

Edition: May 15, 2008



Service Manual

Lexmark™ X560n MFP

7105-135

- ***Table of contents***
- ***Start diagnostics***
- ***Safety and notices***
- ***Trademarks***
- ***Index***

LEXMARK™

Lexmark and Lexmark with diamond design are trademarks of Lexmark International, Inc., registered in the United States and/or other countries.

Edition: May 15, 2008

The following paragraph does not apply to any country where such provisions are inconsistent with local law: LEXMARK INTERNATIONAL, INC. PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in later editions. Improvements or changes in the products or the programs described may be made at any time.

Comments may be addressed to Lexmark International, Inc., Department D22A/032-2, 740 West New Circle Road, Lexington, Kentucky 40550, U.S.A or e-mail at ServiceInfoAndTraining@Lexmark.com. Lexmark may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

References in this publication to products, programs, or services do not imply that the manufacturer intends to make these available in all countries in which it operates. Any reference to a product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any existing intellectual property right may be used instead. Evaluation and verification of operation in conjunction with other products, programs, or services, except those expressly designated by the manufacturer, are the user's responsibility.

Lexmark and Lexmark with diamond design are trademarks of Lexmark International, Inc., registered in the United States and/or other countries.

PCL® is a registered trademark of the Hewlett-Packard Company.

All other trademarks are the property of their respective owners.

© 2007 Lexmark International, Inc.
All rights reserved.

UNITED STATES GOVERNMENT RIGHTS

This software and any accompanying documentation provided under this agreement are commercial computer software and documentation developed exclusively at private expense.

Table of contents

Notices and safety information	xi
Laser notice	xi
Lithium warning	xvii
Safety information	xvii
Preface	xxi
Conventions	xxi
General information	1-1
Options and features	1-1
Printer and scanner specifications	1-2
Electronic specifications	1-2
Environment specifications	1-3
Physical dimensions and clearances	1-3
Media guidelines and specifications	1-4
Paper	1-4
Envelopes	1-4
Transparencies	1-4
Labels	1-4
Mixed Size Scan	1-5
Supported media sizes on the scanner	1-5
Supported media sizes for the printer	1-6
Supported media types	1-7
Supported media type and weight	1-7
Tools required for service	1-8
Acronyms	1-9
Diagnostic information	2-1
Start	2-1
Symptom tables	2-2
Service error codes and attention messages	2-4
Service checks	2-29
010-351 Fuser Error service check	2-29
010-397 Fuser Error, Insert Fuser service check	2-29
016-220 Too Many Incorrect service check	2-30
016-611 Controller board service check	2-31
016-720 PDL Error service check	2-31
016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error service check	2-32
016-757 Invalid User, 016-758 Disabled Func, 016-759 Limit Exceeded service check	2-32
016-794 Network Not Ready service check	2-33
016-799 Invalid Job service check	2-33
017-988 Scan Time Out	2-34
024-371 MCU Comm Error (controller board communication)	2-35
033-510 Fax Codec Error service check	2-35
033-517 Password Error service check	2-35
033-762 Communication service check	2-36
033-763 Communication service check	2-36
033-773 Fax Codec Error	2-36
035-701 Target Fax	2-37
035-720 Fax Communication service check	2-37
035-781 Target Fax Busy	2-38
041-340 MCU NVRAM Error service check	2-38
042-313 Fan Motor Error service check	2-39
042-325 Motor Error service check	2-40

042-326 Motor Error	2-41
042-358 Fan Motor Error service check	2-42
042-700 Printer Too Hot, 142-700 Ready to Copy service check	2-42
061-370 Laser Error service check	2-43
062-320, 062-324 Restart Printer service check	2-44
072-215 550 Feeder Error service check	2-44
072-216 Motor Error service check	2-45
077-215 Duplexer Error service check	2-46
077-215 Duplexer Error service check	2-46
077-343 Motor Error service check	2-47
092-651 ADC Sensor Error service check	2-48
092-651 ADC Sensor Error service check	2-49
092-661 Env Sensor Error service check	2-50
093-320 Motor Error service manual	2-51
093-970 Insert Yellow service check	2-52
093-971 Insert Magenta service check	2-53
093-972 Insert Cyan service check	2-54
093-973 Insert Black service check	2-55
094-330 CRUM Error service check	2-57
116-367 Parallel Port Error service check	2-57
550-sheet feeder turn clutch assembly service check	2-58
550-sheet feeder feed clutch assembly service check	2-58
550-sheet feeder drive assembly service check	2-59
Abnormal noise service check	2-60
When power is turned on	2-60
During standby	2-62
During printing	2-63
Communication errors service check	2-66
Controller board service check	2-67
Copier Error service check	2-68
Door A Open service check	2-69
Download Mode service check	2-69
Duplex jam sensor, duplex clutch, duplex motor assembly, duplex fan service check	2-70
Electrical noise (interference) service check	2-70
Engine board error service check	2-71
Exit sensor service check	2-72
Fax Codec Error, Communication service check	2-72
Fax Error service check	2-73
Fax Number Error, No Dial Tone service check	2-73
Fax Send Error service check	2-74
Feed clutch assembly service check	2-74
Feed drive assembly service check	2-75
Flash card service check	2-75
Fuser CRUM Error, Ready to Copy service check	2-76
Illegal Settings service check	2-76
Paper trays	2-76
Paper type	2-78
Paper size	2-79
Insert Tray 2, Insert Tray 3, Illegal Settings service check	2-79
Insert Tray 3, Illegal Settings service check	2-80
Jam at Scanner service check	2-80
Jam at Tray 2 service check	2-81
Jam service check—tray 1 (MP feeder)	2-82
Jam service check—tray 2 (250-sheet tray)	2-83
Jam service check—tray 3 (550-sheet feeder)	2-85
Jam service check—duplex unit	2-87
Jam at Exit, Jam at Reg. Roll, Wrong Paper Type service check	2-89
Load tray service check	2-92
Main drive assembly (main motor) service check	2-93

Main drive assembly (sub motor) service check	2-94
Main drive assembly (developer motor) service check	2-94
Main drive assembly (exit clutch) service check	2-95
Memory Error service check	2-95
Memory full service check	2-96
MFD Memory Full service check	2-97
MP feeder feed solenoid service check	2-97
Multiple feed service check	2-98
MPC (Multi-Protocol Network Card) service check	2-98
MPC (Multi-Protocol Network Card) service check	2-99
No paper sensor service check	2-100
250-sheet tray	2-100
550-sheet feeder	2-100
MPF (multipurpose feeder)	2-101
Operator panel service check	2-102
Operator panel service check	2-102
Power (AC) service check	2-103
Power (DC) service check	2-103
Protocol Error service check	2-104
Registration clutch assembly service check	2-104
Registration sensor service check	2-105
Remove Tape Yellow Cartridge service check	2-106
Remove Tape Magenta Cartridge service check	2-107
Remove Tape Cyan Cartridge service check	2-108
Remove Tape Black Cartridge service check	2-109
RIP board service check	2-110
Scanner error service check	2-110
Scanner error service check	2-111
Scanner ADF Cover R Open service check	2-111
Server Error service check	2-112
Toner cartridge (yellow) service check	2-113
Toner cartridge (magenta) service check	2-113
Toner cartridge (cyan) service check	2-114
Toner cartridge (black) service check	2-114
Toner cartridge (black) service check	2-115
Toner cartridge (yellow) service check	2-116
Toner cartridge (magenta) service check	2-117
Toner cartridge (cyan) service check	2-118
Transfer belt assembly service check	2-119
Transfer belt assembly service check	2-119
Turn clutch assembly service check	2-120
Wrong Paper Type service check	2-120
Print quality service checks	2-121
Print image quality specifications	2-122
Repeating marks and lines	2-123
Faint print (low contrast) service check	2-125
Blank print (No print) service check	2-127
Solid black service check	2-129
Vertical blank lines service check	2-131
Horizontal blank lines or bands service check	2-133
Vertical stripes service check	2-135
Horizontal stripes service check	2-138
Partial lack service check	2-141
Spots service check	2-143
Afterimage service check	2-146
Background (fog) service check	2-147
Skew service check	2-149
Paper damage service check	2-151
Toner does not fix service check	2-154

Color registration (color shift) service check	2-155
Hunting service check	2-156
Magnification incorrect (distortion) service check	2-157
Operator panel and customer menus	2-158
Customer menus under System	2-161

Diagnostic aids **3-1**

Printing Information Pages	3-1
Service Mode	3-1
Menu map of Service Mode	3-2
Fax/Scanner Diag	3-3
Board test	3-3
All Test	3-3
1st. Fire Test	3-3
2nd Fire Test	3-4
FPGA Test	3-4
Relay/Signal Test	3-5
Information	3-9
Scan Counter	3-9
Version	3-9
Scanner Maintenance	3-9
White Balance	3-9
Parameter	3-10
Scan Counter	3-10
Scan Counter Clear	3-10
Parameter	3-10
Back Up Data	3-13
All Clear	3-13
User Clear	3-13
System Clear	3-13
User&System Clear	3-13
System Data Init	3-14
Document Clear	3-14
Complete	3-14
Printer Diag	3-15
ESS Diag	3-15
All Test	3-15
CodeROM Test	3-15
FontROM	3-16
EEPROM Test	3-16
DRAM Test	3-16
MAC+PHY Test	3-17
ASIC Test	3-17
Engine Test	3-17
Engine Diag	3-18
Sensor Test	3-18
Motor Test	3-29
Print Info	3-48
Info Page	3-48
Print Settings	3-48
Installation	3-48
Serial No. (serial number)	3-48
Tone Correction	3-49
Display Counter	3-49
Hex Dump	3-49
Pixel Counter	3-49
Configuration	3-50
Counter Type	3-50
Print Counter	3-50

Clear All NVM	3-50
Clear Job History	3-50
Clear All Auditron PV	3-50
Test Print	3-51
Test print samples	3-51
Parameter	3-54
Slow Scan K to P	3-54
Slow Scan 600 M, Y, C	3-55
Slow Scan 1200 M, Y, C	3-55
Fast Scan K to M, K to Y, and K to C	3-56
Fast Scan MPT (MP feeder)	3-56
Fast Scan Tray 2	3-57
Fast Scan Tray 3	3-57
Fast Scan Duplex	3-57
Fast Scan 2 K to C, K to M, or K to Y	3-58
Life Counters	3-58
Print	3-59
Exit Mode	3-59
Clearing jams	3-60
Avoiding jams	3-60
Understanding jam messages and locations	3-61
Clearing tray 1 (MP feeder) jams	3-62
Clearing tray 2 jams	3-64
Clearing tray 3 jams	3-65
Clearing jams in the fuser	3-67
Clearing jams in the duplex unit	3-68
Clearing jams in the ADF	3-69
Theory of operation	3-71
Fax system	3-71
Scanning system	3-76
Printing process	3-85
Paper path	3-96
Functional components	3-97
250-sheet paper tray	3-97
MP feeder and the registration assembly	3-100
Fuser	3-104
Transfer belt assembly	3-105
Printhead	3-107
Toner cartridges	3-108
Drive assemblies	3-110
Electrical	3-111
Duplex unit	3-114
550-sheet feeder paper tray	3-115
550-sheet feeder	3-117
Connector locations	5-1
Locations	5-1
Printer boards	5-1
Printer motors	5-2
Printer sensors	5-3
Connectors	5-4
Controller board diagram	5-4
RIP board diagram	5-12
Engine board diagram	5-14
Low-voltage power supply (LVPS) diagram	5-19
High-voltage power supply (HVPS) diagram	5-21
Wiring diagrams	5-22
DC power supply wiring diagram	5-22
MP feeder and registration wiring diagram	5-24

Drives wiring diagram	5-26
Printhead wiring diagram	5-30
High-voltage power supply (HVPS) wiring diagram	5-34
Developer wiring diagram	5-36
Fuser wiring diagram	5-38
Boards wiring diagrams	5-40
550-sheet feeder wiring diagram	5-42
Duplex unit wiring diagram	5-44
Fax controller wiring diagram	5-46
Scanner imaging wiring diagram	5-48
Scanner imaging wiring diagram	5-49
Automatic document feeder (ADF) wiring diagram	5-50
Repair information	4-1
Handling ESD-sensitive parts	4-1
Screw identification table	4-2
Adjustments	4-3
Scanner adjustment	4-3
Printer color registration	4-6
Automatic color registration adjustment	4-6
Manual color registration	4-6
Enabling/Disabling Automatic Color Registration	4-7
Printhead adjustment	4-7
Removal procedures	4-8
Bottom cover removal	4-8
Tray cover removal	4-9
Front cover assembly removal	4-10
Front cover cable harness removal	4-13
Inner left pole cover removal	4-16
Inner right pole cover removal	4-17
Left cover removal	4-18
Left pole cover removal	4-20
MP feeder cover assembly removal	4-21
Rear cover removal	4-22
Right cover removal	4-23
Right pole cover removal	4-25
Top cover removal	4-26
550-sheet feeder removal	4-27
550-sheet feeder caster removal	4-28
550-sheet feeder controller board	4-29
550-sheet feeder feed clutch removal	4-32
550-sheet feeder drive assembly removal	4-34
550-sheet feeder foot removal	4-35
550-sheet feeder no paper sensor removal	4-36
550-sheet feeder feed roll kit removal	4-37
550-sheet feeder size switch assembly removal	4-38
550-sheet feeder tray separator roll removal	4-41
550-sheet feeder turn clutch removal	4-42
ADF maintenance kit removal	4-44
ADF feed roll	4-44
ADF separator pad and spring	4-45
ADF tray assembly removal	4-46
Controller board removal	4-47
Duplex clutch removal	4-51
Duplex gate removal	4-53
Duplex motor assembly removal	4-54
Duplex roll 1 assembly removal	4-56
Duplex roll 2 assembly removal	4-59
Duplex unit removal	4-62

EEPROM card removal	4-63
Engine board removal	4-64
Engine board cage removal	4-66
Erase lamp assembly removal	4-68
Exit assembly removal	4-69
Extension cover removal	4-70
Fan assembly removal	4-71
Fax card removal	4-73
Feed clutch removal	4-74
Feed drive assembly removal	4-75
Feed roll kit removal—250-sheet tray assembly	4-77
Fuser removal	4-78
High-voltage power supply (HVPS) removal	4-79
Humidity sensor removal	4-85
Interlock harness removal	4-86
Left door link assembly removal	4-87
Low-voltage power supply (LVPS) removal	4-91
Main drive removal	4-92
Memory card removal	4-95
MP feeder feed roll removal	4-96
MP feeder feed solenoid removal	4-97
MP feeder no paper sensor removal	4-100
MP feeder separator roll assembly removal	4-101
Multi-Protocol Network Card removal	4-102
No paper sensor removal	4-103
Operator panel removal	4-104
Operator panel cable harness removal	4-105
Paper feed assembly removal	4-108
Power switch	4-115
Printhead assembly removal	4-116
Registration clutch removal	4-120
Registration sensor removal	4-121
Right door link assembly removal (18)	4-123
RIP board removal	4-126
RIP board cage removal	4-128
Scanner assembly removal	4-130
Separator roll removal—250-sheet tray assembly	4-136
Size switch assembly removal	4-137
Smart Chip contact removal	4-138
Speaker assembly removal	4-139
Spur assembly removal	4-140
Toner cartridge removal	4-141
Toner motor removal	4-142
Toner sensor assembly (black) removal	4-144
Toner sensor assembly (cyan, magenta, yellow) removal	4-145
Transfer belt removal	4-146
Transparency sensor LED removal	4-148
Transparency sensor removal	4-150
Turn clutch assembly removal	4-151
Turn roll assembly removal	4-152
Preventive maintenance	6-1
Safety inspection guide	6-1
Cleaning the MFP	6-1

Parts catalog **7-1**

- How to use this parts catalog 7-1
- Assembly 1: Covers 7-2
- Assembly 2: Front cover and operator panel 7-4
- Assembly 3: Scanner 7-5
- Assembly 4: Imaging 7-6
- Assembly 5: Paper transport 7-8
- Assembly 6: 250-sheet tray assembly 7-10
- Assembly 7: Electrical 1 7-12
- Assembly 8: Electrical 2 7-14
- Assembly 9: Duplex 7-16
- Assembly 10: 550-sheet feeder 1 7-18
- Assembly 11: 550-sheet feeder 2 7-19
- Assembly 12: Options and supplies 7-20

Index **I-1**

Part number index **I-9**

Notices and safety information

The following laser notice labels may be affixed to this printer.

Laser notice

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

Class I laser products are not considered to be hazardous. The printer contains internally a Class IIIb (3b) laser that is nominally a 5 milliwatt gallium arsenide laser operating in the wavelength region of 770-795 nanometers. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

Laser

Der Drucker erfüllt gemäß amtlicher Bestätigung der USA die Anforderungen der Bestimmung DHHS (Department of Health and Human Services) 21 CFR Teil J für Laserprodukte der Klasse I (1). In anderen Ländern gilt der Drucker als Laserprodukt der Klasse I, der die Anforderungen der IEC (International Electrotechnical Commission) 60825-1 gemäß amtlicher Bestätigung erfüllt.

Laserprodukte der Klasse I gelten als unschädlich. Im Inneren des Druckers befindet sich ein Laser der Klasse IIIb (3b), bei dem es sich um einen Galliumarsenlaser mit 5 Milliwatt handelt, der Wellen der Länge 770-795 Nanometer ausstrahlt. Das Lasersystem und der Drucker sind so konzipiert, daß im Normalbetrieb, bei der Wartung durch den Benutzer oder bei ordnungsgemäßer Wartung durch den Kundendienst Laserbestrahlung, die Klasse I übersteigen würde, Menschen keinesfalls erreicht.

Avis relatif à l'utilisation de laser

Pour les Etats-Unis : cette imprimante est certifiée conforme aux provisions DHHS 21 CFR alinéa J concernant les produits laser de Classe I (1). Pour les autres pays : cette imprimante répond aux normes IEC 60825-1 relatives aux produits laser de Classe I.

Les produits laser de Classe I sont considérés comme des produits non dangereux. Cette imprimante est équipée d'un laser de Classe IIIb (3b) (arséniure de gallium d'une puissance nominale de 5 milliwatts) émettant sur des longueurs d'onde comprises entre 770 et 795 nanomètres. L'imprimante et son système laser sont conçus pour impossible, dans des conditions normales d'utilisation, d'entretien par l'utilisateur ou de révision, l'exposition à des rayonnements laser supérieurs à des rayonnements de Classe I.

Avvertenze sui prodotti laser

Questa stampante è certificata negli Stati Uniti per essere conforme ai requisiti del DHHS 21 CFR Sottocapitolo J per i prodotti laser di classe 1 ed è certificata negli altri Paesi come prodotto laser di classe 1 conforme ai requisiti della norma CEI 60825-1.

I prodotti laser di classe non sono considerati pericolosi. La stampante contiene al suo interno un laser di classe IIIb (3b) all'arseniuro di gallio della potenza di 5mW che opera sulla lunghezza d'onda compresa tra 770 e 795 nanometri. Il sistema laser e la stampante sono stati progettati in modo tale che le persone a contatto con la stampante, durante il normale funzionamento, le operazioni di servizio o quelle di assistenza tecnica, non ricevano radiazioni laser superiori al livello della classe 1.

Avisos sobre el láser

Se certifica que, en los EE.UU., esta impresora cumple los requisitos para los productos láser de Clase I (1) establecidos en el subcapítulo J de la norma CFR 21 del DHHS (Departamento de Sanidad y Servicios) y, en los demás países, reúne todas las condiciones expuestas en la norma IEC 60825-1 para productos láser de Clase I (1).

Los productos láser de Clase I no se consideran peligrosos. La impresora contiene en su interior un láser de Clase IIIb (3b) de arseniuro de galio de funcionamiento nominal a 5 milivatios en una longitud de onda de 770 a 795 nanómetros. El sistema láser y la impresora están diseñados de forma que ninguna persona pueda verse afectada por ningún tipo de radiación láser superior al nivel de la Clase I durante su uso normal, el mantenimiento realizado por el usuario o cualquier otra situación de servicio técnico.

Declaração sobre Laser

A impressora está certificada nos E.U.A. em conformidade com os requisitos da regulamentação DHHS 21 CFR Subcapítulo J para a Classe I (1) de produtos laser. Em outros locais, está certificada como um produto laser da Classe I, em conformidade com os requisitos da norma IEC 60825-1.

Os produtos laser da Classe I não são considerados perigosos. Internamente, a impressora contém um produto laser da Classe IIIb (3b), designado laser de arseneto de potássio, de 5 milliwatts, operando numa faixa de comprimento de onda entre 770 e 795 nanómetros. O sistema e a impressora laser foram concebidos de forma a nunca existir qualquer possibilidade de acesso humano a radiação laser superior a um nível de Classe I durante a operação normal, a manutenção feita pelo utilizador ou condições de assistência prescritas.

Laserinformatie

De printer voldoet aan de eisen die gesteld worden aan een laserproduct van klasse I. Voor de Verenigde Staten zijn deze eisen vastgelegd in DHHS 21 CFR Subchapter J, voor andere landen in IEC 60825-1.

Laserprodukten van klasse I worden niet als ongevaarlijk aangemerkt. De printer is voorzien van een laser van klasse IIIb (3b), dat wil zeggen een gallium arsenide-laser van 5 milliwatt met een golflengte van 770-795 nanometer. Het lasergedeelte en de printer zijn zo ontworpen dat bij normaal gebruik, bij onderhoud of reparatie conform de voorschriften, nooit blootstelling mogelijk is aan laserstraling boven een niveau zoals voorgeschreven is voor klasse 1.

Lasermeddelelse

Printeren er godkendt som et Klasse I-laserprodukt, i overensstemmelse med kravene i IEC 60825-1.

Klasse I-laserprodukter betragtes ikke som farlige. Printeren indeholder internt en Klasse IIIB (3b)-laser, der nominelt er en 5 milliwatt galliumarsenid laser, som arbejder på bølgelængdeområdet 770-795 nanometer. Lasersystemet og printeren er udformet således, at mennesker aldrig udsættes for en laserstråling over Klasse I-niveau ved normal drift, brugervedligeholdelse eller obligatoriske servicebetingelser.

Laserilmoitus

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

Luokan I lasertuotteita ei pidetä haitallisina. Tulostimen sisällä on luokan IIIb (3b) laser, joka on nimellisteholtaan 5 mW:n galliumarsenidilaser ja toimii 770 - 795 nanometrin aallonpituuksilla. Laserjärjestelmä ja tulostin ovat rakenteeltaan sellaisia, että käyttäjä ei joudu alttiiksi luokkaa 1 suuremmalle säteilylle normaalin käytön, ylläpidon tai huollon aikana.

Huomautus laserlaitteesta

Tämä kirjoitin on Yhdysvalloissa luokan I (1) laserlaitteiden DHHS 21 CFR Subchapter J -määrityksen mukainen ja muualla luokan I laserlaitteiden IEC 60825-1 -määrityksen mukainen.

Luokan I laserlaitteiden ei katsota olevan vaarallisia käyttäjälle. Kirjoittimessa on sisäinen luokan IIIb (3b) 5 milliwatin galliumarsenidilaser, joka toimii aaltoalueella 770 - 795 nanometriä. Laserjärjestelmä ja kirjoitin on suunniteltu siten, että käyttäjä ei altistu luokan I määräytyksiä voimakkaammalle säteilylle kirjoittimen normaalin toiminnan, käyttäjän tekemien huoltotoimien tai muiden huoltotoimien yhteydessä.

VARO! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

WARNING! Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

Laser-notis

Denna skrivare är i USA certifierad att motsvara kraven i DHHS 21 CFR, underparagraf J för laserprodukter av Klass I (1). I andra länder uppfyller skrivaren kraven för laserprodukter av Klass I enligt kraven i IEC 60825-1.

Laserprodukter i Klass I anses ej hälsovådliga. Skrivaren har en inbyggd laser av Klass IIIb (3b) som består av en laserenhet av gallium-arsenid på 5 milliwatt som arbetar i våglängdsområdet 770-795 nanometer. Lasersystemet och skrivaren är utformade så att det aldrig finns risk för att någon person utsätts för laserstrålning över Klass I-nivå vid normal användning, underhåll som utförs av användaren eller annan föreskriven serviceåtgärd.

Laser-melding

Skriveren er godkjent i USA etter kravene i DHHS 21 CFR, underkapittel J, for klasse I (1) laserprodukter, og er i andre land godkjent som et Klasse I-laserprodukt i samsvar med kravene i IEC 60825-1.

Klasse I-laserprodukter er ikke å betrakte som farlige. Skriveren inneholder internt en klasse IIIb (3b)-laser, som består av en gallium-arsenlaserenhet som avgir stråling i bølgelengdeområdet 770-795 nanometer. Lasersystemet og skriveren er utformet slik at personer aldri utsettes for laserstråling ut over klasse I-nivå under vanlig bruk, vedlikehold som utføres av brukeren, eller foreskrevne serviceoperasjoner.

Avís sobre el Làser

Segons ha estat certificat als Estats Units, aquesta impressora compleix els requisits de DHHS 21 CFR, apartat J, pels productes làser de classe I (1), i segons ha estat certificat en altres llocs, és un producte làser de classe I que compleix els requisits d'IEC 60825-1.

Els productes làser de classe I no es consideren perillosos. Aquesta impressora conté un làser de classe IIIb (3b) d'arseniür de gal.li, nominalment de 5 mil.liwats, i funciona a la regió de longitud d'ona de 770-795 nanòmetres. El sistema làser i la impressora han sigut concebuts de manera que mai hi hagi exposició a la radiació làser per sobre d'un nivell de classe I durant una operació normal, durant les tasques de manteniment d'usuari ni durant els serveis que satisfacin les condicions prescrites.

レーザーに関するお知らせ

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

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

注意：

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

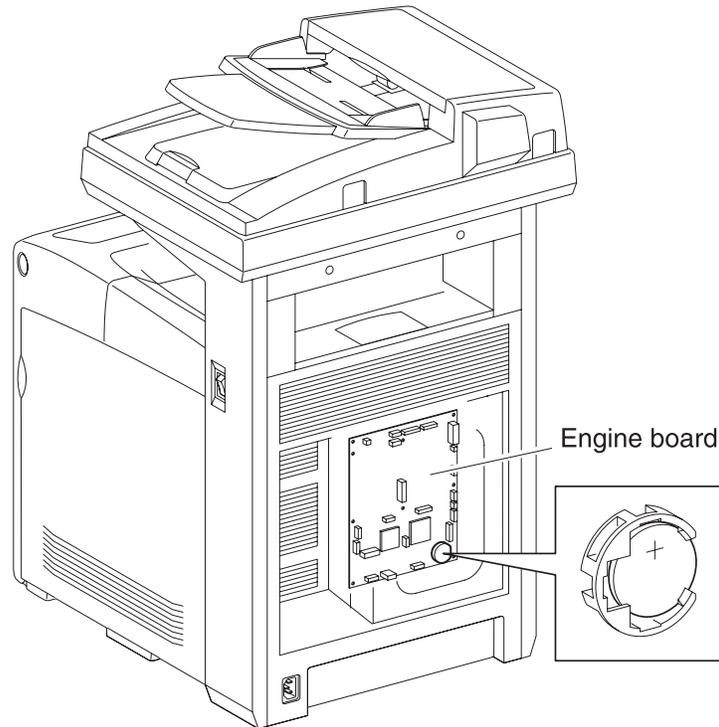
分类 I 激光产品一般认为不具危险性，本打印机内部含有分类 IIIb (3b) 的激光，在操作过程中会产生 5 毫瓦含镓及砷的微量激光，其波长范围在 770-795 nm 之间。本激光系统及打印机的设计，在一般操作、使用者维护或规定内的维修情况下，不会使人体接触分类 I 以上等级的辐射。

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

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

Lithium warning

	<p>CAUTION</p> <p>This product contains a lithium battery. THERE IS A RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE. Discard used batteries according to the battery manufacturer's instructions and local regulations.</p>
---	--



Safety information

- The safety of this product is based on testing and approvals of the original design and specific components. The manufacturer is not responsible for safety in the event of use of unauthorized replacement parts.
- The maintenance information for this product has been prepared for use by a professional service person and is not intended to be used by others.
- There may be an increased risk of electric shock and personal injury during disassembly and servicing of this product. Professional service personnel should understand this and take necessary precautions.



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

Consignes de sécurité

- La sécurité de ce produit repose sur des tests et des agrégations portant sur sa conception d'origine et sur des composants particuliers. Le fabricant n'assume aucune responsabilité concernant la sécurité en cas d'utilisation de pièces de rechange non agréées.
- Les consignes d'entretien et de réparation de ce produit s'adressent uniquement à un personnel de maintenance qualifié.
- Le démontage et l'entretien de ce produit pouvant présenter certains risques électriques, le personnel d'entretien qualifié devra prendre toutes les précautions nécessaires.
-  **ATTENTION** : Ce symbole indique la présence d'une tension dangereuse dans la partie du produit sur laquelle vous travaillez. Débranchez le produit avant de commencer ou faites preuve de vigilance si l'exécution de la tâche exige que le produit reste sous tension.

Norme di sicurezza

- La sicurezza del prodotto si basa sui test e sull'approvazione del progetto originale e dei componenti specifici. Il produttore non è responsabile per la sicurezza in caso di sostituzione non autorizzata delle parti.
- Le informazioni riguardanti la manutenzione di questo prodotto sono indirizzate soltanto al personale di assistenza autorizzato.
- Durante lo smontaggio e la manutenzione di questo prodotto, il rischio di subire scosse elettriche e danni alla persona è più elevato. Il personale di assistenza autorizzato deve, quindi, adottare le precauzioni necessarie.
-  **ATTENZIONE:** Questo simbolo indica la presenza di tensione pericolosa nell'area del prodotto. Scollegare il prodotto prima di iniziare o usare cautela se il prodotto deve essere alimentato per eseguire l'intervento.

Sicherheitshinweise

- Die Sicherheit dieses Produkts basiert auf Tests und Zulassungen des ursprünglichen Modells und bestimmter Bauteile. Bei Verwendung nicht genehmigter Ersatzteile wird vom Hersteller keine Verantwortung oder Haftung für die Sicherheit übernommen.
- Die Wartungsinformationen für dieses Produkt sind ausschließlich für die Verwendung durch einen Wartungsfachmann bestimmt.
- Während des Auseinandernehmens und der Wartung des Geräts besteht ein zusätzliches Risiko eines elektrischen Schlags und körperlicher Verletzung. Das zuständige Fachpersonal sollte entsprechende Vorsichtsmaßnahmen treffen.
-  **ACHTUNG:** Dieses Symbol weist auf eine gefährliche elektrische Spannung hin, die in diesem Bereich des Produkts auftreten kann. Ziehen Sie vor den Arbeiten am Gerät den Netzstecker des Geräts, bzw. arbeiten Sie mit großer Vorsicht, wenn das Produkt für die Ausführung der Arbeiten an den Strom angeschlossen sein muß.

Pautas de Seguridad

- La seguridad de este producto se basa en pruebas y aprobaciones del diseño original y componentes específicos. El fabricante no es responsable de la seguridad en caso de uso de piezas de repuesto no autorizadas.
- La información sobre el mantenimiento de este producto está dirigida exclusivamente al personal cualificado de mantenimiento.
- Existe mayor riesgo de descarga eléctrica y de daños personales durante el desmontaje y la reparación de la máquina. El personal cualificado debe ser consciente de este peligro y tomar las precauciones necesarias.
-  **PRECAUCIÓN:** este símbolo indica que el voltaje de la parte del equipo con la que está trabajando es peligroso. Antes de empezar, desenchufe el equipo o tenga cuidado si, para trabajar con él, debe conectarlo.

Informações de Segurança

- A segurança deste produto baseia-se em testes e aprovações do modelo original e de componentes específicos. O fabricante não é responsável pela segurança, no caso de uso de peças de substituição não autorizadas.
- As informações de segurança relativas a este produto destinam-se a profissionais destes serviços e não devem ser utilizadas por outras pessoas.
- Risco de choques eléctricos e ferimentos graves durante a desmontagem e manutenção deste produto. Os profissionais destes serviços devem estar avisados deste facto e tomar os cuidados necessários.
-  **CUIDADO:** Quando vir este símbolo, existe a possível presença de uma potencial tensão perigosa na zona do produto em que está a trabalhar. Antes de começar, desligue o produto da tomada eléctrica ou seja cuidadoso caso o produto tenha de estar ligado à corrente eléctrica para realizar a tarefa necessária.

Informació de Seguretat

- La seguretat d'aquest producte es basa en l'avaluació i aprovació del disseny original i els components específics. El fabricant no es fa responsable de les qüestions de seguretat si s'utilitzen peces de recanvi no autoritzades.
- La informació pel manteniment d'aquest producte està orientada exclusivament a professionals i no està destinada a ningú que no ho sigui.
- El risc de xoc elèctric i de danys personals pot augmentar durant el procés de desmuntatge i de servei d'aquest producte. El personal professional ha d'estar-ne assabentat i prendre les mesures convenients.
-  **PRECAUCIÓ:** aquest símbol indica que el voltatge de la part de l'equip amb la qual esteu treballant és perillós. Abans de començar, desendolieu l'equip o extremeu les precaucions si, per treballar amb l'equip, l'heu de connectar.

안전 사항

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

安全信息

- 本产品的安全性以原来设计和特定产品的测试结果和认证为基础。万一使用未经许可的替换部件，制造商不对安全性负责。
- 本产品的维护信息仅供专业服务人员使用，并不打算让其他人使用。
- 本产品在拆卸、维修时，遭受电击或人员受伤的危险性会增高，专业服务人员对这点必须有所了解，并采取必要的预防措施。
-  **切记:** 当您看到此符号时，说明在您工作的产品区域有危险电压的存在。请在开始操作前拔掉产品的电源线，或者在产品必须使用电源来执行任务时，小心从事。

Preface

This manual contains maintenance procedures for service personnel. It is divided into the following chapters:

1. **General information** contains a general description of the printer and the maintenance approach used to repair it. Special tools and test equipment, as well as general environmental and safety instructions, are discussed.
2. **Diagnostic information** contains an error indicator table, symptom tables, and service checks used to isolate failing field replaceable units (FRUs).
3. **Diagnostic aids** contains tests and checks used to locate or repeat symptoms of printer problems.
4. **Repair information** provides instructions for making printer adjustments and removing and installing FRUs.
5. **Connector locations** uses illustrations to identify the connector locations and test points on the printer.
6. **Preventive maintenance** contains the lubrication specifications and recommendations to prevent problems.
7. **Parts catalog** contains illustrations and part numbers for individual FRUs.

Conventions

Note: A note provides additional information.

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

There are several types of caution statements:

	<p>CAUTION</p> <p>A caution identifies something that might cause a servicer harm.</p>
---	---

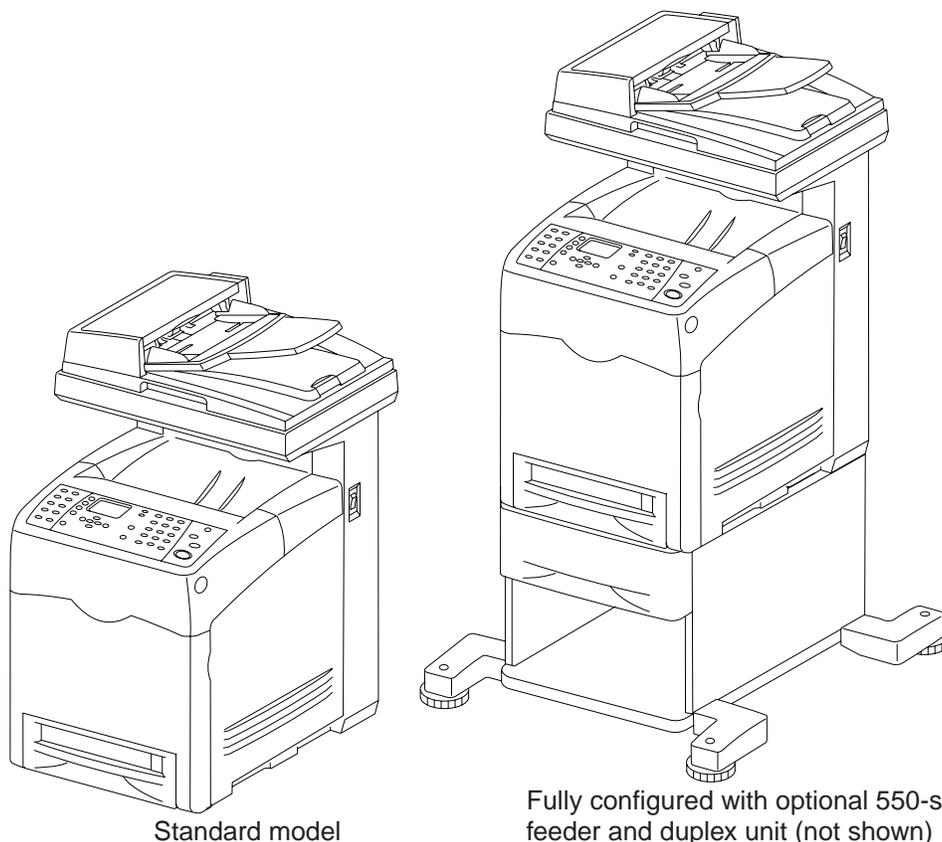
	<p>CAUTION</p> <p>This type of caution indicates there is a danger from hazardous voltage in the area of the product where you are working. Unplug the product before you begin, or use caution if the product must receive power in order to perform the task.</p>
---	--

	<p>CAUTION</p> <p>This type of caution indicates a hot surface.</p>
---	--

	<p>CAUTION</p> <p>This type of caution indicates a tipping hazard.</p>
---	---

1. General information

The Lexmark™ X560n (7105-135) is a color laser MFP (multifunction printer) that provides print, copy, scan, and fax functions.



See **“Operator panel and customer menus” on page 2-158** for information about the operator panel and menus.

Options and features

You can order additional memory, trays, and the Multi-Protocol Network Card if these are not standard on your printer.

- Memory—the MFP features one slot that accepts 256MB, 512MB, 1GB DDR2 DIMM.
- 550-sheet feeder—this additional input feature comes with a storage cabinet.
- Additional trays—additional trays can be added to allow you to switch paper types quickly by exchanging the trays.
- Duplex unit—provides duplex printing.
- Multi-Protocol Network Card—provides additional protocols and security features.

Printer and scanner specifications

Electronic specifications

Printer specifications

Processor	
Speed and Type	400 MHz RISC
Memory	
Standard	384MB (256MB dedicated to printer/128MB dedicated to scanner)
Optional (DDR2)	256MB, 512MB, and 1GB
Maximum printer memory	1280 MB maximum for printing/and 128MB dedicated to scanner)
Connections	
Print (standard)	10Base-T/100Base-TX, high speed USB, IEEE1284 Parallel
Scan	Ethernet
Fax	RJ11 Dual Analog Ports (Line/Phone)
Option Slots	
DRAM DIMM Slots	1
Expansion Slots	1 for Multi-Protocol Network Card
Input sources	
Standard input trays	MP feeder (tray 1)—150 sheets Integrated tray (tray 2)—250 sheets
Optional feeder/cabinet	550-sheet feeder (tray 3)—550 sheets

Scanner specifications

Scanner		
Scanner Type	White Xenon Lamp	
Scan Technology	CCD	
Number of Light Sources	2	
Color bit depth	24	
Max Optical Resolution	600 x 600	
Scan Area - Flatbed	215.9 x 297mm (A4)	
Scanner ADF		
Type	C-Path	
Optical Resolution ADF (Mono)	Max. 600 x 600 dpi	
Optical Resolution ADF (Color)	Max. 600 x 300 dpi	
Document Capacity	50 Sheets (80g/m ²) Bond	
Media Weight	Max. 32 lb (128 g/m ²)	Min. 16lb (38g/m ²)
Speed - Maximum (Letter/A4 Long-edge fed)	Mono: Up to 45 SPM Color: Up to 45 SPM	
Scan Area - ADF	Max. 8.5 (w) x 14 (l) (215.9 mm x 355.6 mm) Min. 5.8 (w) x 5.0 (l) (147.3 mm x 127 mm)	
Enlargement/Reduction capability	25 to 400%	

Environment specifications

Acoustics

All measurements were made in accordance with ISO 7779 and reported in conformance with ISO 9296.

Mode	Sound Pressure Level (dBA)	Sound Power Level (Bels)
Printing	52	7.0
Copying	53	7.0
Scanning	54	7.3
Standby Mode	34	4.9

Operating environment

Specified Operating Environment	
Operating Temperature	5° to 32.2° C (41° to 90° F)
Relative Humidity	15% to 85%
Altitude	3,100 meters (10,170 feet)
Shipping Environment (with supply items)	
Temperature	-20° to 40° C (-40° to 104° F)
Humidity	5% to 95%
Storage Environment (with supply items)	
Temperature	0.6° to 40° C (33° to 104° F)
Altitude	15,000 meters (49,212 feet)
Humidity	5% to 80%

Physical dimensions and clearances

Dimensions and weight

	Height	Width	Depth	Weight
X560n MFP (with cartridge)	730 mm	460 mm	525 mm	40 kg
Weight without cartridge & PC	730 mm	460 mm	525 mm	36 kg

Operating clearances	Inches	mm
Left	3.9	100
Right	3.9	100
Front	23.6	600
Rear	5.1	130
Top	13.8	350

Media guidelines and specifications

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

Paper

Follow the media guidelines below for successful printing:

- Rough, highly textured, limp, or pre-curved papers will result in lower print quality and more frequent paper feed failures.
- Colored papers must be able to withstand 220° C (446° F) fusing temperature.
- Preprinted forms and letterheads should be selected using guidelines found in the MFP *User's Guide*. The chemical process used in preprinting may render some papers unsuitable for use with the MFP.
- Unsuitable papers include multipart forms and documents; chemically treated papers; coated, synthetic, and thermal papers; and preprinted papers requiring a high degree of registration.
- Recycled paper less than 80 g/m² may cause unacceptable results.

Envelopes

- If envelope wrinkling occurs, refer to the *User's Guide* for correct loading and stacking of envelopes.
- All envelopes should be new, unused, and without package damage.
- Envelopes with excessive curl or twist exceeding 6.0mm, those stuck together, those with bent corners or nicked edges, or those that interlock should not be used.
- Minimum weight: 75 g/m² (20lb.)
- The following envelopes should not be used:
 - Envelopes with windows, holes, perforations, cutouts, or deep embossing
 - Envelopes with metal clasps, string ties, or metal folding bars
 - Envelopes with exposed flap adhesive when the flap is in the closed position
- For best results, printing on new 90 g/m² (24 lb.) sulfite or 25% cotton bond envelopes is recommended
- Under high humidity conditions (over 60%), the envelopes may seal during printing

Transparencies

- Use letter- or A4-size sheets only.
- Many transparencies specifically designed for copy machines or laser printers may be used with the MFP. Single-sided transparencies designed for color laser printers may not work well. Refer to the *User's Guide* for recommended part numbers.

Labels

Labels should be selected using guidelines found in the *User's Guide*, *Complete MFP Reference*, or the *Card Stock and Label Guide*, and tested for acceptability.

Mixed Size Scan

The mixed size scan will allow users to scan different size originals which have common edges from the ADF. The scanner will detect the paper size/orientation of each page in the mixed size set. The following is a list of paper sizes with a common edge.

- 8.5" common edge: Letter (SEF), Statement (LEF), Legal (SEF), Folio (SEF),
- 11" common edge: Letter (LEF), Tabloid (SEF)
- 219mm common edge: A4 (SEF), A5 (LEF)
- 297mm common edge: A4 (LEF), A3 (SEF)
- 257mm common edge: B5 (LEF), B4 (SEF)

For flatbed scans, the mixed size scan will scan any paper size which can be sensed by the scanner.

The mixed size scan will be used for copy, fax, and all host send jobs.

Supported media sizes on the scanner

The following table lists the paper sizes, which are supported in the US and the international modes through the ADF and from the flatbed. The user will get correct images from the supported paper sizes in the table. For the unsupported sizes, the user may get either clipped or padded images.

International and US alignment for the scanner (X is supported)

Paper sizes	LEF/SEF (Long Edge First, Short Edge First)	US		International	
		ADF	Flatbed	ADF	Flatbed
A4	SEF			X	X
	LEF		X	X	X
A5	SEF				X
	LEF			X	X
JIS B5	SEF				X
	LEF			X	X
JIS B4	SEF			X	X
Letter	SEF	X	X		X
	LEF	X	X		X
Legal (8.5 x 14 in.)	SEF	X	X		
Executive	SEF				
	LEF		X		
Statement	SEF		X		
	LEF	X	X		X
Folio (8.5 x 13 in.)	SEF	X			X

Supported media sizes for the printer

Media sizes	Tray 1—MP feeder	Tray 2—Standard 250-sheet tray assembly	Tray 3—550-sheet feeder (option)	Duplex (option)	Standard output tray
A4 210 x 297mm	X	X	X	X	X
A5 148 x 210mm	X	X	X	X	X
JIS B5 182 x 257mm	X	X	X	X	X
JIS B4 257 x 364mm	X	X	X		X
Letter 8.5 x 11 in.	X	X	X	X	X
Legal 8.5 x 14 in.	X	X	X	X	X
Executive 7.25 x 10.5 in.	X	X	X	X	X
Folio 8.5 x 13 in.	X	X	X	X	X
Statement 5.5 x 8.5 in.	X	X	X		X
Universal Length: 98.4 to 432mm (3.9 to 17 in.) Width: 140 to 297mm (5.5 to 11.7 in.) MP feeder only: Length: 148 to 482mm (5.8 to 19 in.) Width: 105 to 305mm (4.1 to 12 in.)	X	X	X		X
7¼ Envelope 98.4 x 190.5mm	X				X
10 Envelope 104.8 x 241.3mm (4.12 x 9.5 in.)	X				X
DL Envelope 110 x 220mm (4.33 x 8.66 in.)	X				X
C5 Envelope 162 x 229mm (6.38 x 9.01 in.)	X				X
DL Envelope 110 x 220mm	X				X
Other envelope Length: 98.4–431.8mm (3.8–17 in.) Width: 89–297mm (3.5–11.7 in.)	X				X

Supported media types

Media types	Tray 1—MP feeder	Tray 2—Standard 250-sheet tray assembly	Tray 3—550-sheet feeder (option)	Duplex (option)	Standard output tray
Paper	X	X	X	X	X
Card stock		X			X
Transparencies (A4 and letter)	X	X	X		X
Paper labels		X			X
Envelopes	X				

Supported media type and weight

Type	Paper Type setting on operator panel	Weight
Plain	Plain paper (Light)	60 to 80 g/m ²
	Plain paper (Normal)	
Plain (side 2)	Plain paper (Light/side2)	
	Plain paper (Normal/side2)	
Plain Thick	Plain paper Thick	81 to 105 g/m ²
Plain Thick (side 2)	Plain paper Thick (side 2)	
Transparency	Transparency	
Covers	Covers	106 to 163 g/m ²
Covers (side 2)	Covers (side 2)	
Covers Thick	Covers Thick	164 to 216 g/m ²
Covers Thick (side 2)	Covers Thick (side 2)	
Label	Label Normal	
	Label Thick	
Coated	Coated paper Normal	106 to 163 g/m ²
Coated (side 2)	Coated paper Normal (side 2)	
Coated Thick	Coated paper Thick	164 to 216 g/m ²
Coated Thick (side 2)	Coated paper Thick (side 2)	
Envelope	Envelope	
Recycled	Recycled paper	
Recycled (side 2)	Recycled paper (side 2)	

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
Needlenose pliers
Diagonal side cutters
Spring hook
Feeler gauges
Analog or digital multimeter
Parallel wrap plug 1319128
Twinax/serial debug cable 1381963
Coax/serial debug cable 1381964
Flash light (optional)

Acronyms

ADC	Automatic Density Control
ADF	Automatic Document Feeder
ASIC	Application-Specific Integrated Circuit
C	Cyan
CCD	Charged Coupled Device
CVT	Constant Velocity Transport
DIMM	Dual Inline Memory Module
DRAM	Dynamic Random Access Memory
DSL	Digital Subscriber Line
DTMF	Dual Tone Multi-Frequency
EEPROM	Electrically Erasable Programmable Read-Only Memory
EP	Electrophotographic Process
ESD	Electrostatic Discharge
Fax	Abbreviation for facsimile
FRU	Field Replaceable Unit
GB	Gigabyte
HVPS	High Voltage Power Supply
IIT	Image Input Terminal
K	Black
LASER	Light Amplification by Stimulated Emission of Radiation
LCD	Liquid Crystal Display
LED	Light-Emitting Diode
LEF	Long Edge Feed
LVPS	Low Voltage Power Supply
M	Magenta
MB	Megabyte
MAC	Media Access Control
MP	Multipurpose (as in MP feeder)
MPC	Multi-Protocol Network Card
MPF	Multipurpose Feeder
NCU	Network Control Unit
NVRAM	Nonvolatile Random Access Memory
PC	Photoconductor
PHY	Physical Layers
Pixels	Picture elements (also pels)
POR	Power-On Reset
RIP	Raster Imaging Processor
ROM	Read Only Memory
RTC	Real Time Clock
SDRAM	Synchronous Dual Random Access Memory
SEF	Short Edge Feed
SIMM	Single Inline Memory Module
SRAM	Static Random Access Memory
V ac	Volts alternating current
V dc	Volts direct current
Y	Yellow

2. Diagnostic information

Start

**CAUTION**

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

To determine the corrective action necessary to repair a printer, look for the following information:

- Do you have a symptom, rather than an error message?
 - **“Symptoms” on page 2-2**
 - **“Print/image quality” on page 2-3**
- If you have an error message or user message, check the following:
 - **“Service error codes and attention messages” on page 2-4**
 - **“Service checks” on page 2-29** for individual error messages
 - **“Print quality service checks” on page 2-121** for specific service checks and samples or print quality issues
- Additional information can be found at the following locations:
 - **“Operator panel and customer menus” on page 2-158**
 - **“Menu map of Service Mode” on page 3-2**
 - **“Theory of operation” on page 3-71**
 - **“Media guidelines and specifications” on page 1-4**

Note: There may be printer error messages that are not contained in this service manual. Call your next level of support for assistance.

