feed Test > Tray # > Single Feed Test . Does the feed test run successfully on each option?	Go to step 8.	Go to step 5.
Step 5 Check the following for any damage: For 550 input option: <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads For 650 input option: <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads • MPF gear • MPF pick assembly • MPF tray Is the input option tray assembly free of damage?	Go to step 6.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
Step 6 Check the pick tires for wear, damage, contamination, and if they are installed correctly. Is the pick tire free of wear and damaged?	Go to step 7.	Replace the pick tire assembly. See “Pick tire removal” on page 303 .

Action	Yes	No
Step 7 Check the input option drawer and the following for any damage or contamination: <ul style="list-style-type: none"> • Top and bottom autoconnector • Pass-through sensors • Feed rollers • Input option pick assembly (if it can go down every time the paper input tray is inserted) Is the option drawer assembly free of damage or contamination?	Go to step 8.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
Step 8 a Turn off the printer. b Remove the printer from the input option trays. c Remove the rear shield. d Reseat the JOPT1 cable on the system board. e Check the JOPT1 cable for any damage. f Position the printer to partially hang on the side of a table, and check the autoconnect/option tray cable for damage. Is the tray 2 to controller board cable damaged?	<ul style="list-style-type: none"> • If the printer autoconnector is damaged, then replace the tray 2 to controller board cable. • If the option tray autoconnector is damaged, then go to step 8. 	Go to step 9.
Step 9 <ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer. Does this fix the problem?	Problem resolved.	Go to step 10.
Step 10 a Turn off the printer. b Remove the rear cover. See c Disconnect the cable at JOPT1 on the controller board. d Turn the printer on. e Measure the voltages below: JOPT1: <ul style="list-style-type: none"> • Pin 2: Ground • Pin 3: Ground • Pin 5: +24 V dc • Pin 6: Ground • Pin 7: +5 V dc • Pin 9: Ground • Pin 10: Ground Are the voltages correct?	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291.

Failed to load/feed from multipurpose feeder service check

Action	Yes	No
Step 1 a Make sure the 650 input option tray is at tray 2. b Make sure the correct 650 tray is inserted on the options drawer. c Fan the media. d Verify the proper tray settings for the media. e Verify the input source. f Check the condition of the multipurpose feeder pick tires. g Make sure the tray is fully inserted. h Refer to media specifications and check the condition of the media. i Make sure the media is free from damage and defects. Does the error remain?	Go to step 2.	Problem resolved.
Step 2 Is the machine using both 650 and 550 input option tray?	Go to step 3.	Go to step 4.
Step 3 a Make sure the sequence of the input option trays is correct. The 650 option tray should be in tray 2, and the 550 option tray should be in tray 3. b Bring the printer into the Diagnostics Menu . c Navigate to Feed Test > Tray # > Single Feed Test . d Run a continuous feed test (feed at least 5 pages). Does the feed test run successfully on each option?	Go to step 8.	Go to step 4.
Step 4 Isolate the problem. Verify the problem by installing only one input option to the printer at a time. a Bring the printer into the Diagnostics Menu . b Navigate to Feed Test > Tray # > Single Feed Test . Does the feed test run successfully on each option?	Go to step 8.	Go to step 5.

Action	Yes	No
<p>Step 5</p> <p>Check the following for any damage:</p> <p>For 550 input option:</p> <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads <p>For 650 input option:</p> <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads • MPF gear • MPF pick assembly • MPF tray <p>Is the input option tray assembly free of damage?</p>	Go to step 6.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
<p>Step 6</p> <p>Check the pick tires for wear, damage, contamination, and if they are installed correctly.</p> <p>Is the pick tire free of wear and damaged?</p>	Go to step 7.	Replace the pick tire assembly. See “Pick tire removal” on page 303 .
<p>Step 7</p> <p>Check the input option drawer and the following for any damage or contamination:</p> <ul style="list-style-type: none"> • Top and bottom autoconnector • Pass-through sensors • Feed rollers • Input option pick assembly (if it can go down every time the paper input tray is inserted) <p>Is the option drawer assembly free of damage or contamination?</p>	Go to step 8.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
<p>Step 8</p> <p>a Turn off the printer.</p> <p>b Remove the printer from the input option trays.</p> <p>c Remove the rear shield.</p> <p>d Reseat the JOPT1 cable on the system board.</p> <p>e Check the JOPT1 cable for any damage.</p> <p>f Position the printer to partially hang on the side of a table, and check the autoconnect/option tray cable for damage.</p> <p>Is the tray 2 to controller board cable damaged?</p>	<ul style="list-style-type: none"> • If the printer autoconnector is damaged, then replace the tray 2 to controller board cable. • If the option tray autoconnector is damaged, then go to step 8. 	Go to step 9.

Action	Yes	No
Step 9 <ul style="list-style-type: none"> For 550 input option, replace the optional 550-sheet drawer. For 650 input option, replace the optional 650-sheet duo drawer. <p>Does this fix the problem?</p>	Problem resolved.	Go to step 10.
Step 10 <p>a Turn off the printer.</p> <p>b Remove the rear cover. See</p> <p>c Disconnect the cable at JOPT1 on the controller board.</p> <p>d Turn the printer on.</p> <p>e Measure the voltages below:</p> <p>JOPT1:</p> <ul style="list-style-type: none"> Pin 2: Ground Pin 3: Ground Pin 5: +24 V dc Pin 6: Ground Pin 7: +5 V dc Pin 9: Ground Pin 10: Ground <p>Are the voltages correct?</p>	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291.

Failed to feed from option tray and leading edge damaged service check

Action	Yes	No
Step 1 <p>a Fan the media.</p> <p>b Verify the proper tray settings for the media.</p> <p>c Verify the input source.</p> <p>d Check the condition of the multipurpose feeder pick tires.</p> <p>e Make sure the tray is fully inserted.</p> <p>f Refer to media specifications and check the condition of the media.</p> <p>g Make sure the media is free from damage and defects.</p> <p>Does the error remain?</p>	Go to step 2.	Problem resolved.
Step 2 <p>Is the machine using both 650 and 550 input option tray?</p>	Go to step 3.	Go to step 4.

Action	Yes	No
Step 3 a Make sure the sequence of the input option trays is correct. The 650 option tray should be in tray 2, and the 550 option tray should be in tray 3. b Bring the printer into the Diagnostics Menu . c Navigate to Feed Test > Tray # > Single Feed Test . d Run a continuous feed test (feed at least 5 pages). Does the feed test run successfully on each option?	Go to step 8.	Go to step 4.
Step 4 Isolate the problem. Verify the problem by installing only one input option to the printer at a time. a Bring the printer into the Diagnostics Menu . b Navigate to Feed Test > Tray # > Single Feed Test . Does the feed test run successfully on each option?	Go to step 8.	Go to step 5.
Step 5 Check the following for any damage: For 550 input option: <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads For 650 input option: <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads • MPF gear • MPF pick assembly • MPF tray Is the input option tray assembly free of damage?	Go to step 6.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
Step 6 Check the pick tires for wear, damage, contamination, and if they are installed correctly. Is the pick tire free of wear and damaged?	Go to step 7.	Replace the pick tire assembly. See “Pick tire removal” on page 303 .

Action	Yes	No
Step 7 Check the input option drawer and the following for any damage or contamination: <ul style="list-style-type: none"> • Top and bottom autoconnector • Pass-through sensors • Feed rollers • Input option pick assembly (if it can go down every time the paper input tray is inserted) Is the option drawer assembly free of damage or contamination?	Go to step 8.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
Step 8 a Turn off the printer. b Remove the printer from the input option trays. c Remove the rear shield. d Reseat the JOPT1 cable on the system board. e Check the JOPT1 cable for any damage. f Position the printer to partially hang on the side of a table, and check the autoconnect/option tray cable for damage. Is the tray 2 to controller board cable damaged?	<ul style="list-style-type: none"> • If the printer autoconnector is damaged, then replace the tray 2 to controller board cable. • If the option tray autoconnector is damaged, then go to step 8. 	Go to step 9.
Step 9 <ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer. Does this fix the problem?	Problem resolved.	Go to step 10.
Step 10 a Turn off the printer. b Remove the rear cover. See c Disconnect the cable at JOPT1 on the controller board. d Turn the printer on. e Measure the voltages below: JOPT1: <ul style="list-style-type: none"> • Pin 2: Ground • Pin 3: Ground • Pin 5: +24 V dc • Pin 6: Ground • Pin 7: +5 V dc • Pin 9: Ground • Pin 10: Ground Are the voltages correct?	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291.

Tray 2 or tray 3 not detected service check

Action	Yes	No
Step 1 a POR the printer. b Reseat the input options. Does the error remain?	Go to step 2.	Problem resolved.
Step 2 Is the machine using both 650 and 550 input option tray?	Go to step 3.	Go to step 4.
Step 3 a Make sure the sequence of the input option trays is correct. The 650 option tray should be in tray 2, and the 550 option tray should be in tray 3. b Bring the printer into the Diagnostics Menu . c Navigate to Feed Test > Tray # > Single Feed Test . d Run a continuous feed test (feed at least 5 pages). Does the feed test run successfully on each option?	Go to step 8.	Go to step 4.
Step 4 Isolate the problem. Verify the problem by installing only one input option to the printer at a time. a Bring the printer into the Diagnostics Menu . b Navigate to Feed Test > Tray # > Single Feed Test . Does the feed test run successfully on each option?	Go to step 8.	Go to step 5.
Step 5 Check the following for any damage: For 550 input option: <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads For 650 input option: <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads • MPF gear • MPF pick assembly • MPF tray Is the input option tray assembly free of damage?	Go to step 6.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.

Action	Yes	No
Step 6 Check the pick tires for wear, damage, contamination, and if they are installed correctly. Is the pick tire free of wear and damaged?	Go to step 7.	Replace the pick tire assembly. See “Pick tire removal” on page 303 .
Step 7 Check the input option drawer and the following for any damage or contamination: <ul style="list-style-type: none"> • Top and bottom autoconnector • Pass-through sensors • Feed rollers • Input option pick assembly (if it can go down every time the paper input tray is inserted) Is the option drawer assembly free of damage or contamination?	Go to step 8.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
Step 8 <ol style="list-style-type: none"> Turn off the printer. Remove the printer from the input option trays. Remove the rear shield. Reseat the JOPT1 cable on the system board. Check the JOPT1 cable for any damage. Position the printer to partially hang on the side of a table, and check the autoconnect/option tray cable for damage. Is the tray 2 to controller board cable damaged?	<ul style="list-style-type: none"> • If the printer autoconnector is damaged, then replace the tray 2 to controller board cable. • If the option tray autoconnector is damaged, then go to step 8. 	Go to step 9.
Step 9 <ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer. Does this fix the problem?	Problem resolved.	Go to step 10.

Action	Yes	No
Step 10 a Turn off the printer. b Remove the rear cover. See c Disconnect the cable at JOPT1 on the controller board. d Turn the printer on. e Measure the voltages below: JOPT1: <ul style="list-style-type: none"> • Pin 2: Ground • Pin 3: Ground • Pin 5: +24 V dc • Pin 6: Ground • Pin 7: +5 V dc • Pin 9: Ground • Pin 10: Ground Are the voltages correct?	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291 .

Tray 2 or tray 3 missing service check

Action	Yes	No
Step 1 a POR the printer. b Reseat the input options. c Reinsert the paper input tray. d Check if the option paper pick assembly can go down and trigger manually. Does the error remain?	Go to step 2.	Problem resolved.
Step 2 Is the machine using both 650 and 550 input option tray?	Go to step 3.	Go to step 4.
Step 3 a Make sure the sequence of the input option trays is correct. The 650 option tray should be in tray 2, and the 550 option tray should be in tray 3. b Bring the printer into the Diagnostics Menu . c Navigate to Feed Test > Tray # > Single Feed Test . d Run a continuous feed test (feed at least 5 pages). Does the feed test run successfully on each option?	Go to step 8.	Go to step 4.

Action	Yes	No
<p>Step 4</p> <p>Isolate the problem. Verify the problem by installing only one input option to the printer at a time.</p> <p>a Bring the printer into the Diagnostics Menu.</p> <p>b Navigate to Feed Test > Tray # > Single Feed Test.</p> <p>Does the feed test run successfully on each option?</p>	Go to step 8.	Go to step 5.
<p>Step 5</p> <p>Check the following for any damage:</p> <p>For 550 input option:</p> <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads <p>For 650 input option:</p> <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads • MPF gear • MPF pick assembly • MPF tray <p>Is the input option tray assembly free of damage?</p>	Go to step 6.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
<p>Step 6</p> <p>Check the pick tires for wear, damage, contamination, and if they are installed correctly.</p> <p>Is the pick tire free of wear and damaged?</p>	Go to step 7.	Replace the pick tire assembly. See “Pick tire removal” on page 303 .
<p>Step 7</p> <p>Check the input option drawer and the following for any damage or contamination:</p> <ul style="list-style-type: none"> • Top and bottom autoconnector • Pass-through sensors • Feed rollers • Input option pick assembly (if it can go down every time the paper input tray is inserted) <p>Is the option drawer assembly free of damage or contamination?</p>	Go to step 8.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.

Action	Yes	No
Step 8 a Turn off the printer. b Remove the printer from the input option trays. c Remove the rear shield. d Reseat the JOPT1 cable on the system board. e Check the JOPT1 cable for any damage. f Position the printer to partially hang on the side of a table, and check the autoconnect/option tray cable for damage. Is the tray 2 to controller board cable damaged?	<ul style="list-style-type: none"> • If the printer autoconnector is damaged, then replace the tray 2 to controller board cable. • If the option tray autoconnector is damaged, then go to step 8. 	Go to step 9.
Step 9 <ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer. Does this fix the problem?	Problem resolved.	Go to step 10.
Step 10 a Turn off the printer. b Remove the rear cover. See c Disconnect the cable at JOPT1 on the controller board. d Turn the printer on. e Measure the voltages below: JOPT1: <ul style="list-style-type: none"> • Pin 2: Ground • Pin 3: Ground • Pin 5: +24 V dc • Pin 6: Ground • Pin 7: +5 V dc • Pin 9: Ground • Pin 10: Ground Are the voltages correct?	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291 .

Tray 2 or tray 3 empty service check

Action	Yes	No
Step 1 a Add media on the paper tray. b Properly set the paper restraints on the paper tray. c POR the printer. d Reseat the input option tray from the printer. e Refer to the media specifications and check the condition of the media. f Make sure the media is free from damage and defects. Does the error remain?	Go to step 2.	Problem resolved.
Step 2 Is the machine using both 650 and 550 input option tray?	Go to step 3.	Go to step 4.
Step 3 a Make sure the sequence of the input option trays is correct. The 650 option tray should be in tray 2, and the 550 option tray should be in tray 3. b Bring the printer into the Diagnostics Menu . c Navigate to Feed Test > Tray # > Single Feed Test . d Run a continuous feed test (feed at least 5 pages). Does the feed test run successfully on each option?	Go to step 8.	Go to step 4.
Step 4 Isolate the problem. Verify the problem by installing only one input option to the printer at a time. a Bring the printer into the Diagnostics Menu . b Navigate to Feed Test > Tray # > Single Feed Test . Does the feed test run successfully on each option?	Go to step 8.	Go to step 5.

Action	Yes	No
<p>Step 5</p> <p>Check the following for any damage:</p> <p>For 550 input option:</p> <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads <p>For 650 input option:</p> <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads • MPF gear • MPF pick assembly • MPF tray <p>Is the input option tray assembly free of damage?</p>	Go to step 6.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
<p>Step 6</p> <p>Check the pick tires for wear, damage, contamination, and if they are installed correctly.</p> <p>Is the pick tire free of wear and damaged?</p>	Go to step 7.	Replace the pick tire assembly. See “Pick tire removal” on page 303 .
<p>Step 7</p> <p>Check the input option drawer and the following for any damage or contamination:</p> <ul style="list-style-type: none"> • Top and bottom autoconnector • Pass-through sensors • Feed rollers • Input option pick assembly (if it can go down every time the paper input tray is inserted) <p>Is the option drawer assembly free of damage or contamination?</p>	Go to step 8.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
<p>Step 8</p> <p>a Turn off the printer.</p> <p>b Remove the printer from the input option trays.</p> <p>c Remove the rear shield.</p> <p>d Reseat the JOPT1 cable on the system board.</p> <p>e Check the JOPT1 cable for any damage.</p> <p>f Position the printer to partially hang on the side of a table, and check the autoconnect/option tray cable for damage.</p> <p>Is the tray 2 to controller board cable damaged?</p>	<ul style="list-style-type: none"> • If the printer autoconnector is damaged, then replace the tray 2 to controller board cable. • If the option tray autoconnector is damaged, then go to step 8. 	Go to step 9.

Action	Yes	No
Step 9 <ul style="list-style-type: none"> For 550 input option, replace the optional 550-sheet drawer. For 650 input option, replace the optional 650-sheet duo drawer. <p>Does this fix the problem?</p>	Problem resolved.	Go to step 10.
Step 10 <p>a Turn off the printer.</p> <p>b Remove the rear cover. See</p> <p>c Disconnect the cable at JOPT1 on the controller board.</p> <p>d Turn the printer on.</p> <p>e Measure the voltages below:</p> <p>JOPT1:</p> <ul style="list-style-type: none"> Pin 2: Ground Pin 3: Ground Pin 5: +24 V dc Pin 6: Ground Pin 7: +5 V dc Pin 9: Ground Pin 10: Ground <p>Are the voltages correct?</p>	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291.

Incompatible tray 3 service check

Action	Yes	No
Step 1 <p>a Make sure the correct input option tray is installed in its proper tray slot. The 650 input option tray should be in tray 2, and the 550 input option tray should be in tray 3.</p> <p>b Reseat the input options from the printer.</p> <p>Does the error remain?</p>	Go to step 2.	Problem resolved.
Step 2 <p>Is the machine using both 650 and 550 input option tray?</p>	Go to step 3.	Go to step 4.

Action	Yes	No
Step 3 a Make sure the sequence of the input option trays is correct. The 650 option tray should be in tray 2, and the 550 option tray should be in tray 3. b Bring the printer into the Diagnostics Menu . c Navigate to Feed Test > Tray # > Single Feed Test . d Run a continuous feed test (feed at least 5 pages). Does the feed test run successfully on each option?	Go to step 8.	Go to step 4.
Step 4 Isolate the problem. Verify the problem by installing only one input option to the printer at a time. a Bring the printer into the Diagnostics Menu . b Navigate to Feed Test > Tray # > Single Feed Test . Does the feed test run successfully on each option?	Go to step 8.	Go to step 5.
Step 5 Check the following for any damage: For 550 input option: <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads For 650 input option: <ul style="list-style-type: none"> • Input tray • Paper restrains • Paper dams • Pick pads • MPF gear • MPF pick assembly • MPF tray Is the input option tray assembly free of damage?	Go to step 6.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
Step 6 Check the pick tires for wear, damage, contamination, and if they are installed correctly. Is the pick tire free of wear and damaged?	Go to step 7.	Replace the pick tire assembly. See “Pick tire removal” on page 303 .

Action	Yes	No
Step 7 Check the input option drawer and the following for any damage or contamination: <ul style="list-style-type: none"> • Top and bottom autoconnector • Pass-through sensors • Feed rollers • Input option pick assembly (if it can go down every time the paper input tray is inserted) Is the option drawer assembly free of damage or contamination?	Go to step 8.	<ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer.
Step 8 a Turn off the printer. b Remove the printer from the input option trays. c Remove the rear shield. d Reseat the JOPT1 cable on the system board. e Check the JOPT1 cable for any damage. f Position the printer to partially hang on the side of a table, and check the autoconnect/option tray cable for damage. Is the tray 2 to controller board cable damaged?	<ul style="list-style-type: none"> • If the printer autoconnector is damaged, then replace the tray 2 to controller board cable. • If the option tray autoconnector is damaged, then go to step 8. 	Go to step 9.
Step 9 <ul style="list-style-type: none"> • For 550 input option, replace the optional 550-sheet drawer. • For 650 input option, replace the optional 650-sheet duo drawer. Does this fix the problem?	Problem resolved.	Go to step 10.
Step 10 a Turn off the printer. b Remove the rear cover. See c Disconnect the cable at JOPT1 on the controller board. d Turn the printer on. e Measure the voltages below: JOPT1: <ul style="list-style-type: none"> • Pin 2: Ground • Pin 3: Ground • Pin 5: +24 V dc • Pin 6: Ground • Pin 7: +5 V dc • Pin 9: Ground • Pin 10: Ground Are the voltages correct?	Contact your next level of support.	Replace the controller board. See “Controller board removal” on page 291.

Service menus

- “Understanding the printer control panel” on page 163
- “Diagnostics menu” on page 166
- “Configuration menu” on page 184
- “Entering invalid engine mode” on page 194
- “Entering recovery mode” on page 195
- “Accessing the Network SE menu” on page 195
- “Accessing the service engineer (SE) menu” on page 195

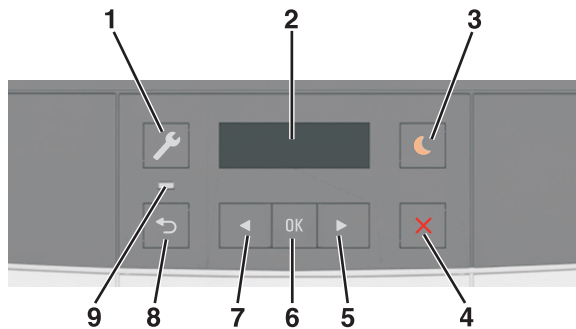
Understanding the printer control panel

- “Using the printer control panel” on page 163
- “Understanding the colors of the indicator light and Sleep button lights” on page 165

The printer control panel is used to navigate through printer menus and to control printer settings.

Using the printer control panel

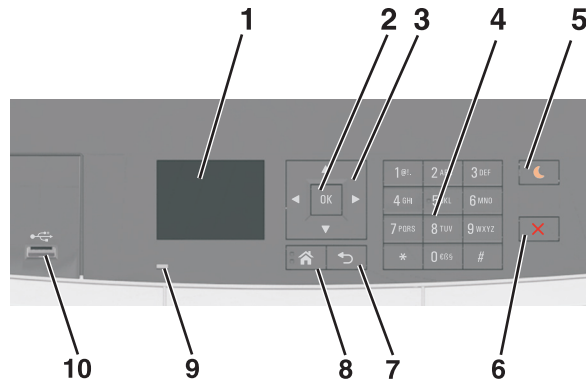
CS310



#	Item	Description
1	Menus button	This button opens the menus. Notes: <ul style="list-style-type: none"> • The menus are available only when the printer is in Ready state. • Pressing the button while in a menu item lets you return to the top level menu screen.
2	Display	This display allows the user to view printing options as well as status and error messages.

#	Item	Description
3	Sleep button	This button enables sleep mode or hibernation mode. Notes: <ul style="list-style-type: none"> Pressing any hard button, sending a print job, or performing a power on reset with the main power switch wakes the printer from Sleep mode Pressing the Sleep button or performing a power on reset with the main power switch wakes the printer from Hibernation mode.
4	Stop button	This button stops printer activity.
5	Right arrow button	This button scrolls through the menus or moves between screens and menu options. This button also increases the numeric value of an option or setting being displayed.
6	Select button	The button selects menu options and saves settings.
7	Left arrow button	This button scrolls through the menus or moves between screens and menu options. This button also decreases the numeric value of an option or setting being displayed.
8	Back button	This button returns to the previous screen.
9	Indicator light	This light determines the status of the printer.

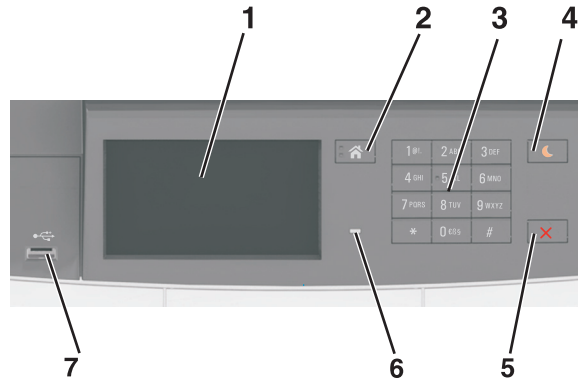
CS410



#	Item	Description
1	Display	The display allows the user to view the printer's status and to set up and operator the printer.
2	Select button	This button selects menu options and saves settings.
3	Arrow buttons	These buttons are used to scroll through menus or settings on the display.
4	Keypad	The keypad allows the user to enter numbers, letters, or symbols.
5	Sleep button	This button enables Sleep mode or hibernation mode. Notes: <ul style="list-style-type: none"> Pressing any hard button, attaching a device to a USB port, sending a print job, or performing a power-on reset with the main power switch wakes the printer from Sleep mode. Pressing the Sleep button or the power switch will cause the printer to wake from Hibernation mode.
6	Stop button	This button stops all printer activity.
7	Back button	This button returns to the previous screen.

#	Item	Description
8	Home button	This button goes to the home screen.
9	Indicator light	This light determines the status of the printer.
10	USB port	The USB port connects a camera or flash drive to the printer.

CS510



#	Item	Description
1	Display	The display shows the status of the printer and sets up and operates the printer.
2	Home button	This button goes to the home screen.
3	Keypad	The keypad allows the user to enter numbers, letters, or symbols.
4	Sleep button	This button enables Sleep mode or hibernation mode. Notes: <ul style="list-style-type: none"> Pressing any hard button, touching the printer control panel, attaching a device to the USB port, sending a print job, or performing a power-on reset with the main power switch wakes the printer from Sleep mode. Pressing the Sleep button or the power switch causes the printer to wake from hibernation mode.
5	Stop button	This button stops all printer activity.
6	Indicator light	This light determines the status of the printer.
7	USB port	The USB port connects a USB or flash drive to the printer. Note: Only the front USB supports flash drives.

Understanding the colors of the indicator light and Sleep button lights

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

Indicator light	Printer status
Off	The printer is off or in hibernation 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	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 entering hibernation mode.
Blinking amber for 0.1 second, then goes completely off for 1.9 seconds in pulsing pattern.	The printer is in hibernation mode.

Diagnostics menu

- [“Entering diagnostics mode” on page 166](#)
- [“REGISTRATION” on page 167](#)
- [“Skew” on page 168](#)
- [“Quick Test” on page 168](#)
- [“Alignment Menu” on page 169](#)
- [“MISC TESTS” on page 170](#)
- [“PRINT TESTS” on page 171](#)
- [“Feed Tests” on page 171](#)
- [“Print quality test pages” on page 172](#)
- [“HARDWARE TESTS” on page 172](#)
- [“DUPLEX TESTS” on page 173](#)
- [“INPUT TRAY TESTS” on page 176](#)
- [“BASE SENSOR TEST” on page 176](#)
- [“DEVICE TESTS” on page 177](#)
- [“PRINTER SETUP” on page 178](#)
- [“EP SETUP” on page 181](#)
- [“TPS Setup: Right or Left” on page 181](#)
- [“TPS Setup: Reset Color Cal” on page 182](#)
- [“TPS Setup: Cal Ref Adj” on page 182](#)
- [“REPORTS” on page 182](#)
- [“EVENT LOG” on page 183](#)
- [“Exit Diagnostics” on page 184](#)

Entering diagnostics mode

For CS310 models:

- 1 Turn off the printer.
- 2 Press and hold **Left** and **OK**.

- 3 Turn on the printer.
- 4 Release the buttons when the installed memory and processor speed displays.
- 5 Select **Exit Diags** to exit Diagnostics mode.

For CS410 and CS510 models:

- 1 Turn off the printer.
- 2 Press and hold **3** and **6**.
- 3 Turn on the printer.
- 4 Release the buttons when the installed memory and processor speed displays.
- 5 Select **Exit Diags** to exit Diagnostics mode and return to the printer home screen.

REGISTRATION

Print registration makes sure the black printing plane is properly aligned on the page. This is one of the steps in aligning a new printhead. It is also the first step in aligning the duplex registration. See [“Quick Test” on page 168](#).

To set Registration:

- 1 Select **Registration** from the Diag Menu, and press **Select**.
- 2 Use **Left** or **Right** to select **Print Quick Test**, and press **Select**.
See [“Quick Test” on page 168](#) for addition information.
The message **Printing . . .** appears on the display, and the page prints.
Retain this page to determine the changes you need to make to the margin settings.
- 3 Press **Select** to enter the **Registration**.
- 4 Use **Left** or **Right** to select the margin setting you need to change, and press **Select**.
- 5 Use **Left** to decrease or **Right** to increase the offset values, and press **Select** to confirm the value. The message **Submitting** changes displays, and the original margin setting screen appears.

The print registration ranges are:

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

Right margin	-50 to +50 Each increment corresponds to an approximate shift of 4 pixels at 600 dpi. The default is 0.	A positive change moves the image to the left, and a negative change moves the image to the right.
Skew	-100 to +100 Each increment corresponds to 1/1200 of an inch. The default is 0.	A positive value causes the left end of the scan line to move down the page. A negative value causes the left end of the scan line to move up the page. The right end stays fixed. There is no compression or expansion of the image.

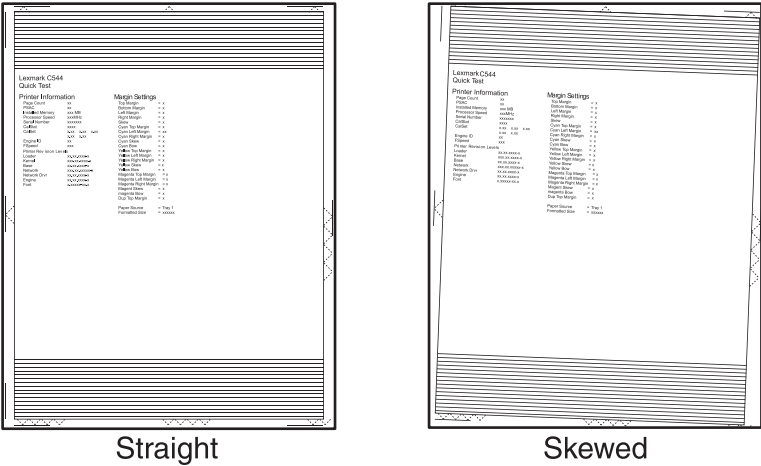
6 Print another copy of the Quick Test to verify your changes.

7 Continue changing the settings by repeating steps 3 through 5.

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

Skew

One printhead houses the four color planes. The black plane is aligned to the printer, and the other color planes are internally aligned to black. Electronic alignment fine tunes the alignment of the color planes to the black plane once the printhead is installed. See [“Setting alignment for color” on page 169](#) for instructions on setting printhead alignment. This must be performed before color skew adjustment is attempted. The following illustration shows proper alignment versus skewed alignment.



Quick Test

The Quick Test contains the following information:

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

Lexmark C544					
Quick Test					
Device Information			MARGIN SETTINGS		
Page Count	205		Top Margin	= 40	
PSAC	205		Bottom Margin	= -5	
Installed Memory	128 MB		Left Margin	= -4	
Processor Speed	500MHz		Right Margin	= 0	
Serial Number	98P104V		Cyan Top Margin	= 1	
Engine ID	25		Cyan Left Margin	= -90	
System Card ID	000400CED869		Cyan Right Margin	= 36	
AA	0000		Yellow Top Margin	= -6	
CalSet			Yellow Left Margin	= -56	
C	0.0000	1.0000	Yellow Right Margin	= -10	
	0.0000	0.0000	Magenta Top Margin	= 0	
M	0.0000	1.0000	Magenta Left Margin	= -8	
	0.0000	0.0000	Magenta Right Margin	= -30	
Y	0.0000	1.0000	Dup Top Margin	= -50	
	0.0000	1.0000	Dup Left Margin	= 0	
K	0.0000	1.0000			
	0.0000	0.0000	Paper Source	= Tray1	
			Formatted Size	= Letter	
Printer Revision Levels					
Loader		L.F.AS.P076-0			
Kernel		FFN.APS.F151-0			
Base		L.F.AS.P076-0			
Network		WF.APS.N141-0			
Network Drvr		L.F.AS.P076-0			
Engine		L.F.AS.E074A-0			
Printhead		LSU.AS.H007.16			
Panel		0.0			
Font		8.31M02-U5.0			

To print the Quick Test page:

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

- 1 Select **Registration** from Diag Menu, and press **Select**.
- 2 Select **Quick Test Page**, and press **Select**.

The message **Printing...** appears on the display.

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

Alignment Menu

Use the alignment menu to align the image on the page for cyan, yellow, and magenta. The black image should be aligned using REGISTRATION before the individual colors are aligned.

Warning—Potential Damage: Read the instructions for the alignment carefully.

Setting alignment for color

- 1 From the Diagnostics menu, touch **Alignment Menu**.
- 2 Select **CYAN**, **YELLOW**, or **MAGENTA**.

- 3** Touch **Quick Test**. You may need to scroll to the next page.

A two-page instruction sheet prints.

The printer prints the test page from the default paper source, however if the default source only supports envelopes, then the page prints from Tray 1. Print on A4 or letter paper for the best results.

- 4** Determine which settings to change and follow the instructions on the printed sheets to determine the adjustment.

Description	Range
Top Margin	-128 to +127
Left Margin	-1200 to +1200
Right Margin	-1200 to +1200
Skew	-50 to +50
Bow	-50 to +50
Linearity	Linearity has a separate Quick Test sheet and adjustment instructions.

- 5** Touch (-) to decrease the value or (+) to increase the value. After the value appears, touch to save the value or **Back** to cancel.
- 6** Reprint the Quick Test to evaluate the changes. Continue until each adjustment is correct.
- 7** Repeat steps 4 through 6 as needed.
- 8** Continue until all three colors are aligned. A separate Quick Test prints for each color.
- 9** Touch **Back** to exit the Alignment Menu

MISC TESTS

Motor Detect

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

To run Motor Detect:

- 1 Remove the imaging unit and the waste toner bottle. See [“Imaging unit \(IU\) removal” on page 246](#).
- 2 Reinstall the right cover assembly.
- 3 Close the front door.
- 4 Enter Diagnostics menu.
- 5 Select **MISC TESTS** in the Diag Menu, and press **Select**.
- 6 Select **Motor Detect**, and press **Select**.
If you press **Select** before closing the front cover, then a message appears: **Close Cover. Press Select.**
Motor Detection In Progress... appears.
The motor detection process takes about 10 seconds, and stops automatically.
Detect Complete. Rebooting... appears, and the printer performs a POR (Power On Reset).
If the motor ran, the test was passed. If the motor did not run, the test failed.

PRINT TESTS

The Print Test determines 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 installed in the selected input source.

- If a source is selected that contains paper, then a page similar to the Quick Test Page is printed and does not contain the Print Registration diamonds.
- If a source is selected which 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 same page prints continuously from the selected source until you press **Stop** (X). If Continuous is selected from a source which contains envelopes, then the envelope print test pattern is printed on the first envelope, and 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, touch **PRINT TESTS**.
- 2 Select the paper source.
- 3 Select either **Single** or **Continuous**.
- 4 If **Single** is selected, no buttons are active while the Print Test Page is printing. If **Continuous** is selected, **Stop** (X) can be pressed to cancel the test.
- 5 At the end of the test, the printer returns to the **PRINT TESTS** menu.

Print Quality Pages

The print quality test consists of five pages. Pages one and two contain a mixture of graphics and text. The remainder of the pages only contain graphics.

This test may be printed from either Configuration menu or the Diagnostics menu. To run the print quality pages from the Diagnostics menu, touch **PRINT TESTS >Print Quality Pages**. This test cannot be canceled or terminated after the test has begun. After the test pages print, the printer returns to the **PRINT TESTS** menu.

Feed Tests

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

To run the Feed Test:

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

Print quality test pages

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

To run the print quality pages from the Diagnostics Menu:

- 1 Select **PRINT TESTS**, and press **Select**.

- 2 Select **Prt Qual Pgs**, and press **Select**.

The message **Printing Quality Test Pages** is displayed.

Note: Once the test is started, it cannot be canceled.

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

HARDWARE TESTS

If the hardware test fails, replace the failing part.

Panel Test

This test verifies the operator panel display function.

To run the Panel Test:

- 1 From the Diagnostics menu, navigate to **HARDWARE TESTS > LCD Test**.

The Panel test continually executes.

- 2 Press **Stop** (X) to cancel the test.

Button Test

This test verifies the operator panel button function.

To run the Button Test:

- 1 From the Diagnostics menu, navigate to:

HARDWARE TESTS > Button Test

- 2 With no buttons pressed, a pattern matching the operator panel buttons is displayed. Press each operator panel button one at a time, and an "X" displays in the box that represents the button.

- 3 Press **Stop** (X) or touch **Back** 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 DRAM to verify that each bit in memory can be set and read correctly.

To run the DRAM Test:

From the Diagnostics menu, navigate to **HARDWARE TESTS > DRAM Test**.

DRAM Test Testing... appears on the screen, followed by **Resetting the Printer**.

After the printer resets, the results of the test appear: DRAM Test (x)MB 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.

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

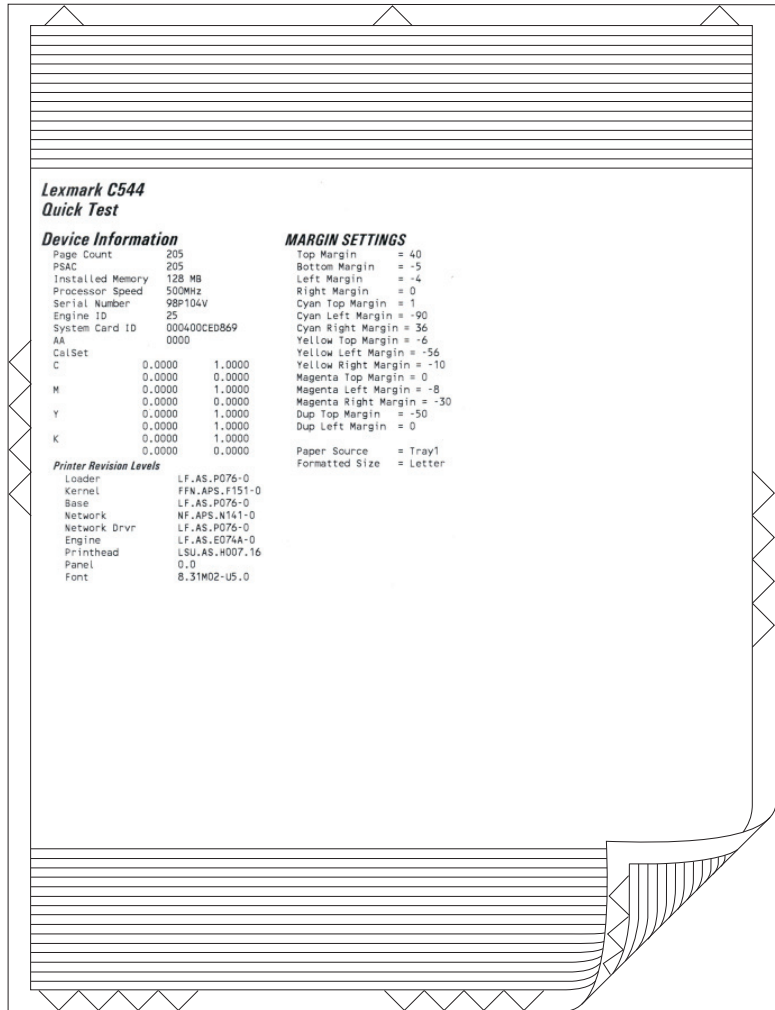
- 3 To exit the test, POR the printer.
- 4 If the test fails, replace the failing USB cable.

DUPLEX TESTS

Duplex Quick Test

The duplex quick test determines if the Duplex Option Top Margin is set correctly. This test prints a duplexed version of the Quick Test Page that can be used to adjust the Top Margin for the back of the duplexed page. You can run one duplexed page (**Single**) or continue printing duplexed pages (**Continuous**) until **Stop (X)** is pressed.

You must use either Letter or A4 paper.



To run the duplex quick test:

1 From the Diagnostics menu, touch **DUPLEX TESTS > Duplex Quick Test**.

2 Select **Single** or **Continuous**. The single test cannot be canceled.

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.

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.

5 Press **Stop (X)** to cancel the test.

Duplex Top Margin

This setting controls the offset between the first scan line on the front of the duplex page and the first scan line on the back of the page. Therefore, be sure to set the top margin in REGISTRATION before setting the duplex top margin. See [“REGISTRATION” on page 167](#).

To set the Duplex Top Margin

- 1 Select **DUPLEX TESTS** from Diag Menu, and press **Select**.
- 2 Select **Quick Test**, and press **Select**.
- 3 Select **Single**, and press **Select**.
- 4 Hold the page to the light to see whether the top margin of the back aligns with the top margin of the front.
- 5 Select **Top Margin** from DUPLEX TESTS.
- 6 Use **Left** or **Right** to select the margin setting you need to change.
 - Each increment shifts the duplex top margin by 1/100 of an inch.
 - The Top Margin (duplex) range is -50 to +50, and the default value is 0.
 - An increase in the value moves the backside top margin down and widens the top margin. A decrease moves the top margin upward and narrows the top margin.
- 7 Press **Select** to save the new value.
- 8 Print the Quick Test (duplex) again (steps 1–4) to verify the adjustment. Repeat if necessary.

Duplex Left Margin

This setting shifts the image on the back of the duplex sheet to the left or right to correctly position it on the page. Therefore, be sure to set the top margin in REGISTRATION before setting the duplex top margin. See [“REGISTRATION” on page 167](#).

To set the Duplex Left Margin

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

INPUT TRAY TESTS

Feed Tests

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

To run the Feed Test:

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

Sensor Test

Note: This test is not available on all models.

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

- 1 Select **INPUT TRAY TESTS** from Diag Menu, and press **Select**.
- 2 Select **Sensor Test**, and press **Select**.
- 3 Select the tray where you want to test the sensors. .
- 4 Depending on the tray selected, you may have **Empty Sensor**, **Low Sensor**, or **Passthru Sensor**.

Sensors will be displayed with either **Open** or **Closed**. Toggle the sensor you want to test and note the change of state of that sensor.

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

- 5 To Exit the test, press **Back** or **Stop**.

BASE SENSOR TEST

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



CAUTION—SHOCK HAZARD: Do not use your hand to toggle these switches. Use a nonconducting item.

To run the Base Sensor Test.

- 1 Select **Base Sensor Test** from Diag Menu, and press **Select**
- 2 Select the sensor you want to test, and press **Select**

The following tests are available:

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

3 To exit the test, press **Back** or **Stop**.

DEVICE TESTS

Quick Disk Test

This test will perform a non-destructive read/write on one block per track on the disk. Once executed, this test cannot be canceled.

Note: This test only appears when a non-defective disk is installed.

Disk Test/Clean

This test will perform a low-level format of the hard disk which will destroy all data on the disk and which should never be performed on a good disk. This test should only be used when the disk contains bad data.

Note: This test only appears when a non-defective disk is installed.

Note: This process does not erase any information stored on the device's NAND.

Note: When this test is completed, the disk automatically is initialized with a new file system.

Flash test

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

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

To run the Flash Test:

- 1 Select **DEVICE TESTS** from Diag Menu, and press **Select**.
- 2 Select **Flash Test**, and press **Select**.
Contents will be lost. Continue? appears.
- 3 To continue, select **Yes**, and press **Select**. To end the test, select **No**, and press **Select**.

If you continue, **Flash Test Testing...** appears.

- If the test is successful, then **Flash Test Test Passed** appears. Use Format Flash in the Utilities Menu to reformat the flash card
- If the test is unsuccessful, then **Flash Test Test Failed** appears. Replace the flash card.

- 4 Press **Back** to remove the message and return to the Device Tests menu.

PRINTER SETUP

Defaults

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

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

PAGE COUNTS

This menu lets you view the total page counts of the printer or the page counts broken down into color and mono pages printed. Unlike in previous printers, none of these values can be changed.

Touch **Back** to return to the Diagnostics menu.

Serial Number

This menu lets you view the total page counts of the printer or the page counts broken down into color and mono pages printed. Unlike in previous printers, none of these values can be changed.

To view the serial number:

- 1 Select **Printer Setup** from Diag Menu, and press **Select** .
- 2 Select **Serial number**, and press **Select**.
The Serial Number is displayed.
- 3 Press **Back** to return to Printer Setup.

Engine Setting 1 through 4

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

Model Name

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

Configuration ID

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

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

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

To set the configuration ID:

- 1 Select **Printer Setup** from Diag Menu, and press **Select** .
- 2 Select **Configuration ID**, and press **Select** .
The current value for Configuration ID 1 is displayed.
- 3 Enter the Configuration ID 1.
 - Change the left character or digit first.
 - To change the value of a character or digit, press **Left** to decrease or **Right** to increase the underlined value, and press **Select** to move to the next character or digit.

- To move to the next character or digit without changing the current value, press **Select**.
- When you press **Select** on the last digit, the value will be submitted.
If **Invalid ID** appears, then the entry is discarded, and the previous Configuration ID 1 is displayed on the screen.
If the process is successful, then **Submitting Selection** appears on the display, followed by the current value for Configuration ID 2.

4 Repeat the steps for entering the Configuration ID 2, and press **Select**.

If the Configuration ID 2 is validated, **Submitting Selection** appears, and a check mark appears next to **Printer Setup**.

5 Restart the printer. A POR is not automatically performed.

ITU Barcode

The 16-digit numeric value matches the image transfer unit installed in the printer. If you replace the image transfer unit, reenter this value. **Stop** exits the menu.

To enter the ITU barcode:

- 1** Select **Printer Setup** from Diag Menu, and press **Select**.
- 2** Select **ITU Barcode**, and press **Select**.
- 3** To enter the 16-digit numeric value:
 - Use **Left** to decrease the left most digit value or **Right** to increase the value.
 - Press **Select** to advance to the next digit.
 - If a digit is already correct, then press **Select** to accept the number and to continue.
 - When the last number is entered and you press **Select**, **Submitting changes...** should appear.
 - If the entered number is incorrect, then **Check Sum Does Not Match** displays. Check and reenter the number.

Processor ID

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

Reset Fuser Count

Resets the fuser count value to zero. The Event Log records each time that a user executes the Reset Fuser Count operation. See [“EVENT LOG” on page 183](#) for more information. This setting appears only if the Maintenance Warning and Intervention function is enabled in the printer Configuration ID.

To reset the fuser count:

- 1** Select **Printer Setup** from Diag Menu, and press **Select**.
- 2** Select **Reset Fuser Cnt**, and press **Select**.
- 3** Select **Reset**, and press **Select**.
Reset Resetting... appears.
- 4** To cancel a reset, press **Back**.

EP SETUP

EP Defaults

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

To restore EP Defaults:

- 1 Select **EP Setup** from Diag Menu, and press **Select**.
- 2 Select **EP Defaults**, and press **Select**.
- 3 Select **Restore** to reset the values to the factory settings, and select **Do Not Restore**.
- 4 To cancel a reset, press **Back**.

Fuser temperature

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

To adjust the fuser temperature:

- 1 Select **EP Setup** from Diag Menu, and press **Select**.
- 2 Select **Fuser Temp**, and press **Select**.
- 3 Select Normal, High, or Low. The default is Normal.
- 4 To return to the menus, press **Back**.

DC Charge Adjust, Bias Adjust, Transfer Adjust

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

TPS Setup: Right or Left

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

To enter the value:

- 1 Select **TPS Setup** from Diag Menu, and press **Select**.
- 2 Select **Right** or **Left**, and press **Select**.
TPS Right 1-16 or **TPS Left 1-16** appears above a blinking 0 in the left position.
- 3 To enter a character or digit:
 - a Press **Left** to decrease or **Right** to increase the blinking value.
 - b Pause for several seconds without pressing any buttons. The blinking value becomes solid.
 If the value is incorrect, then use **Back** to go back and reenter the number.
 - c Continue until the last value is reached.

- d When the last of the 16 values is entered and becomes solid, **TPS Right 17-32 or TPS Left 17-32** appears.
 - e Continue entering and pausing
- 4 After the 32nd number is entered and becomes solid, the number is automatically entered.
- If the number is incorrect, then **Checksum does not match** appears, and the original screen appears to reenter the value.
- If the number is correct, then **Saving changes to NVRAM** appears.

TPS Setup: Reset Color Cal

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

To reset the programmed value:

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

TPS Setup: Cal Ref Adj

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

To set the Cal Ref Adj:

- 1 Select **TPS Setup** from Diag Menu, and press **Select**.
- 2 Select **Cal Ref Adj**, and press **Select**.
- 3 Select **CMY** or **Black**, and press **Select**.
- 4 Press **Left** to decrease or **Right** to increase the value.
The values can be -8 to +8, and the default value is 0.
- 5 To cancel and return to the menus, press **Back**.

REPORTS

Menu Settings Page

To print the Menu Settings Page:

- 1 Select **Reports** from Diag Menu, and press **Select**.
- 2 Select **Menu Settings Page**, and press **Select**.

Installed Licenses

This report lists all of the currently installed licenses and each license's feature data. The objective of this report is to enable the collection of this information from non-networked devices.

EVENT LOG

Display Log

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

To view the event log:

- 1 Select **Event Log** from Diag Menu, and press **Select**.
- 2 Select **Display Log**, and press **Select**.

Error codes display on the screen. Press **Left** or **Right** to view additional error codes. Press **Right** to view additional details.

- 3 Press **Back** to return to the Event Log menu.

Print Log

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

The Event Log printed from Diag Menu includes:

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

Model and Serial number

Printer information

Panel display when error occurred

Page count

Earliest error code

Event Log (Page 1)

Lexmark C544 (s/n: 98P104V)

Device Information

Page Count

210

Installed Memory

128 MB

Processor Speed

500MHz

Engine ID

25

AA

0

CalSet

0.0000 1.0000 0.0000 0.0000

C

0.0000 1.0000 0.0000 0.0000

M

0.0000 1.0000 0.0000 0.0000

Y

0.0000 1.0000 0.0000 0.0000

K

0.0000 1.0000 0.0000 0.0000

Alignment Info

CTAN:

Base Auto

A

0 0

Theta

0 0

MAGENTA:

Base Auto

M

0 0

Theta

0 0

YELLOW:

Base Auto

Y

0 0

Theta

0 0

Engine

LF_AS_E074A-0

Loader

LF_AS_P076-0

Kernel

FFM_APS_P151-0

Base

LF_AS_P076-0

Network

WF_APS_W141-0

Network Driver

LF_AS_P076-0

Panel

0.0

Firmware

8.3.W02-05.0

PrintHead

LSU_AS_W007.16

Event Log Information

976:0 Service Network Software

Panel Message

976:0 Service Network Software[34] mac_prep:10=0x00000000 MacID=000000013 Loc=0x00210914, Error setting hw address of network int

Process

mac_prep[34]

Page Count

210

POR Count

18

Date and Time

7/7/08

Up Time

14 mns 33 secs 538 msec

Code Levels

Target: [0x0] andW02

0: Copyright-LF_AS_P076

Thu Feb 7 17:15:02 2008 mls-bld

1: Loader-LF_AS_P076

Thu Feb 7 17:15:02 2008 mls-bld

2: Kernel-FFM_APS_P151

Thu Feb 7 17:15:04 2008 mls-bld

3: Base-LF_AS_P076

Thu Feb 7 17:15:01 2008 mls-bld

4: Network-WF_APS_W141

Thu Feb 7 17:15:02 2008 mls-bld

4: Network-Driver-LF_AS_P076

Thu Feb 7 17:15:02 2008 mls-bld

25: W02_WV-1.0

Thu Feb 7 17:15:02 2008 mls-bld

27: Driver-WV-1.0

Thu Feb 7 17:15:02 2008 mls-bld

29: Engine-LF_AS_E074A

Tue Feb 12 14:49:19 2008 mls-bld

30: W02_WV-1.0

Thu Feb 7 17:15:02 2008 mls-bld

31: Network-WV-1.0

Mon Feb 4 12:55:50 2008 mls-bld

=====

mac_prep

Proc: 134(mac_prep)

File: /usr/lib/ldd/netapp/utility/mac_prep.c:233

DS: 00000000

Mag: 00000013

Loc: 00210914

Info: Error setting hw address of network int

Firmware Rev: WF_APS_W141

Service menus

183

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

To print the event log:

- 1 Select **Event Log** from Diag Menu, and press **Select** .
- 2 Select **Print Log**, and press **Select**.
- 3 Press **Back** to return to Event Log.

Clear Log

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

To clear the event log:

- 1 Select **Event Log** from Diag Menu, and press **Select** .
- 2 Select **Clear Log**, and press **Select**.
- 3 Select **YES** to clear the Event Log or **NO** to exit the Clear Log menu. If **YES** is selected, the **Deleting EVENT LOG** displays on the screen.
- 4 Press **Back** to return to Event Log.

Exit Diagnostics

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

Configuration menu

Entering configuration mode

The Configuration Menu group contains a set of menus, settings, and operations which are infrequently required by a user. Generally, the options made available in this menu group are used to configure a printer for operation.

For CS310 models:

- 1 Turn off the printer.
- 2 Press and hold the **OK** and **Right** buttons.
- 3 Turn on the printer.
- 4 Release the buttons after 10 seconds.

For CS410 and CS510 models:

- 1 Turn off the printer.
- 2 Press and hold the **2** and **6** buttons.
- 3 Turn on the printer.
- 4 Release the buttons after 10 seconds.

Print Quality Pages

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

To help isolate print quality problems, print the Print Quality Test Pages. The pages are formatted. The **Printing Quality Test Pages** message appears, and then the pages print. The message remains on the operator panel until all the pages print.

Press **Select** to print the pages. The Print Quality Test Pages contain several pages. The first page, which is printed in English text only, contains a mixture of text and graphics. The information includes values of the Quality Menu settings in Settings and printer and toner cartridge configuration information. The remaining pages contain only graphics.

Fuser Cleaning Process

Over the lifetime of the device, flecks that adhere to the fuser may transfer to printed pages. The three step fuser cleaning process removes these flecks.