Symptom tables

Symptoms

Symptoms	Actions
Dead machine	Go to “Power (AC) service check” on page 2-103.
MFP does not come out of deep sleep when a print or fax job is sent to the device.	Press Wake Up to bring the device out of deep sleep.
Multiple pages picked at once	Go to “Multiple feed service check” on page 2-98.
Access is blocked to the Admin Menu and a password is required. The password feature was not purposely set or the password is unknown.	<p>If Panel Lock is enabled (In Admin Menu—Secure Settings—Panel Lock), you need a 4-digit PIN to unlock the menus. If this setting is set inadvertently or the PIN is unknown, you can still get into the menu. However, some of the user settings and data may be lost.</p> <ol style="list-style-type: none"> 1. Print a configuration page from the Information Menu. This will allow you to know which settings you may have to reset after this procedure. 2. Turn the printer off. 3. Turn the printer on while pressing and holding OK until Select Function is displayed. The password is now reset to the default (0000) and Panel Lock is disabled.
Noise—when power is turned on	Go to “When power is turned on” on page 2-60.
Noise—during standby	Go to “During standby” on page 2-62.
Noise—during printing	Go to “During printing” on page 2-63.
Noise—electrical interference	Go to “Electrical noise (interference) service check” on page 2-70.
When printing color fax, an out of memory error is generated, and a prompt to POR appears.	This is not unusual. Printing a color fax requires more memory than may be installed.
Tray linking while copying fails	This is not a supported function.
Closing tray 2 with too much force may cause the size setting in the tray to change. For example it may slip from letter to A4.	Use less force when media is loaded in tray.
MP feeder door fails to open.	Open and close tray 2 door, then open MP feeder door.
Poor paper pick performance when using the MP feeder	Make sure the paper is below the maximum line on the MP feeder paper guides.
MP feeder picks envelopes too quickly when tray is loaded	Allow print engine to stop and prompt for more envelopes before loading.
077-343 Motor Error appears when envelopes in MP feeder. Error message posted instead of jam and job may be lost.	Avoid loading media, especially envelopes, above the maximum fill line. If the problem persists, go to “077-343 Motor Error service check” on page 2-47.
Scanner problems	Go to “Scanner error service check” on page 2-111.
Fax problems	Go to “Fax Error service check” on page 2-73.
Cannot fax or scan	Check for empty cartridges.

Print/image quality

Symptoms	Actions
Poor performance when using cotton paper	Set the media setting to thin card stock.
ADF skew. Generally occurs at high humidity conditions (78° F/80% relative humidity to 90°F/45% relative humidity, 25.6°C/80% relative humidity to 32.2°C.80%).	Load less media in the ADF.
Faint (light) print	Go to “Faint print (low contrast) service check” on page 2-125.
Blank (white) print out	Go to “Blank print (No print) service check” on page 2-127.
All-black (solid)	Go to “Solid black service check” on page 2-129.
Vertical blank lines	Go to “Vertical blank lines service check” on page 2-131.
Horizontal blank lines	Go to “Horizontal blank lines or bands service check” on page 2-133.
Thin sharp bands every 76 mm on the image.	This can occur with new cartridges. Check again in 12 hours. It should go away on its own.
Vertical streaks (stripes)	Go to “Vertical stripes service check” on page 2-135.
Vertical lines on scans from ADF	Go to “Cleaning the document glass” on page 6-1.
Horizontal streaks (stripes or bands)	Go to “Horizontal stripes service check” on page 2-138.
Horizontal banding every 77 mm	Possible light overexposure on the photoconductor drums. Allow 29 hours to correct itself.
Missing areas, blank areas	Go to “Partial lack service check” on page 2-141.
Specks or spots	Go to “Spots service check” on page 2-143.
Ghost or afterimages	Go to “Afterimage service check” on page 2-146.
Background contamination	Go to “Background (fog) service check” on page 2-147.
Skewed (crooked) image on paper	Go to “Skew service check” on page 2-149.
Paper wrinkled, folded, worn, or torn	Go to “Paper damage service check” on page 2-151.
Toner not fixed (smears)	Go to “Toner does not fix service check” on page 2-154.
Color registration error, color shift, or colors overlap within image	Go to “Color registration (color shift) service check” on page 2-155.
Black color plane off after storing device	Go to “Color registration (color shift) service check” on page 2-155.
Wavy image	Go to “Hunting service check” on page 2-156.
Incorrect image aspect or distorted image	Go to “Magnification incorrect (distortion) service check” on page 2-157.
Solid halftone areas have visible screen artifacts when printing with PostScript driver.	Recommend user change from PostScript driver to PCL driver.

Service error codes and attention messages

Error code	Error code text	Description	Service check
010-351	Fuser Error Error 010-351 Restart Printer	<IOT Fuser Life Over> The fuser has reached the replacement time.	Go to "010-351 Fuser Error service check" on page 2-29.
010-397	Fuser Error Error 010-397 Error Code:xx Restart Printer	<IOT Fuser Failure> A fuser error is detected.	Go to "010-397 Fuser Error, Insert Fuser service check" on page 2-29.
016-500	Erase Flash Error Error 016-500 Restart Printer	<Download Delete Error> An error occurred erasing the Flash.	Go to "Flash card service check" on page 2-75.
016-501	Write Flash Error Error 016-501 Restart Printer	<Download Write Error> An error occurred writing to the Flash.	Go to "Flash card service check" on page 2-75.
016-502	Verify Flash Error Error 016-502 Restart Printer	<Download Verify Error> An error occurred verifying the Flash.	Go to "Flash card service check" on page 2-75.
016-503	Email Error Invalid SMTP Server Error 016-503 Press OK	<SMTP Server Address Resolution Fail for Maillib> Failed to Resolve SMTP Server Name at Mail Reception.	Go to "Server Error service check" on page 2-112.
016-504	Email Error Invalid POP3 Server Error 016-504 Press OK	<POP Server Address Resolution Fail for Maillib> Failed to Resolve POP3 Server Name at Mail Reception.	Go to "Server Error service check" on page 2-112.
016-505	Email Login Error POP3 Login Failed Error 016-505 Press OK	<POP Authentication Fail for Maillib> Failed to Login to POP3 Server at Mail Reception.	Go to "Server Error service check" on page 2-112.
016-506	Email Login Error Error 016-506 Press OK	<SMTP Error> Required User Parameter Not Set.	Go to "Server Error service check" on page 2-112.
016-507	Email Login Error SMTP Login Failed Error 016-507 Press OK	<SMTP Error> Failed to Login to SMTP Server at Mail Transmission.	Go to "Server Error service check" on page 2-112.
016-611		NVRAM mismatch.	Go to "016-611 Controller board service check" on page 2-31.
016-718	Out of Memory Error 016-718 Press OK	<Memory Overflow> Exceeds the memory capacity.	Go to "Memory full service check" on page 2-96.
016-720	PDL Error Error 016-720 Press OK	<PDL Error> PDL error occurs.	Go to "016-720 PDL Error service check" on page 2-31.
016-737	Format Error Error 016-737 Press OK	<Download Format Error> The format is invalid.	Go to "016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error service check" on page 2-32.

Error code	Error code text	Description	Service check
016-738	MPC Error Error 016-738 Press OK	<DOWNLOAD INITIAL ERROR> Failed to start Multi-Protocol Network Card download mode at MPC download.	Go to "MPC (Multi-Protocol Network Card) service check" on page 2-98.
016-739	Reseat MPC Error 016-739 Press OK	<DOWNLOAD INSERTION ERROR> Multi-Protocol Network Card download was attempted without a MPC mounted.	Go to "MPC (Multi-Protocol Network Card) service check" on page 2-98.
016-740	MPC Comm Error Error 016-740 Press OK	<DOWNLOAD COMM ERROR> Communication error occurred between Multi-Protocol Network Card (MPC) and RIP board during download.	Go to "MPC (Multi-Protocol Network Card) service check" on page 2-98.
016-741	Protection Error Error 016-741 Press OK	<Download Protect Error> File was downloaded to the unavailable (protected) area of the Flash ROM.	Go to "016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error service check" on page 2-32.
016-742	Invalid ID Error 016-742 Press OK	<Download ID Error> The ID of the downloaded file is invalid.	Go to "016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error service check" on page 2-32.
016-743	Range Chk Error Error 016-743 Press OK	<Download Range Error> An error occurred writing to the Flash.	Go to "016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error service check" on page 2-32.
016-744	Check Sum Error Error 016-744 Press OK	<Download Checksum Error> The checksum is invalid.	Go to "016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error service check" on page 2-32.
016-745	Header Error Error 016-745 Press OK	<Download Header Error> The file header information is invalid.	Go to "016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error service check" on page 2-32.
016-757	Invalid User Error 016-757 Press OK	<Auditron - Invalid User> The user is not registered to any account.	Go to "016-757 Invalid User, 016-758 Disabled Func, 016-759 Limit Exceeded service check" on page 2-32.
016-758	Disabled Func Error 016-758 Press OK	<Auditron - Disabled Function> An invalid account was detected.	Go to "016-757 Invalid User, 016-758 Disabled Func, 016-759 Limit Exceeded service check" on page 2-32.
016-759	Limit Exceeded Error 016-759 Press OK	<Auditron - Reached Limit> The number of registered users exceeded its upper limit.	Go to "016-757 Invalid User, 016-758 Disabled Func, 016-759 Limit Exceeded service check" on page 2-32.

Error code	Error code text	Description	Service check
016-765	Network Scan Error Email Server Full Error 016-765 Press OK	<SMTP Error> SMTP Server Disk Space Full.	Check the server side.
016-766	SMTP Server Error Error 016-766 Press OK	<SMTP Error> SMTP Server File System Error.	Check the server side.
016-767	Invalid Email Address Error 016-767 Press OK	<Email Address Error> Invalid Recipient Email Address.	Go to “Server Error service check” on page 2-112.
016-768	Invalid 'From' Address Error 016-768 Press OK	<Email Address Error> Invalid Sender Email Address.	Go to “Server Error service check” on page 2-112.
016-782	Login Error Error 016-782 Press OK	<Login Error> Login Error.	Check the server side.
016-783	Network Scan Error Invalid SMB/FTP Server Error 016-783 Press OK	<Server Path Error> Specified Server Path Not Found.	Check the server side.
016-784	Network Scan Error Invalid Write Permission Error 016-784 Press OK	<SMB/FTP Error> Error Writing to Server at File Transfer.	Go to “Server Error service check” on page 2-112. or Check the server side.
016-785	Network Scan Error Server Out of Memory Error 016-785 Press OK	<Disk Full> File Transfer Failed due to FTP/SMB Server Disk Space Full.	Check the server side.
016-786	Network Scan Error Communication Timeout Error 016-786 Press OK	<Network Error> Time Out Error at Data Transmission/Reception.	Go to “Server Error service check” on page 2-112. or Check the server side.
016-787	Network Scan Error Directory Not Found Error 016-787 Press OK	<SMB/FTP Error> Failed to Create Directory.	Go to “Server Error service check” on page 2-112. or Check the server side.
016-788	Network Scan Error File Name Exists Error 016-788 Press OK	<SMB/FTP Error> Error due to Duplicated Filename.	Go to “Server Error service check” on page 2-112.
016-789	Network Scan Error Error 016-789 Press OK	<SMB/FTP Error> Error after File Transmission.	Go to “Server Error service check” on page 2-112.
016-790	Network Not Ready Error 016-790 Press OK	<Network Error> F2N Module Starting Up or IP Address Not Determined.	Go to “Server Error service check” on page 2-112.
016-794	Network Not Ready Scan Aborted Error 016-794 Press OK	<Network Error> Failed to Run ScanToSMB due to SMB over TCP not running. Occurs only when Multi-Protocol Network Card is installed.	Go to “016-794 Network Not Ready service check” on page 2-33.

Error code	Error code text	Description	Service check
016-799	Invalid Job Error 016-799 Press OK	<Job Environment Violation> Detects violation data for the print condition.	Go to “016-799 Invalid Job service check” on page 2-33.
016-985	Email Size Limit Error 016-985 Press OK	<Mail Size Error> Mail Size Error.	Check the server side.
016-986	File Size Limit Error 016-986 Press OK	<File Size Error> Exceeded Format-specific Size Limit after Conversion.	Go to “Engine board error service check” on page 2-71.
017-970	MFD Memory Full Error 017-970 Press OK	<AIOC lack of Memory> Out of memory for AIOC.	Go to “MFD Memory Full service check” on page 2-97.
017-971	MFD Controller Error Error 017-971 Press OK	<FlashROM Write Error> Write error at Image Data FlashROM	Go to “Engine board error service check” on page 2-71.
017-972	MFD Controller Error Error 017-972 Press OK	<FlashROM Erase Error> Erase error at Image Data FlashROM	Go to “Engine board error service check” on page 2-71.
017-973	MFD Controller Error Error 017-973 Press OK	<FlashROM Suspend Error> Suspend error at Image Data FlashROM	Go to “Engine board error service check” on page 2-71.
017-974	MFD Controller Error Error 017-974 Press OK	<FlashROM Resume Error> Resume error at Image Data FlashROM	Go to “Engine board error service check” on page 2-71.
017-975	MFD Controller Error Error 017-975 Press OK	<File Handle Over> File Handle Count exceeds Limit	Go to “Engine board error service check” on page 2-71.
017-976	MFD Controller Error Error 017-976 Press OK	<File Table Over> File Count exceeds Manageable Limit	Go to “Engine board error service check” on page 2-71.
017-977	MFD Controller Error Error 017-977 Press OK	<File Count Over> Document Count exceeds Manageable Limit	Go to “Engine board error service check” on page 2-71.
017-978	MFD Controller Error Error 017-978 Press OK	<File Page Over> Document Page Count exceeds Limit	Go to “Engine board error service check” on page 2-71.
017-979	MFD Controller Error Error 017-979 Press OK	<Double File Open> File double open	Go to “Engine board error service check” on page 2-71.
017-980	Report Error Error 017-980 Press OK	<Report File Open/Close Error> A report file failed to open or close.	Go to “Engine board error service check” on page 2-71.
016-982	Hard Drive Full Error 016-982 Press OK	<Memory Over flow> Exceeds the memory capacity.	Go to “Memory full service check” on page 2-96.
017-986	MFD Controller Error Error 017-986 Press OK	<Create 0 byte file> Empty File created.	Go to “Engine board error service check” on page 2-71.

Error code	Error code text	Description	Service check
017-987	MFD Controller Error Error 017-987 Press OK	<File Read Error> File read error due to buffer overflow.	Go to “Engine board error service check” on page 2-71.
017-988	Scan Time Out Error 017-988 Press OK	<PC Scan Time Out> Timeout at ScanToApplication start.	Go to “017-988 Scan Time Out” on page 2-34.
017-989	MFD Controller Error Error 017-989 Press OK	<File Size Over> The writing file size exceeds the buffer size.	Go to “Engine board error service check” on page 2-71.
018-310	MPC Error Error 018-310 Restart Printer	<MPC-ESS Communication Fail> Communication fail between Multi-Protocol Network Card and RIP board.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-311	MPC Error Error 018-311 Restart Printer	<MPC Flash ROM Boot Module Checksum Error> Checksum error in Multi-Protocol Network Card Flash ROM.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-312	MPC Error Error 018-312 Restart Printer	<MPC RAM R/W Test Error> The error is detected by Multi-Protocol Network Card RAM R/W check.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-313	MPC Error Error 018-313 Restart Printer	<MPC Flash ROM Application Module Checksum Error> Checksum error in the Multi-Protocol Network Card Flash ROM.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-314	MPC Error Error 018-314 Restart Printer	<MPC MAC Address Checksum Error> Checksum error in the Multi-Protocol Network Card MAC address.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-315	MPC Error Error 018-315 Restart Printer	<MPC Ethernet BIST parity/RAM R/W Error> The error is detected by Multi-Protocol Network Card Ethernet BIST parity RAM R/W check.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-316	MPC Error Error 018-316 Restart Printer	<MPC Internal Loopback Error> The error is detected by Loopback test.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-317	MPC Error Error 018-317 Restart Printer	<MPC Fatal Error> The error is detected by Multi-Protocol Network Card check.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-319	MPC Error Error 018-319 Restart Printer	<MPC Network OS Error> The error is detected by Multi-Protocol Network Card Network OS.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
018-320	MPC Error Error 018-320 Restart Printer	<MPC Network VxWorks Error> The error is detected by Multi-Protocol Network Card VxWORKS.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.

Error code	Error code text	Description	Service check
024-340	MCU Firmware Error Error 024-340 Error Code:xx Restart Printer	<IOT Firmware Error> Firmware Error is detected. xx:CODE (hexidecimal) 01h: Unexpected firmware trap 02h: Unexpected firmware trap 03h: I2C retry error 04h: Unexpected firmware trap 05h: Unexpected firmware trap 06h: 07h: Master fail 1 08h: Master fail 2 09h: NVM illegal data 0Ah: Over dispense 0Bh: Unexpected firmware trap 0Ch: Unexpected firmware trap 0Dh: Unexpected firmware trap 0Eh: Unexpected firm-ware trap 0Fh: Unexpected firmware trap 10h: Unexpected firmware trap 11h: Unexpected firm-ware trap 12h: Unexpected firmware trap 13h: Unexpected firmware trap 14h: Unexpected firm-ware trap	Go to “Controller board service check” on page 2-67.
024-360	Download Mode Send FW Data Error 024-360 Send FW Data	<MCU DownLoad Error> MCU firmware download failure.	Go to “Download Mode service check” on page 2-69.
024-371	MCU Comm. Error Error 024-371 Restart Printer	<IOT-ESS Communication Fail> Communication failed between the scanner and RIP board.	Go to “024-371 MCU Comm Error (controller board communication)” on page 2-35.
033-500	Fax Codec Error Error 033-500 Press OK	<FAX RX JPEG Data Limit Over> The incoming fax JPEG decoded data exceeds the system data limit.	Go to “Protocol Error service check” on page 2-104.
033-501	Fax Codec Error Error 033-501 Press OK	<CODEC Error> The Codec process aborted by read error during manual dialing.	Go to “Fax Codec Error, Communication service check” on page 2-72.
033-502	Fax Codec Error Error 033-502 Press OK	<file Open Error> The File Open error occurred during manual dialing.	Go to “Engine board error service check” on page 2-71.
033-503	MFD Memory Full Error 033-503 Press OK	<Memory Full> Memory full at reception.	Go to “MFD Memory Full service check” on page 2-97.
033-510	Fax Codec Error Error 033-510 Press OK	<CODEC Error> The Decoded Line Count per Stripe error at JBIG Data Decoding.	Go to “033-510 Fax Codec Error service check” on page 2-35.
033-511	Fax Codec Error Error 033-511 Press OK	<MH/MR/MMR Decode Error> The MH/HR/MMR Received as 0 Line.	Go to “Protocol Error service check” on page 2-104.
033-512	Fax Communication Error Error 033-512 Press OK	<Modem Parameter Exchange Error> The Modem Parameter Exchange error occurred	Go to “Engine board error service check” on page 2-71.

Error code	Error code text	Description	Service check
033-513	Fax Communication Error Error 033-513 Press OK	<Stop Communication in Memory Full> Communication interrupted due to Memory Full	Go to “Engine board error service check” on page 2-71.
033-514	Fax Codec Error Error 033-514 Press OK	<JPEG DNL/SOF0 Error> Line Number Unavailable at JPEG Reception.	Go to “Protocol Error service check” on page 2-104.
033-515	Fax Codec Error Error 033-515 Press OK	<JPEG Nf Error> Color/BW Multivalue Info Unavailable at JPEG Reception.	Go to “Protocol Error service check” on page 2-104.
033-516	Fax Codec Error Error 033-516 Press OK	<JPEG EOI Error> Failed to detect EOI at JPEG Reception.	Go to “Protocol Error service check” on page 2-104.
033-517	Incorrect Password Error 033-517 Press OK	<DFAX Password Error> The password for DFAX does not match the password for Fax/Scan Lock.	Go to “033-517 Password Error service check” on page 2-35.
033-751	Fax Communication Error Error 033-751 Press OK to retry	<Over Run> The incoming data overrun at the modem.	Go to “Engine board error service check” on page 2-71.
033-752	Target Fax Busy Error 033-752 Press OK	<During Call Busy Tone> The busy tone was received while calling the external telephone in the TEL/FAX mode.	Go to “Fax Error service check” on page 2-73.
033-753	Fax Communication Error Error 033-753 Press OK	<CJ Not Detection> The CJ cannot be detected.	Go to “Fax Error service check” on page 2-73.
033-754	Fax Communication Error Error 033-754 Press OK	<V8 Error> The V8 error occurred.	Go to “Fax Error service check” on page 2-73.
033-755	Fax Communication Error Error 033-755 Press OK	<Phase2> (Line Probing) error occurred.	Go to “Fax Error service check” on page 2-73.
033-756	Fax Communication Error Error 033-756 Press OK	<Phase3> (Primary Channel Equalizer Trimming) error occurred.	Go to “Fax Error service check” on page 2-73.
033-757	Fax Communication Error Error 033-757 Press OK	<Primary Channel Synchronization Error> The primary channel re-synchronization error occurred.	Go to “Fax Error service check” on page 2-73.
033-758	Fax Communication Error Error 033-758 Press OK	<Control Channel Synchronization Error> The control channel re-synchronization error occurred.	Go to “Fax Error service check” on page 2-73.

Error code	Error code text	Description	Service check
033-759	Fax Communication Error Error 033-759 Press OK	<Control Channel Retrain Error> The control channel retrain error occurred.	Go to “Fax Error service check” on page 2-73.
033-760	Fax Communication Error Error 033-760 Press OK	<Control Channel OFF Time Out> The control channel off time out occurred.	Go to “Fax Error service check” on page 2-73.
033-761	Fax Communication Error Error 033-761 Press OK	<Primary Channel OFF Time Out> The primary channel off time out has occurred.	Go to “Fax Error service check” on page 2-73.
033-762	Fax Communication Error Error 033-762 Press OK	<DM Prevention Function Receive Refuse> The incoming data was rejected by the junk fax filter function.	Go to “033-762 Communication service check” on page 2-36.
033-763	Fax Communication Error Error 033-763 Press OK	<Manual Transmission Read Manuscript Not Do> Read Timeout at manual dialing.	Go to “033-763 Communication service check” on page 2-36.
033-764	Fax Communication Error Error 033-764 Press OK	<Draw Data Create Not Do> Graphics process timeout at fax sending	Go to “Engine board error service check” on page 2-71.
033-765	Fax Codec Error Error 033-765 Press OK	<File Pointer Error> Read/Write File Pointer error at Encoding/Decoding.	Go to “Engine board error service check” on page 2-71.
033-766	Fax Codec Error Error 033-766 Press OK	<Target File Opening> The Target File Empty at Decoding.	Go to “Engine board error service check” on page 2-71.
033-767	Fax Codec Error Error 033-767 Press OK	<MMR MN86064 Decode Error> The decode error of MN86064 at MMR decoding.	Go to “Engine board error service check” on page 2-71.
033-768	Fax Codec Error Error 033-768 Press OK	<ATMove Counter Over> The ATMove Count per stripe 5 or more.	Go to “Engine board error service check” on page 2-71.
033-769	Fax Codec Error Error 033-769 Press OK	<JBIG NEWLEN Marker Error> The NEWLEN marker was not detected.	Go to “Fax Error service check” on page 2-73.
033-770	Fax Codec Error Error 033-770 Press OK	<YD Error> The YD error at JBIG encoding.	Go to “Engine board error service check” on page 2-71.
033-771	Fax Codec Error Error 033-771 Press OK	<Abort Marker Error> The abort marker at JBIG decoding.	Go to “Engine board error service check” on page 2-71.
033-772	Fax Codec Error Error 033-772 Press OK	<Undefined Marker Error> The undefined marker was detected.	Go to “Fax Error service check” on page 2-73.
033-773	Fax Codec Error Error 033-773 Press OK	<BIH Error> The BIH was abnormal at JBIG decoding.	Go to “033-773 Fax Codec Error” on page 2-36.

Error code	Error code text	Description	Service check
033-774	Fax Codec Error Error 033-774 Press OK	<FAX TX Encode Output Buffer Over> The JBIG encode output buffer overflow at fax sending.	Go to “Engine board error service check” on page 2-71.
033-775	Fax Codec Error Error 033-775 Press OK	<FAX RX Encode Output Buffer Over> The JBIG encode output buffer overflow at fax receiving.	Go to “Protocol Error service check” on page 2-104.
033-776	Fax Codec Error Error 033-776 Press OK	<Scan Encode Output Buffer Over> The JBIG Encode Output Buffer overflow at Accumulation of Outgoing FAX or D-FAX.	Go to “Engine board error service check” on page 2-71.
033-777	Fax Codec Error Error 033-777 Press OK	<FAX RX Decode Input Buffer Over> The incoming fax buffer overflow at copy from ECM to JBIG decode.	Go to “Protocol Error service check” on page 2-104.
033-782	Fax Communication Error Error 033-782 Press OK	<NSS/DCS Function disagreement> The incoming NSS/DCS Function Not supported.	Go to “Protocol Error service check” on page 2-104.
033-784	Fax Codec Error Error 033-784 Press OK	<Buffer Error> The Incoming FAX Buffer overflow at JBIG Decode Output.	Go to “Protocol Error service check” on page 2-104.
033-785	Scan Codec Error Error 033-785 Press OK	<Buffer Error> The MHR Decode Output Buffer overflow at push-scan.	Go to “Engine board error service check” on page 2-71.
033-786	MFD Memory Full Error 033-786 Press OK	<CODEC Error> The Decode-BIH line count inconsistency at JBIG data decoding.	Go to “Engine board error service check” on page 2-71.
033-787	MFD Memory Full Error 033-787 Press OK	<No Room Fax TX Call Table> The calling table is full.	Go to “Engine board error service check” on page 2-71.
033-788	MFD Memory Full Error 033-788 Press OK	<Memory Full> Exceeds the memory capacity.	Go to “MFD Memory Full service check” on page 2-97.
033-789	Fax Job Canceled Error 033-789 Press OK	<Cancel> The cancel occurred.	Go to “Engine board error service check” on page 2-71.
033-790	Fax Job Canceled Error 033-790 Press OK	<Cancel> The cancel occurred.	Go to “Engine board error service check” on page 2-71.
033-791	Fax Job Canceled Error 033-791 Press OK	<Cancel> The cancel occurred.	Go to “Engine board error service check” on page 2-71.
033-799	Fax Codec Error Error 033-799 Press OK	<Line Count Limit Over> The Line Count per page exceeds limit at MH/HR/MMR reception.	Go to “Protocol Error service check” on page 2-104.
034-508	Fax Communication Error Error 034-508 Press OK	<Command Refuse Signal Send> The communication aborted sending command rejection code.	Go to “Scanner error service check” on page 2-110.

Error code	Error code text	Description	Service check
034-515	Fax Communication Error Error 034-515 Press OK	<DIS DCS Illegal Command Receive> Unsupported Command received.	Go to “Fax Codec Error, Communication service check” on page 2-72.
034-799	Fax Number Error Error 034-799 Press OK	<No Dial Data> The auto dial started by no data ready.	Go to “Fax Number Error, No Dial Tone service check” on page 2-73.
035-701	Target Fax No Answer Error 035-701 Press OK	<Send T1 Time Out> The T1 Time Out error occurred as the data was transmitting.	Go to “035-701 Target Fax” on page 2-37.
035-702	Fax Communication Error Error 035-702 Press OK	<Receive DCN> Receiving the DCN.	Go to “Protocol Error service check” on page 2-104.
035-704	Fax Communication Error Error 035-704 Press OK	<Not Send Ability> Source lacking send capability.	Go to “Protocol Error service check” on page 2-104.
035-705	Fax Communication Error Error 035-705 Press OK	<DCS/NSS Resend Over> Exceeds the predetermined value of the resending.	Go to “Protocol Error service check” on page 2-104.
035-706	Fax Communication Error Error 035-706 Press OK	<Fall Back Error> The Fall Back error occurred.	Go to “Fax Error service check” on page 2-73.
035-708	Fax Communication Error Error 035-708 Press OK	<Post Message Resend Over> Exceeds the predetermined value of the resending.	Go to “Protocol Error service check” on page 2-104.
035-709	Fax Communication Error Error 035-709 Press OK	<G3 Send RTN/PIN Receive> Received RTN/PIN at G3 Transmission.	Go to “Protocol Error service check” on page 2-104.
035-710	Fax Communication Error Error 035-710 Press OK	<Receive PIN> Received PIN (except the EOR).	Go to “Protocol Error service check” on page 2-104.
035-716	Fax Communication Error Error 035-716 Press OK	<T2 Time Out> The T2 time out occurred.	Go to “Protocol Error service check” on page 2-104.
035-717	Fax Communication Error Error 035-717 Press OK	<G3 Receive RTN Send> Received RTN at G3 Transmission.	Go to “Protocol Error service check” on page 2-104.
035-718	Target Fax No Answer Error 035-718 Press OK	<Receive T1 Time Out> The T1 Time Out error occurred at receiving the data.	Go to “Protocol Error service check” on page 2-104.

Error code	Error code text	Description	Service check
035-720	Fax Communication Error Error 035-720 Press OK	<Not Receive Ability> Source Lacking Receive Capacity.	Go to “035-720 Fax Communication service check” on page 2-37.
035-728	Fax Communication Error Error 035-728 Press OK	<G3 EOL Not Receive> Unable to Receive EOL for 13 seconds at G3 reception.	Go to “Protocol Error service check” on page 2-104.
035-729	Fax Communication Error Error 035-729 Press OK	<Career Cut> Career interrupted.	Go to “Protocol Error service check” on page 2-104.
035-730	Fax Communication Error Error 035-730 Press OK	<RS Request CS NOT ON> The modem CS not turning on to RS request at high-speed training.	Go to “Engine board error service check” on page 2-71.
035-737	Fax Communication Error Error 035-737 Press OK	<CTC/EOR Resend Over> Exceeds the predetermined value of the resending.	Go to “Protocol Error service check” on page 2-104.
035-739	Fax Communication Error Error 035-739 Press OK	<T5 Time Out> The T5 time out error occurred.	Go to “Protocol Error service check” on page 2-104.
035-740	Fax Communication Error Error 035-740 Press OK	<ECM Send EOR-Q Send> Sent EOR-Q at ECM transmission.	Go to “Protocol Error service check” on page 2-104.
035-742	Fax Communication Error Error 035-742 Press OK	<ECM Receive EOR-Q Receive> Received EOR-Q at ECM.	Go to “Protocol Error service check” on page 2-104.
035-746	No Dial Tone Error Error 035-746 Press OK	<Before Dial Dial Tone> Failed to Detect Dial Tone before Dialing.	Go to “Fax Number Error, No Dial Tone service check” on page 2-73.
035-779	Fax Communication Error Error 035-779 Press OK	<FAX FWD document change error> Document change error at forwarding fax.	Go to “Engine board error service check” on page 2-71.
035-781	Target Fax Busy Error Error 035-781 Press OK	<Detect Busy Tone> Detected busy tone after dialing.	Go to “035-781 Target Fax Busy” on page 2-38.
035-792	Fax Communication Error Error 035-792 Press OK	<JM Not Detection> The JM cannot be detected.	Go to “Fax Codec Error, Communication service check” on page 2-72.
041-340	MCU NVRAM Error Error 041-340 Address:xxxx Data:xx Restart Printer	<IOT NVRAM Error> The error is detected by controller board NVRAM check.	Go to “041-340 MCU NVRAM Error service check” on page 2-38.
042-313	Fan Motor Error Error 042-313 Restart Printer	<IOT Fan Motor Failure> A duplex fan motor error is detected.	Go to “Transfer belt assembly service check” on page 2-119.

Error code	Error code text	Description	Service check
042-325	Motor Error Error 042-325 Restart Printer	<IOT Motor Failure> A main motor failure is detected.	Go to “042-325 Motor Error service check” on page 2-40.
042-326	Motor Error Error 042-326 Restart Printer	<IOT Motor Failure> A sub motor failure is detected.	Go to “042-326 Motor Error” on page 2-41.
042-358	Fan Motor Error Error 042-358 Restart Printer	<IOT Fan Motor Failure> A rear fan motor failure is detected.	Go to “042-358 Fan Motor Error service check” on page 2-42.
042-700	Printer Too Hot Error 042-700 Cooling down Please Wait...	<IOT Over Heat Stop> The temperature sensor in transparency sensor sensed high temperature.	Go to “042-700 Printer Too Hot, 142-700 Ready to Copy service check” on page 2-42.
061-370	Laser Error Error 061-370 Error Code:xx Restart Printer	<IOT ROS Failure> ROS failure is detected. xx:CODE where xx stand for 01 to 0f. These codes are indicate the internal parts of the printhead assembly.	Go to “061-370 Laser Error service check” on page 2-43.
062-311	Scanner Error Error 062-311 Restart Printer	<Scanner Initial Error> The scanner initializing error occurred.	Go to “Scanner error service check” on page 2-111.
062-320	Scanner Error Error 062-320 Restart Printer	Scanner Error> The image acquisition error occurred.	Go to “062-320, 062-324 Restart Printer service check” on page 2-44.
062-321	Scanner Error Error 062-321 Restart Printer	<Scanner Malfunction> <ul style="list-style-type: none"> • The scanner initializing error occurred • The Carriage Lock error occurred. 	Go to “Scanner error service check” on page 2-111.
062-322	Scanner Error Error 062-322 Restart Printer	<Scanner Parameter Error> Abnormality of the parameter.	Go to “Scanner error service check” on page 2-110.
062-323	Error 062-323 Restart Printer	<Panel Setting Parameter NG> Copy Start Parameter error occurred.	Go to “Operator panel service check” on page 2-102.
062-324	Scanner Error Error 062-324 Restart Printer	<Scanner Error> Out of Memory for scanner.	Go to “062-320, 062-324 Restart Printer service check” on page 2-44.
062-360	Scanner Sensor Error Error 062-360 Restart Printer	<HPSensor Error> The Scanner Home Position error occurred.	Go to “Scanner error service check” on page 2-111.
062-371	Scanner Lamp Error Error 062-371 Restart Printer	<IIT Lamp Error> The scanner Fault Lamp error occurred.	Go to “Scanner error service check” on page 2-111.
062-393	Scanner Error Error 062-393 Restart Printer	<CcdAsic Error> The CCD ASIC communication error occurred.	Go to “Scanner error service check” on page 2-110.
072-215	550 Feeder Error Error 072-215 Restart Printer	<IOT Option Feeder Failure> The error is detected by 550-sheet feeder communication check.	Go to “072-215 550 Feeder Error service check” on page 2-44.

Error code	Error code text	Description	Service check
072-216	Motor Error Error 072-216 Restart Printer	<IOT Motor Failure> Option Feeder Motor failure is detected.	Go to “072-216 Motor Error service check” on page 2-45.
077-215	Duplexer Error Error 077-215 Restart Printer	<IOT Option Duplexer Failure> The error is detected by Option Duplexer check.	Go to “077-215 Duplexer Error service check” on page 2-46.
077-343	Motor Error Error 077-343 Restart Printer	<IOT Motor Failure> A feed motor failure is detected.	Go to “077-343 Motor Error service check” on page 2-47.
092-651	ADC Sensor Error Error 092-651 Error Code:01 Restart Printer	<IOT ADC Sensor Error> Density sensor (ADC sensor) detects high density.	Go to “092-651 ADC Sensor Error service check” on page 2-48.
092-651	ADC Sensor Error Error Error Code:02 Restart Printer	<IOT ADC Sensor Error> Density sensor (ADC sensor) detects low density.	Go to “092-651 ADC Sensor Error service check” on page 2-49.
092-661	Env Sensor Error Error 092-661 Restart Printer	<IOT Environment Sensor Error> Temperature sensor error is detected.	Go to “092-661 Env Sensor Error service check” on page 2-50.
093-320	Motor Error Error 093-320 Restart Printer	<IOT Motor Failure> A developer motor failure is detected.	Go to “093-320 Motor Error service manual” on page 2-51.
093-423	Ready to Copy Replace Yellow Print Cartridge Soon or Check Cartridge Error 093-423 Replace Yellow Print Cartridge Soon	<IOT Y CRU Near Life> The toner cartridge is going to reach the replacement time.	Go to “Toner cartridge (yellow) service check” on page 2-113.
093-424	Ready to Copy Replace Magenta Print Cartridge Soon or Check Cartridge Error 093-424 Replace Magenta Print Cartridge Soon	<IOT M CRU Near Life> The toner cartridge is going to reach the replacement time.	Go to “Toner cartridge (magenta) service check” on page 2-113.
093-425	Ready to Copy Replace Cyan Print Cartridge Soon or Check Cartridge Error 093-425 Replace Cyan Print Cartridge Soon	<IOT C CRU Near Life> The toner cartridge is going to reach the replacement time.	Go to “Toner cartridge (cyan) service check” on page 2-114.
093-426	Ready to Copy Replace Black Print Cartridge Soon or Check Cartridge Error 093-426 Replace Black Print Cartridge Soon	<IOT K CRU Near Life> The toner cartridge is going to reach the replacement time.	Go to “Toner cartridge (black) service check” on page 2-114.

Error code	Error code text	Description	Service check
093-925	Blk - CRUM Error Error 093-925 Restart Printer	<CRU CRUM Error> Black toner Smart Chip communication error is detected.	Go to “Toner cartridge (black) service check” on page 2-115.
093-950	Y - CRUM Error Error 093-950 Restart Printer	<CRU CRUM Error> The toner Smart Chip error is detected.	Go to “Toner cartridge (yellow) service check” on page 2-116.
093-424	Ready to Copy Replace Magenta Print Cartridge Soon or Check Cartridge Error 093-424 Replace Magenta Print Cartridge Soon	<IOT M CRU Near Life> The toner cartridge is going to reach the replacement time.	Go to “Toner cartridge (magenta) service check” on page 2-113.
093-425	Ready to Copy Replace Cyan Print Cartridge Soon or Check Cartridge Error 093-425 Replace Cyan Print Cartridge Soon	<IOT C CRU Near Life> The toner cartridge is going to reach the replacement time.	Go to “Toner cartridge (cyan) service check” on page 2-114.
093-426	Ready to Copy Replace Black Print Cartridge Soon or Check Cartridge Error 093-426 Replace Black Print Cartridge Soon	<IOT K CRU Near Life> The toner cartridge is going to reach the replacement time.	Go to “Toner cartridge (black) service check” on page 2-114.
093-925	Blk - CRUM Error Error 093-925 Restart Printer	<CRU CRUM Error> Black toner Smart Chip communication error is detected.	Go to “Toner cartridge (black) service check” on page 2-115.
093-950	Y - CRUM Error Error 093-950 Restart Printer	<CRU CRUM Error> The toner Smart Chip error is detected.	Go to “Toner cartridge (yellow) service check” on page 2-116.
093-951	M - CRUM Error Error 093-951 Restart Printer	<CRU CRUM Error> The toner Smart Chip error is detected.	Go to “Toner cartridge (magenta) service check” on page 2-117.
093-952	C - CRUM Error Error 093-952 Restart Printer	<CRU CRUM Error> The toner Smart Chip error is detected.	Go to “Toner cartridge (cyan) service check” on page 2-118.
093-970	Insert Yellow Print Cartridge Error 093-970	<IOT Y CRU Detached> The yellow toner cartridge detached is detected.	Go to “093-970 Insert Yellow service check” on page 2-52.
093-971	Insert Magenta Print Cartridge Error 093-971	<IOT M CRU Detached> The magenta toner cartridge detached is detected.	Go to “093-971 Insert Magenta service check” on page 2-53.
093-972	Insert Cyan Print Cartridge Error 093-972	<IOT C CRU Detached> The cyan toner cartridge detached is detected.	Go to “093-972 Insert Cyan service check” on page 2-54.

Error code	Error code text	Description	Service check
093-973	Insert Black Print Cartridge Error 093-973	<IOT K CRU Detached> The black toner cartridge detached is detected.	Go to “093-973 Insert Black service check” on page 2-55.
094-330	CRUM Error Error Reseat Transfer Unit	<IOT CRUM ID Error> An invalid transfer belt assembly Smart Chip error is detected.	Go to “094-330 CRUM Error service check” on page 2-57.
116-310	Font ROM Error Error 116-310 Restart Printer	<ESS FontROM Error(Main)> Checksum error in the built-in font ROM.	Go to “RIP board service check” on page 2-110.
116-315	RAM Error Error 116-315 Restart Printer	<ESS On Board RAM W/R Check Fail> The error is detected by on board RAM W/R check during initialization.	Go to “RIP board service check” on page 2-110.
116-316	RAM Error Error 116-316 Restart Printer	<ESS DIMM Slot RAM W/R Check Fail> The error is detected by DIMM slot RAM W/R check during initialization.	Go to “Memory Error service check” on page 2-95.
116-317	Controller Error Error 116-317 Restart Printer	<ESS ROM Check(Main) Fail> Checksum error in the main program ROM.	Go to “RIP board service check” on page 2-110.
116-320	RAM Error Error 116-320 Restart Printer	<ESS DIMM Slot RAM Error> The error is detected by DIMM slot check during initialization.	Go to “Memory Error service check” on page 2-95.
116-323	NV RAM Error Error 116-323 Restart Printer	<ESS NVRAM1 W/R Check Fail> The fail is detected by NVRAM 1 W/R check during initialization.	Go to “RIP board service check” on page 2-110.
116-324	Controller Error Error 116-324 Restart Printer	<ESS Illegal Exception> CPU illegal exception.	Go to “RIP board service check” on page 2-110.
116-326	NV RAM Error Error 116-326 Restart Printer	<ESS NVRAM2 W/R Check Fail> The fail is detected by NVRAM 2 W/R check during initialization.	Go to “RIP board service check” on page 2-110.
116-327	Controller Error Error 116-327 Restart Printer	<ESS Instruction Check Error> CPU instruction cache error.	Go to “RIP board service check” on page 2-110.
116-328	Controller Error Error 116-328 Restart Printer	<ESS Data Cache Error> CPU data cache error.	Go to “RIP board service check” on page 2-110.
116-333	MPC error Error 116-333 Restart Printer	<PCI Option#0 Fail> Detection error of PCI option 0.	Go to “MPC (Multi-Protocol Network Card) service check” on page 2-99.
116-343	ASIC Error Error 116-343 Restart Printer	<ASIC Fail> The error is detected by ASIC fail.	Go to “RIP board service check” on page 2-110.
116-350	Network Error Error 116-350 Restart Printer	<On Board Network Communication Fail> Communication error between CPU network and ESS F/W.	Go to “RIP board service check” on page 2-110.

Error code	Error code text	Description	Service check
116-351	Network Error Error 116-351 Restart Printer	<On Board Network Ethernet BIST parity/RAM R/W Error> The error is detected by network Ethernet parity RAM R/W check.	Go to “RIP board service check” on page 2-110.
116-352	Network Error Error 116-352 Restart Printer	<On Board Network Internal Loopback Error> The error is detected by on board Network Internal Loopback check.	Go to “RIP board service check” on page 2-110.
116-355	Network Error Error 116-355 Restart Printer	<On Board Network Fatal Error> The fatal error is detected by On Board Network check.	Go to “RIP board service check” on page 2-110.
116-367	Parallel Port Error Error 116-367 Restart Printer	<IEEE1284 Data Error> The error is detected by IEEE1284 controller.	Go to “116-367 Parallel Port Error service check” on page 2-57.
116-390	NV RAM Error Error 116-390 Restart Printer	<ESS NVRAM1 SIZE And ID Check Fail> The error is detected by consistency check between the NVRAM size required by the system and its actual size, and by consistency check of the ID recorded when turning on the power.	Go to “RIP board service check” on page 2-110.
116-397	Controller Error Error 116-397 Restart Printer	<Communication Error With AIO> Communication error with AIO.	Go to “Communication errors service check” on page 2-66.
116-398	Controller Error Error 116-398 Restart Printer	<Communication Timeout Error With AIO> Communication time out error with AIO.	Go to “Communication errors service check” on page 2-66.
116-396	Scan Error Error 116-396 Restart Printer	<Software Bag> <ul style="list-style-type: none"> • Fatal Maillib Related Error • Other File2Net Lib Error • Fatal Format Lib Related Error 	Go to “Engine board error service check” on page 2-71.
116-987	Scan Error Error 116-987 Restart Printer	<Software Bag> A fatal error related to the format library.	Go to “Engine board error service check” on page 2-71.
117-310	MFD Controller Error Error 117-310 Restart Printer	<Main Program Sum Error> The main program sum error occurred.	Go to “Engine board error service check” on page 2-71.
117-311	MFD Controller Error Error 117-311 Restart Printer	<Parameter Sum Error> The parameter sum error occurred.	Go to “Engine board error service check” on page 2-71.
117-312	MFD Controller Error Error 117-312 Restart Printer	<Download Program Sum Error> The download program sum error occurred.	Go to “Engine board error service check” on page 2-71.
117-313	Controller Communication Error Error 117-313 Restart Printer	<ESS Data Transmission Error> Failed in the ESS data transfer.	Go to “Communication errors service check” on page 2-66.
117-314	Report Error Error 117-314 Restart Printer	<Report Program Error> The Report Creating Program error occurred.	Go to “Engine board error service check” on page 2-71.

Error code	Error code text	Description	Service check
117-315	MFD EEPROM Error Error 117-315 Restart Printer	<EEPROM Driver Error> The EEPROM Driver program error occurred.	Go to “Engine board error service check” on page 2-71.
117-322	Error 117-322 Restart Printer	<SYSMGR Task Error> The SYSMGR task error occurred.	Go to “Engine board error service check” on page 2-71.
117-323	Error 117-323 Restart Printer	<ESSMGR Task Error> The ESSMGR task error occurred.	Go to “Communication errors service check” on page 2-66.
117-324	Error 117-324 Restart Printer	<ESSSUB1 Task Error> The ESSSUB1 task error occurred.	Go to “Communication errors service check” on page 2-66.
117-328	Error 117-328 Restart Printer	<MSCAN Task Error> The MSCAM task error occurred.	Go to “Engine board error service check” on page 2-71.
117-335	Error 117-335 Restart Printer	<DFAX Task Error> The DFAX task error occurred.	Go to “Engine board error service check” on page 2-71.
117-336	Error 117-336 Restart Printer	<PULL Task Error> The PULL task error occurred.	Go to “Engine board error service check” on page 2-71.
117-337	Error 117-337 Restart Printer	<IITX Task Error> The scanner TX task error occurred.	Go to “Engine board error service check” on page 2-71.
117-340	Error 117-340 Restart Printer	<HOOK Task Error> The HOOK task error occurred.	Go to “Engine board error service check” on page 2-71.
117-344	Error 117-344 Restart Printer	<FLASHFILE Task Error> The FLASHFILE task error occurred.	Go to “Engine board error service check” on page 2-71.
117-348	Error 117-348 Restart Printer	<IITRX Task Error> The scanner RX task error occurred.	Go to “Engine board error service check” on page 2-71.
117-349	Error 117-349 Restart Printer	<SCANMGR Task Error> The SCANMGR task error occurred.	Go to “Engine board error service check” on page 2-71.
117-350	Error 117-350 Restart Printer	<Task Initialize Error> The task initializing (start up) error occurred.	Go to “Engine board error service check” on page 2-71.
117-352	MFD Controller Error Error 117-352 Restart Printer	<AIOC-IIT Communication Error> The Communication error between the AIOC and the scanner.	Go to “Scanner error service check” on page 2-111.
117-354	Error 117-354 Restart Printer	<ESSMGR Task Error> Failed in AIF SET.	Go to “Communication errors service check” on page 2-66.
117-355	Error 117-355 Restart Printer	<ESSMGR Task Error> The Service FunctionID out of range.	Go to “Communication errors service check” on page 2-66.
117-362	MFD EEPROM Error Error 117-362 Restart Printer	<EEPROM Sum Check Error> The EEPROM Check Sum error occurred.	Go to “Engine board error service check” on page 2-71.
117-363	MFD NVM Error Error 117-363 Restart Printer	<NVM Sum Check Error> The NVM Check Sum error occurred.	Go to “Engine board error service check” on page 2-71.

Error code	Error code text	Description	Service check
123-314	Control Panel Error Error 123-314 Restart Printer	<Panel Power On Error> The power on sequence of the FAX controller does not start within one minute after activating the panel.	Go to “Operator panel service check” on page 2-102.
133-231	Fax Communication Error Error 133-231 Restart Printer	<T_FAXCOM Data Receive I/F Error> The data processing interface error on T FAXCOM.	Go to “Engine board error service check” on page 2-71.
133-234	Fax Error Error 133-234 Restart Printer	<JBIG Parameter Error> The JBIG parameter setting error occurred.	Go to “Engine board error service check” on page 2-71.
133-235	Fax Error Error 133-235 Restart Printer	<MHR Parameter Error> The MHR parameter setting error occurred.	Go to “Engine board error service check” on page 2-71.
133-236	Fax Error Error 133-236 Restart Printer	<MHR Encode Error> The encoding error at the MHR	Go to “Engine board error service check” on page 2-71.
133-237	Fax Codec Error Error 133-237 Restart Printer	<MHR Input Buffer Error> The Data error at MHR Input Buffer.	Go to “Engine board error service check” on page 2-71.
133-238	Fax Codec Error Error 133-238 Restart Printer	<MHR Output Buffer Error> The Data error at MHR Output Buffer	Go to “Engine board error service check” on page 2-71.
133-239	Fax Error Error 133-239 Restart Printer	<FAX ECM Buffer Address Error> The FAX ECM Buffer Read/Write Address error occurred.	Go to “Engine board error service check” on page 2-71.
133-240	Fax Error Error 133-240 Restart Printer	<Resolution Change Error> The FAX Resolution Conversion error at Sending/Receiving.	Go to “Engine board error service check” on page 2-71.
133-241	Fax Error Error 133-241 Restart Printer	<Memory Pool Get Error> The Memory Pool acquisition error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-242	Fax Error Error 133-242 Restart Printer	<Memory Pool Release Error> The Memory Pool release error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-243	Fax Error Error 133-243 Restart Printer	<Message Send Error> The Message communication error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-244	Fax Error Error 133-244 Restart Printer	<Message Receive Error> The Message reception error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-246	Fax Error Error 133-246 Restart Printer	<Memory Pool Get Error> The Memory Pool acquisition error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-247	Fax Error Error 133-247 Restart Printer	<Message Send Error> The communication error occurred (OS error).	Go to “Engine board error service check” on page 2-71.

Error code	Error code text	Description	Service check
133-248	Fax Error Error 133-248 Restart Printer	<Memory Pool Release Error> The Memory Pool release error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-249	Fax Error Error 133-249 Restart Printer	<Message Receive Error> The Message receive error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-251	Fax Error Error 133-251 Restart Printer	<File Open Error> The File Open error occurred.	Go to “Engine board error service check” on page 2-71.
133-252	Fax Error Error 133-252 Restart Printer	<File Close Error> The File Close error occurred.	Go to “Engine board error service check” on page 2-71.
133-253	Fax Error Error 133-253 Restart Printer	<File Erase Error> The File Erasing error occurred.	Go to “Engine board error service check” on page 2-71.
133-254	Fax Error Error 133-254 Restart Printer	<Memory Full> Out of Memory for Faxing.	Go to “MFD Memory Full service check” on page 2-97.
133-259	Fax Error Error 133-259 Restart Printer	<OS Call Error> The OS Call error occurred.	Go to “Engine board error service check” on page 2-71.
133-260	Fax Error Error 133-260 Restart Printer	<File Open Error> The File Open error occurred.	Go to “Engine board error service check” on page 2-71.
133-261	Fax Error Error 133-261 Restart Printer	<File Close Error> The File Close error occurred.	Go to “Engine board error service check” on page 2-71.
133-269	Fax Error Error 133-269 Restart Printer	<File Close Error> The File Close error occurred.	Go to “Engine board error service check” on page 2-71.
133-271	Fax Error Error 133-271 Restart Printer	<Memory Pool Get Error> The Memory Pool acquisition error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-272	Fax Error Error 133-272 Restart Printer	<Message Send Error> The Message send error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-273	Fax Error Error 133-273 Restart Printer	<Memory Pool Release Error> The Memory Pool release error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-274	Fax Error Error 133-274 Restart Printer	<Message Receive Error> The Message receive error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-275	Fax Error Error 133-275 Restart Printer	<OS Call Error> The OS Call error occurred.	Go to “Engine board error service check” on page 2-71.
133-276	Fax Error Error 133-276 Restart Printer	<File Open Error> The File Open error occurred.	Go to “Engine board error service check” on page 2-71.

Error code	Error code text	Description	Service check
133-277	Fax Error Error 133-277 Restart Printer	<File Close Error> The File Close error occurred.	Go to “Engine board error service check” on page 2-71.
133-278	Fax Error Error 133-278 Restart Printer	<File Erase Error> The File Erase error occurred.	Go to “Engine board error service check” on page 2-71.
133-279	Fax Error Error 133-279 Restart Printer	<FAX CODEC I/F Error> The fax codec I/F error occurred.	Go to “Engine board error service check” on page 2-71.
133-280	Fax Error Error 133-280 Restart Printer	<ERR_FAX_TIME> The fax timer error occurred.	Go to “Engine board error service check” on page 2-71.
133-281	Fax Report Error Error 133-281 Restart Printer	<Power Off Report Create Fail> Failed to Create Power Off Report.	Go to “Engine board error service check” on page 2-71.
133-282	Fax Error Error 133-282 Restart Printer	<Memory Pool Get Error> The Memory Pool acquisition error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-283	Fax Error Error 133-283 Restart Printer	<Message Send Error> The Message send error occurred (OS error).	Go to “Engine board error service check” on page 2-71.
133-286	Fax Error Error 133-286 Restart Printer	<OS Call Error> The OS CALL error occurred.	Go to “Engine board error service check” on page 2-71.
133-287	Fax Error Error 133-287 Restart Printer	<File Open Error> The File Open error occurred.	Go to “Engine board error service check” on page 2-71.
133-288	Fax Error Error 133-288 Restart Printer	<File Close Error> The File Close error occurred.	Go to “Engine board error service check” on page 2-71.
133-289	Fax Error Error 133-289 Restart Printer	<File Erase Error> The File Erase error occurred.	Go to “Engine board error service check” on page 2-71.
133-290	Fax Error Error 133-290 Restart Printer	<Print Decode Error> A decoding error occurred three times consecutively during the decoding of JBIG data.	Go to “Engine board error service check” on page 2-71.
142-700	Ready to Copy Printer Too Hot Error 142-700 Printing at Half Speed	<IOT Over Heat Forced Half Speed> The printing mode becomes half speed mode, by the high temperature. The temp. sensor in transparency sensor sensed high temperature.	Go to “042-700 Printer Too Hot, 142-700 Ready to Copy service check” on page 2-42.
	Controller Initialized NVM	<EEPROM R/W Error> EEPROM Read/Write error at system boot.	Go to “Engine board error service check” on page 2-71.
	Copier Error Last Sheet not Copied Press OK	<Copy Limit> Unable to continue due to copy limitation.	Go to “Copier Error service check” on page 2-68.

Error code	Error code text	Description	Service check
	Door A Open Close Door A	<IOT Cover Front Open> The Front Cover is open.	Go to “Door A Open service check” on page 2-69.
	Fax Send Error Last Sheet not Sent Press OK	<FAX Send Count Limit> The Outgoing FAX exceed store limit.	Go to “Fax Send Error service check” on page 2-74.
	Fuser CRUM Error Reseat Fuser	<IOT Fuser CRUM ID Error> An invalid fuser Smart Chip ID error is detected.	Go to “Fuser CRUM Error, Ready to Copy service check” on page 2-76.
	Illegal Settings Insert Selected Tray	<Copy Select Tray REMOVE> Unable to Start due to Tray Disengaged.	<ul style="list-style-type: none"> Go to “Insert Tray 2, Insert Tray 3, Illegal Settings service check” on page 2-79. Go to “Insert Tray 3, Illegal Settings service check” on page 2-80.
	Illegal Settings Selected Tray is Unavailable	<Copy Select Tray Broken> Unable to Start due to Tray Fault.	<ul style="list-style-type: none"> Go to “Jam service check—tray 1 (MP feeder)” on page 2-82. Go to “Jam service check—tray 2 (250-sheet tray)” on page 2-83. Go to “Jam service check—tray 3 (550-sheet feeder)” on page 2-85. Go to “Load tray service check” on page 2-92. Go to “Insert Tray 2, Insert Tray 3, Illegal Settings service check” on page 2-79. Go to “Insert Tray 3, Illegal Settings service check” on page 2-80.
	Illegal Settings Selected Tray is Unavailable	<Copy Select Tray Exist> Unable to Start due to Tray Not Found.	<ul style="list-style-type: none"> Go to “Insert Tray 2, Insert Tray 3, Illegal Settings service check” on page 2-79. Go to “Insert Tray 3, Illegal Settings service check” on page 2-80.
	Illegal Settings Specified Paper Type Does Not Match Tray (Media)	<Copy Dup Medium NG> Copy Duplex Disabled due to Invalid Paper Type.	Go to “Paper type” on page 2-78.
	Illegal Settings Specified Size Does Not Match Tray (size)	<Copy Dup Size Limit> Copy Duplex Disabled due to Invalid Size.	Go to “Paper size” on page 2-79.
	Illegal Settings Tray Selected is Empty	<Copy Select Tray NoPaper> Unable to Start due to No Paper.	Go to “Paper trays” on page 2-76.
	Insert Fuser Restart Printer	<IOT Fuser Detached> The fuser is not installed properly.	Go to “010-397 Fuser Error, Insert Fuser service check” on page 2-29.
	Insert Transfer Unit	<IOT DTB Detached> The transfer belt assembly is not properly installed.	Go to “Transfer belt assembly service check” on page 2-119.

Error code	Error code text	Description	Service check
	Insert Tray 2	<Upper Cassette Detached> The integrated 250-sheet paper tray is not closed securely.	Go to “Insert Tray 2, Insert Tray 3, Illegal Settings service check” on page 2-79.
	Insert Tray 2 Insert Tray 3	<Tray Detached> When a tray is specified, the tray is detached.	Go to “Insert Tray 2, Insert Tray 3, Illegal Settings service check” on page 2-79.
	Insert Tray 3	<Tray Detached> The 550-sheet feeder tray is not closed securely.	Go to “Insert Tray 3, Illegal Settings service check” on page 2-80.
	Jam at Duplexer Open Door A Lift Belt Unit	<IOT Remaining Paper JAM> <ul style="list-style-type: none"> • The paper remains at the duplex jam sensor. • The paper reached duplex jam sensor earlier than the specified time. • The paper passed duplex jam sensor earlier than the specified time. • The paper does not pass through the duplex jam sensor within the specified time. • The paper does not reach the registration sensor within the specified time, after the duplex jam sensor is on. 	Go to “Jam service check—duplex unit” on page 2-87.
	Jam at Exit Open Door A	<IOT Remaining Paper JAM> <ul style="list-style-type: none"> • The paper remains at the exit sensor. • The paper does not reach the exit sensor within the specified time. • The paper passed exit sensor earlier than the specified times. 	Go to “Jam at Exit, Jam at Reg. Roll, Wrong Paper Type service check” on page 2-89.
	Jam at Reg. Roll Open Door A	<IOT Remaining Paper JAM> <ul style="list-style-type: none"> • The paper remains at the registration sensor. • The paper does not reach the exit sensor within the specified time after the registration sensor is on. • The paper does not pass through the registration sensor within the specified time. 	Go to “Jam at Exit, Jam at Reg. Roll, Wrong Paper Type service check” on page 2-89.
	Jam at Scanner Open ADF Cover R and Remove Paper Turn the Green Dial to Remove Paper or Return the Removed Original and Press Start	<PICKUP JAM> The pick-up jam occurred.	Go to “Jam at Scanner service check” on page 2-80.

Error code	Error code text	Description	Service check
	Jam at Scanner Open ADF Cover R and Remove Paper Turn the Green Dial to Remove Paper or Return the Removed Original and Press Start	<ADF JAM> The ADF jam occurred.	Go to “Jam at Scanner service check” on page 2-80.
	Jam at Tray 1 Check Tray 1 Open Door A	<IOT MPT Misfeed JAM> The registration sensor is not turned on within the specified time.	Go to “Jam service check—tray 1 (MP feeder)” on page 2-82.
	Jam at Tray 2 Open Tray 2 Open Door A	<IOT 250 Feeder Misfeed JAM> The Regi sensor is not turned on within the specified time.	Go to “Jam service check—tray 2 (250-sheet tray)” on page 2-83.
	Jam at Tray 2 Open Tray 2 Open Door A	<IOT Feed JAM> The arrival time of the regi sensor is earlier than the specified time.	Go to “Jam at Tray 2 service check” on page 2-81.
	Jam at Tray 3 Open Tray 3 Open Door A	<IOT Option Feeder Misfeed JAM> The Regi sensor is not turned on within the specified time.	Go to “Jam service check—tray 3 (550-sheet feeder)” on page 2-85.
	Load Tray 1(MPT)	<IOT Paper Size Mismatch> The paper size mismatch is detected in the MP feeder.	Go to “Load tray service check” on page 2-92.
	Load Tray 1(MPT)	<No suitable paper> The MP feeder is empty, has a size mismatch, or has a type mismatch.	Go to “Paper trays” on page 2-76.
	Load Tray 2	<IOT Paper Size Mismatch> The paper size mismatch is detected in the integrated 250-sheet tray.	Go to “Load tray service check” on page 2-92.
	Load Tray 2	<No suitable paper> The integrated 250-sheet tray is empty, has a size mismatch, or has a type mismatch.	Go to “Paper trays” on page 2-76.
	Load Tray 3	<IOT Paper Size Mismatch> The paper size mismatch is detected in the 550-sheet feeder.	Go to “Load tray service check” on page 2-92.
	Load Tray 3	<No suitable paper> The 550-sheet feeder is empty, has a size mismatch, or has a type mismatch.	Go to “Paper trays” on page 2-76.
	Network Scan Error Connection Timeout Press OK	<SMTP/FTP Error> Timeout Error at Connection Start.	Go to “Server Error service check” on page 2-112.
	Network Scan Error SMTP Connection Failed Press OK	<SMTP Error> Error Connecting to SMTP Server.	Go to “Server Error service check” on page 2-112.

Error code	Error code text	Description	Service check
	Ready to Copy Replace Fuser Soon	<IOT Fuser Life Pre Warning> The fuser is going to reach the replacement time.	Go to “010-351 Fuser Error service check” on page 2-29.
	Ready to Copy Replace Transfer Unit Soon	<IOT DTB Life Pre Warning> The transfer belt assembly is close to reaching the replacement time.	Go to “Transfer belt assembly service check” on page 2-119.
	Remove Tape Black Cartridge	<IOT K Toner Tape Staying> The black toner tape staying is detected.	Go to “Remove Tape Black Cartridge service check” on page 2-109.
	Remove Tape Cyan Cartridge	<IOT C Toner Tape Staying> The cyan toner tape staying is detected.	Go to “Remove Tape Cyan Cartridge service check” on page 2-108.
	Remove Tape Magenta Cartridge	<IOT M Toner Tape Staying> The magenta toner tape staying is detected.	Go to “Remove Tape Magenta Cartridge service check” on page 2-107.
	Remove Tape Yellow Cartridge	<IOT Y Toner Tape Staying> The yellow toner tape staying is detected.	Go to “Remove Tape Yellow Cartridge service check” on page 2-106.
	Replace Transfer Unit	<IOT DTB Life Over> The transfer belt assembly has reached the replacement time.	Go to “Transfer belt assembly service check” on page 2-119.
	Replace Black Print Cartridge	<IOT K CRU Life Over> The toner cartridge has reached the replacement time.	Go to “Toner cartridge (black) service check” on page 2-114.
	Replace Black Print Cartridge or Empty Black Print Cartridge	<IOT K CRU Life Over detect by counter> The value of life counter has reached the replacement value.	Go to “Toner cartridge (black) service check” on page 2-114.
	Replace Cyan Print Cartridge	<IOT C CRU Life Over> The cyan toner cartridge has reached the replacement time.	Go to “Toner cartridge (cyan) service check” on page 2-114.
	Replace Cyan Print Cartridge or Empty Cyan Print Cartridge	IOT C CRU Life Over detect by counter> The value of life counter has reached the replacement value.	Go to “Toner cartridge (cyan) service check” on page 2-114.
	Replace Magenta Print Cartridge	<IOT M CRU Life Over> The magenta toner cartridge has reached the replacement time.	Go to “Toner cartridge (magenta) service check” on page 2-113.
	Replace Magenta Print Cartridge or Empty Magenta Print Cartridge	<IOT M CRU Life Over detect by counter> The value of life counter has reached the replacement value.	Go to “Toner cartridge (magenta) service check” on page 2-113.
	Replace Yellow Print Cartridge	<IOT Y CRU Life Over> The yellow toner cartridge has reached the replacement time.	Go to “Toner cartridge (yellow) service check” on page 2-113.

Error code	Error code text	Description	Service check
	Replace Yellow Print Cartridge or Empty Yellow Print Cartridge	<IOT Y CRU Life Over detect by counter> The value of life counter has reached the replacement value.	Go to “Toner cartridge (yellow) service check” on page 2-113.
	Scanner ADF Cover R Open Close ADF Cover	<ADF Cover Open> The ADF cover is open.	Go to “Scanner ADF Cover R Open service check” on page 2-111.
	Too Many Incorrect Numeric Passwords have been Entered. Try Again after 24 Hours	<PagePack Password Error> Input mistake of password.	Go to “016-220 Too Many Incorrect service check” on page 2-30.
	Wrong Paper Type Open Door A Remove Paper & Set Paper Type	<IOT Transparency Set Error> <ul style="list-style-type: none"> • The printer media setting is paper but transparency sensor sensed transparency. • The printer media setting is transparency but transparency sensor sensed paper. 	Go to “Wrong Paper Type service check” on page 2-120.

Service checks

010-351 Fuser Error service check

	<p>CAUTION</p> <p>Make sure you allow time for the fuser to cool before you begin this service check.</p>
---	--

Affected FRUs:

- Fuser assembly
- Controller board

Step	Action and questions	Yes	No
1	Is the fuser assembly installed correctly?	Go to step 3.	Reinstall the fuser assembly. See "Fuser removal" on page 5-78. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the fuser assembly. See "Fuser removal" on page 5-78. Does the error still occur when the power is turned on?	Replace the controller board. See "Controller board removal" on page 5-47.	Problem resolved.

010-397 Fuser Error, Insert Fuser service check

	<p>CAUTION</p> <p>Make sure you allow time for the fuser to cool before you begin this service check.</p>
---	--

Affected FRUs:

- Fuser assembly
- Controller board
- LVPS

Step	Action and questions	Yes	No
1	Check the fuser installation. Is fuser installed correctly?	Go to step 2.	Reinstall the fuser assembly. Then go to step 2.
2	Does the error still occur when the print is turned on?	Go to step 3.	Problem resolved.

Step	Action and questions	Yes	No
3	<p>Check all the connections:</p> <ol style="list-style-type: none"> 1. Remove the fuser assembly. See “Fuser removal” on page 5-78. 2. Check the connections between the controller board and the fuser assembly. 3. Check the connections between the fuser assembly and the LVPS. 4. Check the connections between the LVPS and the controller board. <p>Are the P/J17, P/J171, P/J47, P/J501, and P/J14 connected securely?</p>	Go to step 4.	<p>Reconnect the connects P/J17, P/J171, P/J47, P/J501, and P/J14.</p> <p>Then go to step 4.</p>
4	<p>Replace the fuser assembly. See “Fuser removal” on page 5-78.</p> <p>Does the error still occur when the power is turned on?</p>	Go to step 5.	Problem resolved.
5	<p>Replace the LVPS. See “Low-voltage power supply (LVPS) removal” on page 5-91.</p> <p>Does the error still occur when the power is turned on?</p>	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p>	Problem resolved.

016-220 Too Many Incorrect service check

Affected FRU: RIP board

Step	Action and questions	Yes	No
1	Did the customer enter the correct password?	Go to step 2.	Enter the correct password after waiting for 24 hours.
2	Does the error still occur after turning the power off and on?	<p>Replace the RIP board. See “RIP board removal” on page 5-126.</p>	Problem resolved.

016-611 Controller board service check

Affected FRU: Controller board

Step	Action and questions	Yes	No
1	Did you restore NVM after replacing a controller board?	Go to step 2.	Go to step 3.
2	Restore NVM. See “NVM Settings” on page 3-47. Did this fix the issue?	Problem resolved.	Go to step 3.
3	Perform the NVM variable reset procedure. <ol style="list-style-type: none"> 1. Press and hold ▲ and ▼, turn on the printer, and release the buttons when the menu displays. 2. Select Printer Diag, and press OK. 3. Select Installation, and press OK. 4. Scroll to Clear All NVM, and press OK. OK? displays. 5. Press OK. Processing, and then Initialized displays. Warning: This will reset all NVM settings. 6. Turn off the printer, press and hold ▲ and ▼, turn on the printer, and release the buttons when the menu displays. 7. Select Printer Diag, and press OK. 8. Select Engine Diag, and press OK. 9. Select NVM Settings, and press OK. 10. Select Edit NVM, and press OK. 11. Input the following value: Ad1000=00040300 12. Press OK to save the value. 13. Restart the multiple-function printer, and verify the error message is cleared. 14. Reestablish any settings from the printed NVRAM Settings. Did this solve the issue?	Problem resolved.	Go to step 4.
4	Replace the controller board. Did this solve the issue?	Problem resolved.	Contact the next level of support.

016-720 PDL Error service check

Affected FRU: RIP board

Step	Action and questions	Yes	No
1	Print a small file, such as a test page. Does the error still occur when printing?	Go to step 2.	Problem solved.
2	Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the error still occur when printing?	Replace the RIP board. See “RIP board removal” on page 5-126.	Problem solved.

016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error service check

Affected FRU: RIP board

This service check covers the following errors: 016-737 Format Error, 016-741 Protection Error, 016-742 Invalid ID, 016-743 Range Chk Error, 016-744 Check Sum Error, 016-745 Header Error.

Step	Action and questions	Yes	No
1	Is the download firmware the correct file for this model of MFP?	Go to step 2.	Download the correct firmware.
2	Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the error still occur when downloading the firmware?	Replace the RIP board. See “RIP board removal” on page 5-126.	Problem resolved.

016-757 Invalid User, 016-758 Disabled Func, 016-759 Limit Exceeded service check

Affected FRU: RIP board

This service check covers the following errors: 016-757 Invalid User, 016-758 Disabled Func, 016-759 Limit Exceeded.

Step	Action and questions	Yes	No
1	If the 016-759 Limit Exceeded error occurred, check that the number of registered users is 50 or less. Is the Print Auditron setting correctly set?	Replace the RIP board. See “RIP board removal” on page 5-126.	Set the Print Auditron setting.

016-794 Network Not Ready service check

Affected FRU: RIP board

Step	Action and questions	Yes	No
1	Check the network setting of the computer. Is the setting correct?	Go to step 2.	Set the network on the computer.
2	Check the MFP setting for the Network Settings in the Admin Menu. 1. On the operator panel, press System to access the customer menus. 2. Select Admin Menu , and press OK . 3. Select Network Settings , and press OK . Is the protocol or network type set correctly?	Go to step 3.	Set the Network Settings on the MFP.
3	Check the setting. 1. Press System to access the customer menus. 2. Select Network Settings . 3. Select Protocol . 4. Select SMB TCP/IP . 5. Select Enable . Is SMB TCP/IP set to Disable ?	Set to Enable .	Go to step 4.
4	Reinstall the RIP board. See “RIP board removal” on page 5-126 . Does the error still occur when turning on the power?	Replace the RIP board. See “RIP board removal” on page 5-126 .	Problem resolved.

016-799 Invalid Job service check

Affected FRU: RIP board

Step	Action and questions	Yes	No
1	Check the media specifications. See “Media guidelines and specifications” on page 1-4 . Does the paper size in use meet the specifications?	Go to step 2.	Use paper that meets specifications.
2	Does the paper size in use match the size set through the operator panel?	Go to step 4.	Go to step 3.
3	Set the paper size through the operator panel. Does the error still occur when printing?	Go to step 5.	Problem resolved.
4	Does the error still occur when printing?	Go to step 5.	Problem resolved.
5	Does the error still occur when printing a small job, such as a test page?	Replace the RIP board. See “RIP board removal” on page 5-126 .	Problem resolved.

017-988 Scan Time Out

Step	Action and questions	Yes	No
1	Is the customer operating the printer correctly?	Go to step 2.	Problem resolved.
2	In Windows, reconnect the USB connection between the PC and the printer, and enable Windows Image Acquisition (WIA): 1. In the Control Panel, select Administrative Tools . 2. Select Services . 3. Select Windows Image Acquisition (WIA) . Does the error still occur when scanning?	Go to step 3.	Problem resolved.
3	Is the correct scanner driver installed?	Go to step 4.	Install the driver software.
4	Is the scanning software from the installation CD installed?	Go to step 5.	Install the software.
5	Make sure the following scanning software settings are set correctly: <ul style="list-style-type: none"> • Image type • Resolution • Paper size • Output destination (check that the directory specified for output destination really exists. Is the setting correct?	Go to step 6.	Set the scanning software settings.
6	Check the software: 1. In the Start Menu , select Control Panel . 2. Select Printers and Other Hardware . 3. Select Scanners and Cameras . 4. Right-click Lexmark X560n in the list, and select Properties . 5. Select the Events tab. For Windows XP/Vista/Server 2003) Check that the Select an Event setting is set correctly. For Windows 2003, check that Scanner events is set correctly. Is the selecting of software correct?	Retry the scanning. If the message Select the program to launch for this action appears on the monitor, select Express Scan Manager within 30 seconds.	Set up the Events tab of the Lexmark X560n correctly.

024-371 MCU Comm Error (controller board communication)

Affected FRUs:

- RIP board
- Controller board

Step	Action and questions	Yes	No
1	Reinstall the RIP board and the controller board. See “RIP board removal” on page 5-126 and “Controller board removal” on page 5-47 . Does the error still occur when the power is turned on?	Go to step 2.	Problem resolved.
2	Replace the RIP board. See “RIP board removal” on page 5-126 . Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47 .	Problem resolved.

033-510 Fax Codec Error service check

Affected FRU: Engine board.

Step	Action and questions	Yes	No
1	Turn the printer off and on. Does the error still occur when faxing?	Go to step 2.	Problem resolved.
2	Check the setting for 825-662 in the Fax/Scanner Parameter menu. See “Parameter” on page 3-10 . The value for 825-662 in Parameter should be MMR. Is 825-662 set to MMR?	Go to step 3.	Set 825-662 to MMR.
3	Reinstall the engine board. See “Engine board removal” on page 5-64 .	Replace the engine board. See “Engine board removal” on page 5-64 .	Problem resolved.

033-517 Password Error service check

Affected FRU: Engine board.

Step	Action and questions	Yes	No
1	Check the password of the fax/scanner lock in the Scan/Fax Lock menu (in Secure Settings). Is the password correct?	Go to step 2.	Set the password.
2	Reinstall the engine board. See “Engine board removal” on page 5-64 . Does the error still occur when turning on the power?	Replace the engine board. See “Engine board removal” on page 5-64 .	Problem resolved.

033-762 Communication service check

Affected FRU: Engine board

Step	Action and questions	Yes	No
1	Check the fax setting. Is the Junk Fax Filter on?	Problem resolved.	Go to step 2.
2	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

033-763 Communication service check

Affected FRUs: Engine board

Step	Action and questions	Yes	No
1	Turn the power off and back on. Does the error still occur when faxing?	Go to step 2.	Problem resolved.
2	Replace the engine board. See “Engine board removal” on page 5-64. Does the error still occur when faxing?	Replace the printer.	Problem resolved.

033-773 Fax Codec Error

Affected FRU: Engine board.

Step	Action and questions	Yes	No
1	Check the dial data. Is the dial data correct?	Go to step 2.	Set the dial data.
2	Check the setting for 825-662 in the Fax/Scanner Parameter menu. See “Parameter” on page 3-10. The value for 825-662 in Parameter should be MMR. Is 825-662 set to MMR?	Go to step 3.	Set 825-662 to MMR.
3	Check the setting on the printer for Country. 1. Press System to access the customer menus. 2. Select Admin Menu . 3. Select Fax Setting . 4. Select Country . Is the Country setting correct?	Go to step 4.	Set the Country setting correctly.
4	Reinstall the fax card on the engine board. Does the error still occur when faxing?	Go to step 5.	Problem resolved.
5	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

035-701 Target Fax

Affected FRU: Engine board.

Step	Action and questions	Yes	No
1	Check the fax number. Is the fax number correct?	Go to step 2.	Retry the fax.
2	Reseat the telephone line connector on the engine board. Does the error still occur when faxing?	Go to step 3.	Problem resolved.
3	Check the setting on the printer for Country. 1. Press System to access the customer menus. 2. Select Admin Menu . 3. Select Fax Setting . 4. Select Country . Is the Country setting correct?	Go to step 4.	Set the Country setting correctly.
4	Reinstall the fax card on the engine board. Does the error still occur when faxing?	Go to step 5.	Problem resolved.
5	Reinstall the engine board. See “Engine board removal” on page 5-64 . Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64 .	Problem resolved.

035-720 Fax Communication service check

Affected FRUs: Engine board

Step	Action and questions	Yes	No
1	Check the specifications of the fax receiving your outgoing message. Does the receiving fax meet the specifications?	Go to step 2.	Change the receiving fax setting or send to another fax.
2	Check the setting on the printer for Country. 1. Press System to access the customer menus. 2. Select Admin Menu . 3. Select Fax Setting . 4. Select Country . Is the Country setting correct?	Go to step 3.	Set the Country setting correctly.
3	Reinstall the engine board. See “Engine board removal” on page 5-64 . Does the error still occur when faxing?	Go to step 4.	Problem resolved.
4	Send a fax to another reliable fax. Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64 .	Check the receiving fax side. Problem resolved.

035-781 Target Fax Busy

Affected FRU: Engine board.

Step	Action and questions	Yes	No
1	Check the dial data. Is the dial data correct?	Go to step 2.	Set the dial data.
2	Is the telephone line busy?	Redial in about 10 minutes.	Go to step 3.
3	Check the setting for 825-662 in the Fax/Scanner Parameter menu. (See “Parameter” on page 3-10. The value for 825-662 in Parameter should be MMR. Is 825-662 set to MMR?	Go to step 4.	Set 825-662 to MMR.
4	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

041-340 MCU NVRAM Error service check

Affected FRUs:

- Transfer belt assembly
- HVPS card
- Fuser
- EEPROM card
- Controller board

Step	Action and questions	Yes	No
1	Does Address: 38** display on the operator panel?	Go to step 2.	Go to step 3.
2	Reinstall the EEPROM card. Does the error still occur when turning on the power?	Replace the EEPROM card.	Problem resolved.
3	Does Address: 3A** display?	Go to step 4.	Go to step 5.
4	Reinstall the fuser assembly. See “Fuser removal” on page 5-78. Does the error still occur when turning on the power?	Replace the fuser assembly. See “Fuser removal” on page 5-78.	Problem resolved.
5	Does Address: 3A** display?	Go to step 6.	Go to step 7.
6	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146. Does the error still occur when turning on the power?	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146.	Problem resolved.
7	Does Address 31** display?	Go to step 8.	Go to step 9.

Step	Action and questions	Yes	No
8	Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79. Does the error still occur when turning on the power?	Replace the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79.	Problem resolved.
9	Reinstall the controller board. See “Controller board removal” on page 5-47.	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

042-313 Fan Motor Error service check

Affected FRUs:

- Duplex unit
- Controller board

Step	Action and questions	Yes	No
1	Check the duplex fan assembly by performing the Duplex Fan Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select Duplex Fan . 5. Open the front cover. 6. Bypass the front cover interlock. 7. Press OK to start the test. You will hear the fan and feel air coming from the fan if it is operational. Does the duplex fan assembly function correctly?	Replace the controller board. See “Controller board removal” on page 5-47.	Go to step 2.
2	Reinstall the duplex unit. Does the error still occur when turning the power on?	Go to step 3.	Problem resolved.
3	Check the connections between the duplex board and the controller board. Are P/J27, P/J272, P/J2720, and P/428 connected securely?	Go to step 4.	Go to step 4.
4	Replace the duplex feeder unit. See “Duplex unit removal” on page 5-62.	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

042-325 Motor Error service check

Affected FRU: Controller board.

Step	Action and questions	Yes	No
1	Check the installation of the following: <ul style="list-style-type: none"> • Transfer belt assembly • Fuser • Black toner cartridge Are the transfer belt assembly, the fuser, and the black toner cartridge installed correctly?	Go to step 3.	Reinstall the: <ul style="list-style-type: none"> • Transfer belt assembly • Fuser • Black toner cartridge Go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the P/J21 and P/J211 connections between the controller board and the main drive assembly. <p>Are the connectors secure?</p>	Go to step 5.	Reconnect the connectors P/J21 and P/J211. <p>Then go to step 4.</p>
4	Does the error still occur when the power is turned on?	Go to step 5.	Problem resolved.
5	Check the main motor by performing the Main Motor Test: <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Test, and press OK. 4. Select Main Motor. 5. Open the front cover, and remove the black toner cartridge. 6. Bypass the interlock on the front cover. 7. Select the speed with ▲ or ▼ to perform the test (FULL1, FULL2, HALF, and LOW). 8. Press OK to begin the test. For example, <pre> Main Motor (Full2). EXEC </pre> While the test is executing, you should hear the motor running. <p>Does the main motor function correctly?</p>	Replace the controller board. See “Controller board removal” on page 5-47.	Go to step 6.
6	Check the main drive installation. <p>Is the main drive assembly installed correctly?</p>	Go to step 7.	Reinstall the main drive assembly. See “Main drive removal” on page 5-92. <p>Then go to step 7.</p>
7	Does the error still occur when the power is turned on?	Go to “Main drive assembly (main motor) service check” on page 2-93.	Problem resolved.

042-326 Motor Error

Affected FRU: Controller board.

Step	Action and questions	Yes	No
1	Check the toner cartridges for proper installation. Are the toner cartridges installed correctly?	Go to step 3.	Reinstall the toner cartridges. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the P/J22 and P/J221 connections between the controller board and the main drive assembly. Are the connectors secure?	Go to step 4.	Reconnect the connectors P/J22 and P/J221. Then go to step 4.
4	Check the sub motor by performing the Sub Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Test , and press OK . 4. Select Sub Motor , and press OK . 5. Open the front cover, and remove all the toner cartridges. 6. Bypass the interlock on the front cover. 7. Select the speed with ▲ or ▼ to perform the test (FULL1, FULL2, HALF, and LOW). 8. Press OK to begin the test. For example, Sub Motor (Fu112). EXEC While the test is executing, you should hear the motor running. Does the main motor function correctly?	Replace the controller board. See “Controller board removal” on page 5-47.	Go to step 5.
5	Check the main drive assembly installation. Is the main drive assembly installed correctly?	Go to step 6.	Reinstall the main drive assembly. See “Main drive removal” on page 5-92. Then go to step 6.
6	Does the error still occur when the power is turned on?	Go to “Main drive assembly (sub motor) service check” on page 2-94.	Problem resolved.

042-358 Fan Motor Error service check

Affected FRUs:

- Fan
- Controller board
- LVPS

Step	Action and questions	Yes	No
1	<p>Check the fan by performing the Fan Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Test, and press OK. 4. Select Fan Test, and press OK. 5. Select HIGH or LOW speed with ▲ or ▼. 6. Press OK to begin the test. <p>While the test is executing, you should hear the motor running and feel a stream of air at the rear air ducts.</p> <p>Does the main motor function correctly?</p>	Replace the controller board. See “Controller board removal” on page 5-47.	Go to step 2.
2	<p>Reinstall the fan. See “Fan assembly removal” on page 5-71.</p> <p>Does the error still occur when the power is turned on?</p>	Go to step 3.	Problem resolved.
3	<p>Replace the fan. See “Fan assembly removal” on page 5-71.</p> <p>Does the error still occur when turning the power on?</p>	Go to step 4.	Problem resolved.
4	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p> <p>Does the error still occur when the power is turned on?</p>	Replace the LVPS. See “Low-voltage power supply (LVPS) removal” on page 5-91.	Problem resolved.

042-700 Printer Too Hot, 142-700 Ready to Copy service check

Affected FRUs:

- Paper feed assembly (P.3.2.1)
- Controller board

Step	Action and questions	Yes	No
1	<p>Check the room temperature.</p> <p>Is the room temperature over 32° C (89.6° F)?</p>	Change the room, or cool down the room.	Go to step 2.
2	<p>Did the customer print a large volume of printing?</p>	Go to step 5.	Go to step 3.
3	<p>Reseat the controller board. See “Controller board removal” on page 5-47.</p> <p>Does the error still occur when printing?</p>	Go to step 4.	Problem resolved.

Step	Action and questions	Yes	No
4	Replace the controller board. See “Controller board removal” on page 5-47. Does the error still occur when printing?	Replace the paper feed assembly. See “Paper feed assembly removal” on page 5-108.	Problem resolved.
5	Check the printing after five minutes of cool down. Does the error still occur when printing?	Go to step 3.	Problem resolved.

061-370 Laser Error service check

Affected FRUs:

- Printhead assembly
- Controller board

Step	Action and questions	Yes	No
1	Is the printhead installed correctly?	Go to step 3.	Reinstall the printhead assembly. See “Printhead assembly removal” on page 5-116. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the P/J12 connector on the controller board. Is the connector securely connected?	Go to step 5.	Reconnect the P/J12 connector. Then go to step 4.
4	Does the error still occur when the power is turned on?	Go to step 5.	Problem resolved.
5	Is the controller board installed correctly?	Go to step 7.	Reinstall the controller board. See “Controller board removal” on page 5-47. Then go to step 6.
6	Does the error still occur when the power is turned on?	Go to step 7.	Problem resolved.
7	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

062-320, 062-324 Restart Printer service check

Affected FRUs:

- Engine board
- Scanner assembly

Step	Action and questions	Yes	No
1	Reseat the connectors (P/J60, P/J62, P/J63, P/J64, P/J65) on the engine board. Does the error still occur when turning on the power?	Go to step 2.	Problem resolved.
2	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130. Does the error still occur when turning on the power?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

072-215 550 Feeder Error service check

Affected FRUs:

- Controller board
- 550-sheet feeder
- 550-sheet feeder controller card

Step	Action and questions	Yes	No
1	Is the 550-sheet feeder installed correctly?	Go to step 3.	Reinstall the 550-sheet feeder. See “550-sheet feeder removal” on page 5-27.
2	Does the error still occur when turning on the power?	Go to step 3.	Problem resolved.
3	Check the P/J27, P/J273, and P/J419 connectors between the 550-sheet feeder controller board and the controller board. Are the cable connections secure?	Go to step 5.	Reconnect the cables, and go to step 4.
4	Does the error still occur when turning on the power?	Go to step 5.	Problem resolved.
5	Replace the 550-sheet feeder controller board. See “550-sheet feeder controller board” on page 5-29. Does the error still occur when turning on the power?	Go to step 6.	Problem resolved.
6	Replace the 500-sheet feeder. See “550-sheet feeder removal” on page 5-27. Does the error still occur when turning on the power?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

072-216 Motor Error service check

Affected FRUs:

- Controller board
- 550-sheet feeder feed roll assembly
- 550-sheet feeder separator roll assembly

Step	Action and questions	Yes	No
1	Is the 550-sheet feeder paper tray installed correctly?	Go to step 3.	Reinstall the paper tray, then go to step 2.
2	Does the error still occur when turning on the power?	Go to step 3.	Problem resolved.
3	Check the feed roll assembly and the separator roll assembly by turning them with your finger. Make sure they rotate smoothly. Do the rolls rotate smoothly?	Go to step 4.	Replace the rolls that do not turn properly.
4	Check the P/J422, P/J4221, and P/J4222 connectors between the 550-sheet feeder controller board and the 550-sheet feeder feed drive assembly. Are the cables connected securely?	Go to step 5.	Reconnect the P/J422, P/J4221, and P/J4222. Then go to step 5.
5	Check the feed motor by performing the Tray 3 Feed Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select Tray 3 Feed Motor Test , and press OK . 5. Select a speed to test, and press OK to start the test. For example, select Tray 3 Feed Motor(FULL2). You will hear the motor run if it is function Does the tray 3 feed motor function correctly?	Replace the controller board. See “Controller board removal” on page 5-47.	Go to step 6.
6	Is the 550-sheet feeder drive assembly installed correctly?	Go to step 7.	Reinstall the 550-sheet feeder drive assembly. See “550-sheet feeder drive assembly removal” on page 5-34.
7	Does the error still occur when turning on the power?	Go to “550-sheet feeder drive assembly service check” on page 2-59.	Problem resolved.

077-215 Duplexer Error service check

Affected FRUs:

- Duplex card
- Controller board

Step	Action and questions	Yes	No
1	Is the duplex unit installed correctly?	Go to step 3.	Reinstall the duplex. See “Duplex unit removal” on page 5-62. Then go to step 2.
2	Does the error display when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the P/J27, P/J272, P/J2720, and P/J428 connectors between the duplex card and the controller board. Are the cable connections secure?	Go to step 5.	Reconnect P/J27, P/J272, P/J2720, and P/J428. Then go to step 4.
4	Does the error display when the power is turned on?	Go to step 5.	Problem resolved.
5	Replace the duplex unit. See “Duplex unit removal” on page 5-62. Does the error display when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

077-215 Duplexer Error service check

Affected FRUs:

- Duplex unit
- Controller board

Step	Action and questions	Yes	No
1	Is the duplex unit installed correctly?	Go to step 3.	Reinstall the duplex. See “Duplex unit removal” on page 5-62. Then go to step 2.
2	Does the error display when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the P/J27, P/J272, P/J2720, and P/J428 connectors between the duplex card and the controller board. Are the cables connections secure?	Go to step 4.	Reconnect P/J27, P/J272, P/J2720, and P/J428. Then go to step 4.

Step	Action and questions	Yes	No
4	Does the error display when the power is turned on?	Go to step 5.	Problem resolved.
5	Replace the duplex unit. See “Duplex unit removal” on page 5-62. Does the error display when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

077-343 Motor Error service check

Affected FRUs:

- Feeder assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the rotation of the registration roll rubber with a finger. Does the rubber on the registration roll rotate correctly?	Go to step 2.	Replace the feeder assembly.
2	Check the P/J25 and P/J251 connectors between the controller board and the feed drive assembly. Are the connections secure?	Go to step 3.	Reconnect the connectors P/J25 and P/J251. Then go to step 3.
3	Check the PH Motor by performing the PH Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select PH Motor . 5. Open the front cover. 6. Press OK . 7. Select a speed to test, and press OK to start the test. For example, select PH Motor(Full2) . 8. During the Test, close the front cover. You will hear the motor run if it is functional Does the PH motor function correctly?	Replace the controller board. See “Controller board removal” on page 5-47.	Go to step 4.
4	Is the feed drive assembly installed correctly?	Go to step 5.	Reinstall the feed drive assembly. See “Feed drive assembly removal” on page 5-75. Then go to step 5.
5	Does the error still occur when the power is turned on?	Go to “Feed drive assembly service check” on page 2-75.	Problem resolved.

092-651 ADC Sensor Error service check

Affected FRUs:

- Transfer belt assembly
- Controller board

Step	Action and questions	Yes	No
1	Is the transfer belt assembly installed correctly?	Go to step 3.	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the toner density. Compare the density of the four colors by printing the Graduation ESS Test Page. 1. In Service Mode, select Printer Diag. 2. Select Test Print , and press OK. 3. Select the desired test page, and press OK. Ready displays. 4. Press OK to print the test page. Processing displays and then the page prints. Ready displays when the page is complete. Compare the results against the sample page, “Gradation ESS” on page 3-54. Is the toner too dark?	Go to step 4.	Replace the controller board. See “Controller board removal” on page 5-47.
4	Check the density solenoid in the transfer belt assembly by performing the ADC (CTD) Sensor Solenoid Test: 1. In Service Mode, select Printer Diag , and press OK. 2. Select Engine Diag , and press OK. 3. Select Motor Tests , and press OK. 4. Select ADC (CTD) Sensor Solenoid. 5. Open the front cover. 6. Bypass the front cover interlock. 7. Press OK to start the test. You will see the shutter move if the solenoid is functional. Does the density sensor operate correctly?	Replace the corresponding toner cartridge assembly. See “Toner cartridge removal” on page 5-141.	Go to step 5.
5	Check the P/J27, P/J272, and P/J2721 connectors between the controller board and the transfer belt assembly. Are the connectors connected correctly?	Go to step 6.	Reconnect the P/J27, P/J272, and/or P/J2721 connectors. Then go to step 6.
6	Disconnect P/J27 on the controller board. Measure the voltage between ground and J27-A7 pin on the controller board. It should measure approximately +5 V dc. Does the voltage measure approximately +5 V dc?	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146.	Replace the controller board. See “Controller board removal” on page 5-47.

092-651 ADC Sensor Error service check

Affected FRUs:

- Transfer belt
- Printhead assembly
- Controller board

Step	Action and questions	Yes	No
1	Is the transfer belt installed correctly?	Go to step 3.	Reinstall the transfer belt. See “Transfer belt removal” on page 5-146. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the toner cartridges for proper installation. Are the toner cartridges installed correctly?	Go to step 5.	Reinstall the toner cartridges, then go to step 4.
4	Does the error still occur when the power is turned on?	Go to step 5.	Problem resolved.
5	Check the toner density. Compare the density of the four color toner by printing the Gradation ESS Test Page. 1. In Service Mode, select Printer Diag , and press OK . 2. Select Test Print , and press OK . 3. Select the desired test page, and press OK . Ready displays. 4. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. Compare the results against the sample page. See “Gradation ESS” on page 3-54. Is the toner too light?	Go to step 6.	Replace the controller board. See “Controller board removal” on page 5-47.
6	Check the density solenoid in the transfer belt by performing the ADC (CTD) Sensor Solenoid Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select ADC (CTD) Sensor Solenoid . 5. Open the front cover. 6. Bypass the front cover interlock. 7. Press OK to start the test. You will see the shutter move if the solenoid is functional. Does the density sensor operate correctly?	Go to step 11.	Go to step 7.
7	Check the P/J27, P/J272, and P/J2721 connectors between the controller board and the transfer belt. Are the connectors connected correctly?	Go to step 8.	Reconnect the P/J27, P/J272, and/or P/J2721 connectors. Then go to step 8.

Step	Action and questions	Yes	No
8	Disconnect P/J27 on the controller board. Measure the voltage between ground and the J27-A7 pin on the controller board. It should measure approximately +5 V dc. Does the voltage measure approximately +5 V dc?	Replace the transfer belt. See “Transfer belt removal” on page 5-146.	Replace the controller board. See “Controller board removal” on page 5-47.
9	Check the developer motor by performing the Dev Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select Deve Motor . 5. Open the front cover. 6. Remove the yellow, cyan, and magenta toner cartridges. 7. Close the front cover. 8. Press OK . 9. Select a speed to test, and press OK . You will hear the motor run if it is functional. Does the developer motor function correctly?	Go to step 11.	Go to step 10.
10	Replace the main drive assembly. See “Main drive removal” on page 5-92. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.
11	Replace the toner cartridges. See “Toner cartridge removal” on page 5-141. Does the error still occur when the power is turned on?	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116.	Problem resolved.

092-661 Env Sensor Error service check

Affected FRUs:

- Humidity sensor
- Controller board

Step	Action and questions	Yes	No
1	Is the humidity sensor installed correctly?	Go to step 2.	Reinstall the humidity sensor. See “Humidity sensor removal” on page 5-85. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.

Step	Action and questions	Yes	No
3	Check the P/J26 and P/J261 connections between the controller board and the humidity sensor. Are the connections secure?	Go to step 4.	Reconnect the P/J26 and P/J261 connections. Then go to step 4.
4	Disconnect the P/J26 connector on the controller board. Measure the voltage between ground and J26-4 pin on the controller board. It should measure approximately +5 V dc. Does the voltage measure approximately +5 V dc?	Replace the humidity sensor. See “Humidity sensor removal” on page 5-85.	Replace the controller board. See “Controller board removal” on page 5-47.

093-320 Motor Error service manual

Affected FRU: Controller board

Step	Action and questions	Yes	No
1	Are the toner cartridges installed correctly?	Go to step 3.	Reinstall the toner cartridges, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the P/J22 and P/J222 connectors between the controller board and the main drive assembly. Are P/J22 and P/J22 connected securely?	Go to step 4.	Reconnect the P/J22 and P/J222 connectors. Then go to step 4.
4	Check the developer motor by performing the Deve Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select Deve Motor . 5. Open the front cover. 6. Remove the yellow, cyan, and magenta toner cartridges. 7. Bypass the front cover interlock. 8. Press OK . 9. Select a speed to test, and press OK . You will hear the motor run if it is functional. Does the developer motor function correctly?	Replace the controller board. See “Controller board removal” on page 5-47.	Go to step 5.
5	Is the main drive assembly installed correctly?	Go to step 6.	Reinstall the main drive. See “Main drive removal” on page 5-92. Then go to step 6.
6	Does the error still occur when the power is turned on?	Go to “Main drive assembly (developer motor) service check” on page 2-94.	Problem resolved.

093-970 Insert Yellow service check

Affected FRUs:

- Yellow toner cartridge
- Yellow toner sensor assembly
- Controller board

This service check covers the following error: 093-970 Insert Yellow.

Step	Action and questions	Yes	No
1	Check that the yellow toner cartridge is correctly installed and in the yellow position. Is the yellow toner cartridge installed correctly?	Go to step 3.	Go to step 2.
2	Reinstall the toner cartridge. Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the yellow toner cartridge. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved.
4	Check the toner sensor: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Sensor Test , and press OK . 4. Select CRU Sensor Y . OFF appears on the display. 5. Open the front cover. 6. Press OK to begin the test. 7. Toggle the yellow CRU sensor by opening the front cover and removing and replacing the yellow toner cartridge. If the sensor is functional, the initial L - 0 increments by one whenever the sensor is activated. Does the number on the screen increase by one every time the toner cartridge is reinstalled?	Replace the controller board. See " Controller board removal " on page 5-47.	Go to step 5.
5	Check the P/J19 and P/J191 connectors between the controller board and toner cartridge assembly. Are the connectors (P/J19 and P/J191) connected securely?	Go to step 6.	Reconnect the connector(s) P/J19 and/or P/J191, then go to step 6.
6	Does the error still occur when the power is turned on?	Go to step 7.	Problem resolved.
7	Disconnect the P/J19 connector on the controller board. Measure the voltage between J19-1 pin and the J19-2 pin. The voltage should measure approximately +3.3 V dc. Is the voltage between J19-1 and J19-2 pins approximately +3.3 V dc?	Go to step 8.	Replace the controller board. See " Controller board removal " on page 5-47.

Step	Action and questions	Yes	No
8	Measure the voltage across ground and the P/J19-3 pin. Check that the voltage changes when the paper is inserted into the sensor detecting point. Does the voltage change when paper is inserted?	Replace the controller board. See "Controller board removal" on page 5-47.	Replace the toner sensor assembly. See "Toner sensor assembly (cyan, magenta, yellow) removal" on page 5-145.

093-971 Insert Magenta service check

Affected FRUs:

- Magenta toner cartridge
- Magenta toner sensor assembly
- Controller board

This service check covers the following error: 093-971 Insert Magenta.

Step	Action and questions	Yes	No
1	Check that the magenta toner cartridge is correctly installed and in the magenta position. Is the magenta toner cartridge installed correctly?	Go to step 3.	Go to step 2.
2	Reinstall the toner cartridge. Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the magenta toner cartridge. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved.
4	Check the toner sensor: 1. In Service Mode, select Printer Diag . 2. Select Engine Diag , and press OK . 3. Select Sensor Test , and press OK . 4. Select CRU Sensor M . OFF appears on the display. 5. Open the front cover. 6. Press OK to begin the test. 7. Toggle the magenta CRU sensor by opening the front cover and removing and replacing the magenta toner cartridge. If the sensor is functional, the initial L - 0 increments by one whenever the sensor is activated. Does the number on the screen increase by one every time the toner cartridge is reinstalled?	Replace the controller board. See "Controller board removal" on page 5-47.	Go to step 5.
5	Check the P/J19 and P/J192 connectors between the controller board and toner cartridge assembly. Are the connectors (P/J19 and P/J191) connected securely?	Go to step 6.	Reconnect the connector(s) P/J19 and/or P/J192, then go to step 6.
6	Does the error still occur when the power is turned on?	Go to step 7.	Problem resolved.

Step	Action and questions	Yes	No
7	Disconnect the P/J19 connector on the controller board. Measure the voltage between J19-4 pin and the J19-5 pin. The voltage should measure approximately +3.3 V dc. Is the voltage between J19-4 and J19-5 pins approximately +3.3 V dc?	Go to step 8.	Replace the controller board. See “Controller board removal” on page 5-47.
8	Measure the voltage across ground and the P/J19-6 pin. Check that the voltage changes when the paper is inserted into the sensor detecting point. Does the voltage change when paper is inserted?	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the toner sensor assembly. See “Toner sensor assembly (cyan, magenta, yellow) removal” on page 5-145.

093-972 Insert Cyan service check

Affected FRUs:

- Cyan toner cartridge
- Cyan toner sensor assembly
- Controller board

This service check covers the following error: 093-972 Insert Cyan.

Step	Action and questions	Yes	No
1	Check that the cyan toner cartridge is correctly installed and in the cyan position? Is the cyan toner cartridge installed correctly?	Go to step 3.	Go to step 2.
2	Reinstall the toner cartridge. Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the cyan toner cartridge. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved.
4	Check the toner sensor: <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag., and press OK. 3. Select Sensor Test, and press OK. 4. Select CRU Sensor C. OFF appears on the display. 5. Open the front cover. 6. Press OK to begin the test. 7. Toggle the cyan CRU sensor by opening the front cover and removing and replacing the cyan toner cartridge. <p>If the sensor is functional, the initial L - 0 increments by one whenever the sensor is activated.</p> Does the number on the screen increase by one every time the toner cartridge is reinstalled?	Replace the controller board. See “Controller board removal” on page 5-47.	Go to step 5.