Values	Description
Print Cleaning Pages	The printer prints three very high-coverage, one-sided pages. Each of these pages contain instructions and information that the process heats the fuser to a very high temperature in order to loosen the flecks and make them sticky.
Start Cleaning Process	Several high-coverage sheets are fed through the fuser in order to pick up and remove the flecks.

Reports

The Reports setting contains the Menu Settings Page and Event Log.

Menu Settings Page

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

To print the menu settings:

- 1 Select **Reports** from the Config Menu, and press **Select**.
- 2 Select **Menu Settings Page**, and press **Select**.

Event Log

The Event Log lets the system support person print a limited set of the information contained in the Diagnostic Menu version of the printed Event Log. The limited Configuration log and the full Diagnostics log printed versions show the same operator panel messages when the print and follow the same layout guidelines.

To print the Event Log:

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

Color Trapping

Color Trapping uses an algorithm to compensate for mechanical incorrect registration in the printer. When small black text or fine black lines are being printed, the printer checks to see if they are being printed on top of a colored background. If so, then rather than remove the color from beneath the black content, the printer leaves the color around the edge of the text or line. The hole in the colored region is reduced in size, which prevents the characteristic white gap that is caused by incorrect registration.

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

Tray Insert Msg

This setting determines how many seconds the panel will display the **Tray Insert** message after a user has inserted a tray into the printer.

The user can choose to disable this setting, or to set the value between 1 to 90 seconds. The default value is 5 seconds.

Panel Menus

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

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

PPDS Emulation

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

Download emuls

This appears only if at least one download emulator (DLE) is installed. The default setting is Disable. All download emulators (DLEs) are re-enabled automatically after two PORs.

Safe Mode

The settings for this menu item are On and Off (default). When enabled, Safe Mode lets the printer operate in a special limited mode in which it attempts to continue offering as much functionality as possible despite known issues. For more information about Safe Mode and the Safe Mode print behavior for this model, see ["Using Safe Mode" on page 34](#).

To change the setting:

- 1 From the Configuration menu, navigate to **Safe Mode**.
- 2 Select **On** or **Off** to change the setting.
- 3 Select **Submit**.
- 4 POR the printer.

Demo Mode

The Demo Mode lets marketing personnel or merchandisers demonstrate the printer to potential customers by printing the demo page.

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

Energy Conserve

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

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

Auto Color Adjustment

Auto Color Adjustment sets the suggested number of pages which the printer should print between consecutive calibrations.

Selections are **Off** and the values between **100** and **1000** in increments of 50. The default is 700 pages.

If the printer exceeds the set value while printing a job, it completes the current job and any other jobs received while printing the current job before it initiates a calibration. The printer does not cancel or suspend an active job to perform a calibration. If a user is using the menus, including the Configuration Menu and the Diagnostics Menu, an automatic color adjust calibration does not occur.

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

Auto Align Adj

Note: This setting should never be set to off during normal printer usage.

Toner Patch Sensing (TPS) is a diagnostic mechanism that automatically adjusts the printer's toner density. When TPS executes, the printer generates toner patches on the belt and then uses these to calculate the appropriate amount of necessary adjustment. When an event initiates a TPS operation, the device performs a toner density calibration.

Regardless of this setting's value, the device always performs an automatic alignment calibration after any initiating event occurs. If this setting's value is set to off, then the device does not use the results of this test to automatically adjust its alignment, and may eventually require the user to have to manually align the device.

Color Alignment

A user will need to run the color alignment process after any event that might cause the printhead to misalign. When this setting is selected, the device generates several alignment pages. The user can then manually adjust the value of any of the settings **A** through **L** as necessary in order to improve the device's alignment. Regardless of this setting's value, the device always performs an automatic alignment calibration after any initiating event occurs. If this setting's value is set to off, the device does not use the results of this test to automatically adjust its alignment, and may eventually require the user to have to manually align the device.


Note: The user will not be allowed to access the **Cancel Job** or **Reset Printer** functions while printing the color alignment pages.

Paper Prompts

This controls which tray a change prompt is directed to when paper is sensed to be the wrong size.

Note: The value of [“Action for prompts” on page 189](#) may override the value of this setting.

To change this setting:

- 1 From the Configuration menu, navigate to **Paper Prompts**.
- 2 Select from the available options:
 - Auto (default)
 - Multi-purpose Feeder
 - Manual Paper
- 3 Depending on the printer model, press **OK** or touch  to save the setting, or press **X** to return to the Configuration menu without saving any changes.


When it is set to **Auto**, the emulator selected to print the job determines which of the installed input sources will receive the change prompt. When set to a value other than Auto, the selected source always receives this type of prompt.

Envelope Prompts

This controls which tray a change prompt is directed to when the envelopes are sensed to be the wrong size.

Note: The value of [“Action for prompts” on page 189](#) may override the value of this setting.

To change this setting:

- 1 From the Configuration menu, navigate to **Envelope Prompts**.
- 2 Select from the available options:
 - Auto (default)
 - Multi-purpose Feeder
 - Manual Envelope
- 3 Depending on the printer model, press **OK** or touch  to save the setting, or press **X** to return to the Configuration menu without saving any changes.

When it is set to **Auto**, the emulator selected to print the job determines which of the installed input sources will receive the change prompt. When set to a value other than Auto, the selected source always receives this type of prompt.

Action for prompts

This setting enables users to determine which input source would receive paper-related or envelope-related change prompts when they occur. Regardless of the target source, the device always requires some type of user assistance to resolve the change prompt (examples: pushing a button to ignore the prompt and changing the source's installed media). However, this setting gives a user the option of having the device resolve change prompt situations without requiring any user assistance.

To change this setting:

- 1 From the Configuration Menu, navigate to **Action for prompts**.
- 2 Touch **Left** or **Right** to change the setting.
- 3 Touch **Submit** to save the setting, or touch **Back** to return to the Configuration Menu without saving any changes.

When set to **Prompt user**, the device behaves like the past implementation. When a change prompt occurs, the device stops printing, posts the change prompt to the target source, and waits for the user to select an action before continuing.

When set to **Continue**, the device automatically assumes that the user selects **Continue** every time a change prompt is encountered. Likewise, when the device is set to **Use Current**, all change prompts will perform as if **Use Current** was selected by the user.

Jobs on Disk

This setting appears only if a hard disk is installed. It allows buffered jobs to be deleted from the disk. This does not affect Print and Hold or parked jobs.

To change the setting:

- 1 From the Configuration menu, navigate to **Jobs on Disk**.
- 2 Select from the available options to change the setting:
 - Delete
 - Do Not Delete (default)
- 3 Press **X** to return to the Configuration menu.

Disk Encryption

Warning—Potential Damage: If the settings are changed, then the printer completely formats the hard disk. All information on the disk will be unrecoverable.

This setting appears only if a hard disk is installed. It controls whether the printer encrypts the information that it writes to the hard disk.

To change the setting:

- 1 From the Configuration menu, navigate to **Disk Encryption**.
- 2 Select from the available options to change the setting.
 - Enable—enables encryption of hard disk.
 - Disable (default)—enables formatting of hard disk.
- 3 **Contents will be lost. Continue?** appears. Select **Yes** to proceed with the encryption or formatting of the disk, or **No** to cancel the operation. If Yes is selected, then a progress bar appears on the display that indicates the overall completion of the selected operation. After completion, the display returns to Disk Encryption.

Font Sharpening

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

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


Require Standby

This turns On or Off the standby mode in the General Settings Menu. The default setting is On.

UI Automation

Once enabled, this setting creates an **ENABLE_UI_AUTOMATION** file in the `/var/fs/shared/` directory. As long as this file exists, the printer permits external developers to test the stability of their applications against the printer to make sure that their applications have an appropriate level of stability. Disabling this setting deletes the file and prohibits automated testing.

To change the setting:

- 1 From the Configuration menu, navigate to **UI Automation**.
- 2 Select from the available options to change the setting.
 - Enable
 - Disable (default)
- 3 Depending on the printer model, press **OK** or touch  to save the setting, or press **X** to return to the Configuration menu without saving any changes.

LES Applications


This enables or disables the Lexmark Embedded Solutions (LES) applications. The default setting is Enable.

Key Repeat Initial Delay

Note: This setting is available only on the MS610de model.

This setting determines the length of delay before a repeating key starts repeating. The range is 0.25–5 seconds, with increments of 0.25. The default setting is one second.

To adjust this setting:


- 1 From the Configuration menu, navigate to **Key Repeat Initial Delay**.
- 2 Touch the arrow keys to adjust the setting.
- 3 Touch  to save the setting, or press **X** to return to the Configuration menu without saving any changes.

Key Repeat Rate

Note: This setting is available only on the MS610de model.

This setting indicates the number of presses per second for repeating keys. The range is 0.5–100, with increments of 0.5. The default setting is 15 presses per second.

To adjust this setting:

- 1 From the Configuration menu, navigate to **Key Repeat Rate**.
- 2 Touch the arrow keys to adjust the setting.
- 3 Touch  to save the setting, or press **X** to return to the Configuration menu without saving any changes.

Clear Supply Usage History

This setting reverts the supply usage history (number of pages and days remaining) to the factory shipped level.

To clear the supply usage history:

- 1 From the Configuration menu, navigate to **Clear Supply Usage History**.
- 2 Depending on the printer model, press **OK** or touch **Clear Supply Usage History** to proceed.

Clear Custom Status

Executing this operation erases any strings that have been defined by the user for the default or alternate custom messages.

To clear the custom status:

- 1 From the Configuration menu, navigate to **Clear Custom Status**.
- 2 Depending on the printer model, press **OK** or touch **Clear Custom Status** to proceed.

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.

Automatically Display Error Screens

If On, the panel automatically displays any existing printer-related IR after the printer remains inactive on the home screen for a length of time equal to the Screen timeout setting in the Timeouts section of the General settings menu. Any IR that appears on the display will give the user the option of returning to the home screen without clearing it. From the home screen, any other workflow or feature can be initiated as usual. Once the printer returns to the home screen, any existing IR will again appear after the printer remains inactive for a length of time equal to the Screen timeout setting.

To change this setting:

- 1 From the Configuration menu, navigate to **Automatically Display Error Screens**.
- 2 Select from the available options:
 - On (default)
 - Off
- 3 Depending on the printer model, press **OK** or touch  to save the setting, or press **X** to return to the Configuration menu without saving any changes.

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

Restore Factory Defaults

Restore Settings

This setting enables a user to restore all of the printer settings to either the network settings (on network models only) or to the base printer settings.

To restore the settings:

- 1 From the Configuration menu, navigate to **Restore Factory Defaults > Restore Settings**.
- 2 Select from the available options:
 - Restore Printer Settings—restores all non-critical base printer NVRAM settings.
 - Restore Network Settings—restores all network NVRAM settings.
 - Restore Apps—restores the factory default eSF configuration.

Erase Printer Memory

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.

Erase Hard Disk

This setting performs a wipe of the printer hard disk, erasing all data.

Warning—Potential Damage: This deletes all data on the printer hard disk, including downloaded fonts, macros, and held jobs. Do not initiate a disk wipe if you have information on the printer that you want to save.

Available options:

- Single Pass Erase—overwrites all data and the file system. This wipe is faster but less secure since it is possible to retrieve the deleted data with forensic data-retrieval techniques.
- Multi Pass Erase—overwrites all data without rewriting the file system. This wipe is DoD 5220.22-M compliant since the deleted data is irretrievable.

Note: If the printer is reset while a disk wipe operation is executing, then **Corrupt Disk** appears upon regaining power.

ADF Edge Erase

The value of this setting determines the size in millimeters of the “no-print” zone around an ADF scan job.

To change this setting:

- 1 From the Configuration Menu, navigate to **ADF Edge Erase**.
- 2 Touch **Left** or **Right** to change the setting.
- 3 Touch **Submit** to save the setting, or touch **Back** to return to the Configuration Menu without saving any changes.

Size sensing

B5/Executive

Due to engine limitations, Trays 1 through 4 cannot simultaneously sense executive and JIS-B5-size paper. The value of this setting determines which of the two paper sizes these trays will sense automatically. This setting will apply to all automatic trays, but not to the MP Feeder. The MP Feeder can support these paper sizes regardless of the value of this setting.

Tray [x] sensing

By turning the tray [x] sensing setting to **Auto**, every input option equipped with size sensing hardware automatically registers what size of paper it contains. When this setting is turned Off, the printer ignores the size detected by the hardware and treats the input source as a non-sensing source. The media size can be set by the operator panel or the data stream.

To change this setting:

- 1 From the Configuration menu, navigate to **SIZE SENSING**. The screen displays each size sensing equipped input source and its current Size Sensing setting.
- 2 Select the appropriate input source.
- 3 Touch **Left** or **Right** to change the setting.
- 4 Touch **Submit** to save the setting, or touch **Back** to return to the Configuration menu without saving any changes.

Factory Defaults

Warning—Potential Damage: This operation cannot be undone.

This setting enables a user to restore all of the device settings to either the network settings (on network models only) or to the base device settings.

To print current menu settings:

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

- 1 Turn the printer off, or select **Exit Config Menu**.
- 2 At the Ready prompt, select **Menus** and press **Select**.
- 3 Select **Reports**, and press **Select**.
- 4 Select **Menu Settings Page**, and press **Select**.
- 5 Enter the Diagnostic Menu, select **Reports, Menu Settings Page**, and press **Select**.
- 6 Turn the printer off, or select **Exit Diags**.
- 7 Enter Configuration Menu, select **Reports, Menu Settings Page**, and press **Select**.

To reset factory defaults:

- 1 Select **Reports** from the Config Menu, and press **Select**.
- 2 Select **Factory Defaults**, and press **Select**.
- 3 Select **Restore Base** (for locally attached printers) or **Restore STD NET** (if you have integrated network support).

Submitting Changes... appears on the operator panel, and then the printer PORs (restarts in Ready mode).

Exit Config

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

Entering invalid engine mode

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

For CS310

- 1 Turn off the printer.
- 2 Press and hold the **Return** and **Left** buttons simultaneously.
- 3 Turn on the printer.
- 4 Release the buttons after 10 seconds.

For CS410 and CS510

- 1 Turn off the printer.
- 2 Press and hold the **3**, **4**, and **6** buttons simultaneously.

- 3 Turn on the printer.
- 4 Release the buttons after 10 seconds.

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 via USB.

- 1 Turn off the printer.
- 2 Press and hold the **7**, **2**, and **8** buttons simultaneously.
- 3 Turn on the printer.
- 4 Release the buttons after 10 seconds.

Accessing the Network SE menu

This menu contains settings for fine tuning the communication settings for the network interfaces and protocols.

- 1 Touch **Select** and **Right**.
- 2 Navigate to **Networks/Ports > Standard Network > Std Network Setup**.
- 3 Press and hold **6**, **7**, and **9** simultaneously.


Accessing the service engineer (SE) menu


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

Repair information

- [“Removal precautions” on page 197](#)
- [“Removal procedures” on page 219](#)
- [“Left side removals” on page 219](#)
- [“Right side removals” on page 232](#)
- [“Front removals” on page 252](#)
- [“Bottom removals” on page 271](#)
- [“Rear side removals” on page 290](#)
- [“Top side removals” on page 294](#)
- [“Options removals” on page 300](#)

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.

 **CAUTION—POTENTIAL INJURY:** The printer weight is greater than 18 kg (40 lb) and requires two or more trained personnel to lift it safely.

Data security notice

1 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 184](#) pertaining to this.

To erase the printer hard disk, see the menu item under [“Configuration menu” on page 184](#) pertaining to this.

The following parts are capable of storing memory:

- printer control panel
- UICC (User Interface Controller Card)

- controller board
- optional hard drives

Note: The printer control panel and controller board contain NVRAM.

2 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.

Controller board/control panel replacement

This procedure should be followed only if both the controller board and the control 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 control panel and the controller board are being replaced at the same time, replace the parts in this order to avoid damage to the machine.

1 Replace the controller board first.

Note: Do not replace the new control panel and controller board in the machine at the same time.

2 After installing the new controller board, and before installing the new control panel, start the printer into diagnostics mode.

- 3 After the printer has completed startup, turn off the printer and replace the control panel.

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

- 4 After installing the new control 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 control panel in the machine, place the old controller board back in the machine, and start it up. After the machine startup, shut down the machine, and install the new controller board. After installing the new controller board, 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.

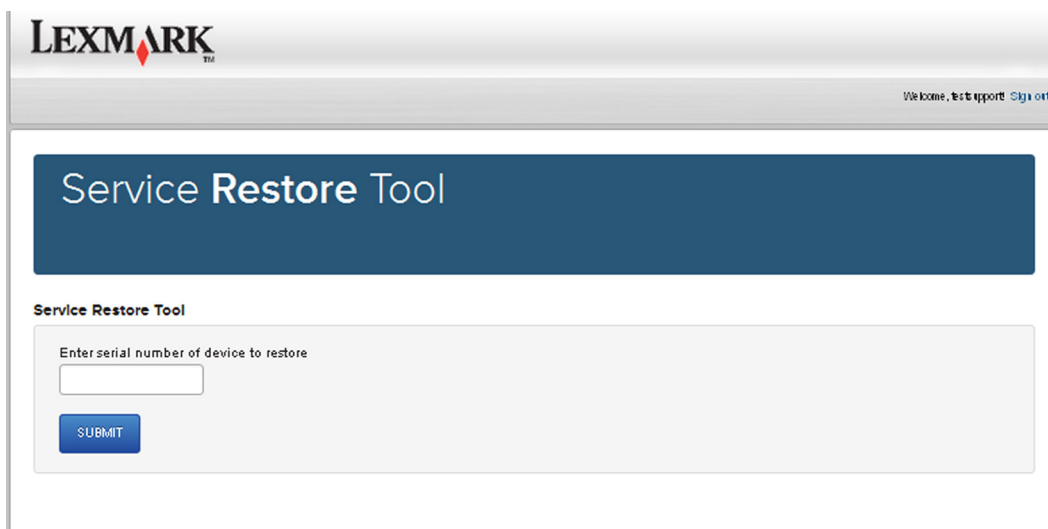
Restoring the printer configuration after replacing the controller board

Restore the printer to its correct configuration to complete the replacement service. Use the Service Restore Tool to download the software bundle, and then flash the printer settings and Embedded Solutions.

Note: The software bundle contains the latest version of the firmware, applications, and software licenses from the Lexmark Virtual Solutions Center (VSC). The printer firmware may be at a different level from what was used before replacing the controller board.

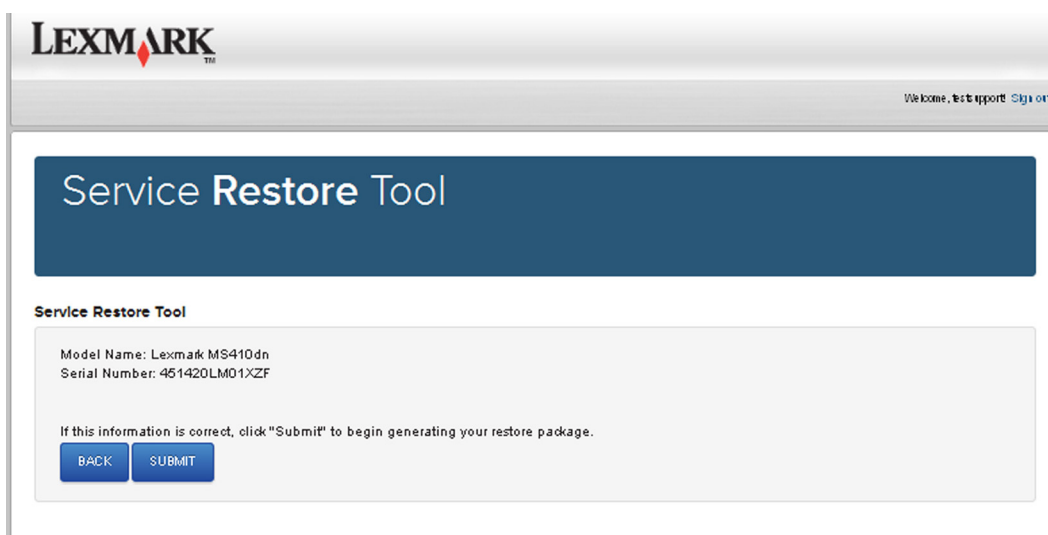
Using the Service Restore Tool

- 1 Go to <https://cdp.lexmark.com/service-restore-tool/> to access the tool.
- 2 Log in using your Lexmark or partner login.
If your login fails, then contact your next level of support.
- 3 Enter the printer serial number, and then submit the information.



The screenshot shows the Lexmark Service Restore Tool web interface. At the top is the Lexmark logo. Below it, a navigation bar contains the text "Welcome, test support" and a "Sign out" link. The main heading "Service Restore Tool" is displayed in a large blue box. Below this, the text "Service Restore Tool" appears again. A form area contains the instruction "Enter serial number of device to restore" above a text input field. A blue "SUBMIT" button is located below the input field.

Note: Make sure that the serial number that appears on the verification screen is correct.



The screenshot shows the Lexmark Service Restore Tool web interface. At the top is the Lexmark logo. Below it, a dark blue banner contains the text "Service Restore Tool". Underneath the banner, the page title "Service Restore Tool" is repeated. A form contains the following information:

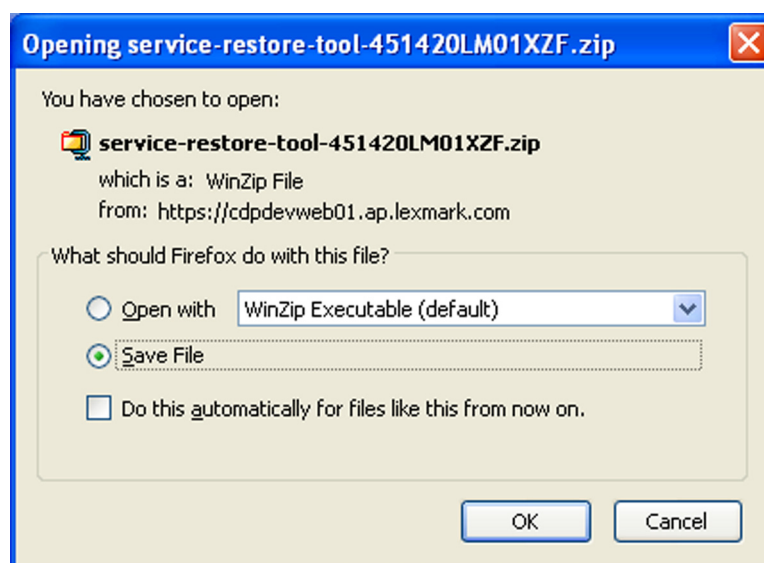
Model Name: Lexmark MS410dn
Serial Number: 451420LM01XZF

If this information is correct, click "Submit" to begin generating your restore package.

At the bottom of the form are two buttons: "BACK" and "SUBMIT".

4 Save the zip file.

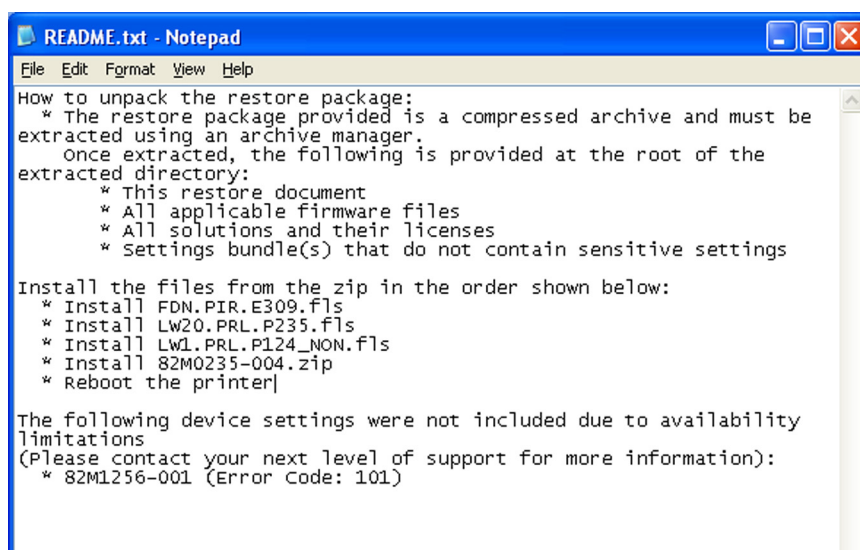
Note: Make sure that the serial number in the zip file matches the serial number of the printer being restored.



5 Extract the contents of the zip file, open the *Readme* file, and then follow the instructions in the file.

Notes:

- Perform the install instructions on the *Readme* file in the exact order shown. Only restart the printer when instructed to in the file.
- For more information on how to flash the downloaded files, see [“Updating the printer firmware ” on page 203.](#)
- To load the zip files that are extracted from the Service Restore Tool, see [“Restoring solutions, licenses, and configuration settings” on page 202.](#)



- 6 After performing the installation instructions in the *Readme* file, confirm from the customer if all the eSF apps have been installed.

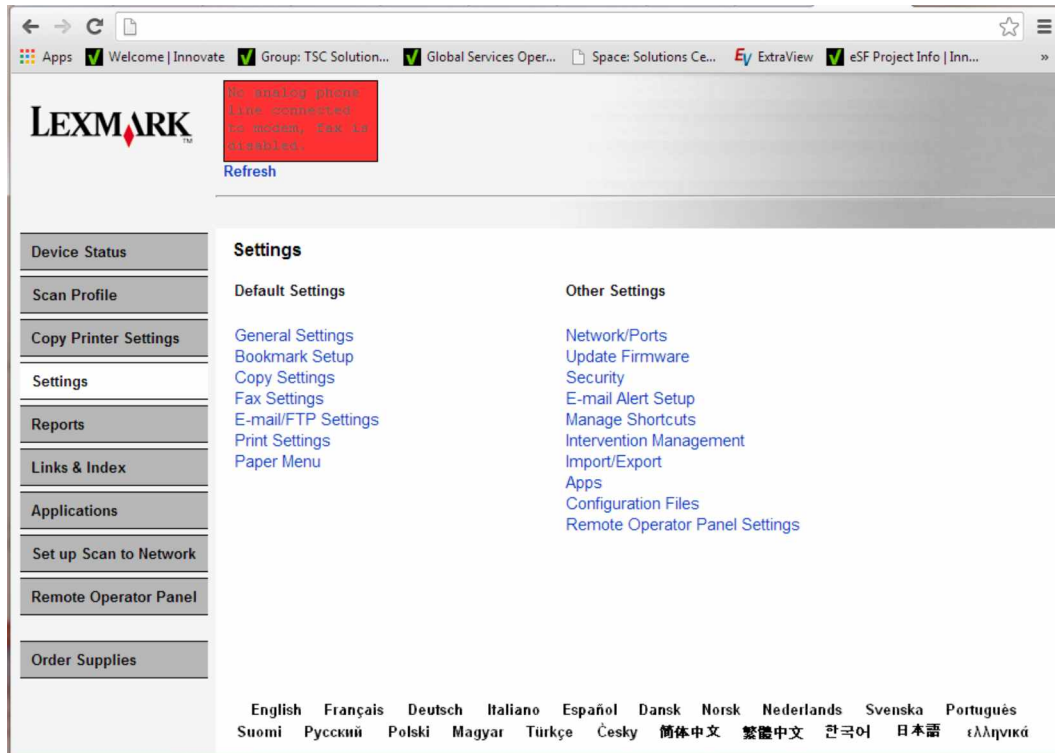
Notes:

- If you are unable to access the administrative menus to verify that the printer is restored, then ask the customer for access rights.
- If a 10.00 error is displayed after you restart the printer, then contact the next level of support.

Restoring solutions, licenses, and configuration settings

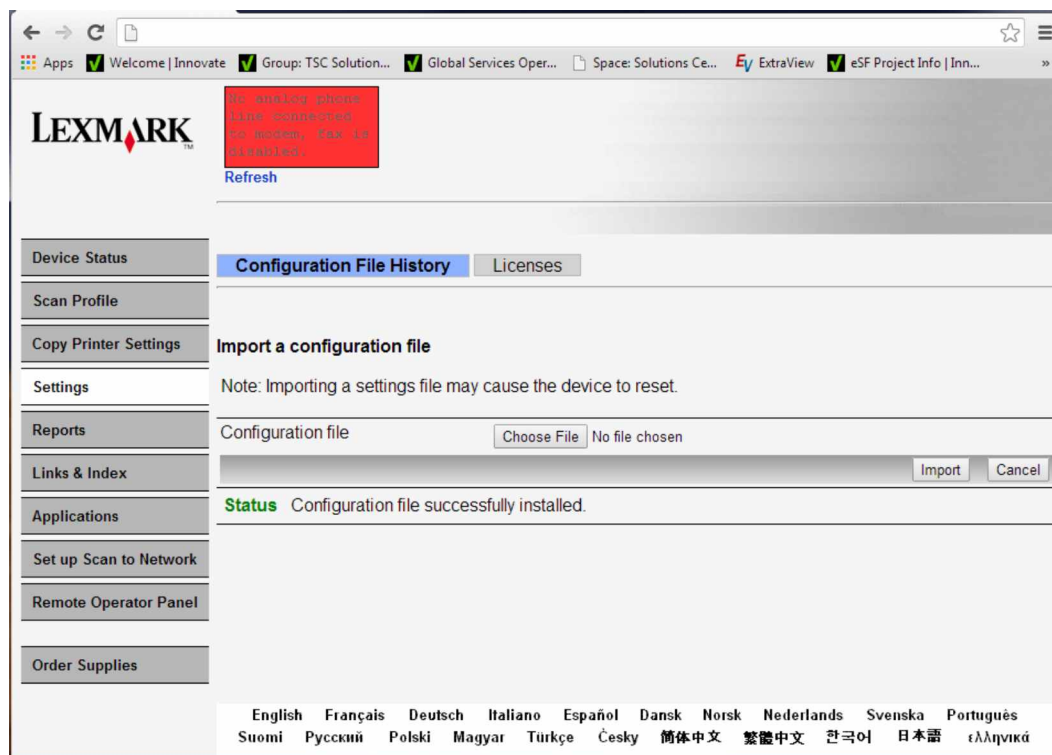
To load the zip files that are extracted from the Service Restore Tool, do the following:

- 1 Open a Web browser, and then type the printer IP address.
- 2 Navigate to **Settings > Configuration Files**.



- 3 From the Configuration File History tab, navigate to **Import > Choose File**, and then select the zip file from the expanded Service Restore Tool package.

4 Click **Import**.



5 Repeat steps 3 and 4 for the other zip files that are included in the expanded zip file.

Updating the printer firmware

Warning—Potential Damage: Before updating the printer firmware, contact the next level of support to confirm or obtain the correct code. Using an incorrect code level may damage the printer.

The printer must be in ready state in order to update the firmware.

Using a flash drive

This option is available only in printer models with front USB port.

Make sure to enable the Enable Drive and Update Code settings. You can find the settings in the Flash drive menu under the Settings menu.

- 1 Insert the flash drive into the USB port.
- 2 From the home screen, navigate to **USB Menu: Print from USB > Accept** or **OK**.
- 3 Select the file you need to flash.

Note: Do not turn off the printer while the update is going on.

Using a network computer

Using the File Transfer Protocol (FTP)

Make sure that the printer is in a ready state before flashing the printer.

- 1 Turn on the printer.
- 2 Obtain the IP address:
 - From the home screen
 - From the TCP/IP section of the Network/Ports menu
- 3 From the command prompt of a network computer, open an FTP session to the printer IP address.
- 4 Use a PUT command to place the firmware file on the printer.
The printer performs a POR sequence and terminates the FTP session.
- 5 Repeat steps 2 through 4 for the other files.

Using the Embedded Web Server

Make sure that the printer is in a ready state before flashing the printer.

- 1 Open a Web browser, and then type the printer IP address.
- 2 From the home page, navigate to **Configuration > Update Firmware**.
- 3 Select the file to use.
The printer performs a POR sequence and terminates the FTP session.
- 4 Repeat steps 2 through 4 for the other files.

Backing up eSF solutions and settings

Note: Export the eSF solutions and settings from the printer before replacing the controller board.

Exporting eSF solutions and settings file

- 1 POR the printer into Invalid engine mode. See [“Entering invalid engine mode” on page 194](#).
- 2 Open a Web browser, and then type the printer IP address.
- 3 Navigate to **Settings > Solutions > Embedded Solutions**.
- 4 From the Embedded Solutions page, select the applications you want to export.
- 5 Click **Export**.

Notes:

- If the Web page cannot be accessed or an error occurs when starting the printer in Invalid engine mode, then data backup is not an option. Inform the customer that the data cannot be saved.
- There is a size limit of 128 KB on the export file.

Importing eSF solutions and settings file

After replacing the controller board, import back to the printer the eSF solutions and settings that were exported.

- 1 POR the printer into Invalid engine mode. See [“Entering invalid engine mode” on page 194](#).
- 2 Open a Web browser, and then type the printer IP address.
- 3 Navigate to **Settings > Solutions > Embedded Solutions**.
- 4 From the Embedded Solutions page, select the applications you want to import.
- 5 Click **Import**.

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.

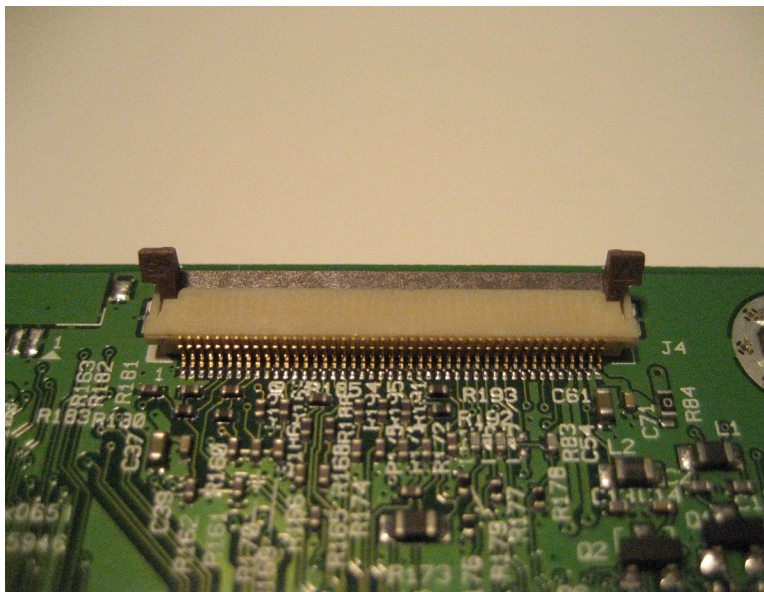
Warning—Potential Damage: Avoid pressing against the cable when opening the locking mechanism. This can also damage the cable.

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

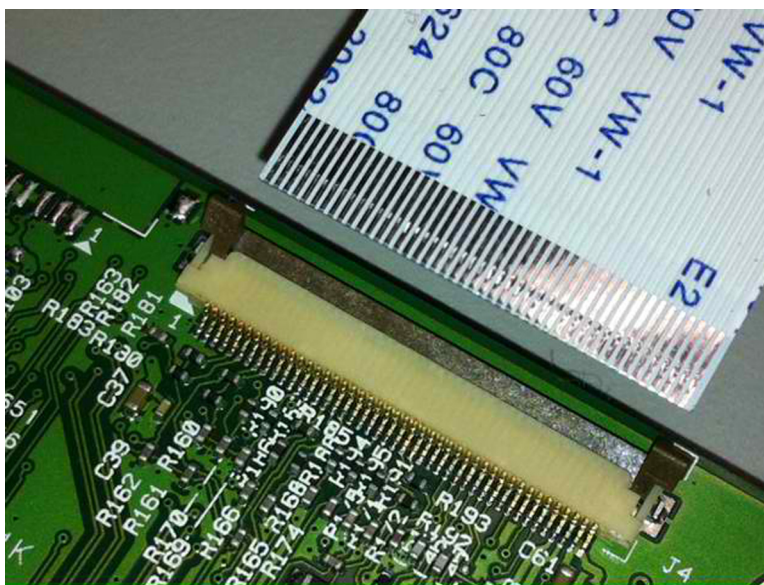
Inserting a cable into the horizontal top contact connector

- 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.

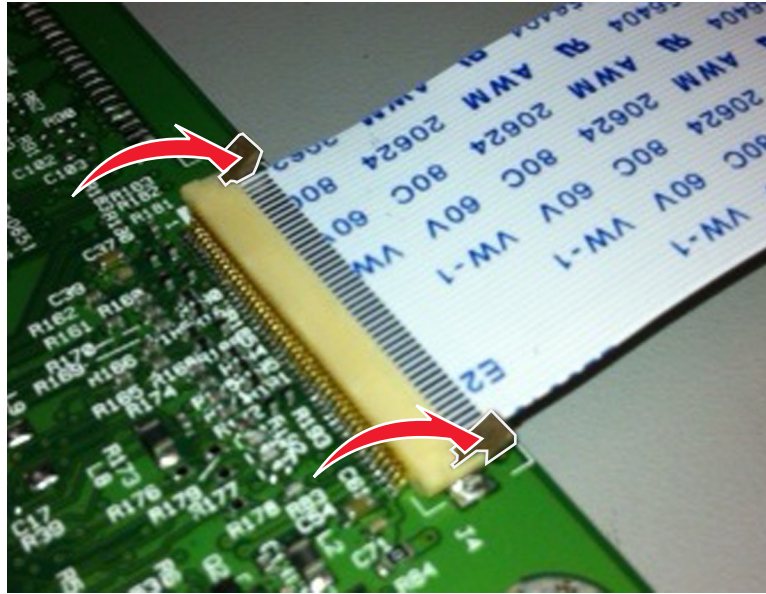


- 2 Insert the cable with the contacts on the cable facing up. Insert the cable on top of the actuator.

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

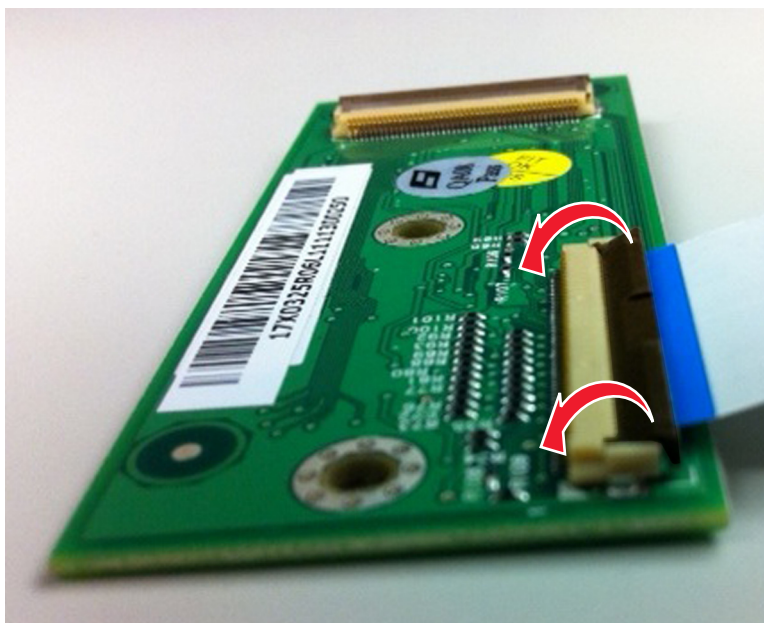
This FRU contains a horizontal bottom contact cable connector. Read the instructions before proceeding.

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.

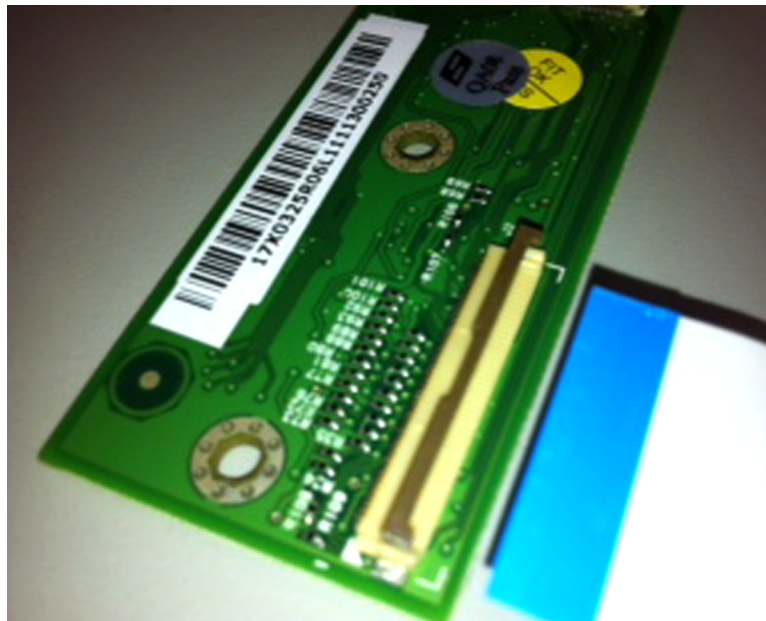
Inserting a cable into the horizontal bottom contact connector

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

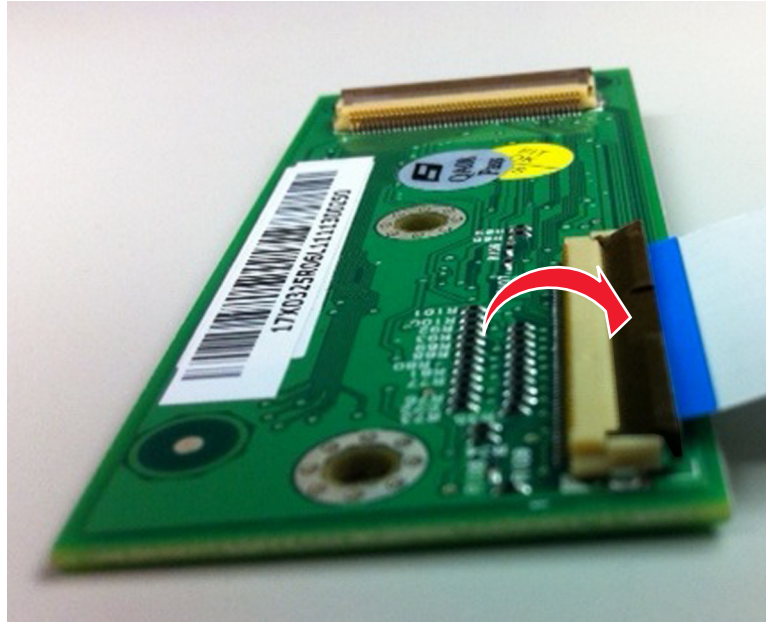


- 2 Insert the cable into the ZIF connector with the contacts facing downward and away from the locking actuator. The cable needs to be inserted below the actuator.

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

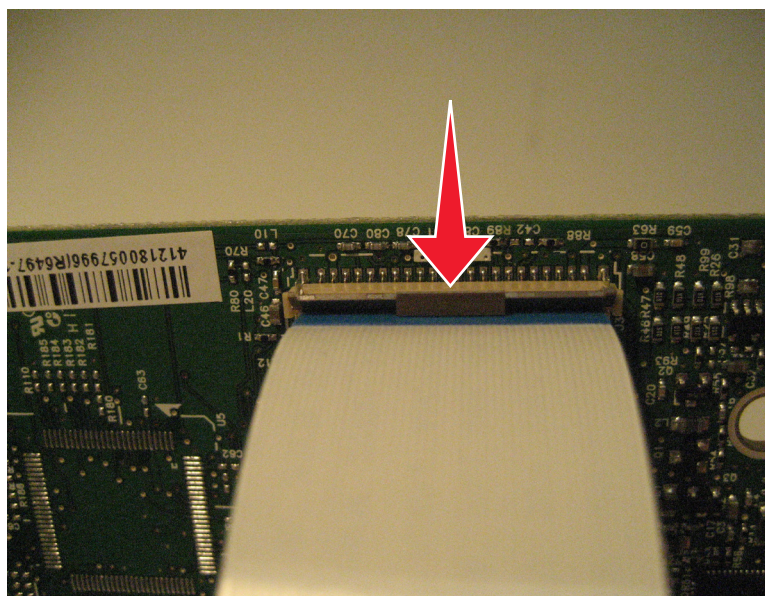
This FRU contains a vertical mount contact connector. Read the instructions before proceeding.

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.

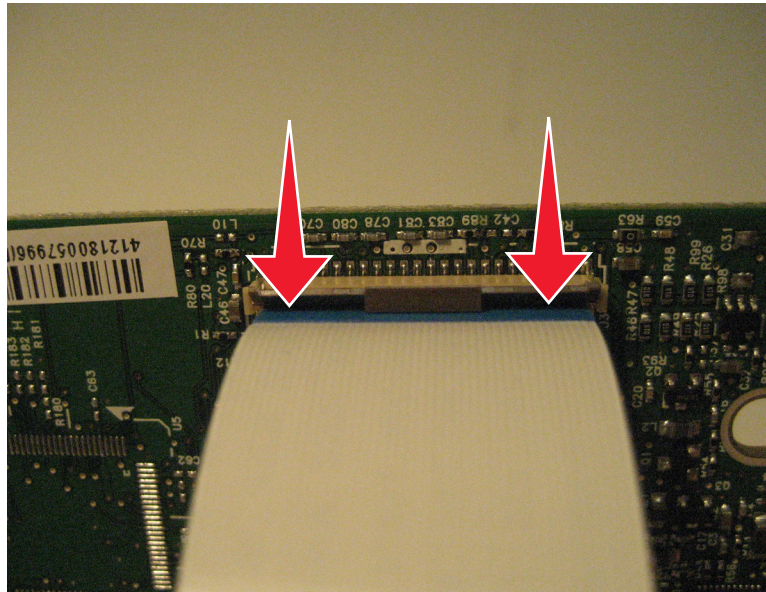


- 2 Insert the cable with the contacts on the cable away from the locking actuator. Insert the cable on top of the actuator.

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

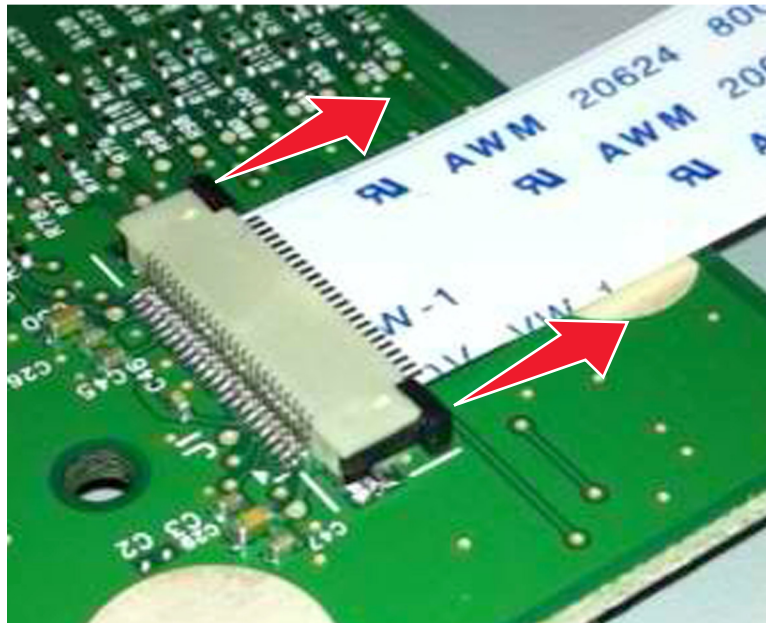
This FRU contains a horizontal sliding contact connector. Read the instructions before proceeding.

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

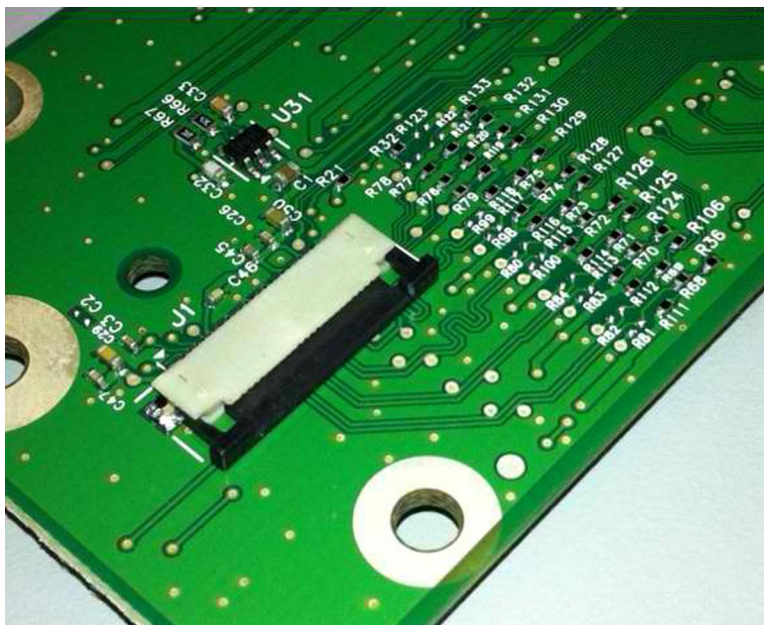
- 1 Simultaneously slide the two tabs located on the ends of the locking actuator away from the connector.



- 2 Slide the cable out of the connector.

Inserting a cable into the horizontal sliding contact connector

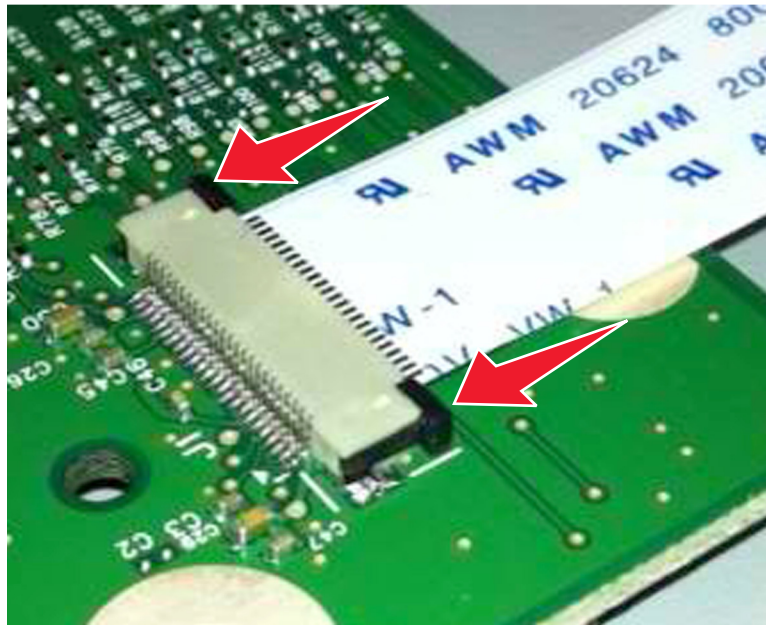
- 1 When installing the cable, check the locking actuator to verify it is in the open position. If you are opening the connector, pull back on both end tabs using equal force to avoid breaking the connector.



- 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.



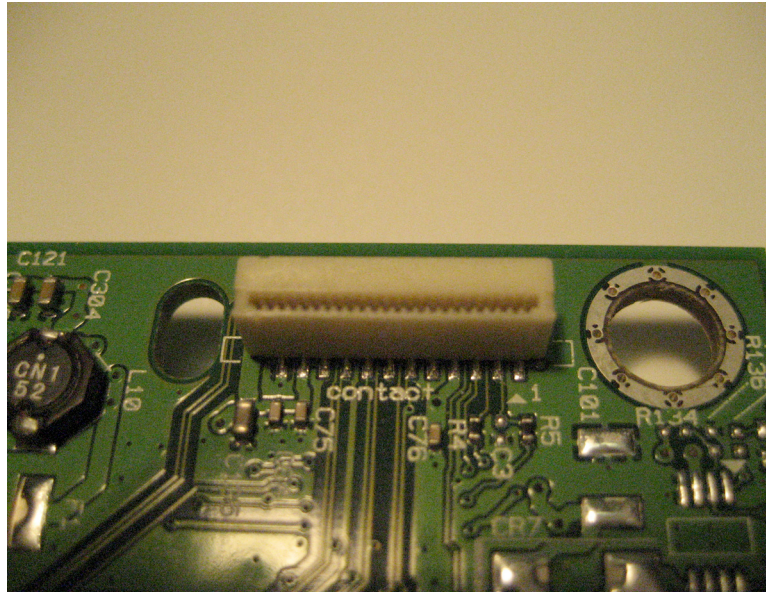
Low Insertion Force (LIF) connector

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.



Removal procedures

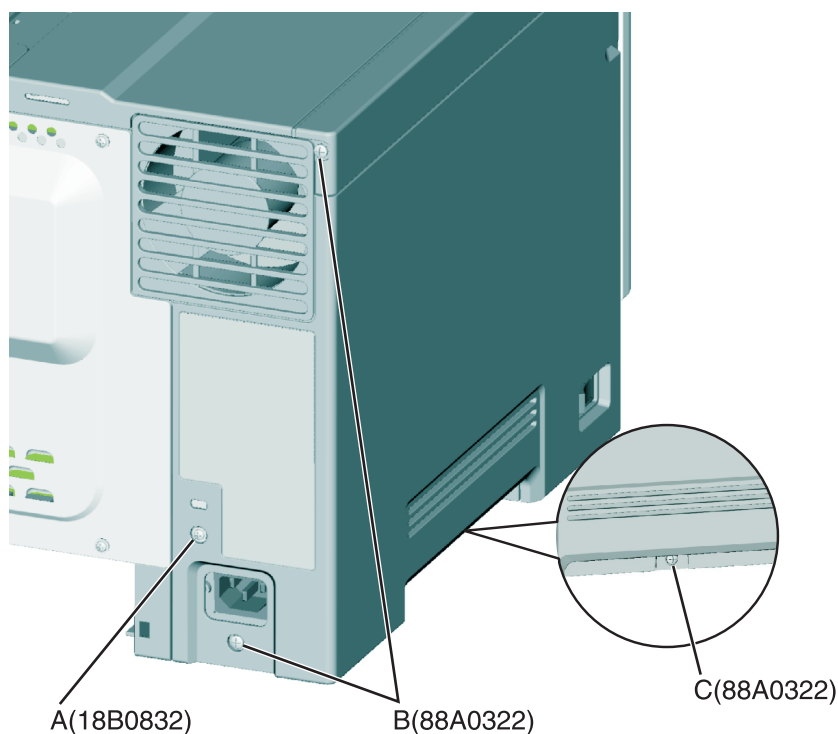
Keep the following tips in mind as you replace parts:

- 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 cartridges, imaging unit, and media tray before removing other printer parts. The imaging unit should be carefully set on a clean, smooth, and flat surface. It should also be protected from light while out of the 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.

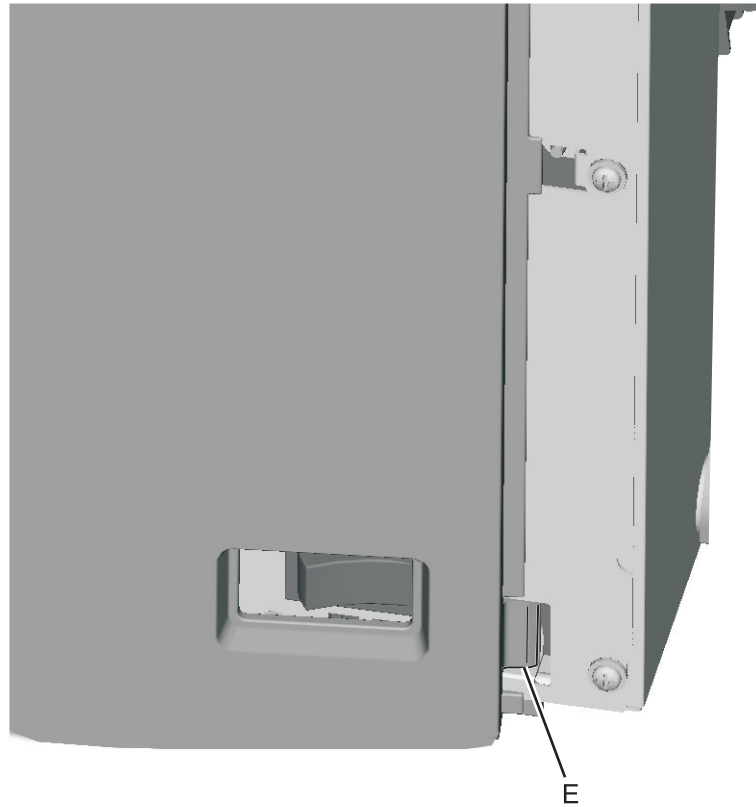
Left side removals

Left cover assembly removal

- 1 Remove the media tray.
- 2 Position the printer with the left side hanging over the edge of the table.
- 3 Remove the two screws (A) and one screw (B) from the rear, and the one screw (C) from the bottom of the cover.



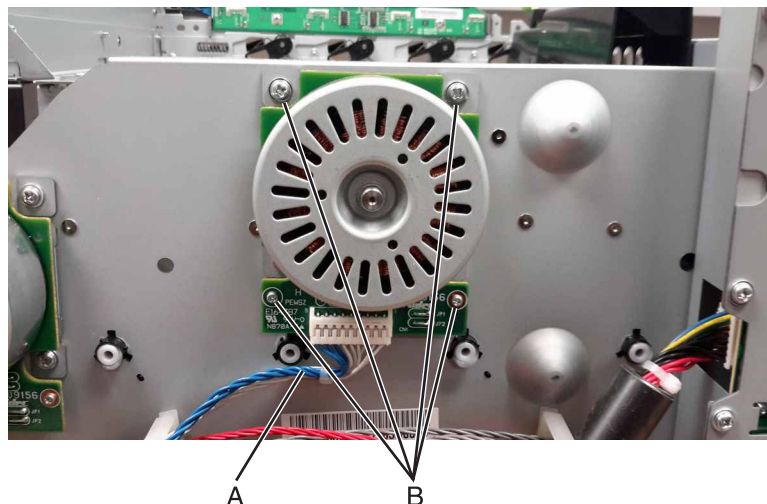
- 4 Flex the cover slightly to unlatch the front bottom corner tab (D), and lower the front while disengaging from the top cover.



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

Drive unit motor removal

- 1 Remove the left cover assembly. See [“Left cover assembly removal” on page 219.](#)
- 2 Disconnect the cable (A) from the motor.
- 3 Remove the four screws (B), and then remove the motor.

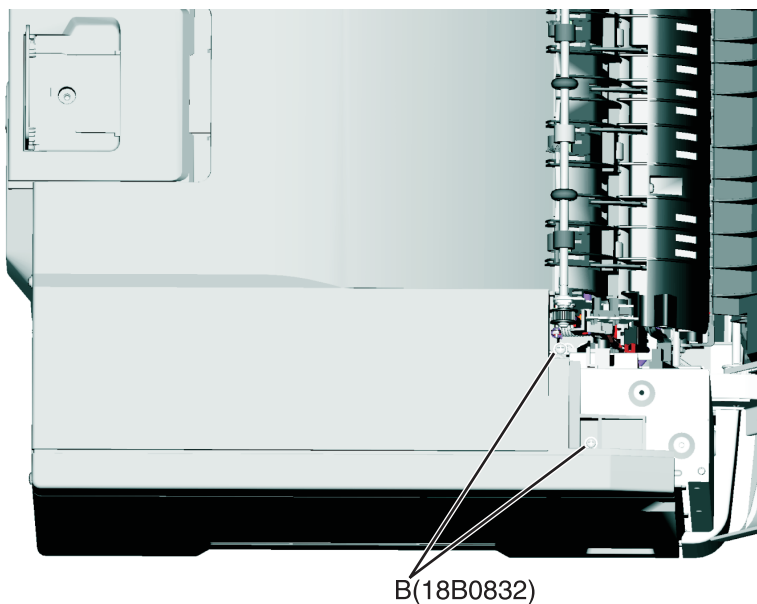


EP drive assembly removal

- 1 Remove the left cover assembly. See [“Left cover assembly removal” on page 219.](#)
- 2 Remove the image transfer unit. See [“Image transfer unit \(ITU\) removal” on page 243.](#)
- 3 Disconnect the three cables (A) from the LVPS.

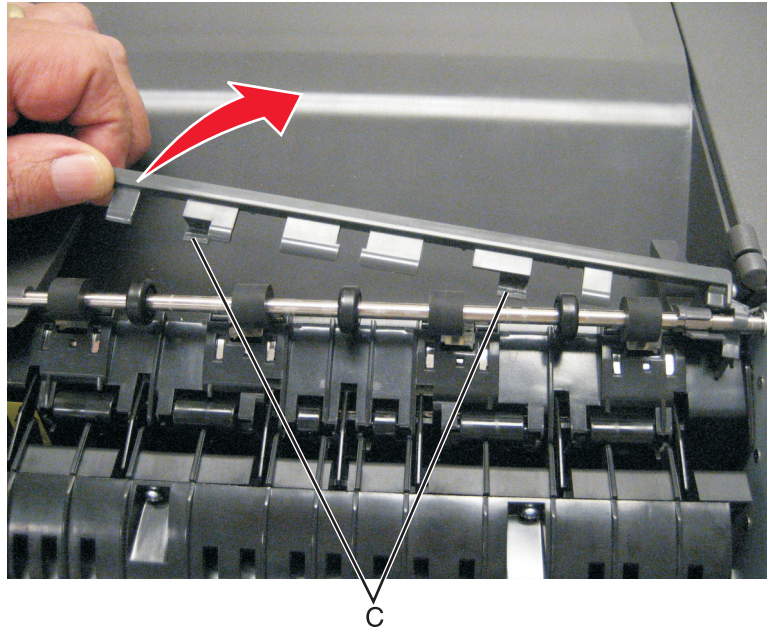


- 4 Remove the two top screws (B) holding the top cover to the LVPS shield.

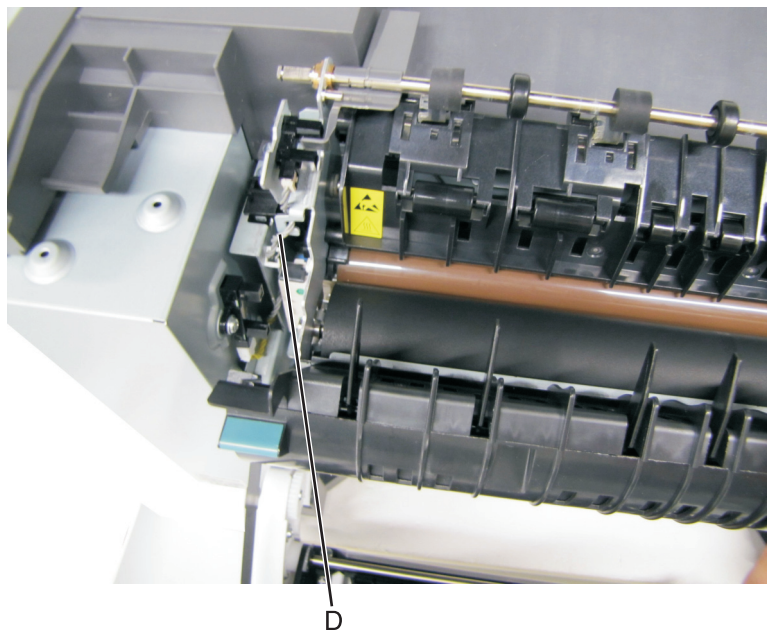


- 5 Remove the bin-full/narrow media sensor flag. See [“Bin-full/narrow media sensor flag removal” on page 231.](#)

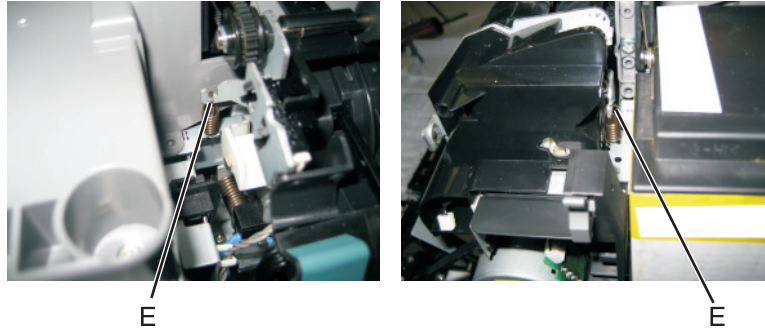
- 6 Press to *unsnap* the tabs (C), and gently rotate the exit deflector to remove.



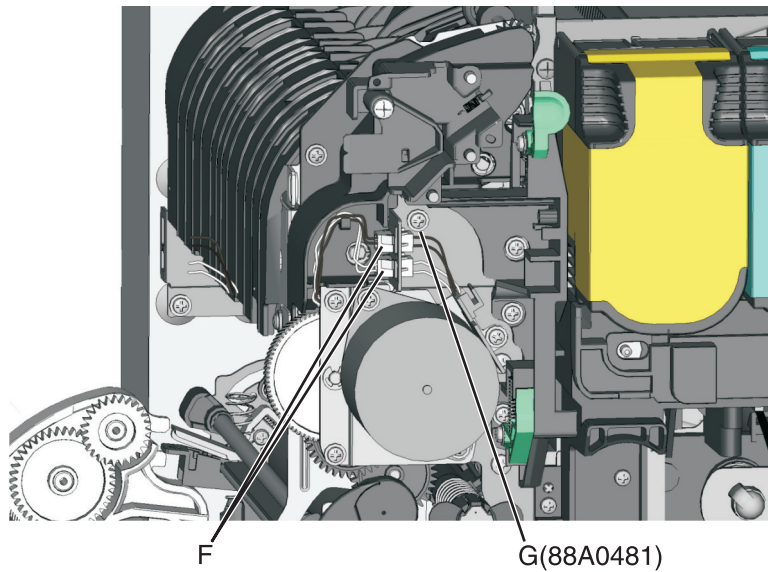
- 7 Remove the right out put bin deflector. See [“Right output bin deflector removal” on page 271.](#)
- 8 Disconnect the cable (D) from the bin-full/narrow media sensor, and unroute the cable from its retainer.



- 9** Unhook the springs (E) from both sides of the fuser.



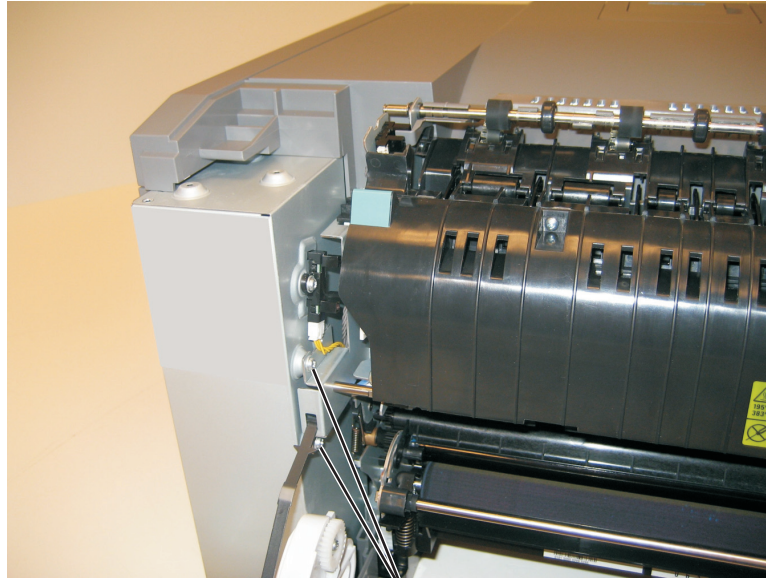
- 10** Disconnect the thermistor cables (F), and pull them over the retainer.
11 Remove the screw and grounding washer (G) on the right side of the frame.



Note: Be careful to not lose the grounding washer.

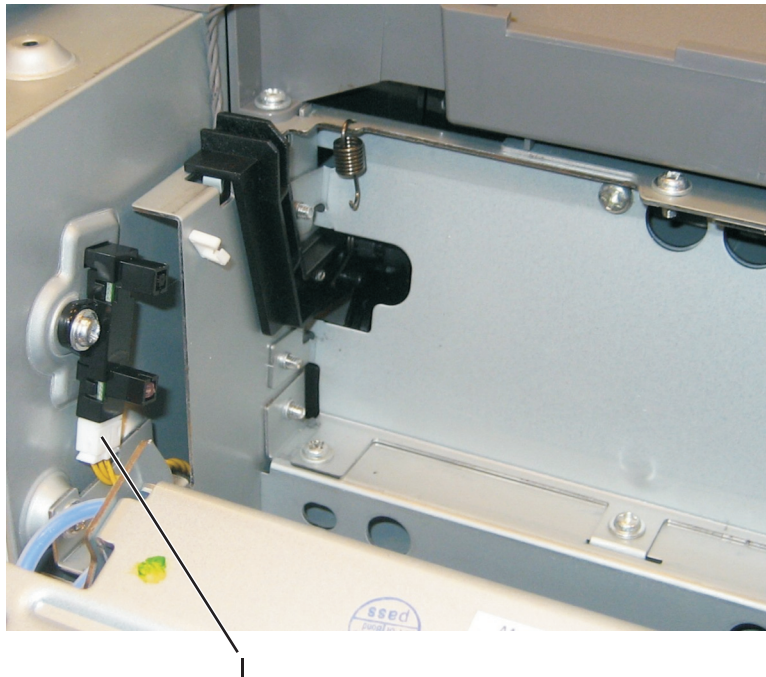
- 12** Rotate the top of the fuser toward the front, and then slide to the left to align the fuser side frames with the flat area of the shaft.

- 13** Remove the two screws (H).



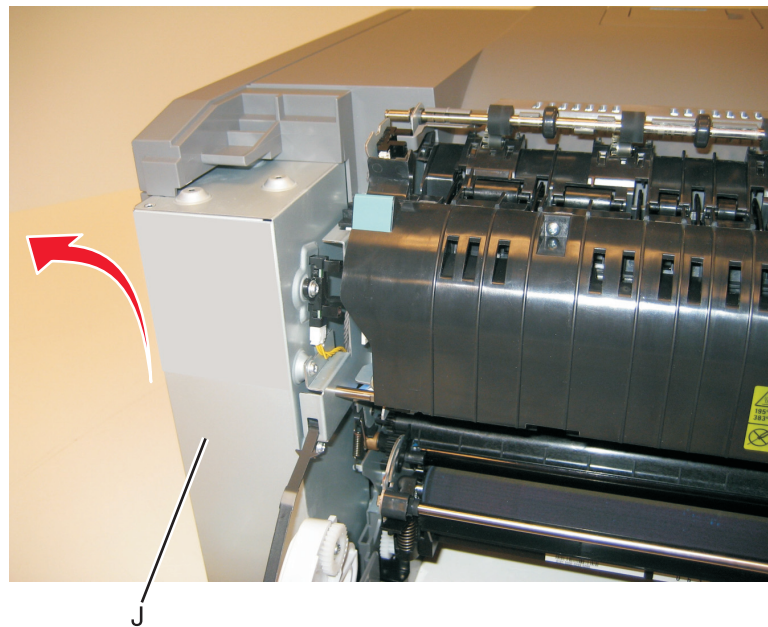
H(18B0832)

- 14** Disconnect the fuser exit cable (I).



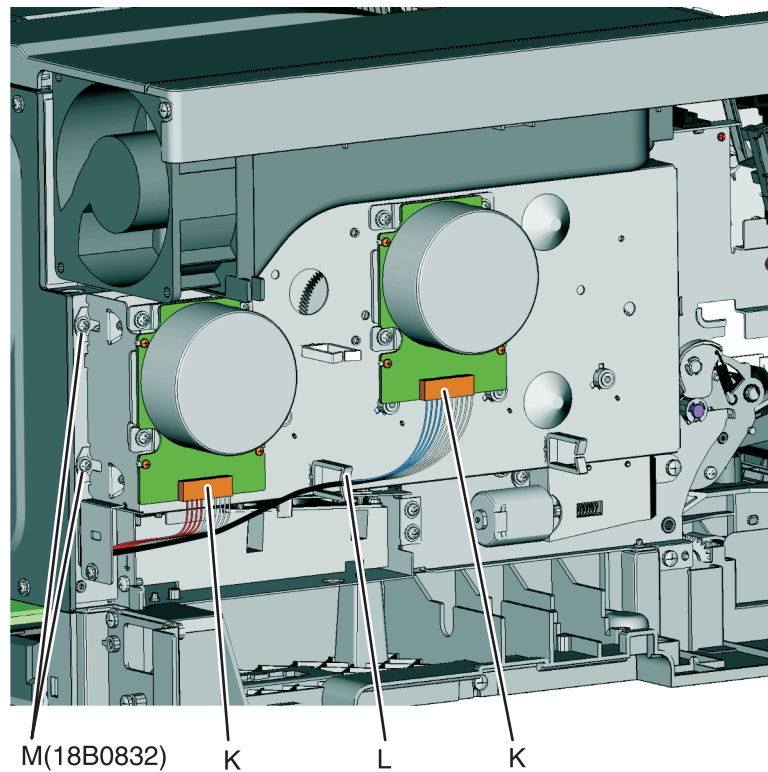
- 15** Lift the front left corner of the top cover, and tilt the LVPS cage (J) to remove. There are two posts at the bottom of the cage on the left side that need to be disengaged.

Note: Be careful to not damage the fuser exit sensor as it remains in the cage.

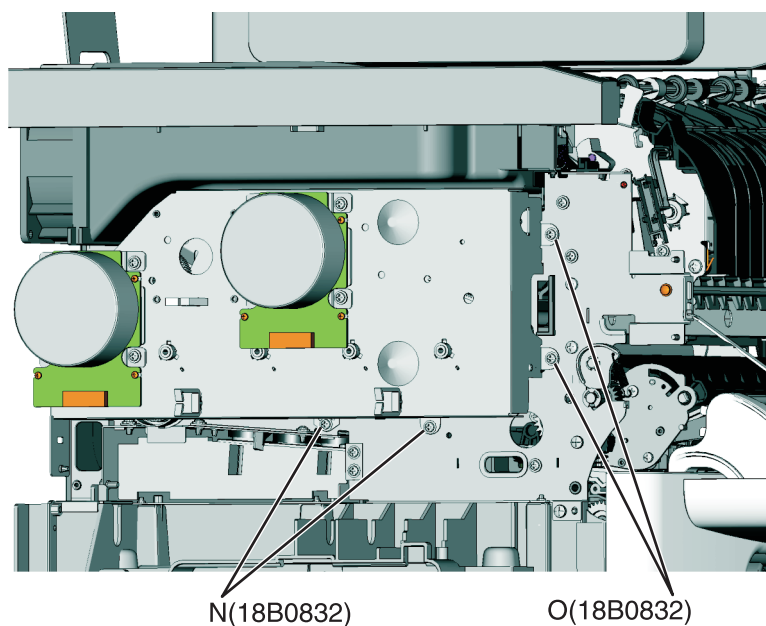


16 Disconnect the cables from the motors (K) and the two cables from the retainer (L).

17 Remove the two screws (M) from the rear, and unroute all of the cables.



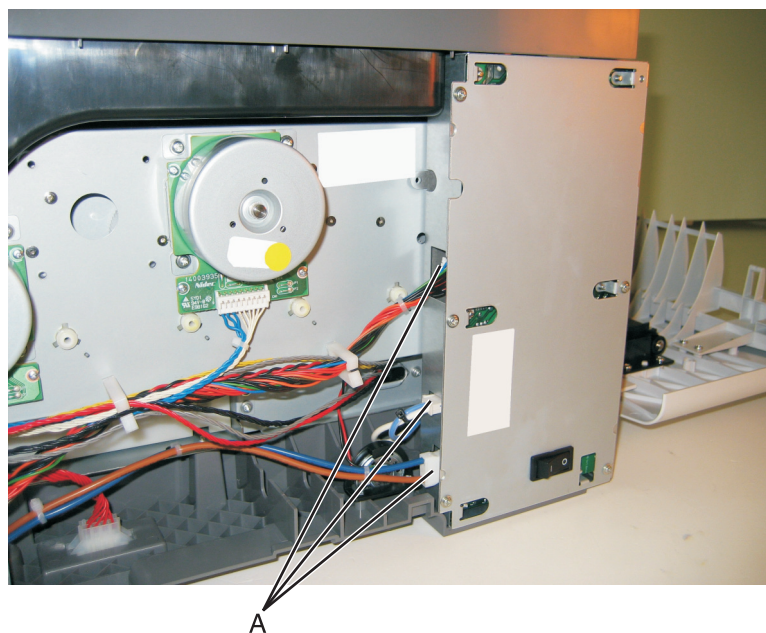
- 18** Remove the two screws (N) from below the EP drive assembly, and the two screws (O) from the right of the EP drive assembly.



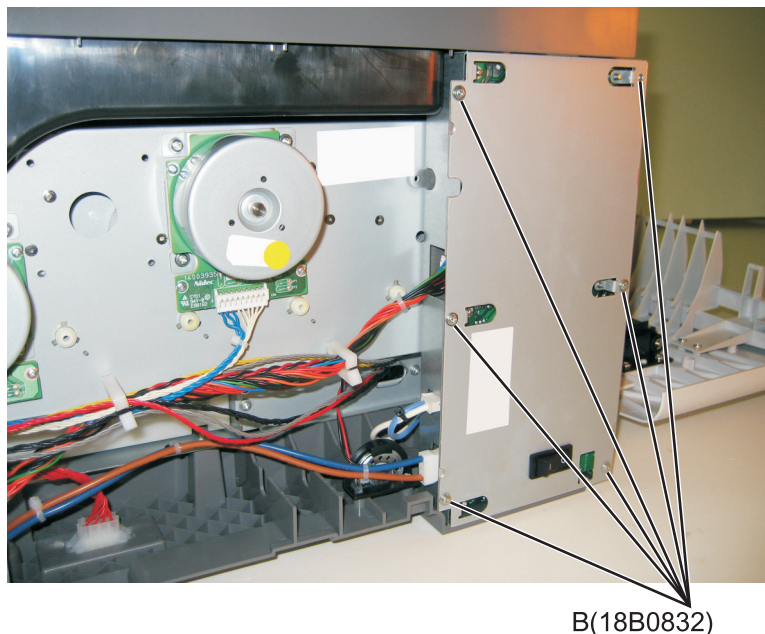
- 19** Lift the EP drive assembly, and remove.

Low-voltage power supply (LVPS) assembly removal

- 1** Remove the left cover assembly. See [“Left cover assembly removal” on page 219.](#)
- 2** Press in on the latches to disconnect the three cables (A) from the LVPS.



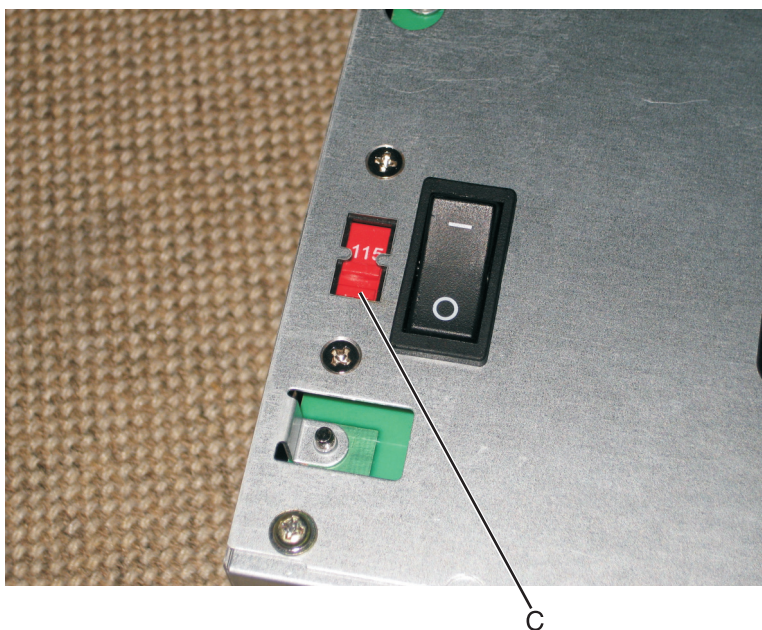
3 Remove the six screws (B).



4 Remove the LVPS.

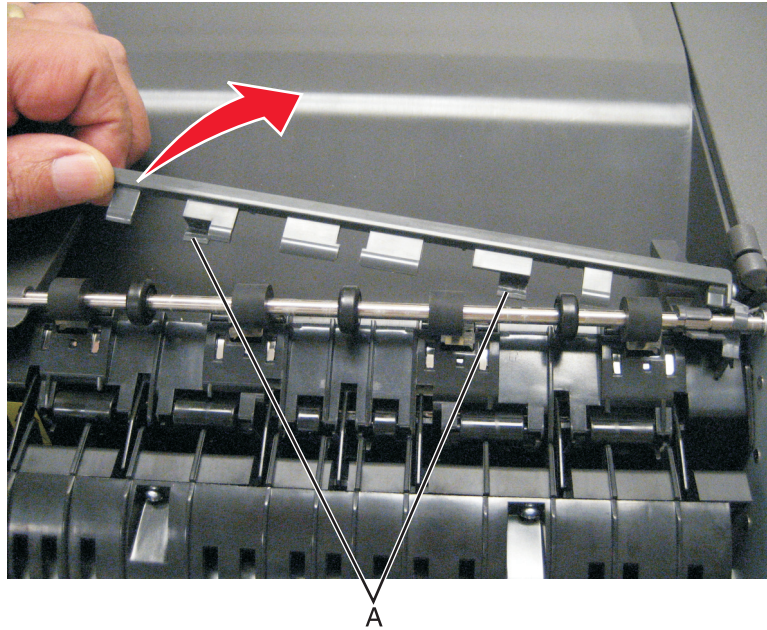
Warning—Potential Damage: If you receive a new low-voltage power supply with a voltage selector switch (C), then be sure to set the switch to the correct setting for your voltage requirements before installing the low-voltage power supply. The switch can be set for either 115 V or 230 V. Failure to do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

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

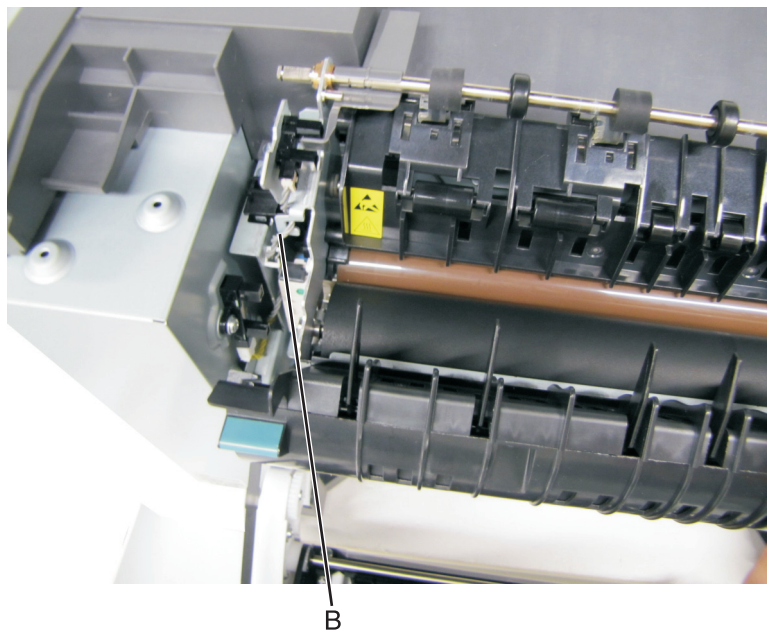


Fuser exit sensor removal

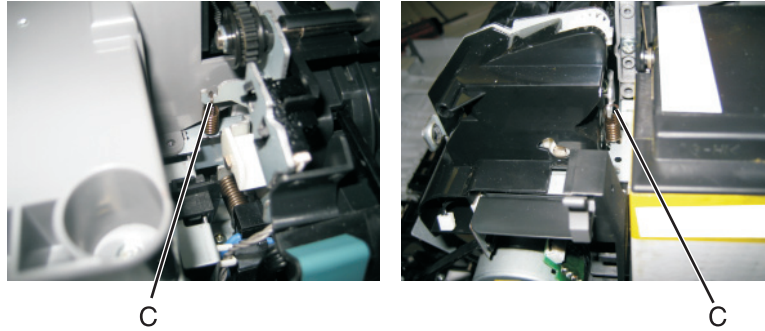
- 1 Remove the right cover assembly. See [“Right cover assembly removal” on page 232.](#)
- 2 Remove the bin-full/narrow media sensor flag. See [“Bin-full/narrow media sensor flag removal” on page 231.](#)
- 3 Press to *unsnap* the tabs (A), and gently rotate the exit deflector to remove.



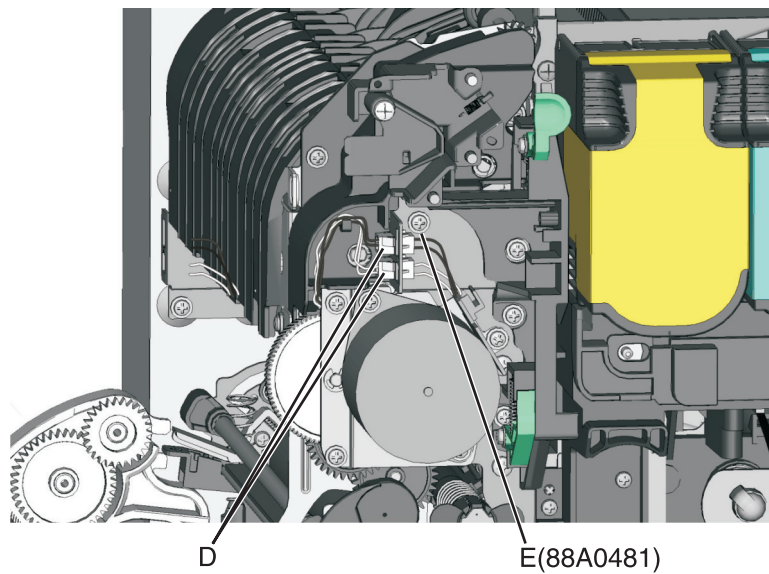
- 4 Remove the right out put bin deflector. See [“Right output bin deflector removal” on page 271.](#)
- 5 Disconnect the cable (B) from the bin-full/narrow media sensor, and unroute the cable from its retainer.



- 6** Unhook the springs (C) from both sides of the fuser.



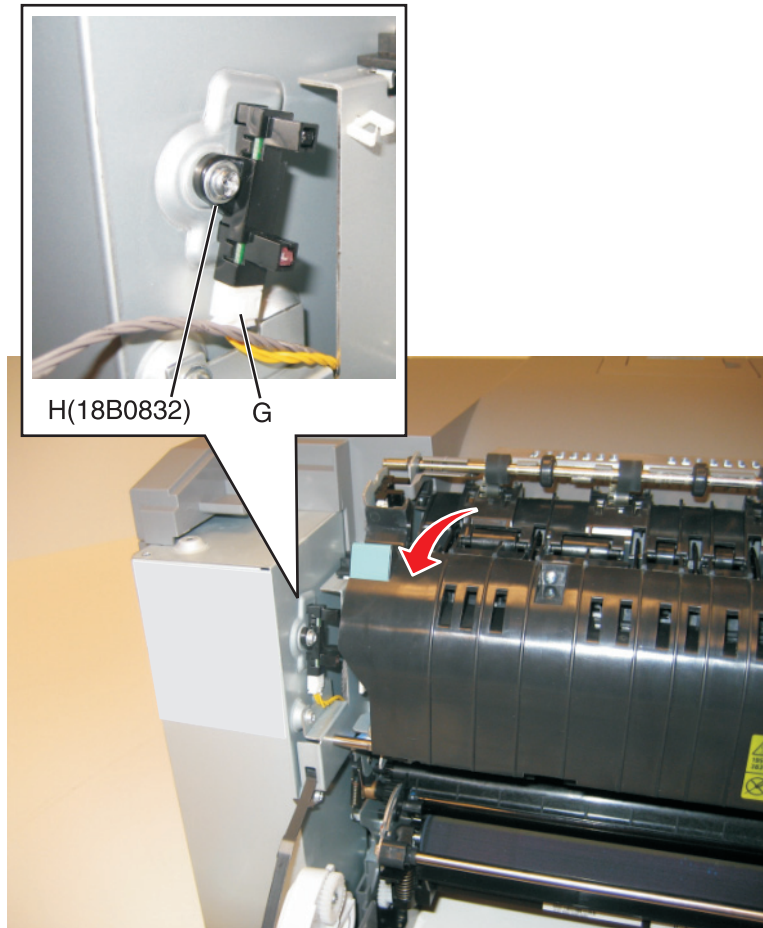
- 7** Disconnect the thermistor cables (E), and pull them over the retainer.
- 8** Remove the screw and grounding washer (F) on the right side of the frame.



Note: Be careful to not lose the grounding washer.

- 9** Rotate the top of the fuser toward the front, and then slide to the left to align the fuser side frames with the flat area of the shaft.
- 10** Disconnect the cable (G), and remove the screw (H) from the fuser exit sensor.

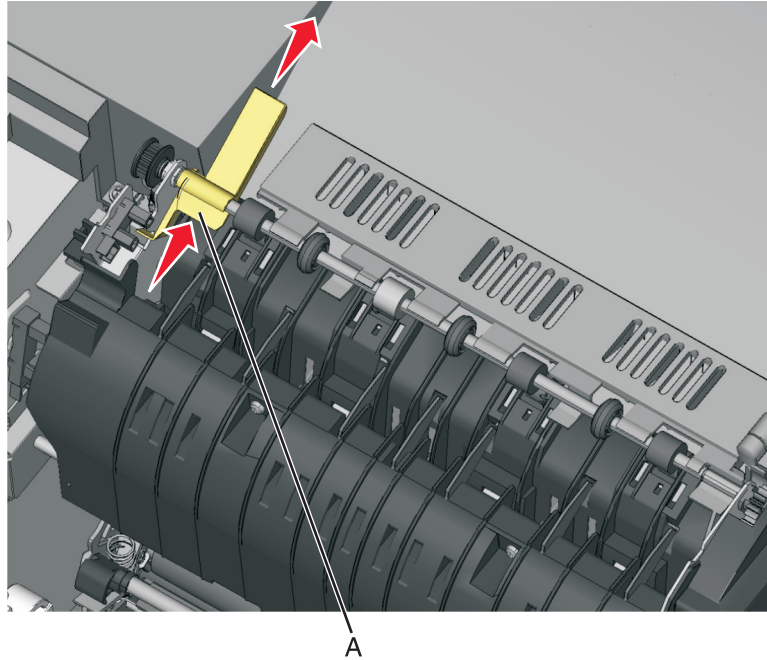
- 11** Remove the lower end of the sensor with a flat screwdriver, and gently pull the sensor from the frame.



Bin-full/narrow media sensor flag removal

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

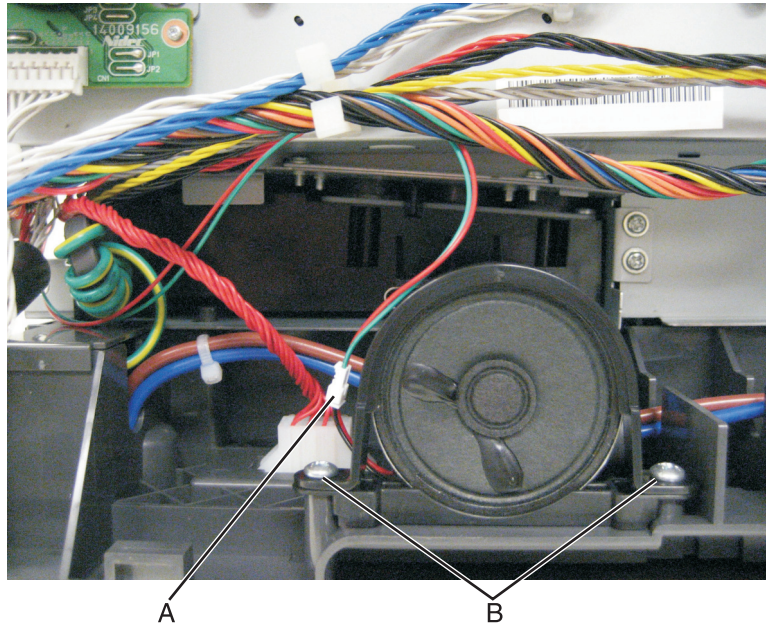
- 1 Open the front cover.
- 2 Press upward on the tab (A) to *unsnap* the bin-full/narrow media sensor flag, and remove the flag.



Note: Be careful to not dislodge the sensor.

Speaker removal

- 1 Remove the left cover. See [“Left cover assembly removal” on page 219.](#)
- 2 Disconnect the cable (A), and remove the two screws (B).



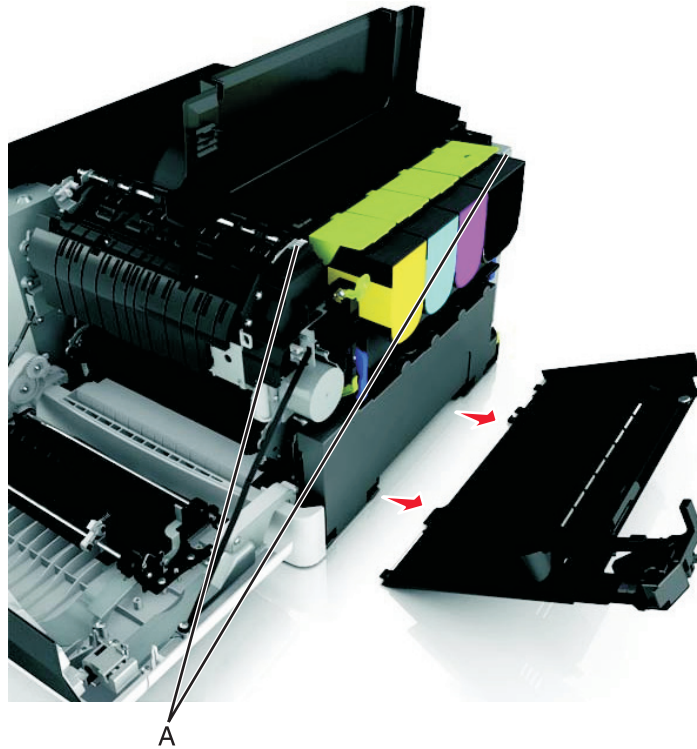
- 3 Remove the speaker.

Right side removals

Right cover assembly removal

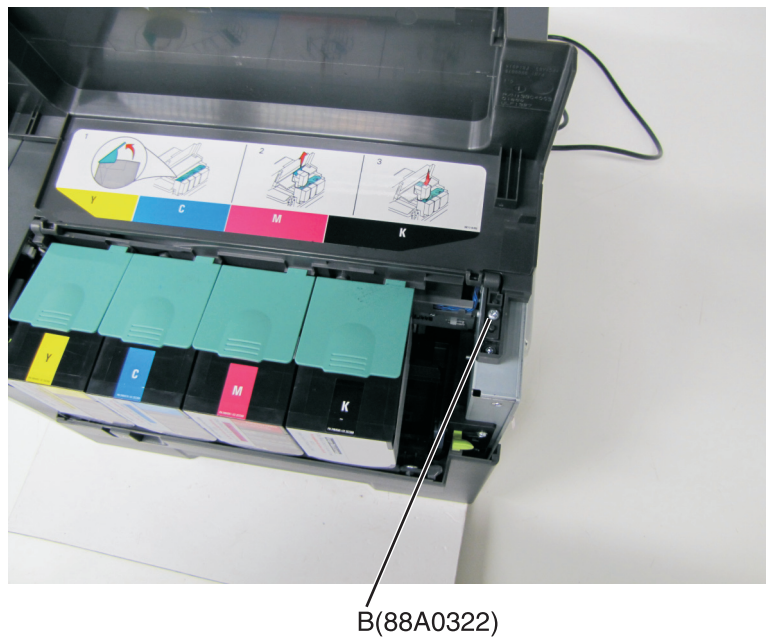
- 1 Open the toner supply door.
- 2 Open the front door.

- 3 Release the latches (A), and lift off the cover.



Toner supply door removal

- 1 Press in on the latch to open the toner supply door.
- 2 Remove the screw (B).



- 3 Remove the toner supply door.

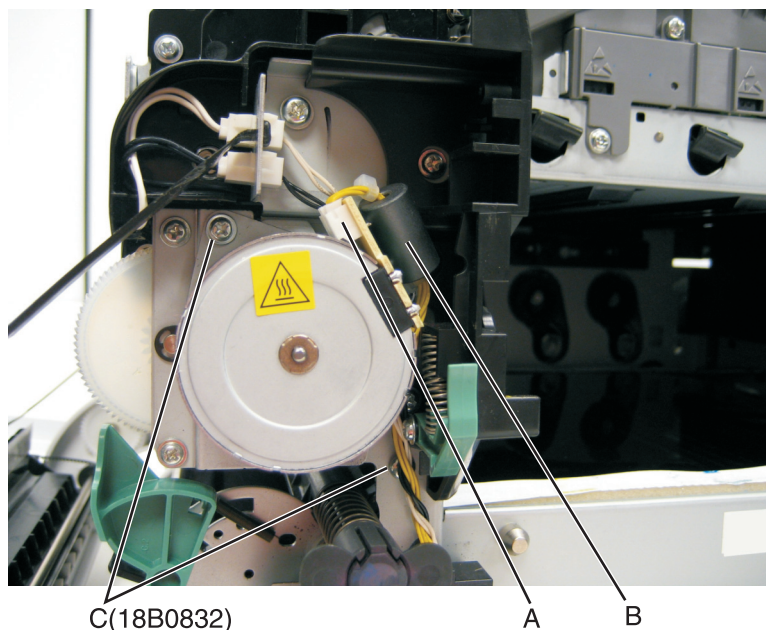
Fuser drive motor assembly removal

1 Remove the right cover assembly. See [“Right cover assembly removal” on page 232.](#)

2 Disconnect the cable (A) from the fuser drive motor assembly.

Note: If you remove the toroid (B) from the cable, be sure to return the toroid to the cable when reinstalling.

3 Remove the two screws (C).



4 Remove the fuser drive motor assembly.

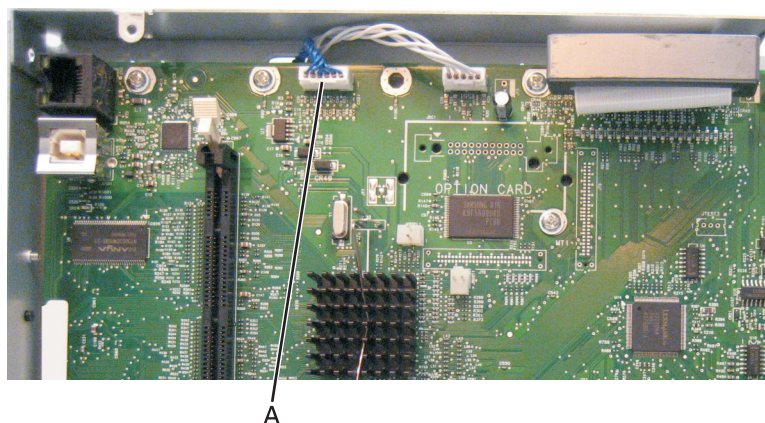
Toner meter cycle (TMC) card removal

1 Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246.](#)

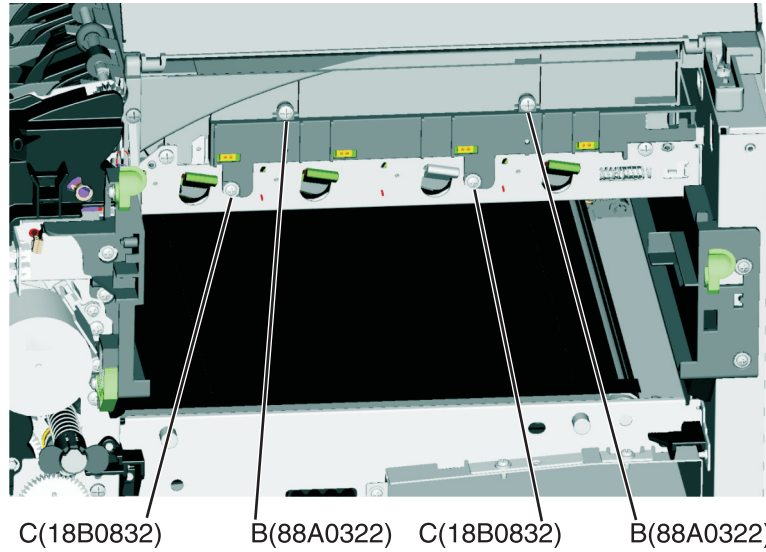
2 Remove the rear cover. See [“Rear cover removal” on page 290.](#)

3 Disconnect the TMC cable from JCTM1 connector (A), and push the toner meter cycle card cable through the frame opening.

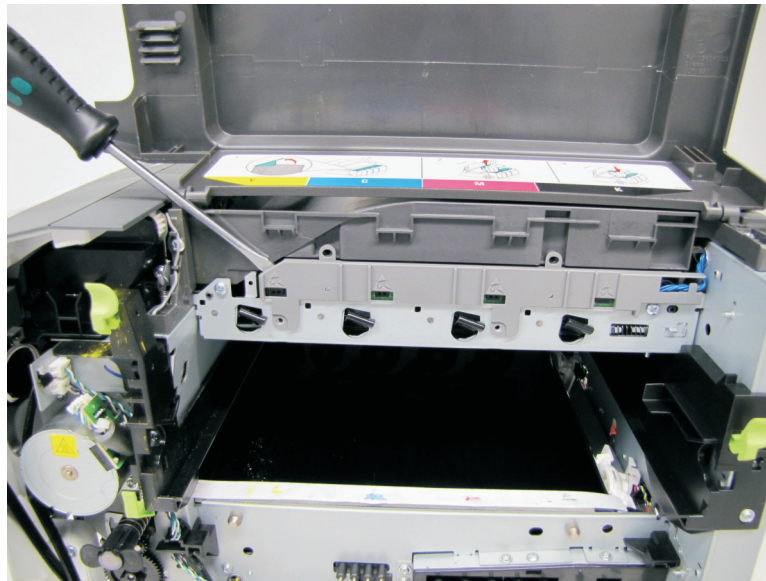
Note: Pay close attention to the routing of the cable for reinstallation.



- 4 Remove the two plastic screws (B), and the two metal screws (C).

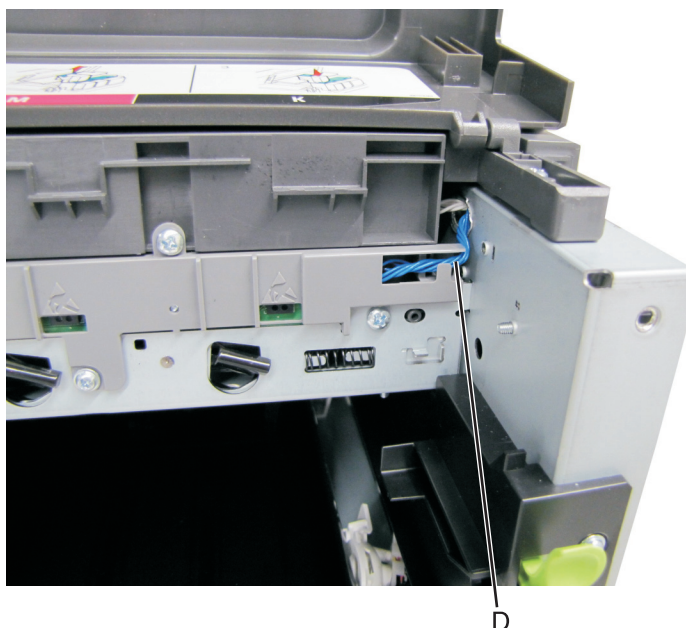


- 5 Slide a flat-blade screwdriver into the left side of the frame, and pry the card loose to remove.



Installation notes:

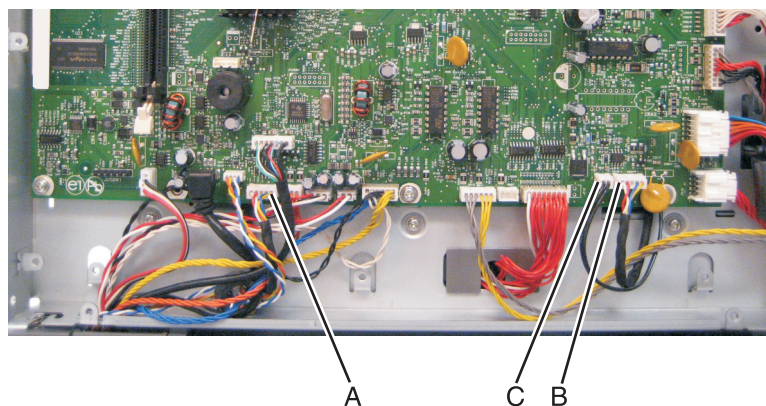
- Be sure the cable (D) runs through the retainer.
- The toner meter cycle card is a tight fit. Insert the bottom edge inside the frame, and then push down on the top edge to clear the top cover.

**Toner density sensor (TDS) (left or right sensor) removal**

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

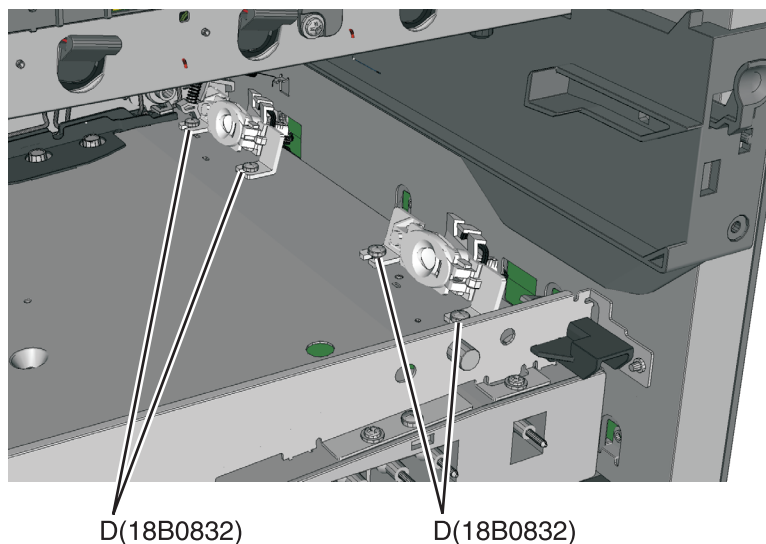
Note: The toner density sensors are the same, but the left sensor has a thermistor attached which needs to be removed when you install a new TDS on the left side. Reinstall the thermistor on the new TDS.

- 1 Remove the image transfer unit. See [“Image transfer unit \(ITU\) removal” on page 243.](#)
- 2 Remove the rear cover. See [“Rear cover removal” on page 290.](#)
- 3 Disconnect the toner density sensor cable from JTDS1 connector (A) or JTDS2 connector (B) on the controller board. If you are removing the left toner density sensor, also disconnect the thermistor from JFUSES1 connector (C) on the controller board.



Note: Be sure to pay close attention to the routing of all cables for reinstallation.

- 4 Remove the four screws (D) from the left and right sensors.



Installation notes:

- Before beginning the installation of the new left or right toner density sensor, note the 32-digit TPS value printed on the barcode on the new FRU.
- After installation, perform the TPS Setup. Enter the factory preset alignment number.

a Enter the Diagnostics Menu:

- 1 Turn the printer off.
- 2 Press and hold **Left** and **Select**.



- 3 Turn the printer on.

- 4 Release the buttons when the installed memory and processor speed displays.

b Select **TPS SETUP** from Diag Menu, and press **Select**.

c Select **Right** or **Left**, and press **Select**.