Step	Action and questions	Yes	No
5	Check the P/J19 and P/J194 connectors between the controller board and toner cartridge assembly. Are the connectors (P/J19 and P/J194) connected securely?	Go to step 6.	Reconnect the connector(s) P/J19 and/or P/J192, then go to step 6.
6	Does the error still occur when the power is turned on?	Go to step 7.	Problem resolved.
7	Disconnect the P/J19 connector on the controller board. Measure the voltage between J19-10 pin and the J19-11 pin. The voltage should measure approximately +3.3 V dc. Is the voltage between J19-10 and J19-11 pins approximately +3.3 V dc?	Go to step 8.	Replace the controller board. See “Controller board removal” on page 5-47.
8	Measure the voltage across ground and the P/J19-12 pin. Check that the voltage changes when the paper is inserted into the sensor detecting point. Does the voltage change when paper is inserted?	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the toner sensor assembly. See “Toner sensor assembly (cyan, magenta, yellow) removal” on page 5-145.

093-973 Insert Black service check

Affected FRUs:

- Black toner cartridge
- Black toner sensor assembly
- Controller board

This service check covers the following error: 093-972 Insert Black.

Step	Action and questions	Yes	No
1	Check that the black toner cartridge is correctly installed and in the black position. Is the black toner cartridge installed correctly?	Go to step 3.	Go to step 2.
2	Reinstall the toner cartridge. Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the black toner cartridge. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved.

Step	Action and questions	Yes	No
4	<p>Check the toner sensor:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Sensor Test, and press OK. 4. Select CRU Sensor K. OFF appears on the display. 5. Open the front cover. 6. Press OK to begin the test. 7. Toggle the black CRU sensor by opening the front cover and removing and replacing the black toner cartridge. <p>If the sensor is functional, the initial L - 0 increments by one whenever the sensor is activated.</p> <p>Does the number on the screen increase by one every time the toner cartridge is reinstalled?</p>	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p>	<p>Go to step 5.</p>
5	<p>Check the P/J19 and P/J193 connectors between the controller board and toner cartridge assembly.</p> <p>Are the connectors (P/J19 and P/J193) connected securely?</p>	<p>Go to step 6.</p>	<p>Reconnect the connector(s) P/J19 and/or P/J192, then go to step 6.</p>
6	<p>Does the error still occur when the power is turned on?</p>	<p>Go to step 7.</p>	<p>Problem resolved.</p>
7	<p>Disconnect the P/J19 connector on the controller board. Measure the voltage between J19-7 pin and the J19-8 pin. The voltage should measure approximately +3.3 V dc.</p> <p>Is the voltage between J19-7 and J19-8 pins approximately +3.3 V dc?</p>	<p>Go to step 8.</p>	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p>
8	<p>Measure the voltage across ground and the P/J19-9 pin. Check that the voltage changes when the paper is inserted into the sensor detecting point.</p> <p>Does the voltage change when paper is inserted?</p>	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p>	<p>Replace the toner sensor assembly.</p>

094-330 CRUM Error service check

Affected FRUs:

- Transfer belt assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the transfer belt assembly. Is the transfer belt assembly installed correctly?	Go to step 3.	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

116-367 Parallel Port Error service check

Affected FRUs:

- RIP board
- IEEE 1284 cable

This service check covers the following errors: 116-367 Error.

Step	Action and questions	Yes	No
1	Is another computer and/or cable available?	Go to step 2.	Go to step 3.
2	Exchange the cable on the MFP that has the error with another cable. If another computer is available, attach the MFP to the other computer with a working cable. Does the error still occur when printing?	Replace the RIP board. See “RIP board removal” on page 5-126.	Check the original computer settings and verify the connection of the original cable.
3	If another cable or another computer are not available, verify the connection of the cable to the printer and the computer to the cable. Does the error still occur when printing?	Go to step 4.	Problem resolved.
4	Replace the IEEE-1284 parallel cable. Does the error still occur when printing?	Replace the RIP board. See “RIP board removal” on page 5-126.	Problem resolved.

550-sheet feeder turn clutch assembly service check

Affected FRUs:

- Controller board
- Turn clutch assembly (550-sheet feeder)
- 550-sheet feeder controller board

Step	Action and questions	Yes	No
1	Check the connections between the (P/J420) and the paper handling turn clutch assembly (P/J4201) on the 550-sheet feeder controller board. Are P/J420 and P/J4201 connected correctly?	Go to step 2.	Reconnect the connectors P/J420 and/or P/J4201 securely.
2	Disconnect the P/J420 connector on the 550-sheet feeder controller board. Check the voltage across ground and J420-1 pin on the 550-sheet controller board. The measurement should be approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc?	Replace the 550-sheet feeder turn clutch. See “550-sheet feeder turn clutch removal” on page 5-42.	Go to step 4.
3	Check the connections between the 550-sheet feeder controller board and the printer controller board. Are the connectors P/J419, P/J273, and P/J27 connected correctly?	Go to step 4.	Reconnect the connectors P/J419, P/J273, and P/J27.
4	Disconnect the connector P/J27 on the controller board. Check the voltage across ground and J27-B4 and J27-B5 pins on the controller board. The measurement should be approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc?	Replace the feeder controller board. See “550-sheet feeder controller board” on page 5-29.	Replace the controller board. See “Controller board removal” on page 5-47.

550-sheet feeder feed clutch assembly service check

Affected FRUs:

- Controller board
- 550-sheet feeder feed clutch assembly
- 550-sheet feeder controller board

Step	Action and questions	Yes	No
1	Check the connections between the 550-sheet feeder controller board and the feed clutch assembly. Are P/J421 and P/J4213 connected correctly?	Go to step 2.	Reconnect the connectors P/J421 and/or P/J4213 securely.
2	Disconnect the P/J421 connector on the 550-sheet feeder controller board. Check the voltage across ground and J421-1 pin on the 550-sheet feeder controller board. The measurement should be approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc?	Replace the feeder feed clutch assembly. See “550-sheet feeder feed clutch removal” on page 5-32.	Go to step 3.

Step	Action and questions	Yes	No
3	Check the connections between the 550-sheet feeder controller board and the printer controller board. Are the connectors P/J419, P/J273, and P/J27 connect correctly?	Go to step 4.	Reconnect the connectors P/J419, P/J273, and P/J27.
4	Disconnect the connector P/J27 on the controller board. Check the voltage across ground and J27-B4 and J27-B5 pins on the controller board. The measurement should be approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc?	Replace the 550-sheet feeder controller board. See “550-sheet feeder controller board” on page 5-29.	Replace the controller board. See “Controller board removal” on page 5-47.

550-sheet feeder drive assembly service check

Affected FRUs:

- Controller board
- 550-sheet feeder controller board
- 550-sheet feeder drive assembly

Step	Action and questions	Yes	No
1	Check the connections between the 550-sheet feeder controller board and the feeder drive assembly. Are the connectors P/J422 and P/J4222 connected correctly?	Go to step 2.	Reconnect the connectors P/J422 and/or P/J4222 securely.
2	Disconnect the P/J422 connector on the 550-sheet feeder controller board. Check the voltage across ground and J422-6 pin on the 550-sheet feeder controller board. The measurement should be approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc?	Replace the feeder drive assembly. See “550-sheet feeder drive assembly removal” on page 5-34.	Go to step 3.
3	Check the connections between the 550-sheet feeder controller board and the printer controller board. Are the connectors P/J419, P/J273, and P/J27 connected correctly?	Go to step 4.	Reconnect the connectors P/J419, P/J273, and P/J27.
4	Disconnect the connector P/J27 on the controller board. Check the voltage across ground and J27-B4 and J27-B5 pins on the controller board. The measurement should be approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc?	Replace the 550-sheet feeder controller board. See “550-sheet feeder controller board” on page 5-29.	Replace the controller board. See “Controller board removal” on page 5-47.

Abnormal noise service check

When power is turned on

Affected FRUs:

- Transfer belt assembly
- Toner cartridges
- Fuser
- Main drive assembly
- Feed drive assembly
- 550-sheet feeder

Step	Action and questions	Yes	No
1	<p>Check the Main Motor by performing the Main Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Test, and press OK. 4. Select Main Motor. 5. Open the front cover, and remove the black toner cartridge. 6. Bypass the interlock on the front cover. 7. Select the speed with ▲ or ▼ to perform the test (FULL1, FULL2, HALF, and LOW). 8. Press OK to begin the test. <p>While the test is executing, you should hear the motor running.</p> <p>Does the printer make the noise when it is turned on?</p>	Go to step 2.	Go to step 4.
2	<p>Check the fuser installation by performing the Main Motor Test (see step 1).</p> <p>Does the printer make the noise when it is turned on?</p>	Go to step 3.	Problem resolved.
3	<p>Reseat the black toner cartridge. Perform the Main Motor Test (see step 1).</p> <p>Does the printer make the noise when it is turned on?</p>	Go to step 4.	Problem resolved.
4	<p>Check the sub motor installation by performing the Sub Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Sub Motor Test, and press OK. 5. Open the front cover, and remove all the toner cartridges. 6. Bypass the interlock on the front cover. 7. Select a speed to test, and press OK to start the test. <p>You will hear the motor run if it is functional.</p> <p>Does the printer make the noise when it is turned on?</p>	Go to step 5.	Go to step 9.
5	<p>Reseat all the toner cartridges. Perform the Sub Motor Test (see Step 4).</p> <p>Does the printer make the noise when it is turned on?</p>	Go to step 6.	Problem resolved.

Step	Action and questions	Yes	No
6	Reinstall the main drive assembly. See “Main drive removal” on page 5-92 . Perform the Sub Motor Test (see step 4). Does the printer make the noise when it is turned on?	Replace the toner cartridges and the main drive assembly one after the other to isolate the problem.	Problem resolved.
7	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146 . Perform the Main Motor Test (see step 1). Does the printer make the noise when it is turned on?	Go to step 8.	Problem resolved.
8	Reinstall the main drive assembly. See “Main drive removal” on page 5-92 . Perform the Main Motor Test (see step 1). Does the printer make the noise when it is turned on?	Replace the yellow, magenta, cyan, and black toner cartridges and the main drive one after the other to isolate the problem.	Problem resolved.
9	Reinstall the developer motor. See “Main drive removal” on page 5-92 . Perform the Deve Motor Test: 1. Select Engine Diag , and press OK . 2. Select Motor Tests , and press OK . 3. Select Deve Motor . 4. Open the front cover. 5. Remove the yellow, cyan, and magenta toner cartridges. 6. Bypass the front cover interlock. 7. Press OK . 8. Select a speed to test, and press OK to start the test. You will hear the motor run if it is functional. Does the printer make the noise when it is turned on?	Go to step 10.	Go to step 12.
10	Reseat the toner cartridges. See “Toner cartridge removal” on page 5-141 . Perform the Deve Motor Test (see step 9). Does the printer make the noise when it is turned on?	Go to step 11.	Problem resolved.
11	Check the main drive assembly installation. Perform the Deve Motor Test (see step 9). Does the printer make the noise when it is turned on?	Replace the yellow, magenta, and cyan toner cartridges and the main drive one after the other to isolate the problem.	Problem resolved.

Step	Action and questions	Yes	No
12	<p>Reinstall the feed drive assembly. See “Feed drive assembly removal” on page 5-75. Perform the Tray 2 Motor Test:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Tray 2 Motor Test, and press OK. Select the speed by scrolling to your desired speed, and press OK to start the test. <p>You will hear the motor run if it is functional. Does the printer make the noise when it is turned on?</p>	Go to step 14.	<p>Problem resolved.</p> <p>If the 550-sheet feeder is installed, go to step 13.</p>
13	<p>Reinstall the 550-sheet feeder. See “550-sheet feeder removal” on page 5-27. Perform the Tray 3 Feed Motor Test:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag, and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Tray 3 Feed Motor Test, and press OK. Select a speed to test, and press OK to start the test. <p>You will hear the motor run if it is functional. Does the printer make the noise when it is turned on?</p>	Replace the 550-sheet feeder. See “550-sheet feeder removal” on page 5-27 .	Problem resolved.
14	<p>Check the feed drive assembly. Perform the Tray 2 Motor Test again (see step 12). Does the printer make the noise when it is turned on?</p>	Replace the feed drive assembly. See “Feed drive assembly removal” on page 5-75 .	Problem resolved.

During standby

Affected FRUs:

- Fan assembly
- Low-voltage power supply (LVPS)

Step	Action and questions	Yes	No
1	<p>Reinstall the fan. See “Fan assembly removal” on page 5-71. Perform the Motor Test:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag, and press OK. Select Engine Diag, and press OK. Select Motor Test, and press OK. Select Main Motor. Open the front cover, and remove the black toner cartridge. Bypass the interlock on the front cover. Select the speed with ▲ or ▼ to perform the test (FULL1, FULL2, HALF, and LOW). Press OK to begin the test. <p>While the test is executing, you should hear the motor running. Does the printer make the noise during standby?</p>	Replace the fan assembly. See “Fan assembly removal” on page 5-71 .	Replace the LVPS. See “Low-voltage power supply (LVPS) removal” on page 5-91 .

During printing

Affected FRUs:

- MP feeder separator roller assembly
- Separator and feed roller (250-sheet tray assembly)
- Separator and feed roller (550-sheet feeder)
- ADF feed roller
- Transfer belt assembly
- Toner cartridges
- Fuser
- Main drive assembly
- Feed drive assembly
- Duplex unit (option)
- 550-sheet feeder (option)

Step	Action and questions	Yes	No
1	Check the multipurpose feeder (MP feeder). Does the noise arise when feeding the paper from the MP feeder?	Go to step 2.	Go to step 3.
2	Replace the paper with new paper that meets the MP feeder specifications. See “Media guidelines and specifications” on page 1-4. Does the printer make the noise while printing?	Replace the MP feeder separator roller assembly. See “MP feeder separator roll assembly removal” on page 5-101.	Problem resolved.
3	Check the 550-sheet feeder, if installed. Reinstall if necessary. Does printer make the noise when feeding the paper from the feeder?	Go to step 4.	Go to step 5.
4	Replace the paper with new paper that meets printer specifications. See “Media guidelines and specifications” on page 1-4. Does the printer make the noise while printing?	Replace the separator roller. 250-sheet tray assembly: See “Separator roll removal—250-sheet tray assembly” on page 5-136. 550-sheet feeder: See “550-sheet feeder tray separator roll removal” on page 5-41	Problem resolved.
5	Check the duplex unit, if installed. Does the printer make the noise when feeding the paper from the duplex unit?	Go to step 6.	Go to step 8.
6	Reinstall the duplex unit. See “Duplex unit removal” on page 5-62. Does the noise arise from the printer?	Replace the duplex unit. See “Duplex unit removal” on page 5-62.	Go to step 7.

Step	Action and questions	Yes	No
7	<p>Check the duplex motor by performing the Duplex Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Duplex Motor. 5. Open the front cover. 6. Remove the transfer belt assembly. 7. Bypass the front cover interlock. 8. Select a speed to test, and press OK to start the test. <p>You will see the motor turn the duplex rolls if it is functional.</p> <p>Does the printer make the noise when feeding paper from the duplex unit?</p>	Try replacing the duplex unit. See “Duplex unit removal” on page 5-62.	Problem resolved.
8	<p>Check the ADF.</p> <p>Does the printer make the noise when feeding paper from the ADF?</p>	Go to step 9.	Go to step 11.
9	<p>Check the document and document type. See “Media guidelines and specifications” on page 1-4.</p> <p>Does the document meet the ADF specifications?</p>	Go to step 10.	Change the paper type.
10	<p>Check the feed roll and the separator pad.</p> <p>Is there damage or debris on the feed roll and separator pad?</p>	Remove the debris, or replace the damaged feed roll and the separator pad.	Replace the feed roll and the separator pad.
11	<p>Reinstall the fuser. See “Fuser removal” on page 5-78.</p> <p>Does the printer make the noise when printing?</p>	Go to step 12.	Problem resolved.
12	<p>Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146.</p> <p>Does the printer make the noise when printing?</p>	Go to step 13.	Problem resolved.
13	<p>Reinstall the toner cartridges. See “Toner cartridge removal” on page 5-141.</p> <p>Does the printer make the noise when printing?</p>	Go to step 14.	Problem resolved.
14	<p>Reinstall the main drive assembly. See “Main drive removal” on page 5-92.</p> <p>Does the printer make the noise when printing?</p>	Go to step 15.	Problem resolved.
15	<p>Reinstall the feed drive assembly. See “Feed drive assembly removal” on page 5-75.</p> <p>Does the printer make the noise when printing?</p>	Go to step 16.	Problem resolved.

Step	Action and questions	Yes	No
16	<p>Check the main drive assembly by performing the Main Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Test, and press OK. 4. Select Main Motor. 5. Open the front cover, and remove the black toner cartridge. 6. Bypass the interlock on the front cover. 7. Select the speed with ▲ or ▼ to perform the test (FULL1, FULL2, HALF, and LOW). 8. Press OK to begin the test. While the test is executing, you should hear the motor running. <p>Does the printer make the noise when printing?</p>	<p>Replace the main drive assembly. See “Main drive removal” on page 5-92.</p>	<p>Go to step 17.</p>
17	<p>Check the Deve Motor by performing the Deve Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Deve Motor. 5. Open the front cover. 6. Remove the yellow, cyan, and magenta toner cartridges. 7. Bypass the front cover interlock. 8. Press OK. 9. Select a speed to test, and press OK to start the test. You will hear the motor run if it is functional. <p>Does the printer make the noise when printing?</p>	<p>Replace the main drive assembly. See “Main drive removal” on page 5-92.</p>	<p>Go to step 18.</p>
18	<p>Check the Sub Motor by performing the Sub Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Sub Motor Test, and press OK. 5. Open the front cover, and remove all the toner cartridges. 6. Bypass the interlock on the front cover 7. Select a speed to test, and press OK to start the test. You will hear the motor run if it is functional. <p>Does the printer make the noise when printing?</p>	<p>Replace the main drive assembly. See “Main drive removal” on page 5-92.</p>	<p>Go to step 19.</p>

Step	Action and questions	Yes	No
19	<p>Check the feed drive assembly by performing the Tray 2 Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Tray 2 Motor Test, and press OK. 5. Select the speed by scrolling to your desired speed, and press OK to start the test. <p>You will hear the motor run if it is functional. Does the printer make the noise when printing?</p>	<p>Replace the feed drive assembly. See “Feed drive assembly removal” on page 5-75.</p>	<p>Problem resolved. If you have a 550-sheet feeder, go to step 20.</p>
20	<p>Check the 550-sheet feeder motor by performing the Tray 3 Feed Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Tray 3 Feed Motor Test, and press OK. 5. Select a speed to test, and press OK to start the test. <p>You will hear the motor run if it is functional. Does the printer make the noise when printing?</p>	<p>Replace the 550-sheet feeder. See “550-sheet feeder removal” on page 5-27.</p>	<p>Problem resolved.</p>

Communication errors service check

Affected FRUs:

- Engine board
- RIP board

This service check covers the following errors: 116-397 Controller Error, 116-398, 117-313 Controller Communication Error, 117-323 Error, 117-324, 117-354, 117-355.

Step	Action and questions	Yes	No
1	<p>Turn the power off. Wait for five seconds, and turn the power on.</p> <p>Does the error still occur when copying?</p>	Go to step 2.	Problem resolved.
2	<p>Reseat the P/J480 connector on the RIP board.</p> <p>Does the error still occur when copying?</p>	Go to step 3.	Problem resolved.
3	<p>Reseat the P/J48 connector on the engine board.</p> <p>Does the error still occur when copying?</p>	Go to step 4.	Problem resolved.
4	<p>Replace the engine board. See “Engine board removal” on page 5-64.</p>	<p>Replace the RIP board. See “RIP board removal” on page 5-126.</p>	Problem resolved.

Controller board service check

Affected FRU: Controller board

The following error refers to this service check: 024-340 MCU Firmware

Step	Action and questions	Yes	No
1	Does the error still occur after turning the power on and off several times?	Go to step 2.	Problem resolved. Some noise may be a possible cause. If this seems to be the case, go to “Electrical noise (interference) service check” on page 2-70.
2	Check the firmware version. Is the firmware the latest version?	Go to step 3.	Upgrade the firmware version. Then go to step 3.
3	Reinstall the controller board. See “Controller board removal” on page 5-47. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved. Some noise may be a possible cause. If this seems to be the case, go to “Electrical noise (interference) service check” on page 2-70.
4	Replace the controller board. See “Controller board removal” on page 5-47. Does the error still occur when the power is turned on?	Go to “Electrical noise (interference) service check” on page 2-70.	Problem resolved.

Copier Error service check

Affected FRU: Engine board

Step	Action and questions	Yes	No
1	Does the error message disappear within 70 seconds automatically?	Go to step 2.	Press OK to clear the message, or the message remains. Go to step 4.
2	Does the error message still occur when copying, scanning, or faxing the original document?	Go to step 3.	Go to step 4.
3	Print the Configuration report: 1. On the operator panel, press System to access the customer menus. 2. Select Setup , and press OK . 3. Select Information Pages , and press OK . 4. Select Configuration , and press OK . Does the error still occur when copying, scanning, or faxing the Configuration report?	Go to step 4.	Change the original document. Problem resolved.
4	Turn the power off and back on. Does the error still occur when copying, scanning, or faxing the original document?	Go to step 5.	Problem resolved.
5	Replace the engine board. See " Engine board removal " on page 5-64. Does the error occur when copying, scanning, or faxing the original?	Replace the printer.	Problem resolved.

Door A Open service check

Affected FRUs:

- Front cover assembly
- Interlock harness assembly
- Controller board.

Step	Action and questions	Yes	No
1	Is the front cover assembly bent or damaged so that it does not close properly?	Replace the front cover assembly. See "Front cover assembly removal" on page 5-10.	Go to step 2.
2	<p>Check the interlock switch by performing the Interlock Switch Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Sensor Test, and press OK. 4. Select Interlock Switch. OFF appears on the display. 5. Open the front cover. 6. Press OK to begin the test. 7. Toggle the interlock switch by opening and closing the front cover. <p>If the switch is functional, the initial L - 0 increments by one every time the switch is activated.</p> <p>Does the number on the screen increase by one every time the front cover is operated?</p>	Replace the controller board. See "Controller board removal" on page 5-47.	Go to step 3.
3	<p>Replace the interlock harness assembly. See "Interlock harness removal" on page 5-86.</p> <p>Does the error still occur when turning on the power?</p>	Replace the controller board. See "Controller board removal" on page 5-47.	Problem resolved.

Download Mode service check

Affected FRU: Controller board

Step	Action and questions	Yes	No
1	<p>Check the download firmware version.</p> <p>Is the downloaded firmware the latest version for this model MP feeder?</p>	Go to step 2.	Reinstall the correct firmware.
2	<p>Reinstall the controller board. See "Controller board removal" on page 5-47.</p> <p>Does the error still occur when downloading?</p>	Replace the controller board. See "Controller board removal" on page 5-47.	Problem resolved.

Duplex jam sensor, duplex clutch, duplex motor assembly, duplex fan service check

Affected FRUs:

- Duplex unit
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the duplex board and the controller board. Are the connectors P/J428, P/J2720, P/J272, and P/J27 correctly connected?	Go to step 2.	Reconnect the connector(s) P/J428, P/J2720, P/J272, and/or P/J27 securely.
2	Disconnect the P/J27 connector on the controller board. Measure the voltage across ground and J27-A15 pin on the controller card. It should measure approximately +3.3 V dc. Does the voltage measure approximately +3.3 V dc?	Go to step 3.	Replace the controller board. See “Controller board removal” on page 5-47.
3	Replace the duplex card. Does the error still occur when the power is turned on?	Problem resolved.	Replace the duplex assembly. See “Duplex unit removal” on page 5-62.

Electrical noise (interference) service check

Step	Action and questions	Yes	No
1	Check the external noise. Are there any other electrical appliances within 3 meters of the printer, such as generators, radio, and appliances with motors?	Go to step 2.	Go to step 3.
2	Either turn off the other electrical appliances or relocate the printer at least 6 meters from other appliances. Does the electrical noise error still occur?	Go to step 3.	Problem resolved.
3	Check the AC ground. Is the AC power supply outlet wired and grounded appropriately?	Go to step 4.	Suggest the customer have the AC power supply outlet repaired.
4	Reinstall the toner cartridges and transfer belt assembly. Does the electrical noise error still occur?	Go to step 5.	Problem resolved.
5	Remove all the toner cartridges. Are there any stains or debris on the contacts of the toner cartridges?	Wipe off the stains or debris gently with a dry cloth.	Reseat the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79.

Engine board error service check

This service check covers the following errors: MFD Controller Error 017-971 to 017-979, 017-986, 017-987, 017-989, 117-310 to 117-312, Report Error 017-980, 117-314, Fax Error 033-502, 133-234, 133-235, 133-236, 133-239 to 133-244, 033-246 to 133-249, 133-251 to 133-254, 133-259 to 133-261, 133-269, 133-271 to 133-280, 133-282, 133-283, 133-286 to 133-290, Fax Communication Error 033-512, 033-513, 033-751, 033-764, 035-730, 035-779, 113-231, Fax Codec Error 033-765 to 033-768, 033-770, 033-771, 033-774, 033-776, 033-786, 133-237, 133-238, Scan Codec Error 033-785, MFD Memory Full 033-787, 033-788, Fax Job Canceled 033-789 to 033-791, Scan Error 116-396, 116-987, Error 117-322, 117-328, 117-335, 117-336, 117-337, 117-340, 117-344, 117-348, 117-349, 117-350, MFD EEPROM Error 117-315, 117-362, MFD NVM Error 117-363, Fax Report Error 133-281, Controller, Film Size Limit 016-986.

Affected FRU: Engine board

Step	Action and questions	Yes	No
1	Turn the power off and on. Does the error still occur when turning on the power?	Go to step 2.	Problem resolved.
2	Check the printer setting for the Country setting. 1. Press System to access the customer menus. 2. Select Admin Menu . 3. Select Fax Setting . 4. Select Country . Is the Country setting in the customer menus correct?	Go to step 3.	Set the Country setting correctly.
3	Reinstall the engine board. See "Engine board removal" on page 5-64 . Does the error still occur when turning on the power?	Replace the engine board. See "Engine board removal" on page 5-64 .	Problem resolved.

Exit sensor service check

	<p>CAUTION</p> <p>Start the operation after the fuser assembly has cooled down.</p>
---	--

Affected FRUs:

- Fuser
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and the fuser. Are the cables at P/J17 and P/J171 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J17 and/or P/J171 securely.
2	Disconnect the P/J17 connector from the fuser. Check the voltage across ground and the J17-1 pin on the controller board. It should measure approximately +3.3 V dc. Does the voltage measure approximately +3.3 V dc?	Go to step 3.	Replace the controller board. See “Controller board removal” on page 5-47.
3	Measure the voltage across ground and the J17-3 pin on the controller board. The voltage should change every time the actuator of the exit sensor is operated. Does the voltage change every time you operate the actuator of the exit sensor?	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the fuser. See “Fuser removal” on page 5-78.

Fax Codec Error, Communication service check

Affected FRUs:

- Engine board
- Scanner assembly

The following service check refers to these errors: 033-501 Fax Codec Error, and 034-515, 035-792 Communication

Step	Action and questions	Yes	No
1	Check the customer operation. Does the customer operate the fax correctly?	Go to step 2.	Try again to send the fax.
2	Reseat the connectors (P/J60,62,63,64,65) on the engine board. Does the error still occur when faxing?	Go to step 3.	Problem resolved.
3	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130. Does the error still occur when turning on the power?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

Fax Error service check

Affected FRU: Engine board

This service check covers the following errors: Target Fax Busy 033-752, Fax Communication Error 033-753 to 033-761, 035-706, Fax Codec Error 033-769, 033-772

Step	Action and questions	Yes	No
1	Check the dial data. Is the dial data correct?	Go to step 2.	Set the dial data.
2	Reseat the telephone line connector on the engine board. Does the error still occur when faxing?	Go to step 3.	Problem resolved.
3	Reinstall the fax card on the engine board. Does the error still occur when faxing?	Go to step 4.	Problem resolved.
4	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

Fax Number Error, No Dial Tone service check

Affected FRU: Engine board

This service check covers the following errors: 034-799 Fax Number Error, 035-746 No Dial Tone

Step	Action and questions	Yes	No
1	Check the dial data. Is the dial data correct?	Go to step 2.	Set the dial data.
2	Check the setting on the printer for Country. 1. Press System to access the customer menus. 2. Select Admin Menu . 3. Select Fax Setting . 4. Select Country Is the Country setting correct?	Go to step 3.	Set the Country setting correctly.
3	Reinstall the engine board. See “Engine board removal” on page 5-64 Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

Fax Send Error service check

Affected FRU: Engine board

Step	Action and questions	Yes	No
1	Is the document to be faxed 100 sheets or more?	Go to step 2.	Go to step 3.
2	Divide the documents. Does the error still occur when faxing?	Go to step 3.	Problem resolved.
3	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

Feed clutch assembly service check

Affected FRUs:

- Feed clutch assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and feed clutch assembly. Are the cables at P/J23 and P/J235 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J23 and/or P/J235 securely.
2	Disconnect the P/J23 connector on the controller board. Measure the voltage across ground and the J23-15 pin on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc when the interlock switch is pushed?	Replace the feed clutch assembly. See “Feed clutch removal” on page 5-74.	Replace the controller board. See “Controller board removal” on page 5-47.

Feed drive assembly service check

Affected FRUs:

- Feed drive assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and feed drive assembly. Are the cables at P/J25 and P/J251 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J25 and/or P/J251 securely.
2	Disconnect the P/J25 connector on the controller board. Measure the voltage across ground and the J25-1 and J25-2 pins on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc when the interlock switch is pushed?	Replace the feed drive assembly. See "Feed drive assembly removal" on page 5-75	Replace the controller board. See "Controller board removal" on page 5-47.

Flash card service check

Affected FRU: RIP board

This service check covers the following errors: 016-500 Erase Flash Error, 016-501 Write Flash Error, 016-502 Verify Flash Error.

Step	Action and questions	Yes	No
1	Reinstall the RIP board. See "RIP board removal" on page 5-126. Does the error display when the power is turned on?	Replace the RIP board. See "RIP board removal" on page 5-126.	Problem resolved.

Fuser CRUM Error, Ready to Copy service check

	<p>CAUTION</p> <p>Make sure you allow time for the fuser to cool before you begin this service check.</p>
---	--

Affected FRUs:

- Fuser assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the fuser installation. Is fuser installed correctly?	Go to step 2.	Problem resolved.
2	Is the fuser assembly the correct version for this model MFP?	Go to step 3.	Problem resolved.
3	Replace the fuser assembly. See “Fuser removal” on page 5-78. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Illegal Settings service check

Paper trays

Affected FRUs:

- MP feeder actuator assembly
- No paper A4 actuator
- Controller board
- No paper A4 actuator

This service check covers the following errors: 024-965, 024-966, 024-969 Load Tray 1, 2, or 3, or MPF.

Step	Action and questions	Yes	No
1	Check the paper. Is the paper in the specified tray?	Go to step 2.	Load the paper.
2	Check the paper sizes: <ul style="list-style-type: none"> • The paper size of paper in the tray • The Paper Size setting on the operator panel for the tray • The paper size of the printing job Are all of these paper sizes the same?	Go to step 3.	Change the paper, the paper size setting, or the printing job.
3	Check the paper type: <ul style="list-style-type: none"> • Paper in the tray • Paper type setting by the operator panel • Paper type of the printing job Are of these paper types the same?	For trays, go to step 4. For MP feeder, go to step 9.	Change the paper, the paper type setting, or the printing job.

Step	Action and questions	Yes	No
4	Reinstall the 250-sheet tray (tray 2) or the 550-sheet tray (tray 3). Does the error still occur when printing?	For 250-sheet tray, go to step 5. For 550-sheet feeder, go to step 7.	Problem resolved.
5	Check the no A4 paper actuator. Does the no A4 paper actuator operate smoothly?	Go to step 6.	Replace the paper feed assembly. See “Paper feed assembly removal” on page 5-108.
6	Check the no paper sensor for the 250-sheet tray: 1. In Service Mode, select Printer Diag. 2. Select Engine Diag , and press OK . 3. Select Sensor Test , and press OK . 4. Select either Tray 2 No Paper , and press OK . L-0 appears on the display. 5. Remove the tray. 6. Toggle the Tray 2 paper out sensor by activating the sensor with your finger. The L-0 increments if the sensor is functional. Does the number on the screen increase by one every time the actuator of the no paper sensor is operated?	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the paper feed assembly. See “Paper feed assembly removal” on page 5-108.
7	Does the no A4 paper actuator operate smoothly?	Go to step 8.	Replace the paper feed assembly. See “Paper feed assembly removal” on page 5-108.
8	Check the no paper sensor in the 550-sheet feeder. 1. In Service Mode, select Printer Diag. 2. Select Engine Diag , and press OK . 3. Select Sensor Test , and press OK . 4. Select either Tray 3 No Paper , and press OK . L-0 appears on the display. 5. Remove the tray. 6. Toggle the Tray 3 paper out sensor by activating the sensor with you finger. The L-0 increments if the sensor is functional. Does the number on the screen increase by one every time the actuator of the no paper sensor is operated?	Replace the controller board. See “Controller board removal” on page 5-47.	Go to “550-sheet feeder” on page 2-100.
9	Check the MP feeder no paper actuator. Does the MP feeder no paper actuator operate smoothly?	Go to step 10.	Clean any debris in the MP feeder actuator. If the problem persists, replace the 250-sheet tray.

Step	Action and questions	Yes	No
10	<p>Check the paper out sensor.</p> <ol style="list-style-type: none"> 1. Remove any paper from the Multipurpose feeder (tray 1). 2. In Service Mode, select Printer Diag. 3. Select Engine Diag., and press OK. 4. Select Sensor Test, and press OK. 5. Select MPT No Paper, and press OK. H-0 appears on the display. 6. Open the MP feeder cover. 7. Toggle the MP feeder no paper sensor with your finger. <p>The L-0 increments if the sensor is functional.</p> <p>Does the number on the screen increase by one every time the actuator of the paper out sensor is operated?</p>	Replace the controller board. See “Controller board removal” on page 5-47.	Go to “MPF (multipurpose feeder)” on page 2-101.

Paper type

Affected FRUs:

- Engine board
- RIP board
- Controller board

Step	Action and questions	Yes	No
1	<p>Check the paper type. See “Media guidelines and specifications” on page 1-4.</p> <p>Does the paper type meet the duplex specification?</p>	Go to step 2.	Change the paper type.
2	<p>Reseat the connectors (P/J60,62,63,64,65) on the engine board.</p> <p>Does the error still occur when copying?</p>	Go to step 3.	Problem resolved.
3	<p>Reinstall the RIP board.</p> <p>Does the error still occur when copying?</p>	Reinstall the controller board.	Problem resolved.

Paper size

Affected FRUs:

- Engine board
- RIP board
- Controller board

Step	Action and questions	Yes	No
1	Check the paper size. See “Media guidelines and specifications” on page 1-4. Does the paper size meet the duplex specification?	Go to step 2.	Change the paper size.
2	Reseat the connectors (P/J60, 62, 63, 64, 65) on the engine board. Does the error still occur when copying?	Go to step 3.	Problem resolved.
3	Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the error still occur when copying?	Reinstall the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Insert Tray 2, Insert Tray 3, Illegal Settings service check

Affected FRUs:

- Size switch assembly
- Controller board

This service check covers the following errors: Insert Tray 2, Insert Tray 3, Illegal Settings

Step	Action and questions	Yes	No
1	Is the 250-sheet tray assembly installed correctly?	Go to step 3.	Reinstall the tray assembly. Then go to step 2.
2	Does the error still occur when turning on the power?	Go to step 3.	Problem resolved.
3	Check the size switch assembly by performing the Tray 2 Paper Size Test: <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Sensor Test, and press OK. 4. Select Tray 2 Paper Size, and press OK. The current paper size appears on the display if the tray is sensed. 5. Toggle the tray 2 paper size switch by removing and reinserting the paper tray. When the tray is removed, the display should change to NoCassette. Does the size switch assembly function correctly?	Problem resolved.	Go to step 4.
4	Replace the size switch assembly. See “Size switch assembly removal” on page 5-137.	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Insert Tray 3, Illegal Settings service check

Affected FRUs:

- Controller board
- 550-sheet feeder size switch assembly

This service check covers the following errors: Insert Tray 3, Illegal Settings

Step	Action and questions	Yes	No
1	Is the 550-sheet feeder tray assembly installed correctly?	Go to step 3.	Reinstall the tray assembly. Then go to step 2.
2	Does the error still occur when turning on the power?	Go to step 3.	Problem resolved.
3	Check the 550-sheet feeder size switch assembly by performing the Tray 3 Paper Size Test: 1. In Service Mode, select Printer Diag . 2. Select Engine Diag , and press OK . 3. Select Sensor Test , and press OK . 4. Select Tray 3 Paper Size , and press OK . The current paper size appears on the display if the tray is sensed. 5. Toggle the tray 3 paper size switch by removing and reinserting the paper tray. When the tray is removed, the display should change to NoCassette. Does the size switch assembly function correctly?	Problem resolved.	Go to step 4.
4	Replace the 550-sheet feeder size switch assembly. See “550-sheet feeder size switch assembly removal” on page 5-38.	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Jam at Scanner service check

Affected FRUs:

- Engine board
- Scanner assembly
- ADF feed roller

Step	Action and questions	Yes	No
1	Check the print job media type. See “Media guidelines and specifications” on page 1-4. Does the print job meet the ADF specification?	Go to step 2.	Use the flatbed, or change the paper type.
2	Reseat the connectors (P/J60, P/J62, P/J63, P/J64, and P/J65) on the engine board. Does the error still occur when copying?	Go to step 3.	Problem resolved.
3	Is the ADF closed against flatbed glass completely?	Go to step 4.	Close the ADF.
4	Does the ADF feed the document correctly?	Go to step 5.	Go to step 7.

Step	Action and questions	Yes	No
5	Check the document path. Is there contamination or debris on the document path?	Remove the contamination or debris.	Go to step 6.
6	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130. Does the error still occur when copying?	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.
7	Check the ADF feed roller installation. Make sure they are not contaminated or damaged, and that they rotate smoothly. Are the rollers installed and working correctly?	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.	Replace the ADF feed rollers. See “ADF maintenance kit removal” on page 5-44.

Jam at Tray 2 service check

Affected FRU: Controller board

Step	Action and questions	Yes	No
1	Remove the jammed paper. Does the error still occur when printing?	Go to step 2.	Problem resolved.
2	Check the registration sensor for proper operation: 1. In Service Mode, select Printer Diag. 2. Select Engine Diag , and press OK. 3. Select Sensor Test , and press OK. 4. Select Regi Sensor test. OFF appears on the display. 5. Remove the 250-sheet paper tray. 6. Press OK to begin the test. 7. Toggle the sensor by inserting a sheet of paper into the paper path by the registration assembly. If the sensor is working properly, the initial screen displays L - 0, and increments one with each activation. Does the number on the screen increase by one every time the actuator of the registration sensor is operated?	Go to step 3.	Go to “Registration sensor service check” on page 2-105.
3	Do multiple sheets of paper feed at the same time?	Go to “Multiple feed service check” on page 2-98.	Replace the controller board. See “Controller board removal” on page 5-47.

Jam service check—tray 1 (MP feeder)

Affected FRUs:

- Separator roll assembly
- MP feeder feed roll assembly
- Controller board

Step	Action and questions	Yes	No
1	Is the paper in the MP feeder wrinkled or damaged?	Replace the paper, then go to step 2.	Go to step 2.
2	Does the paper size in use match the size setup set through the operator panel?	Go to step 3.	Correct the paper size through the operator panel, then go to step 3.
3	Does the error still occur when printing?	Go to step 4.	Problem resolved.
4	Set the side guides of the MP feeder correctly.	Go to step 5.	Problem resolved.
5	<p>Check the registration sensor for proper operation:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Sensor Test, and press OK. 4. Select Regi Sensor test. OFF appears on the display. 5. Remove the 250-sheet paper tray. 6. Press OK to begin the test. Toggle the sensor by inserting a sheet of paper into the paper path by the registration assembly. <p>If the sensor is working properly, the initial screen displays L - 0, and increments one with each activation.</p> <p>Does the number on the screen increase by one every time the actuator is operated?</p>	Go to step 6.	Go to “Registration sensor service check” on page 2-105.
6	<p>Check the MP feeder feed solenoid for proper operation:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Tray 1 (MPT) Feed Solenoid. 5. Remove the paper tray from the MFP. 6. Press OK to start the test. You will see the MP feeder feed roll rotate, and you should also hear the solenoid activate. <p>Does the MFP feed solenoid work properly?</p>	Go to step 7.	Go to “MP feeder feed solenoid service check” on page 2-97.

Step	Action and questions	Yes	No
7	<p>Check the turn clutch assembly for proper operation:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Tray 1 (MPT) Turn Clutch. 5. Remove the paper tray from the MFP. 6. Press OK to start the test. <p>You will see the MP feeder feed roll rotate if the clutch is functional.</p> <p>Does the turn clutch operate properly?</p>	Go to step 8.	Go to “Turn clutch assembly service check” on page 2-120.
8	<p>Check the feed drive assembly operation:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Tray 2 Motor Test, and press OK. 5. Select the speed by scrolling to your desired speed, and press OK to start the test. <p>You will hear the motor run if it is functional.</p> <p>Press Stop/⏏ to end the test at this speed. Press ▲ to scroll to the different speeds (Full2, Full1, Half, and Low).</p> <p>Does the feed drive assembly operate properly?</p>	Go to step 9.	Go to “Feed drive assembly service check” on page 2-75.
9	<p>Check the separator roll assembly, the MP feeder feed roll assembly, and the turn roll assembly for the correct shape, operation, damage, contamination, and smooth rotation.</p>	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the roll(s).

Jam service check—tray 2 (250-sheet tray)

Affected FRU: Controller board

This service check covers the following errors: Jam at Tray 2 and Illegal Settings.

Step	Action and questions	Yes	No
1	Is the paper in tray 2 wrinkled or damaged?	Replace the paper, then go to step 2.	Go to step 2.
2	Does the paper size in use match the size setup set through the operator panel.	Go to step 3.	Correct the paper size through the control panel, then go to step 3.
3	Does the error still occur when printing?	Go to step 4.	Problem resolved.
4	Reinstall the paper tray. Does the error still occur when printing?	Go to step 5.	Problem resolved.

Step	Action and questions	Yes	No
5	Are there any stains, obstacles, or debris in the transfer path?	Remove the obstacles or stains from the paper transfer path.	Go to step 6.
6	<p>Check the registration sensor for proper operation:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Sensor Test, and press OK. 4. Select Regi Sensor test. OFF appears on the display. 5. Remove the 250-sheet paper tray. 6. Press OK to begin the test. 7. Toggle the sensor by inserting a sheet of paper into the paper path by the registration assembly. If the sensor is working properly, the initial screen displays L - 0, and increments one with each activation. <p>Does the registration sensor work properly?</p>	Go to step 7.	Go to “Registration sensor service check” on page 2-105.
7	<p>Check the paper handling drive assembly for proper operation:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select PH Motor. 5. Open the front cover. 6. Bypass the front cover interlock. 7. Press OK. 8. Select a speed to test, and press OK to start the test. For example, select PH Motor(Full2). You will hear the motor run if it is functional. <p>Does the paper handling drive assembly operate properly?</p>	Go to step 8.	Go to “Feed drive assembly service check” on page 2-75.
8	<p>Check the paper handling feed clutch assembly for proper operation:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Tray 2 Turn Clutch. 5. Remove the paper tray from the MFP. 6. Press OK to start the test. You will see the tray 2 paper feed rolls rotate if the clutch is functional. <p>Does the paper handling feed clutch assembly operate properly?</p>	Replace the controller board. See “Controller board removal” on page 5-47.	Go to “Feed clutch assembly service check” on page 2-74.

Jam service check—tray 3 (550-sheet feeder)

Affected FRUs:

- Controller board
- Feed roll assembly
- Feed roll assembly (pick roll)
- 550-sheet feeder
- Separator roll assembly

This service check covers the following errors: Jam at tray 3, Illegal Settings.

Step	Action and questions	Yes	No
1	Check the condition of the paper in the 550-sheet feeder tray. See “Media guidelines and specifications” on page 1-4. Is the paper wrinkled or damaged?	Replace the paper with new paper that meets specifications. Go to step 2.	Go to step 2.
2	Check the paper size setup and the paper loaded in the tray. Does the paper size in the tray match the size set through the operator panel?	Go to step 3.	Correct the paper size through the operator panel. Then go to step 3.
3	Does the error still occur when printing?	Go to step 4.	Problem resolved.
4	Reinstall the paper tray. Does the error still occur when printing?	Go to step 5.	Problem resolved.
5	Perform the Regi Sensor Test (registration sensor): 1. In Service Mode, select Printer Diag. 2. Select Engine Diag. , and press OK. 3. Select Sensor Test , and press OK. 4. Select Regi Sensor test. OFF appears on the display. 5. Remove the 550-sheet paper tray. 6. Press OK to begin the test. 7. Toggle the sensor by inserting a sheet of paper into the paper path by the registration assembly. If the sensor is working properly, the initial screen displays L - 0, and increments one with each activation. Does the number on the screen increase by one every time the actuator of the registration sensor is operated?	Go to step 6.	Go to “Registration sensor service check” on page 2-105.

Step	Action and questions	Yes	No
6	<p>Perform the Tray 3 Feed Motor Test:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Tray 3 Feed Motor Test, and press OK. Select a speed to test, and press OK to start the test. You will hear the motor run if it is functional. Press Stop/ to end the test at this speed. Press ▲ to scroll to the other speeds. Restart (POR) the MFP after completing the tests. <p>Does the optional feeder drive assembly operate properly?</p>	Go to step 7.	Go to “550-sheet feeder drive assembly service check” on page 2-59.
7	<p>Check the feed clutch for proper operation:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Tray 3 Feed Clutch. Remove Tray 3 from the feeder. Press OK to start the test. You will see the tray 3 paper feed rolls rotate if the clutch is functional. <p>Does the feed clutch operate properly?</p>	Go to step 8.	Go to “550-sheet feeder feed clutch assembly service check” on page 2-58.
8	<p>Check the turn clutch for operation:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag, and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Tray 3 Turn Clutch. Remove the paper tray from the tray 2 (250-sheet tray assembly). Press OK to start the test. You will see the tray 3 turn roll rotate if the clutch is functional, <p>Does the feed clutch operate properly?</p>	Go to step 9.	Go to “550-sheet feeder turn clutch assembly service check” on page 2-58.
9	<p>Check the feed roll and turn roll for shape and operation. Remove the paper tray. Check these rolls by turning them with your fingers. Check for contamination, wear, or damage. Make sure they are installed correctly.</p> <p>Are the rolls installed correctly, clear of contamination or damage, and do they operate correctly?</p>	Go to step 10.	Replace the defective roll(s).
10	<p>Replace the 550-sheet feeder. See “550-sheet feeder removal” on page 5-27.</p> <p>Does the error still occur when printing?</p>	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Jam service check—duplex unit

Affected FRUs:

- Exit assembly
- Duplex gate
- Controller board

This service check covers the following error: Jam at Duplexer.

Step	Action and questions	Yes	No
1	Open and close the front cover to check the latching. Does the error still occur when printing?	Go to step 2.	Problem resolved.
2	 CAUTION: Do not begin this step until the fuser has cooled down. Reinstall the fuser. See “Fuser removal” on page 5-78. Does the error still occur when printing?	Go to step 3.	Problem resolved.
3	Reinstall the duplex unit. “Duplex unit removal” on page 5-62. Does the error still occur when printing?	Go to step 4.	Problem resolved.
4	Check the duplex gate. Make sure there is no damage or wear, and that it is installed correctly. Is the duplex gate installed correctly and not damaged?	Go to step 5.	Reinstall or replace the duplex gate. See “Duplex gate removal” on page 5-53.
5	Check the exit assembly. Make sure there is no damage or wear, and that it is installed correctly. See “Exit assembly removal” on page 5-69. Is the exit assembly installed correctly and not damaged?	Go to step 6.	Reinstall the exit assembly. See “Exit assembly removal” on page 5-69. If damaged, replace the exit assembly. See “Exit assembly removal” on page 5-69.
6	Check the duplex jam sensor for correct operation: <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Sensor Test, and press OK. 4. Select Duplex Jam sensor. OFF appears on the display. 5. Open the front cover. 6. Remove the transfer belt assembly. 7. Press OK to begin the test. 8. Using your finger, toggle the sensor actuator. If the sensor is working properly, the initial L - 0 increments by one with each activation. Does the number on the screen increase by one every time the actuator of the duplex jam sensor is operated?	Go to step 7.	Go to “Duplex jam sensor, duplex clutch, duplex motor assembly, duplex fan service check” on page 2-70.

Step	Action and questions	Yes	No
7	<p>Check the duplex clutch:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag, and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Duplex Clutch. Open the front cover. Bypass the front cover interlock. Remove the transfer roll. Press OK to start the test. <p>You will see the duplex gears rotate if the clutch is functional.</p> <p>Does the duplex clutch operate properly?</p>	Go to step 8.	Go to “Duplex jam sensor, duplex clutch, duplex motor assembly, duplex fan service check” on page 2-70.
8	<p>Check the duplex motor:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag, and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Duplex Motor, and press OK. Open the front cover. Remove the transfer belt assembly. Bypass the front cover interlock. Select a speed to test, and press OK to start the test. <p>You will hear the motor turn the duplex rolls if it is functional.</p> <p>Does the duplex motor operate properly?</p>	Go to step 9.	Go to “Duplex jam sensor, duplex clutch, duplex motor assembly, duplex fan service check” on page 2-70.
9	<p>Check the MP feeder turn clutch by performing the Tray 1 (MPT) Turn Clutch Test:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag, and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Tray 1 (MPT) Turn Clutch. Remove the paper tray from the MFP. Press OK to start the test. <p>You will see the MP feeder feed roll rotate if the clutch is functional.</p> <p>Does the MP feeder turn clutch operate properly?</p>	Go to step 10.	Go to “Turn clutch assembly service check” on page 2-120.
10	<p>Check the paper handling motor by performing the PH Motor Test:</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag, and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select PH Motor. Open the front cover. Bypass the front cover interlock. Press OK. Select a speed to test, and press OK to start the test. <p>For example, select PH Motor(Full2).</p> <p>You will hear the motor run if it is functional.</p> <p>Does the feed motor operate properly?</p>	Replace the controller board. See “Controller board removal” on page 5-47.	Go to “Feed drive assembly service check” on page 2-75.