TPS Right 1-16 or **Left 1-16** appears above a blinking 0 in the left position.

d To enter a character or digit:

- 1 Press **Left** to decrease or **Right** to increase the blinking value.
- 2 Pause for several seconds without pushing any buttons. The blinking value becomes solid. If the value is incorrect, then press **Back** to go back and reenter the number.
- 3 Continue until the last value is reached.
- 4 When the last of the 16 values is entered and becomes solid, **TPS Right 17-32** or **TPS Left 17-32** appears.
- 5 Continue entering and pausing.

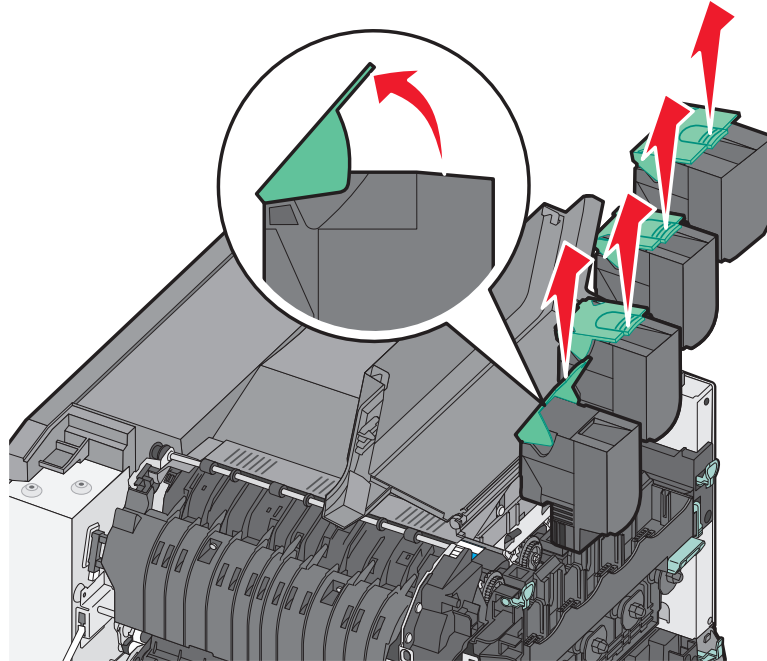
e After the 32nd number is entered and becomes solid, the number is automatically entered.

- If the number is incorrect, then **Checksum does not match** appears, and the original screen appears to reenter the value.
- If the number is correct, then **Saving changes to NVRAM** appears.

Developer unit removal

Note: The developer units are not FRUs.

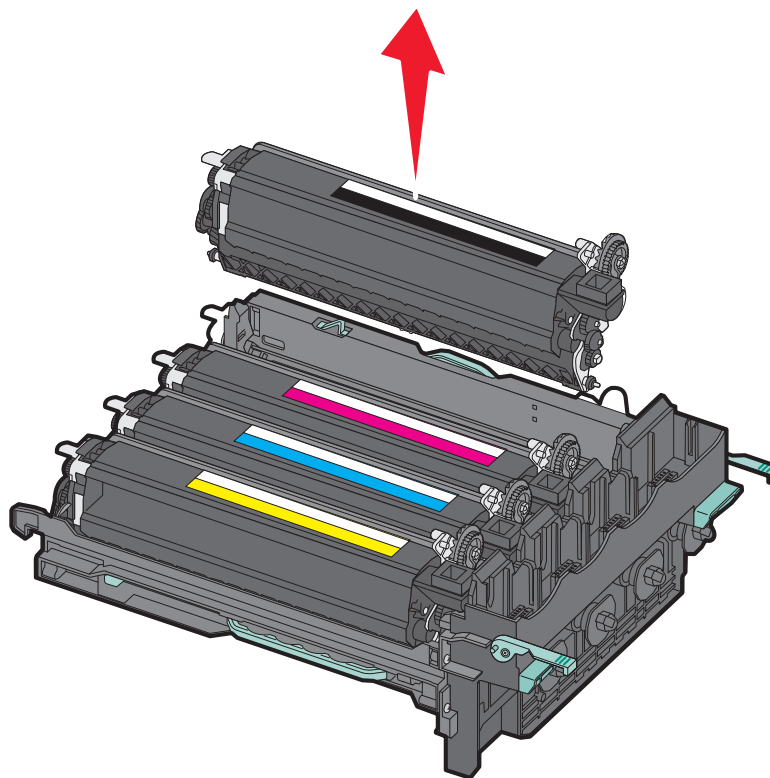
- 1 Open the toner access door.
- 2 Remove the toner cartridges.



- 3 Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246](#).

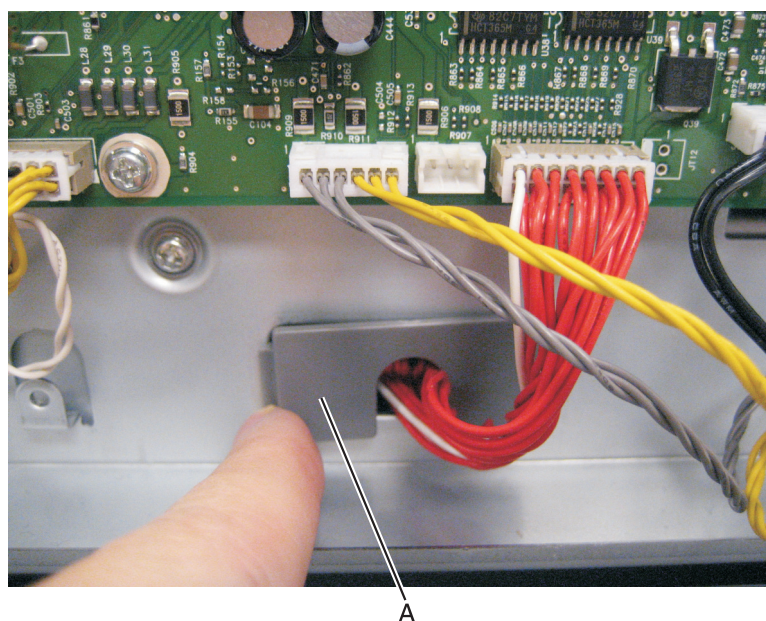
Warning—Potential Damage: Do not touch the underside of the imaging unit. This could damage it.

- 4 Remove the developer unit(s).



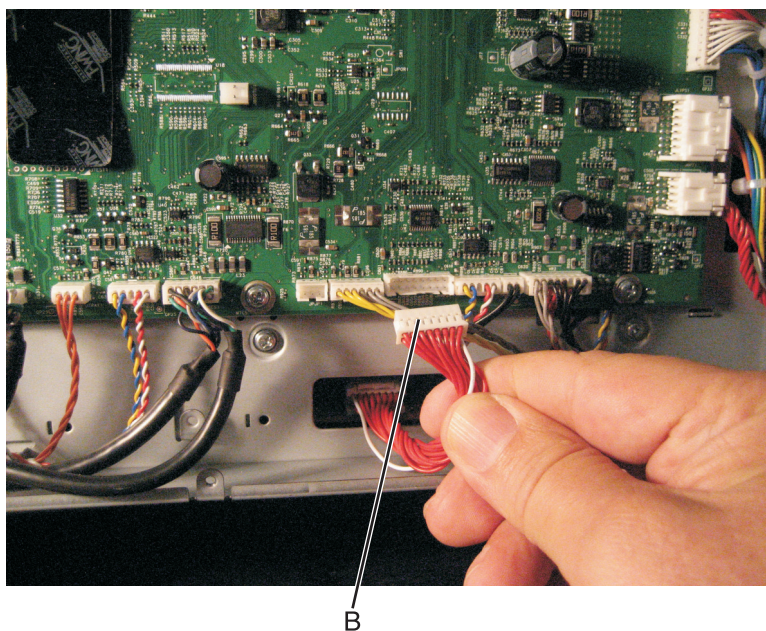
High-voltage power supply (HVPS) removal

- 1 Remove the rear cover. See [“Rear cover removal” on page 290.](#)
- 2 For the CS510 model only, remove the controller board. See [“Controller board removal” on page 291.](#)
- 3 Remove the cable cover (A).

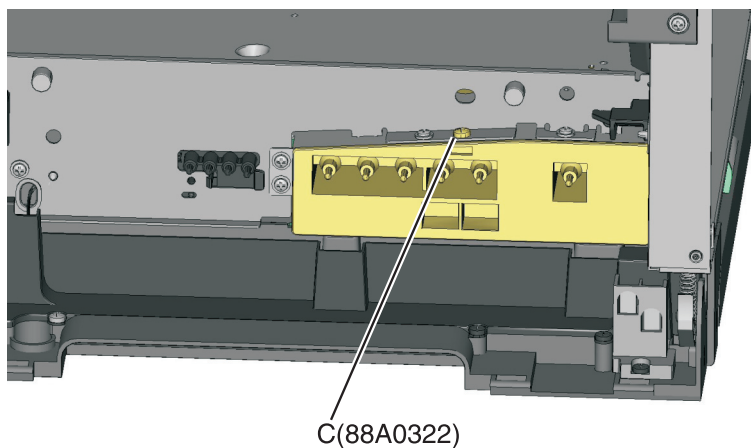


- 4 Disconnect the high-voltage power supply cable (B) from the controller board.

Note: Some connectors contain a latch that has to be disengaged while removing the cable.

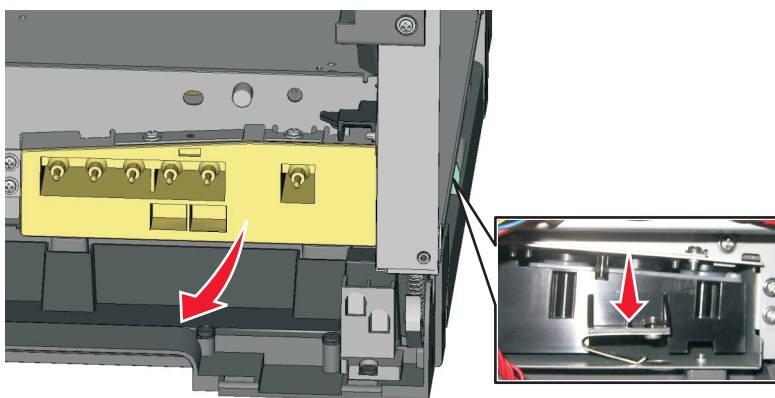


- 5 Remove the image transfer unit. See [“Image transfer unit \(ITU\) removal” on page 243.](#)
- 6 Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250.](#)
- 7 Remove the screw (C) securing the HVPS.



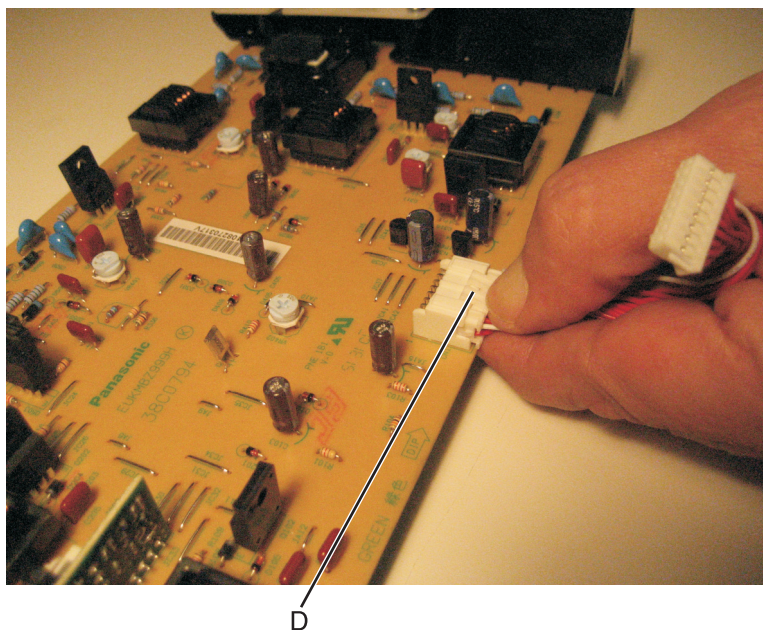
- 8 Remove the left cover assembly. See [“Left cover assembly removal” on page 219.](#)

- 9 Press down on the spring mount, and carefully slide the HVPS out by pulling from one side and pushing from the other. Release the pressure on the spring mount, and pull the HVPS the remaining distance.



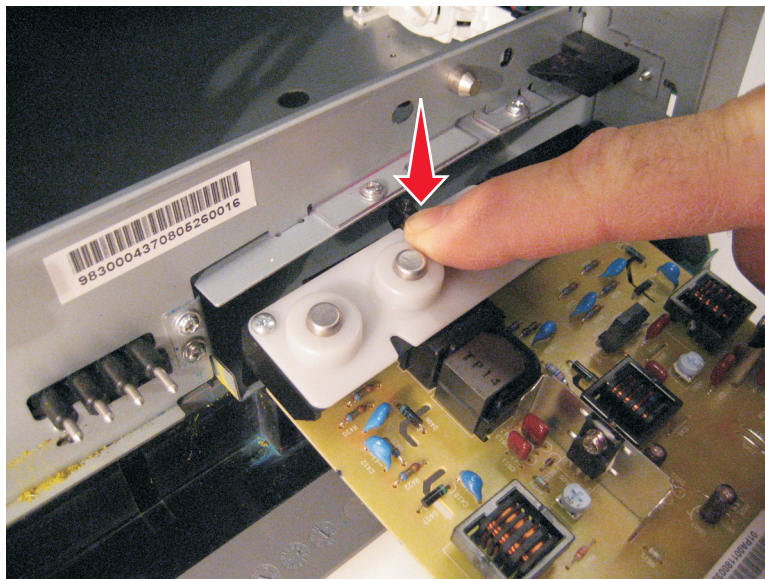
- 10 Slide the HVPS out to remove.
- 11 Press down on the latch (D) to disconnect the cable from the HVPS board.

CAUTION—SHOCK HAZARD: To avoid personal injury or printer damage after disconnecting the high-voltage power cable from the controller board, always check that the HVPS connection was not loosened. Make this check anytime you are working near the HVPS cable.

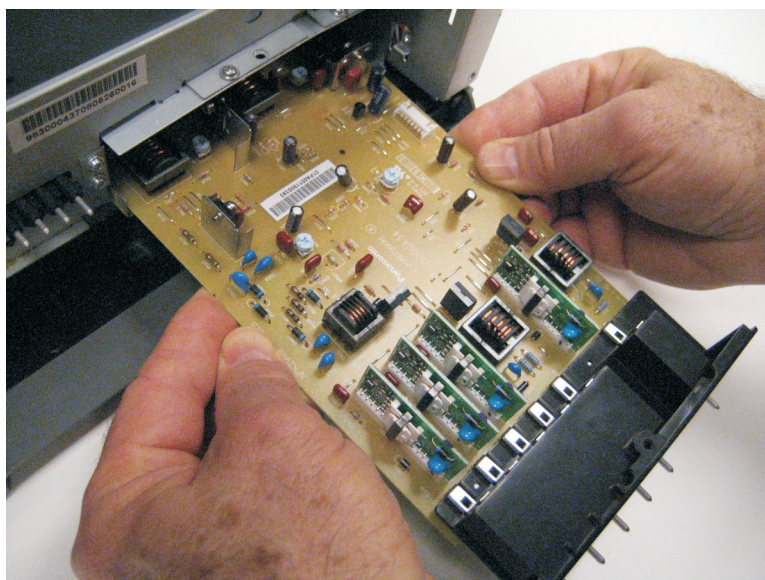


Installation notes:

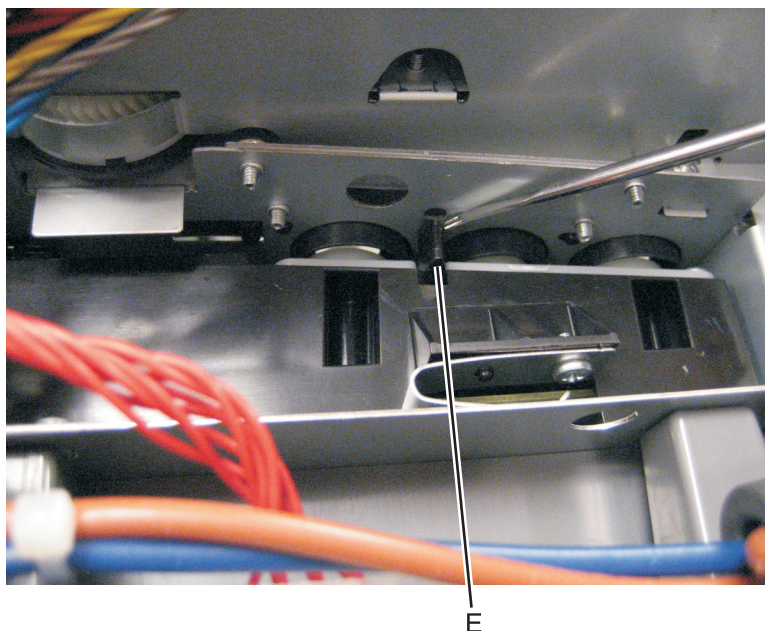
- a** To install the new HVPS board, insert the spring end of the HVPS board while compressing the spring, as shown below.



- b** Slide the HVPS into position while holding its sides, as shown below. Do not allow the card to flex and touch the cage.



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



- d Install the new cable making sure the connector to the board is locked into position.

Note: Reinstall the screw to hold the HVPS to the right side of the printer.

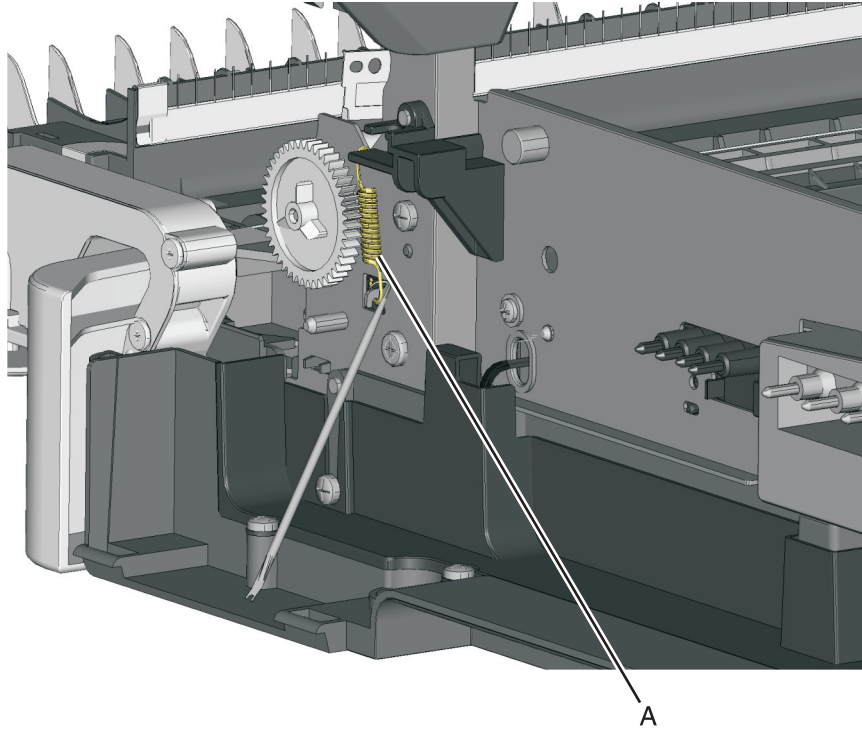
Image transfer unit (ITU) removal

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

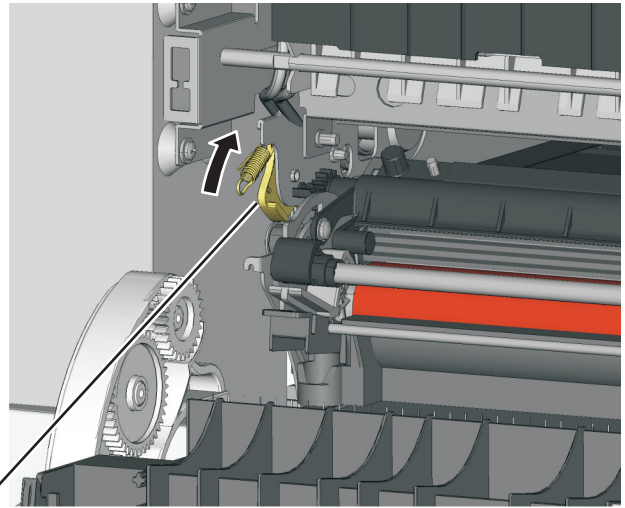
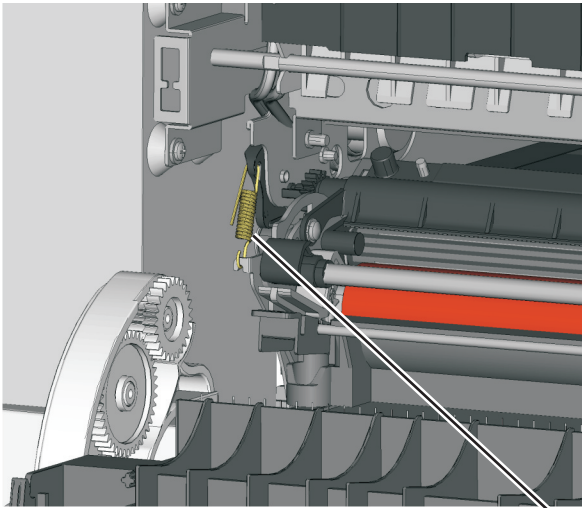


- 2 Remove the right cover assembly. See [“Right cover assembly removal” on page 232.](#)
- 3 Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250.](#)
- 4 Remove the imaging unit (IU). See [“Imaging unit \(IU\) removal” on page 246.](#)

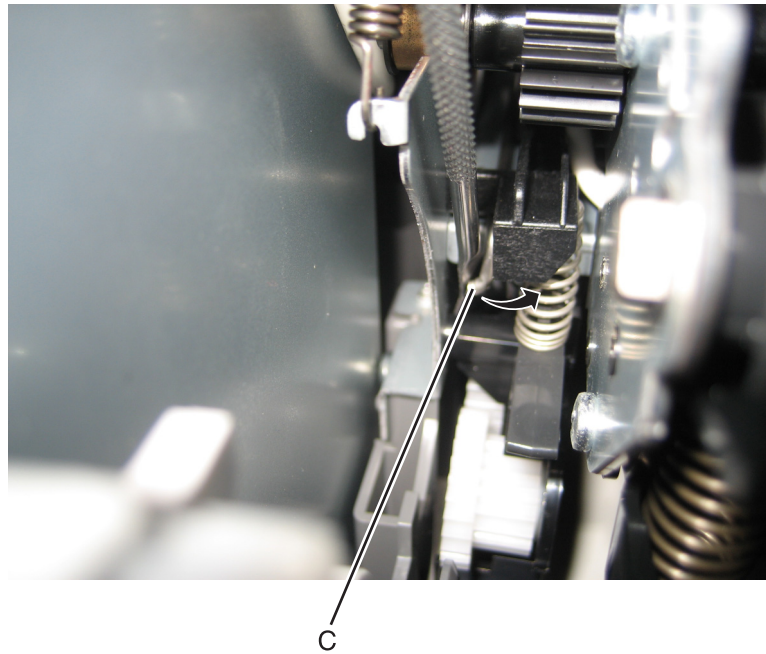
- 5 Disconnect the two springs (A, B) from the side frames, leaving the right one (A) attached to the ITU spring clamp.



- 6 Unhook the left spring (B), and the cam away from the ITU so the spring is held out of the ITU path.



- 7 Rotate the release lever (C) in a counterclockwise direction with a springhook or needlenose pliers to decouple the ITU while pulling the ITU toward the front.

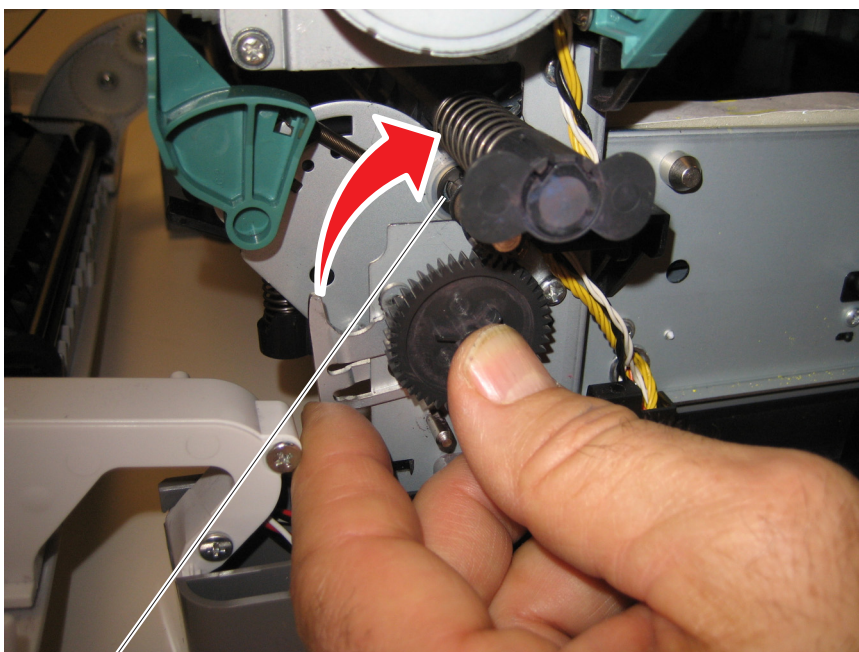


- 8 Hold the release lever as you pull out the ITU for the first four inches (100 mm), but a quick, firm pull should overcome the latch at this point.

Installation notes:

- a Write down the 16-digit numeric value of the new FRU before you begin to install it.
- b You may have to rotate the release lever again to install the new ITU, but a quick firm push should overcome the latch.
- c Rotate the spring clamp (D) so it hooks over the new ITU.

Note: Position the spring on the right side of the gear shaft.



D

d When you have replaced the ITU, be sure to enter the 16-digit numeric value from the barcode on the new ITU into the printer.

1 Enter the Diagnostics Menu:

- a** Turn off the printer.
- b** Press and hold **3** and **6**.
- c** Turn on the printer.
- d** Release the buttons when the installed memory and processor speed displays.

2 Select **PRINTER SETUP** from the Diagnostic Menu.

3 Select **ITU Barcode**.

4 To enter the 16-digit numeric value:

Use the **left arrow** to decrease the value, or use the **right arrow** to increase the value. press **Select** to advance to the next digit. If a digit is already correct, press **Select** to accept the number and to continue. When the last number is entered, press **Select**, and **Submitting changes...** should appear. If the entered number is incorrect, **Check Sum Does Not Match** displays. Check and reenter the number.

Imaging unit (IU) removal

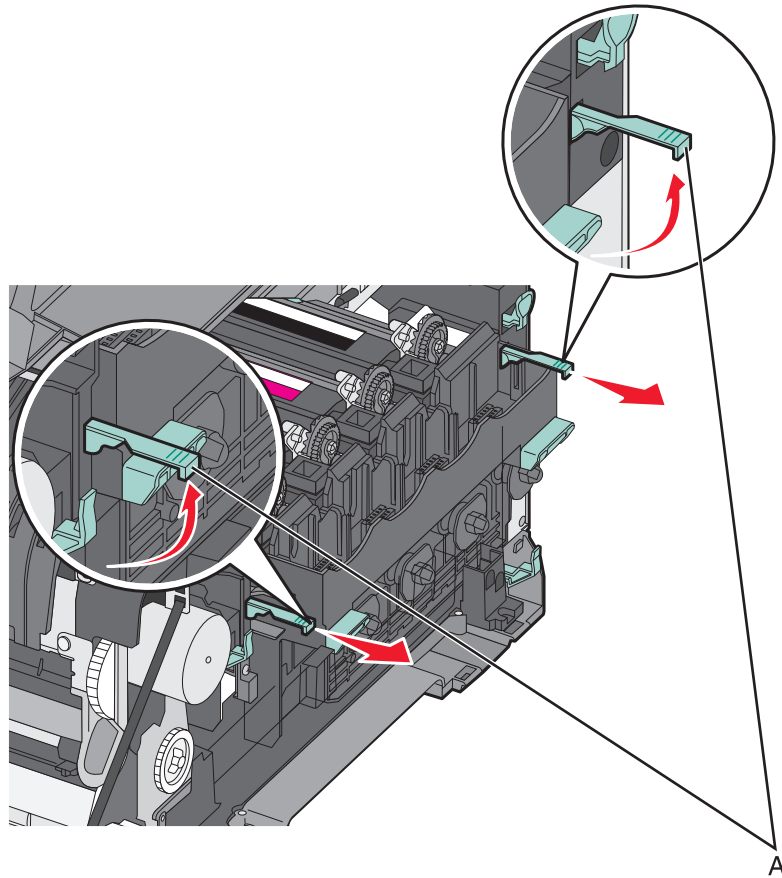
Note: The imaging unit is a customer replacement unit and is not a FRU.

Note: The imaging unit contains:

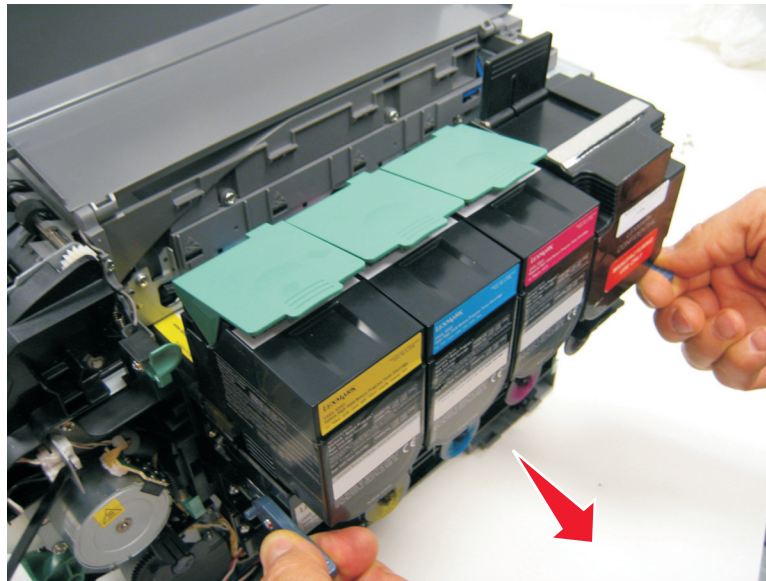
- Photoconductor unit
- Developer units

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

- 1 Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250](#).
- 2 Remove the toner cartridges.
- 3 Lift the two latches (A) to unlock the imaging unit.

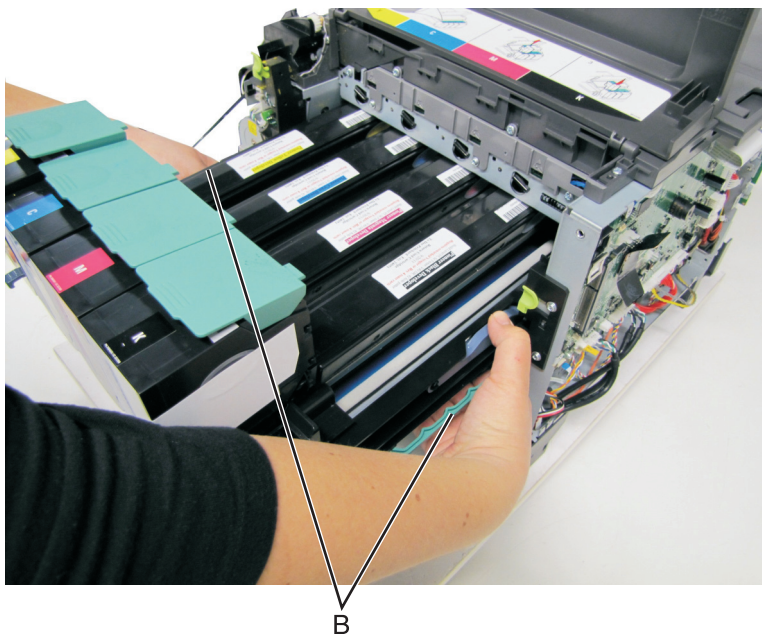


- 4 Pull the two latches until the imaging unit meets resistance.



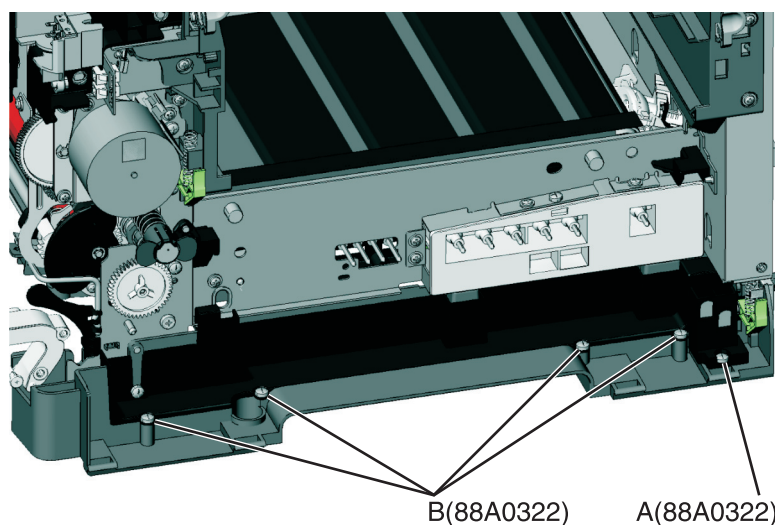
- 5 Press and hold the handles (B) on the right and left sides, and pull the imaging unit straight out.

Note: Avoid touching the bottom of the imaging unit.



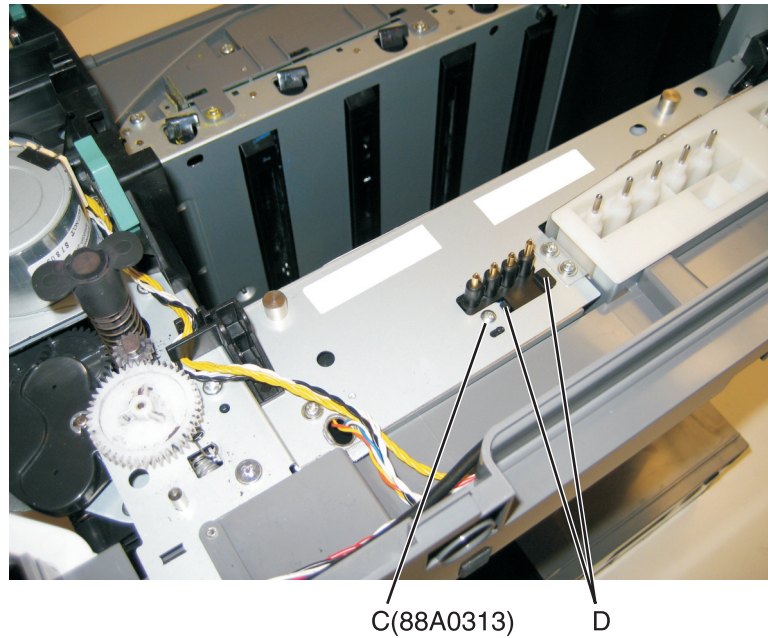
Toner cartridge contacts removal

- 1 Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246.](#)
- 2 Remove the rear cover. See [“Rear cover removal” on page 290.](#)
- 3 Remove the rear screw (A) in the waste toner bottle sensor contact to allow access to the cable cover.
Note: The waste toner bottle sensor contact does not need to be unplugged or removed.
- 4 Remove the four screws (B) securing the cable cover, and remove the cable cover.

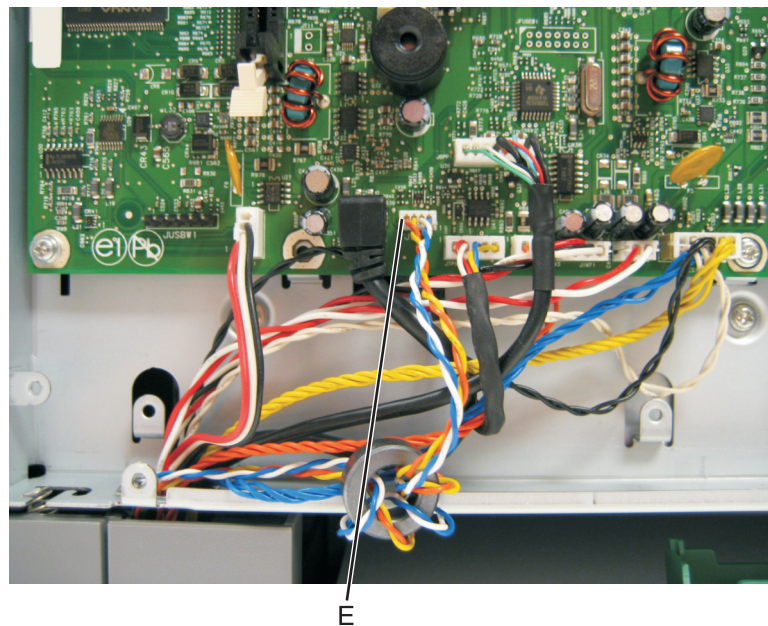


- 5 Rotate the printer to view the right side.
- 6 Lay the printer on its left side, and remove the screw (C) securing the spring contacts.

- 7 Release the tabs (D) on the spring contact, and slide to the left to remove.

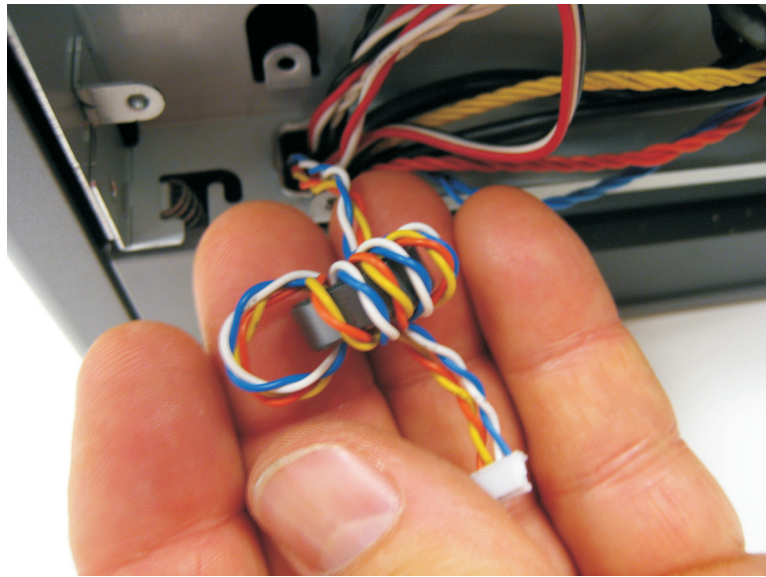


- 8 Disconnect the cable (E) from the controller board at JSC1.



- 9 Remove the cable from the retainer on the bottom of the printer.
- 10 Extract the cable through the frame, and remove the cable with the spring contacts.

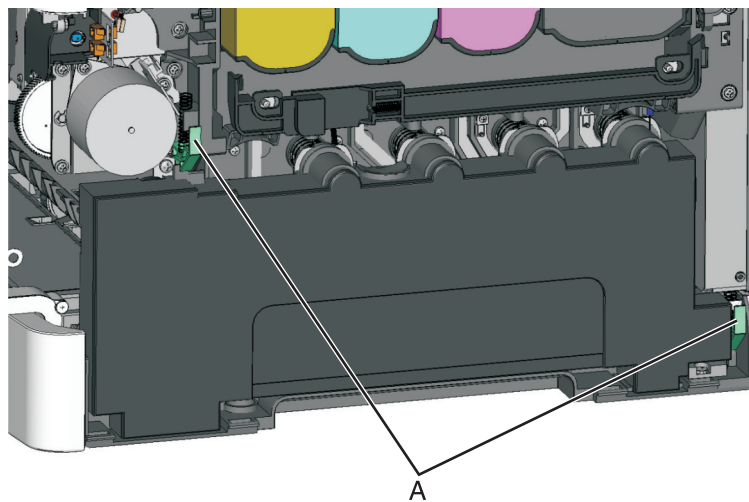
Note: To remove the cable, be sure to unwrap the toroid. When reinstalling, be sure to wrap the toroid five times as shown below.



Waste toner bottle removal

Note: The waste toner bottle is not a FRU.

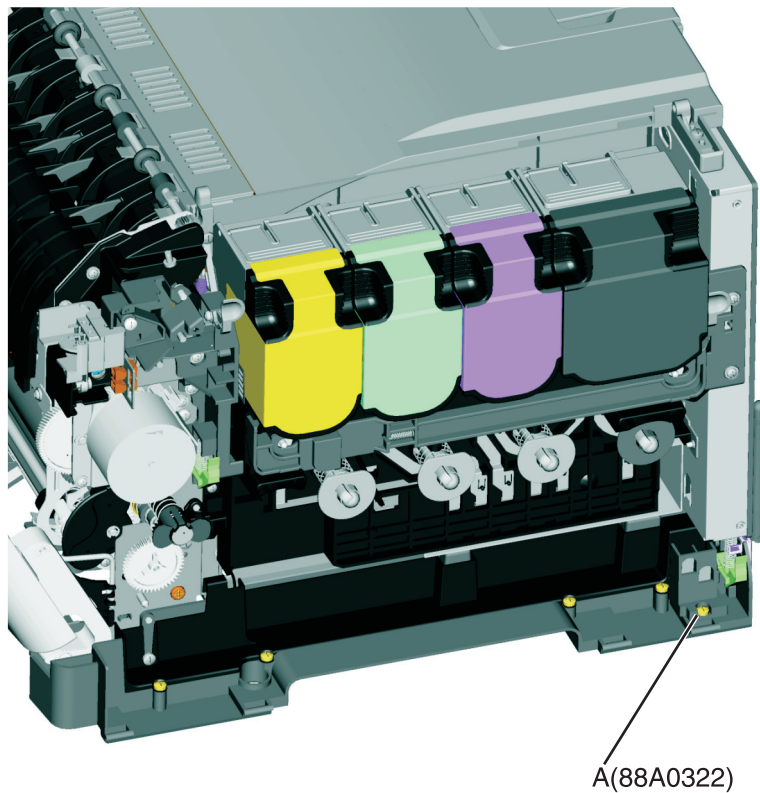
- 1 Remove the right cover assembly. See [“Right cover assembly removal” on page 232.](#)
- 2 Press the two tabs (A) to remove the waste toner bottle.



Waste toner bottle contact block removal

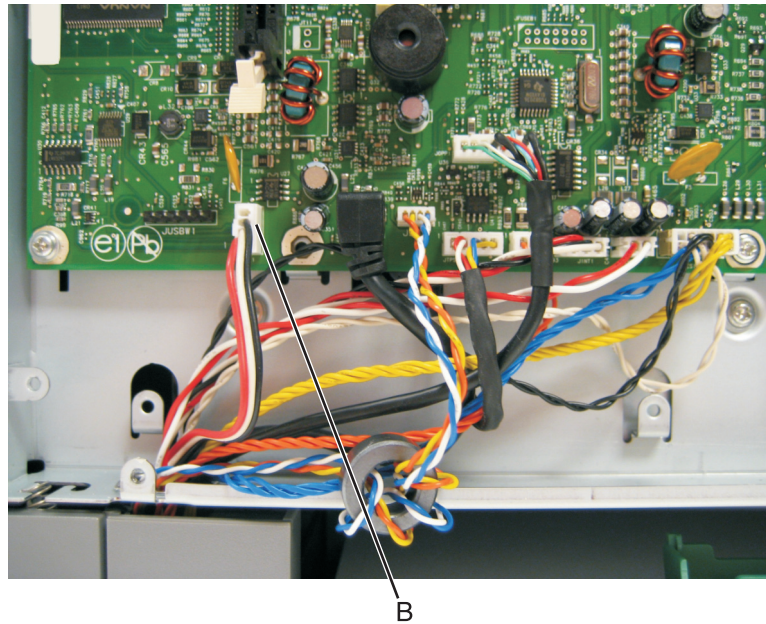
Note: The waste toner bottle is not a FRU.

- 1 Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250.](#)
- 2 Remove the screw (A) from the back of the waste toner bottle block.



- 3 Remove the rear cover. See [“Rear cover removal” on page 290.](#)

- 4 Disconnect the waste toner bottle contact block (B) from the controller board.



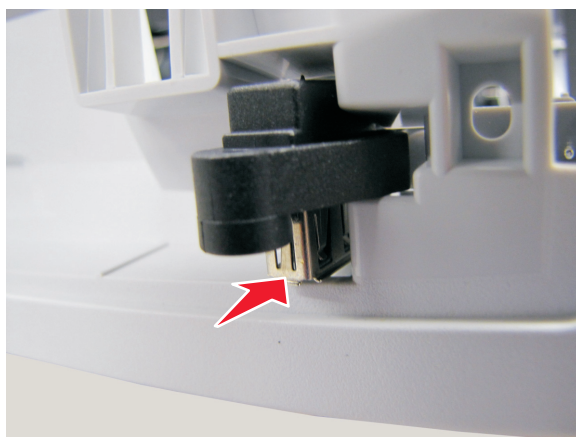
- 5 Remove the waste toner bottle contact block.

Front removals

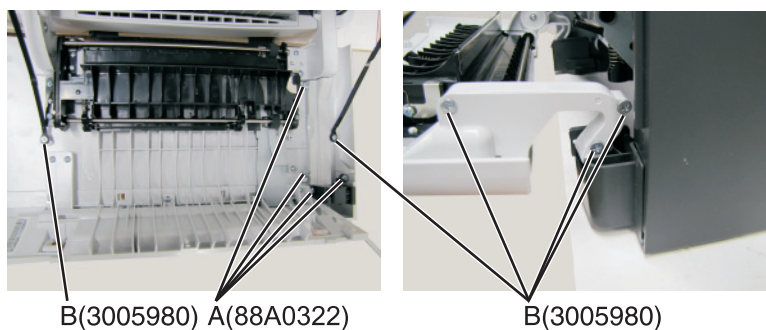
Front cover assembly removal

- 1 Position the printer with the front at the edge of the table.
- 2 Remove the media tray.
- 3 Remove the logo plate. See [“Operator panel logo plate removal” on page 262](#).
- 4 Remove the operator panel. For CS310 models, see [“Operator panel removal \(for CS310 models only\)” on page 254](#). For CS410 models, see [“Operator panel removal \(for CS410 models only\)” on page 256](#). For CS510, see [“Operator panel removal \(for CS510 models only\)” on page 259](#).
- 5 Remove the operator panel cable through the front upper cover.

Note: If the printer has a USB cable, then remove it from the front cover. See the picture on how to slide the USB connector through the front upper cover.

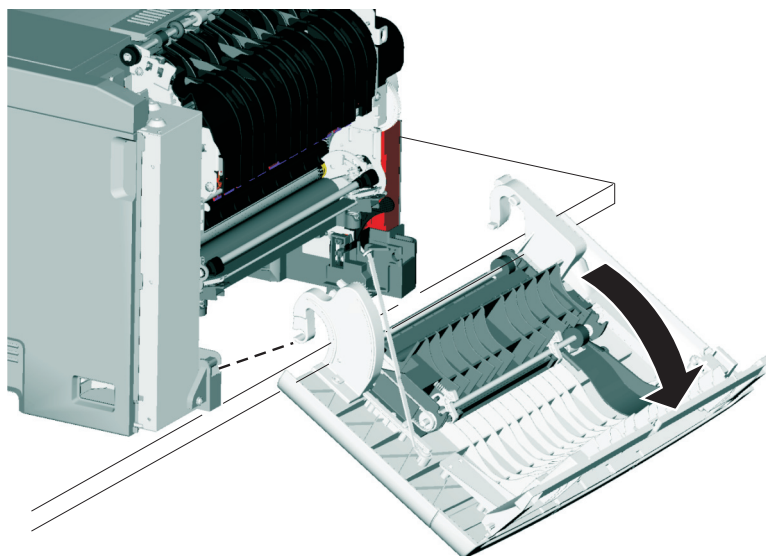


6 Remove the four screws (A) and the five screws (B) from the front cover.



7 Remove the cable cover and the front cover switch.

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



Operator panel bezel removal

- 1 Remove the operator panel logo plate. See [“Operator panel logo plate removal” on page 262.](#)
- 2 Use a flat-head screwdriver to pry the bezel loose, and remove.



Operator panel removal (for CS310 models only)

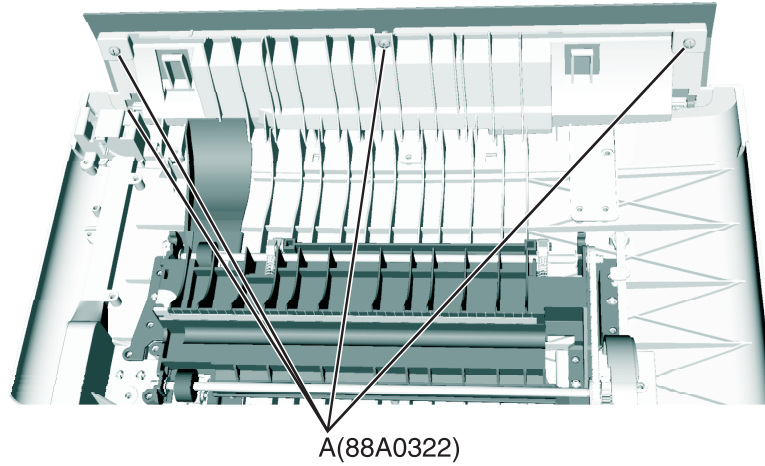
Installation warning: Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer may be rendered inoperable:

- Operator panel assembly
- Controller board

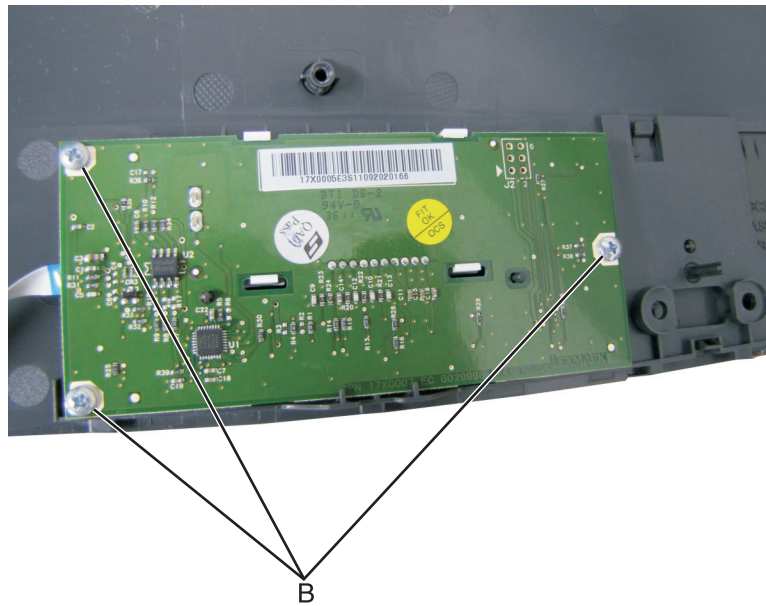
Note: The UICC card is part of the operator panel.

- 1 Remove the operator panel bezel. See [“Operator panel bezel removal” on page 254.](#)
- 2 Open the front cover.

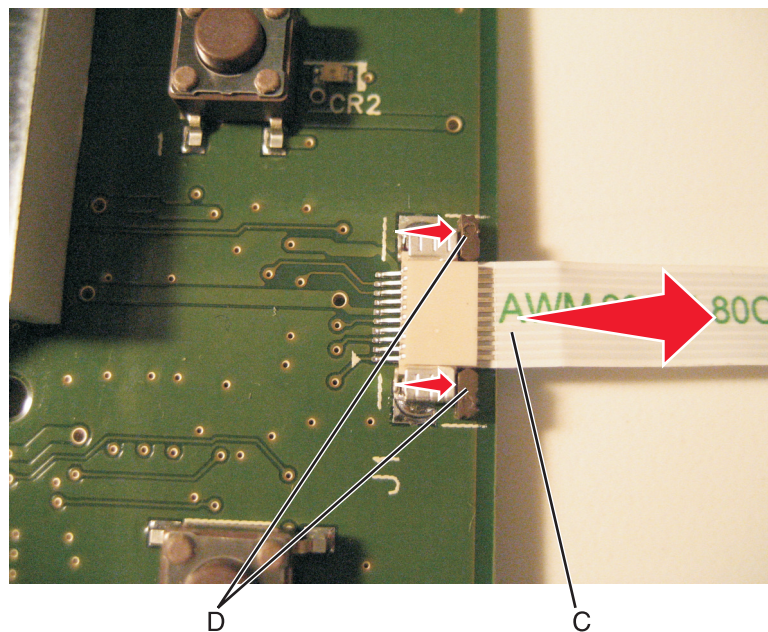
- 3** Remove the four screws (A) from the front cover assembly.



- 4** Remove the three screws (B), and remove the operator panel.



- 5 Slide the lever (D) forward, and disconnect the operator panel cable (C) from the operator panel.



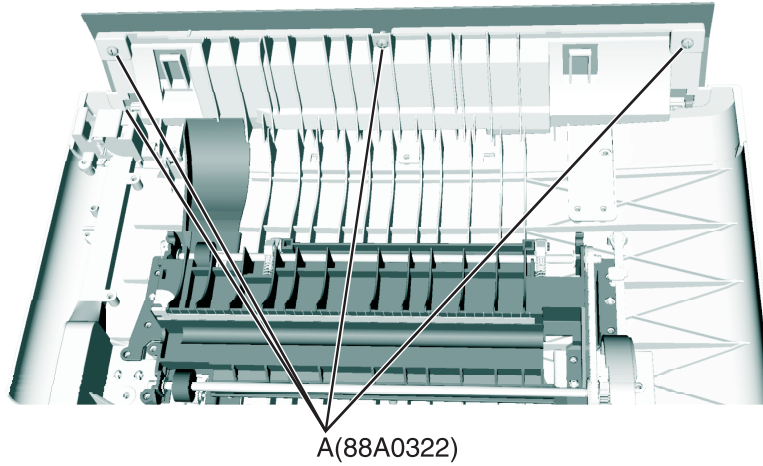
Operator panel removal (for CS410 models only)

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

- UICC card and display
- Controller board

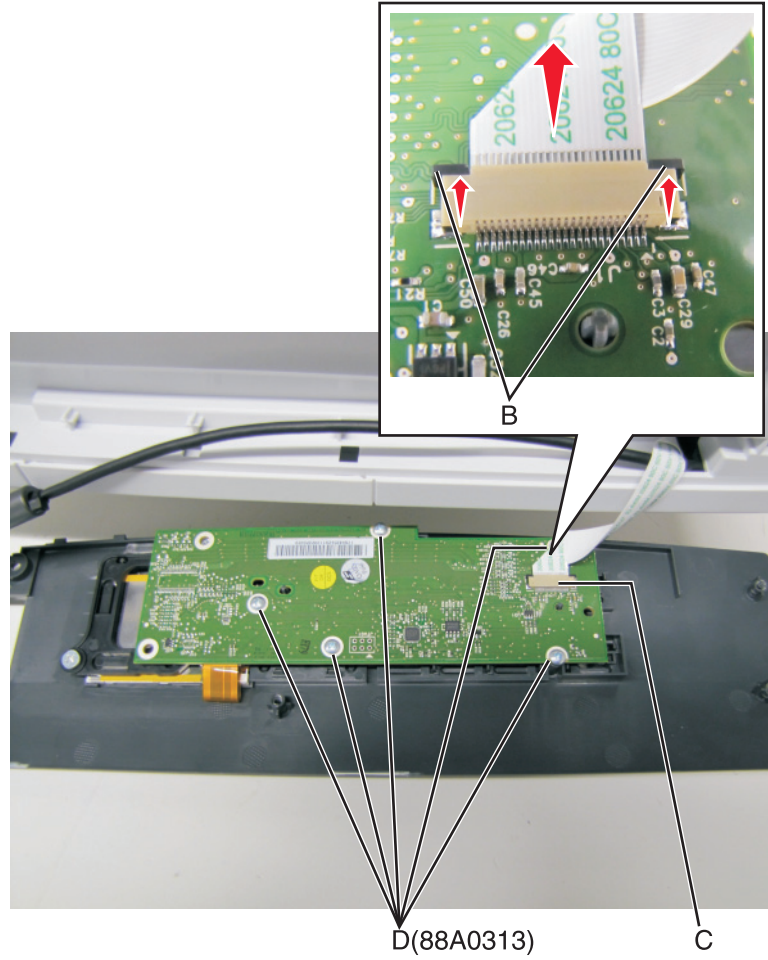
- 1 Remove the operator panel bezel. See [“Operator panel bezel removal” on page 254](#).
- 2 Open the front cover.

- 3** Remove the four screws (A) from the front cover assembly.

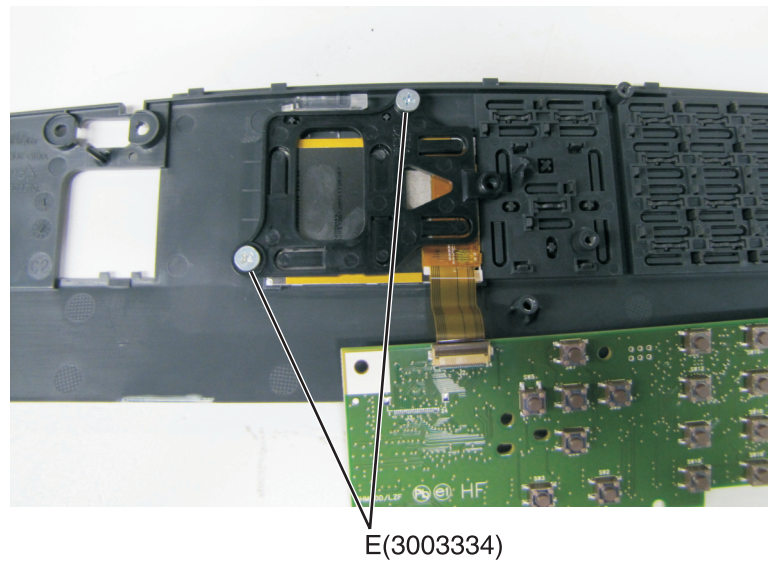


- 4** Slide the lever (B), and disconnect the operator panel cable (C) from the operator panel.

5 Remove the five screws (D).



6 Turn the UICC card over, and remove the two screws (E) from the operator panel support bracket.



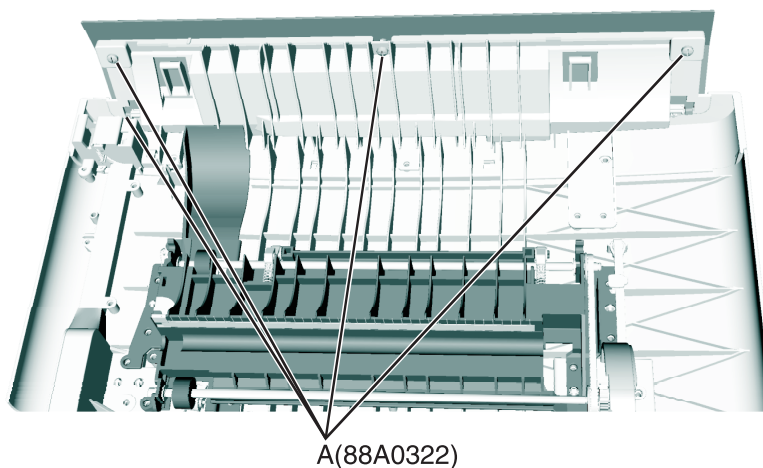
7 Remove the UICC card and display.

Operator panel removal (for CS510 models only)

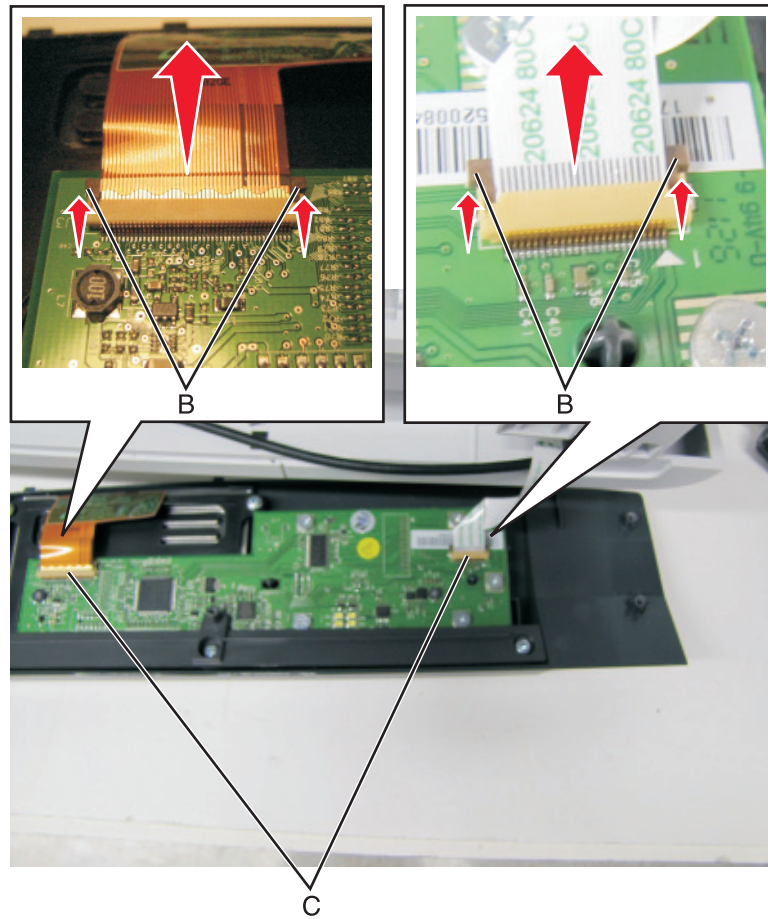
Installation warning: Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer may be rendered inoperable:

- UICC card
- Controller board

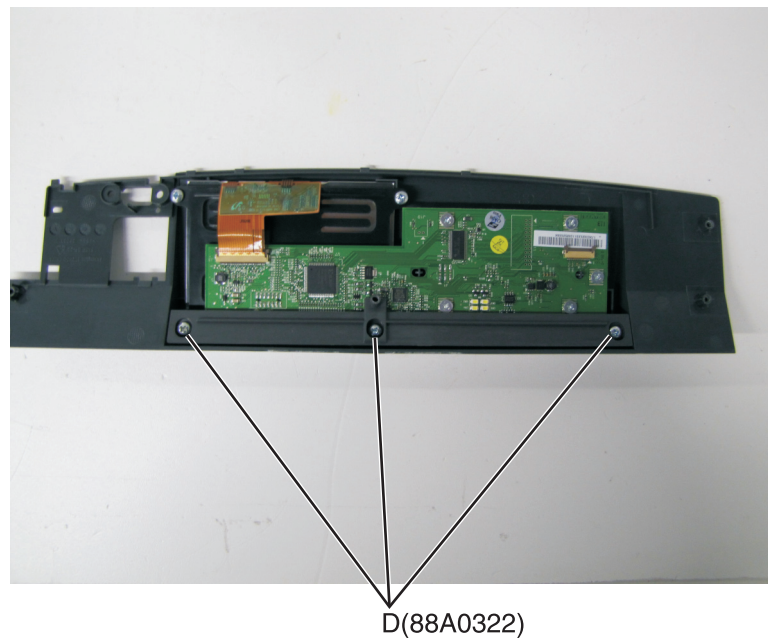
- 1 Remove the operator panel bezel. See [“Operator panel bezel removal” on page 254](#).
- 2 Open the front cover.
- 3 Remove the four screws (A) from the front cover assembly.



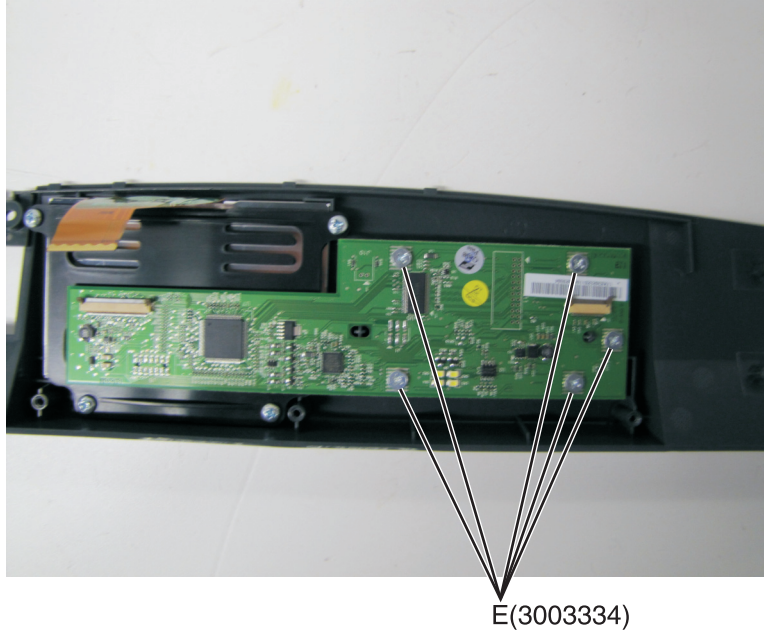
- 4 Rotate the two levers (B) from each cable, and disconnect the two operator panel cables (C) from the operator panel.



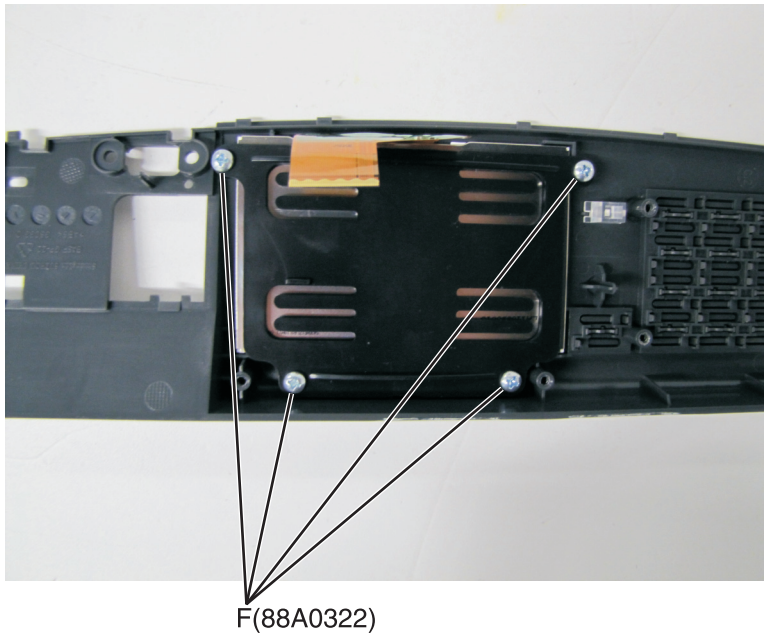
- 5 Remove the three screws (D) from the back cover of the operator panel.



- 6** Remove the back cover of the operator panel.
- 7** Remove the five screws (E) from the UICC card.



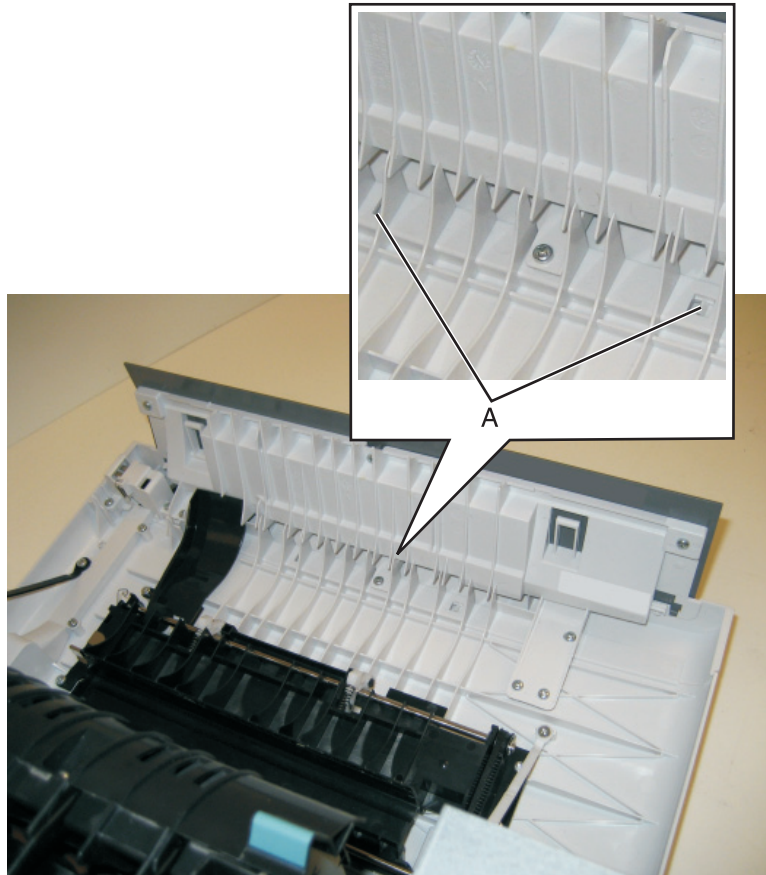
- 8** Remove the UICC card.
- 9** Remove the four screws (F) from the operator display support bracket.



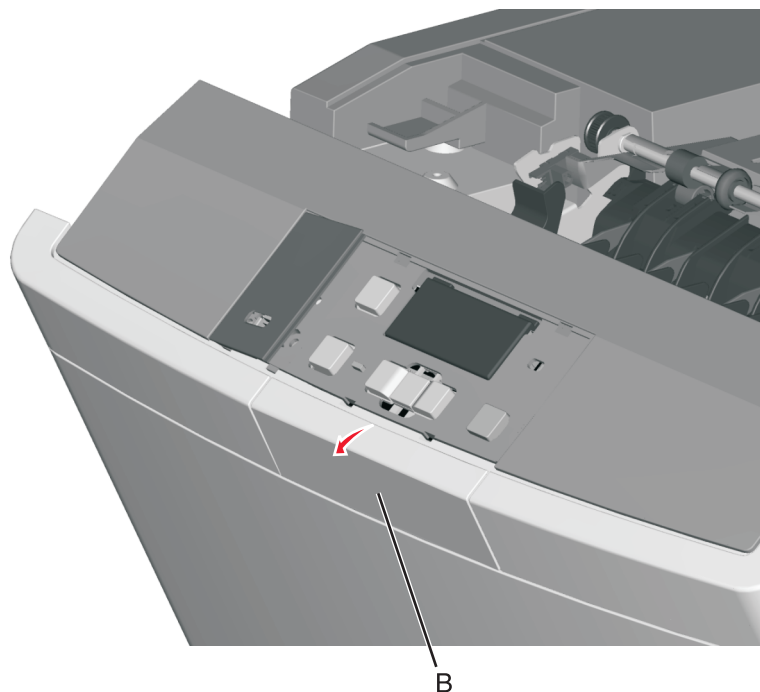
- 10** Remove the operator display support bracket.
- 11** Remove the operator panel display.

Operator panel logo plate removal

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



- 3 Remove the logo plate (B).



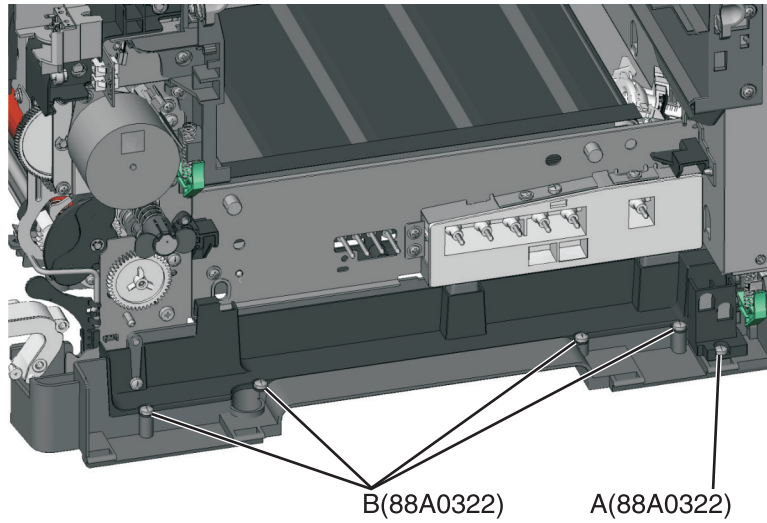
USB port connector removal

Note: The FRU includes the USB port connector and cable.

- 1 Remove the operator panel. See [“Operator panel removal \(for CS310 models only\)” on page 254](#), [“Operator panel removal \(for CS410 models only\)” on page 256](#), or [“Operator panel removal \(for CS510 models only\)” on page 259](#).
- 2 Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250](#).
- 3 Remove the rear cover. See [“Rear cover removal” on page 290](#).
- 4 Remove the rear screw (A) from the waste toner bottle sensor contact to allow access to the cable cover.

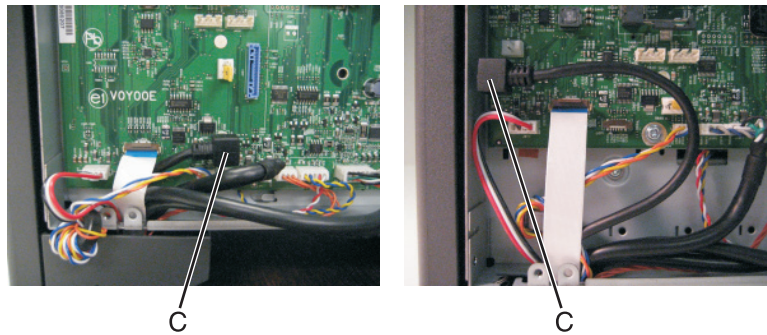
Note: The waste toner bottle sensor contact does not need to be unplugged or removed.

- 5 Remove the four screws (B) from the cable cover.

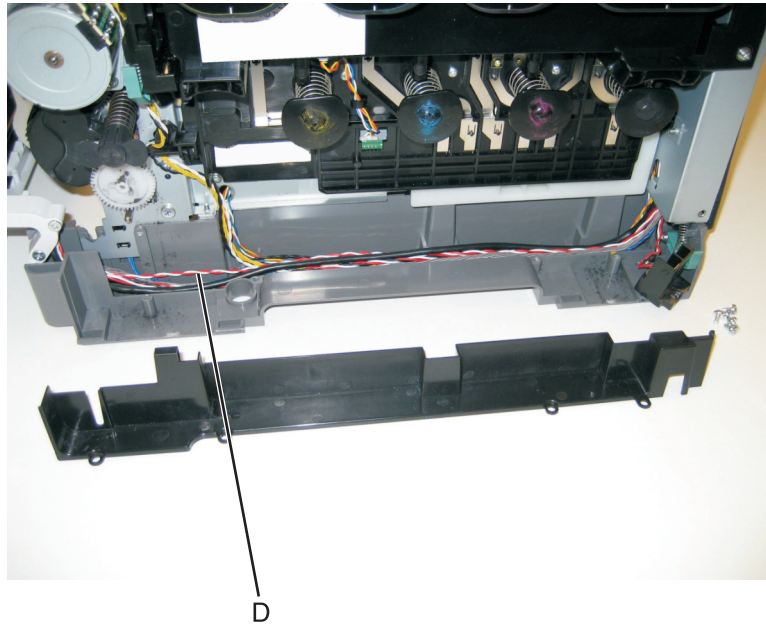


- 6 Disconnect the USB port cable (C) from the controller board.

Note: The picture below shows the position of the cable in the CS310 and CS410 models (left) and the CS510 models (right).

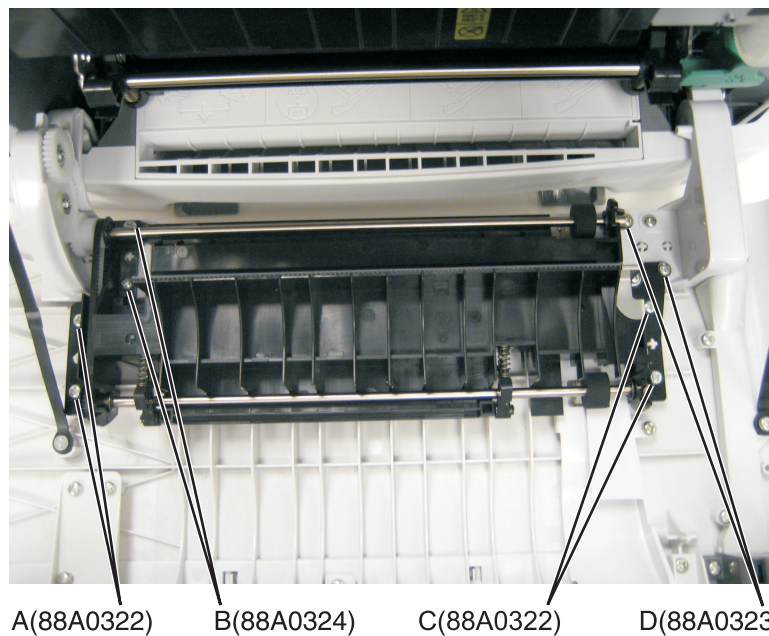


- 7 Remove the USB port cable (D) from the cable channel on the right side.

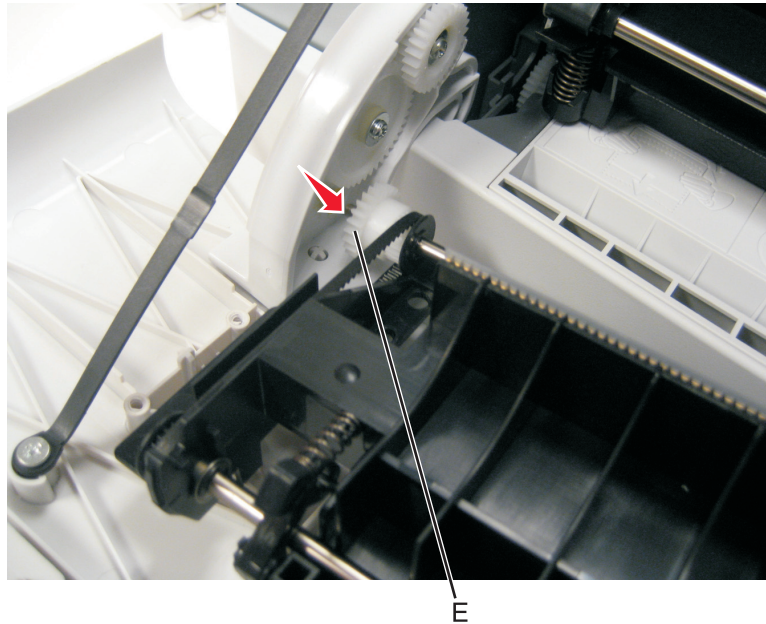


Duplex reference edge removal

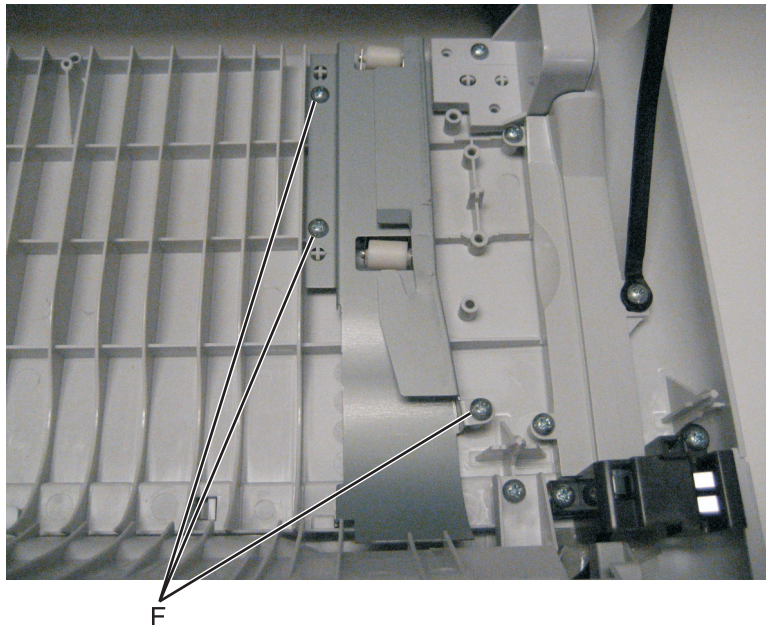
- 1 Open the front door.
- 2 Remove the two screws (A), the two screws (B), the two screws (C), and the two screws (D) in the back of the duplex aligner.



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



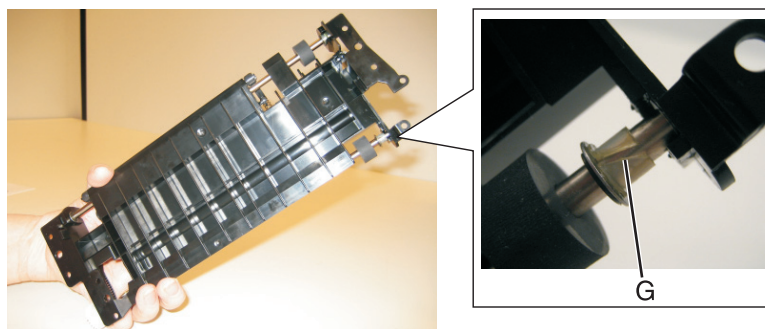
- 4 Remove the three screws (F) from the duplex reference guide, and remove the guide.



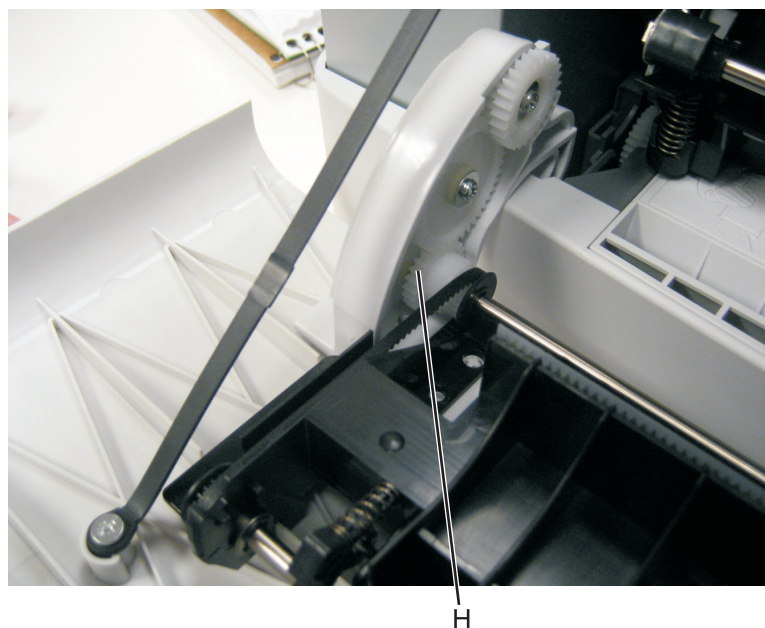
Installation notes:

- a Align the duplex reference guide so that the tabs are inserted into the slots, and the top of the reference guide fits under the door ribs.
- b Replace the three screws in the duplex reference guide.
- c Be sure that the shaft and bearing have not shifted out of the guide. If they have, then make sure that the bearing on the left is aligned with the slot (G) facing down (towards the front door).

Note: Improperly aligned bearings or seated shafts may cause vibration and noise in the front door.



- d** Align the duplex aligner guide so that the gears (H) mesh on the left.

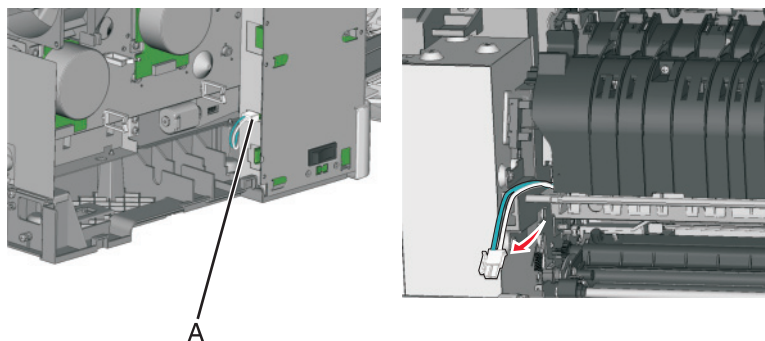


- e** Replace the eight screws in the duplex aligner.
f Close the front door.

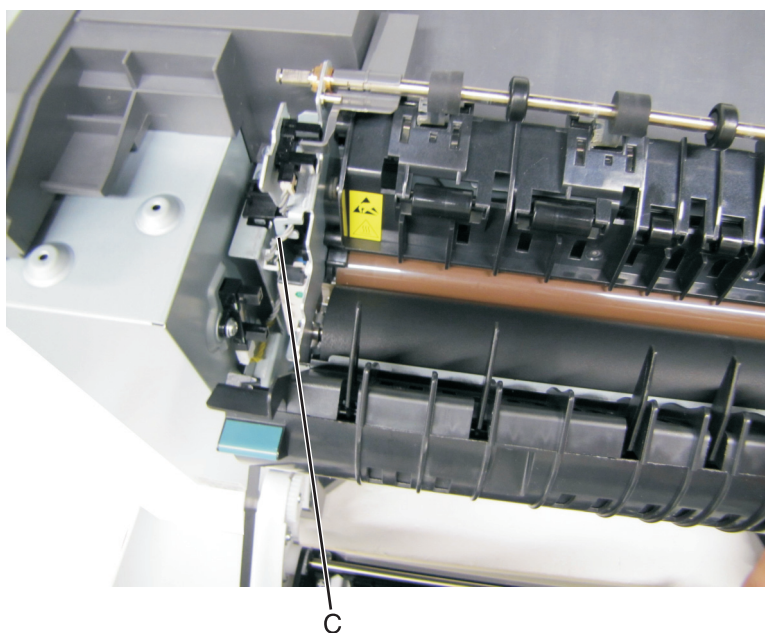
Fuser assembly removal

- 1** Remove the right cover assembly. See [“Right cover assembly removal” on page 232.](#)
- 2** Remove the left cover assembly. See [“Left cover assembly removal” on page 219.](#)
- 3** Disconnect the two-wire fuser cable (A) from the LVPS.
- 4** Position the fuser cable so that it can be pulled through from the front of the printer, and guide the cable through to the front.

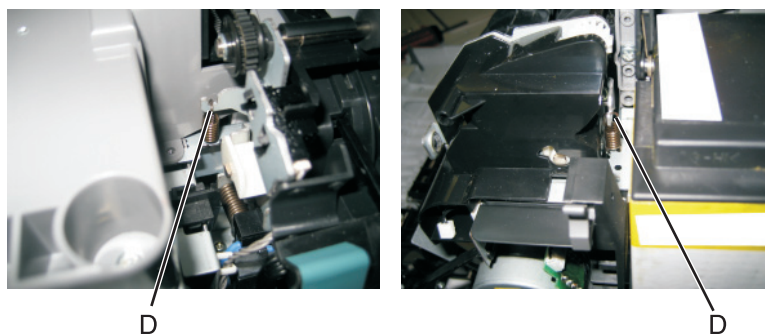
Warning—Potential Damage: Be careful not to damage the cable by pulling too hard or cutting the cable insulation.



- 5 Remove the bin-full/narrow media sensor flag. See [“Bin-full/narrow media sensor flag removal” on page 231.](#)
- 6 Remove the right output bin deflector. See [“Right output bin deflector removal” on page 271.](#)
- 7 Disconnect the cable (C) from the bin-full/narrow media sensor, and unroute the cable from its retainer.

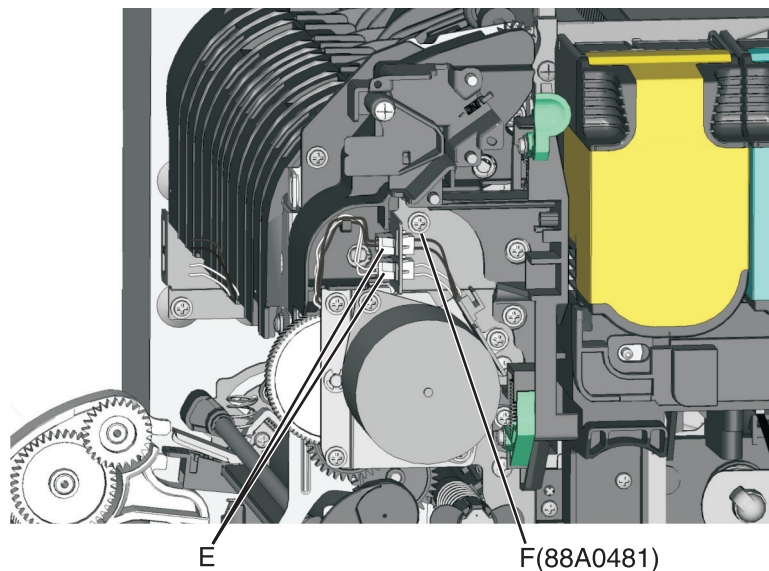


- 8 Unhook the springs (D) from both sides of the fuser.



- 9 Disconnect the thermistor cables (E), and pull them over the retainer.

- 10** Remove the screw and grounding washer (F) on the right side of the frame.



Note: Be careful to not lose the grounding washer.

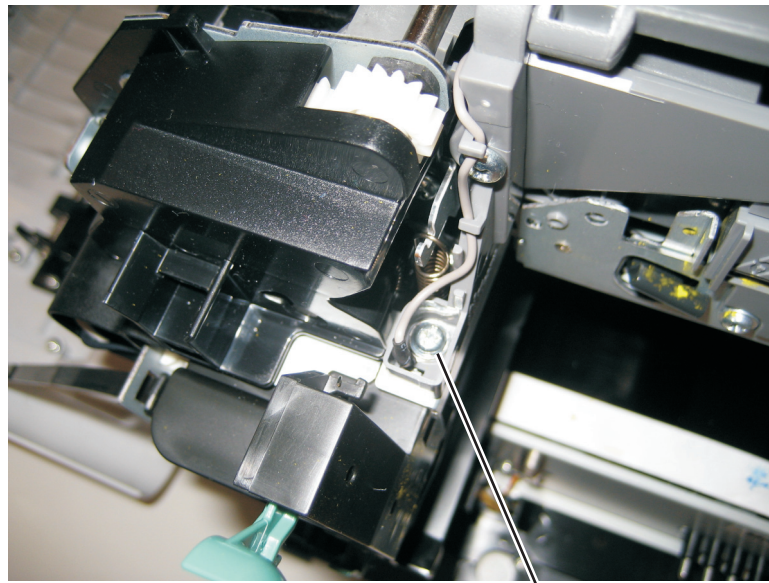
- 11** Rotate the top of the fuser toward the front, and then slide to the left to align the fuser side frames with the flat area of the shaft.
- 12** Lift the fuser, and remove.

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

Exit deflector removal

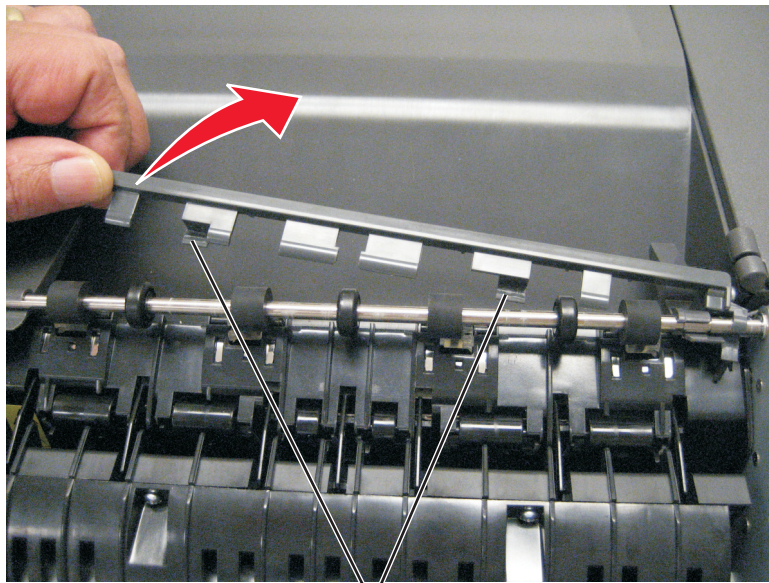
- 1** Open the front door.
- 2** Remove the yellow toner cartridge.
- 3** Remove the exit deflector ground screw (A), and remove the cable from its retainers.

Note: Be sure to pay close attention to the routing of the cables through the retainers for reinstallation.



A(88A0481)

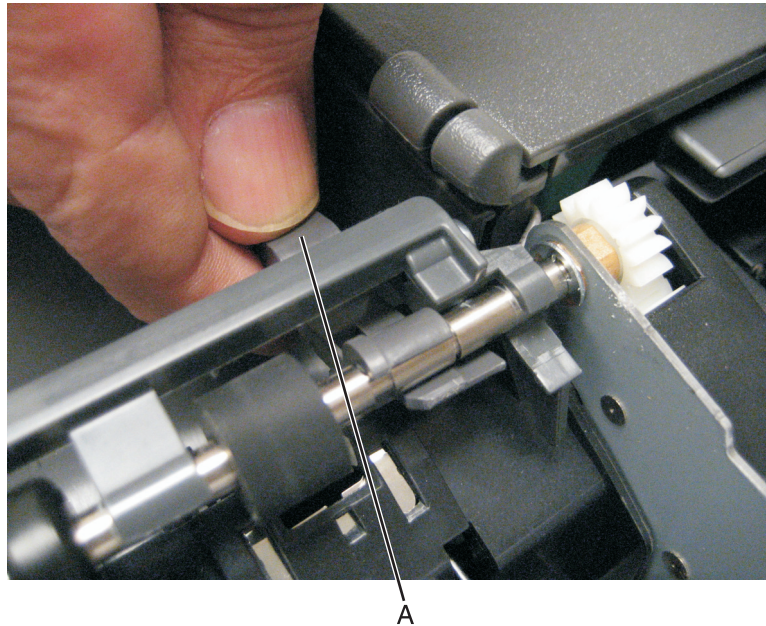
4 Press to *unsnap* the tabs (B), and gently rotate the deflector to remove.



A

Right output bin deflector removal

- 1 Open the front cover.
- 2 Pull up on the right output bin deflector (A), and remove.



Bottom removals

Pick tires removal

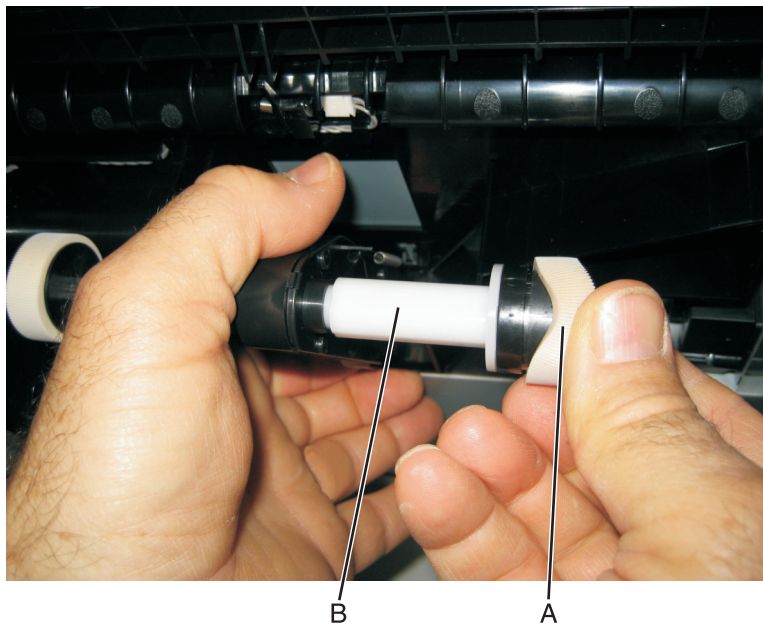
Note: You will need to have a soft, padded work surface for this removal.

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

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

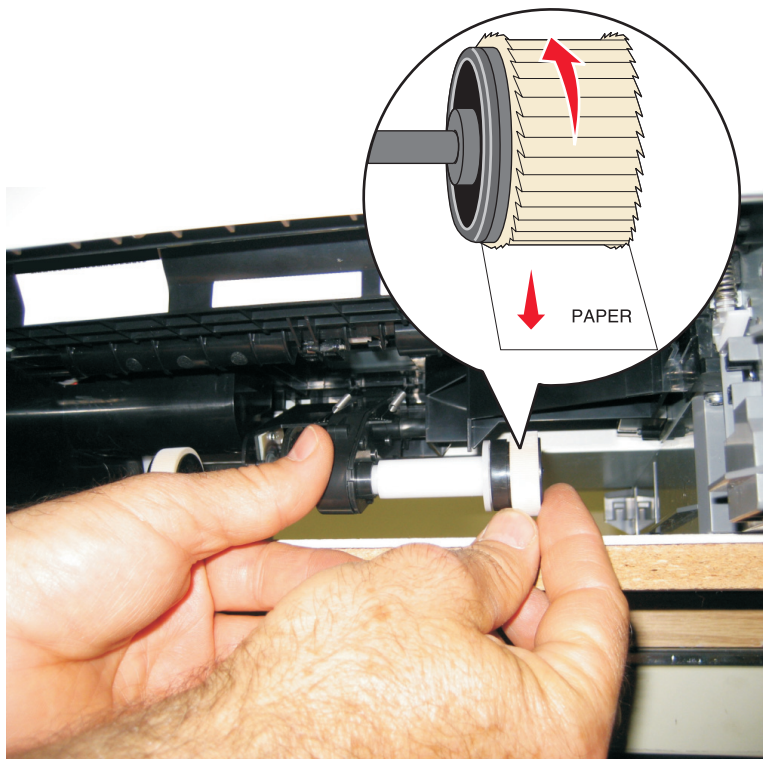
- 1 Remove the media tray.
- 2 Lower the paper pick motor drive assembly.

- 3 Remove the rubber tire (A) from the pick roll assembly (B). Repeat for the other tire.



Installation note:

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

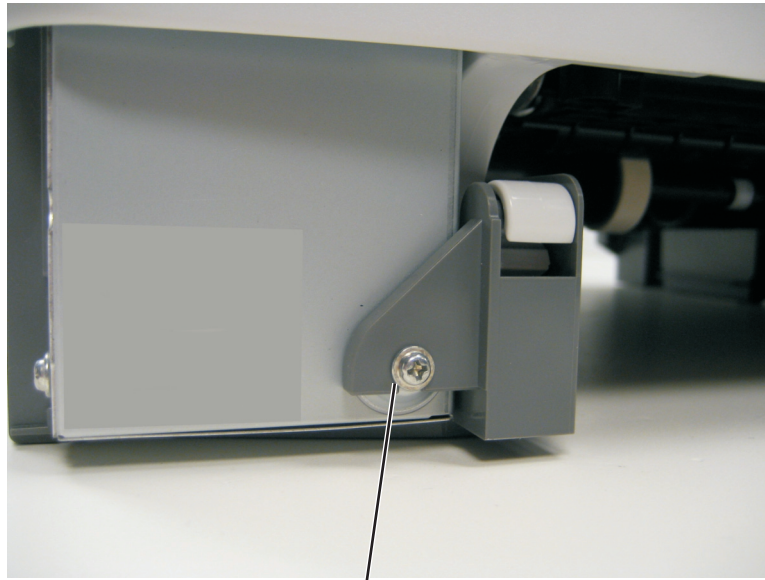


Note: Feel each rubber surface to verify it turns properly in the direction shown. The smoother surface pushes the paper toward the front of the printer.

Lower left frame removal

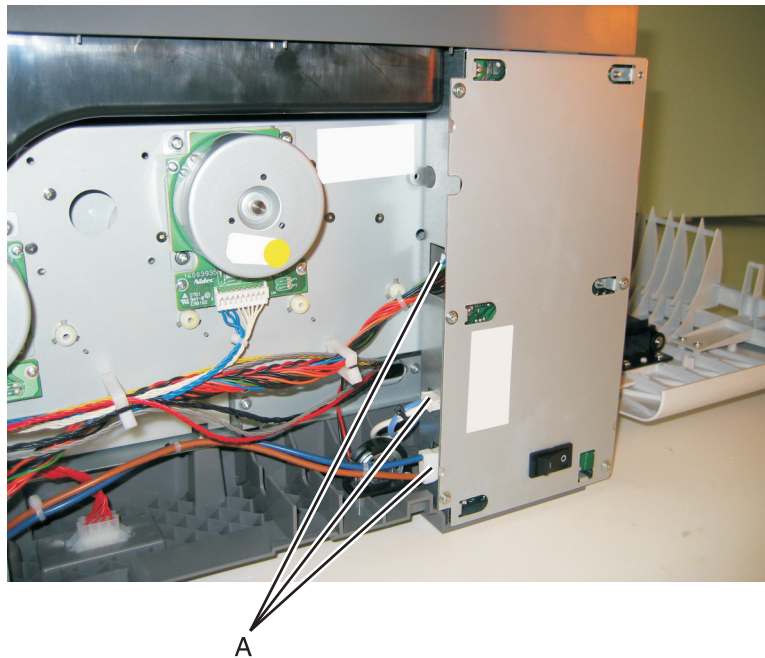
Note: The right and left lower frames are in the same FRU.

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



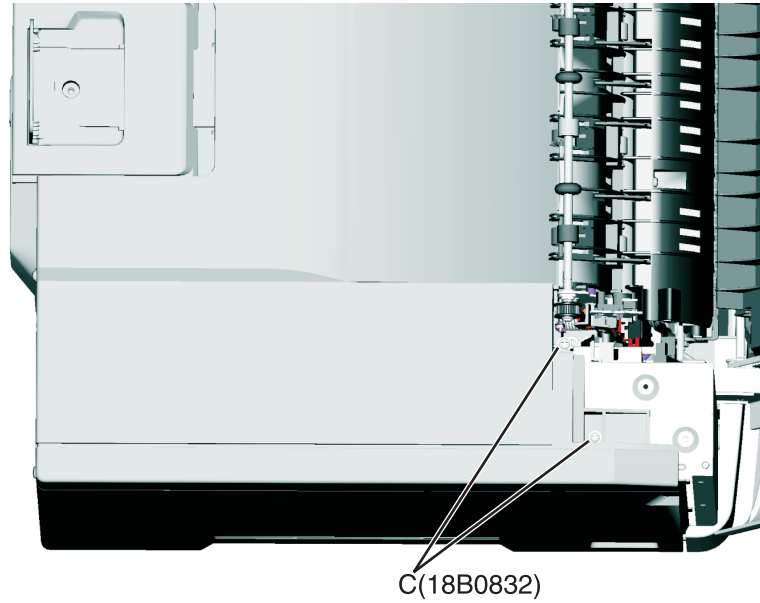
A(18B0832)

- 2 Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250.](#)
- 3 Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246.](#)
- 4 Disconnect the three cables (B) from the LVPS.



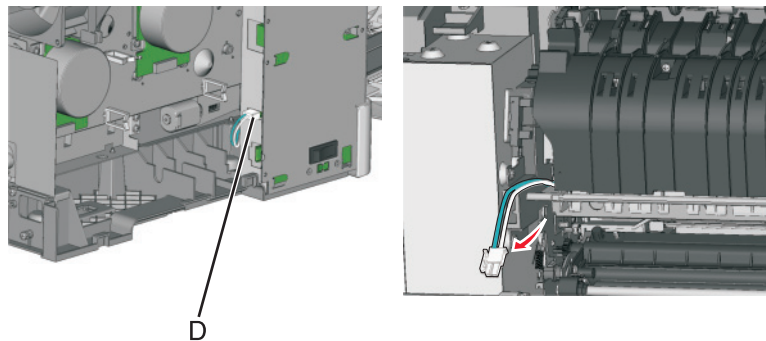
A

- 5 Remove the two top screws (C) near the front holding the top cover to the LVPS shield.



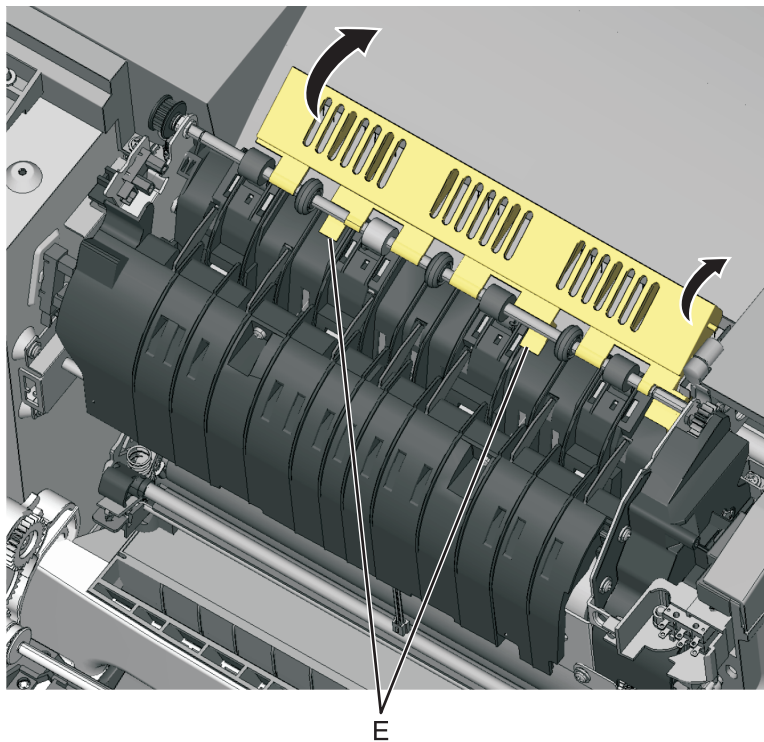
- 6 Position the fuser cable (D) so that it can be pulled through from the front of the printer, and guide the cable through to the front.

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

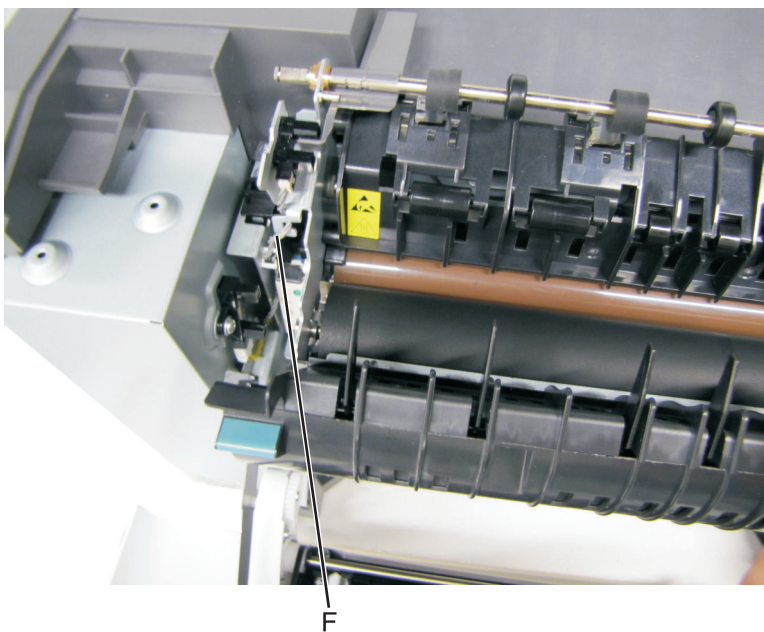


- 7 Remove the bin-full/narrow media sensor flag. See [“Bin-full/narrow media sensor flag removal” on page 231](#).