Jam at Exit, Jam at Reg. Roll, Wrong Paper Type service check

Note: If the paper loaded in tray does not match the Paper Type setting in the operator panel, continuing to print may cause a jam.

Affected FRUs:

- Paper feed assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the condition of the paper in the tray. Is the paper or the transparency in the tray wrinkled or damaged?	Replace the paper or the transparency.	Go to step 2.
2	Open and close the front cover, and check that the latch closes correctly. Does the error still occur when printing?	Go to step 3.	Problem resolved.
3	 CAUTION: Do not begin this step until the fuser assembly has cooled down. Reinstall the fuser. See “Fuser removal” on page 5-78. Does the error still occur when printing?	Go to step 4.	Problem resolved.
4	Check the exit sensor by performing the Exit Sensor Test: 1. In Service Mode, select Printer Diag. 2. Select Engine Diag , and press OK . 3. Select Sensor Test , and press OK . 4. Select Exit Sensor Test . OFF appears on the display. 5. Open the front cover. 6. Press OK to begin the test. 7. Toggle the sensor by raising and lowering the duplex gate which is located by the fuser. If the sensor is working properly, L - 0 appears on the initial screen and increments by one with each activation. Does the number on the screen increase by one every time the actuator of the exit sensor is operated?	Go to step 5.	Go to “Exit sensor service check” on page 2-72.
5	Check the registration sensor by performing the Regi Sensor Test: 1. In Service Mode, select Printer Diag. 2. Select Engine Diag , and press OK . 3. Select Sensor Test , and press OK . 4. Select Regi Sensor Test . OFF appears on the display. 5. Remove the 250-sheet paper tray. 6. Press OK to begin the test. 7. Toggle the sensor by inserting a sheet of paper into the paper path by the registration assembly. If the sensor is working properly, the initial screen displays L - 0, and increments one with each activation. Does the number on the screen increase by one every time the actuator of the exit sensor is operated?	Go to step 6.	Go to “Registration sensor service check” on page 2-105.

Step	Action and questions	Yes	No
6	<p>Check the main motor by performing the Main Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Test, and press OK. 4. Select Main Motor. 5. Open the front cover, and remove the black toner cartridge. 6. Bypass the interlock on the front cover. 7. Select the speed with ▲ or ▼ to perform the test (FULL1, FULL2, HALF, and LOW). 8. Press OK to begin the test. <p>For example, Main Motor (Fu112). EXEC</p> <p>While the test is executing, you should hear the motor running. Does the main motor operate properly?</p>	Go to step 7.	Go to “Main drive assembly (main motor) service check” on page 2-93.
7	<p>Check the sub motor by performing the Sub Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Sub Motor Test, and press OK. 5. Open the front cover, and remove all the toner cartridges. 6. Bypass the interlock on the front cover. 7. Select a speed to test, and press OK to start the test. <p>For example, select Sub Motor (Fu112). You will hear the motor run if it is functional. Does the feed motor operate properly?</p>	Go to step 8.	Go to “Main drive assembly (sub motor) service check” on page 2-94.
8	<p>Check the paper handling motor by performing the PH Motor Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select PH Motor. 5. Open the front cover. 6. Bypass the front cover interlock. 7. Press OK. 8. Select a speed to test, and press OK to start the test. <p>For example, select PH Motor(Full2). You will hear the motor run if it is functional. Does the feed motor operate properly?</p>	Go to step 9.	Go to “Feed drive assembly service check” on page 2-75.

Step	Action and questions	Yes	No
9	<p>Check the registration clutch by performing the Regi Clutch Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Regi Clutch. 5. Open the front cover. 6. Bypass the front cover interlock. 7. Press OK to start the test. <p>Confirm that the registration roll is moving. Does the registration clutch operate properly?</p>	Go to step 10.	Go to “Registration clutch assembly service check” on page 2-104.
10	<p>Remove the fuser. Check for any paper or debris. Reinstall the fuser.</p> <p>Is there any remaining paper or debris in the fuser?</p>	<p>Remove the paper or debris.</p> <p>Go to step 11.</p>	Go to step 11.
11	<p>Check the registration rolls for shape and operation. Remove the paper tray. Check these rolls by turning them with your fingers. Check for contamination, wear, or damage. Make sure they are installed correctly.</p> <p>Are rolls installed correctly, clear of contamination or damage, and do they operate correctly?</p>	Go to step 12.	Replace the paper feed assembly. See “Paper feed assembly removal” on page 5-108.
12	<p>Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146.</p> <p>Does the error still occur when printing?</p>	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p>	Problem resolved.

Load tray service check

Affected FRUs:

- 250-sheet tray assembly
- Size switch assembly
- Controller board
- 550-sheet feeder size switch assembly
- 550-sheet feeder tray

This service check covers the following errors: Load Tray 2, Load Tray 3, Load Tray 1 (MPT), Illegal Settings.

Step	Action and questions	Yes	No
1	Check the paper in the tray. See “Media guidelines and specifications” on page 1-4. Does the paper in use meet the specification?	Go to step 2.	Use the paper that meets the specification.
2	Does the paper size in the paper tray match the size set through the operator panel?	For 250-sheet tray and 550-sheet feeder, go to step 4. For MP feeder, go to step 6.	Set the paper size through the control panel. Then go to step 3.
3	Does the error still occur when printing?	For 250-sheet tray and 550-sheet feeder, go to step 4. For MP feeder, go to step 6.	Problem resolved.
4	Reseat the end guide of the tray (250-sheet or 550-sheet) to match the paper.	Go to step 5.	Problem resolved.
5	Replace the 250-sheet or 550-sheet tray. Does the error still occur when printing?	Go to step 7.	Problem resolved.
6	Check the registration sensor by performing the Regi Sensor Test: 1. In Service Mode, select Printer Diag. 2. Select Engine Diag , and press OK . 3. Select Sensor Test , and press OK . 4. Select Regi Sensor Test . OFF appears on the display. 5. Remove the 250-sheet paper tray. 6. Press OK to begin the test. 7. Toggle the sensor by inserting a sheet of paper into the paper path by the registration assembly. If the sensor is working properly, the initial screen displays L - 0, and increments one with each activation. Does the number on the screen increase by one every time the registration actuator of the registration sensor is operated?	Replace the controller board. See “Controller board removal” on page 5-47.	Go to “Registration sensor service check” on page 2-105.

Step	Action and questions	Yes	No
7	<p>Check the size switch assembly by performing the Tray 2 Paper Size Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Sensor Test, and press OK. 4. Select Tray 2 Paper Size, and press OK. The current paper size appears on the display if the tray is sensed. 5. Toggle the tray 2 paper size switch by removing and reinserting the paper tray. When the tray is removed, the display should change to NoCassette. <p>Does the size switch assembly operate properly?</p>	<p>If the 550-sheet feeder is installed, go to step 8.</p> <p>Otherwise, go to step 9.</p>	<p>Replace the size switch assembly. See “Size switch assembly removal” on page 5-137.</p>
8	<p>Check the 550-sheet feeder size switch assembly by performing the Tray 3 Paper Size Test:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Sensor Test, and press OK. 4. Select Tray3 Paper Size, and press OK. The current paper size appears on the display. 5. Toggle the Tray 3 paper size switch by removing and reinserting the paper tray. When the tray is removed, the display should change to NoCassette. <p>Does the 550-sheet feeder size switch assembly operate properly?</p>	<p>Go to step 9.</p>	<p>Replace the 550-sheet feeder size switch assembly. See “550-sheet feeder size switch assembly removal” on page 5-38.</p>
9	<p>Check the registration rolls using your finger.</p> <p>Do the registration rolls rotate smoothly?</p>	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p>	<p>Replace the paper feed assembly. See “Paper feed assembly removal” on page 5-108.</p>

Main drive assembly (main motor) service check

Affected FRUs:

- Main motor (main drive assembly)
- Controller board

Step	Action and questions	Yes	No
1	<p>Check the connections between the controller board and main drive assembly.</p> <p>Are the cables at P/J21 and P/J211 connected securely?</p>	<p>Go to step 2.</p>	<p>Reconnect the connector(s) at P/J21 and/or P/J211 securely.</p>
2	<p>Disconnect the P/J21 connector on the controller board. Measure the voltage across ground and the J21-2 and J21-4 pins on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed.</p> <p>Does the voltage measure approximately +24 V dc when the interlock switch is pushed?</p>	<p>Replace the main drive assembly. See “Main drive removal” on page 5-92.</p>	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p>

Main drive assembly (sub motor) service check

Affected FRUs:

- Sub motor (main drive assembly)
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and main drive assembly. Are the cables at P/J22 and P/J221 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J22 and/or P/J221 securely.
2	Disconnect the P/J21 connector on the controller board. Measure the voltage across ground and the J22-A2 and J22-A4 pins on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc when the interlock switch is pushed?	Replace the main drive assembly. See “Main drive removal” on page 5-92.	Replace the controller board. See “Controller board removal” on page 5-47.

Main drive assembly (developer motor) service check

Affected FRUs:

- Developer (main drive assembly)
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and main drive assembly. Are the cables at P/J22 and P/J222 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J22 and/or P/J222 securely.
2	Disconnect the P/J21 connector on the controller board. Measure the voltage across ground and the J22-B2 and J22-B4 pins on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc when the interlock switch is pushed?	Replace the main drive assembly. See “Main drive removal” on page 5-92.	Replace the controller board. See “Controller board removal” on page 5-47.

Main drive assembly (exit clutch) service check

Affected FRUs:

- Main drive assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and main drive assembly. Are the cables at P/J27, P/J276, and P/J2761 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J27, P/J276, and/or P/J2761 securely.
2	Disconnect the P/J27 connector from the controller board. Measure the voltage across ground and the J27-B15 pin on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc when the interlock switch is pushed?	Replace the main drive assembly. See “Main drive removal” on page 5-92.	Replace the controller board. See “Controller board removal” on page 5-47.

Memory Error service check

Affected FRUs:

- RIP board
- Memory card

This service check covers the following errors: 116-316 RAM Error, 116-320.

Step	Action and questions	Yes	No
1	Reinstall the memory card. Does the error still occur when turning on the power?	Go to step 2.	Problem resolved.
2	Replace the memory card. Does the error still occur when turning on the power?	Replace RIP board. See “RIP board removal” on page 5-126.	Problem resolved.

Memory full service check

Affected FRUs:

- RIP board
- Memory card (option)

This service check covers the following errors: 016-700 Out of Memory, 016-980 Disk Full

Step	Action and questions	Yes	No
1	Check the memory capacity by printing a small file or test page. Does the error still occur when printing a small job?	Go to step 2.	Add additional memory, or divide the printing job.
2	Reinstall the memory card. See "Memory card removal" on page 5-95. Does the error still occur when test printing?	Go to step 3.	Problem resolved.
3	Check the memory capacity: 1. On the operator panel, press System to access the customer menus. 2. Select Setup , and press OK . 3. Select Information Pages , and press OK . 4. Select Configuration , and press OK . Is all the memory capacity you have installed being recognized by the MFP?	Go to step 4.	Replace the RIP board. See "RIP board removal" on page 5-126.
4	Replace the memory card. See "Memory card removal" on page 5-95. Does the error still occur when test printing?	Replace the RIP board. See "RIP board removal" on page 5-126.	Problem resolved.

MFD Memory Full service check

Affected FRU: Engine board

This service check covers the following errors: 017-970, 033-503.

Step	Action and questions	Yes	No
1	Turn the power off and back on. Does the error still occur?	Go step 2.	Problem resolved.
2	Check the printer menu for stored jobs. Select Job Status on the Stored Print menu. Is there a lot of stored data?	Send the stored fax, or print the stored job. For a Secure Receive fax, have the customer enter the password to receive.	Go to step 3.
3	Check the value for the Interval Timer: 1. On the operator panel, press System to access the customer menus. 2. Select Admin Menu , and press OK . 3. Select Fax Settings , and press OK . 4. Select Interval Timer , and press OK . The default value is 8. Is the interval timer set for a long interval?	Decrease the value of the interval timer on the menu.	Go to step 4.
4	Replace the engine board. See " Engine board removal " on page 5-64. Does the error still occur when receiving a fax?	Replace the printer.	Problem resolved.

MP feeder feed solenoid service check

Affected FRUs:

- MP feeder feed solenoid
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and the MP feeder feed solenoid. Are P/J23 and P/J236 connected securely?	Go to step 2.	Reconnect the connectors P/J23 and/or P/J236 securely.
2	Checking the power to MP feeder feed solenoid. Disconnect the connector of P/J23 on the controller board. Measure the voltage across the ground and the J23-17 pin on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed. Is the voltage measured approximately +24 V dc when the interlock switch is pushed?	Replace the MP feeder feed solenoid. See " MP feeder feed solenoid removal " on page 5-97.	Replace the controller board. See " Controller board removal " on page 5-47.

Multiple feed service check

Affected FRUs:

- MP feeder separator roller assembly
- 250- and 550-sheet separator and feed rolls

Step	Action and questions	Yes	No
1	Check the MP feeder feed. Have the multiple feeds occurred in the MP feeder?	Go to step 2.	Go to step 3.
2	Replace the paper with new paper that meets the MP feeder specifications. See “Media guidelines and specifications” on page 1-4. Do the multiple feeds still occur when printing?	Replace the MP feeder separator roller assembly, MP feeder feed roll, and MP feeder separator roll.	Problem resolved.
3	Replace the paper with new paper that meets the tray specifications. See “Media guidelines and specifications” on page 1-4. Do the multiple feeds still occur when printing?	Replace the three feed rolls of the affected tray. See “Feed roll kit removal—250-sheet tray assembly” on page 5-77 or “550-sheet feeder feed roll kit removal” on page 5-37.	Problem resolved.

MPC (Multi-Protocol Network Card) service check

Download errors.

Affected FRUs:

- RIP board
- Multi-Protocol Network Card

This service check covers the following errors: 016-738 MPC Error, 016-739 Reseat MPC, 016-740 MPC Common Error.

Step	Action and questions	Yes	No
1	Check the Multi-Protocol Network Card (MPC). Is the Multi-Protocol Network Card installed on the RIP board?	Go to step 2.	Install the Multi-Protocol Network Card.
2	Check the download Multi-Protocol Network Card firmware. Is the download firmware the up-to-date firmware for this model MFP?	Go to step 3.	Download the correct firmware.
3	Reinstall the Multi-Protocol Network Card. See “Multi-Protocol Network Card removal” on page 5-102. Does the error still occur when downloading the firmware?	Go to step 4.	Problem resolved.

Step	Action and questions	Yes	No
4	Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the error still occur when downloading the firmware?	Go to step 5.	Problem resolved.
5	Replace the Multi-Protocol Network Card. See “Multi-Protocol Network Card removal” on page 5-102. Does the error still occur when downloading the firmware?	Replace the RIP board. See “RIP board removal” on page 5-126.	Problem resolved.

MPC (Multi-Protocol Network Card) service check

Affected FRUs:

- RIP board
- Multi-Protocol Network Card

This service check covers the following errors: 116-333 MPC Error, 018-310–018-317.

Step	Action and questions	Yes	No
1	Is the Multi-Protocol Network Card installed correctly?	Go to step 2.	Reinstall the Multi-Protocol Network Card. See “Multi-Protocol Network Card removal” on page 5-102. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the Multi-Protocol Network Card. See “Multi-Protocol Network Card removal” on page 5-102. Does the error still occur when the power is turned on?	Replace the RIP board. See “RIP board removal” on page 5-126.	Problem resolved.

No paper sensor service check

250-sheet tray

Affected FRUs:

- No paper sensor
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and no paper sensor. Are the cables at P/J23, P/J 232, and P/J2321 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J23, P/J232, and/or P/J2321 securely.
2	Disconnect P/J23 on the controller board. Check the voltage across ground and the J23-5 pin on the controller board. The voltage should measure approximately +3.3 V dc. Does the voltage measure approximately +3.3 V dc?	Go to step 3.	Replace the controller board. See “Controller board removal” on page 5-47.
3	Measure the voltage across ground and the J23-7 pin on the controller board. Does the voltage change every time the no paper actuator of the no paper sensor is operated?	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the no paper sensor. See “No paper sensor removal” on page 5-103.

550-sheet feeder

Affected FRUs:

- Controller board
- 550-sheet feeder controller board
- 550-sheet feeder no paper sensor

Step	Action and questions	Yes	No
1	Check the connections between the 550-sheet feeder controller board and the no paper sensor. Are the cables at P/J421, P/J4212, and P/J42121 connected correctly?	Go to step 2.	Reconnect the connector(s) at P/J421, P/J4212, and/or P/J42121 securely.
2	Disconnect P/J421 on the 550-sheet feeder controller board. Check the voltage across ground and J421-3 pin on the 550-sheet feeder controller board. The voltage should measure approximately +3.3 V dc. Does the voltage measure approximately +3.3 V dc?	Go to step 3.	Go to step 7.
3	Measure the voltage across ground and the J421-5 pin on the 550-sheet feeder controller board. Does the voltage change every time the no paper actuator of the no paper sensor is operated?	Go to step 4.	Replace the no paper sensor. See “550-sheet feeder no paper sensor removal” on page 5-36. Go to step 5.

Step	Action and questions	Yes	No
4	Replace the 550-sheet feeder controller board. See “550-sheet feeder controller board” on page 5-29. Does the error still occur when the power is turned on?	Problem resolved.	Replace the controller board. See “Controller board removal” on page 5-47.
5	Check the connections between the 550-sheet feeder controller board and the printer controller board. Are the P/J419, P/J273, and P/J27 connected correctly?	Go to step 6.	Reconnect the P/J419, P/J273, and /or P/J27 connectors securely.
6	Disconnect the P/J27 connector on the controller board. Check the voltage across ground and the J27-B7 pin on the controller board. It should measure approximately +3.3 V dc. Does the voltage measure approximately +3.3 V dc?	Replace the 550-sheet feeder controller board. See “550-sheet feeder controller board” on page 5-29.	Replace the controller board. See “Controller board removal” on page 5-47.

MPF (multipurpose feeder)

Affected FRUs:

- MP feeder no paper sensor
- Controller board

This service check covers the following errors: Sensor photo (MSI No Paper Sensor)

Step	Action and questions	Yes	No
1	Check the connections between the controller board and MP feeder no paper sensor. Are the cables at P/J27, P/J275, and P/J2751 connected correctly?	Go to step 2.	Reconnect the connector(s) at P/J27, P/J275, and/or P/J2751 securely.
2	Disconnect P/J27 on the controller board. Check the voltage across ground and J27-B11 pin on the controller board. The voltage should measure approximately +3.3 V dc. Does the voltage measure approximately +3.3 V dc?	Go to step 3.	Replace the controller board. See “Controller board removal” on page 5-47.
3	Measure the voltage across ground and J27-B13 pin on the controller board. Does the voltage change every time the MP feeder no paper actuator of the MP feeder no paper sensor is operated?	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the MP feeder no paper sensor. See “MP feeder no paper sensor removal” on page 5-100.

Operator panel service check

Affected FRUs:

- Operator panel
- Engine board

This service check covers the following errors: 062-323 Error, 123-314 Control Panel Error.

Step	Action and questions	Yes	No
1	Turn off the power, and wait five seconds. Turn on the power. Does the error still occur when copying?	Go to step 2.	Problem resolved.
2	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the error still occur when turning on the power?	Go to step 3.	Problem resolved.
3	Reinstall the operator panel. See “Operator panel removal” on page 5-104. Does the error still occur when turning on the power?	Go to step 4.	Problem resolved.
4	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the error still occur when turning on the power?	Replace the operator panel. See “Operator panel removal” on page 5-104.	Problem resolved.

Operator panel service check

Step	Action and questions	Yes	No																		
1	Go to the DC power service check. See “Power (DC) service check” on page 2-103. Did this fix the problem?	Problem resolved.	Go to step 2.																		
2	Measure the voltages of the P/J53 pins 3 and 11 on the engine card. The voltages should measure approximately +5 V dc and +3.3 V dc, respectively. Pins 1, 2, 4, 6, 9, and 14 should be signal grounds. <table border="1"> <thead> <tr> <th>P/J53 pins</th> <th>Voltage/signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Ground</td> </tr> <tr> <td>2</td> <td>Ground</td> </tr> <tr> <td>3</td> <td>+5 V dc</td> </tr> <tr> <td>4</td> <td>Ground</td> </tr> <tr> <td>6</td> <td>Ground</td> </tr> <tr> <td>9</td> <td>Ground</td> </tr> <tr> <td>11</td> <td>+3.3 V dc</td> </tr> <tr> <td>14</td> <td>Ground</td> </tr> </tbody> </table> Do the voltages on pins P/J53-3 and -11 measure correctly?	P/J53 pins	Voltage/signal	1	Ground	2	Ground	3	+5 V dc	4	Ground	6	Ground	9	Ground	11	+3.3 V dc	14	Ground	Replace the operator panel. See “Operator panel removal” on page 5-104.	Replace the engine board. See “Engine board removal” on page 5-64.
P/J53 pins	Voltage/signal																				
1	Ground																				
2	Ground																				
3	+5 V dc																				
4	Ground																				
6	Ground																				
9	Ground																				
11	+3.3 V dc																				
14	Ground																				

Power (AC) service check

Step	Action and questions	Yes	No
1	Check the printer—In this test, close the front cover. Do you hear the motors start when turning on the power?	Go to “Power (DC) service check” on page 2-103.	Go to step 2.
2	Connect the power cord to a different outlet. Is the printer working?	Problem resolved.	Go to step 3.
3	Reconnect the power cord to the original outlet. Is the printer working?	Problem resolved.	Go to step 4.
4	Disconnect the power cord, and wait for one minute. Reseat the all connectors on the low-voltage power supply (LVPS). Plug the power cord in, and turn the printer on. Is the printer working?	Problem resolved.	Go to step 5.
5	Disconnect the power cord and wait for one minute. Reseat the connector on main switch. Plug the power in, and turn the printer on. Is the printer working?	Problem resolved.	Replace the LVPS. See “Low-voltage power supply (LVPS) removal” on page 5-91.

Power (DC) service check

Step	Action and questions	Yes	No
1	Disconnect the power cord, and wait for one minute. Reseat the all connectors on the low-voltage power supply (LVPS). Plug the power cord in, and turn the printer on. Is the printer working?	Problem resolved.	Go to step 2.
2	Reseat the connector (P/J202) on the operator panel. Is the operator panel working?	Problem resolved.	Go to step 3.
3	Reinstall the engine board. See “Engine board removal” on page 5-64. Is the printer working?	Problem resolved.	Replace the LVPS. See “Low-voltage power supply (LVPS) removal” on page 5-91.

Protocol Error service check

Affected FRU: Engine board.

This service check covers the following errors: Fax Codec Error 033-500, 033-511, 033-514, 033-515, 033-516, 033-775, 033-777, 033-784, 033-799, Fax Communication Error 033-782, 035-702, 035-704, 035-705, 035-708, 035-709, 035-710, 035-716, 035-717, 035-728, 035-729, 035-737, 035-739, 035-740, 035-742, Target Fax 035-718.

Step	Action and questions	Yes	No
1	Reseat the telephone line connector on the engine board. Does the error still occur when faxing?	Go to step 2.	Problem resolved.
2	Check the protocol used for the sending side: 1. On the operator panel, press System to access the customer menus. 2. Select Setup , and press OK . 3. Select Information Pages , and press OK . 4. Select Protocol Monitor , and press OK . Does the sending fax protocol meet the specification?	Go to step 3.	Change the sending fax side setting.
3	Check the setting on the printer for Country. 1. Press System to access the customer menus. 2. Select Admin Menu . 3. Select Fax Setting . 4. Select Country . Is the Country setting correct?	Go to step 4.	Set the Country setting correctly.
4	Reinstall the engine board. See “Engine board removal” on page 5-64 . Does the error still occur when faxing?	Replace the engine board. See “Engine board removal” on page 5-64 .	Problem resolved.

Registration clutch assembly service check

Affected FRUs:

- Registration clutch assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and registration clutch assembly. Are the cables at P/J23 and P/J233 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J23 and/or P/J233 securely.
2	Disconnect the P/J23 connector on the controller board. Measure the voltage across ground and the J23-11 pin on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc when the interlock switch is pushed?	Replace the registration clutch assembly. See “Registration clutch removal” on page 5-120 .	Replace the controller board. See “Controller board removal” on page 5-47 .

Registration sensor service check

Affected FRUs:

- Registration sensor
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and the registration sensor. Are P/J23, P/J232, and P/J2322 connected securely?	Go to step 2.	Reconnect the connectors P/J23, P/J232, and/or P/J2322 securely.
2	Disconnect the connector of P/J23 on the controller board. Check the voltage across ground and the J23-8 pin on the controller board. Does the voltage measure approximately +3.3 V dc?	Go to step 3.	Replace the controller board. See “Controller board removal” on page 5-47.
3	Checking the registration sensor for operation Measure the voltage across ground and the J23-10 pin on the controller board. Does the voltage change every time the actuator of the registration sensor is operated?	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the registration sensor. See “Registration sensor removal” on page 5-121.

Remove Tape Yellow Cartridge service check

Affected supplies:

- Yellow toner motor
- Controller board

Step	Action and questions	Yes	No
1	Check for any packaging material left on the toner cartridge. Has the packaging material been removed?	Go to step 2.	Remove the packaging material, and then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Reinstall the yellow toner cartridge. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved.
4	Check the rotation of the toner motor. Perform the Yellow Toner Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select Yellow Toner Motor . 5. Open the front cover, and remove the yellow toner cartridge. During the test, close the interlock switch (interlock harness assembly). 6. Bypass the front cover interlock. 7. Press OK to begin the test. Does the toner motor function normally?	Check to make sure the gear of the auger is not damaged. If the gear is damaged, replace the toner motor. See “Toner motor removal” on page 5-142 . If that does not fix the problem, replace the controller board. See “Controller board removal” on page 5-47 .	Go to step 5.
5	Check the P/J18 connectors and the P/J181 between the controller board and the toner motor. Are P/J18 and P/J181 connected securely?	Go to step 6.	Reconnect the connectors P/J18 and/or P/J181, then go to step 6.
6	Does the error still occur when the power is turned on?	Go to step 7.	Problem resolved.
7	Disconnect P/J18 on the controller board. Measure the voltages across ground and the J18-A1 and A2 pins on the controller board. The approximate measurement should be +24 V dc when the interlock switch (interlock harness assembly) is pushed. Are the voltages approximately +24 VDC when the interlock switch is pushed?	Replace the toner motor. See “Toner motor removal” on page 5-142 .	Replace the controller board. See “Controller board removal” on page 5-47 .

Remove Tape Magenta Cartridge service check

Affected supplies:

- Magenta toner motor
- Controller board

Step	Action and questions	Yes	No
1	Check for any packaging material left on the toner cartridge. Has the packaging material been removed?	Go to step 2.	Remove the packaging material, and then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Reinstall the magenta toner cartridge. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved.
4	Check the rotation of the toner motor. Perform the Magenta Toner Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select Magenta Toner Motor . 5. Open the front cover, and remove the magenta toner cartridge. During the test, close the interlock switch (interlock harness assembly). 6. Bypass the front cover interlock. 7. Press OK to begin the test. Does the toner motor function normally?	Check to make sure the gear of the auger is not damaged. If the gear is damaged, replace the toner motor. See "Toner motor removal" on page 5-142 . If that does not fix the problem, replace the controller board. See "Controller board removal" on page 5-47 .	Go to step 5.
5	Check the P/J18 connectors and the P/J182 between the controller board and the toner motor. Are P/J18 and P/J182 connected securely?	Go to step 6.	Reconnect the connectors P/J18 and/or P/J182, then go to step 6.
6	Does the error still occur when the power is turned on?	Go to step 7.	Problem resolved.
7	Disconnect P/J18 on the controller board. Measure the voltages across ground and the J18-A7 and A8 pins on the controller board. The approximate measurement should be +24 V dc when the interlock switch (interlock harness assembly) is pushed. Are the voltages approximately +24 VDC when the interlock switch is pushed?	Replace the toner motor. See "Toner motor removal" on page 5-142 .	Replace the controller board. See "Controller board removal" on page 5-47 .

Remove Tape Cyan Cartridge service check

Affected supplies:

- Cyan toner motor
- Controller board

Step	Action and questions	Yes	No
1	Check for any packaging material left on the toner cartridge. Has the packaging material been removed?	Go to step 2.	Remove the packaging material, and then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Reinstall the cyan toner cartridge. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved.
4	Check the rotation of the toner motor. Perform the Cyan Toner Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select Cyan Toner Motor . 5. Open the front cover, and remove the cyan toner cartridge. During the test, close the interlock switch (interlock harness assembly). 6. Bypass the front cover interlock. 7. Press OK to begin the test. Does the toner motor function normally?	Check to make sure the gear of the auger is not damaged. If the gear is damaged, replace the toner motor. See "Toner motor removal" on page 5-142 . If that does not fix the problem, replace the controller board. See "Controller board removal" on page 5-47 .	Go to step 5.
5	Check the P/J18 connectors and the P/J184 between the controller board and the toner motor. Are P/J18 and P/J184 connected securely?	Go to step 6.	Reconnect the connectors P/J18 and/or P/J182, then go to step 6.
6	Does the error still occur when the power is turned on?	Go to step 7.	Problem resolved.
7	Disconnect P/J18 on the controller board. Measure the voltages across ground and the J18-B7 and B8 pins on the controller board. The approximate measurement should be +24 V dc when the interlock switch (interlock harness assembly) is pushed. Are the voltages approximately +24 VDC when the interlock switch is pushed?	Replace the toner motor. See "Toner motor removal" on page 5-142 .	Replace the controller board. See "Controller board removal" on page 5-47 .

Remove Tape Black Cartridge service check

Affected supplies:

- Black toner motor
- Controller board

Step	Action and questions	Yes	No
1	Check for any packaging material left on the toner cartridge. Has the packaging material been removed?	Go to step 2.	Remove the packaging material, and then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Reinstall the black toner cartridge. Does the error still occur when the power is turned on?	Go to step 4.	Problem resolved.
4	Check the rotation of the toner motor. Perform the Black Toner Motor Test: 1. In Service Mode, select Printer Diag , and press OK . 2. Select Engine Diag , and press OK . 3. Select Motor Tests , and press OK . 4. Select Black Toner Motor . 5. Open the front cover, and remove the black toner cartridge. During the test, close the interlock switch (interlock harness assembly). 6. Bypass the front cover interlock. 7. Press OK to begin the test. Does the toner motor function normally?	Check to make sure the gear of the auger is not damaged. If the gear is damaged, replace the toner motor. See "Toner motor removal" on page 5-142 . If that does not fix the problem, replace the controller board. See "Controller board removal" on page 5-47 .	Go to step 5.
5	Check the P/J18 connectors and the P/J183 between the controller board and the toner motor. Are P/J18 and P/J183 connected securely?	Go to step 6.	Reconnect the connectors P/J18 and/or P/J183, then go to step 6.
6	Does the error still occur when the power is turned on?	Go to step 7.	Problem resolved.
7	Disconnect P/J18 on the controller board. Measure the voltages across ground and the J18-B1 and B2 pins on the controller board. The approximate measurement should be +24 V dc when the interlock switch (interlock harness assembly) is pushed. Are the voltages approximately +24 VDC when the interlock switch is pushed?	Replace the toner motor. See "Toner motor removal" on page 5-142 .	Replace the controller board. See "Controller board removal" on page 5-47 .

RIP board service check

Affected FRU: RIP board

This service check covers the following errors: 116-310 Font Rom Error, 116-314 MAC Address Error, 116-315, RAM Error, 116-317 Controller Error, 116-324, 116-327, 116-328, 116-323 NV RAM Error, 116-326, 116-390, 116-343 ASIC Error, 116-350 Network Error, 116-351, 116-352, 116-355, 018-319 MPC Error, and 018-320 MPC Error.

Step	Action and questions	Yes	No
1	Is the RIP board installed correctly?	Go to step 2.	Reinstall the RIP board. See “RIP board removal” on page 5-126. Then go to step 2.
2	Does the error still occur when the power is turned on?	Replace the RIP board. See “RIP board removal” on page 5-126.	Problem resolved.

Scanner error service check

Affected FRU: Engine board.

This service check covers the following errors: 062-322 Scanner Error, 062-393, 034-508 Fax Communication Error.

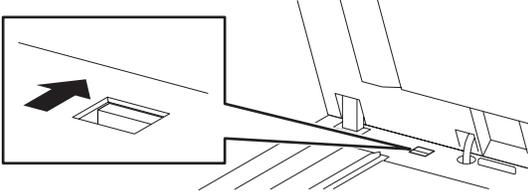
Step	Action and questions	Yes	No
1	Turn the power off and on. Does the error still occur when copying?	Go to step 2.	Problem resolved.
2	Replace the engine board. See “Engine board removal” on page 5-64. Does the error still occur when copying and faxing?	Replace the printer.	Problem resolved.

Scanner error service check

Affected FRUs:

- Engine board
- Scanner assembly

This service check covers the following errors: 062-311, 062-321 Scanner Error, 062-360 Scanner Sensor Error, 062-371 Scanner Lamp Error, 117-352 MFD Controller Error service check.

Step	Action and questions	Yes	No
1	<p>Check the scanner lock. Move the lock toward the rear to unlock the scanner.</p>  <p>Is the scanner lock at the unlocked position?</p>	Go to step 2.	Set the scanner lock to the unlocked position.
2	<p>Reseat the connectors (P/J60, 62, 63, 64, 65) on the engine board.</p> <p>Does the error still occur when turning on the power?</p>	Go to step 3.	Problem resolved.
3	<p>Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.</p> <p>Does the error still occur when turning on the power?</p>	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

Scanner ADF Cover R Open service check

Affected FRUs:

- Engine board
- Scanner assembly

This service check covers the following errors: 005-301 Scanner ADF Cover R Open.

Step	Action and questions	Yes	No
1	<p>Is the ADF feed roller cover closed and fixed?</p>	Go to step 2.	Close the ADF feed roller cover.
2	<p>Reseat the P/J60 connector on the engine board.</p> <p>Does the error still occur when turning on the power?</p>	Go to step 3.	Problem resolved.
3	<p>Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.</p> <p>Does the error still occur when turning on the power?</p>	Replace the engine board. See “Engine board removal” on page 5-64.	Problem resolved.

Server Error service check

Affected FRUs:

- Engine board
- RIP board

Step	Action and questions	Yes	No
1	Check the network connection using the Ping command. Is the printer connected to the network?	Go to step 2.	Go to step 5.
2	Check the Address Book. 1. On the operator panel, press System to access the user menus. 2. Select Admin Menu , and press OK . 3. Select Address Book , and press OK . 4. Select the type of dialing. Is the Address Book in the Admin Menu set correctly?	Go to step 3.	Set the Address Book.
3	Do the settings of the MFP match the specifications for the server?	Go to step 4.	Change the server.
4	Reinstall the engine board. See " Engine board removal " on page 5-64. Does the error still occur when using the server?	Replace the engine board. See " Engine board removal " on page 5-64.	Problem resolved.
5	Reseat the network connector. Does the error still occur when using the server?	If you have the Multi-Protocol Network Card (MPC), go to step 6. If you do not have the MPC, go to step 7.	Problem resolved.
6	Reinstall the Multi-Protocol Network Card. Does the error still occur when using the server?	Go to step 7.	Problem resolved.
7	Check the Network Settings in the Admin Menu: 1. Press System to access the menus. 2. Select Admin Menu , and press OK . 3. Select Network Settings , and press OK . Are the MFP network settings correct?	Go to step 8.	Set the Network Settings correctly.
8	Reinstall the RIP board. Does the error still occur when using the server?	Replace the RIP board. See " RIP board removal " on page 5-126.	Return to step 7, and recheck the network settings.

Toner cartridge (yellow) service check

Affected FRU: Controller board

This service check covers the following errors: Ready to Copy, Check Cartridge Error 093-423, Replace Yellow, Empty Yellow.

Step	Action and questions	Yes	No
1	Check toner cartridge installation. Is the yellow toner cartridge installed correctly?	Go to step 3.	Reinstall the yellow toner cartridge, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the toner cartridge. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Toner cartridge (magenta) service check

Affected FRU: Controller board

This service check covers the following errors: Ready to Copy, Check Cartridge Error 093-424, Replace Magenta, Empty Magenta.

Step	Action and questions	Yes	No
1	Check toner cartridge installation. Is the magenta toner cartridge installed correctly?	Go to step 3.	Reinstall the magenta toner cartridge, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the toner cartridge. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Toner cartridge (cyan) service check

Affected FRU: Controller board

This service check covers the following errors: Ready to Copy, Check Cartridge Error 093-425, Replace Cyan, Empty Cyan.

Step	Action and questions	Yes	No
1	Check toner cartridge installation. Is the cyan toner cartridge installed correctly?	Go to step 3.	Reinstall the cyan toner cartridge, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the toner cartridge. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Toner cartridge (black) service check

Affected FRU: Controller board

This service check covers the following errors: Ready to Copy, Check Cartridge Error 093-426, Replace Black, Empty Black.

Step	Action and questions	Yes	No
1	Check toner cartridge installation. Is the black toner cartridge installed correctly?	Go to step 3.	Reinstall the black toner cartridge, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Replace the toner cartridge. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Toner cartridge (black) service check

Affected FRU:

- Toner Smart Chip contact
- Controller board

This service check covers the following errors: 093-925 Blk - CRUM Error, 193-700 Ready to Copy.

Step	Action and questions	Yes	No
1	Check toner cartridge installation. Is the black toner cartridge installed correctly?	Go to step 3.	Reinstall the black toner cartridge, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Is the black toner cartridge the correct cartridge for this MFP?	Go to step 4.	Install the correct toner black cartridge.
4	Check the toner Smart Chip contact for proper installation. Is the toner Smart Chip contact installed correctly?	Go to step 5.	Reinstall the toner Smart Chip contact. See “Smart Chip contact removal” on page 5-138. Then go to step 5.
5	Check the P/J31 and P/J314 connectors between the controller board and the toner Smart Chip contact. Are the connectors (P/J31 and P/J314) connected correctly?	Go to step 6.	Reconnect the P/J31 and/or P/J314 connectors securely, then go to step 6.
6	Replace the black toner cartridge. See “Toner cartridge removal” on page 5-141. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Toner cartridge (yellow) service check

Affected FRU:

- Toner Smart Chip contact
- Controller board

This service check covers the following errors: 093-950 Y—CRUM Error, 193-700 Ready to Copy.

Step	Action and questions	Yes	No
1	Check toner cartridge installation. Is the yellow toner cartridge installed correctly?	Go to step 3.	Reinstall the yellow toner cartridge, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Is the yellow toner cartridge the correct cartridge for this MFP?	Go to step 4.	Install the correct toner yellow cartridge.
4	Check the toner Smart Chip contact for proper installation. Is the toner Smart Chip contact installed correctly?	Go to step 5	Reinstall the toner Smart Chip contact. See “Smart Chip contact removal” on page 5-138. Then go to step 5.
5	Check the P/J31 and P/J314 connectors between the controller board and the toner Smart Chip contact. Are the connectors (P/J31 and P/J314) connected correctly?	Go to step 6.	Reconnect the P/J31 and/or P/J314 connectors securely, then go to step 6.
6	Replace the yellow toner cartridge. See “Toner cartridge removal” on page 5-141. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Toner cartridge (magenta) service check

Affected FRU:

- Toner Smart Chip contact
- Controller board

This service check covers the following errors: 093-951 M—CRUM Error, 193-700 Ready to Copy.

Step	Action and questions	Yes	No
1	Check toner cartridge installation. Is the magenta toner cartridge installed correctly?	Go to step 3.	Reinstall the magenta toner cartridge, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Is the magenta toner cartridge the correct cartridge for this MFP?	Go to step 4.	Install the correct toner magenta cartridge.
4	Check the toner Smart Chip contact for proper installation. Is the toner Smart Chip contact installed correctly?	Go to step 5	Reinstall the toner Smart Chip contact. See “Smart Chip contact removal” on page 5-138. Then go to step 5.
5	Check the P/J31 and P/J314 connectors between the controller board and the toner Smart Chip contact. Are the connectors (P/J31 and P/J314) connected correctly?	Go to step 6.	Reconnect the P/J31 and/or P/J314 connectors securely, then go to step 6.
6	Replace the magenta toner cartridge. See “Toner cartridge removal” on page 5-141. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Toner cartridge (cyan) service check

Affected FRU:

- Toner Smart Chip contact
- Controller board

This service check covers the following errors: 093-952 C—CRUM Error, 193-700 Ready to Copy.

Step	Action and questions	Yes	No
1	Check toner cartridge installation. Is the cyan toner cartridge installed correctly?	Go to step 3.	Reinstall the cyan toner cartridge, then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Is the cyan toner cartridge the correct cartridge for this MFP?	Go to step 4.	Install the correct toner cyan cartridge.
4	Check the toner Smart Chip contact for proper installation. Is the toner Smart Chip contact installed correctly?	Go to step 5.	Reinstall the toner Smart Chip contact. See “Smart Chip contact removal” on page 5-138. Then go to step 5.
5	Check the P/J31 and P/J314 connectors between the controller board and the toner Smart Chip contact. Are the connectors (P/J31 and P/J314) connected correctly?	Go to step 6.	Reconnect the P/J31 and/or P/J314 connectors securely, then go to step 6.
6	Replace the cyan toner cartridge. See “Toner cartridge removal” on page 5-141. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Transfer belt assembly service check

Affected FRUs:

- Transfer belt assembly
- Controller board

This service check covers the following error: Insert Transfer Unit.

Step	Action and questions	Yes	No
1	Check the transfer belt assembly. Is the transfer belt assembly installed correctly?	Go to step 3.	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146. Then go to step 2.
2	Does the error still occur when the power is turned on?	Go to step 3.	Problem resolved.
3	Check the P/J27, P/J272, and P/J2721 connectors between the controller board and the transfer belt assembly. Are the P/J27, P/J272, and P/J2721 connectors connected securely?	Go to step 4.	Reconnect the connector(s) P/J27, P/J272, and P/J2721 securely. Then go to step 4.
4	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Transfer belt assembly service check

Affected FRUs:

- Transfer belt assembly
- Controller board

This service check covers the following errors: Ready to Copy, Replace Transfer Unit

Step	Action and questions	Yes	No
1	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146. Does the error still occur when the power is turned on?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Turn clutch assembly service check

Affected FRUs:

- Turn clutch assembly
- Controller board

Step	Action and questions	Yes	No
1	Check the connections between the controller board and turn clutch assembly. Are the cables at P/J23 and P/J234 connected securely?	Go to step 2.	Reconnect the connector(s) at P/J23 and/or P/J234 securely.
2	Disconnect the P/J23 connector on the controller board. Measure the voltage across ground and the J23-13 pin on the controller board. It should measure approximately +24 V dc when the interlock switch is pushed. Does the voltage measure approximately +24 V dc when the interlock switch is pushed?	Replace the turn clutch assembly. See “Turn clutch assembly removal” on page 5-151.	Replace the controller board. See “Controller board removal” on page 5-47.

Wrong Paper Type service check

Affected FRUs:

- Controller board

Step	Action and questions	Yes	No
1	Check the paper type: <ul style="list-style-type: none"> • Paper in the tray • Paper type setting on the printer menu • Paper type setting on the printer driver Do all the printer types match?	Go to step 2.	Load the correct paper, or change the paper type settings.
2	Reinstall the controller board. See “Controller board removal” on page 5-47. Does the error still occur when downloading?	Replace the controller board. See “Controller board removal” on page 5-47.	Problem resolved.

Print quality service checks

Customers may need your help determining the cause of print quality issues such as streaking, fading, or dropouts. Here are some questions that may help you determine why your customer's results are not optimal. First, confirm the following items to understand the customer's operating condition.

- **Does your customer's print media fall within the printer specifications?**
See **“Media guidelines and specifications” on page 1-4**. Have your customer print a small document from a different application to replicate the problem, and verify the amount of toner available for printing. When your customers print a document, the Laser Printer Status Monitor should display a dialog box that estimates the amount of toner left in the cartridge. If the printer is attached to the network, check the toner level by going to the printer's Web site.
- **Is there enough toner?**
If the toner is nearly exhausted, quality will not be at its best. If the toner is low, your customers can sometimes extend the cartridge life by removing the cartridge from the MFP, gently shaking it from side to side, and replacing it. Rocking the toner cartridge from side to side distributes the toner more evenly.
- **Has the printer been cleaned recently?**
Paper, toner, and dust particles can accumulate inside the MFP and cause print quality problems, such as smearing or toner specks. Clean inside to prevent these problems.

Check the following items if any print quality problems occur. Those actions may solve problems easily and simply.

- Color is out of alignment
 - Clean inside the printer.
 - If you install a new black cartridge, and a printhead assembly cleaning has not been done, this problem will happen. Clean inside the printer.
- Print is too light
 - The toner may be low. Confirm the amount of the toner, and change the toner cartridges if necessary.
 - Set the Draft Mode check box to off in the Advanced dialog box in the printer driver.
 - If you are printing on an uneven print surface, change the Paper Type settings in the Tray Settings menu.
 - Verify that the correct print media is being used.
 - The drum cartridge may need to be replaced. Change the drum cartridge.
- Toner smears or print comes off page
 - If you are printing on an uneven media surface, change the Paper Type settings in the Tray Settings menu.
 - Verify that the print media is within the printer specifications. See **“Media guidelines and specifications” on page 1-4**.
- Toner spots appear on the page/printing is blurred
 - Check the toner cartridge to make sure it is installed correctly.
 - Change the toner cartridge.
- Entire page is white
 - Make sure the packaging material is removed from the toner cartridge.
 - Check the toner cartridge to make sure it is installed correctly.
 - The toner may be low. Change the toner cartridge.
- Streaks appear on the page
 - The toner may be low. Change the toner cartridge.
 - If you are using preprinted forms, make sure the toner can withstand temperatures of 0°C to 35°C.
- Characters have jagged or uneven edges
 - Change the Print Mode in the Graphics tab (or Advanced dialog box) to Standard in the printer driver.
 - If you are using downloaded fonts, verify that the fonts are supported by the printer, the host computer, and the software program.
- Part or all of the page prints in black
 - Check the toner cartridge to make sure it is installed correctly.

- The job prints, but the top and side margins are incorrect
 - Make sure the Paper Size setting in the Tray Settings is correct.
 - Make sure the margins are set correctly in your software program.
- The image appears on both sides of transparencies
 - This occurs when the printer is operating in a location where relative humidity reaches 85% or more. Adjust the humidity, or relocate the printer to an appropriate environment.

Print image quality specifications

Conditions for best image quality

The best image quality can be attained under the following conditions.

- Environmental Condition
 - Temperature: 10°C–32°C
 - Humidity: 15% RH–85% RH (85% RH at 28°C)

Note: Defects may occur due to condensation after around 30 minutes if the printer is turned on in a critical environment such as 85% at 10°C.
- Guaranteed Paper

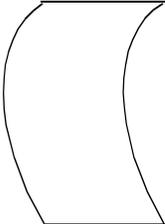
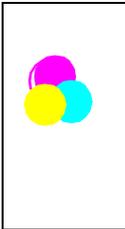
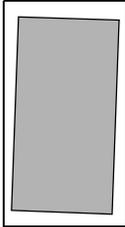
The print image quality specified in this chapter shall be guaranteed when the standard paper is fed from the paper tray. The print image quality is evaluated on the maximum size of each standard paper.

 - Color print quality: X-Pression paper
 - Black and white quality: 4200 paper
- Paper condition

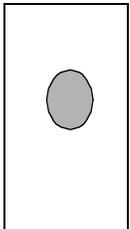
The paper used shall be fresh from unpacking and shall have been left in the operating environment for 12 hours before unpacking.
- Printer condition

The print image quality specified in this chapter is guaranteed with the printer in normal condition.
- Paper feeding problems.

Description of paper feeding problems

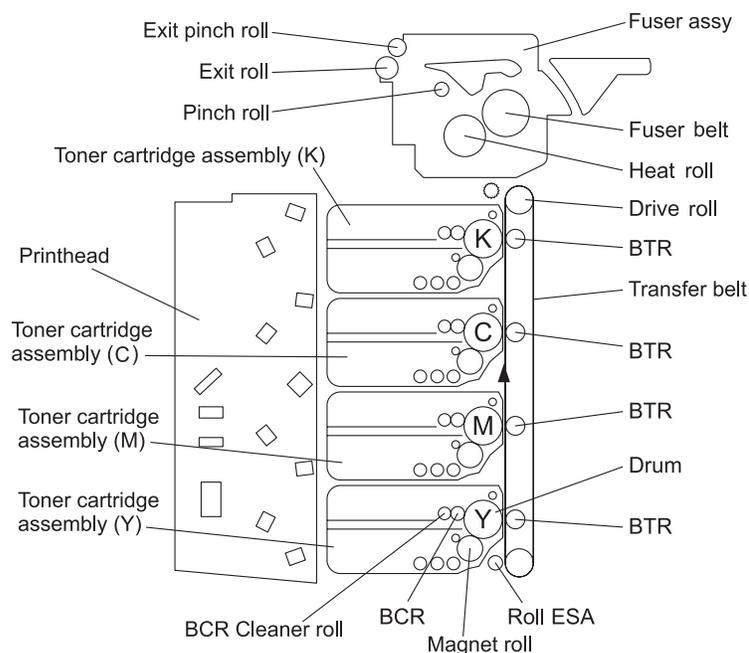
Characteristic	Characteristic
Parallelism (irregular paper) 	Linearity (image sides curve in or out.) 
Registration (one or more colors do not print in the proper locations.) 	Skew (text is printing so that the top of one side is closer to the edge than the top of the printing on the other side.) 

Description of paper feeding problems (continued)

Characteristic	Characteristic
Printing area (printing extends into the non-printable area.) The dog ran across the meadow.	Magnification error (image is wider or taller in one direction) 

Repeating marks and lines

Note: Horizontal lines and/or spots that occur periodically are possibly caused by the trouble of a particular roll. In this case, measure the trouble interval on the test print, and compare it with the intervals in the table below to isolate the roll. Note that the interval does not necessarily match the circumference of the roll.



Repeating print defects

Roll	Parts name	Roll Diameter (mm)	Interval (mm)
Drum	Toner cartridge	24	75.4
Bias charge roll	Toner cartridge	9	28.8
Bias charge roll cleaner roll	Toner cartridge	8	25.9
Sleeve (K)	Toner cartridge	16	25.2
Sleeve (Y, M, C)	Toner cartridge	16	22.3
1st BTR	Transfer belt assembly	12	37.7
HVPS contact	Transfer belt assembly	9	28.3

Repeating print defects (continued)

Roll	Parts name	Roll Diameter (mm)	Interval (mm)
Drive roll	Transfer belt assembly	18.1	56.9
Fuser roll	Fuser	26.3	82.7
Fuser belt	Fuser	30	94.2
Pinch roll	Fuser	6	18.8
Exit roll	Fuser	13.8	43.2
Exit pinch roll	Fuser	10	31.4

Faint print (low contrast) service check

The density of the image is entirely too faint.