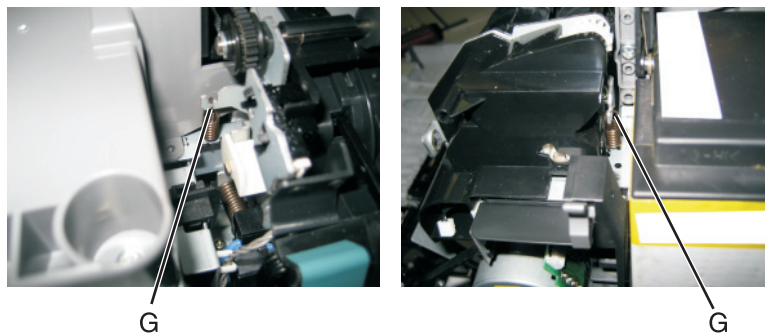
- 8 Press to *unsnap* the tabs (E), and gently rotate the exit deflector to remove.



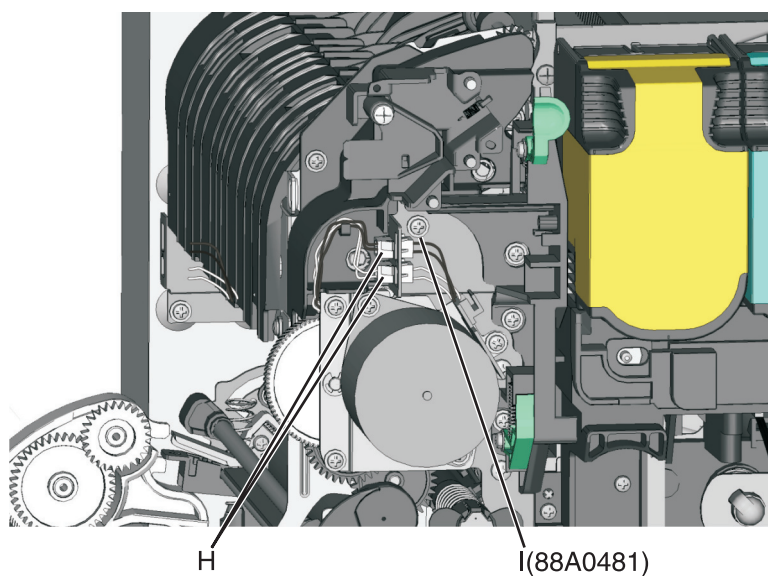
- 9 Remove the right out put bin deflector. See [“Right output bin deflector removal” on page 271](#).
- 10 Disconnect the cable (F) from the bin-full/narrow media sensor, and unroute the cable from its retainer.



- 11** Unhook the springs (G) from both sides of the fuser.



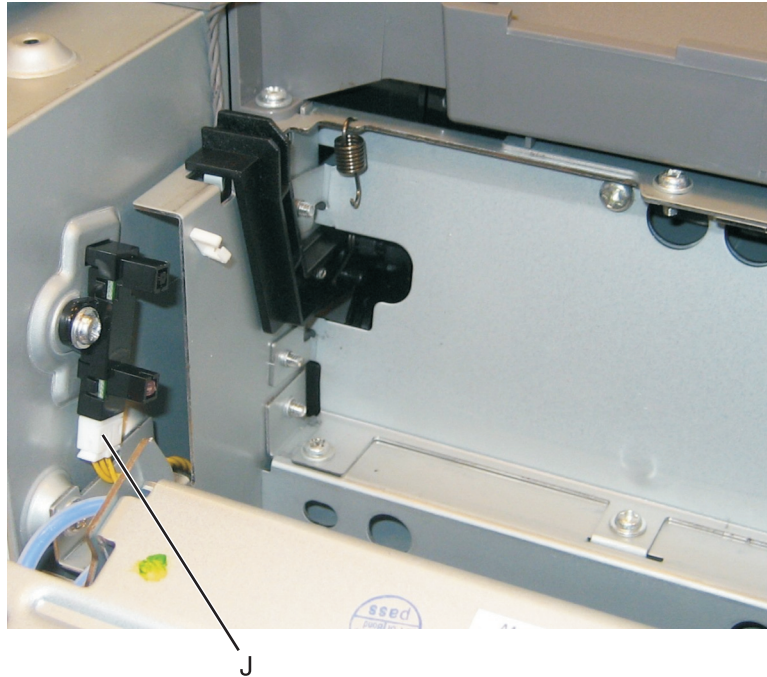
- 12** Disconnect the thermistor cables (H), and pull them over the retainer.
- 13** Remove the screw and grounding washer (I) on the right side of the frame.



Note: Be careful to not lose the grounding washer.

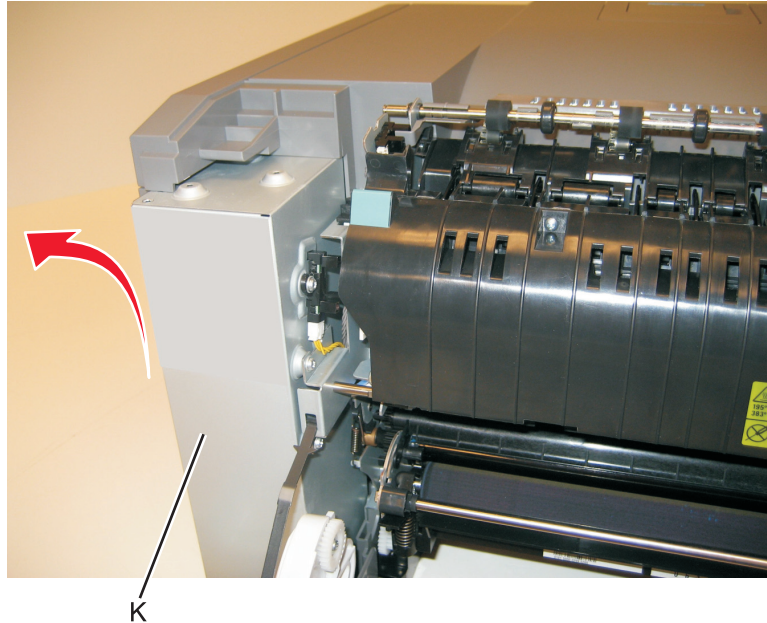
- 14** Rotate the top of the fuser toward the front, and then slide to the left to align the fuser side frames with the flat area of the shaft.

- 15** Disconnect the fuser exit sensor cable (J).



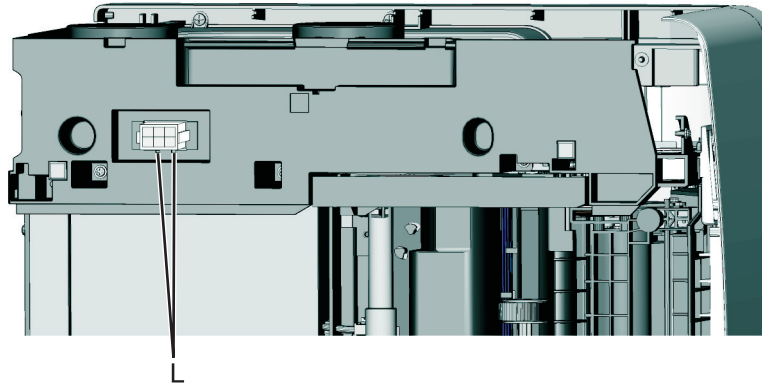
- 16** Lift the front left corner of the top cover, and tilt the LVPS cage (K) to remove. There are two posts at the bottom of the cage on the left side that need to be disengaged.

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

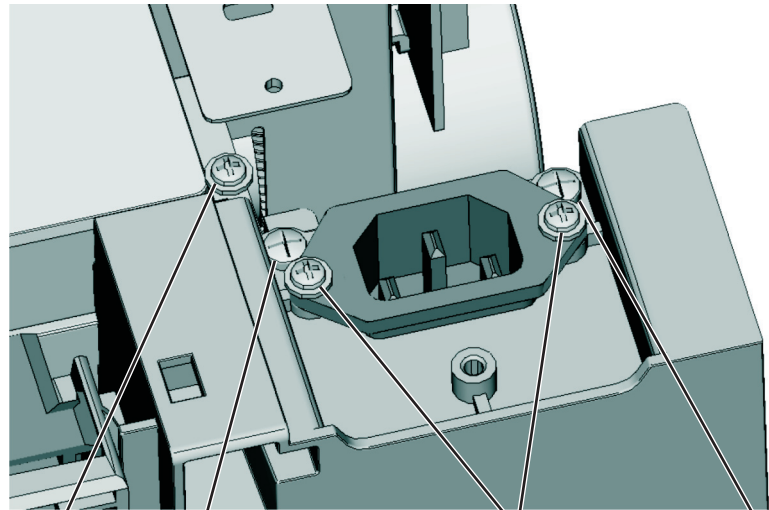


- 17** Place the printer on its right side.

- 18** Remove the tray 2 connector (L) by pinching the tabs together and pushing the connector into the printer.



- 19** At the rear of the printer, remove the two screws (M) from the AC receptacle, and the ground screw (N), and the two screws (O) holding the plastic shield.



N(88A0213)

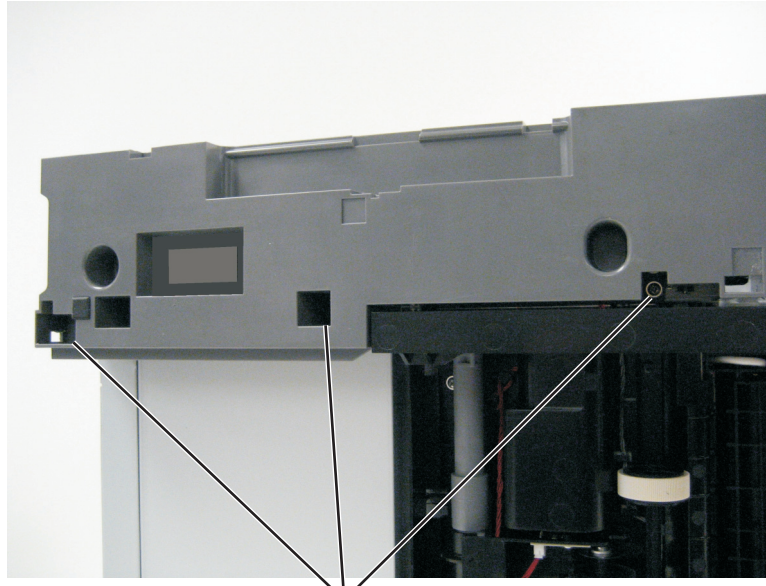
M(88A0323)

O(88A0327)

M(88A0323)

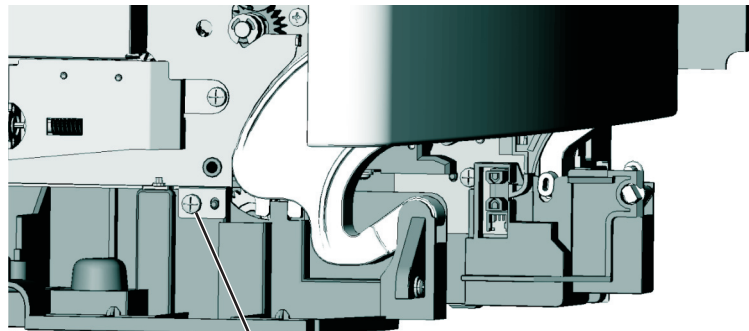
- 20** Remove the AC receptacle from the left lower frame.

- 21** Remove the three screws (P) securing the left lower frame.



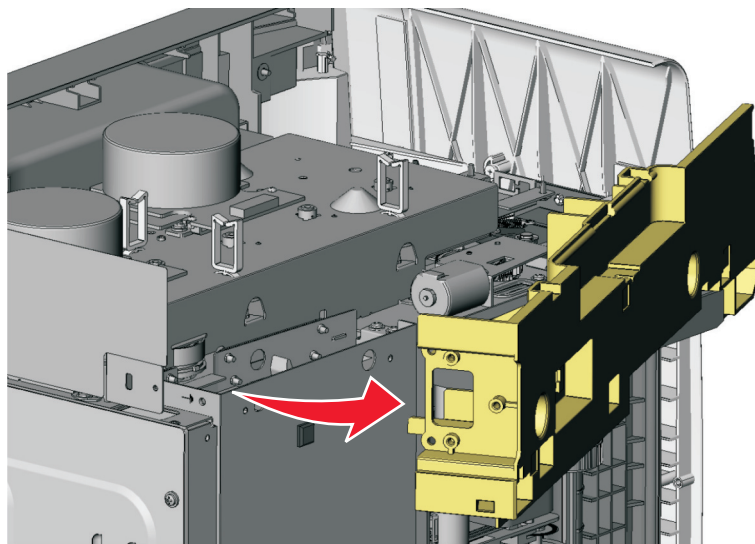
P(18B0832)

- 22** Remove the screw (Q) above the frame.



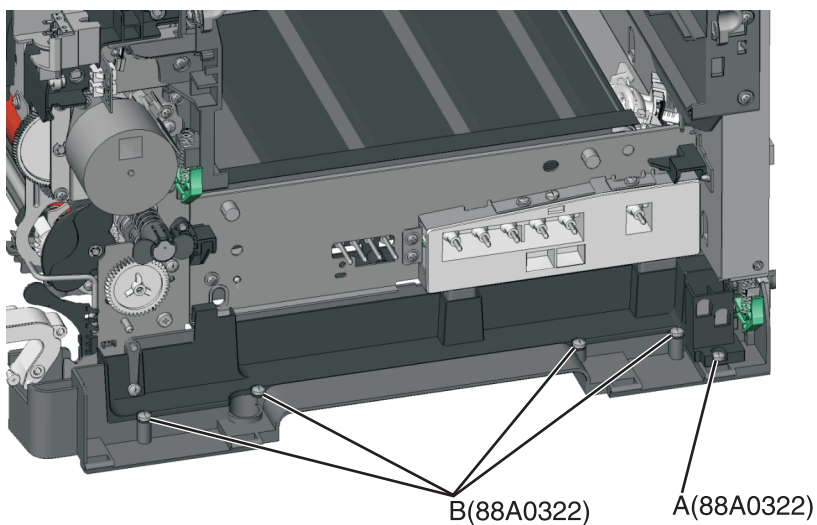
Q(88A0321)

- 23** Swing the left lower frame away from the printer, and remove.



Lower right frame removal

- 1** Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250.](#)
- 2** Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246.](#)
- 3** Remove the screw (A) in the waste toner bottle sensor contact to allow access to the cable cover, and remove the four screws (B) securing the cable cover.

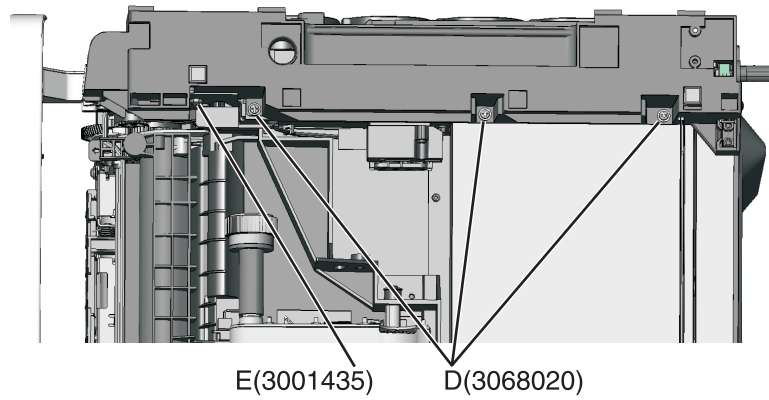


Notes:

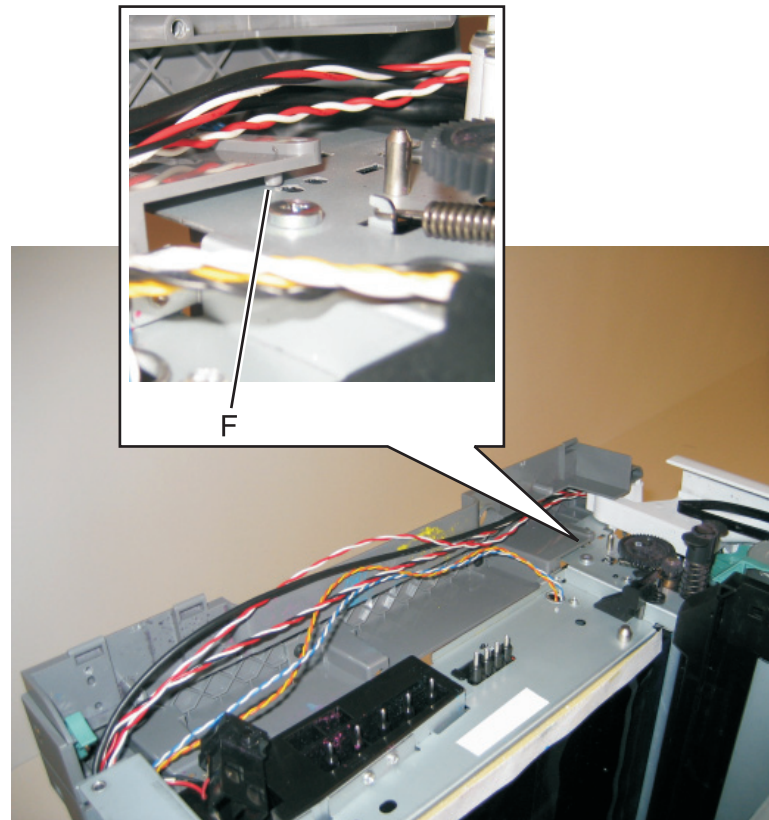
- The waste toner bottle sensor contact does not need to be unplugged.
- The cable cover is part of the right lower frame FRU.

- 4** Carefully place the printer on its left side.
- 5** Remove the three screws (D) securing the lower right frame to the printer.

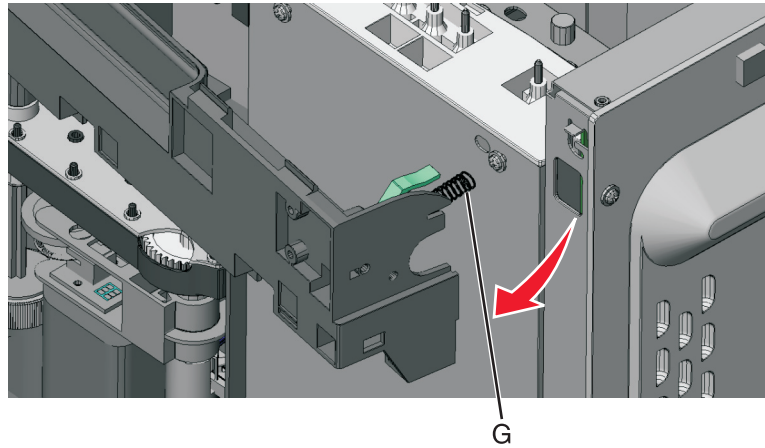
6 Remove the screw (E) closer to the front of the printer.



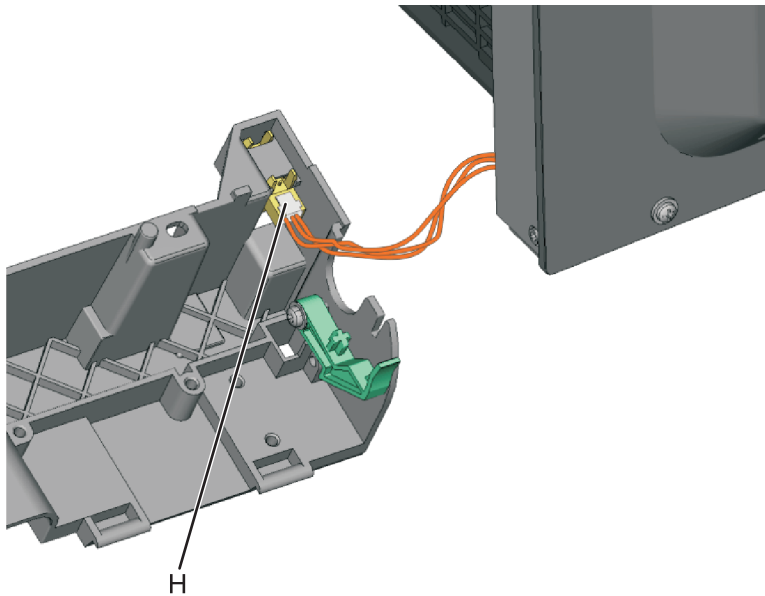
7 Next to screw (E), lift the right lower frame pin (F) out of the hole in the printer frame.



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



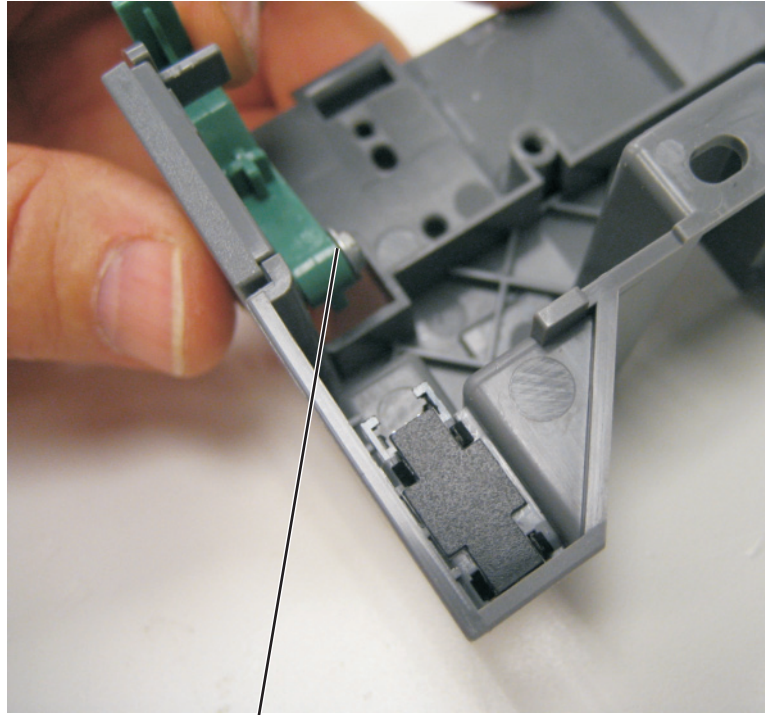
- 9 Disconnect the cable (H) from the tray present sensor.



- 10 Swing the rear of the lower frame away from the printer, and remove the right lower frame.

Note: There are parts in the right lower frame that are not included in the frame. The following instructions show how to remove them.

- 11** Remove the screw (L), and remove the spring bracket.



L(18B1236)

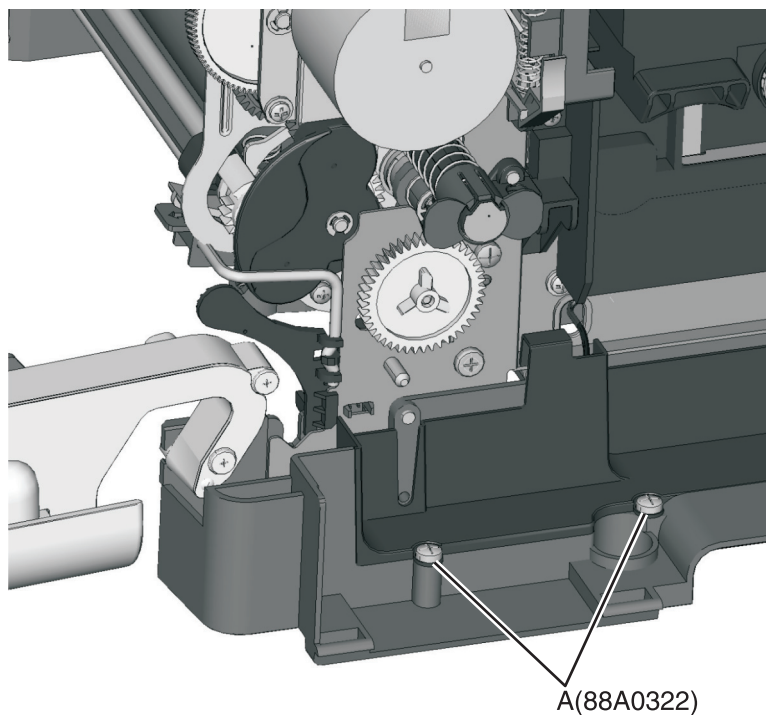
Note: For non-wireless models, remove the screw, and remove plate from your printer if it does not have a wireless antenna.

Installation notes:

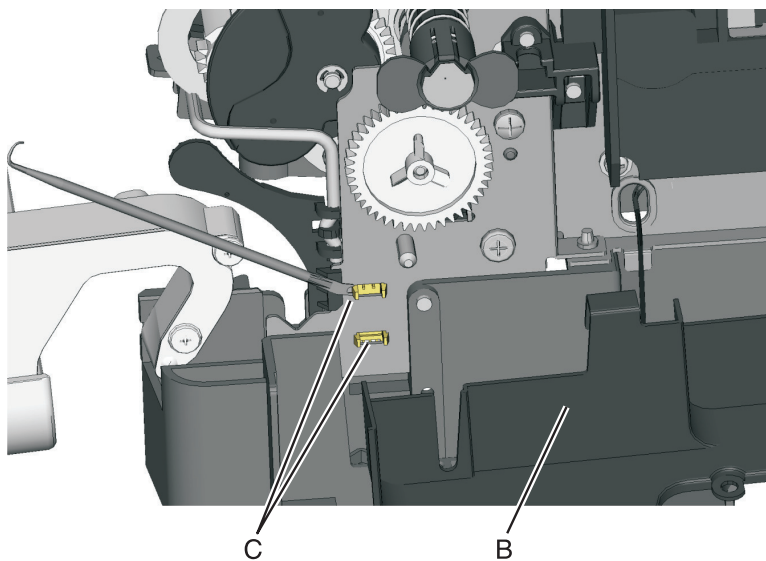
- a** Reinstall the spring bracket and the wireless antenna plate (or the blank plate).
- b** Connect the cable to the tray present sensor, and put the spring in place before installing the right lower frame.

Duplex sensor removal

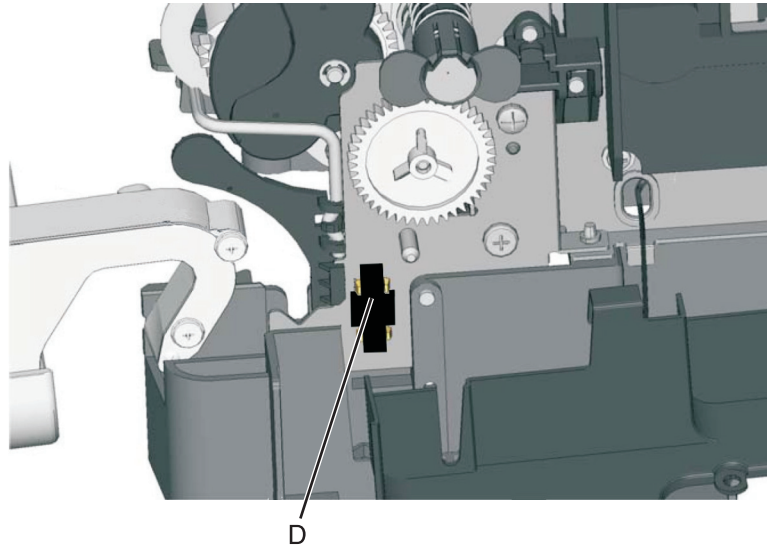
- 1 Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246](#).
- 2 Remove the two screws (A) from the cable cover.



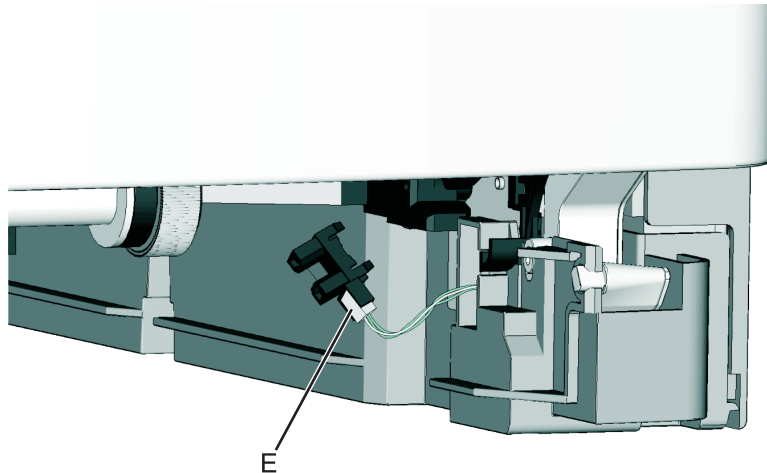
- 3 Pull the corner of the cable cover (B) away from the right side to access the two sensor posts (C).



- 4 Remove the sensor plate (D).



- 5 Push in on the latches to disconnect the duplex sensor from the printer.
- 6 Disconnect the cable (E) from the duplex sensor.



Installation notes:

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

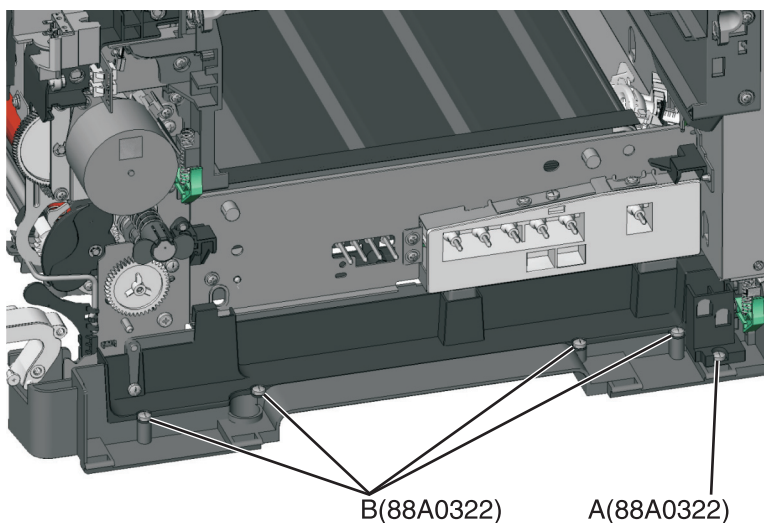
Tray present sensor removal

- 1 Remove the media tray.
- 2 Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246](#).

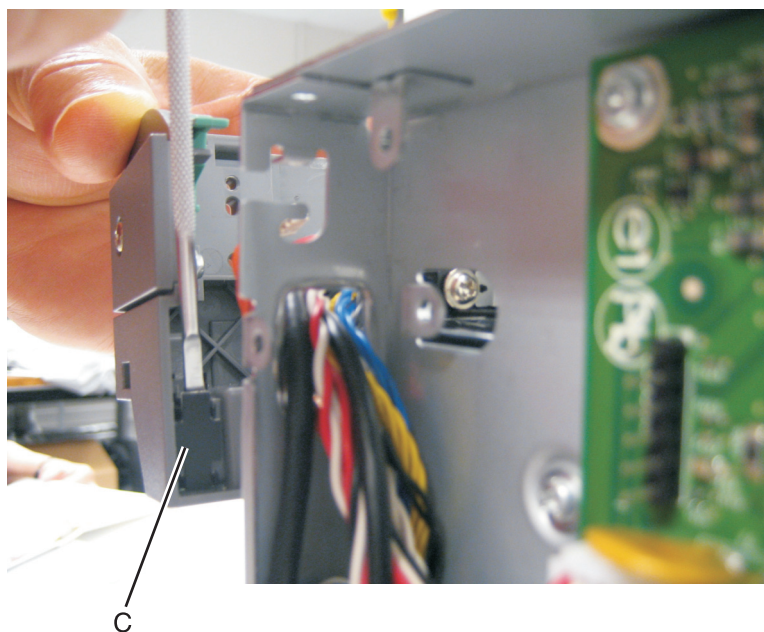
- 3 Remove the rear screw (A) in the waste toner bottle sensor contact to allow access to the cable cover.

Note: The waste toner bottle sensor contact does not need to be unplugged or removed.

- 4 Remove the four screws (B) from the cable cover, and remove the cable cover.



- 5 Remove the sensor retaining plate (C), and then pinch the latches together to remove the tray present sensor.



- 6 Disconnect the tray present sensor cable.

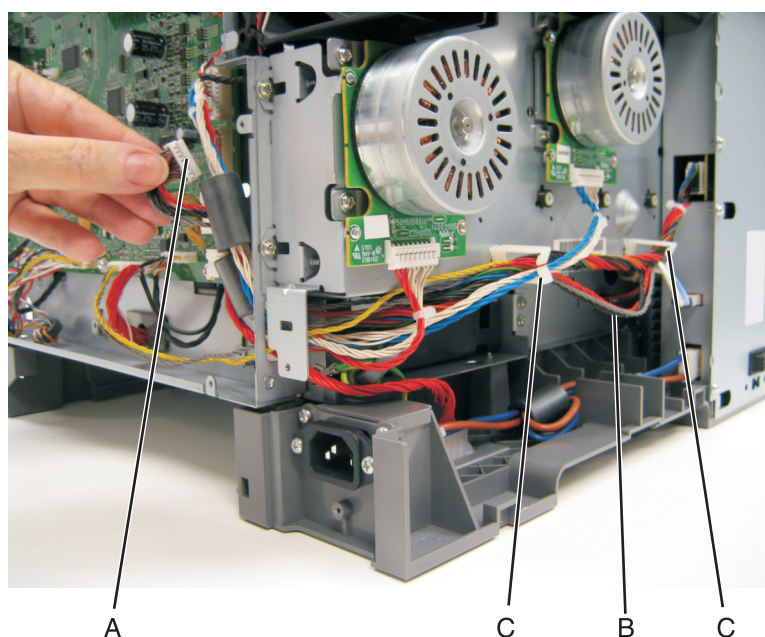
Installation notes:

- a Clean the contact surface where you removed the sensor retaining plate, or where you need to install the new one.
Install the sensor.
- b Remove the backing from the new plate, and place the plate on the surface between the sensor mounting posts.

- c Connect the cable to the tray present sensor.
- d Replace the spring.

Paper pick motor drive assembly standard tray removal

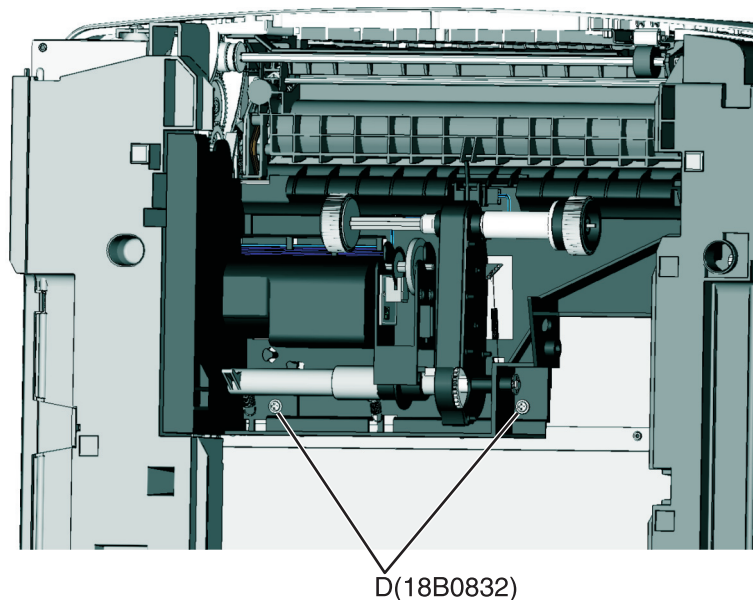
- 1 Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250](#).
- 2 Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246](#).
- 3 Remove the left cover assembly. See [“Left cover assembly removal” on page 219](#).
- 4 Remove the rear cover. See [“Rear cover removal” on page 290](#).
- 5 Disconnect the paper pick motor drive assembly cable connector (A) from JSP1 on the controller board.
- 6 Pull the cable (B) through the opening, and free the cables from their retainers (C) on the left.



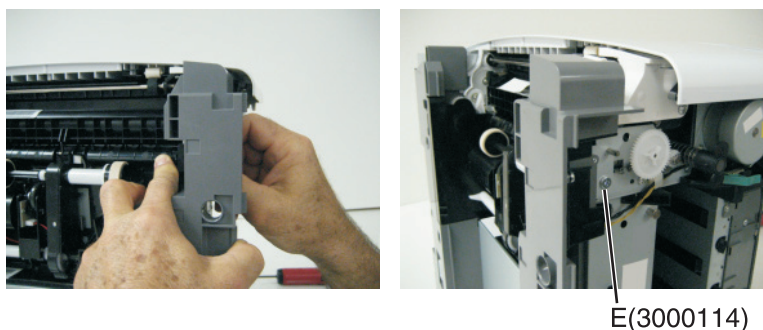
- 7 Partially reinstall the rear cover to protect the controller board, and turn the printer so that the rear cover rests on the table. The bottom should be facing you.

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

- 8 Place the printer on its rear, and remove the two screws (D) from the bottom.



- 9 On the right side, loosen the screw (E) with a screwdriver, and hold the paper feed roller assembly in place as you use your fingers to remove the screw.



- 10 Move the right side of the paper feed roller assembly out to free the shaft from the opening in the frame.

Note: Pay close attention to the location of the shaft and opening for reinstallation.

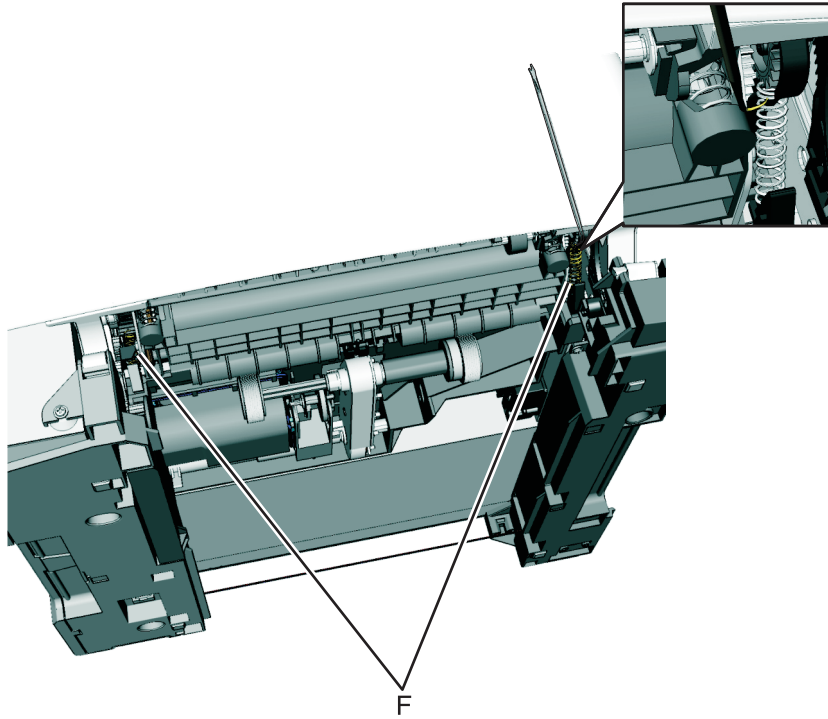
- 11 Remove the paper feed roller assembly.

Note: Be careful not to lose the springs.

Installation notes:

- a Place the left side of the paper feed roller assembly in the printer. Make sure the shaft on the left side aligns with the hole in the frame.
- b Install the left spring (F).
- c Reinstall the three screws holding the paper feed roller assembly to the printer.
- d Turn the printer to the proper upright position.
- e Reroute the cable, making sure to place the cables into the two retainers on the left side.
- f Remove the rear cover, and reconnect the cable.
- g Replace the rear cover.

h Install the right spring (F).

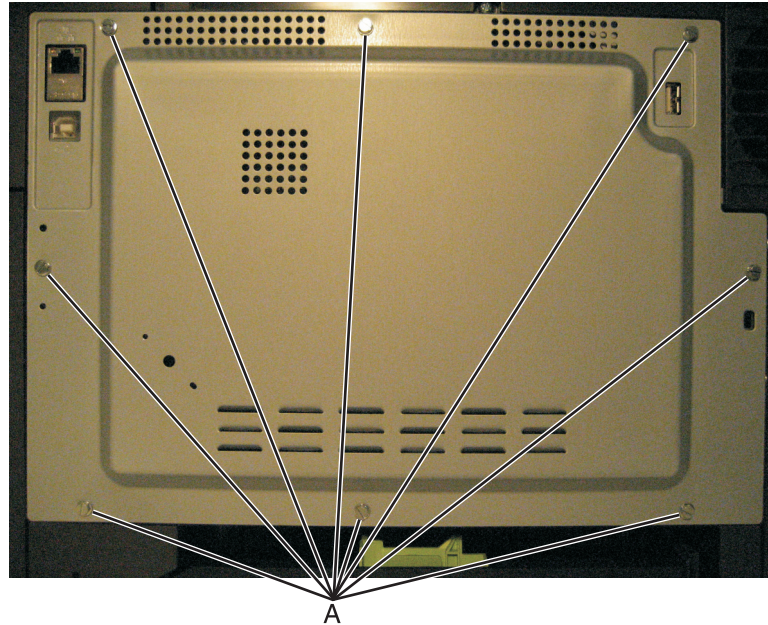


Rear side removals

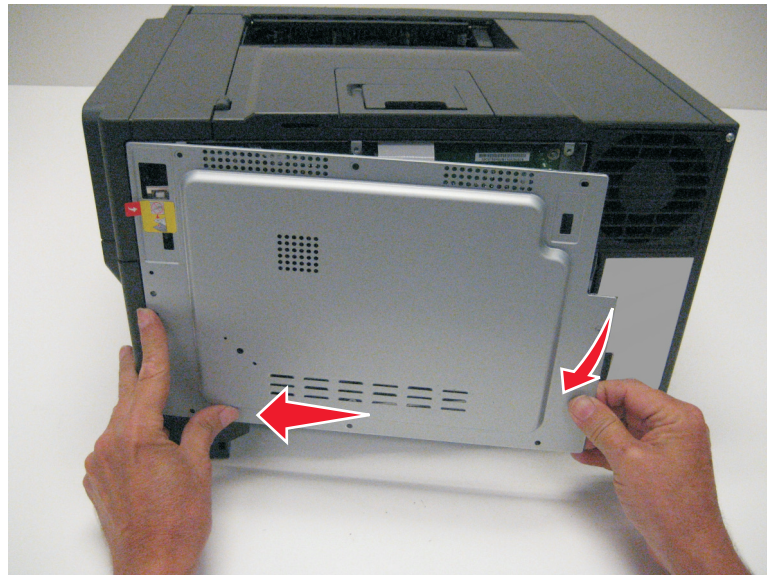
Rear cover removal

Note: The rear cover is not a field replaceable unit (FRU).

- 1 Remove the eight screws (A).

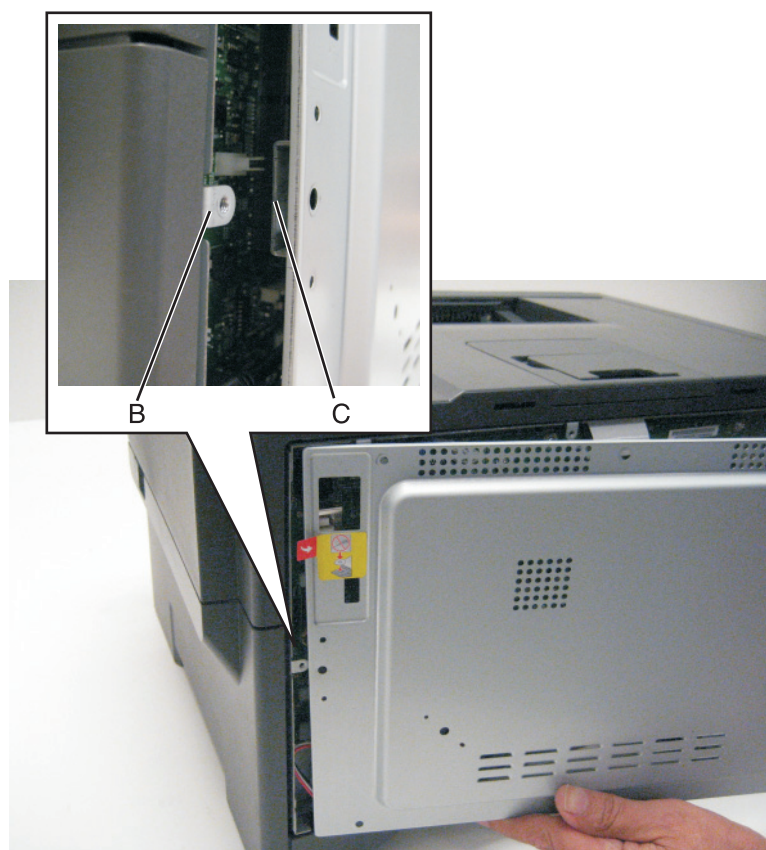


- 2 Swing the side of the cover out, and slide to the left to remove.



- 3 Remove the rear cover.

Installation note: When installing the rear cover, be sure that the bracket (B) is positioned behind the ear (C).



Controller board removal

Note: Back up the eSF solutions and settings before replacing the controller board. For more information, see [“Backing up eSF solutions and settings” on page 204](#).

CAUTION—SHOCK HAZARD: To avoid personal injury or printer damage after disconnecting the high-voltage power cable from the controller board, always check that the HVPS connection was not loosened. Make this check anytime you are working near the HVPS cable.

Warning—Potential Damage: Observe all ESD precautions while handling electrostatic discharge sensitive parts. See Handling ESD-sensitive parts on page 4-1.

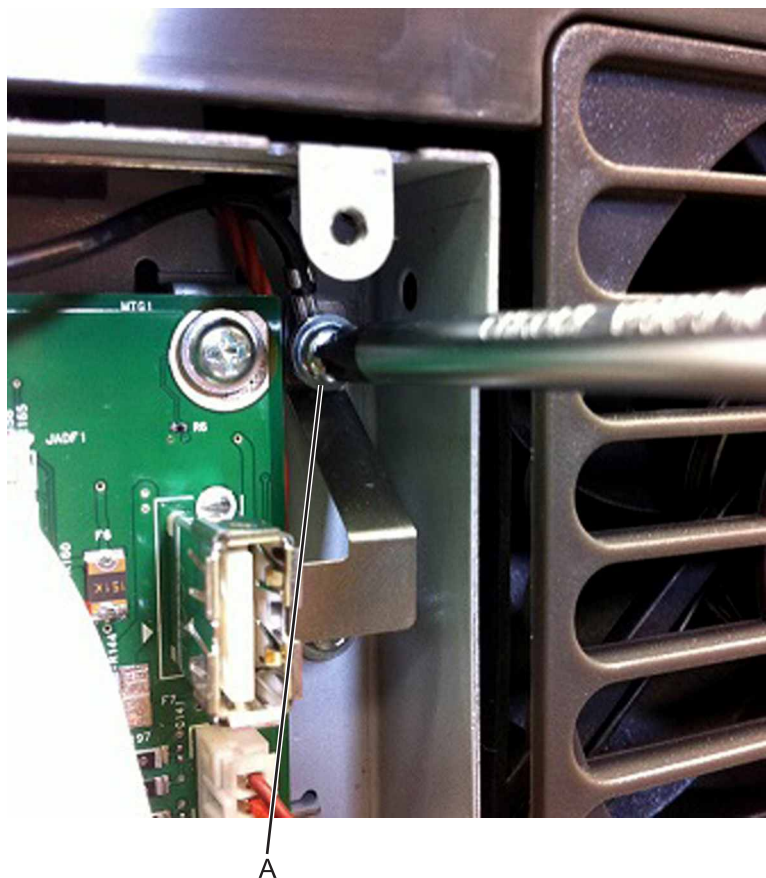
Warning—Potential Damage: Replace one of the following components, and perform a POR before replacing a second component. Never replace both of the components without performing a POR after installing each one, or the printer may be rendered inoperable:

- UICC
- Controller board

1 Remove the rear cover. See [“Rear cover removal” on page 290](#).

2 If the printer has a wireless card, then disconnect the JSC1 cable from the controller board.

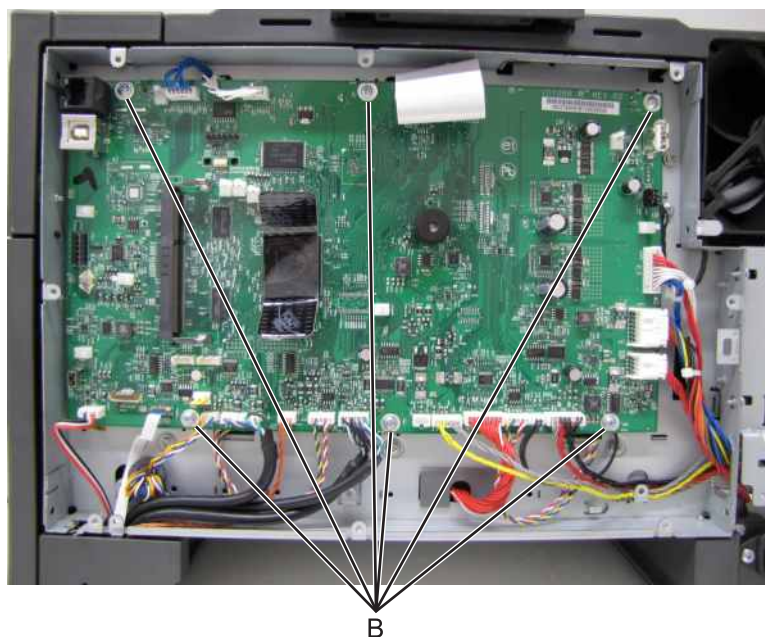
- 3 Remove the screw (A) securing the ground cable and USB ground contact on the controller board cage.



Installation note: Make sure to install the ground cable and USB ground contact on the controller board cage after installing a new controller board.

- 4 Disconnect all cables from the controller board, and then remove the six screws (B).

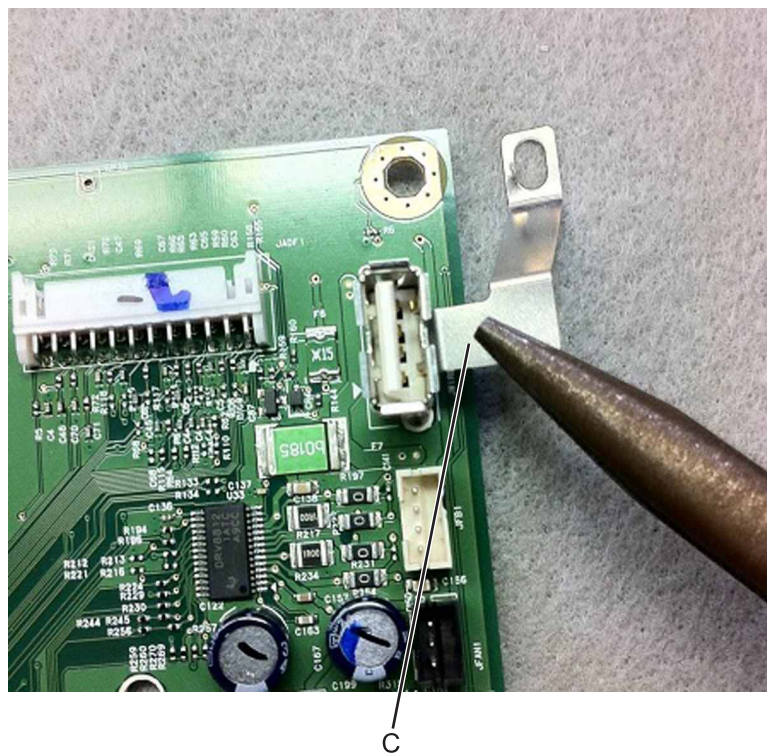
Note: Do not use tools when disconnecting the ribbon cables from the JPH1 and JLCD1 connectors on the controller board to avoid damage.



- 5 Remove the controller board.
- 6 Remove all USB grounding contacts (C) from the controller board.

Installation notes:

- Install the USB grounding contacts on the new controller board.



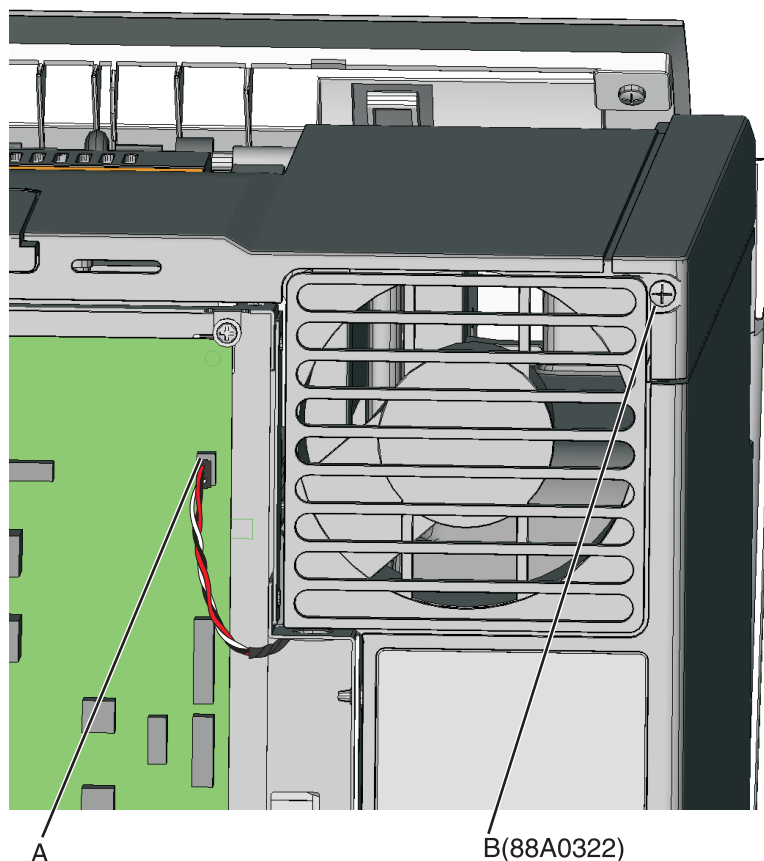
- After replacing the controller board, perform the motor detect test (see [“Motor Detect” on page 170](#)), and the printer configuration restoration (see [“Restoring the printer configuration after replacing the controller board” on page 199](#)).