Affected FRUs

- Transfer belt assembly
- Toner cartridges
- Printhead assembly
- Toner motors
- High-voltage power supply (HVPS)
- Controller board
- RIP board

Note: Before starting troubleshooting, check the paper transfer path for any foreign material, such as staples, paper clips, paper scraps, and so on.



Step	Action and questions	Yes	No
1	Check the toner cartridge installation. Is the installed toner cartridge(s) the correct color toner?	Go to step 2.	Replace the toner cartridge.
2	Check the paper. See “Media guidelines and specifications” on page 1-4. Does the paper in the tray meet specifications?	Go to step 3.	Replace the paper.
3	Check the toner cartridge—Print a test page for the color or colors that are faint (see “Cyan 20% ESS” on page 3-52, “Magenta 20% ESS” on page 3-52, “Black 20% ESS” on page 3-53, or “Yellow 20% ESS” on page 3-53.) Is there still faint toner?	Go to step 4.	Check the printing data.
4	Reinstall the transfer belt assembly. Does the image print correctly?	Problem resolved.	Go to step 5.
5	Turn off the MFP, and unplug it from the power outlet. Check for any debris between the printhead and drum. Is there any debris between the printhead assembly and the drum?	Remove the debris.	Go to step 6.
6	Reinstall the toner cartridge(s). Does the image print correctly?	Problem resolved.	Go to step 7.

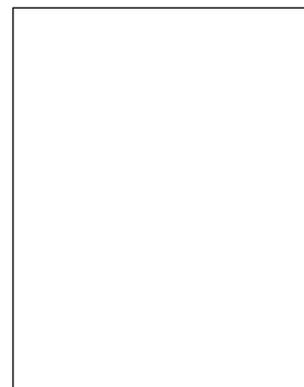
Step	Action and questions	Yes	No
7	<p>Check the toner motor—Perform a Toner Motor Test.</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag, and press OK. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Yellow Toner Motor. 5. Open the front cover, and remove the yellow toner cartridge. 6. Bypass the front cover interlock. 7. Press OK to begin the test. <p>You will hear the motor run if it is functional.</p> <p>For additional information, see “Yellow Toner Motor” on page 3-35, “Magenta Toner Motor” on page 3-36, “Cyan Toner Motor” on page 3-37, or “Black Toner Motor” on page 3-38.</p> <p>Does the toner motor rotate when tested?</p>	Go to step 8.	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p> <p>If not, replace the toner motor. See “Toner motor removal” on page 5-142.</p>
8	<p>Reinstall the controller board. See “Controller board removal” on page 5-47.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 9.
9	<p>Reinstall the RIP board. See “RIP board removal” on page 5-126.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 10.
10	<p>Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 11.
11	<p>Replace the toner cartridge. See “Toner cartridge removal” on page 5-141.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 12.
12	<p>Replace the printhead assembly. See “Printhead assembly removal” on page 5-116.</p> <p>Does the image print correctly?</p>	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126 .

Blank print (No print) service check

The entire paper is blank.

Affected FRUs:

- Transfer belt assembly
- Toner motor
- High-voltage power supply (HVPS)
- Toner cartridge
- Printhead assembly
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing or faxing?	Go to step 4.	Go to step 2.
2	Check the document placement. Is the document placed on the ADF or flatbed glass with the wrong side up?	Place the document properly on the scanner glass.	Go to step 3.
3	Reinstall the connectors (P/J64, P/J65) on the engine board. Does the image print correctly?	Problem resolved.	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.
4	Check the paper size. See “Media guidelines and specifications” on page 1-4. Does the paper the customer uses meet specifications?	Go to step 5.	Use paper that meets the specifications.
5	Check the paper size setup. Does the paper size in use match the size set through the operator panel?	Go to step 7.	Go to step 6.
6	Set the correct paper size through the operator panel. Does the error still occur when printing?	Go to step 7.	Problem resolved.
7	Check the toner cartridge. Is the installed toner cartridge the correct cartridge for this printer?	Go to step 8.	Replace the toner cartridge.
8	Check that the paper meets specifications. See “Media guidelines and specifications” on page 1-4. Does the paper in the tray meet specifications?	Go to step 9.	Replace the paper with new paper that meets specifications.

Step	Action and questions	Yes	No
9	<p>Print the Gradation Test Page.</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag. Select Test Print, and press OK. Select Gradation, and press OK. Ready displays. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. <p>See “Gradation ESS” on page 3-54 for additional information on the testing.</p> <p>Did the test page print correctly?</p>	Check the document that was printed.	Go to step 10.
10	<p>Reinstall the transfer belt assembly.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 11.
11	<p>Is there any debris between the printhead assembly and the drum?</p>	Remove the debris.	Go to step 12.
12	<p>Reseat the connector (P/J151) of the printhead assembly.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 13.
13	<p>Reinstall the four toner cartridges.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 14.
14	<p>Check the toner motor—Perform a Toner Motor Test.</p> <ol style="list-style-type: none"> In Service Mode, select Printer Diag, and press OK. Select Engine Diag, and press OK. Select Motor Tests, and press OK. Select Yellow Toner Motor. Open the front cover, and remove the yellow toner cartridge. Bypass the front cover interlock. Press OK to begin the test. You will hear the motor run if it is functional. <p>For additional information on this test, see “Yellow Toner Motor” on page 3-35, “Magenta Toner Motor” on page 3-36, “Cyan Toner Motor” on page 3-37, or “Black Toner Motor” on page 3-38.</p> <p>Does the toner motor rotate when tested?</p>	Go to step 15.	<p>Replace the controller board. See “Controller board removal” on page 5-47.</p> <p>If the problem persists, replace the toner motor. See “Toner motor removal” on page 5-142.</p>
15	<p>Reinstall the controller board. See “Controller board removal” on page 5-47.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 16.
16	<p>Reinstall the RIP board. See “RIP board removal” on page 5-126.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 17.
17	<p>Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 18.
18	<p>Reinstall the engine board. See “Engine board removal” on page 5-64.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 19.

Step	Action and questions	Yes	No
19	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126.

Solid black service check

The entire paper is black.

Affected FRUs:

- Transfer belt assembly
- HVPS
- Toner cartridge
- Printhead assembly
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing?	Go to step 2.	If the problem occurs during faxing, go to step 14.
2	Check the toner cartridge. Is the installed toner cartridge the correct cartridge for this MFP?	Go to step 3.	Replace the toner cartridge.
3	Check that the paper meets specifications. See “Media guidelines and specifications” on page 1-4. Does the paper in the tray meet specifications?	Go to step 4.	Replace the paper.
4	Check the printer—Print test pages (see “Cyan 20% ESS” on page 3-52, “Magenta 20% ESS” on page 3-52, “Black 20% ESS” on page 3-53, or “Yellow 20% ESS” on page 3-53.) Does the image print correctly?	Check the printing data.	Go to step 5.
5	Reinstall the transfer belt assembly. Does the image print correctly?	Problem resolved.	Go to step 6.
6	Reseat the connector (P/J151) of the printhead assembly. Does the image print correctly?	Problem resolved.	Go to step 7.
7	Reseat the toner cartridges. Does the image print correctly?	Problem resolved.	Go to step 8.
8	Reinstall the controller board. See “Controller board removal” on page 5-47. Does the image print correctly?	Problem resolved.	Go to step 9.

Step	Action and questions	Yes	No
9	Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the image print correctly?	Problem resolved.	Go to step 10.
10	Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79. Does the image print correctly?	Problem resolved.	Go to step 11.
11	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the image print correctly?	Problem resolved.	Go to step 12.
12	Replace the toner cartridges. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 13.
13	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126. If the problem remains, replace the controller board.
14	Reseat the connectors (P/J64 and P/J65) on the engine board. Does the image print correctly?	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.	Problem resolved.

Vertical blank lines service check

White stripes appear in the paper transport direction. There are some extremely faint or completely non-printed parts. Those non-printed parts cover a wide area vertically, along the paper feeding direction.

Affected FRUs:

- Transfer belt assembly
- HVPS
- Toner cartridge
- Printhead assembly
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing?	Go to step 6.	Go to step 2.
2	Check the error code. Does the error occur when faxing?	Go to step 11.	Go to 3.
3	Check the document. Are the vertical lines missing when faxing?	Go to step 4.	Change the document. Problem resolved.
4	Check the copy mode. Was the document sent from the ADF?	Go to step 12.	Go to step 5.
5	Reseat the connectors (P/J64, 65) on the engine board. Does the image print correctly?	Problem resolved.	Go to step 6.
6	Check for blank lines at regular intervals. Print a set of color Test Pages: 1. In Service Mode, select Printer Diag . 2. Select Test Print , and press OK . 3. Select Cyan 20% ESS (and/or Magenta 20%, Black 20%, or Yellow 20% ESS) , and press OK . 4. Ready displays. 5. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. Compare the distances between the blank lines with the defect print table. See " Repeating marks and lines " on page 2-123. Are there any blank lines matching the table?	Replace the corresponding parts.	Go to step 7.
7	Check the toner cartridge. Is the installed toner cartridge the correct cartridge for this MFP?	Go to step 8.	Replace the toner cartridge.

Step	Action and questions	Yes	No
8	Check that the paper meets specifications. See “Media guidelines and specifications” on page 1-4. Does the paper in the tray meet specifications?	Go to step 9.	Replace the paper.
9	Check the surface of the transfer belt assembly. Is there any damage on the surface of the transfer belt assembly?	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146.	Go to step 10.
10	Reinstall the transfer belt assembly. Does the image print correctly?	Problem resolved.	Go to step 13.
11	Check the receiving data. Ask that the fax be sent again. Is the receiving data correct?	Problem resolved.	Go to step 6.
12	Check the document path. Is there debris or jammed paper in the document path?	Remove the debris or jammed paper.	Go to step 5.
13	Check for any debris between the printhead assembly and the drum. Is there any debris?	Remove the debris.	Go to step 14.
14	Reseat the connector (P/J151) of the printhead assembly. Does the image print correctly?	Problem resolved.	Go to step 15.
15	Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 16
16	Reinstall the controller board. See “Controller board removal” on page 5-47. Does the image print correctly?	Problem resolved.	Go to step 17.
17	Reinstall the RIP board. See “Controller board removal” on page 5-47. Does the image print correctly?	Problem resolved.	Go to step 18.
18	Reinstall the engine board. See “Engine board removal” on page 5-64. Does the image print correctly?	Problem resolved.	Go to step 19.
19	Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79. Does the image print correctly?	Problem resolved.	Go to step 20.
20	Replace the toner cartridge. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 21.

Step	Action and questions	Yes	No
21	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126. If not, replace the controller board. See “Controller board removal” on page 5-47.

Horizontal blank lines or bands service check

White stripes appear in the horizontal direction. There are some extremely faint or completely non-printed parts. Those non-printed parts cover a wide area horizontally, perpendicular to the paper feeding direction.

Affected FRUs:

- Transfer belt assembly
- HVPS
- Toner cartridge
- Printhead assembly
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing?	Go to step 6.	Go to step 2.
2	Check when the error occurs. Does the error occur when faxing?	Go to step 5.	Go to step 3.
3	Check the document. Are the horizontal lines missing when faxing?	Go to step 5.	Change the document. Problem resolved.
4	Reseat the connectors (P/J64 and P/J65) on the engine board. Does the image print correctly?	Problem resolved.	Go to step 6.
5	Check the receiving data—Have the fax sent again. Is the receiving data correct?	Problem resolved.	Go to step 6.

Step	Action and questions	Yes	No
6	<p>Check for blank lines at regular intervals. Print a set of color Test Pages:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Test Print, and press OK. 3. Select Cyan 20% ESS (and/or Magenta 20%, Black 20%, or Yellow 20% ESS), and press OK. 4. Ready displays. 5. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. <p>Compare the distances between the blank lines with the defect print table. See “Repeating marks and lines” on page 2-123.</p> <p>Are there any blank lines matching the table?</p>	Replace the corresponding parts.	Go to step 7.
7	<p>Check the toner cartridge.</p> <p>Is the installed toner cartridge the correct toner cartridge for the MFP?</p>	Go to step 8.	Replace the toner cartridge.
8	<p>Check that the paper meets specifications. See “Media guidelines and specifications” on page 1-4.</p> <p>Does the paper in the tray meet specifications?</p>	Go to step 9.	Replace the paper.
9	<p>Check the surface of the transfer belt assembly.</p> <p>Is there any damage on the surface of the transfer belt assembly?</p>	Replace the transfer belt assembly.	Go to step 10.
10	<p>Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 11.
11	<p>Is there any debris between the printhead assembly and the drum?</p>	Remove the debris.	Go to step 12.
12	<p>Reseat the connector (P/J151) of the printhead assembly.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 13.
13	<p>Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 14.
14	<p>Reinstall the controller board. See “Controller board removal” on page 5-47.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 15.
15	<p>Reinstall the RIP board. See “RIP board removal” on page 5-126.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 16.
16	<p>Reinstall the engine board. See “Engine board removal” on page 5-64.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 17.
17	<p>Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 18.

Step	Action and questions	Yes	No
18	Replace the toner cartridge. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 19.
19	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126. If the problem is not fixed, replace the controller board. See “Controller board removal” on page 5-47.

Vertical stripes service check

There are vertical black stripes along the page.

Affected FRUs:

- Transfer belt assembly
- High-voltage power supply (HVPS)
- Toner cartridge
- Printhead assembly
- Fuser
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: If the stripes appear at the top or back of the page, replace the transfer belt assembly only. Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing?	Go to step 7.	Go to step 2.
2	Check when the error occurs. Does the error occur when faxing?	Go to step 6.	Go to step 3.
3	Check the document. Are the vertical lines missing?	Go to step 4.	Change the document. Problem resolved.
4	Check the flatbed glass and the ADF window. Is there debris or scratches on the flatbed glass and the ADF window?	Remove the debris, or replace the scanner assembly. See “Scanner assembly removal” on page 5-130.	Go to step 5.

Step	Action and questions	Yes	No
5	Reseat the connectors (P/J64 and P/J65) on the engine board. Does the image print correctly?	Problem resolved.	Go to step 7.
6	Check the receiving data—Have the fax resent. Is the receiving data correct?	Problem resolved.	Go to step 7.
7	Check the dark line's regular intervals. Print a set of color Test Pages: 1. In Service Mode, select Printer Diag . 2. Select Test Print , and press OK . 3. Select Cyan 20% ESS (and/or Magenta 20%, Black 20%, or Yellow 20% ESS) , and press OK . 4. Ready displays. 5. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. Compare the distances between the dark lines with the defect print table. See “Repeating marks and lines” on page 2-123 . Are there any dark lines matching the table?	Replace the corresponding parts.	Go to step 8.
8	Check the toner cartridge. Is the installed toner cartridge the correct one for this MFP?	Go to step 9.	Replace the tone cartridge.
9	Check the surface of the transfer belt assembly. Is there any damage on the surface of the transfer belt assembly?	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146 .	Go to step 10.
10	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146 . Does the image print correctly?	Problem resolved.	Go to step 11.
11	Reinstall the fuser. See “Fuser removal” on page 5-78 . Does the image print correctly?	Problem resolved.	Go to step 12.
12	Reseat the connector (P/J151) of the printhead assembly. See “Printhead assembly removal” on page 5-116 . Does the image print correctly?	Problem resolved.	Go to step 13.
13	Reinstall the engine board. See “Engine board removal” on page 5-64 . Does the image print correctly?	Problem resolved.	Go to step 14.
14	Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141 . Does the image print correctly?	Problem resolved.	Go to step 15.
15	Reinstall the controller board. See “Controller board removal” on page 5-47 . Does the image print correctly?	Problem resolved.	Go to step 16.

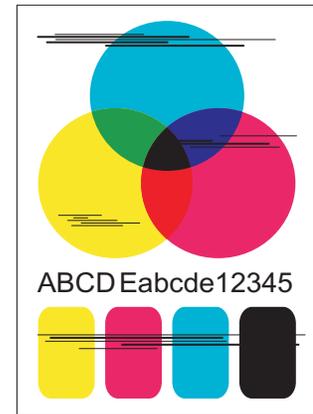
Step	Action and questions	Yes	No
16	Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the image print correctly?	Problem resolved.	Go to step 17.
17	Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79. Does the image print correctly?	Problem resolved.	Go to step 18.
18	Replace the toner cartridge. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 19.
19	Replace the fuser. See “Fuser removal” on page 5-78. Does the image print correctly?	Problem resolved.	Go to step 20.
20	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126. If the problem is not solved, replace the controller board. See “Controller board removal” on page 5-47.

Horizontal stripes service check

There are horizontal black stripes (perpendicular to the paper path direction) along the paper.

Affected FRUs:

- Transfer belt assembly
- High-voltage power supply (HVPS)
- Toner cartridge
- Printhead assembly
- Fuser
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing?	Go to step 7.	Go to step 2.
2	Check when the error occurs. Does the error occur when faxing?	Go to step 6.	Go to step 3.
3	Check the document. Is the document normal?	Go to step 4.	Change the document, or the problem is resolved.
4	Check the flatbed glass and the ADF window for debris, scratches, or smears. Are the flatbed glass and the ADF window free of debris and clean?	Go to step 5.	Remove the debris, or replace the scanner assembly. See “Scanner assembly removal” on page 5-130.
5	Reseat the connectors (P/J64 and P/J65) on the engine board. Does the image print correctly?	Problem resolved.	Go to step 7.
6	Check the receiving data—Have someone resend the fax. Is the receiving data correct?	Problem resolved.	Go to step 7.

Step	Action and questions	Yes	No
7	<p>Check the dark line's regular intervals. Print a set of color Test Pages:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Test Print, and press OK. 3. Select Cyan 20% ESS (and/or Magenta 20%, Black 20%, or Yellow 20% ESS), and press OK. 4. Ready displays. 5. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. <p>Compare the distances between the dark lines with the defect print table. See “Repeating marks and lines” on page 2-123.</p> <p>Are there any measurements matching the table?</p>	Replace the corresponding parts.	Go to step 8.
8	<p>Check the toner cartridge.</p> <p>Is the installed toner cartridge the correct toner cartridge for this printer?</p>	Go to step 9.	Replace the toner cartridge.
9	<p>Check the surface of the transfer belt assembly.</p> <p>Is there any damage on the surface of the transfer belt assembly?</p>	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146 .	Go to step 10.
10	<p>Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 11.
11	<p>Reinstall the fuser. See “Fuser removal” on page 5-78.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 12.
12	<p>Check the paper path.</p> <p>Is there toner contamination in the paper path?</p>	Clean the paper path.	Go to step 13.
13	<p>Reseat the connector (P/J151) of the printhead assembly.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 14.
14	<p>Reinstall the engine board. See “Engine board removal” on page 5-64.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 15.
15	<p>Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 16.
16	<p>Reinstall the controller board. See “Controller board removal” on page 5-47.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 17.
17	<p>Reinstall the RIP board. See “RIP board removal” on page 5-126.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 18.
18	<p>Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 19.

Step	Action and questions	Yes	No
19	Replace the toner cartridge. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 20.
20	Replace the fuser. See “Fuser removal” on page 5-78. Does the image print correctly?	Go to step 21.	Problem resolved.
21	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126. If the problem is not resolved, replace the controller board. See “Controller board removal” on page 5-47.

Partial lack service check

There are some extremely faint or completely missing parts in a limited area on the paper.

Affected FRUs:

- Transfer belt assembly
- High-voltage power supply (HVPS)
- Toner cartridge
- Printhead assembly
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing?	Go to step 6.	Go to step 2.
2	Check when the error occurs. Does the error occur when faxing?	Go to step 5.	Go to step 3.
3	Check the document. Does the entire image appear?	Go to step 4.	Change the document, or the problem is resolved.
4	Reseat the connectors (P/J64 and P/J65) on the engine board. Does the image print correctly?	Problem resolved.	Go to step 6.
5	Check the receiving data—Have someone resend the fax. Is the receiving data correct?	Problem resolved.	Go to step 6.
6	Print a test page from the print driver dialog. Does the image print correctly?	Check the printing data.	Go to step 7.
7	Check for any repeating pattern of faint or blank lines by printing several test pages—See “Repeating print defects” on page 2-123 . Check the dark line's regular intervals. Print a set of color Test Pages: <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Test Print, and press OK. 3. Select Cyan 20% ESS (and/or Magenta 20%, Black 20%, or Yellow 20% ESS), and press OK. 4. Ready displays. 5. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. Compare the distances between the dark lines with the defect print table. See “Repeating marks and lines” on page 2-123 . Are there any repeating defects that match the table?	Replace the corresponding parts.	Go to step 8.

Step	Action and questions	Yes	No
8	Check the toner cartridge. Is the installed toner cartridge the correct toner cartridge for this printer?	Go to step 9.	Replace the toner cartridge(s).
9	Check that the paper in the tray meets specifications. See “Media guidelines and specifications” on page 1-4. Does the paper meet specifications?	Go to step 10.	Replace the paper.
10	Check the surface of the transfer belt assembly. Is there any damage on the surface of the transfer belt assembly?	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146.	Go to step 11.
11	Reinstall the transfer belt assembly. Does the image print correctly?	Problem resolved.	Go to step 12.
12	Reseat the connector (P/J151) of the printhead assembly. Does the image print correctly?	Problem resolved.	Go to step 13.
13	Reinstall the engine board. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Go to step 14.
14	Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 15.
15	Reinstall the controller board. See “Controller board removal” on page 5-47. Does the image print correctly?	Problem resolved.	Go to step 16.
16	Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the image print correctly?	Problem resolved.	Go to step 17.
17	Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79. Does the image print correctly?	Problem resolved.	Go to step 18.
18	Replace the toner cartridge. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 19.
19	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126. If the problem persists, replace the controller board. See “Controller board removal” on page 5-47.

Spots service check

There are toner spots or specks distributed randomly all over the paper.

Affected FRUs:

- Transfer belt assembly
- HVPS
- Toner cartridge
- Printhead assembly
- Fuser
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: If the toner spot is at the top or back of the paper, replace the transfer belt only. Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing?	Go to step 7.	Go to step 2.
2	Check when the error occurs. Does the error occur when faxing?	Go to step 6.	Go to step 3.
3	Check the document. Are the spots missing from the printout?	Go to step 4.	Change the document, or the problem is resolved.
4	Check the flatbed glass and ADF window. Is there debris, smears, or scratches on the flatbed glass and the ADF window?	Remove the debris, or clean the glass. If the glass is damaged, replace the scanner assembly. See “Scanner assembly removal” on page 5-130.	Go to step 5.
5	Check the receiving data. Send the fax again. Is the receiving data correct?	Problem resolved.	Go to step 7.
6	Reseat the connectors (P/J64 and P/J65) on the engine board. Does the image print correctly?	Problem resolved.	Go to step 7.

Step	Action and questions	Yes	No
7	<p>Check if the spots repeat at regular intervals. See “Repeating print defects” on page 2-123.</p> <p>Check for any repeating pattern of spots or specks by printing several test pages. Do the seemingly random spots repeat? See “Repeating print defects” on page 2-123.</p> <p>Print a set of color Test Pages:</p> <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Test Print, and press OK. 3. Select Cyan 20% ESS (and/or Magenta 20%, Black 20%, or Yellow 20% ESS), and press OK. 4. Ready displays. 5. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. <p>Compare the distances between the patterns of spots or specks with the defect print table. See “Repeating marks and lines” on page 2-123.</p> <p>Are there any repeating spots that match the table?</p>	Replace the corresponding parts.	Go to step 8.
8	<p>Check the toner cartridge.</p> <p>Is the installed toner cartridge the correct toner cartridge for this MFP?</p>	Go to step 9.	Replace the toner cartridge.
9	<p>Check the surface of the transfer belt assembly.</p> <p>Is there any damage on the surface of the transfer belt assembly?</p>	Replace the transfer belt assembly. See “Transfer belt removal” on page 5-146.	Go to step 10.
10	<p>Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 11.
11	<p>Reinstall the fuser. See “Fuser removal” on page 5-78.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 12.
12	<p>Check the paper path.</p> <p>Is there toner contamination in the paper path?</p>	Clean the paper path.	Go to step 13.
13	<p>Reseat the connector (P/J151) of the printhead assembly.</p> <p>Did the image print correctly?</p>	Problem resolved.	Go to step 14.
14	<p>Reinstall the engine board. See “Engine board removal” on page 5-64.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 15.
15	<p>Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 16.
16	<p>Reinstall the controller board. See “Controller board removal” on page 5-47.</p> <p>Does the image print correctly?</p>	Problem resolved.	Go to step 17.

Step	Action and questions	Yes	No
17	Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the image print correctly?	Problem resolved.	Go to step 18.
18	Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79. Does the image print correctly?	Problem resolved.	Go to step 19.
19	Replace the toner cartridge(s). See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 20.
20	Replace the printhead assembly. See “Printhead assembly removal” on page 5-116. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126. If this does not fix the problem, replace the controller board. See “Controller board removal” on page 5-47.

Afterimage service check

The “ghost” image appears on the paper. The ghost may be the image of the previous page or a part of the page currently printing.

Affected FRUs:

- Transfer belt assembly
- HVPS
- Toner cartridge
- Printhead assembly
- Fuser
- Controller board
- RIP board



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check the printing. Did the customer print a large volume of the same image?	Go to step 2.	Go to step 3.
2	Print the Gradation Test Pages: 1. In Service Mode, select Printer Diag . 2. Select Test Print , and press OK . 3. Select Gradation ESS , and press OK . 4. Ready displays. 5. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. See a sample at “Gradation ESS” on page 3-54 . Does the image print correctly?	Problem resolved.	Go to step 3.
3	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146 . Does the image print correctly?	Problem resolved.	Go to step 4.
4	Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141 . Does the image print correctly?	Problem resolved.	Go to step 5.
5	Reinstall the controller board. See “Controller board removal” on page 5-47 . Does the image print correctly?	Problem resolved.	Go to step 6.
6	Reinstall the RIP board. See “RIP board removal” on page 5-126 . Does the image print correctly?	Problem resolved.	Go to step 7.
7	Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79 . Does the image print correctly?	Problem resolved.	Go to step 8.
8	Replace the toner cartridge. See “Toner cartridge removal” on page 5-141 . Does the image print correctly?	Problem resolved.	Go to step 9.

Step	Action and questions	Yes	No
9	Replace the fuser. See “Fuser removal” on page 5-78. Does the image print correctly?	Problem resolved.	Replace the RIP board. See “RIP board removal” on page 5-126. If the problem is not resolved, replace the controller board. See “Controller board removal” on page 5-47.

Background (fog) service check

There is toner stain over all the page or over a portion of the page. The stain appears as very bright gray stain.

Affected FRUs:

- Transfer belt assembly
- HVPS
- Toner cartridge
- Printhead assembly
- Fuser
- Controller board
- RIP board
- Engine board
- Scanner assembly



Note: Before starting the troubleshooting, check the paper transfer path. Make sure that there is no debris on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check when the error occurs. Does the error occur when printing?	Go to step 6.	Go to step 2.
2	Check when the error occurs. Does the error occur when faxing?	Go to step 5.	Go to step 3.
3	Check the document. Is the background discoloration missing?	Go to step 5.	Problem resolved or change the document.
4	Reseat the connectors (P/J64 and P/J65) on the engine board. Does the image print correctly?	Problem resolved.	Go to step 6.
5	Check the receiving data. Have someone resend the fax. Is the receiving data correct?	Problem resolved.	Go to step 6.

Step	Action and questions	Yes	No
6	<p>Check the printing.</p> <ul style="list-style-type: none"> Print the five sheets Gradation ESS Test Page (internal to the printer): <ol style="list-style-type: none"> In Service Mode, select Printer Diag. Select Test Print, and press OK. Select Gradation ESS, and press OK. Ready displays. Press OK to print the test page. Processing displays, and then the page prints. Ready displays when the page is complete. See a sample at “Gradation ESS” on page 3-54. Print a test page from the computer (external source). <p>Do all the test pages print correctly?</p>	Problem resolved.	Go to step 7.
7	<p>Check the toner cartridge. Is the toner cartridge the correct toner for this MFP?</p>	Go to step 8.	Replace the toner cartridge.
8	<p>Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146. Does the image print correctly?</p>	Problem resolved.	Go to step 9.
9	<p>Reseat the connector (P/J151) of the printhead assembly. Does the image print correctly?</p>	Problem resolved.	Go to step 10.
10	<p>Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141. Does the image print correctly?</p>	Problem resolved.	Go to step 11.
11	<p>Reinstall the controller board. See “Controller board removal” on page 5-47. Does the image print correctly?</p>	Problem resolved.	Go to step 12.
12	<p>Reinstall the RIP board. See “RIP board removal” on page 5-126. Does the image print correctly?</p>	Problem resolved.	Go to step 13.
13	<p>Reinstall the HVPS. See “High-voltage power supply (HVPS) removal” on page 5-79. Does the image print correctly?</p>	Problem resolved.	Go to step 14.
14	<p>Reinstall the engine board. See “Engine board removal” on page 5-64. Does the image print correctly?</p>	Problem resolved.	Go to step 15.
15	<p>Replace the toner cartridge. See “Toner cartridge removal” on page 5-141. Does the image print correctly?</p>	Problem resolved.	<p>Replace the RIP board. See “RIP board removal” on page 5-126. If the problem persists, replace the controller board. See “Controller board removal” on page 5-47.</p>

Skew service check

The printed image is not parallel with both sides of the paper.

Affected FRUs:

- MP feeder separator roller assembly
- Separator and feed roller kit
- MP feeder feed roller
- Transfer belt assembly
- Duplex unit
- Separator and feed roller kit
- Engine board
- Scanner assembly
- ADF feed roller kit



Note: Before starting the troubleshooting, check the paper transfer path. Make sure that there is no debris on the transfer path, such as staples, paper clips, or scraps of paper and so on.

Step	Action and questions	Yes	No
1	Check the error code. Does the error occur when printing?	Go to step 9.	Go to step 2.
2	Check the error code. Does the error occur when faxing?	Go to step 3.	Go to step 4.
3	Check the receiving data—Have someone send the fax again. Is the receiving data correct?	Problem resolved.	Go to step 9.
4	Check the error code. Is the document fed through the ADF?	Go to step 6.	Go to step 5.
5	Check the document alignment. Is the document set on the flatbed glass correctly?	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.	Realign the document.
6	Check the document media type. See “Media guidelines and specifications” on page 1-4. Does the document meet the paper specifications for the ADF?	Go to step 7.	Use the flatbed, or change the paper type.
7	Check the side guide setting, and reset the side guide of the ADF, if necessary. Does the image print correctly?	Problem resolved.	Go to step 8.
8	Check the ADF feed roll, ADF separator pad, and ADF separator spring. Is there damage or debris on the feed roll and separator pad?	Remove the debris, or replace the feed roll and the separator pad. See “ADF maintenance kit removal” on page 5-44.	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.

Step	Action and questions	Yes	No
9	Check the condition of the paper. See “Media guidelines and specifications” on page 1-4. Does the paper in the tray meet specifications?	Go to step 10.	Replace the paper with paper that meets specifications.
10	Check the front cover latching. Open and close the front cover securely. Does the error still occur when printing?	Go to step 11.	Problem resolved.
11	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146. Does the error still occur when printing?	Go to step 12.	Problem resolved.
12	Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141. Does the error still occur when printing?	Go to step 13.	Problem resolved.
13	Check whether the tray or the paper in the tray is crooked or skewed. Is the crooked or skewed paper fed from the MP feeder?	Go to step 14.	Go to step 18.
14	Check the paper installation. Carefully reload the paper on the MP feeder. Does the error still occur when printing?	Go to step 15.	Problem resolved.
15	Check the side guide of the MP feeder. Verify the side guide is at the right position. Does the error still occur when printing?	Go to step 16.	Problem resolved.
16	Check the paper path. Is there debris or jammed paper in the paper path?	Remove the debris or jammed paper.	Go to step 17.
17	Replace the MPF roller. See “MP feeder feed roll removal” on page 5-96. Does the error still occur when printing?	Replace the MPF separator roller assembly. See “MP feeder separator roll assembly removal” on page 5-101.	Go to step 18.
18	Check the duplex unit. Is the crooked or skewed paper fed by the duplex unit?	Go to step 19.	Go to step 21.
19	Reinstall the duplex unit. Does the error still occur when printing?	Go to step 20.	Problem resolved.
20	Check the paper path. Is there debris or jammed paper in the paper path?	Remove the debris or jammed paper.	Replace the duplex unit. See “Duplex unit removal” on page 5-62.
21	Reinstall the paper tray. Does the error still occur when printing?	Go to step 22.	Problem resolved.
22	Reload the paper in the paper tray. Does the error still occur when printing?	Go to step 23.	Problem resolved.

Step	Action and questions	Yes	No
23	Check the side guide of the paper tray—Verify the side guide is at the right position. Does the error still occur when printing?	Go to step 24.	Problem resolved.
24	Check the paper path. Is there debris or jammed paper in the paper path?	Remove the debris or jammed paper.	Go to step 25.
25	Replace the feed roller. <ul style="list-style-type: none"> For the 250-sheet tray assembly: See “Feed roll kit removal—250-sheet tray assembly” on page 5-77. For the 550-sheet feeder: See “550-sheet feeder feed roll kit removal” on page 5-37. Does the error still occur when printing?	Replace the separator roller assembly: 250-sheet tray assembly: See “Separator roll removal—250-sheet tray assembly” on page 5-136. 550-sheet feeder: See “550-sheet feeder tray separator roll removal” on page 5-41.	Problem resolved.

Paper damage service check

The paper comes out from the printer wrinkled, folded, or worn out.

Affected FRUs:

- MP feeder separator roller assembly
- Separator and feed roller kit
- Duplex unit
- Scanner assembly
- ADF feed roller kit



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there is no debris on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check the error code. Does the error occur when printing?	Go to step 5.	Go to step 2.
2	Check the document. See “Media guidelines and specifications” on page 1-4. Does the document meet the ADF specification?	Go to step 3.	Use the flatbed, or change the paper type.
3	Check the side guide setting. Verify the side guide of the ADF is in the right position. Does the document feed correctly?	Problem resolved.	Go to step 4.

Step	Action and questions	Yes	No
4	Replace the feed roll and the separator pad. See “ADF maintenance kit removal” on page 5-44. Is the document fed correctly?	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.	Problem resolved.
5	Check the paper condition. See “Media guidelines and specifications” on page 1-4. Does the paper in the tray meet specifications?	Go to step 6.	Replace the paper with paper that meets specifications.
6	Check the front cover latching. Open the front cover, and close it securely. Does the error still occur when printing?	Go to step 7.	Problem resolved.
7	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146. Does the error still occur when printing?	Go to step 8.	Problem resolved.
8	Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141. Does the error still occur when printing?	Go to step 9.	Problem resolved.
9	Reinstall the fuser. See “Fuser removal” on page 5-78. Does the error still occur when printing?	Go to step 10.	Problem resolved.
10	Check if the tray is installed incorrectly or the paper is crooked in the tray. Is the paper that is feeding skewed or damaged fed from the MP feeder?	Go to step 11.	Go to step 15.
11	Reload the paper on the MP feeder. Does the error still occur when printing?	Go to step 12.	Problem resolved.
12	Check the side guide of the MP feeder—Reset the side guide. Does the error still occur when printing?	Go to step 13.	Problem resolved.
13	Check the paper path. Is there debris or jammed paper in the paper path?	Remove the debris or jammed paper.	Go to step 14.
14	Check after replacing the feed roller—Replace the MP feeder roller. See “MP feeder feed roll removal” on page 5-96. Does the error still occur when printing?	Replace the MP feeder separator roller assembly. See “MP feeder separator roll assembly removal” on page 5-101.	Problem resolved.
15	Check the damaged mode. Is the damaged paper the duplex fed?	Go to step 16.	Go to step 18.
16	Check the duplex unit installation—Reseat the duplex unit. Does the error still occur when printing?	Go to step 17.	Problem resolved.

Step	Action and questions	Yes	No
17	Check the paper path. Is there debris or jammed paper in the paper path?	Remove the debris or jammed paper.	Replace the duplex unit. See “Duplex unit removal” on page 5-62.
18	Reinstall the paper tray. Does the error still occur when printing?	Go to step 19.	Problem resolved.
19	Reinstall the paper in the paper tray. Does the error still occur when printing?	Go to step 20.	Problem resolved.
20	Check the side guide of paper tray. Verify the side guide is placed correctly. Does the error still occur when printing?	Go to step 21.	Problem resolved.
21	Check the paper path. Is there debris or jammed paper in the paper path?	Remove the debris or jammed paper.	Go to step 22.
22	Replace the feed roller. <ul style="list-style-type: none"> 250-sheet tray assembly: See “Feed roll kit removal—250-sheet tray assembly” on page 5-77. 550-sheet feeder: See “550-sheet feeder feed roll kit removal” on page 5-37. Does the error still occur when printing?	Replace the separator roller assembly. 250-sheet tray assembly: See “Separator roll removal—250-sheet tray assembly” on page 5-136. 550-sheet feeder: See “550-sheet feeder tray separator roll removal” on page 5-41.	Problem resolved.

Toner does not fix service check

The printed image is not fixed on the paper properly. The image easily comes off when rubbed.

Affected FRU:

Fuser



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check the condition of the paper. See “Media guidelines and specifications” on page 1-4. Does the paper in the tray meet specifications?	Go to step 2.	Replace the paper with paper that meets specifications.
2	Check the toner cartridge. Is the toner cartridge the correct toner cartridge for this MFP?	Go to step 3.	Replace the toner cartridge.
3	Reinstall the fuser. See “Fuser removal” on page 5-78. Does the image print correctly?	Problem resolved.	Replace the fuser. See “Fuser removal” on page 5-78.

Color registration (color shift) service check

A printed yellow or black image is not overlapped on a cyan or magenta image correctly.

Affected FRU:

550-sheet feeder



Note: Before starting troubleshooting, check the paper transfer path. Make sure that there are no foreign materials on the transfer path, such as staples, paper clips, scraps of paper, and so on.

Step	Action and questions	Yes	No
1	Check the printer installation. Has the printer been moved or relocated?	Execute the [Auto Regi Adjust] in [Admin Menu].	Go to step 2.
2	Turn the power off and on again. Tray the print job again. Does the image print correctly?	Problem resolved.	Go to step 3.
3	Check the condition of the paper. See “Media guidelines and specifications” on page 1-4. Does the paper in the tray meet specifications?	Go to step 4.	Replace the paper with paper that meets specifications.
4	Check the printer—Checked by [Test Print]-[Toner Pallet Check] in diagnosis. Does the image print correctly?	Check the printing data.	Go to step 5.
5	Check the registration adjustment—Execute the [Auto Regi Adjust] in [Admin Menu]. Does the image print correctly?	Problem resolved.	Go to step 6.
6	Check the parameter value. Print the values. Did the customer change the registration parameter value?	Reset to the default value.	Go to step 7.
7	Check the latching of the front cover. Open the front cover, and close it securely. Does the image print correctly?	Problem resolved.	Go to step 8.
8	Reinstall the transfer belt assembly. See “Transfer belt removal” on page 5-146. Does the image print correctly?	Problem resolved.	Go to step 9.
9	Reinstall the four toner cartridges. See “Toner cartridge removal” on page 5-141. Does the image print correctly?	Problem resolved.	Go to step 10.

Step	Action and questions	Yes	No
10	Perform the Regi Clutch Test: <ol style="list-style-type: none"> 1. In Service Mode, select Printer Diag. 2. Select Engine Diag, and press OK. 3. Select Motor Tests, and press OK. 4. Select Regi Clutch. 5. Open the front cover. 6. Bypass the front cover interlock. 7. Press OK to start the test. Confirm that the registration roll is moving. Does the registration clutch operate properly?	Replace the controller board. See “Controller board removal” on page 5-47.	Replace the 550-sheet feeder. See “550-sheet feeder removal” on page 5-27.

Hunting service check

Vertical undulation of the image with respect to the feeding direction, such as wavy column line.

Affected FRU:

Scanner assembly



Step	Action and questions	Yes	No
1	Check the document. See “Media guidelines and specifications” on page 1-4. Does the document meet the ADF specifications?	Go to step 2.	Use the flatbed, change the volume of paper in the job, or change the paper type.
2	Check the ADF. Does the ADF close against the flatbed glass completely?	Go to step 3.	Close the ADF.
3	Check the installation status. Is the printer installed on a level, steady surface?	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130.	Reinstall the printer.

Magnification incorrect (distortion) service check

Incorrect magnification when copying with the ADF feeding. The image is distorted.

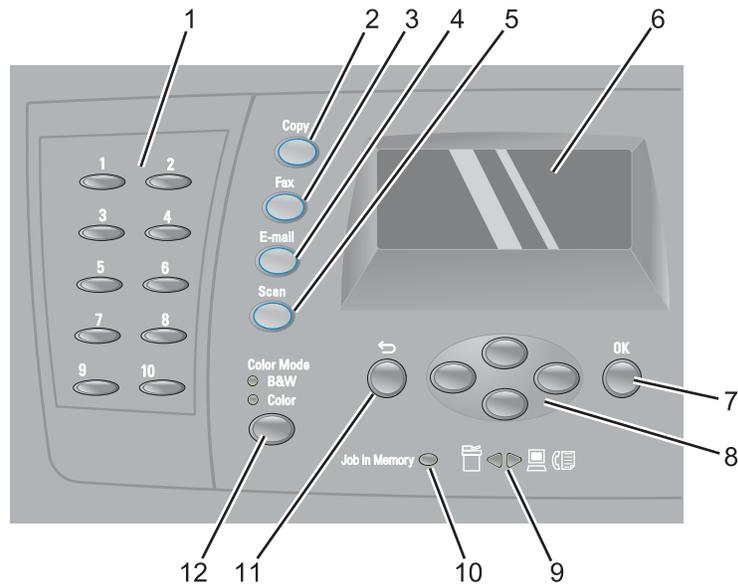
Affected FRUs:

Scanner assembly



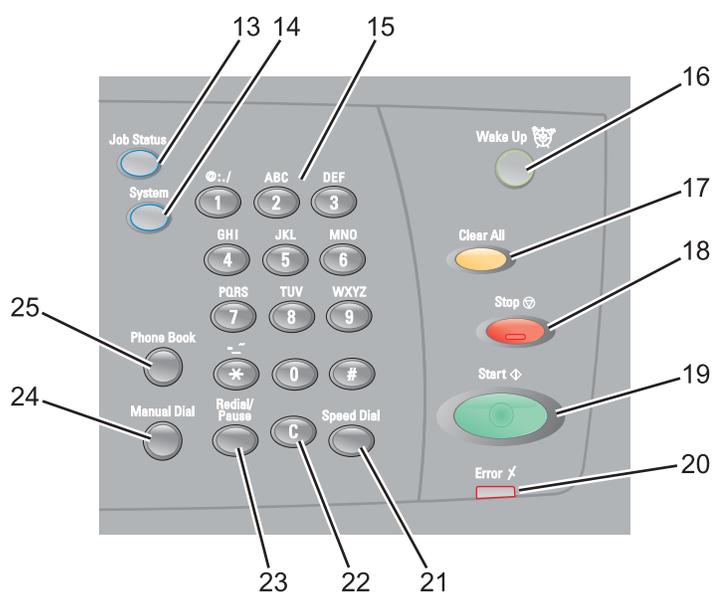
Step	Action and questions	Yes	No
1	Check the document. See “Media guidelines and specifications” on page 1-4. Does the document paper type or number of pages meet the specifications for the ADF?	Go to step 2.	Use the flatbed, or change the paper type
2	Check the ADF. Does the ADF completely close against the flatbed glass?	Go to step 3.	Close the ADF.
3	Check the installation status. Is the printer installed on a level, steady surface?	Replace the scanner assembly. See “Scanner assembly removal” on page 5-130	Reinstall the printer.

Operator panel and customer menus



Descriptions of buttons and indicators

Printer control panel item	Description
1	Quick access panel The buttons on the quick access panel provide direct access to pre-programmed fax numbers. Up to 10 entries can be stored in the Quick Dial directory for one-touch access to fax numbers. Note: You can set up Quick Dial entries using the printer control panel, the Embedded Web Server, or Address Book Editor.
2	Copy Activate Copy mode.
3	Fax Activate Fax mode.
4	E-mail Activate Email mode.
5	Scan Activate Scan mode.
6	Display Shows messages describing the current state of the printer and indicating possible printer problems you must resolve.
7	OK Accept menu selections and settings
8	Navigation buttons  <ul style="list-style-type: none"> Press ▲ or ▼ to scroll through menu lists. Press ◀ to scroll backwards through the menus, or to display the Walk-Up Features menu. Press ▶ to scroll forward through the menus.
9	Arrow lights  Indicates the flow of data either into or out of the printer.
10	Job indicator lights When illuminated, it indicates that there is a fax job in the printer memory.
11	Back  Return to the previous menu.
12	Color Mode Switches between Color and B&W (black-and-white modes for your copy, fax, or scan job).



Descriptions of buttons and indicators

Printer control panel item	Description
13	Job Status Note: Press to check active job status and Walk-Up printing jobs
14	 Switches the display to the Setup menu. See Go to “Customer menus under System” on page 2-161.
15	Keypad In Copy mode: Enter the number of copies or prints you want to make in Fax mode: <ul style="list-style-type: none"> • Enter fax numbers. • Select letters when creating a Speed Dial list. • Type numbers to enter or edit the date and time shown on the display.
16	 This light is on in power saver mode. Push Wake Up to exit power saver mode. Note: While the printer is in power saver mode, no other printer control panel functions will work.
17	 Press once to return to the main menu. All job settings are reset to factory default settings.
18	 Reset the printer when performing an action.
19	 Press to start a copy, scan, or fax job.

Descriptions of buttons and indicators

Printer control panel item		Description
20	Error 	The red light indicates an error condition.
21	Speed Dial	Press to access directories of group or individual fax telephone numbers.
22	Clear button 	Deletes a single character each time the button is pressed. Use this button when entering e-main addresses and telephone numbers.
23	Redial/Pause	<ul style="list-style-type: none"> • Dial the last fax number entered (redial). • Insert a pause in the number to be dialed to wait for an outside line or get through an automated answering system.
24	Manual Dial	When faxing, you can press this button to quickly enter a fax number with the alphanumeric keypad.
26	Phone Book	Press to access the Fax and Email address books.

Customer menus under System

Default Settings

Copy Defaults
Scan Defaults
Fax Defaults

System Settings

2 Mode Power Saver
Power Saver Timer
Auto Reset
Alert Tone
Time-Out
Clock Settings
1mm³inch
Auto Log Print
Print ID
Print Text
Banner Sheet
Fax Activity
Fax Transmit
Fax Broadcast
Protocol Monitor
RAM Disk
Tray Switching
Start Up Page

Panel Language

Panel Lock
Scan/Fax Lock
Secure Receive

Tray Settings

Tray 1 (MPT)
Tray 2
Tray 3 (if installed)

Maintenance

Auto Regi Adjust
Adjust ColorRegi
Initialize NVM
Init Print Meter
Reset Fuser
Custom

Information Pages

Configuration
PCL Fonts List
PS Font List
Job History
Error History
Protocol Monitor
PCL Macro
Stored Documents

Admin Reports

Speed Dial
Dress Book
Server Address
Fax Activity
Fax Pending
Printer Meter

Billing Meters

Total Impressions
Color Impressions
Black Impressions

Secure Settings

Panel Lock
Scan/Fax Lock
Secure Receive
Scan to Email

Admin Menu

Address Book
Speed Dial
Group Dial
Print Language
PCL
PostScript
Network
Ethernet
TCPIP
Protocol
IP Filter
Iialize NVM
Adobe Protocol
Parallel Settings
ECP
Adobe Protocol
USB SettingsAdobe
Protocol TBCP
Fax Settings
Interval Timer
Number of Redial
Int. of Redial
Ans Select
Aut Ans TEL/FAX
Auto Ans Ans/FAX
Line Monitor
Ring Tone Volume
Line Type
Dialing Type
Junk Fax Filter
Remote Receive
Remote Rcv Tone
Duplex Print
Send Header
Company Name
Your Fax Number
Device Name
DRPD Pattern
Forward Settings
Fwd. Settings Num
Fwd. Set Print
Prefix Dial
Prefix Dial Num
Discard Size
Color Fax
Extel Hook Thresh
Country
Forward Error Print

3. Diagnostic aids

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

Printing Information Pages

There are several Information Pages in the customer menus that contain various types of reports and lists. The following Information Pages are available:

- **Configuration**—Prints status of the printer, such as hardware configuration and network information. Print this report to check whether options or features have been correctly installed.
- **Job History**— Prints information on printing results, such as whether data from the computer has been printed correctly. The status of a maximum of 22 jobs can be printed on the Job History Report.
- **Error History**—Prints information of up to the latest 42 errors that occurred.
- **Stored Documents**—Prints a list of documents stored in the printer when using the secure print and sample print feature.
- **Protocol Monitor**—Provides information about the previous fax job as an aid to determining fax protocol problems.
- **PCL Macro List**—Prints a list of PCL macros.
- **PCL Fonts List**—Prints information on PCL fonts and samples of these fonts.
- **PS Fonts List**—Prints information on PostScript fonts and samples of these fonts.

To print Information Pages:

1. On the operator panel, press **System** to access the customer menus.
2. Select **Setup**, and press **OK**.
3. Select **Information Pages**, and press **OK**.
4. Select the report or list you want to print, and press **OK**.