Warning—Potential Damage: When replacing the controller board, verify that the cable from the high-voltage power supply is properly seated. The cable may have been loosened from the HVPS. Print a few pages to verify the installation. If the pages are blank, then confirm that the high-voltage power supply cable is properly seated. The connector may have been loosened at the HVPS. A blank page that should have toner on it could be an indication that toner is applied to the ITU belt but is not transferred. Therefore the toner goes into the ITU cleaner which cannot process massive amounts of toner. It is important to prevent extensive blank pages from being processed if they should have toner on them.

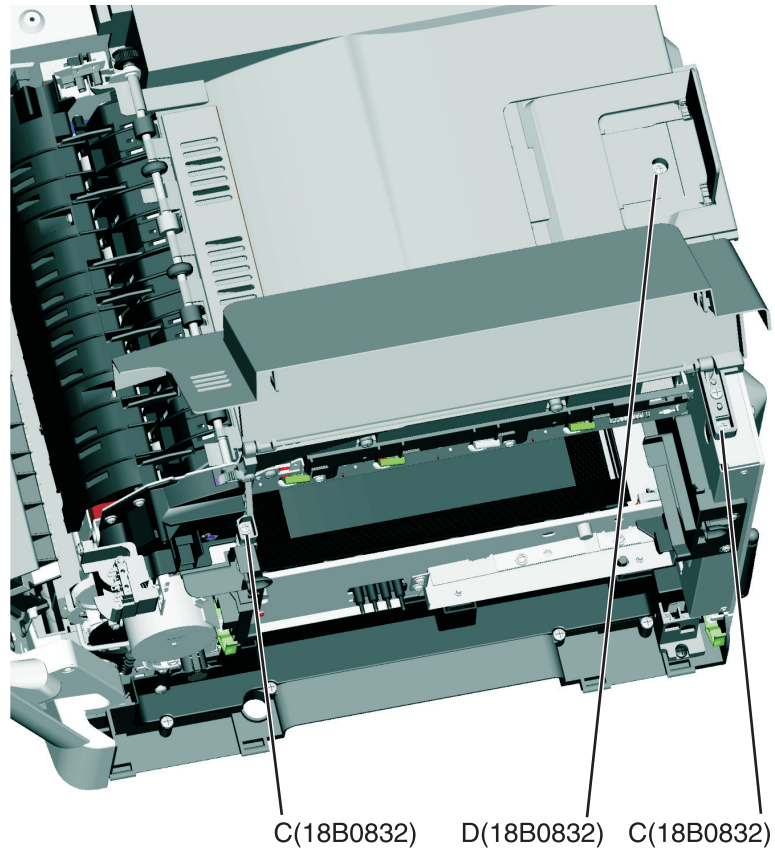
Top side removals

Top cover assembly removal

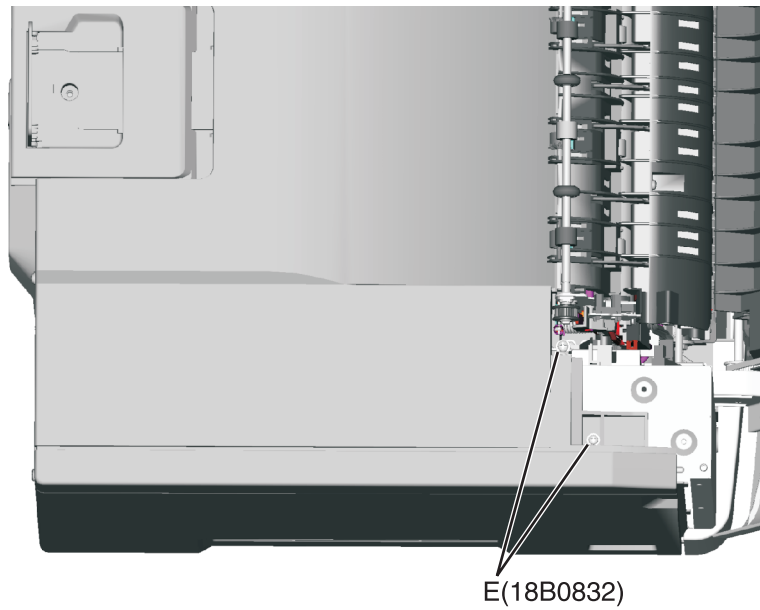
- 1 Remove the right cover assembly. See [“Right cover assembly removal” on page 232.](#)
- 2 Remove the waste toner bottle. See [“Waste toner bottle removal” on page 250.](#)
- 3 Remove the imaging unit. See [“Imaging unit \(IU\) removal” on page 246.](#)
- 4 Remove the rear cover. See [“Rear cover removal” on page 290.](#)
- 5 Disconnect the fan cable from JFAN1 (A) on the controller board, and remove the screw (B).



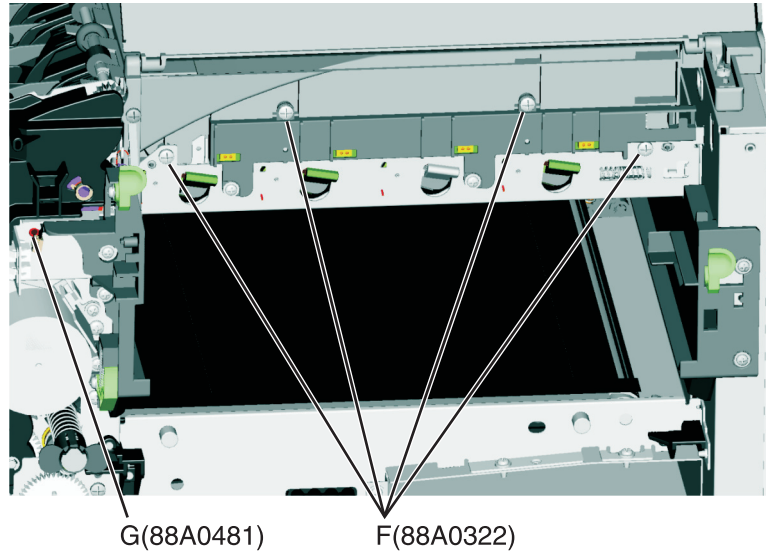
- 6 Remove the two screws (C), unroute the ground cable from the cover, and then lift to slide the paper stop to expose the screw (D). Remove the screw.



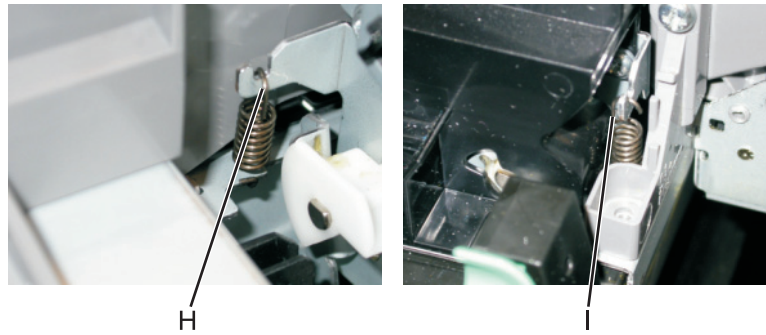
- 7 Remove the top two screws (E) near the front.



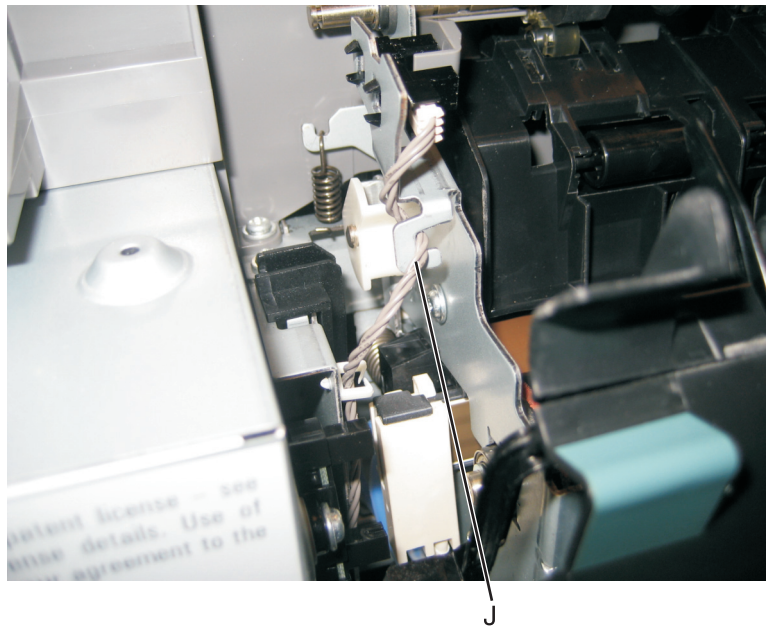
- 8** Remove the remaining four screws (F), and the fuser screw (G).



- 9** Disconnect the left spring (H) and the right spring (I) from the fuser.



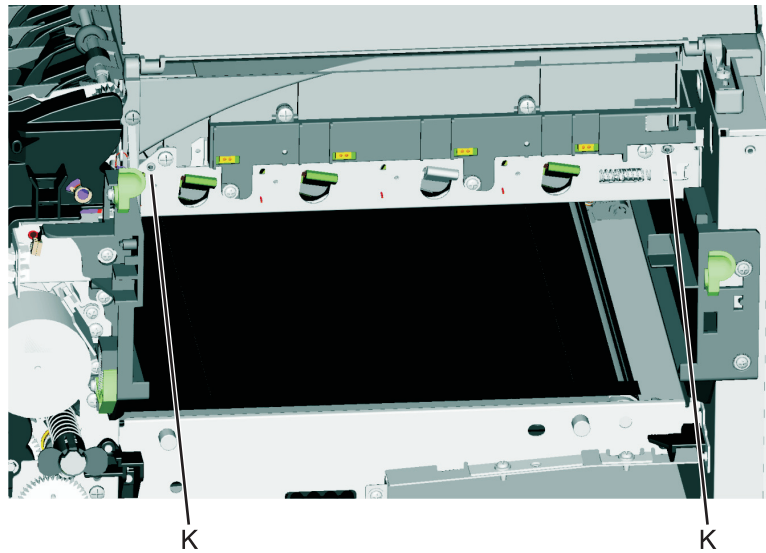
- 10** Unroute the bin-full/narrow media sensor cable (J) from its retainer.



- 11** Gently rotate the fuser away from the top cover, and let it rest.

Note: If the fuser needs to be propped up, then use something that will not move or shift. Avoid putting additional stress on the cables.

- 12** Push in on the cover above the locating pins (K) while lifting to disconnect the cover.

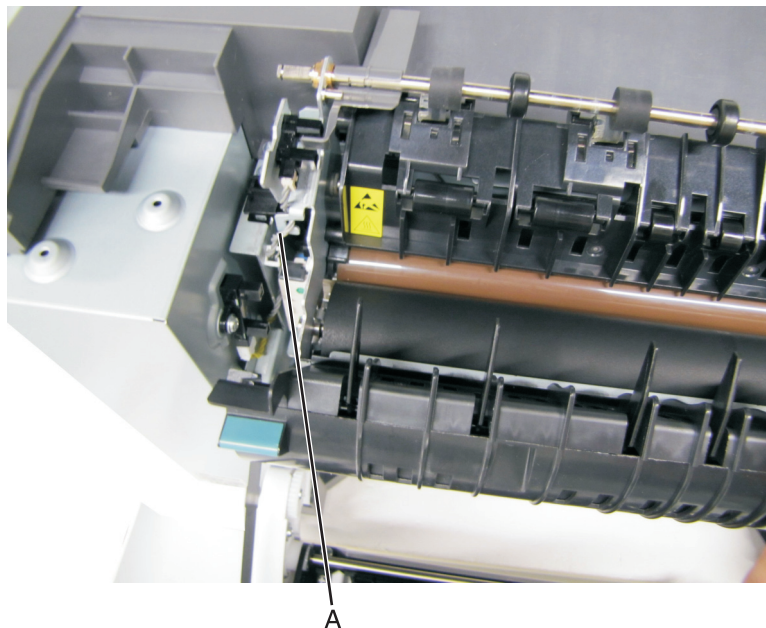


- 13** Carefully lift the cover while keeping it horizontal, and guide the fan connector through the opening.

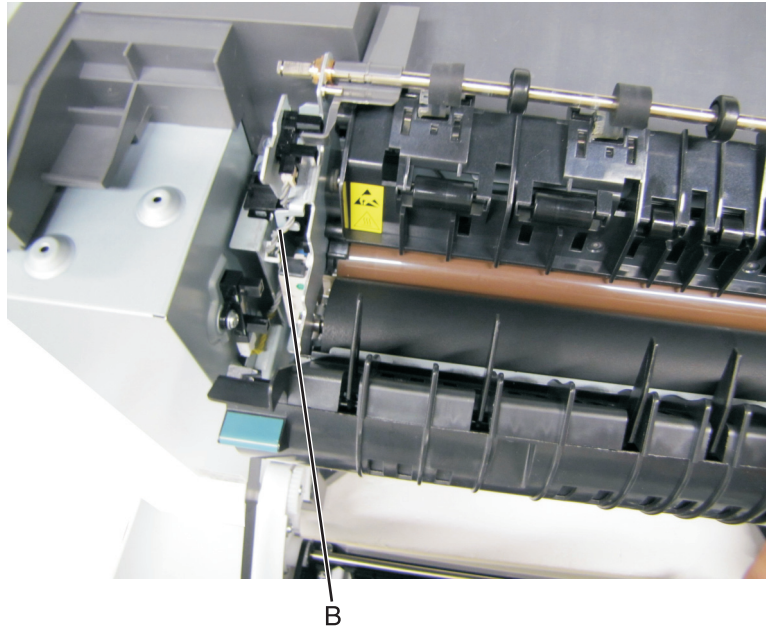
Bin-full/narrow media sensor removal

- 1** Open the front cover.
- 2** Unroute the cable (A) from its retainer.

Note: Be sure to pay close attention to the routing of the cable for re-installation.

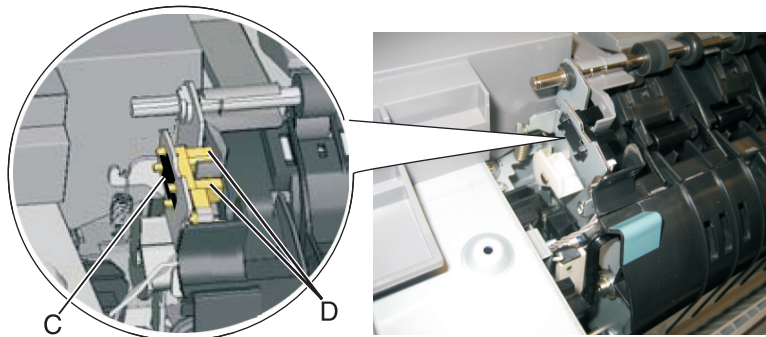


- 3 Disconnect the cable (B) from the bin-full/narrow media sensor.



- 4 Remove the sensor retaining plate (C).

- 5 Gently remove the sensor from the bracket by pressing in on the latches (D).

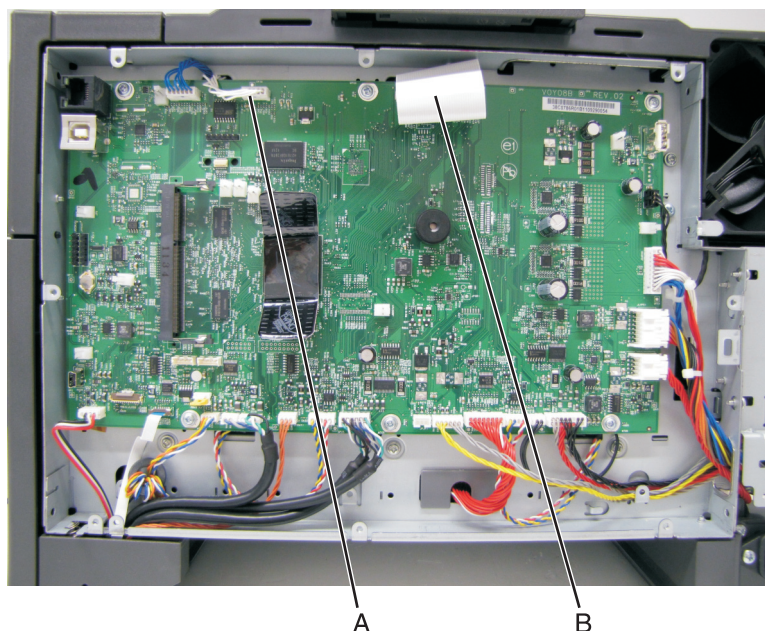


Installation notes:

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

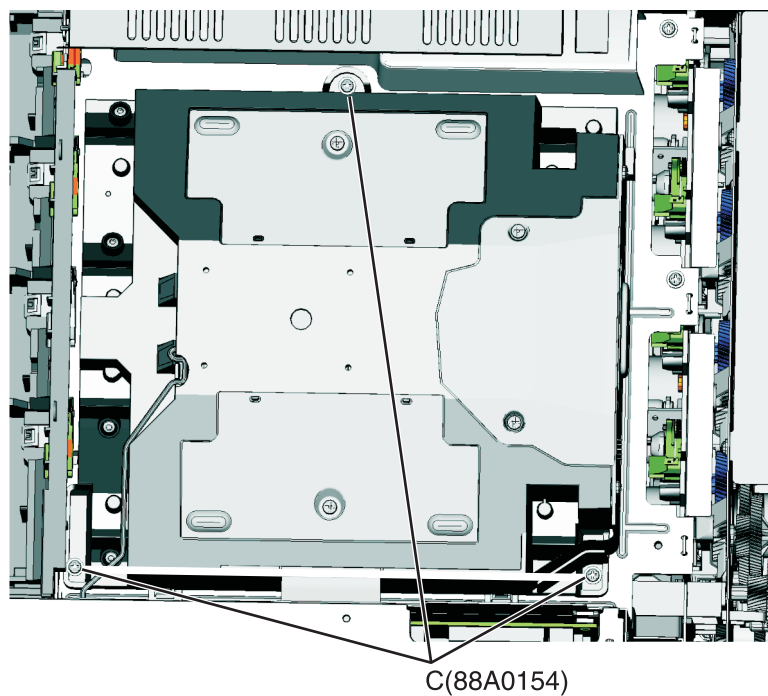
Printhead removal

- 1 Remove the top cover assembly. See [“Top cover assembly removal” on page 294.](#)
- 2 Disconnect the printhead cable (A) and the ribbon cable (B) from the controller board.



Note: Use care when disconnecting and handling the ribbon cable to prevent cable damage.

- 3 Remove the three screws (C).



- 4 Remove the printhead.

Installation notes:

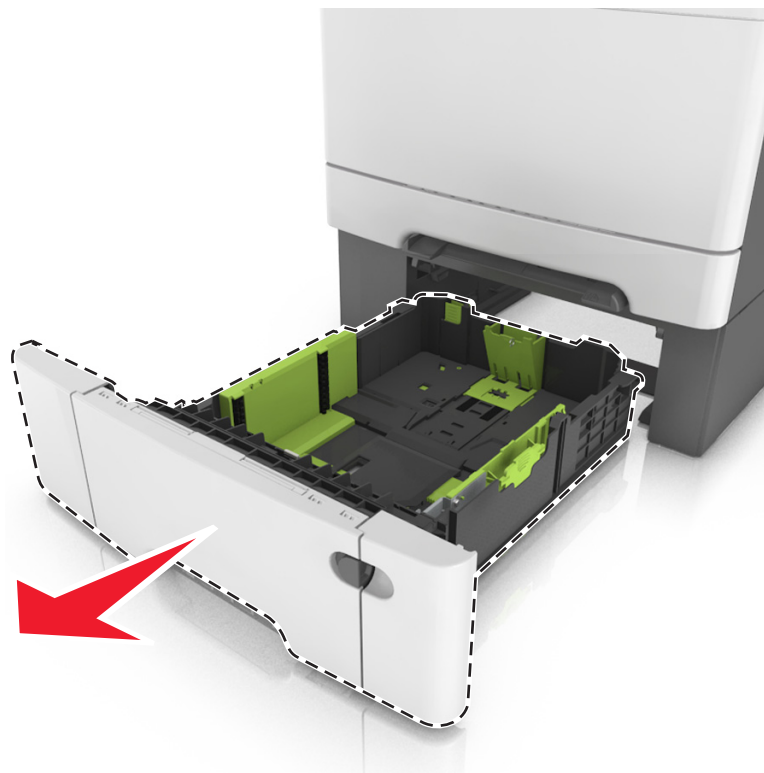
- When the printhead is replaced, perform the registration (black planes) and alignment (color planes). See [“REGISTRATION” on page 167](#) and [“Setting alignment for color” on page 169](#).
- Be sure to replace the toroid on the cable when you reinstall the printhead, and push the toroid between the connector and the top frame so that the weight is not supported by the cable.

Options removals

- [“650-sheet duo drawer tray assembly removal” on page 300](#)
- [“650-sheet duo drawer assembly removal” on page 301](#)
- [“Dust cover removal” on page 302](#)
- [“Pick tire removal” on page 303](#)

650-sheet duo drawer tray assembly removal

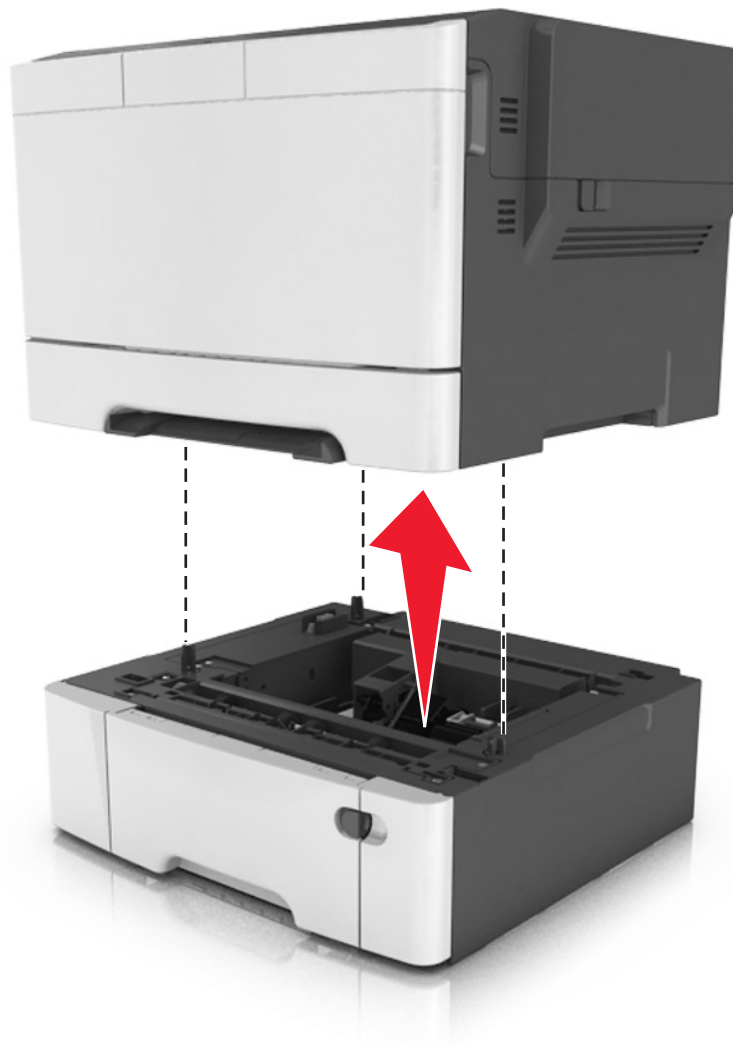
- 1 Pull out the drawer tray assembly.
- 2 Remove the tray assembly.



650-sheet duo drawer assembly removal

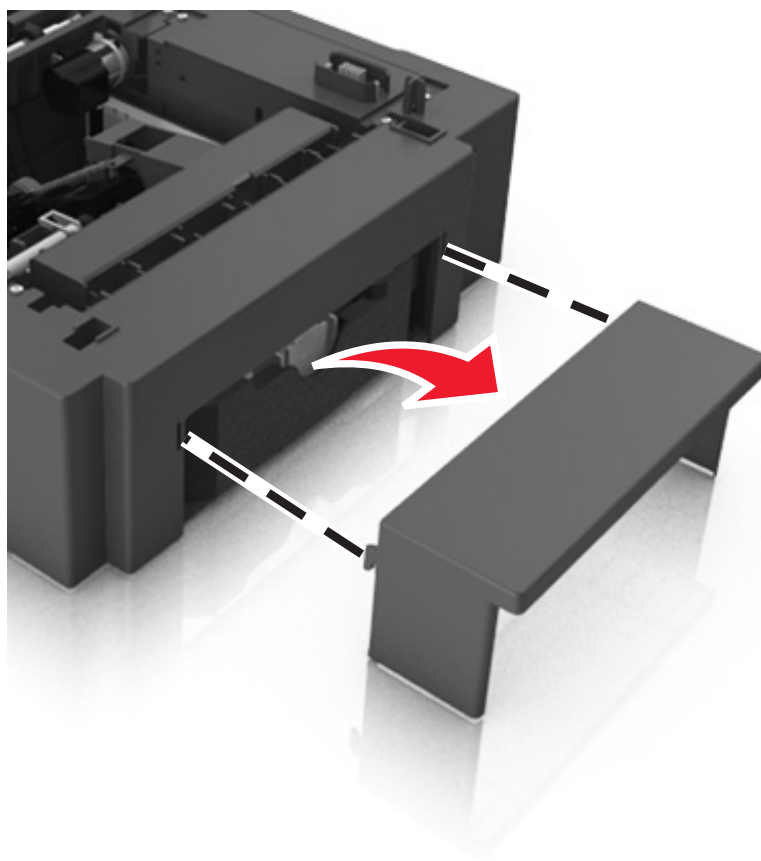
Warning—Potential Damage: Make sure the printer is turned off before removing the drawer assembly.

- 1 Carefully lift the printer, and set it aside on a flat surface.
- 2 Remove the 650-sheet drawer assembly.



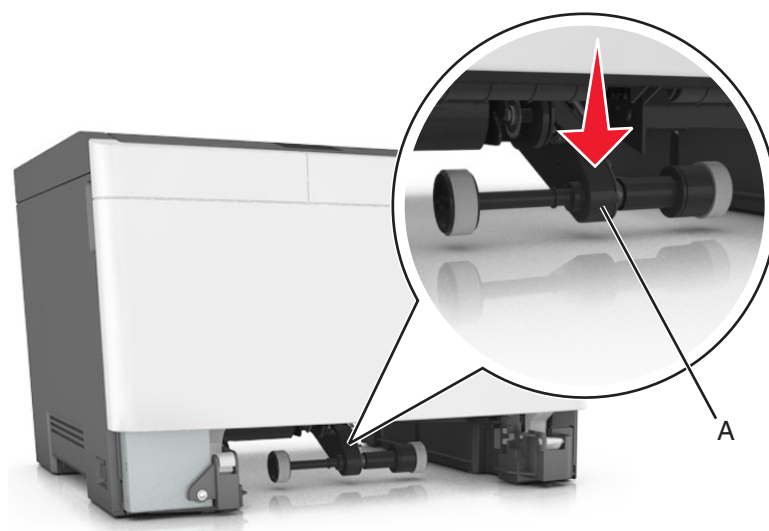
Dust cover removal

- 1 Slightly raise the dust cover.
- 2 Pull the dust cover to remove.

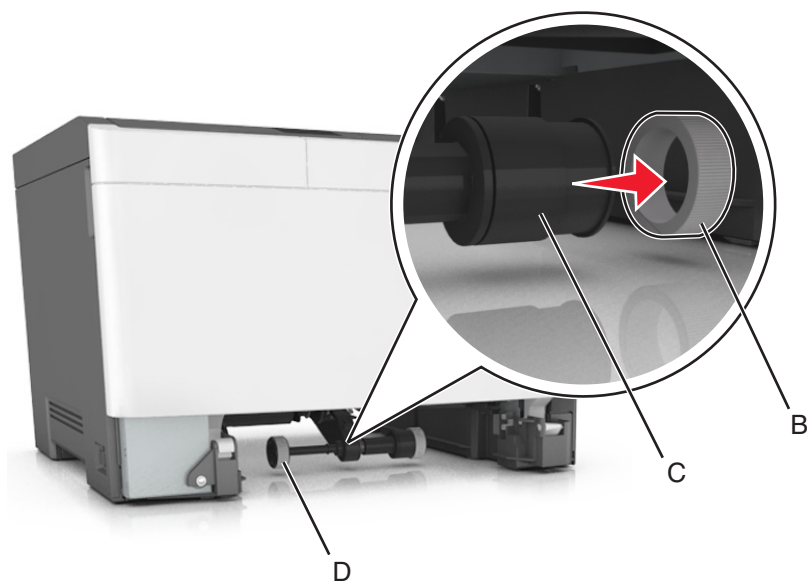


Pick tire removal

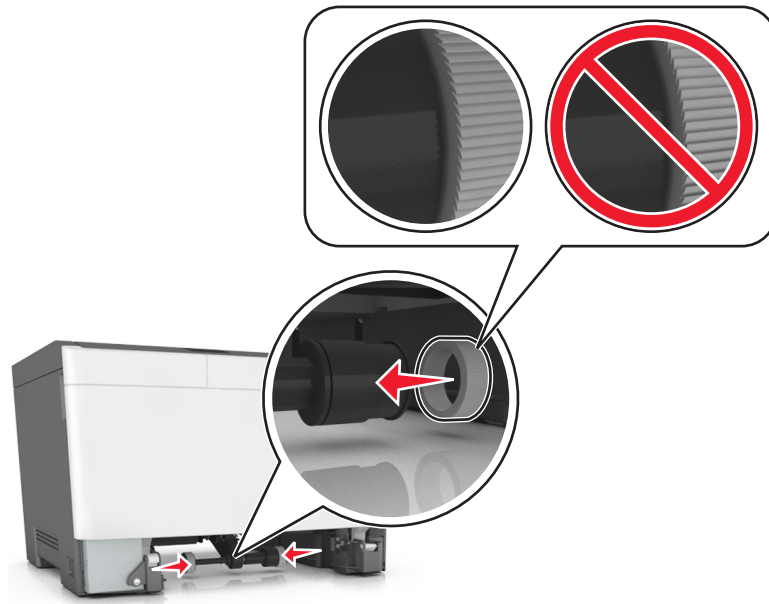
- 1 Remove the drawer tray assembly.
- 2 Lower the auto compensator mechanism (A).



- 3 Remove the rubber tires (B) from the pick roll assembly (C). Repeat for the other tire (D).



Installation note: Install the new rubber tire with its surface texture turning in the direction as shown.

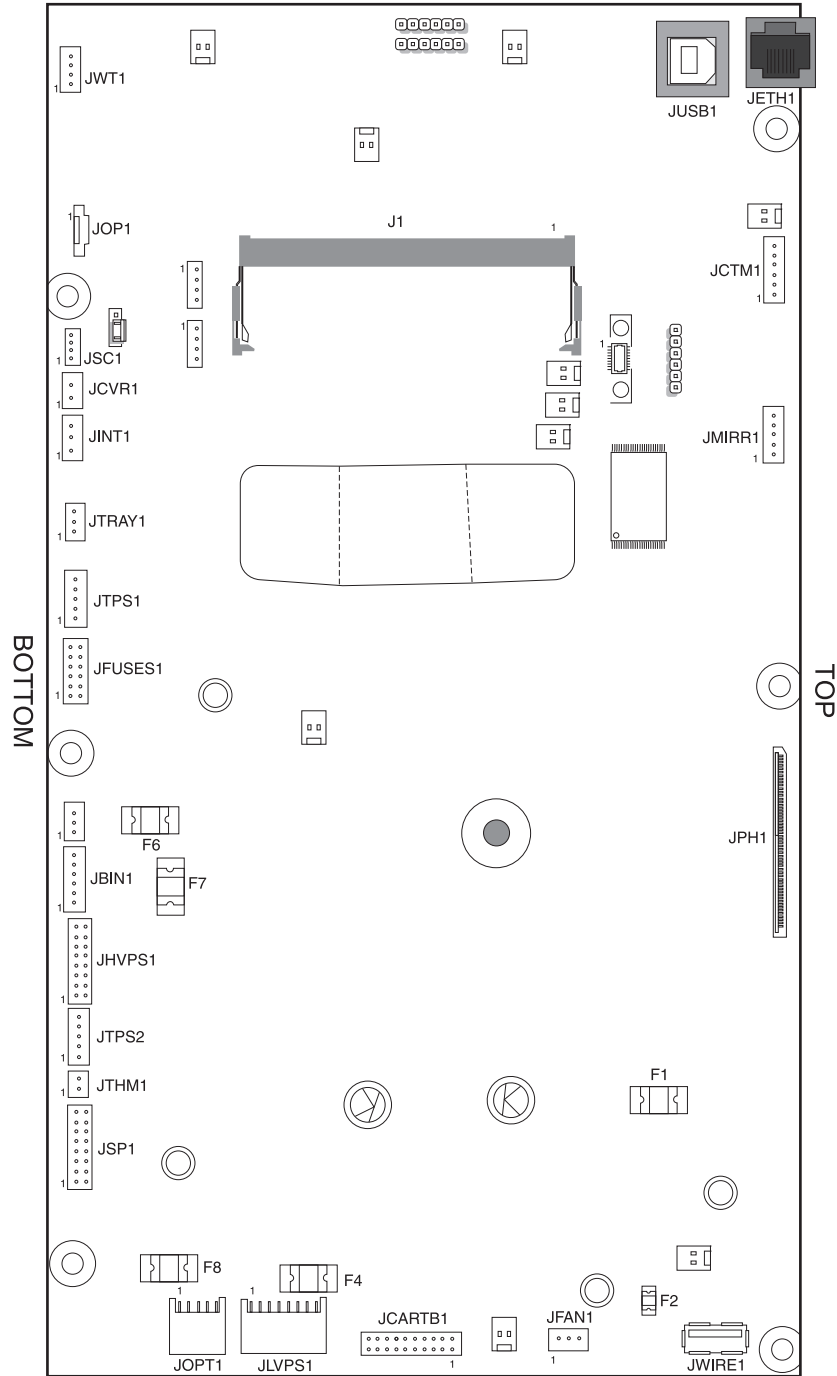


Note: Feel each rubber surface to verify it turns properly in the direction shown.

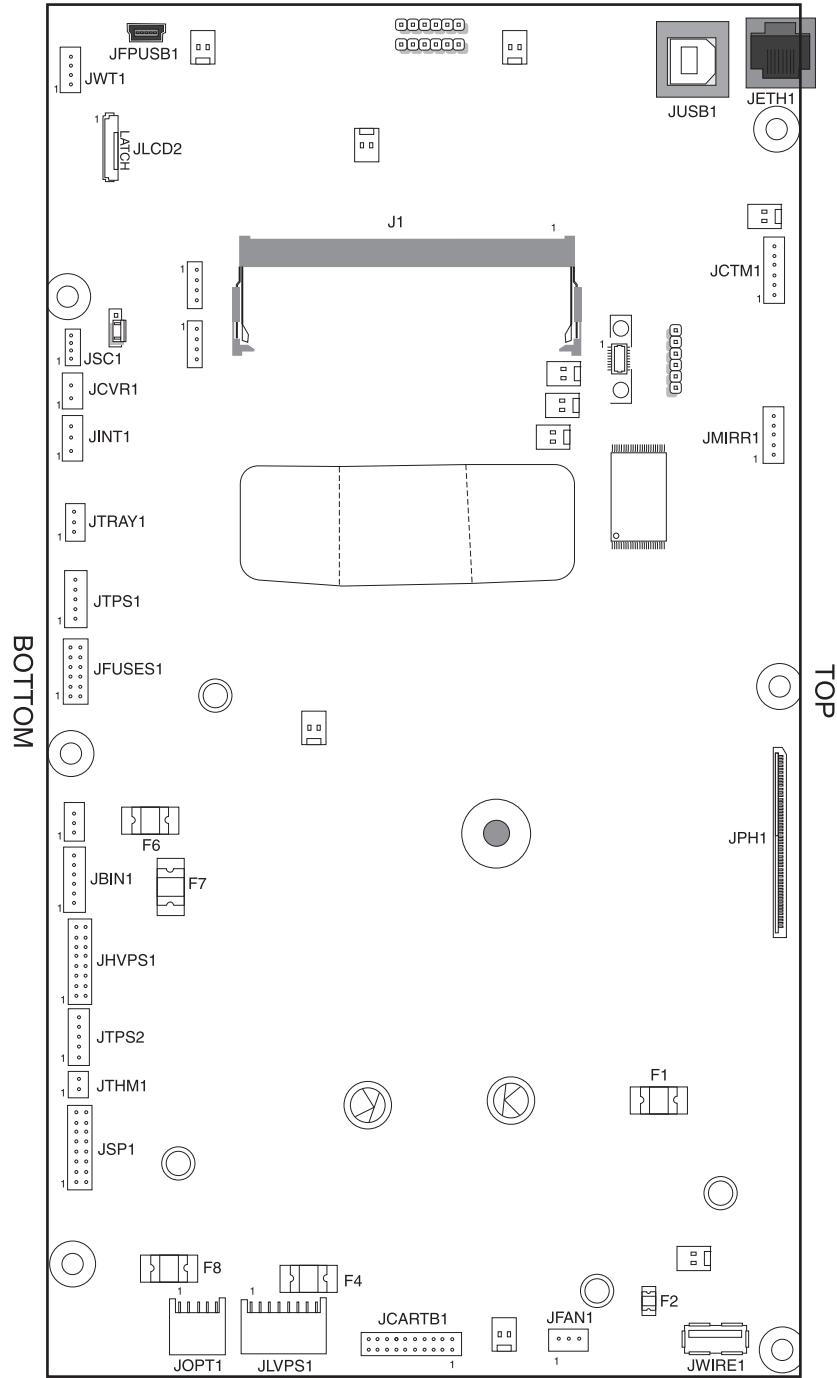
Component locations

Controller board connectors

CS310

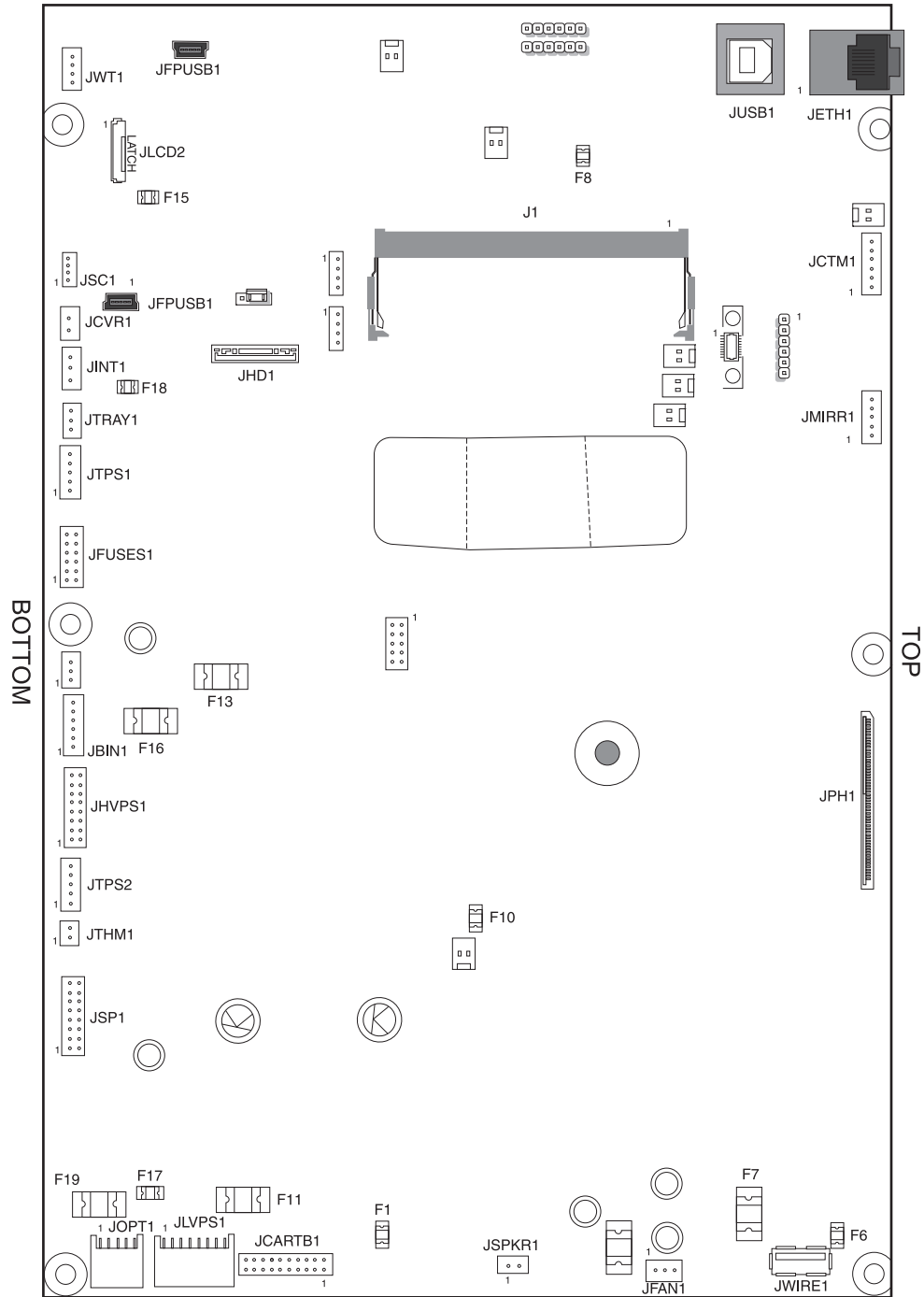


CS410



Component locations

CS510



Component locations

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

Connector	Connects to	Pin no.	Signal
JCVR1	Cover open switch	1	V_24V_CVR, +24 V dc
		2	COVER_OPEN (cover open +0 V dc; cover closed +24 V dc)
JFAN1	System fan	1	FAN_FG, +3.3 V dc
		2	Ground
		3	V_FAN_P3
JFUSES1	<ul style="list-style-type: none"> Fuser Motor pins—1–4 Thermistor—black wire 5–6 Duplex sensor (S1)—7–9 Thermistor—white wire 10–11 	1	V_FUSER_PHA+, +24 V dc (doors closed)
		2	V_FUSER_PHA–, +24 V dc (doors closed)
		3	V_FUSER_PHB+, +24 V dc (doors closed)
		4	V_FUSER_PHB–, +24 V dc (doors closed)
		5	FUSER_HQ_THM, +2.3 V dc
		6	FUSER_HK_THM_RTN, ground
		7	+5V_SW, +5 V dc
		8	Ground
		9	S1_MPF_SNS, +3.3 V dc
		10	BUR_THM, +2.5 V dc
		11	FUSER_BUR_THM_RTN, ground
		12	Ground, (no wire)
JHVPS1	Developer/transfer HVPS	1	M_DEV_PWM_OUT
		2	K_DEV_PWM_OUT
		3	C_DEV_PWM_OUT
		4	CMY_CHG)PWM_OUT
		5	Y_DEV_PWM_OUT
		6	K_CHG_PWM_OUT
		7	CMY_SRVO_OUT, +3.3 V dc
		8	ITM_TX_PWM_OUT
		9	CMY_TX_PWM_OUT
		10	ITM_SRVO_OUT, +3.3 V dc
		11	K_SRVO_OUT, +3.3 V dc
		12	K_TX_PWM_OUT
		13	+24 V dc
		14	Ground
		15	5V_HVPS_REF
		16	Ground

Connector	Connects to	Pin no.	Signal
JINT1	+5V safety interlock connector	1	VS_JINT-1, +5 V dc
		2	Ground
		3	VS_INT, +5 V dc (door closed), 0 V dc (open)
JLCD2	Operator panel connector for CS410 and CS510 models	N/A	N/A
JLVPS1	Low-voltage power supply	1	+5 V dc
		2	Ground
		3	+5 V dc
		4	Ground
		5	+5 V dc
		6	Ground
		7	+24 V dc
		8	Ground
		9	+24 V dc
		10	Ground
		11	+24 V dc
		12	Ground
		13	RELAY_DRIVE
		14	ZERO_XING_IN
		15	HEAT1_ON
		16	Ground
JMIRR1	Mirror motor connector	1	MM_REFR
		2	MM_LOCK, +3.3 V dc
		3	MM_START
		4	Ground
		5	+24 V dc
JOP1	Operator panel connector for CS310 models only	N/A	N/A

Connector	Connects to	Pin no.	Signal
JOPT1	Optional—Tray(s)	1	TXD_PP
		2	Ground
		3	Ground
		4	RXD_PP
		5	+24 V dc
		6	Ground
		7	+5V_OPTIONS, +5 V dc
		8	S2
		9	Ground
		10	Ground
JPH1	Printhead flat cable connector		
JSC1	SC cartridge	1	+3.3 V dc
		2	DATA_SC, +3.3 V dc
		3	SCK_SC
		4	Ground
JSP1	Smart pick drive (paper pick motor drive assembly) <ul style="list-style-type: none"> Encoder—pins 1, 3, 5, 7, and 9 Smart pick—pins 2, 4 Motor—pins 6, 8, 10, 12 Input (S2) sensor—pins 13–16 	1	ANODE (no wire)
		2	M1_OUT1, +24 V dc (0 V dc with door open)
		3	Ground (no wire)
		4	M1_OUT2, +24 V dc (0 V dc with door open)
		5	VCC, 5 V_SW
		6	Ground (no wire)
		7	Ground
		8	CATHODE
		9	VOUTA
		10	+5 V dc
		11	VOUTB
		12	5 V_SW
		13	Ground (no wire)
		14	ANODE
		15	+5 V dc
		16	Ground
JTHM1	TPS thermistor connector	1	TPS_THERM_SNS, +1.5 V dc
		2	TPS_SNS_RTN, ground

Connector	Connects to	Pin no.	Signal
JTPS1	TPS1 connector	1	CATHODE
		2	ANODE
		3	Ground (no wire)
		4	+5V_SW
		5	Ground
JTPS2	TPS2 connector	1	ANODE
		2	CATHODE
		3	Ground (no wire)
		4	+5 V_SW
		5	Ground
JTRAY1	Bottle sensors	1	+5V_SW
		2	DUPLEX_ENT, +5 V dc
		3	Ground
JUSB1 Port	USB connector	N/A	N/A
JUSBW1	USB wireless connector	1	Ground
		2	USB_HST_VP
		3	USB_HST_VM
		4	Ground
		5	+5 V dc
		6	+3.3 V dc
JWT1	Waste toner detection	1	SENSE
		2	VREF
		3	+1.5 V dc
		4	Ground (no wire)

Maintenance

- “Inspection guide” on page 313
- “Scheduled maintenance” on page 314
- “Preventive maintenance” on page 314
- “Lubrication specification” on page 315
- “Cleaning the printer” on page 315

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 tables to determine when specified parts should be Inspected:

Lexmark CS310, CS410, and CS510	Every service call	Every 85K	Notes
Media tray - All			
Media tray side guides	Inspect		Check for correct positioning
Media tray length guides	Inspect		Check for correct positioning
Transfer module (ITM)	Inspect	Replace	Ensure correct installation
Fuser	Inspect	Replace	Ensure correct installation
Media feeders - All			
Media tray pick tires	Inspect, clean if needed		Clean with a damp cloth
MPF pick tires	Inspect, clean if needed		Clean with a damp cloth
Paper path			
Duplex path rollers	Inspect		Check for media fragments and tears Check for excessive toner buildup on white rollers Clean with damp cloth if needed
Miscellaneous			
Toner spillage	Clean		Use a toner vacuum and cloth to remove all toner spillage from the printer

Scheduled maintenance

The operator panel displays the message *80* or *Scheduled Maintenance* when it reaches certain page counts. It is necessary to replace the appropriate maintenance kit at certain intervals to maintain the print quality and reliability of the printer. If needed, reset the maintenance counter after performing scheduled maintenance.

Maintenance kits

After 85,000 printed pages (sides) a maintenance kit may be required.

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

Part number and kit	Contents
40X7615—115V Maintenance Kit	<ul style="list-style-type: none"> • 115V fuser • ITU
40X7616—230V Maintenance Kit	<ul style="list-style-type: none"> • 230V fuser • ITU
40X7617—100V Maintenance Kit	<ul style="list-style-type: none"> • 100V fuser • ITU

When performing the scheduled maintenance procedure, the following areas should be cleaned of media dust and toner contamination:

- Media trays
- PC cartridge area
- Developer housings area
- Transfer roll area
- Duplex area
- Standard bin
- Bridge unit area (if equipped)
- Finisher media bins (if equipped)

Preventive maintenance

Between scheduled maintenance intervals, paper feed, paper transport, and image quality problems can occur. Some preventive maintenance procedures can help prevent issues like these.

Device-specific preventive maintenance

To clean the touchscreen and keypad, use the LCD cleaning cloth. A single two-step LCD cleaning cloth is stored in the compartment beneath the exit tray. Additional cleaning cloths are available.

The following table lists the parts needed to perform preventive maintenance:

Part number	Description	Maintenance interval
40X0392	LCD cleaning kit	As needed

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 the following lubricants:

- IBM no. 10 oil, PN/ 1280443 (Approved equivalents: Mobil DTE27, Shell Tellus 100, Fuchs Renolin MR30)
- IBM no. 23 grease
- Grease P/N 99A0394 and Nyogel type 744—Use this type of lubricant to lubricate the Fuser Drive Assembly.
- Nyogel 744—Use this type of lubricant to lubricate the ITU and Cartridge Drive Assemblies.

The motor drive FRUs contain the proper lubricant in the FRU. Use only the lubricant included.

Cleaning the printer

Cleaning the exterior of the printer

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



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

- 2 Remove paper from the standard exit bin.
- 3 Dampen a clean, lint-free cloth with water.

Warning—Potential Damage:

Do not use household cleaners or detergents, as they might damage the finish of the printer.

- 4 Wipe only the outside of the printer, making sure to include the standard exit bin.
- 5 Make sure the paper support and standard exit bin are dry before beginning a new print job.

Cleaning the printhead lenses

- 1 Open the front door.
- 2 Slide the release lever to the left to unlock the cover.
- 3 Open the cover.
- 4 Locate the printhead wipers.
- 5 Gently pull the printhead wiper out until it stops, and then slowly slide it back into place.
- 6 Close the cover.
- 7 Slide the release lever to the right to lock the cover.
- 8 Close the front door.