Service Mode

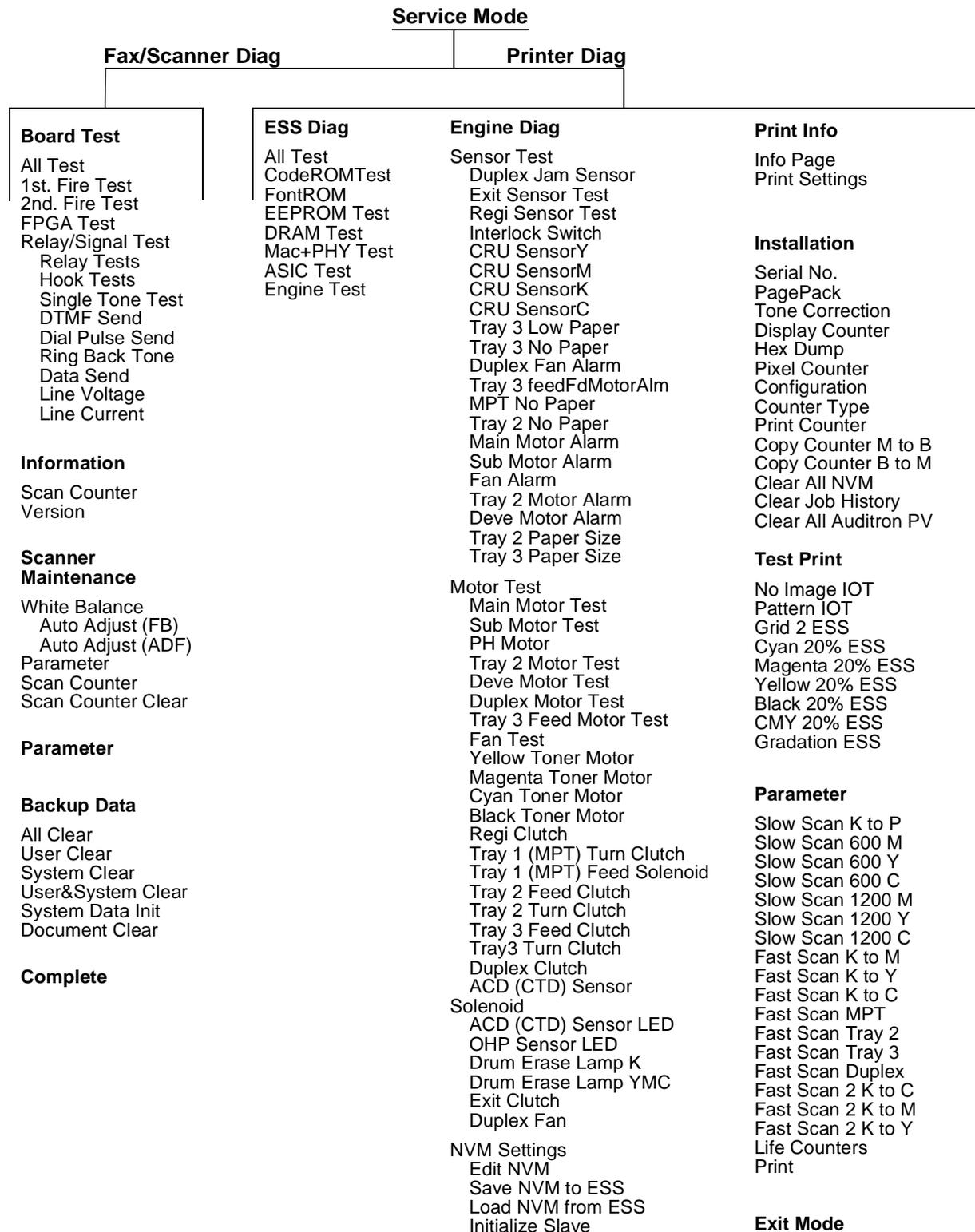
The Service Mode group contains the settings and operations used while manufacturing and servicing the printer. Under Service Mode, there are two different test menus that can be accessed during POR to identify problems with the printer.

When you enter Service Mode, there are two choices:

- Fax/Scanner
- Printer Diag

<p>Service Mode</p> 	<ol style="list-style-type: none"> 1. Press and hold ▲ and ▼. 2. Turn on the printer. 3. Release the buttons when the menu displays: <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> * Fax / Scanner Printer Diag </div> 4. Select the mode using ▲ and ▼, and press OK. 	<ul style="list-style-type: none"> • Fax/Scanner mode—Tests for scanner and fax functionality. • Printer Diag mode—Test for the print engine's functionality.
---	---	---

Menu map of Service Mode



Fax/Scanner Diag

Board test

All Test

This selection runs every test on the engine board.

To run these tests:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board tests**, and press **OK**.
3. Select **All Test**, and press **OK**.
Ready displays.
4. Press **OK** to start the testing.
The name of the test is displayed while it is being run.
After the final test is run successfully, All Tests Ok is displayed at the bottom of the screen.

Press **Back** (⬅) to go back to the Board test menu.

1st. Fire Test

This menu item when selected performs a 1st Fire test on the SDRAM Test and the Code ROM Test of the engine board.

- Run the SDRAM test when errors 062-320, 062-324, 117-311, 117-363, 117-353, 133-254, 017-970, or 033-503 errors occur.
- Run the Code ROM test when 117-310, or 117-318 errors occur.

To run these test perform the following steps:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **1st Fire Test**, and press **OK**.
3. Select the desired test (**SDRAM Test** or **Code ROM Test**), and press **OK**.
Ready displays.
4. Press **OK** to start the test.
Now Checking is displayed. If the test is successful, Check OK is displayed.

Press **Back** (⬅) to return to the 1st Fire test menu, or press **Back** (⬅) twice to return to the Board test menu.

2nd Fire Test

This menu item when selected performs a 2nd Fire test on the RTC Test, EEPROM Test, SDRAM Test, Code ROM Test, Image ROM Test, and the SRAM Test of the engine card.

If you get these error codes:	Perform these tests:
117-316	RTC Test
117-315, 117-362, 117-363	EEPROM Test
117-311, 117-353, 117-363, 133-254, 017-970, 033-503	SDRAM Test
117-310, 117-312, 117-318	CodeROM Test
017-971, 071-972, 017-973, 017-974	Image ROM Test
117-311, 117-353, 117-363, 133-254, 017-970, 033-503	SRAM Test

To run these tests:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **2nd Fire Test**, and press **OK**.
3. Select the desired test, and press **OK**.
Ready displays.
4. Press **OK** to start the test.
Now Checking displays. If the test is successful, Check OK displays.

Press **Back** (⏪) to return to the 2nd Fire test menu, or press **Back** (⏪) twice to return to the Board test menu.

FPGA Test

This menu item allows you to perform the 1st. -FPGA I/F Test, 2nd. -FPGA I/F Test, Video Memory Test. Use the Video Memory test if 062-324, 133-254, 017-970, or 033-503 errors occur.

To run these tests:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **FPGA Test**, and press **OK**.
3. Select the desired test, and press **OK**.
Ready displays.
4. Press **OK** to start the test.
Now Checking is displayed. If the test is successful, Check OK is displayed.

Press **Back** (⏪) to return to the FPGA test menu, or press **Back** (⏪) twice to return to the Board test menu.

Relay/Signal Test

These tests are used to check the fax functionality of the MFP.

These tests are used to check the functionality of the MFP's fax capabilities. The tests can also be used to whether the fax or phone lines are faulty.

- **Relay Toggle Test**

This is used to switch the relay circuit between fax and telephone lines at a predetermined rate. The toggling rate can be set between 50 and 9999, and the toggle interval is 10 milliseconds.

To run these tests, perform the following steps:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
 2. Select **Board test**, and press **OK**.
 3. Select **Relay/Signal** test, and press **OK**.
 4. Select **Relay Test**, and press **OK**.
 5. Select **Relay Toggle**, and press **OK**.
Time (10 ms):0200 displays.
 6. Press **OK**.
Now Switching displays. If the fax is working properly, you should also hear the switching sound.
 7. Press **Stop/⏏** to end the test.
 8. Use **▲** and **▼** to scroll to the different speeds. Repeat steps 4 through 5 for the other speeds.
- Press **Back** (**↶**) twice to return to the Relay/Signal test menu.

- **Relay Set Test**

This test connects the relay circuit selectively to the fax or telephone line.

To test the relay set:

1. In Service Mode select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board test**, and press **OK**.
3. Scroll to **Relay/Signal**, and press **OK**.
4. Select **Relay Test**, and press **OK**.
5. Select **Relay Set Test**, and press **OK**.
Set ON (Open) displays.
6. Press **OK**.
Complete displays. If the fax is working properly, you should also hear the switching sound.
7. Press **Stop/⏏** to end the test.
8. Use **▲** and **▼** to scroll to the off setting.
9. Repeat steps 5 and 6 for the off setting.

Press **Back** (**↶**) twice to return to the Relay/Signal test menu.

- **Hook Toggle Test**

This test switched the telephone line between the on-hook and off-hook status at a predetermined cycle.

To execute the hook toggle test:

1. In Service Mode select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board test**, and press **OK**.
3. Scroll to **Relay/Signal**, and press **OK**.
4. Select **Hook Test**, and press **OK**.
5. Select **Hook Toggle Test**, and press **OK**.
Time (10 ms):0200 displays.
6. Press **OK**.
Now Switching displays. If the fax is working properly, you should also hear the switching sound.
7. Press **Stop/⏏** to end the test.
8. Use **▲** and **▼** to scroll to the different time intervals.
9. Repeat steps 4 through 6 for the other time intervals.

Press **Back** (**↶**) twice to return to the Relay/Signal test menu.

- **Hook Set Test**

This test switched the telephone line between the on-hook and off-hook status selectively.

To run the Hook Set test:

1. In Service Mode select **Fax/Scanner Diag**, and press **OK**.
2. Press **OK**.
3. Select **Board test**, and press **OK**.
4. Scroll to **Relay/Signal** test, and press **OK**.
5. Select **Hook Test**, and press **OK**.
6. Select **Hook Set Test**, and press **OK**.
Set ON displays.
7. Press **OK**.
Complete displays. If the fax is working properly, you should also hear the switching sound.
8. Press **Stop/** (⏏) to end the test.
9. Use **▲** and **▼** to scroll to **Off** setting. Repeat steps 5 and 7 for the off setting.

Press **Back** (↩) twice to return to the Relay/Signal test menu.

- **Single Tone Test**

This test checks the tone output for each single done used for tone dialing. The following tone frequencies are checked: 0Hz, 400Hz, 462Hz, 1100Hz, 1300Hz, 1500Hz, 1650Hz, 1850Hz, 2100Hz, 500Hz, 600Hz, 900Hz, and 1000Hz.

To run this test:

1. In Service Mode select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board test**, and press **OK**.
3. Scroll to **Relay/Signal** test, and press **OK**.
4. Select **Signal Tone Send**, and press **OK**.
0Hz displays.
5. Press **OK**.
Now Sending Signal displays. If the fax is working properly, you should also hear the audible signal, with the exception of the 0 Hz tone.
6. Press **Stop/** (⏏) to end the test.
7. Use **▲** and **▼** to scroll to different frequencies. Repeat steps 4 and 6 for the other frequencies.

Press **Back** (↩) to return to the Relay/Signal test menu.

- **DTMF Send**

This test checks all the tones used in touch tone dialing to ensure that they are being generated. There are two DTMF tests.

Note: Before performing the DTMF send tests, unplug the telephone line.

- **DTMF Continuous**

This test generates a continuous tone of a single frequency.

To run this test:

1. In Service Mode select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board test**, and press **OK**.
3. Scroll to **Relay/Signal** test, and press **OK**.
4. Select **DTMF Send**, and press **OK**.
5. Select **DTMF Continuous**, and press **OK**.
DTMF: 0 displays.
6. Use the **▲** **▼** keys to scroll to the tone you want to test, and press **OK**.
Now Sending Signal displays. If the fax card is working properly, you should also hear the tone.
7. Press **Stop/** (⏏) to end the test.
8. Repeat steps 5 through 7 for the tones you want to test.

Press **Back** (↩) twice to return to the Relay/Signal test menu.

– **DTMF Individually**

This test checks all the available telephone keypad tones. The tone sequence is set by the service technician.

To run this test:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board test**, and press **OK**.
3. Scroll to **Relay/Signal** test, and press **OK**.
4. Select **DTMF Send**, and press **OK**.
5. Select **DTMF Individually**, and press **OK**.
000000000000 displays. Each 0 represents an individual tone that can be tested.
6. Use the ▲ and ▼ keys to scroll to the tone you want to test.
7. After setting a tone, press ► to move to the next entry to be set, and press **OK**.
Now Sending Signal displays. If the fax card is working properly, you should also hear the number being dialed.
8. Press **Stop/⊙** to end the test.
9. Repeat steps 6 through 8 for the tones you want to test.

Press **Back** (↶) twice to return to the Relay/Signal test menu.

• **Dial Pulse Send**

This test checks the ability of the fax board to generate dial pulses if the fax is being used in a non-touch-tone environment. There are two tests: **DP10 Individually** tests the 10 pulse per second setting, and **DP20 Individually** tests the 20 pulse per second setting.

To run these tests:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board test**, and press **OK**.
3. Scroll to **Relay/Signal** test, and press **OK**.
4. Select **Dial Pulse Send**, and press **OK**.
5. Select either **DP10 Continuous** or **DP20 Individually**, and press **OK**.
You should hear the dial pulse if everything is working properly.
6. Press **Stop/⊙** to end the test.

Press **Back** (↶) twice to return to the Relay/Signal test menu.

• **Ring Back Tone**

This test checks the ring back tone output. To check the ring back tone, perform the following steps:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board test**, and press **OK**.
3. Scroll to **Relay/Signal** test, and press **OK**.
4. Select **Ring Back Tone**, and press **OK**.
Now Sending Signal displays. If the fax is working properly, you should also hear the audible ring tone.
5. Press **Stop/⊙** to end the test.

Press **Back** (↶) to return to the Relay/Signal test menu.

- **Data Send**

This test is used to test the modem output for each of the transmission rates the modem is capable of. The following frequencies are tested:

To test the data send capabilities:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Board test**, and press **OK**.
3. Scroll to **Relay/Signal** test, and press **OK**.
4. Select **Data Send**, and press **OK**.
5. Use **▲** and **▼** to scroll to the desired modem compression, and press **OK**.

Value (bps)	Modem transmission rate
V.34	36600, 31200, 28800, 24000, 21600, 19200, 16800, 14400, 1200, 9600, 7200, 4800, 2400
V.29	9600, 7200
V.27ter	4800, 2400
V.21	300
V.18	14400, 1200, 9600, 7200

For example, V.34 36600 displays.

6. Use **▲** and **▼** to scroll to the desired data pattern to test, and press **OK**.
The following binary representations of the data sending patterns are available to test (where 1=On and 0=Off): All 0, All 1, 0101010101, 0000100001, 11101110
Now Sending Signal displays. If the fax is working properly, you should also hear the data signal from the fax speaker.
 7. Press **Stop/⏏** to end the test.
 8. Repeat steps 4 through 7 for the other compressions and data patterns.
- Press **Back** (**↩**) to return to the Relay/Signal test menu.

- **Line Voltage**

This test measures the telephone line voltage. To perform the test, do the following steps:

1. In Service Mode, select **Scanner/Fax Diag**, and press **OK**.
2. Select **Relay/Signal Test**, and press **OK**.
3. Select **Line Voltage**, and press **OK**.

For example:
Value (1.0V):000
Now Sampling

4. Press **Stop/⏏** to stop the test.
- Press **Back** (**↩**) to return to the **Relay/Signal Test** menu.

- **Line Current**

This test measures the telephone line amperage. To perform the test, do the following steps:

1. In Service Mode, select **Scanner/Fax Diag**, and press **OK**.
2. Select **Relay/Signal Test**, and press **OK**.
3. Select **Line Current**, and press **OK**.

For example,
Value (1.1mA):000
Now Sampling

4. Press **Stop/⏏** to stop the test.
- Press **Back** (**↩**) to return to the **Relay/Signal Test** menu.

Information

Scan Counter

The values of the flatbed and ADF scan counts are displayed.

To view these values:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Information**, and press **OK**.
3. Select **Scan Counter**, and press **OK**.

Pressing **Back** (↶) returns you to the Information menu.

Version

The software versions are displayed. The software versions displayed are Main, Param, Boot, Dload, IIT (Scanner), and Panel.

To view the versions:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Information**, and press **OK**.
3. When the version menu item is displayed, press **OK**.
Main will be the first software version displayed.
4. Press ▼ to scroll through the list of software.

Press **Back** (↶) to exit the Version menu.

Scanner Maintenance

White Balance

Enables automatic calibration of the correction value for flatbed scanning and ADF scanning.

To set the white balance:

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Scanner Maintenance**, and press **OK**.
3. Select **White Balance**, and press **OK**.
4. Select **Auto Adjust (FB)**, and press **OK**.
Ready displays.
5. Press the **OK** button to begin the test.
Now Adjusting displays.
 - If successful, Adjust Ok displays.
 - If unsuccessful, Adjust NG displays. To adjust the flatbed scanner manually, see **“Scanner adjustment” on page 5-3**.
6. Press **Back** (↶) to go return to the White Balance menu.
7. Select **Auto Adjust (ADF)**, and press **OK**.
Ready displays.
8. Press **OK** to begin the adjustment.
Adjusting displays.
 - If successful, Adjust Ok displays.
 - If unsuccessful, Adjust NG displays. To adjust the ADF manually, see **“Scanner adjustment” on page 5-3**.
9. Press **Back** (↶) until you exit the White Balance menu.

Parameter

Enables manual calibration of the registration adjustment value or correction value, part of the scanner adjustment. Use this menu to enter the correction value when replacing the scanner assembly. See **“Scanner adjustment” on page 5-3.**

Scan Counter

The values of the flatbed and ADF scan counts are displayed. To view these values, press **OK**. Pressing **Back** (↵) will return you to the Information menu.

Scan Counter Clear

Initializes the counter value of flatbed scanning (FB) and ADF scanning (ADF). Use this menu to enter the correction value when replacing the scanner. To clear the counter, perform these steps:

1. In Service Mode, select **Fax/Scanner Diag.**
2. Select **Scanner Maintenance**, and press **OK**.
3. Select **Counter Clear** using the ▲ or ▼ keys to scroll to desired counter.
4. Press **OK** to select the desired counter.
Ready displays.
5. Press **OK** to confirm.
Processing displays.
6. When Complete displays, press **Back** (↵) to return to Counter Clear.

Parameter

This menu item reads and writes the scanner/fax parameters that are stored on the engine board.

To set the parameters:

1. In Service Mode, select **Fax/Scanner Diag.**
2. Select **Parameter**, and press **OK**.

Parameter Chain-Link:000-000 Value(Hex):
--

3. Using the ▲ and ▼., input the Chain Link number. See the table below for the values.
4. Press **OK**.
5. Press **Stop/⊘**.
6. Repeat the steps to input all the values.
7. Press **Stop/⊘** three times after setting all the values.
8. Select **Complete**, and press **OK** to save the values.
9. Press **OK** to exit the Parameter menu item.

Parameter values

Chain link	Parameter name	Contents	Setting range	Default value
821-201	CONTINUE ILLEGAL	Operation after error such as memory over during transmission storage.	0: All clear 1: Storage document issued	1
821-202	THRESH MEMRX	Remaining memory threshold (%) for stopping/disabling fax reception (color disabled).	0 to 99%	0

Parameter values (continued)

Chain link	Parameter name	Contents	Setting range	Default value
821-203	THRESH RXPRINT	Remaining memory threshold (%) for stopping/disabling transmission storage.	0 to 99%	20
821-204	THRESH MEMTX	Remaining memory threshold (%) for stopping/disabling transmission storage.	0 to 100%	0
821-206	THRESH COLOR RAX RX	Remaining memory threshold (%) for disabling fax reception (color enabled).	0: 0.5MB 1: 1.0MB 2: 1.5MB	0
821-207	THRESH GC START	Remaining memory threshold (%) for starting garbage collection.	0 to 99%	50
821-401	PAGE MARGIN	Page margin, (with reduction off).	0 to 127mm	20
821-406	COLOR RX PAGE LIMIT	Maximum color data size per page	0 to 64 (64KB/1 step)	16
821-412	PAGE MARGIN REDUCTION	Page margin (with reduction on)	0 to 127mm	30
825-013	DIS DP 20PPS	20 PPS pulse dialing	0: Enable 1: Disable	1
825-015	CHG DETECT TIME	CNG detection duration	0 to 255 (0.1sex/1 step)	165
825-016	AUTO ANSWER TIME	External telephone call-up duration. (Duration for which to emit ring sound from the speaker in case CNG was not detected upon reception.)	0 to 255 seconds	21
825-037	NUM CHECK TIMER	Interval duration for the same destination.	1-255 seconds	60
825-109	ONHOOK LCS RATE	Off-hook detection threshold for SiDAA LCS.	1 to 100%	75
825-074	TIME TO DETECT DIALTONE	Dial tone detection time-out duration.	0 to 255 seconds	20
825-079	ONHOOK DETECT TIME	On-hook detection duration.	0 to 255 (20ms/1 step)	65
825-110	DIS DIALTONE PATTERN	Dial tone pattern detection.	0: Disable 1: Enable	0
825-111	DIALTONE ONOFFPTN MIN	Minimum dial tone On/Off duration.	8 to 255 (10ms/1 step)	10
825-112	DIALTONE ONOFFPTN MAX	Maximum dial tone On/Off duration.	8 to 255 (10ms/1 step)	100
825-605	CNG STOP SELECT	Select CNG stop criterion	0: CED and V.21 1: CED 2: V.21	0
825-622	G3M TX MODEM SPEED	Outbound transfer mode (rate).	0: Fallback partner 1: Fallback V27ter 2: V27ter (2400/4800bps) 3: V29 (7200/9600bps) 4: V33 (12000/14400 bps) 5: V17 (7200/9600/12000/14400bps)	0

Parameter values (continued)

Chain link	Parameter name	Contents	Setting range	Default value
825-623	G3M RX MODEM SPEED	Inbound transfer mode (rate).	0: V27ter+V33+V17 1: V27ter (2400bps) 2: V27ter (2400/4800 bps) 3: V29 (7200/9600 bps) 4: V27ter+V29 5: V27ter+V33	0
825-630	G3M TX CABLE_EQU	Outbound cable equalizer.	0: 0db (0km) 1: 4db (1.9km) 2: 8db (3.6km) 3: 12db (7.2km)	2
825-631	G3M RX CABLE_EQU	Inbound cable equalizer.	0: 0db (0km) 1: 4db (1.9km) 2: 8db (3.6km) 3: 12db (7.2km)	2
825-635	CAPAB ECM	ECM capability.	0: Disable 1: Enable	1
825-646	G3M V34 MAX BIT RATE	Maximum bit rate.	1: 2400bps 2: 4800bps 3: 7200bps 4: 9600bps 5: 12000bps 6: 14400bps 7: 16800bps 8: 13200bps 9: 21600bps 10: 2400bps 11: 26400bps 12: 28800bps 13: 31200bps 14: 33600bps	14
825-658	CAPAB V34	V34 capability	0: Disable 1: Enable	1
825-661	G3M TX CODING	Outbound signal encoding method.	0: MH 1: MR 2: MMR 3: JBIG	3
825-662	G3M RX CODING	Inbound signal encoding method.	0: MH 1: MR 2: MMR 3: JBIG	3
825-674	G3M BAUDRATE FIXATION	Fix baud rate to:	0: Disable 1: 2400bps 2: 4800bps 3: 7200bps 4: 9600bps 5: 12000bps 6: 14400bps	0

Back Up Data

When performing these procedures, make sure the correct country is selected.

All Clear

Clears all of the backup data.

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Back Up Data**, and press **OK**.
3. Select **All Clear**, and press **OK**.
4. Use **▲** and **▼** to select the country data you want cleared, and press **OK**.
Processing displays. Complete displays when the data is cleared.
5. Press **Back** (**↵**) twice to return to the **Back Up Data** menu.

User Clear

Clears the stored document data and the address information. Initializes the system data.

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Back Up Data**, and press **OK**.
3. Select **User Clear** and press **OK**.
4. Use **▲** and **▼** to select the country data you want cleared, and press **OK**.
Processing displays. Complete displays when the data is cleared.

Press **Back** (**↵**) twice to return to the **Back Up Data** menu.

System Clear

Clears the stored document data, the communication management data, and the history. Initializes the system data.

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Back Up Data**, and press **OK**.
3. Select **System Clear**, and press **OK**.
4. Use **▲** and **▼** to select the country data you want cleared, and press **OK**.
5. Processing displays. Complete displays when the data is cleared.

Press **Back** (**↵**) twice to return to the **Back Up Data** menu.

User&System Clear

Clears the stored document data, the communication management data, and the history. Initializes the system data.

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Back Up Data**, and press **OK**.
3. Select **User&System Clear**, and press **OK**.
4. Use **▲** and **▼** to select the country data you want cleared, and press **OK**.
5. Processing displays. Complete displays when the data is cleared.

System Data Init

Initializes the system data.

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Back Up Data**, and press **OK**.
3. Select **System Data Init**, and press **OK**.
4. Use ▲ and ▼ to select the country data you want cleared, and press **OK**.
Processing displays. Complete displays when the data is cleared.

Press **Back** (↩) twice to return to the **Back Up Data** menu.

Document Clear

Clears the stored document data.

1. In Service Mode, select **Fax/Scanner Diag**, and press **OK**.
2. Select **Back Up Data**, and press **OK**.
3. Select **Document Clear**, and press **OK**.
Ready displays.
4. Press **OK**.
Processing displays. Complete displays when the document is cleared.

Press **Back** (↩) twice to return to the **Back Up Data** menu.

Complete

Exits the Service Mode, returns to normal operation, and saves the changed settings. The MFP will restart (POR), and an information sheet will print out.

To exit the Scanner/Fax diag menu, press **OK** twice.

Printer Diag

Check the menu map for organization of the menu. See **“Menu map of Service Mode” on page 3-2.**

ESS Diag

All Test

Executes all of the RIP Board diagnostics tests except for the MAC+PHY test and PANEL test.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **ESS Diag**, and press **OK**.
3. Select **All Test**, and press **OK**.
Start displays.
4. Press **OK** to begin the tests.
Processing displays.
 - If successful, Check OK displays.
 - If a test fails, ERROR displays along with the name of the test that failed.

Press **OK** to exit the results screen, and press **Back** () twice to return to the ESS Diag menu.

CodeROM Test

Calculates the ROM checksum and compares it with the valid checksum stored in the ROM. This test is executed when the 016-317 error occurred.

To run this test:

1. In Service Mode, select **Printer Diag**.
2. Select **ESS Diag**, and press **OK**.
3. Select **CodeROM Test**, and press **OK**.
Start displays.
4. Press **OK** to begin the test.
Processing displays.
 - If the checksum from the test is identical to the value stored in ROM, OK is displayed.
 - If there is a mismatch, the test failed and CodeROM#*ERROR is displayed. In addition, S=xxxx V=yyyy is displayed, where xxxx is the calculated value and yyyy is the value stored in ROM.
5. Press **OK** twice to return to the ESS Diag menu.

FontROM

This test is used to verify the FontROM checksum. This test should be used if a 016-310 or 016-311 error occurs.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **ESS Diag**, and press **OK**.
3. Select **FontROM**, and press **OK**.
Start displays.
4. Press **OK** to start the test.
Processing displays.
 - If the test is successful, CHECK OK is displayed.
 - If the test fails, FontROM ERROR is displayed. In addition, S=xxxx V=yyyy is displayed, where. xxxx is the calculated value and yyyy is the value stored in ROM.

Press **OK** twice to return to the ESS Diag menu.

EEPROM Test

This test performs a write/read/verify on the diagnostics area of the EEPROM. Use this test when a 016-327, 016-323, or 016-324 error occurs.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **ESS Diag**, and press **OK**.
3. Select **EEPROM Test**, and press **OK**.
Start displays.
4. Press **OK** to begin the test.
Processing displays.
 - If the test passes, CHECK OK is displayed.
 - If the test fails, EEPROM ID*ERROR (ID*:1,2) is displayed.

Press **OK** twice to return to the ESS Diag menu.

DRAM Test

This tests the OPEN/SHORT with the address line of the DRAM. A read/write/verify is performed on all the DRAM. This test should be executed when a 016-315, 016-316, 016-318, 016-332, or 016-335 errors occur. This test is also performed on optional DRAM.

To run this tests:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **ESS Diag**, and press **OK**.
3. In the **DRAM Test**, and press **OK**.
Start displays.
4. Press **OK**.
Processing displays.
 - If the test passes, CHECK OK is displayed.
 - If the test fails, DRAM slot*ERROR (*AFO,1) is displayed.

Press **OK** twice to return to the ESS Diag menu.

MAC+PHY Test

This procedure tests the MAC (Media Access Control) and PHY (Physical layers) of the MFP network connection. This test should be used when a 016-334, 016-340, 016-344, 016-345, 016-346, or 016-347 error occurs.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **ESS Diag**, and press **OK**.
3. Select **MAC+PHY Test**, and press **OK**.
Start displays.
4. Press **OK** to begin the test.
Processing displays.
If the test passes, CHECK OK is displayed.
If the test fails, MAC+PHY ERROR is displayed.

Press **OK** twice to return to the ESS Diag menu.

ASIC Test

When this test is executed, a test on the ASIC's register is performed. This test should be performed when a 016-313 error occurs.

To run this test, perform these steps:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **ESS Diag**, and press **OK**.
3. Select **ASIC Test**, and press **OK**.
Start displays.
4. Press **OK** to begin the test.
Processing displays.
 - If the test passes, CHECK OK appears.
 - If the test fails, ERROR is displayed.

Press **OK** twice to return to the ESS Diag menu.

Engine Test

This test is used to check the communication with the MFP print engine. It is used when error 016-370 occurs.

To run this test, perform these steps:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **ESS Diag**, and press **OK**.
3. Select **Engine Test**, and press **OK**.
Start displays.
4. Press **OK** to begin the test.
Processing displays.
 - If the test passes, CHECK OK is displayed.
 - If the test fails, ERROR is displayed.

Press **OK** to exit the results screen, and press **Back** (↩) twice to return to the ESS Diag menu.

Engine Diag

This menu contains all the sensor and motor tests used to help diagnose most electro-mechanical issues in the MFP print engine.

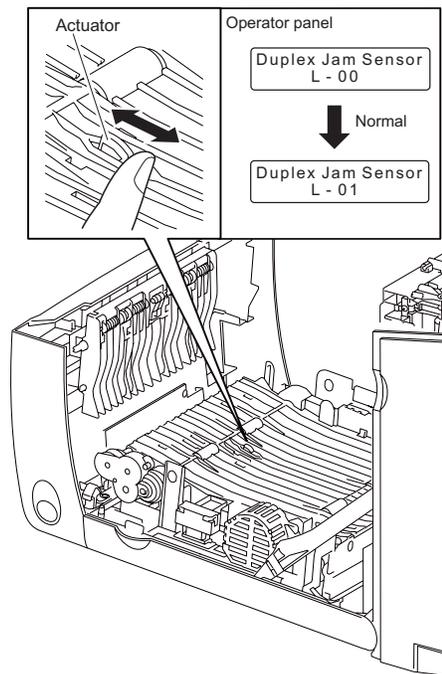
Sensor Test

- **Duplex Jam Sensor**

This test checks the function of the duplex jam sensor, which is located on the top side of the duplex unit.

To perform this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Duplex Jam sensor**.
OFF appears on the display.
5. Open the front cover.
6. Remove the transfer belt assembly.
7. Press **OK** to begin the test.
8. Using your finger, toggle the sensor actuator.
If the sensor is working properly, the initial L - 0 increments by one with each activation.



Note: Press **Back** (↶) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

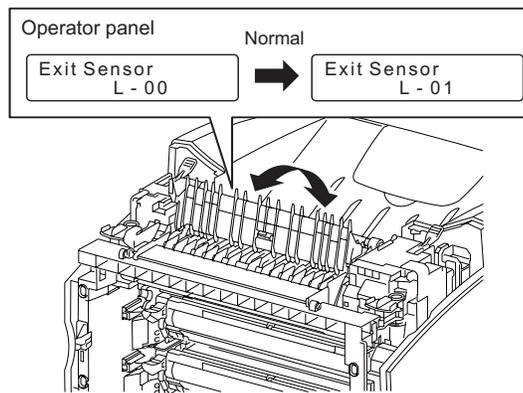
- **Exit Sensor Test**

	CAUTION
The fuser can be extremely hot. Use care when handling to avoid burns.	

This test checks the functionality of the exit sensor which is located by the fuser.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Exit Sensor Test**.
OFF appears on the display.
5. Open the front cover.
6. Press **OK** to begin the test.
7. Toggle the sensor by raising and lowering the duplex gate which is located by the fuser.
If the sensor is working properly, L - 0 appears on the initial screen and increments by one with each activation.



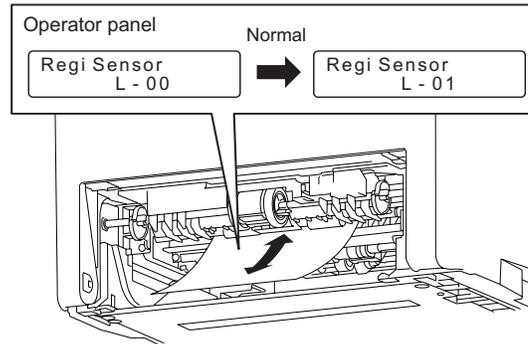
Note: Press **Back** (↩) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

- **Regi Sensor Test**

This test is performed to check the function of the registration sensor, which is located by the paper feed unit.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Regi Sensor Test**.
OFF appears on the display.
5. Remove the 250-sheet paper tray.
6. Press **OK** to begin the test.
7. Toggle the sensor by inserting a sheet of paper into the paper path by the registration assembly.
If the sensor is working properly, the initial screen displays L - 0 and increments one with each activation.



Note: Press **Back** (↩) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

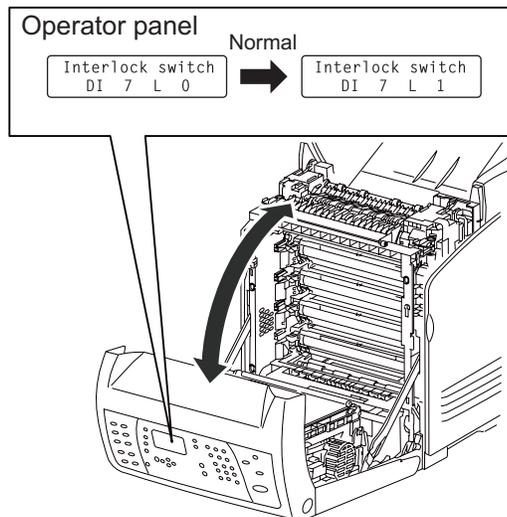
- **Interlock Switch**

This test checks the function of the interlock switch, which is located on the top of the front cover.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Interlock Switch**.
OFF appears on the display.
5. Open the front cover.
6. Press **OK** to begin the test.
7. Toggle the interlock switch by opening and closing the front cover.

If the switch is functional, the initial L - 0 increments by one every time the switch is activated.



Note: Press **Back** (↵) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

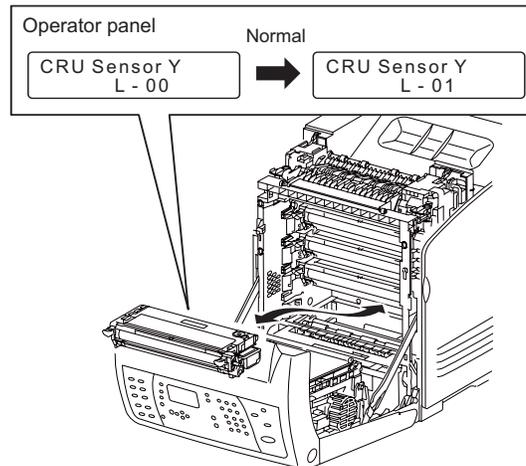
- **CRU Sensor Y**

This test checks the function of the yellow toner cartridge sensor. It is activated whenever the yellow toner cartridge is removed or replaced.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **CRU Sensor Y**.
OFF appears on the display.
5. Open the front cover.
6. Press OK to begin the test.
7. Toggle the yellow CRU sensor by opening the front cover and removing and replacing the yellow toner cartridge.

If the sensor is functional, the initial L - 0 increments by one whenever the sensor is activated.



Note: Press **Back** (↩) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

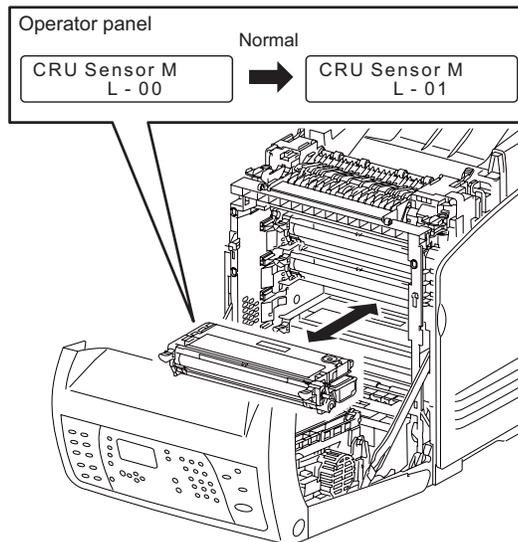
- **CRU SensorM**

This test checks the functionality of the magenta toner cartridge sensor.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **CRU sensorM** test.
OFF appears on the display.
5. Open the front cover.
6. Press **OK** to begin the test.
7. Toggle the magenta CRU sensor by opening the front cover and removing and replacing the magenta toner cartridge.

If the sensor is functioning, the initial L - 0 increments by one whenever it is activated.



Note: Press **Back** (↩) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

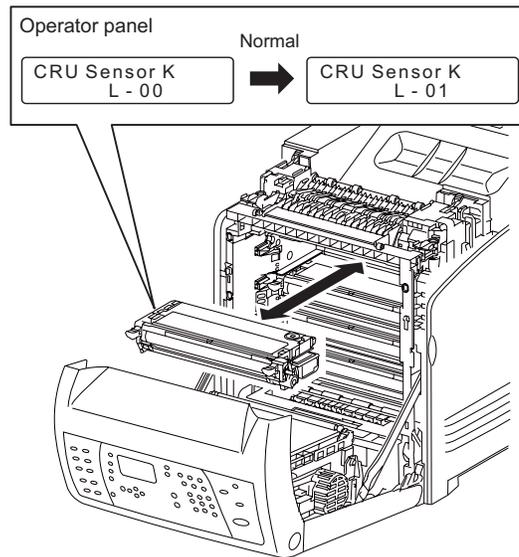
- **CRU SensorK**

This test checks the functionality of the black toner cartridge sensor.

To run this test:

1. In Service Mode, select **Printer Diag.**
2. Select **Engine Diag.**, and press **OK.**
3. Select **Sensor Test**, and press **OK.**
4. Select **CRU SensorK.**
OFF appears on the display.
5. Open the front cover.
6. Press **OK** to begin the test.
7. Toggle the black CRU sensor by opening the front cover and removing and replacing the black toner cartridge.

If the sensor is functional, the initial L - 0 increments by one whenever it is activated.



Note: Press **Back** (↩) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

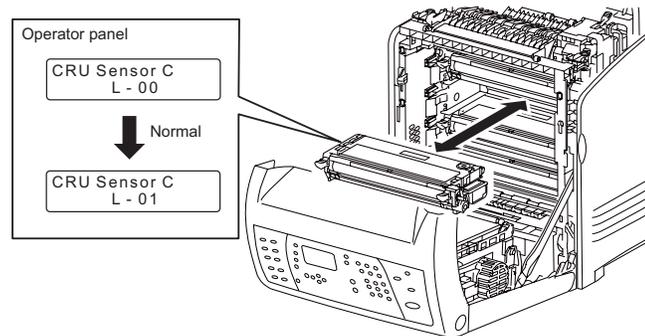
- **CRU SensorC**

This test checks the functionality of the cyan toner cartridge sensor.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **CRU sensorY**.
OFF appears on the display.
5. Open the front cover.
6. Press **OK** to begin the test.
7. Toggle the cyan CRU sensor by opening the front cover and removing and replacing the cyan toner cartridge.

If the sensor is functioning, the initial L - 0 increments by one whenever it is activated.



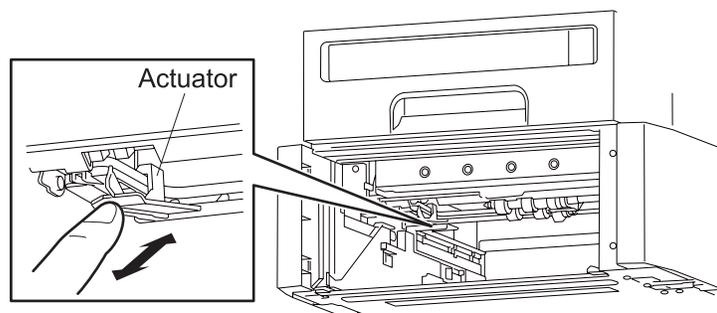
Note: Press **Back** (↵) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

- **Tray 3 Low Paper**

This test checks the functionality of the 550-sheet feeder's paper out sensor.

To run this test, perform the following steps:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Tray 3 Low Paper**.
OFF appears on the display.
5. Remove the feeder paper tray.
6. Press **OK** to begin the test.
7. Toggle the Tray 3 low paper sensor by activating the sensor with your finger.
The initial L - 0 increments by one if the sensor is functional.



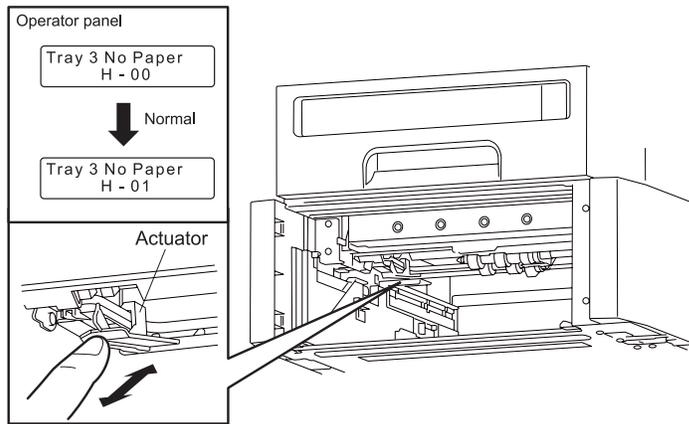
Note: Press **Back** (↵) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

- **Tray 3 No Paper**

This test checks the functionality if the 550-sheet feeder's paper out sensor.

To run this test, perform the following steps:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Tray 3 No Paper**.
OFF appears on the display.
5. Remove the feeder paper tray.
6. Press **OK** to begin the test.
7. Toggle the Tray 3 low paper sensor by activating the sensor with your finger.
The initial L - 0 increments by one if the sensor is functional.



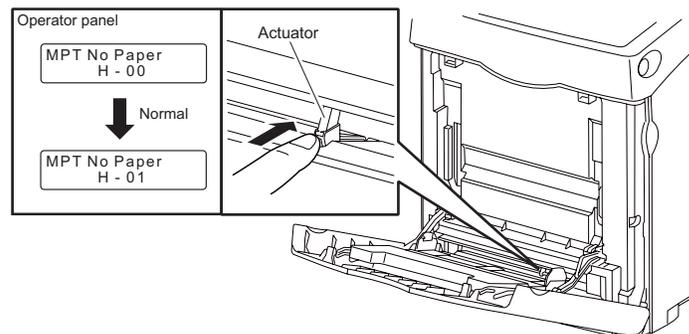
Note: Press **Back** (↶) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

- **MPT No Paper**

This test checks the functionality of the MP feeder (tray 1) paper present sensor.

To run this test, perform the following steps:

1. Remove any paper from the Multipurpose feeder (tray 1).
2. In Service Mode, select **Printer Diag**, and press **OK**.
3. Select **Engine Diag**, and press **OK**.
4. Select **Sensor Test**, and press **OK**.
5. Select **MPT No Paper**, and press **OK**.
H-0 appears on the display.
6. Open the MP feeder cover.
7. Toggle the MP feeder no paper sensor with your finger.
The L-0 increments if the sensor is functional.



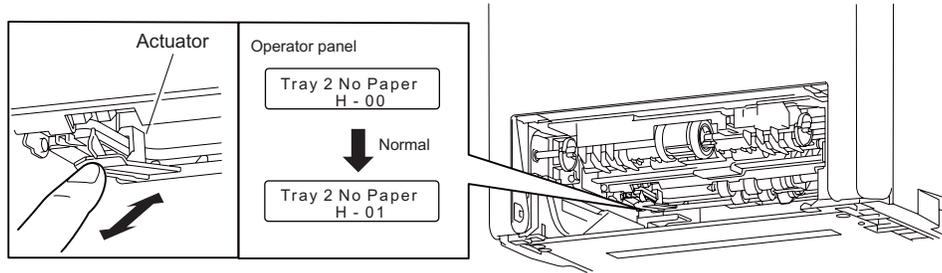
Note: Press **Back** (↶) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

- **Tray 2 No Paper**

This test checks the functionality of the tray 2 paper out sensor.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Tray 2 No Paper**, and press **OK**.
L-0 appears on the display.
5. Remove the feeder paper tray.
6. Toggle the Tray 2 paper out sensor by activating the sensor with your finger.
The L-0 increments if the sensor is functional.



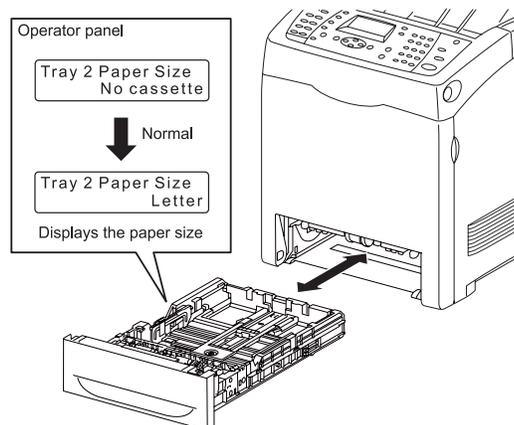
Note: Press **Back** (↩) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

- **Tray 2 Paper Size**

This test is used to test the functionality of the 250-sheet paper tray (tray 2) paper size switch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Tray 2 Paper Size**, and press **OK**.
Letter - 8.5x11 (or the paper size that is currently in tray 2) appears on the display if the tray is sensed.
5. Toggle the tray 2 paper size switch by removing and reinserting the paper tray.
When the tray is removed, the display should change to NoCassette.



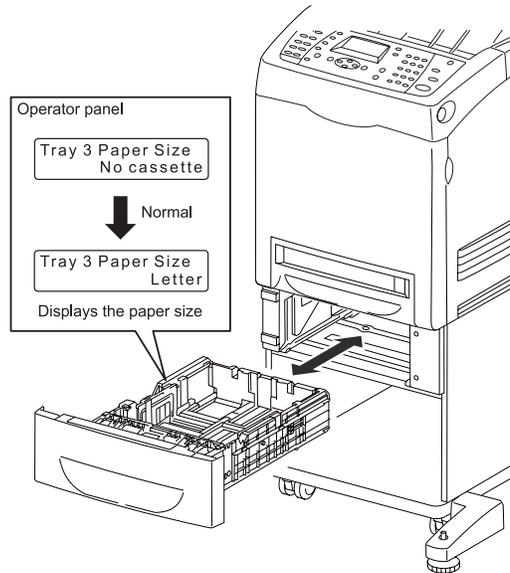
Note: Press **Back** (↩) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

- **Tray 3 Paper Size**

This test is used to test the functionality of the 550-sheet feeder (tray 3) paper size switch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Sensor Test**, and press **OK**.
4. Select **Tray 3 Paper Size**, and press **OK**.
Legal - 8.5x14 (or size paper currently in tray 3) appears on the display.
5. Toggle the Tray 3 paper size switch by removing and reinserting the paper tray.
When the tray is removed, the display should change to NoCassette.



Note: Press **Back** (↩) to test a different sensor. Turn off and restart the printer after you complete all your sensor tests.

Motor Test

- **Main Motor Test**

This test verifies the functionality of the main motor at four speeds. These are Full1, Full2, Half, and Low.

Note: If you are performing tests with the front cover open for five minutes or longer, remove the toner cartridges, and cover the drum to avoid exposure to light.

To run these tests, perform these steps:

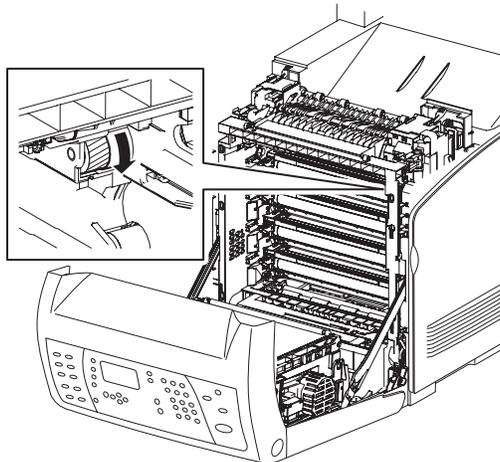
1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Test**, and press **OK**.
4. Select **Main Motor**.
5. Open the front cover, and remove the black toner cartridge.
6. Bypass the interlock on the front cover.
7. Select the speed with ▲ or ▼ to perform the test (FULL1, FULL2, HALF, and LOW).
8. Press **OK** to begin the test.

For example,

Main Motor
(Full2).

EXEC

While the test is executing, you should hear the motor run.



To stop the test, press **Back** (↩) and **READY** appears. You may select another speed, or use ▲ or ▼ to select another motor.

Note: Turn off and restart the printer after you complete all your motor tests.

- **Sub Motor Test**

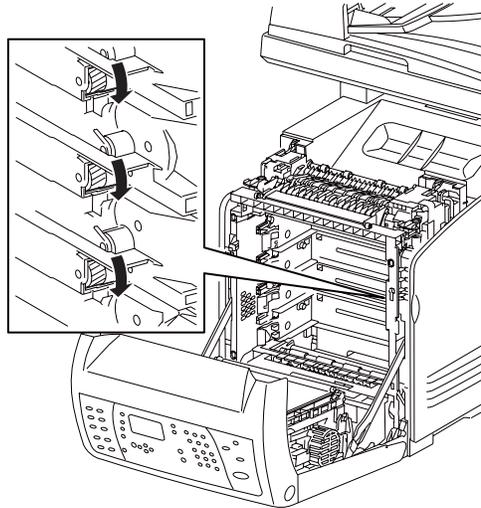
This test verifies the functionality of the sub motor at four speeds. These are Full1, Full2, Half, and Low.

To run these tests:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Sub Motor Test**, and press **OK**.
5. Open the front cover, and remove all the toner cartridges.
6. Bypass the interlock on the front cover
7. Select a speed to test, and press **OK** to start the test.

For example, select Sub Motor (Full2).

You will hear the motor run if it is functional.



8. Press **Stop/** (stop button icon) to end the test at this speed.
9. Press **▲** to scroll to the different speeds.

Restart (POR) the MFP after completing the tests.

- **PH Motor**

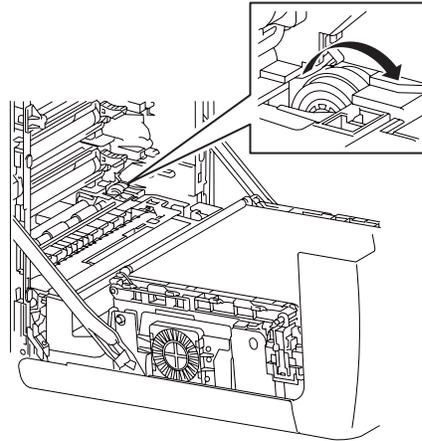
This test verifies the functionality of the PH motor, located on the feed drive assembly, at four speeds. These are Full1, Full2, Half, and Low.

To run these tests:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **PH Motor**.
5. Open the front cover.
6. Bypass the front cover interlock.
7. Press **OK**.
8. Select a speed to test, and press **OK** to start the test.

For example, select **PH Motor(Full2)**.

You will hear the motor run if it is functional.