Parts catalog

- “Legend” on page 316
- “Assembly 1: Covers” on page 317
- “Assembly 2: Frames” on page 321
- “Assembly 3: Electronics” on page 323
- “Assembly 4: Cables and sensors” on page 327
- “Assembly 5: Media drawers and trays” on page 329
- “Assembly 6: Options and miscellaneous” on page 331

Legend

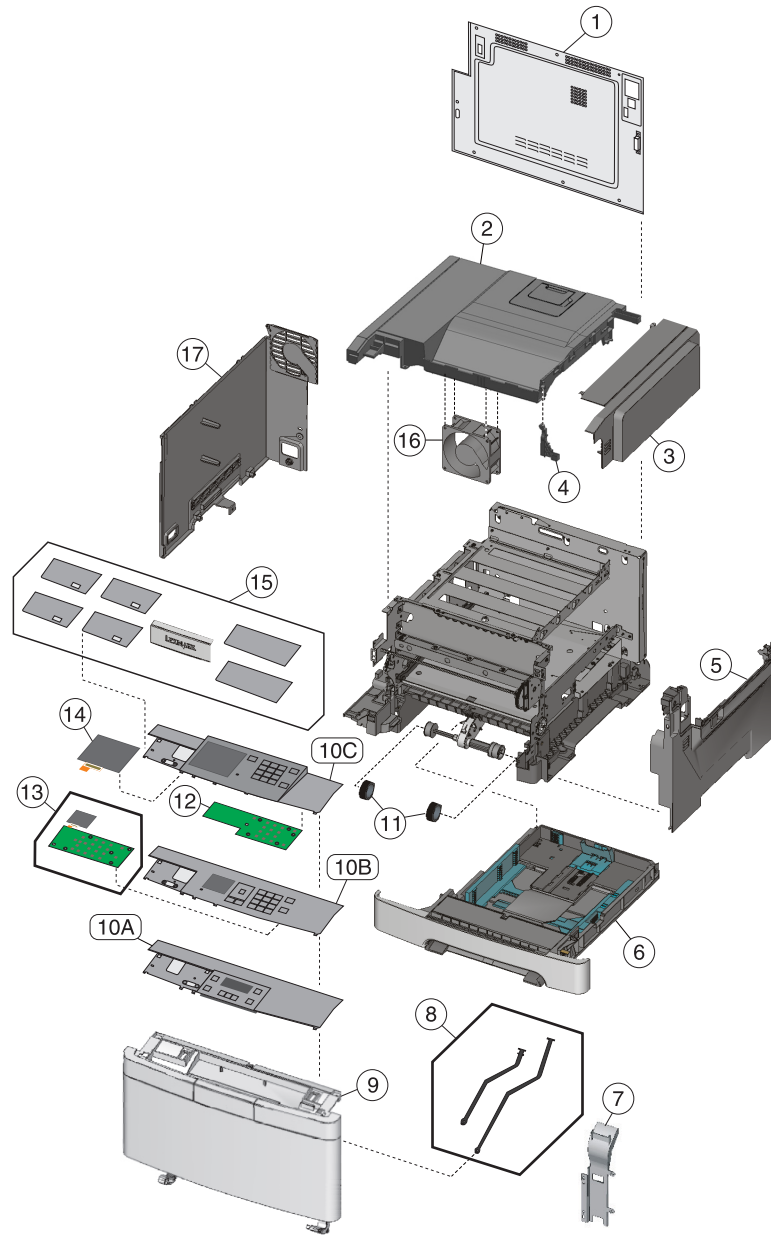
The following column headings are used in the parts catalog:

- **Asm-index**—Identifies the assembly and the item in the diagram. For example, 3-1 indicates Assembly 3 and item 1 in the table.
- **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/option**—Refers to the number of units in a particular option.
- **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

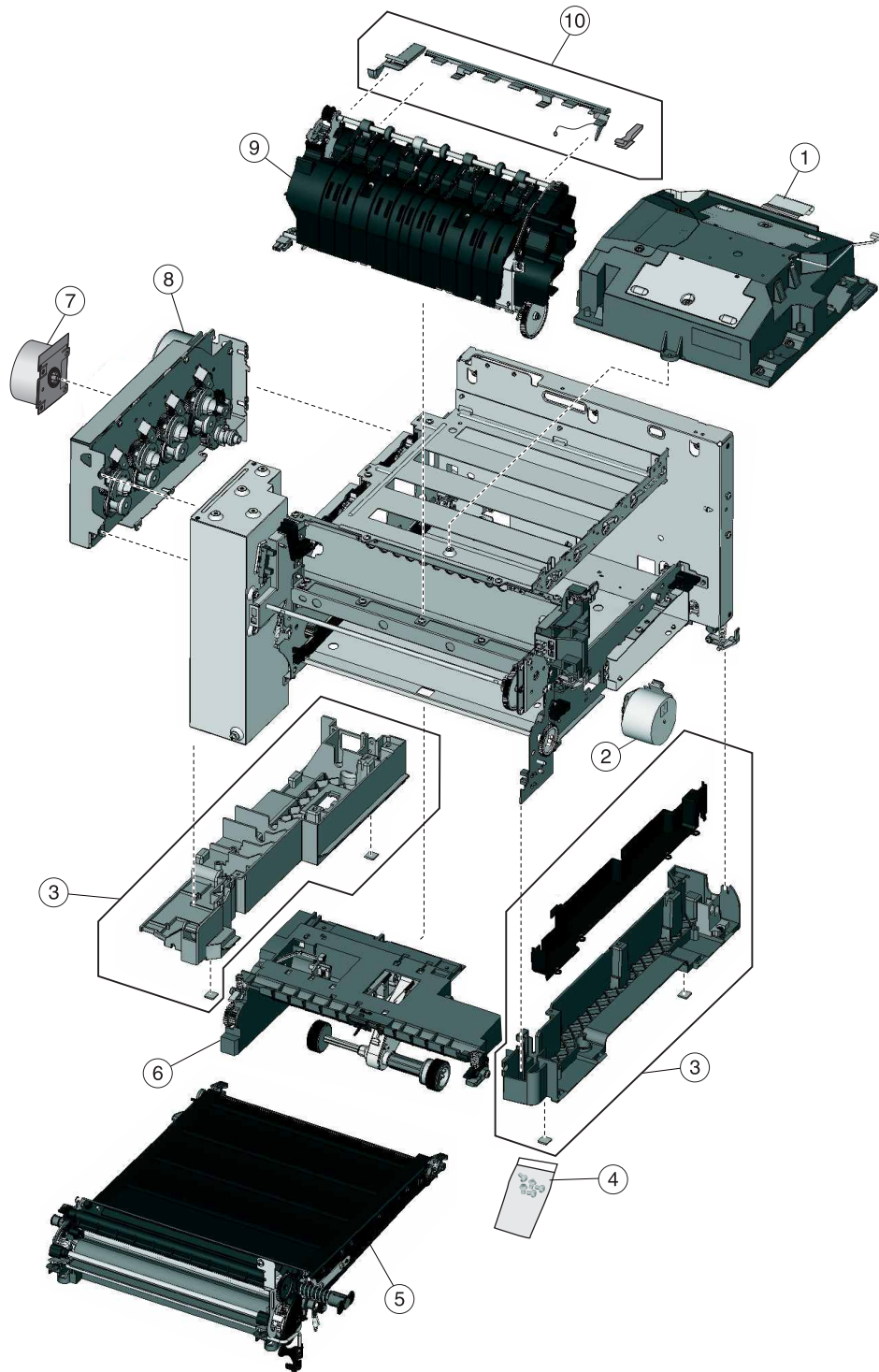


Assembly 1: Covers

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
1-1	40X7643	1	1	Controller board cover (CS310, CS410)	“Controller board removal” on page 291
1	40X7644	1	1	Controller board cover (CS510, C2132)	“Controller board removal” on page 291
2	40X7633	1	1	Top cover assembly	“Top cover assembly removal” on page 294
3	40X7621	1	1	Toner supply door	“Toner supply door removal” on page 233
4	40X9244	1	1	Bracket, front toner door pivot	N/A
5	40X7630	1	1	Right cover assembly	“Right cover assembly removal” on page 232
6	40X7645	1	1	250-sheet tray assembly	“Paper pick motor drive assembly standard tray removal” on page 287
7	40X5803	1	1	Duplex reference edge	“Duplex reference edge removal” on page 265
8	40X7619	2	2	Front cover straps	“Front cover assembly removal” on page 252
9	40X7635	1	1	Front cover assembly	“Front cover assembly removal” on page 252
10A	40X7638	1	1	Operator panel and display assembly (CS310)	“Operator panel removal (for CS310 models only)” on page 254
10B	40X7640	1	1	Operator panel (CS410)	“Operator panel removal (for CS410 models only)” on page 256
10C	40X7642	1	1	Operator panel (CS510, C2132)	“Operator panel removal (for CS510 models only)” on page 259
11	40X5168	2	2	Pick tires	“Pick tire removal” on page 303
12	40X7650	1	1	UICC card (CS510, C2132)	“Operator panel removal (for CS510 models only)” on page 259
13	40X7651	1	1	2.4” Display and UICC card (CS410)	“Operator panel removal (for CS410 models only)” on page 256
14	40X7116	1	1	4.3” Display	“Operator panel removal (for CS510 models only)” on page 259

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
15	40X7637	1	1	Operator panel bezel and name plates, including: <ul style="list-style-type: none"> • Bezel (1) • Name plates (4) • Logo plate (1) • CS310 cover (1) • CS310 cover (1) • CS510 USB cover (1) • CS510 USB cover (1) 	“Operator panel bezel removal” on page 254
16	40X7579	1	1	System fan	N/A
17	40X7632	1	1	Left cover assembly	“Left cover assembly removal” on page 219

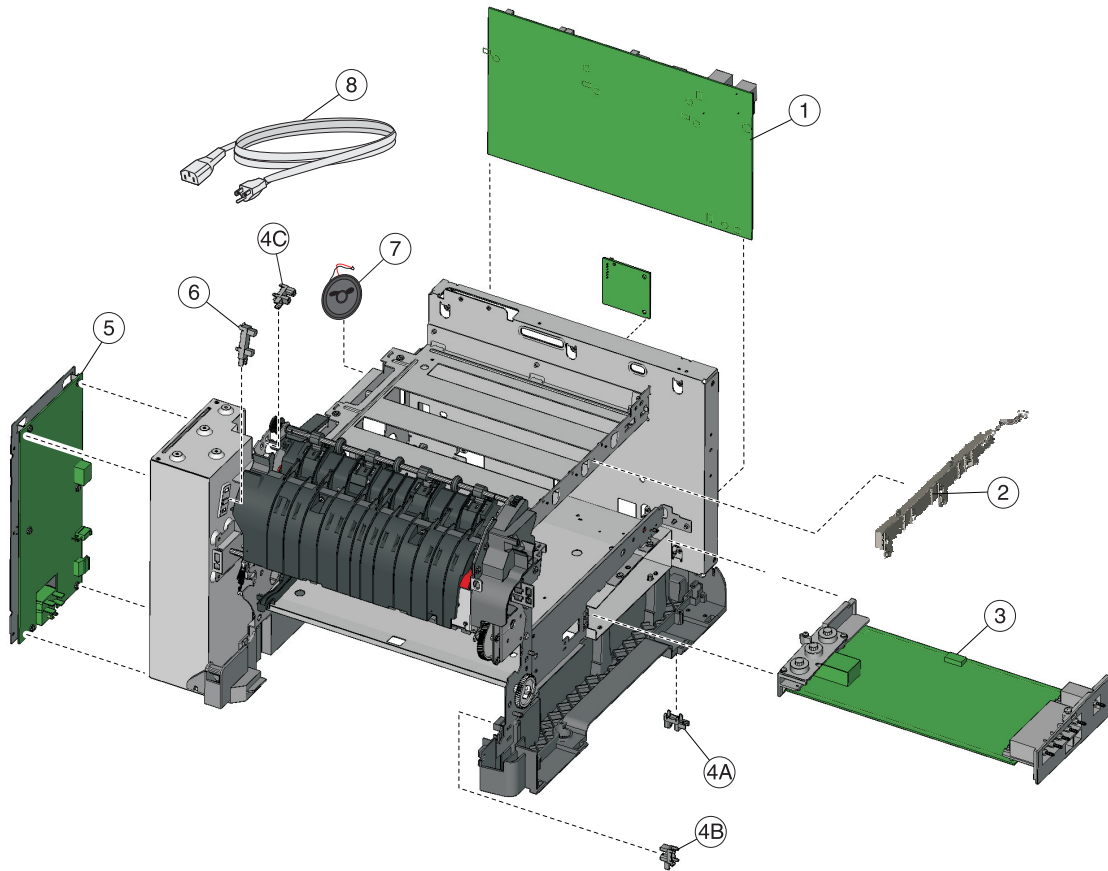
Assembly 2: Frames



Assembly 2: Frames

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
2-1	40X7627	1	1	Printhead laser	N/A
2	40X7629	1	1	Fuser drive motor assembly	“Fuser drive motor assembly removal” on page 234
3	40X7646	1	1	Lower left frame and lower right frame with cable cover	“Lower left frame removal” on page 273 , “Lower right frame removal” on page 280
4	40X7652	1	2X	Spring parts package <ul style="list-style-type: none"> • Tray-bias spring (2) • Fuser latch spring (2) • Image transfer unit front hold down spring (2) • Front cover latch spring (2) 	N/A
5	40X7610	1	1	Image transfer unit	“Image transfer unit (ITU) removal” on page 243
6	40X7614	1	1	Paper pick motor drive assembly, standard tray	“Paper pick motor drive assembly standard tray removal” on page 287
7	41X0001	1	1	Drive unit motor	“Drive unit motor removal” on page 220
8	40X7628	1	1	EP drive gear assembly, with motors	“EP drive assembly removal” on page 221
9	40X7622	1	1	Fuser assembly, 115 V	“Fuser assembly removal” on page 267
9	40X7623	1	1	Fuser assembly, 230 V	“Fuser assembly removal” on page 267
9	40X7624	1	1	Fuser assembly, 100 V	“Fuser assembly removal” on page 267
10	40X7649	1	1	Exit deflector assembly parts packet <ul style="list-style-type: none"> • Exit deflector • Bin-full/narrow media sensor flag • Right output bin deflector 	“Exit deflector removal” on page 269 , “Bin-full/narrow media sensor flag removal” on page 231 , “Right output bin deflector removal” on page 271

Assembly 3: Electronics

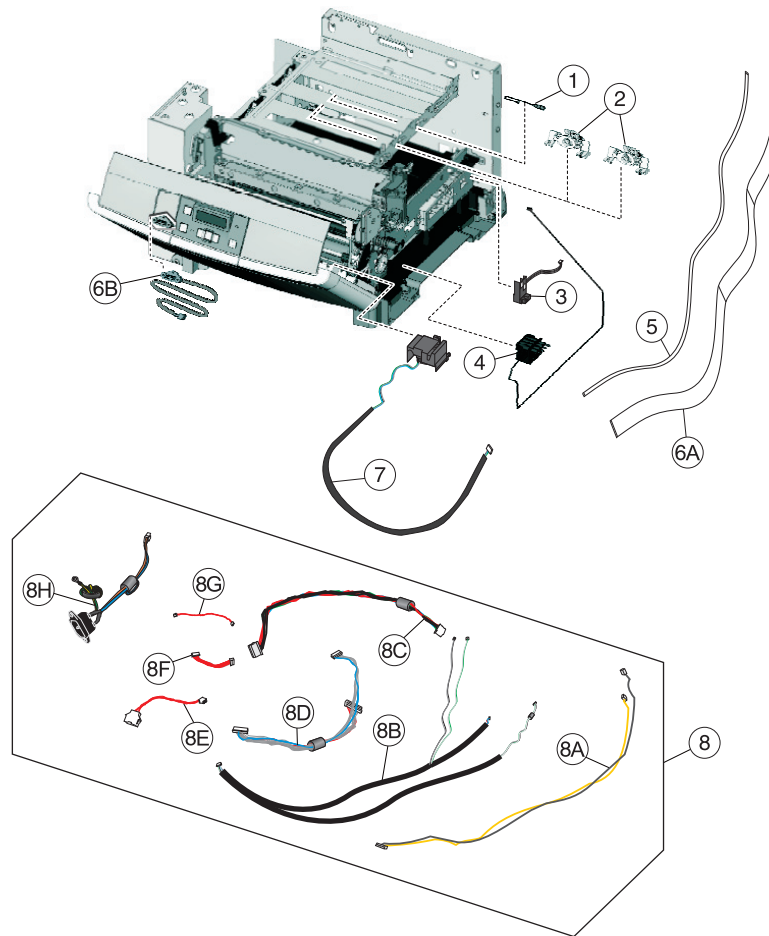


Assembly 3: Electronics

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
3-1	40X7613	1	1	Controller board (CS310)	“Controller board removal” on page 291
1	40X7612	1	1	Controller board (CS410)	“Controller board removal” on page 291
1	40X7611	1	1	Controller board (CS510, C2132)	“Controller board removal” on page 291
2	40X7620	1	1	Toner meter cycle card assembly	“Toner meter cycle (TMC) card removal” on page 234
3	40X7625	1	1	High-voltage power supply	“High-voltage power supply (HVPS) removal” on page 239
4	40X7301	3	1	Photo sensor and retainer (one per package), used for: <ul style="list-style-type: none"> • Tray present sensor (5A) • Duplex sensor (5B) • Bin-full/narrow media sensor (5C) 	“Tray present sensor removal” on page 285 , “Duplex sensor removal” on page 284 , “Bin-full/narrow media sensor removal” on page 297
5	40X7626	1	1	Low-voltage power supply (universal power supply)	“Low-voltage power supply (LVPS) assembly removal” on page 226
6	40X5413	1	1	Fuser exit sensor	“Fuser exit sensor removal” on page 228
7	40X7703	1	1	Speaker (CS510, C2132)	N/A
8	40X1766	1	1	Power cord, 2.5 m (straight): Bolivia, Peru	N/A
8	40X0269	1	1	Power cord, 2.5 m (straight): USA, Canada, APG, LAD	N/A
8	40X0288	1	1	Power cord, 2.5 m (straight): Argentina	N/A
8	40X0301	1	1	Power cord, 2.5 m (straight): Australia	N/A
8	40X4596	1	1	Power cord, 2.5 m (straight): Brazil	N/A
8	40X0273	1	1	Power cord, 2.5 m (straight): Chile, Uruguay, Italy	N/A
8	40X1774	1	1	Power cord, 2.5 m (straight): Denmark	N/A
8	40X0275	1	1	Power cord, 2.5 m (straight): Israel	N/A
8	40X3609	1	1	Power cord, 2.5 m (straight): Japan	N/A
8	40X1792	1	1	Power cord, 2.5 m (straight): Korea	N/A
8	40X3141	1	1	Power cord, 2.5 m (straight): Paraguay, Europe, Middle East, Indonesia, Africa (HV)	N/A
8	40X0303	1	1	Power cord, 2.5 m (straight): PRC	N/A
8	40X1773	1	1	Power cord, 2.5 m (straight): South Africa	N/A

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
8	40X1772	1	1	Power cord, 2.5 m (straight): Switzerland	N/A
8	40X1791	1	1	Power cord, 2.5 m (straight): Taiwan	N/A
8	40X0271	1	1	Power cord, 2.5 m (straight): United Kingdom	N/A
8	40X7229	1	1	Power cord, 2.5 m (straight): India	N/A

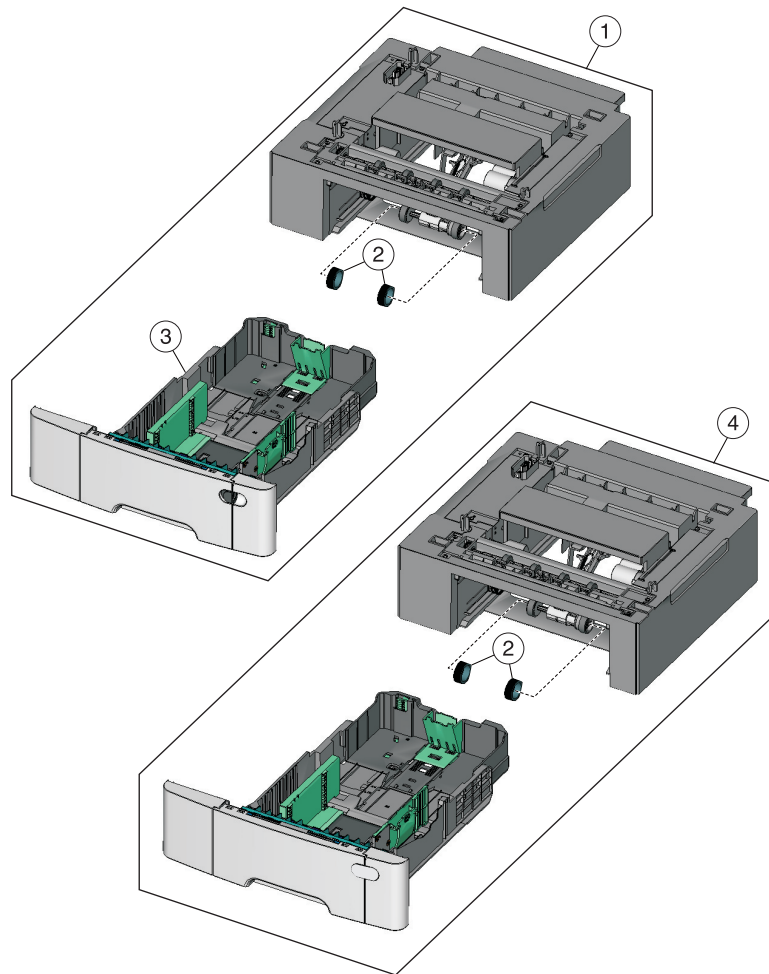
Assembly 4: Cables and sensors



Assembly 4: Cables and sensors

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
4-1	40X5429	1	1	Image transfer unit paper path thermistor	N/A
2	40X5414	2	1	Toner density sensors, left or right (one in package)	N/A
3	40X7046	1	1	Waste toner bottle sensor	N/A
4	40X7636	4	4	Toner cartridge contacts (Pogo pin)	N/A
5	40X7639	1	1	Operator panel cable (CS310)	N/A
6	40X7641	1	1	Operator panel and USB port cables packet <ul style="list-style-type: none"> Operator panel cable (CS410, CS510, C2132) (6A) USB port cable (6B) 	N/A
7	40X7618	1	1	Front and right side interlock switch cover assembly	N/A
8	40X7647	1	1	Cable packet, used for: <ul style="list-style-type: none"> Fuser exit/narrow media to controller board (8A) Fuser motor, thermistor, and duplex sensor to controller board (8B) LVPS to controller board (8C) CMY/K motors to controller board (8D) Tray 2 to controller board (8E) HVPS to controller board (8F) Tray present sensor to controller board (8G) AC power to LVPS (8H) Speaker cable (NS) 	N/A

Assembly 5: Media drawers and trays



Assembly 5: Media drawers and trays

Asm-index	P/N	Units/mach	Units/FRU	Description	Removal procedure
5-1	40X8089	1	0	Optional 650-sheet duo drawer (complete) (includes 100-sheet MPF)	“650-sheet duo drawer assembly removal” on page 301
2	40X5168	2	2	Pick tires	“Pick tire removal” on page 303
3	40X8091	1	1	650-sheet Duo Drawer tray assembly	“650-sheet duo drawer tray assembly removal” on page 300
4	40X8090	1	1	Optional 550-sheet drawer (complete) (CS410, CS510, and C2132 only)	N/A

Assembly 6: Options and miscellaneous

Asm-index	P/N	Units/opt	Units/FRU	Description	Removal procedure
6-NS	40X7615	1	1	115 V Maintenance kit (fuser, ITU)	N/A
NS	40X7616	1	1	230 V Maintenance kit (fuser, ITU)	N/A
NS	40X7617	1	1	100 V Maintenance kit (fuser, ITU)	N/A
NS	40X8555	1	1	256MB Flash memory card	N/A
NS	40X8568	1	1	Korean font card assembly	N/A
NS	40X8557	1	1	Simplified Chinese font card assembly	N/A
NS	40X8556	1	1	Traditional Chinese font card assembly	N/A
NS	40X8569	1	1	Japanese font card assembly	N/A
N/A	40X1368	1	1	USB Cable, packaged (2 m)	N/A
NS	40X7648	1	1	Screw packet, miscellaneous screws	N/A
NS	40X7445	1	1	2GBx32 DDR3 RAM	N/A
NS	40X7567	1	1	1GBx32 DDR3 RAM	N/A
NS	40X7857	1	1	160GB Hard drive (CS510, C2132)	N/A
NS	40X8572	1	1	Forms and bar code card assembly (CS410)	N/A
NS	40X8573	1	1	Forms and bard code card assembly (CS510, C2132)	N/A
NS	40X8574	1	1	Prescribe card assembly (CS410)	N/A
NS	40X8575	1	1	Prescribe card assembly (CS510, C2132)	N/A
NS	40X7061	1	1	Wireless printserver (external)	N/A
NS	40X8701	1	1	Relocation kit (CS310, CS410, CS510)	N/A

Appendix A: Printer specifications

- [“Power specifications” on page 333](#)
- [“Electrical specifications” on page 333](#)
- [“Operating clearances” on page 334](#)
- [“Acoustics” on page 336](#)
- [“Environment” on page 336](#)
- [“Processor” on page 337](#)

Power specifications

The average nominal power requirements for the base printer configuration are shown in the following table (power levels are shown in watts):

Note: Some modes may not apply to all models.

Printing states	Power
Off	0.0W
Sleep Mode	7W
Hibernate Mode	1W
Standby Mode	50W
Ready Mode	40W
Simplex printing	500W
Duplex printing	550W

Maximum current shown in amp ergs.

Notes:

- Using a power converter or inverter is not recommended.
- The CS310, CS410, and CS510 models are ENERGY STAR Qualified.
- All models ship with Sleep Mode set to On.

Electrical specifications

Low-voltage models

- 100 to 127 V ac at 50 to 60 hertz (Hz) nominal
- 90 to 137 V ac, extreme

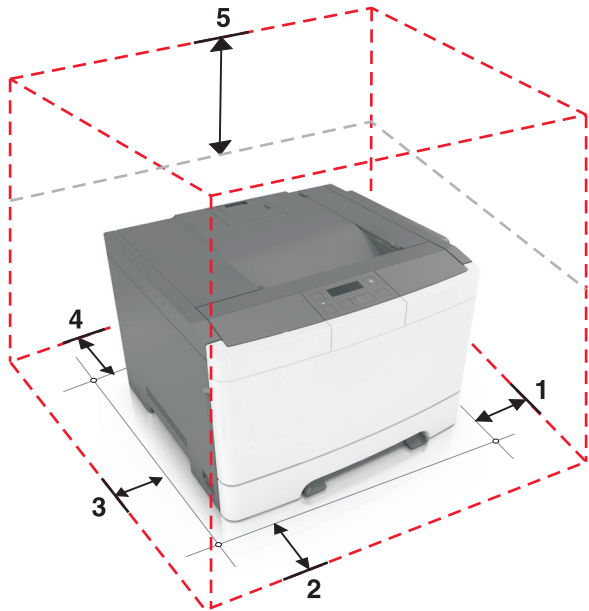
High-voltage models

- 220 to 240 V ac at 50 to 60 hertz (Hz) nominal (not available in all countries and regions)

Operating clearances

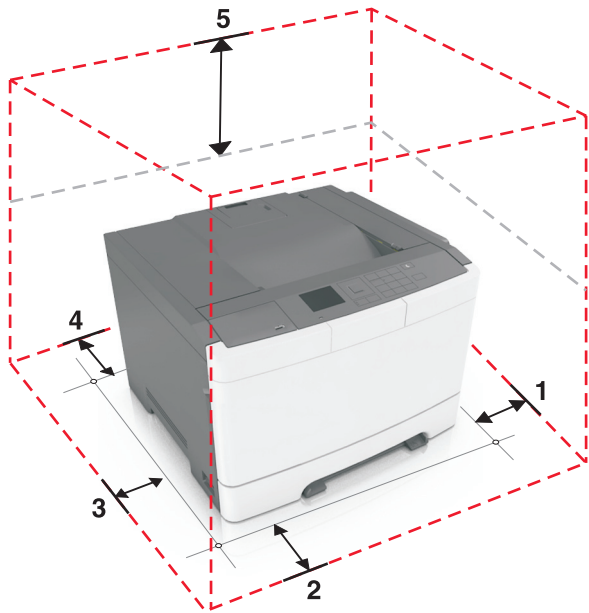
Note: Allow additional clearance around the printer for adding options, such as additional input trays.

CS310



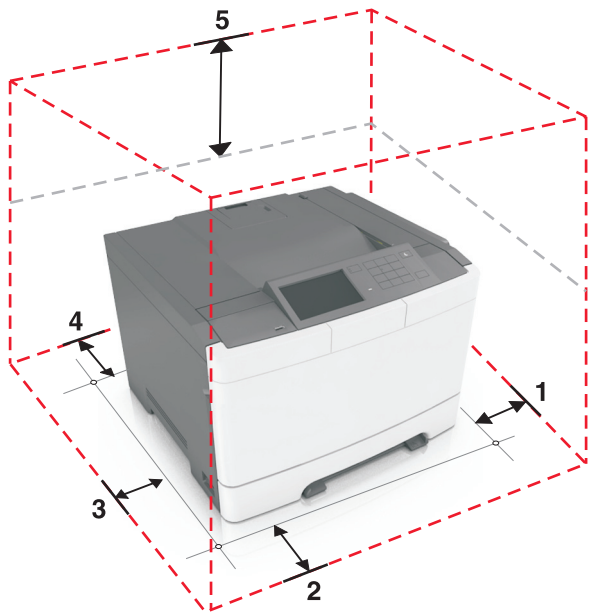
1	Right side	152.4 mm (6 in.)
2	Front	508 mm (20 in.)
3	Left side	76.2 mm (3 in.)
4	Rear	101.6 (4 in.)
5	Top	254 mm (10 in.)

CS410



1	Right side	102 mm (4 in.)
2	Front	508 mm (20 in.)
3	Left side	152 mm (6 in.)
4	Rear	102 mm (4 in.)
5	Top	254 mm (10 in.)

CS510



1	Right side	102 mm (4 in.)
2	Front	508 mm (20 in.)
3	Left side	152 mm (6 in.)
4	Rear	102 mm (4 in.)
5	Top	254 mm (10 in.)

Acoustics

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

Note: Some modes may not apply to all models.

Status	1-meter average sound pressure dBA
Printing	48 dBA
Ready	Inaudible

Status	1-meter average sound pressure dBA
Printing	50 dBA
Ready	Inaudible

Note: Values are subject to change. See <http://www.lexmark.com> for current values.

Environment

Printer Temperature and Humidity

- Operating
 - Temperature: 60 to 90° F (15.6 to 32.2° C)
 - Relative humidity: 8 to 80%
 - Maximum wet bulb temperature: 73° F (22.8° C)
 - Altitude: 10,000 ft. (0 to 3,048 meters)
 - Atmospheric pressure: 74.6 kPa
- Power off
 - Temperature: 50 to 110° F (10 to 43.3° C)
 - Relative humidity: 8 to 80%
 - Maximum wet bulb temperature: 80.1° F (26.7° C)
 - Altitude: 10,000 ft. (0 to 3,048 meters)
 - Atmospheric pressure: 74.6 kPa
- Ambient operating environment*
 - Temperature: 60 to 90° F (15.6 to 32.2° C)
 - Relative humidity: 8 to 80%
- Storage and shipping (packaged printer) with or without print cartridge
 - Temperature: -40 to 110° F (-40 to 43.3° C)

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

Processor

1.2 GHZ Power PC processor

Appendix B: Options and features

- [“Available internal options” on page 339](#)
- [“Media handling options” on page 339](#)
- [“Option configurations” on page 340](#)

Lexmark CS310, CS410, and CS510 support only Lexmark CS310, CS410, and CS510 paper-handling options. These options are not compatible with any other Lexmark printer. Some of the following options are not available in every country or region.

Available internal options

- Memory cards
 - Printer memory
 - Flash memory
 - Fonts
- Firmware cards
 - Bar Code
 - PrintCryption™
- Printer hard disk
- Lexmark™ Internal Solutions Ports (ISP)
 - RS-232-C Serial ISP
 - Parallel 1284-B ISP
 - MarkNet™ N8250 802.11 b/g/n Wireless ISP
 - MarkNet N8130 10/100 Fiber ISP
 - MarkNet N8120 10/100/1000 Ethernet ISP

Media handling options

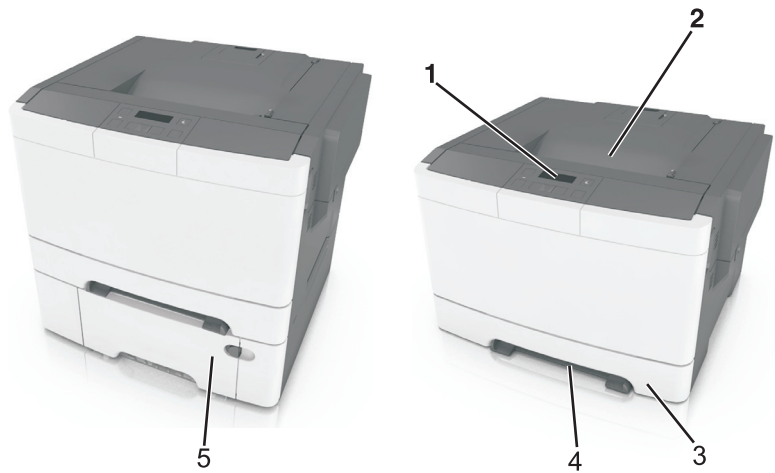
Note: Some media handling options may not be available for all models.

Input options:

- Standard integrated 250-sheet tray (Tray 1)
- Standard 100-sheet multipurpose feeder
- Standard 1-sheet manual feed slot
- Optional 550-sheet tray (CS410 and CS510 models only)

Output options

- Standard 100-sheet sensing bin
- Optional 650-sheet duo tray with integrated multipurpose feeder (Tray 2)



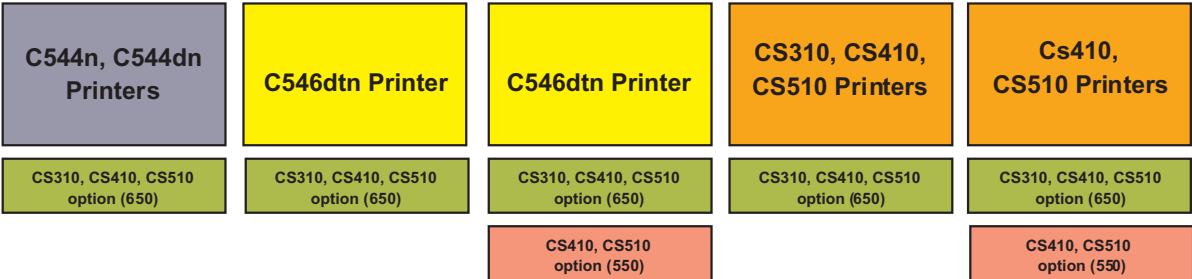
1	Printer control panel
2	Standard bin
3	250-sheet tray (Tray 1)
4	Manual feeder
5	Optional 650-sheet duo tray (Tray 2)

Option configurations

The CS310, CS410, and CS510 optional drawers can be configured to run in a stacked configuration. Unlike the C544n and C544dn printers, the CS310, CS410, and CS510 printers support a maximum of two stacked optional drawers—one 650 DuoDrawer at tray 2, and an additional 550 drawer at tray 3. The CS310, CS410, and CS510 DuoDrawers are also designed to be downward compatible with the C544n and C544dn printers. Because the C544n and C544dn 650 DuoDrawer, and the CS310, CS410, and CS510 650 DuoDrawer and 550 drawer share the same autoconnect features, there are several ways in which the drawers can be stacked together. The following describes three types of option configurations:

Supported configurations

These configurations are valid and supported. The options are designed and tested according to these types of configurations.



Unsupported configurations

These configurations are invalid and would result to an **Invalid Input Config** error on a CS310, CS410, or CS510 printer, or **Too Many Trays Attached** error on a C544n or C544dn printer.

CS310, CS410, CS510 Printers	CS310, CS410, CS510 Printers	CS310, CS410, CS510 Printers	CS310, CS410, CS510 Printers	CS310, CS410, CS510 Printers
C544n, C544dn C546dtn option (650)	CS310, CS410, CS510 option (650)	CS310, CS410, CS510 option (650)	Cs410, CS510 option (550)	CS410, CS510 option (550)
C544n, C544dn C546dtn option (550)	CS310, CS410, CS510 option (650)	C544n, C544dn C546dtn option (550)	CS410, CS510 option (550)	CS310, CS410, CS510 option (650)

Unclaimed configuration

This configuration is not supported and unclaimed, though the printer may not declare an error. This configuration is functional but is not a valid configuration.

Warning—Potential Damage: The engine code and the options are not designed and tested thoroughly on this configuration. This could result to unpredictable printer operation.

CS410, CS510 Printers
CS410,CS510 option (550)

Appendix C: Theory of operation

- [“Paper path and transport components” on page 343](#)
- [“Print engine theory” on page 346](#)
- [“Color theory” on page 350](#)

Paper path and transport components

For an image to be printed, the paper or specialty media has to be moved from an input source (such as a tray) into the printer and eventually exit into an output source.

The most important component in this process is this paper itself. Old, damaged, or out-of-specification paper can and will cause feed and transport problems. If you encounter problems, you should always check the paper first. See [“Media guidelines” on page 23](#). In addition, it is always good practice to check the printer and driver settings to see if the paper being used matches the user’s settings. It is not uncommon to find a user printing on cardstock with the printer programmed to print on a plain paper setting.

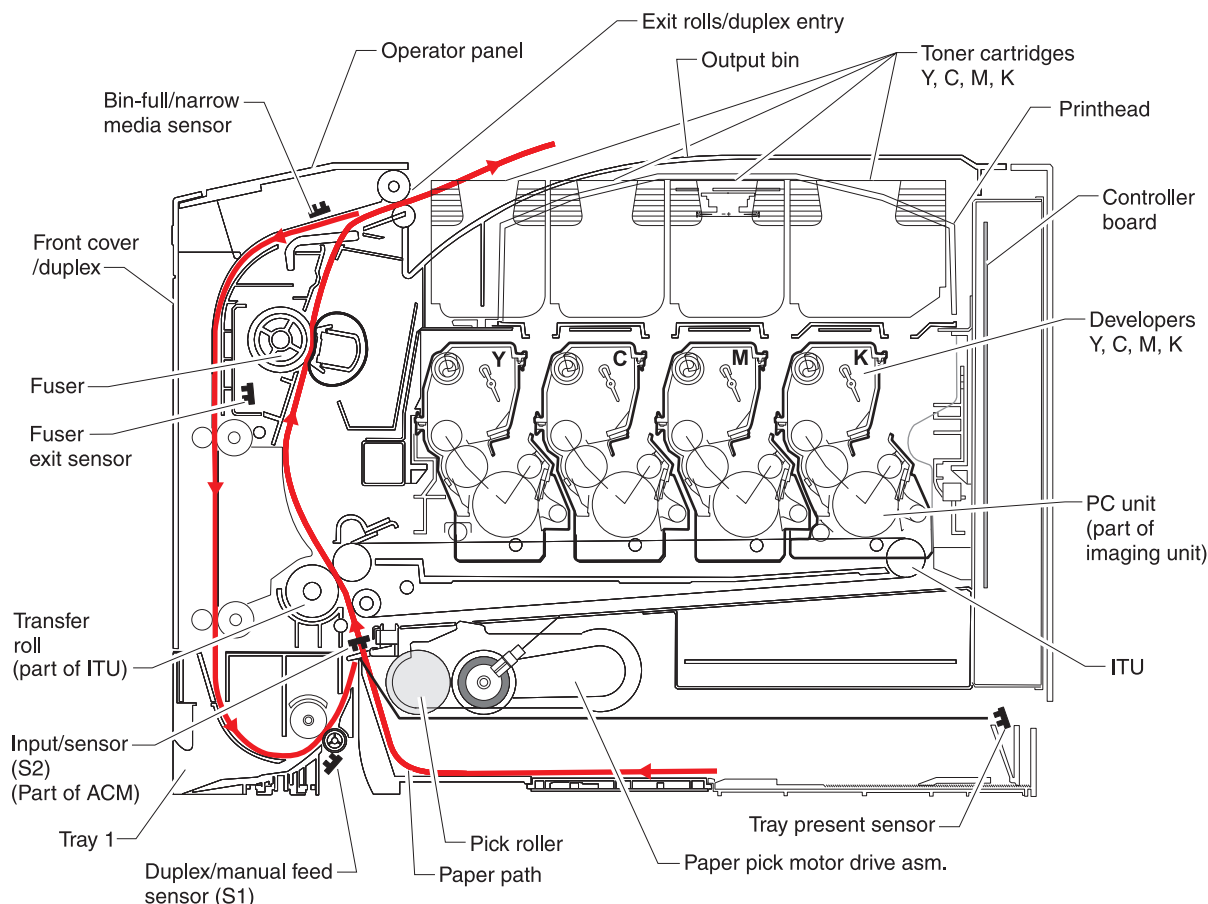
The printer’s feed and transport components can fail and cause paper jams or other feed and transport problems. These components should be examined for damage or wear and replaced if necessary.

Paper path information

The printer has a simple C-shaped paper path. The tray 1 paper is shown in red and the optional 650-sheet Duo Drawer paper path is not shown.

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

There is a duplex unit on the printers. The duplex unit is built into the front cover and Tray 1.



Note: The ACM is also known as the paper feed roller assembly.

Transport components

The paper is fed from the tray into the printer by a pick roll and sent to two sets of feed rollers which time the paper to enter the Electrophotographic Process (EP Process) at just the right moment. The feed rollers push the paper to the image transfer unit where the image is transferred to the page.

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

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

Bubble sensors

The printer uses two bubble sensors to adjust the speed of the fuser motor to better avoid image smearing and paper jams.

The fuser bubble sensor, located before the fuser in the paper path, senses the bubble, or amount of curve in the paper, when it hits the fuser rollers. If the curve is too great, the fuser motor speeds up to avoid causing a paper jam. If the curve is too small, the motor slows to avoid smearing the image.

The redrive bubble sensor, located before the fuser exit rollers in the paper path, senses the bubble in the paper as it exits the fuser. It then adjusts the fuser motor speed as necessary to avoid jams and smearing on the trailing edge of the paper.

Duplexing

Printers with duplex support use a secondary paper path to print on the second side of a sheet of paper. The duplexing process is summarized as follows:

After the first side of the paper is printed and the trailing edge of the paper clears the fuser exit sensor, the fuser motor engages to reverse the paper direction and feed it into the duplex unit. The pick motor also reverses. The pick motor drives the duplex aligner rolls (A), which push the media down to the bottom turnaround in the paper tray and gate aligner (B).

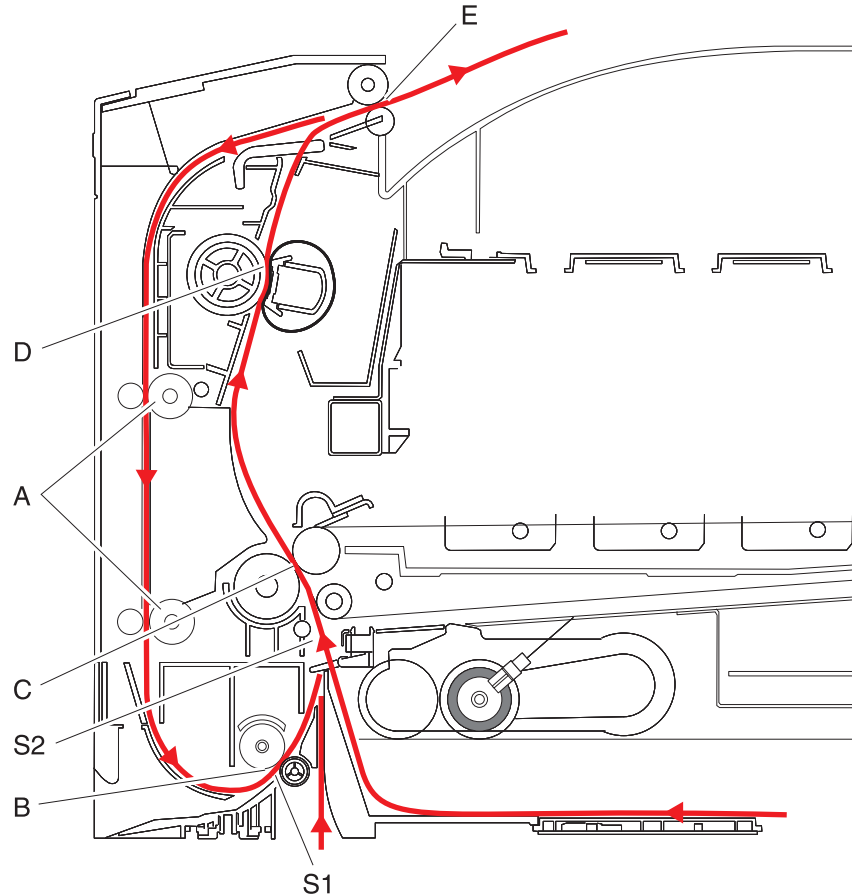
Note: While the sheet is being transported through the duplex unit, it is the only piece of paper being processed by the print engine. A user should not attempt to insert a piece of paper into the manual paper feed while a duplex job is being processed. This would cause a paper jam error.

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

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

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

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



Print engine theory

Electrophotographic process (EP process)

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

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

Electrophotographic process basics

This printer is a single-laser printer that use four print cartridges (cyan, yellow, magenta, and black) to create text and images on paper.

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

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

- 1 Charge the photoconductor.
- 2 Expose the photoconductor with the laser.
- 3 Develop toner on the photoconductor.
- 4 First transfer to the ITU, and second transfer to the paper.
- 5 Fuse the toner to the paper.
- 6 Clean/erase the photoconductor and the ITU.

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

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

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

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

Step 1: Charge

During the charge step, voltage is sent from the HVPS to the charge roller beside each of the four photoconductors. In this printer, the charge roll is part of the photoconductor unit in the print cartridges.

The charge roller puts a uniform negative charge over the entire surface of the photoconductor to prepare it for the laser beam.

Service tips

- If the surface of the charge roller is damaged (such as a nick or pit), it will cause the charge on the photoconductor to be uneven. This will cause a repeating mark on the printed page. Check the service manual for the repeating marks table.
- If the charge roller is severely damaged, the surface of the photoconductor will not be properly charged and heavy amounts of toner will be deposited on the photoconductor. This will cause the printed page to be saturated with 100% of each color. The imaging basket will need to be replaced sooner.

Step 2: Expose

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

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.

Service tips

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

Step 3: Develop

When the laser exposes the photoconductor, the HVPS sends charge to the developer roll. For each color, the print cartridge engages the photoconductor so it is in contact with the surface. 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 won't stick to the rest of the can.

Service tips

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

Step 4a: First transfer

When the latent images are developed on each Photoconductor, the HVPS sends voltage to the 1st Transfer Rollers inside the ITU.

The charge difference between the developed toner image on the Photoconductor surface and the 1st Transfer Roller causes the images to transfer to the surface of the ITU belt for each color. This takes place by a direct surface-to-surface contact between the Photoconductors and the ITU transfer belt.

Service tips

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

Step 4b: Second transfer

When the four planes of color are transferred to the transfer belt from the photoconductors, the image is carried toward the transfer roll, which is also part of the ITU. Based on the speed of the transfer belt, the proper time to send the signal to pick the paper from an input source is determined. The pick is timed so that the paper passes between the transfer belt and transfer roll when the image on the belt reaches the second transfer area.

The HVPS sends voltage to the transfer roll to create a positive charge. When the image on the transfer belt reaches the transfer roll, the negatively charged toner clings to the paper and the entire image is transferred from the transfer belt to the paper.

Service tips

- If the transfer roller has nicks, pits, or flat spots on it, the surface doesn't come into contact with the paper and transfer unit. This will cause voids or light spots on the page or repeating voids/light areas.
- If the transfer roller does not engage the transfer unit, or does not have voltage coming from the HVPS, the toner will not fully transfer from the transfer unit; the entire page will be very light or blank. Any toner that does transfer will be due to a "contact" transfer instead of a "charge" transfer. Check the HVPS contacts to the transfer roller.

Step 5: Fuse

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

The fuser applies heat and pressure to the page to melt the toner particles and bond them permanently to the paper. The fuser moves the paper to the redrive rolls which move the paper to the output bin.

Service tips

- If the fuser rollers are damaged, they can cause toner to be pulled off the page or cause paper jams.
- Toner that rubs off a printed page can be a sign of a malfunctioning fuser or an improper paper setting. Always check the paper type setting before replacing the fuser. A common mistake is to print on heavier media (such as cardstock) with the paper type set to plain paper.
- When removing paper jams from the fuser, be sure to use the fuser release tabs to relieve the pressure on the page. In addition, never pull unfused toner through the fuser if you can help it; try to back the jammed page out of the fuser in the opposite direction it was travelling.

Step 6: Clean/Erase

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

Transfer unit clean

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

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

Photoconductor clean/erase

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

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

Color theory

Color theory

What is RGB color?

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

What is CMYK color?

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

How is color specified in a document to be printed?

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

How does the printer know what color to print?

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

Should I use PostScript or PCL emulation? What settings produce the best color?

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

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

The color conversion tables used in Auto Color Correction mode generally approximate the colors of a standard computer monitor. However, because of technology differences that exist between printers and monitors, there are many colors that can also be affected by monitor variations and lighting conditions.

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

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

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

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

What is manual color correction?

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

Notes:

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

To manually apply a different color conversion table:

- 1 Press **Menu** to open the Admin menus.
- 2 Select **Settings**, and press **Select**.
- 3 Select **Quality**, and press **Select**.
- 4 Select **Color Correction**, and press **Select**.
- 5 Select **Manual**, and press **Select**.

The printer is in manual mode, and you need to select a color conversion table.

- 6 Press **Back** to return to the Quality menu, select **Manual Color**, and press **Select**.
- 7 Select the appropriate color conversion table for the affected object type.

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

CMYK Image	<ul style="list-style-type: none"> • US CMYK—Applies color correction to approximate the SWOP (Specifications for Web Offset Publishing) color output. • Euro CMYK—Applies color correction to approximate EuroScale color output. • Vivid CMYK—Increases the color saturation of the US CMYK color correction setting. • Off—No color correction is implemented.
CMYK Text	
CMYK Graphics	

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

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

To print Color samples from the printer:

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

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

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

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

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

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

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

- 1 Open a Web browser.
- 2 In the address bar, type the network printer IP address.
- 3 Click **Configuration**.
- 4 Click **Color Samples**.
- 5 Click **Detailed Options** to narrow the set to one color range.

- 6 When the Detailed Options page appears, select a color conversion table.
- 7 Enter the RGB or CMYK color number.
- 8 Enter an Increment value from 1–255.

Note: The closer the value is to 1, the narrower the color sample range will appear.

- 9 Click **Print** to print the detailed Color Samples set.

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
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


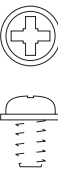

NVM	Nonvolatile Memory
NVRAM	Nonvolatile Random Access Memory
OEM	Original Equipment Manufacturer
OPT	Optical Sensor
PC	Photoconductor
pel, pixel	Picture element
POR	Power-On Reset
POST	Power-On Self Test
PSD	Position Sensing Device
PWM	Pulse Width Modulation
RIP	Raster Imaging Processor
ROM	Read Only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

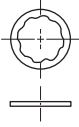


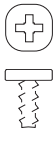

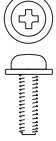

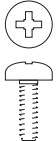
Appendix E: Screw and retainer identification table



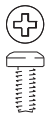
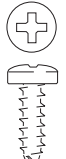
Screw and retainer identification table

The following table contains screw and fastener descriptions, locations, and quantities necessary to service the printer. Pay careful attention to each screw type location when performing a removal. You must install the correct screw type in each location during reassembly.

The size of the screws and fasteners are as close to their actual size as possible, as long as the printout is not scaled or resized.

P/N	Screw type	Location	Qty
18B0832 	Taptite M3 L6 panhead screw	Controller board	6
		EP drive	6
		Fuser drive assembly	2
		Fuser sensor	1
		Left cover	1
		Lower left frame	4
		LVPS assembly	6
		LVPS cage	4
		Paper pick motor drive assembly	2
		Rear cover	8
		Toner density sensor	4
		Toner meter cycle	2
		Top cover	5
		Wireless antenna	1
18B1236 	M3x6 panhead screw	Lower right frame	1
3000114 	Shoulder screw	Paper pick motor drive assembly	1

3000167		M3.5 internal lock washer	Fuser assembly	1
			Top cover	1
3001435		M3x8 screw	Lower right frame	1
3003334		3.5x6 mm flat top screw	CS410 display bracket	3
			CS510 and C2132 UICC card	5
3005980		3.5x8 mm flat top screw	Front door	5
3068020		Taptite M3 L4.5 Panhead screw	Lower right frame	3
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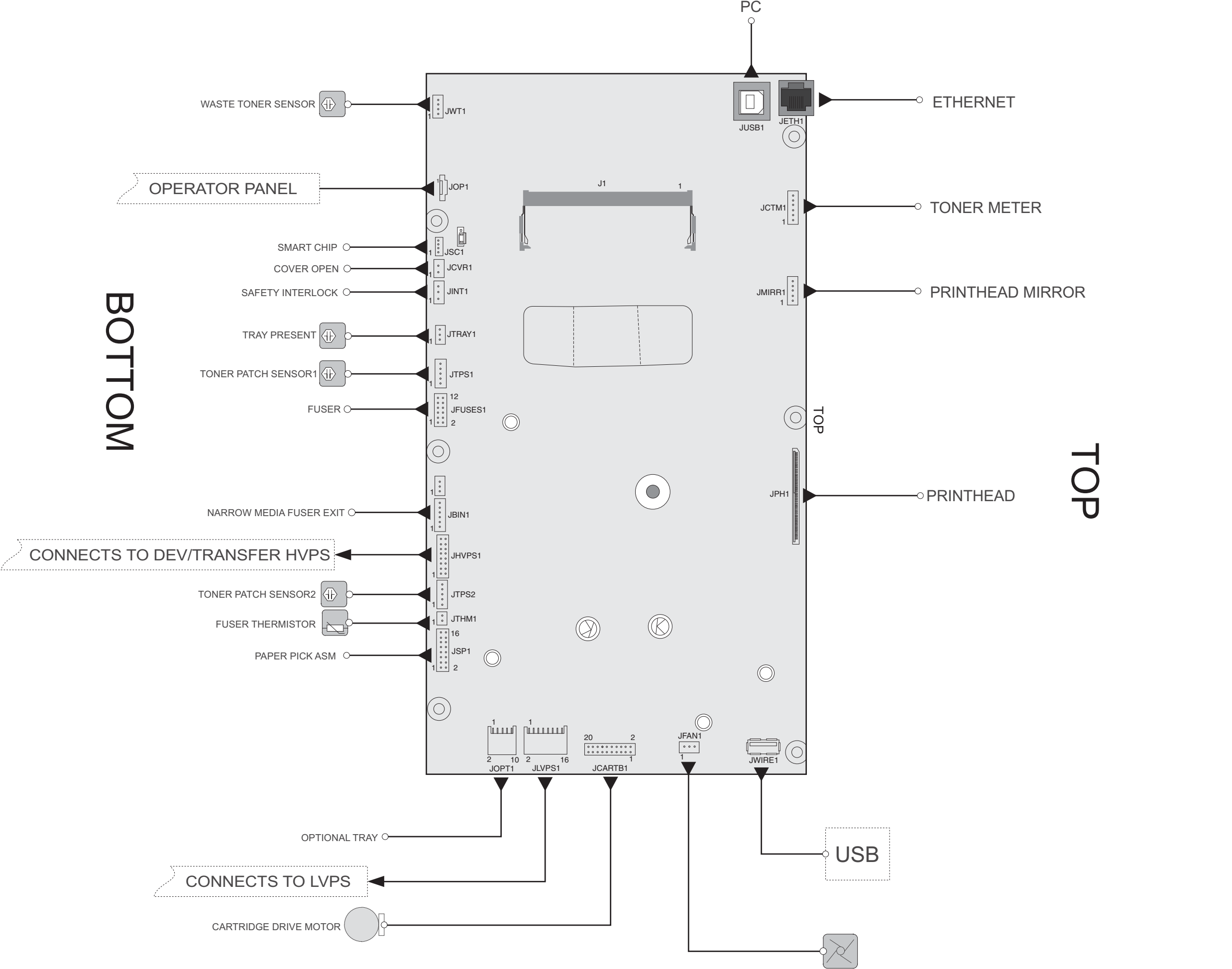
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BOTTOM

TOP