Press **Stop/⏏** to end the test.

Press **▲** to scroll to the different speeds.

Restart (POR) the MFP after completing the tests.

- **Tray 2 Motor Test**

This test verifies the functionality of the 250-sheet paper tray assembly (Tray 2) motor at four speeds. These are Full2, Full1, Half, and Low.

To run these tests:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Tray 2 Motor Test**, and press **OK**.
5. Select the speed by scrolling to your desired speed, and press **OK** to start the test.
You will hear the motor run if it is functional.
6. Press **Stop/⏏** to end the test at this speed.
7. Press **▲** to scroll to the different speeds.

Restart (POR) the MFP after completing the tests.

- **Deve Motor Test**

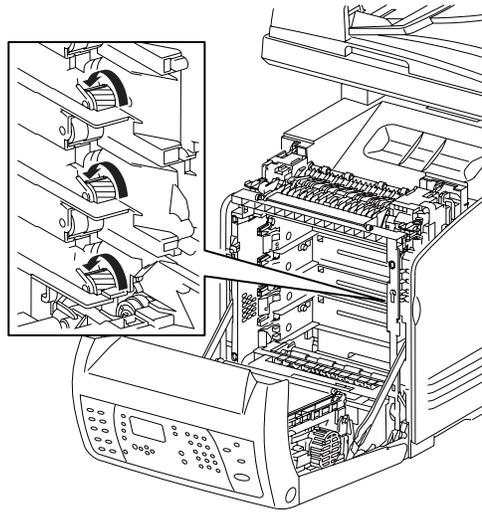
This test verifies the functionality of the developer motor at three speeds. These are Full2 Full1, and Half.

To run these tests:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Deve Motor**.
5. Open the front cover.
6. Remove the yellow, cyan, and magenta toner cartridges.
7. Bypass the front cover interlock.
8. Press **OK**.
9. Select a speed to test, and press **OK** to start the test.

For example, select Deve Motor(Full2).

You will hear the motor run if it is functional.



10. Press **Stop/** (stop button icon) to end the test at this speed.
11. Press **▲** to scroll to the different speeds.

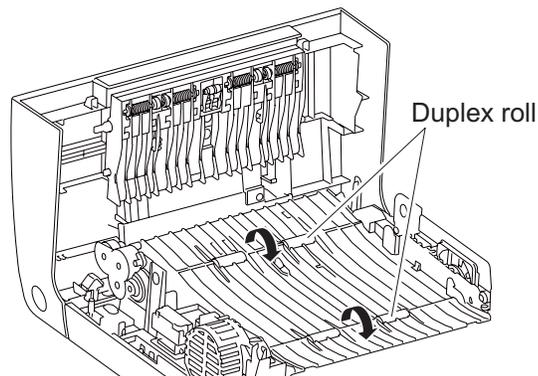
Restart (POR) the MFP after completing the tests.

- **Duplex Motor Test**

This test verifies the functionality of the duplex motor at five speeds. These are High, Full2, Full1, Half, and Low.

To run these tests:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Duplex Motor**, and press **OK**.
5. Open the front cover.
6. Remove the transfer belt assembly.
7. Bypass the front cover interlock.
8. Select a speed to test, and press **OK** to start the test.
For example, select Duplex Motor (HIGH).
You will hear the motor turn the duplex rolls if it is functional.



9. Press **Stop/** (stop button icon) to end the test at this speed.
10. Press **▲** to scroll to the different speeds.
Restart (POR) the MFP after completing the tests.

- **Tray 3 Feed Motor Test**

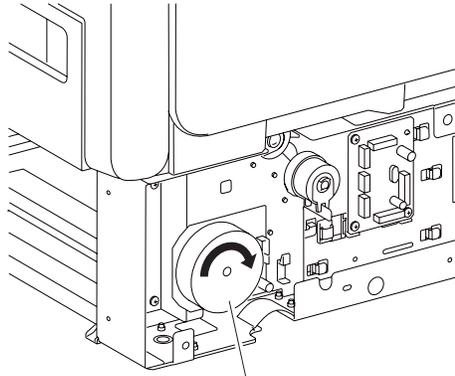
This test verifies the functionality of the Tray 3 Feed (550-sheet feeder) motor at four speeds. These are Full2, Full1, Half, and Low.

To run these tests:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Tray 3 Feed Motor Test**, and press **OK**.
5. Select a speed to test, and press **OK** to start the test.

For example, select Tray 3 Feed Motor(FULL2).

You will hear the motor run if it is functional.



Tray 2 feed motor

6. Press **Stop/⏏** to end the test at this speed.
7. Press **▲** to scroll to the other speeds.

Restart (POR) the MFP after completing the tests.

- **Fan Test**

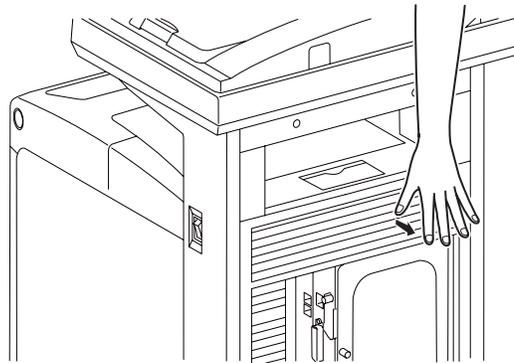
This test verifies the functionality of the Fan motor at two speeds. These speeds are High and Low.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Fan Test**, and press **OK**.
5. Select a speed to test, and press **OK** to start the test.

For example, select Fan(HIGH).

You will hear the motor run if it is functional.



6. Press **Stop/⏏** to end the test at this speed.
7. Press **▲** to scroll to the other speeds.

POR the machine after completing the tests.

- **Yellow Toner Motor**

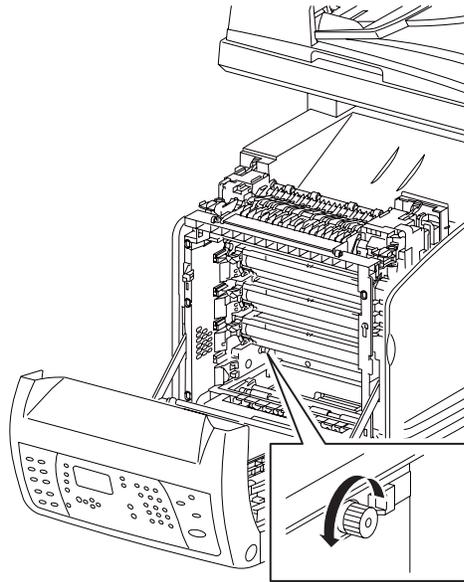
This test verifies the functionality of the yellow toner motor.

Note: If you are performing tests with the front cover open for five minutes or longer, remove the toner cartridges, and cover the drum to avoid exposure to light.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Yellow Toner Motor**.
5. Open the front cover, and remove the yellow toner cartridge.
6. Bypass the front cover interlock.
7. Press **OK** to begin the test.

You will hear the motor run if it is functional.



Press **Stop/**  to end the test.

- **Magenta Toner Motor**

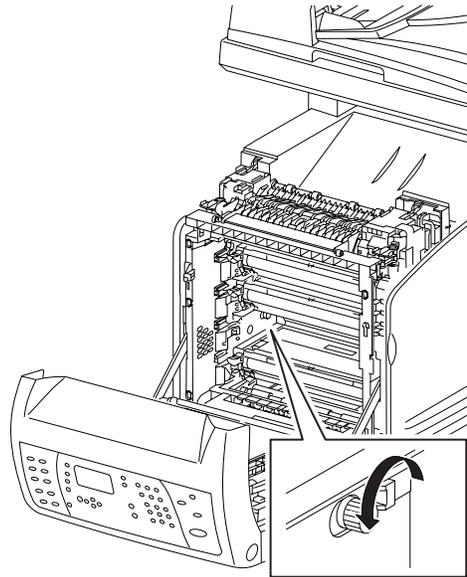
This test verifies the functionality of the magenta toner motor.

Note: If you are performing tests with the front cover open for five minutes or longer, remove the toner cartridges, and cover the drum to avoid exposure to light.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Magenta Toner Motor**.
5. Open the front cover, and remove the magenta toner cartridge.
6. Bypass the front cover interlock.
7. Press **OK** to start the test.

You will hear the motor run if it is functional.



Press **Stop/**  to end the test.

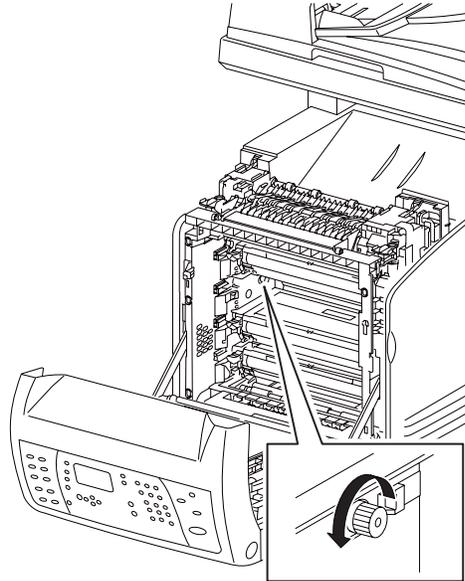
- **Cyan Toner Motor**

This test verifies the functionality of the cyan toner motor.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Cyan Toner Motor**.
5. Open the front cover, and remove the cyan toner cartridge.
6. Bypass the front cover interlock.
7. Press **OK** to start the test.

You will hear the motor run if it is functional.



Press **Stop/**  to end the test.

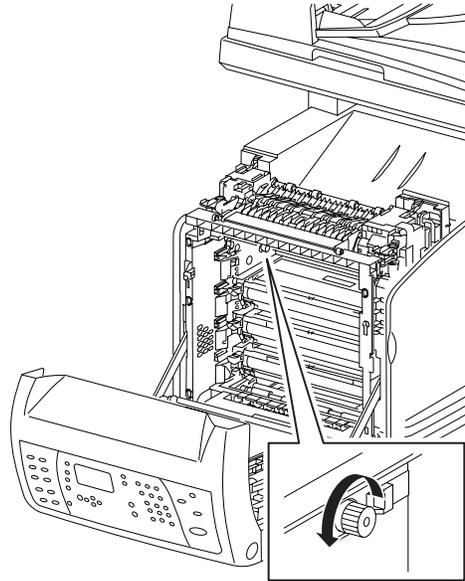
- **Black Toner Motor**

This test verifies the functionality of the black toner motor.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Black Toner Motor**.
5. Open the front cover, and remove the black toner cartridge.
6. Bypass the front cover interlock.
7. Press **OK** to start the test.

You will hear the motor run if it is functional.



Press **Stop/**  to end the test.

- **Regi Clutch Test**

This test verifies the functionality of the registration clutch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Regi Clutch**.
5. Open the front cover.
6. Bypass the front cover interlock.
7. Press **OK** to start the test.

Confirm that the registration roll is moving.



Press **Stop/**  to end the test.

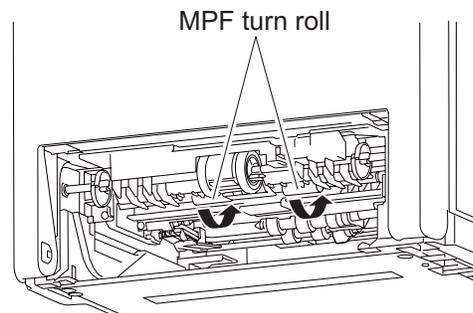
- **Tray 1 (MPT) Turn Clutch**

This test verifies the functioning of the tray1 (MP feeder) paper feed clutch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Tray 1 (MPT) Turn Clutch**.
5. Remove the paper tray from the MFP.
6. Press **OK** to start the test.

You will see the MP feeder paper feed roll rotate if the clutch is functional.



Press **Stop/**  to end the test.

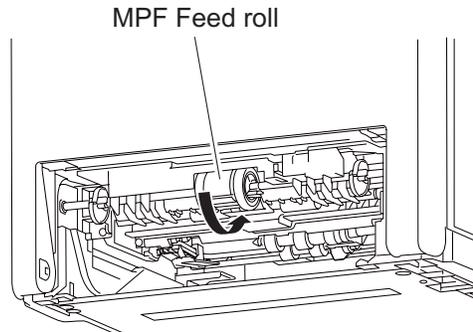
- **Tray 1 (MPT) Feed Solenoid**

This test verifies the functionality of the tray 1 (MP feeder) paper feed solenoid.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Tray 1 (MPT) Turn Solenoid**.
5. Remove the paper tray from the MFP.
6. Press **OK** to start the test.

You will see the MP feeder feed roll rotate if the clutch is functional. You should also hear the solenoid activate.



Press **Stop/**  to end the test.

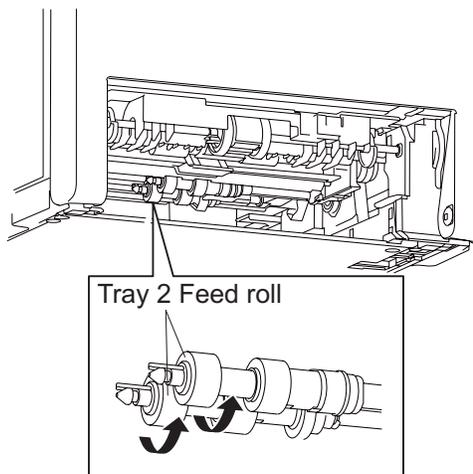
- **Tray 2 Turn Clutch**

This test verifies the functionality of the integrated 250-sheet paper tray assembly (tray 2) paper feed clutch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Tray 2 Turn Clutch**.
5. Remove the paper tray from the MFP.
6. Press **OK** to start the test.

You will see the tray 2 paper feed rolls rotate if the clutch is functional.



Press **Stop/**  to end the test.

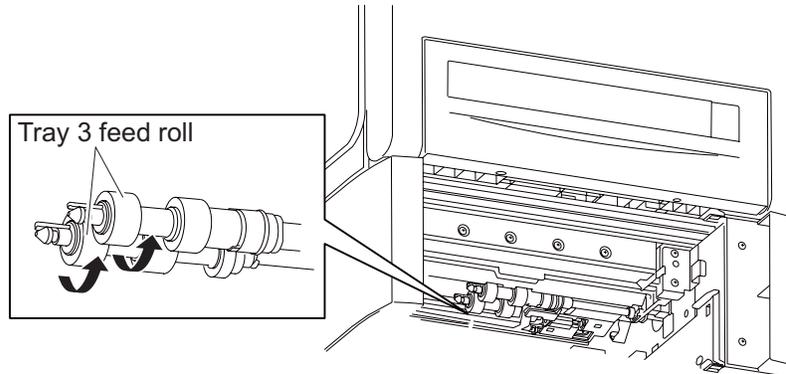
- **Tray 3 Feed Clutch**

This test verifies the functionality of the 550-sheet feeder (tray 3) paper feed clutch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Tray 3 Feed Clutch**.
5. Remove Tray 3 from the feeder.
6. Press **OK** to start the test.

You will see the tray 3 paper feed rolls rotate if the clutch is functional.



Press **Stop/**  to end the test.

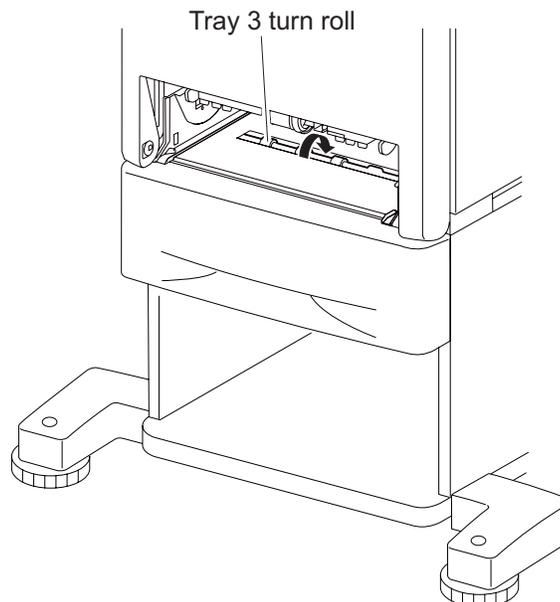
- **Tray 3 Turn Clutch**

This test verifies the functionality of the 550-sheet feeder (tray 3) turn clutch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Tray 3 Turn Clutch**.
5. Remove the paper tray from tray 2 (250-sheet tray assembly).
6. Press **OK** to start the test.

You will see the tray 3 turn roll rotate if the clutch is functional.



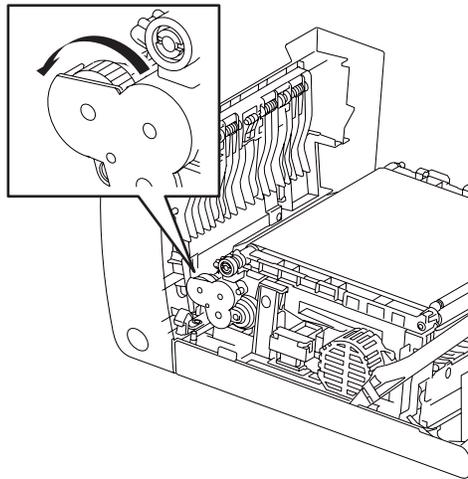
Press **Stop/**  to end to stop the test.

- **Duplex Clutch**

This test verifies the functionality of the duplex clutch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
 2. Select **Engine Diag**, and press **OK**.
 3. Select **Motor Tests**, and press **OK**.
 4. Select **Duplex Clutch**.
 5. Open the front cover.
 6. Bypass the front cover interlock.
 7. Remove the transfer roll.
 8. Press **OK** to start the test.
- You will see the duplex gears rotate if the clutch is functional.



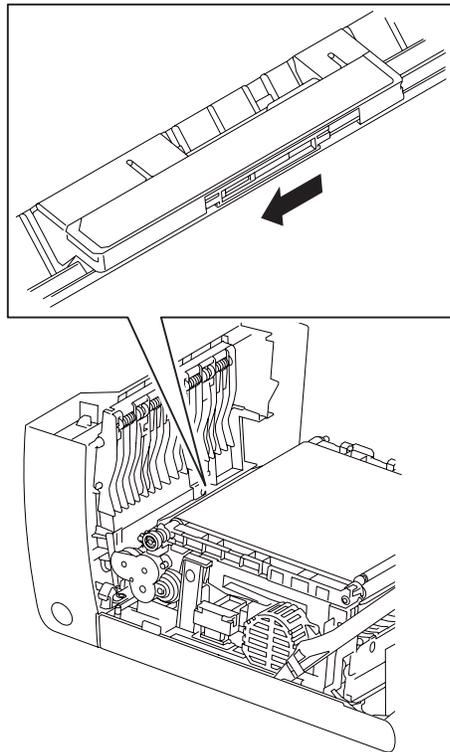
Press **Stop/**  to end the test.

- **ADC (CTD) Sensor Solenoid**

This test verifies the functionality of the density sensor solenoid, which is located on the transfer belt assembly.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
 2. Select **Engine Diag**, and press **OK**.
 3. Select **Motor Tests**, and press **OK**.
 4. Select **ADC (CTD) Sensor Solenoid**.
 5. Open the front cover.
 6. Bypass the front cover interlock.
 7. Press **OK** to start the test.
- You will see the shutter move if the density sensor solenoid is functional.



Press **Back** (↶) to stop the test.

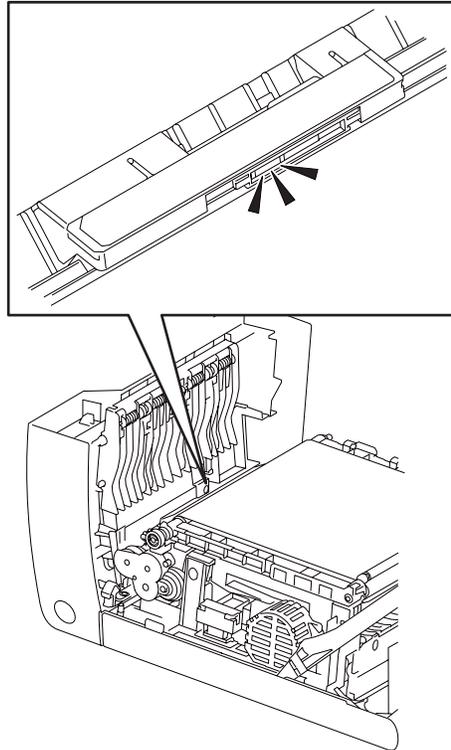
- **ADC (CTD) Sensor LED**

This test verifies the functionality of the density sensor LED, which is located on the transfer belt assembly.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **ADC (CTD) Sensor LED**.
5. Open the front cover.
6. Bypass the front cover interlock.
7. Press **OK** to start the test.

You will see the LED flash if the density sensor LED is functional.



Press **Back** (↩) to stop the test.

- **OHP Sensor LED**

Transparency LED and transparency sensor.

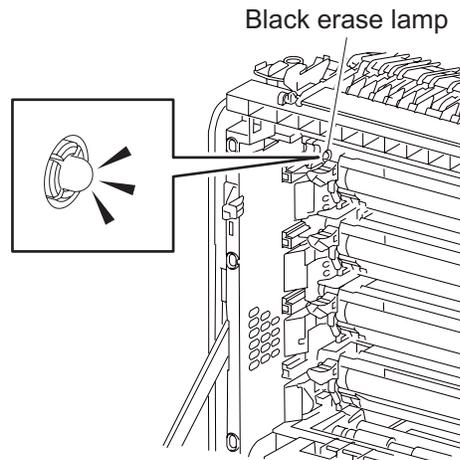
- **Drum Erase Lamp K**

This test verifies the functionality of the black (K) drum erase lamp.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Drum Erase Lamp K**.
5. Open the front cover.
6. Bypass the front cover interlock.
7. Press **OK** to start the test.

You will see the erase lamp illuminate if it is functional.



Press **Back** (↩) to stop the test.

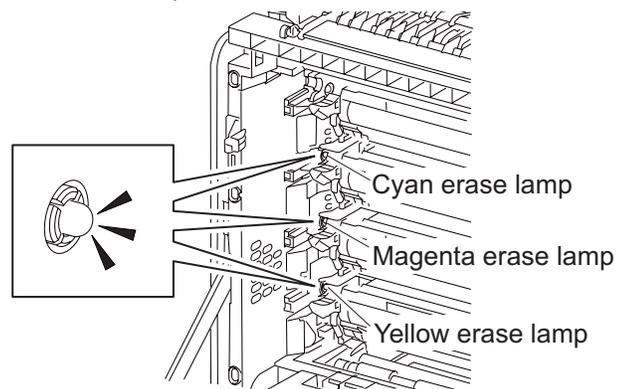
- **Drum Erase Lamp YMC**

This test verifies the functionality of the yellow, magenta, and yellow drum erase lamps.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Drum Erase Lamp YMC**.
5. Open the front cover.
6. Bypass the front cover interlock.
7. Press **OK** to start the test.

You will see the erase lamp illuminate if it is functional.



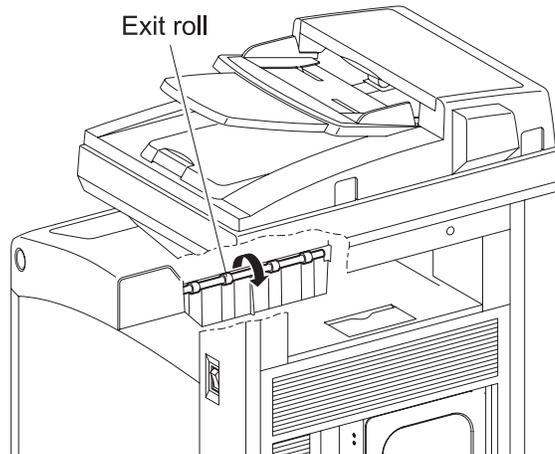
Press **Back** (↩) to stop the test.

- **Exit Clutch**

This test verifies the functionality of the exit clutch.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Exit Clutch**.
5. Press **OK** to start the test.
You will see the paper exit roll rotate if the clutch is functional.



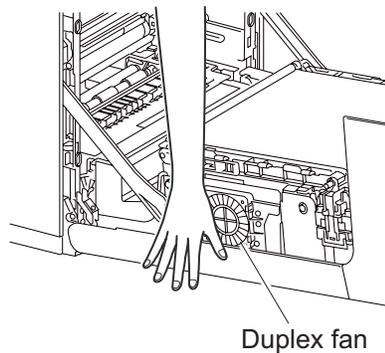
Press **Back** (↩) to stop the test.

- **Duplex Fan**

This test verifies the functionality of the duplex fan.

To run this test:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **Motor Tests**, and press **OK**.
4. Select **Duplex Fan**.
5. Open the front cover.
6. Bypass the front cover interlock.
7. Press **OK** to start the test.
You will hear the fan and feel air coming from the fan if it is operational.



Press **Back** (↩) to stop the test.

NVM Settings

The NVM settings items are used for saving the NVM settings in the MFP.

Warning: Do not use the Edit NVM or Initialize Slave menu items.

- **Edit NVM**

Warning: Do not use Edit NVM.

- **Save NVM to ESS**

This process saves data temporarily from the controller board to the RIP board. Perform this process whenever you remove or replace the controller board.

To save NVM:

1. Press and hold ▲ and ▼, turn on the printer, and release the buttons when the menu displays.



2. Select **Printer Diag**, and press **OK**.
3. Select **Engine Diag**, and press **OK**.
4. Select **NVM Settings**, and press **OK**.
5. Select **Save NVM to ESS** (RIP board), and press **OK**.
6. Press **OK** to confirm.
After NVM Save is complete, Saved is displayed.
7. Press **Stop/⏻** three times.
8. Select **Complete**, and press **OK**.
9. Press **OK** until the original Service Mode menu appears (shown above).
10. Turn off the power.
11. Remove the power cord from the electrical outlet.
12. Remove the controller board. See "**Controller board removal**" on page 5-47.

- **Load NVM from ESS**

When the controller board is removed or replaced with a new one, use this process to restore the information from the RIP board to the controller board.

To restore the NVM to the controller board:

This process copies information back to the controller board.

1. Plug the power cord into the outlet, and turn on the printer.
2. Press and hold ▲ and ▼, turn on the printer, and release the buttons when the menu displays.



3. Select **Printer Diag**, and press **OK**.
4. Select **Engine Diag**, and press **OK**.
5. Select **NVM Settings**, and press **OK**.
6. Select **Load NVM from ESS** (RIP board), and press **OK**.
7. Press **OK** twice to confirm.
When the process is complete, Loaded is displayed.
8. Press **Stop/⏻** three times.
9. Select **Complete**, and press **OK**.
10. Press **OK** until the original Service Mode menu appears (shown above).
The printer restarts (PORs).

- **Initialize Slave**

Warning: Do not use the Initialize Slave menu item.

- **Print NVM Info**

This setting will print out a list of the data stored in each NVRAM address. The information is hexadecimal.

To print the NVM information:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Engine Diag**, and press **OK**.
3. Select **NVM Settings**, and press **OK**.
4. Select **Print NVM Info**, and press **OK**.

Processing displays, and the NVM information prints.

Print Info

Info Page

This menu item prints out an information page detailing the print engine ROM level and the engine cards NVM revision level.

To print the Info Page:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Print Info**, and press **OK**.
3. Select **Info Page**, and press **OK**.
Ready displays.
4. Press **OK** to begin printing.
Processing displays, and the Info Page is printed.

Press **Back** () to exit the Info Page menu item.

Print Settings

This menu item prints out an information page showing the counters and the status of the installation menu parameters. To print the Print Settings, perform the following steps:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Print Info**, and press **OK**.
3. Select **Print Settings**, and press **OK**.
4. Ready displays.
5. Press **OK**.
6. Processing displays, and the Print Settings page is printed.

Press **Back** () to exit the Print Settings menu item.

Installation

Serial No. (serial number)

This menu item displays the MFP serial number.

To display the serial number:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Installation**, and press **OK**.
3. Select **Serial Number**, and press **OK**.
The serial number is displayed.

Press **Back** () to return to the Installation menu.

Tone Correction

This menu item activates the MFP tone correction feature. There are two settings, on and off.

To change the setting:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Installation**, and press **OK**.
3. Select **Tone Correction**, and press **OK**.
4. Select **ON** or **OFF**, and press **OK**.
5. Use **▲** or **▼** to select between On and Off, and press **OK**.

Press **Back** (**↶**) to exit.

Display Counter

This item allows you to control whether the counters display in customer mode. There are two settings, on and off.

To change the setting:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Installation**, and press **OK**.
3. Select **Display Counter**, press **OK**.
4. Use **▲** or **▼** to select between **ON** and **OFF**, and press **OK**.

Press **Back** (**↶**) to exit.

Hex Dump

This setting puts the MFP into Hex mode. When this is set to on, the machine will print a hexadecimal dump when it is restarted. To use this setting, perform the following steps:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Installation**, and press **OK**.
3. Select **Hex Dump**, and press **OK**.
4. Use **▲** or **▼** to select between **ON** and **OFF**, and press **OK**.

Press **Back** (**↶**) to exit.

Pixel Counter

This menu item displays the pixel count values of Y/M/C/K.

To display these values:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Installation**, and press **OK**.
3. Select **Pixel Counter**, and press **OK**.
The pixel counts are displayed.

Y:	<i>n1</i>	M:	<i>n3</i>
C:	<i>n2</i>	K:	<i>n4</i>

(where *n1*, *n2*, *n3*, and *n4* are numbers in the display)

Press **Back** (**↶**) to return to the Installation menu.

Configuration

This menu item is not to be used by service technicians.

Counter Type

This menu item is not to be used by service technicians.

Print Counter

The Print Counter menu contains the counters for Print Service, Copy Service, FAX Service, and Scan Service.

To use view these counters:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Installation**, and press **OK**.
3. Select Print Service, Copy Service, FAX Service, or Scan Service, and press **OK**.
4. Select the desired counter, and press **OK** to display the value.

Press **Back** () twice to return to the Installation menu.

Clear All NVM

This menu item is used to initialize the values stored in NVM. Use with care.

To initialize the NVM, do the following:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Installation**, and press **OK**.
3. Scroll to **Clear All NVM**, and press **OK**.
OK? displays.
4. Press **OK**.
Processing, and then **Initialized** displays.

Press **Back** () twice to return to the Installation menu.

Clear Job History

This menu item is used to initialize the job history. Use with care.

To initialize the job history:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Installation**, and press **OK**.
3. Scroll to **Clear All Job History**, and press **OK**.
OK? displays.
4. Press **OK**.
Processing, and then **Initialized** displays.

Press **Back** () to go back to the Installation menu.

Clear All Auditron PV

Note: This menu item is not to be used by servicers.

Test Print

This submenu enables you print out pages to evaluate print quality and other print system issues.

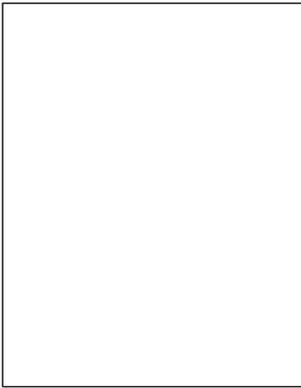
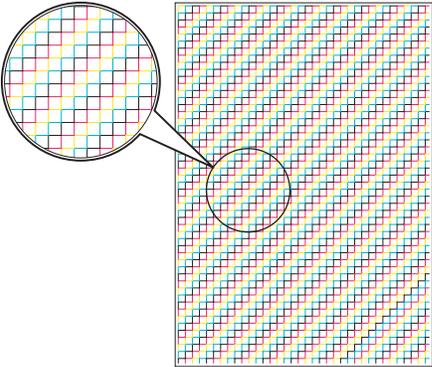
To print a test print:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Test Print**, and press **OK**.
3. Select the desired test page, and press **OK**.
Ready displays.
4. Press **OK** to print the test page.
Processing displays, and then the page prints. Ready displays when the page is complete.

Press **Back** (⏪) to return to the Test Print menu.

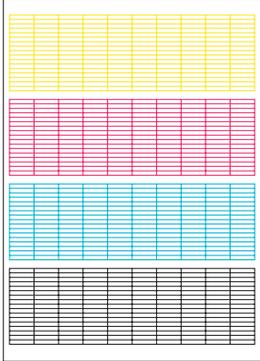
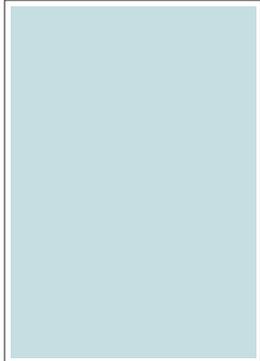
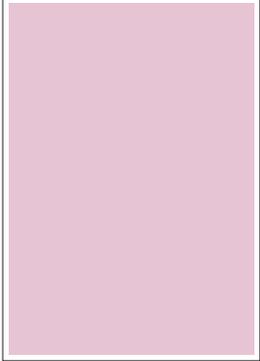
Test print samples

Note: Test samples are approximations and may vary depending on settings of the monitor you use to view these pages, the printer you use to print them, and many other factors. Keep this in mind as you compare them.

Test print name	Usage	Sample
No Image IOT	Blank paper "printed". Look for marks on the paper.	
Pattern IOT	Prints a printer built-in pattern at 600 dpi. Use this to determine if there is a print problem or a problem with the RIP board. <ul style="list-style-type: none"> • If the printout looks like the sample, the problem might be the RIP board. • If the printout does not look like the sample, the printing process may be at fault. 	

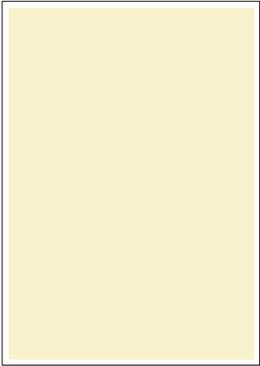
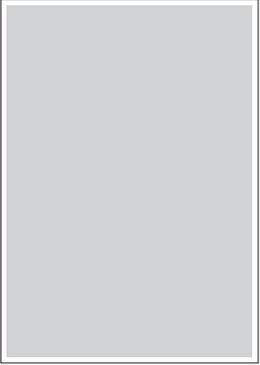
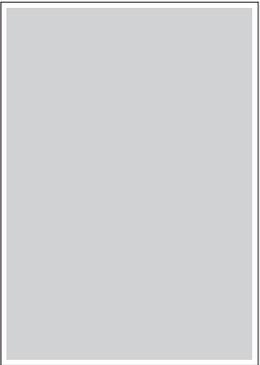
Test print samples (continued)

Note: Test samples are approximations and may vary depending on settings of the monitor you use to view these pages, the printer you use to print them, and many other factors. Keep this in mind as you compare them.

Test print name	Usage	Sample
Grid 2 ESS	<p>Prints the pattern built into the RIP board. This test allows you to determine if the problem is in the print process or in the RIP board.</p> <ul style="list-style-type: none"> • If the printed page does not match the sample, check the printing process and the RIP board. • If the printed page matches the sample, check the network, the cable, the computer, and so on. 	
Cyan 20% ESS	<p>Prints a solid 20% cyan page. This allows you to determine if the problem may be in the cyan color.</p> <ul style="list-style-type: none"> • If the printed page does not match the sample, the problem is cyan-color related. • If the printed page matches the sample, check another color for the problem. 	
Magenta 20% ESS	<p>Prints a solid 20% magenta page. This allows you to determine if the problem may be in the magenta color.</p> <ul style="list-style-type: none"> • If the printed page does not match the sample, the problem is magenta-color related. • If the printed page matches the sample, check another color for the problem. 	

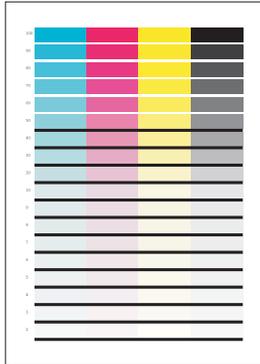
Test print samples (continued)

Note: Test samples are approximations and may vary depending on settings of the monitor you use to view these pages, the printer you use to print them, and many other factors. Keep this in mind as you compare them.

Test print name	Usage	Sample
Yellow 20% ESS	<p>Prints a solid 20% yellow page. This allows you to determine if the problem may be in the yellow color.</p> <ul style="list-style-type: none"> • If the printed page does not match the sample, the problem is yellow-color related. • If the printed page matches the sample, check another color for the problem. 	
Black 20% ESS	<p>Prints a solid 20% black page. This allows you to determine if the problem may be in the black (K) color.</p> <ul style="list-style-type: none"> • If the printed page does not match the sample, the problem is black-color related. • If the printed page matches the sample, check another color for the problem. 	
CMY 20% ESS	<p>Prints a solid 20% cyan, magenta, and yellow combined page. It will appear gray. This allows you to determine if the problem may be in the balancing of the colors.</p> <ul style="list-style-type: none"> • If the printed page does not match the sample, check the cyan, magenta, and yellow pages. • If the printed page matches the sample, check the black toner. 	

Test print samples (continued)

Note: Test samples are approximations and may vary depending on settings of the monitor you use to view these pages, the printer you use to print them, and many other factors. Keep this in mind as you compare them.

Test print name	Usage	Sample
Gradation ESS	<p>Prints gradated stripes from 100% to 2% for each color. This allows you to determine if the problem may be in the printing process or in the RIP board.</p> <ul style="list-style-type: none"> • If the printed page does not match the sample, check the printing process. • If the printed page matches the sample, check the RIP board for problems. 	

Parameter

The Parameter submenu allows you to view and change printer (printhead) registration values, and view the counters for various consumables on the printer.

Note: Before adjusting any printer registration values, print out the printer's parameter values. The values can be printed from the Parameter menu by pressing ▲ to scroll to the Print menu item in the Parameter menu, and pressing **OK** twice.

Slow Scan K to P

This menu item allows you to view and adjust the black registration adjustment.

To adjust the Slow Scan K to P setting:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Print the Black 20% ESS test page:
 - a. Select **Test Print**, and press **OK**.
 - b. Select **Black 20% ESS**, and press **OK**. See "**Black 20% ESS**" on page 3-53 for a sample.
Ready displays.
 - c. Press **OK** to print the test page.
Processing displays, and then the page prints. Ready displays when the page is complete.
 - d. Verify if the test page is centered. If the page is not centered continue.
3. Press **Back** (↵) twice to return to the **Printer Diag**.
4. Select **Parameter**, and press **OK**.
5. Select **Slow Scan K to P**, and press **OK**.
The current numerical registration value is displayed.
6. Change the value to center the Black 20% ESS test page. The adjustment range is from -128 to 127. Each increment moves the adjustment .17 mm to the top or bottom of the page. The default value is 0.
 - Use ▲ to increase the value, and move the printed image down the page.
 - Use ▼ to decrease the value, and move the printed up the page.
7. When the desired value is reached, press **OK** to save the value.
8. Print another copy of the Black 20% ESS test page. If the page is centered, you are done, otherwise continue steps 2 to 8, until the page is centered.

Press **Back** (↵) to exit the menu item and return to the Parameter menu.

Slow Scan 600 M, Y, C

This setting adjusts the 600 dpi color registration for the yellow (Y), magenta (M), and cyan (C) color planes.

To adjust the Slow Scan 600 M, Y, C settings:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Print the Magenta 20% ESS, Yellow 20% ESS, or Cyan 20% ESS test page:
 - a. Select **Test Print**, and press **OK**.
 - b. Select **Magenta 20% ESS, Yellow 20% ESS, or Cyan 20%**, and press **OK**. See **“Magenta 20% ESS” on page 3-52**, **“Yellow 20% ESS” on page 3-53**, or **“Cyan 20% ESS” on page 3-52** for samples.
Ready displays.
 - c. Press **OK** to print the test page.
Processing displays, and then the page prints. Ready displays when the page is complete.
 - d. Verify that the test page is centered. If the page is not centered continue.
3. Press **Back** (↵) twice to return to the **Printer Diag**.
4. Select **Parameter**, and press **OK**.
5. Select **Slow Scan 600 M, Slow Scan 600 Y, or Slow Scan C**, and press **OK**.
The current numerical registration value for that color is displayed.
Note: The Y, M, and C values are adjusted separately in their own Parameter menus.
6. Change the values as needed.
The adjustment range is from -60 to 60. Each increment moves the adjustment .042 mm to the top or bottom of the page.
 - Use ▲ to increase the value, and move the printed image down the page.
 - Use ▼ to decrease the value, and move the printed image up the page.
7. When the desired value is reached, press **OK** to save the value.
8. Print another copy of the test page. If the page is centered, you are done, otherwise continue steps 2 to 8, until the page is centered. Adjust each of the three colors.

Press **Back** (↵) to exit the menu item and return to the Parameter menu.

Slow Scan 1200 M, Y, C

To adjust the Slow Scan 1200M, Y, C settings:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Print the Magenta 20% ESS, Yellow 20% ESS, or Cyan 20% ESS test page:
 - a. Select **Test Print**, and press **OK**.
 - b. Select **Magenta 20% ESS, Yellow 20% ESS, or Cyan 20%**, and press **OK**. See **“Magenta 20% ESS” on page 3-52**, **“Yellow 20% ESS” on page 3-53**, or **“Cyan 20% ESS” on page 3-52** for samples.
Ready displays.
 - c. Press **OK** to print the test page.
Processing displays, and then the page prints. Ready displays when the page is complete.
 - d. Verify if the test page is centered. If the page is not centered continue.
3. Press **Back** (↵) twice to return to the **Printer Diag**.
4. Select **Parameter**, and press **OK**.
5. Select **Slow Scan 1200 M, Slow Scan 1200 Y, or Slow Scan 1200 C**, and press **OK**.
The current numerical registration value for that color is displayed.
Note: The yellow, magenta, and cyan values are adjusted separately in their own Parameter menus.

6. Change the values as needed.

This setting adjusts the 1200 dpi color registration for the yellow (Y), magenta (M), and cyan (C) color planes. The range is from -60 to 60. Each increment moves the adjustment .021 mm to the top or bottom of the page.

- Use ▲ to increase the value, and move the printed image down the page.
- Use ▼ to decrease the value, and move the printed image up the page.

7. When the desired value is reached, press **OK** to save the value.**8.** Print another copy of the test page. If the page is centered, you are done; otherwise continue steps 2 to 8 until the page is centered. Adjust each of the three colors.

Press **Back** (↩) to exit the menu item and return to the Parameter menu.

Fast Scan K to M, K to Y, and K to C

This setting adjusts the vertical color registration for the yellow (Y), magenta (M), and cyan (C) color planes.

To adjust the Fast Scan K to M, Y, or C settings:

1. In Service Mode, select **Printer Diag**, and press **OK**.**2.** Select **Parameter**, and press **OK**.**3.** Select **Fast Scan K to M**, **Fast Scan K to Y**, or **Fast Scan K to C**.**4.** Press **OK**, and the current numerical registration value for that color is displayed.

Note: The Y, M, and C values are adjusted separately in their own Parameter menu items.

5. Change the values as needed.

The range is from -30 to 30. Each increment moves the adjustment .042 mm to the left or right of the page.

- Use ▲ to increase the value, and move the printed image to the right on the page.
- Use ▼ to decrease the value, and move the printed image to the left on the page.

6. When the desired value is reached, press **OK** to save the value.

Press **Back** (↩) to exit the menu item and return to the Parameter menu.

Fast Scan MPT (MP feeder)

This setting adjusts the black registration for the printout on pages fed through the MPT (MP feeder).

To adjust the Fast Scan MPT settings:

1. In Service Mode, select **Printer Diag**, and press **OK**.**2.** Select **Parameter**, and press **OK**.**3.** Select **Fast Scan MPT**, and press **OK**.

The current numerical registration value for the MP feeder is displayed.

4. Change the values as needed.

The adjustment range is from -30 to 30. Each increment moves the adjustment 0.017 mm to the left or right of the page.

- Use ▲ to increase the value, and move the printed image to the right of the page.
- Use ▼ to decrease the value, and move the printed image to the left of the page.

5. When the desired value is reached, press **OK** to save the value.

Press **Back** (↩) to exit the menu item and return to the Parameter menu.

Fast Scan Tray 2

This setting adjusts the black registration for the printout on pages fed through tray 2 (250-sheet tray assembly).

To adjust the Fast Scan Tray 2 settings:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Parameter**, and press **OK**.
3. Select **Fast Scan Tray 2**, and press **OK**.
The current numerical registration value is displayed.
4. Change the values as needed.
The adjustment range is from -30 to 30. Each increment moves the adjustment 0.017 mm to the left or right of the page.
 - Use ▲ to increase the registration value, and move the printed image to the right on the page.
 - Use ▼ to decrease the registration value, and move the printed image to the left on the page.
5. When the desired value is reached, press **OK** to save the value.

Press **Back** (↩) to exit the menu item and return to the Parameter menu.

Fast Scan Tray 3

This setting adjusts the black registration for the printout on pages fed through tray 3 (550-sheet feeder).

To adjust the Fast Scan Tray 3 settings:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Parameter**, and press **OK**.
3. Select **Fast Scan Tray 3**, and press **OK**.
The current numerical registration value is displayed.
4. Change the values as needed.
The adjustment range is from -30 to 30. Each increment moves the adjustment 0.017 mm to the left or right of the page.
 - Use ▲ to increase the registration value, and to move the printed image to the right on the page.
 - Use ▼ to decrease the registration value, and to move the printed image to the left on the page.
5. When the desired value is reached, press **OK** to save the value.

Press **Back** (↩) to exit the menu item and return to the Parameter menu.

Fast Scan Duplex

This setting adjusts the black registration for the printout on pages fed through duplex. Increasing the registration value moves the print image to the right on the page.

To adjust the Fast Scan Duplex settings:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Parameter**, and press **OK**.
3. Select **Fast Scan Duplex**, and press **OK**.
The current numerical registration value will be displayed.
4. Change the values as needed.
The adjustment range is from -30 to 30. Each increment moves the adjustment 0.017 mm to the left or right on the page.
 - Use ▲ to increase the registration value, and to move the printed image to the right on the page.
 - Use ▼ to decrease the registration value, and to move the printed image to the left on the page.
5. When the desired value is reached, press **OK** to save the value.

Press **Back** (↩) to exit the menu item and return to the Parameter menu.

Fast Scan 2 K to C, K to M, or K to Y

This setting adjusts the vertical color registration for the C, M, and Y color planes.

To adjust the Fast Scan 2 K to C, Fast Scan 2 K to M, or Fast Scan 2 K to Y settings:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Parameter**, and press **OK**.
3. Select the **Fast Scan 2 K to C**, **Fast Scan 2 K to M**, or **Fast Scan 2 K to Y**, and press **OK**.
The current numerical registration value for that color is displayed.
Note: The C, M, and Y values are adjusted separately in their own menus.
4. Change the values as needed.
The adjustment range is from -1 to 2. Each increment moves the adjustment 0.01 mm to the left or right of the page.
 - Use ▲ to increment the value, and moves the printed image to the right on the page.
 - Use ▼ to decrease the value, and move the printed image to the left on the page.
5. When the desired value is reached press **OK** to save the value.

Press **Back** (↵) to exit the menu item and return to the Parameter menu.

Life Counters

To view the Life Counters values:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Life Counters**, and press **OK**.
3. Select the counter value you want to view, and press **OK**.
The current numerical value is displayed.

Press **Back** (↵) to exit the menu item and return to the Life Counter menu.

Life counter values

Counter name	Counter type	Value at life warning
Life Y Toner	Dispense time	
Life M Toner	Dispense time	
Life C Toner	Dispense time	
Life K Toner	Dispense time	
Life DTB (Transfer Belt) 1	Paper feeding count	100000
Life Fuser	Paper feeding count	100000
Life Printer	Paper feeding count	
Life DTB (Transfer Belt) 2	Waste toner cleaning count	200000
Life DTB (Transfer Belt) 3	Cycle count	14000000
Life Y Waste Toner	Waste toner cleaning count	18000
Life M Waste Toner	Waste toner cleaning count	18000
Life C Waste Toner	Waste toner cleaning count	18000
Life K Waste Toner	Waste toner cleaning count	18000
Life Developer Y	Cycle count	2500000
Life Developer M	Cycle count	2500000
Life Developer C	Cycle count	2500000
Life Developer K	Cycle count	2500000

Life counter values

Counter name	Counter type	Value at life warning
Life Y Drum	Cycle count	3000000
Life M Drum	Cycle count	3000000
Life C Drum	Cycle count	3000000
Life K Drum	Cycle count	3000000
Life Tray1 (MPT) Feed		
Life Tray 2 Feed		
Life Tray 3 Feed		
Life Duplex Feed		

Print

This menu item prints out the registration settings and life counter stored in the printer. To print out the settings, perform these steps:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Parameter**, and press **OK**.
3. Select **Print**, and press **OK**.
Ready is displayed.
4. Press **OK** to begin printing.
Processing is displayed. After the page is printed, Ready is displayed.

Press **Back** (⏪) to go back to the Parameter menu.

Exit Mode

This menu item is used to exit Service Mode and return to operational mode. To exit Service Mode, perform the following:

1. In Service Mode, select **Printer Diag**, and press **OK**.
2. Select **Exit Mode**, and press **OK**.
Complete Exit displays.
3. Press **OK** to confirm.
Exit? displays.
4. Press **OK**.
The printer restarts.

Clearing jams

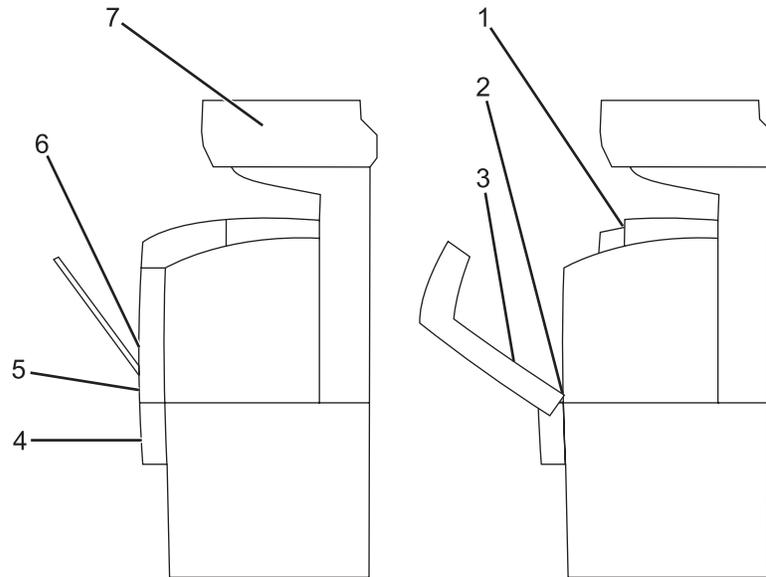
Avoiding jams

The following hints can help you avoid jams:

- Use only recommended paper or specialty media.
For more information, see the *Card Stock & Label Guide* available on the Lexmark Web site at www.lexmark.com/publications.
- Do not load too much paper. Make sure the stack height does not exceed the indicated maximum height.
- Do not load wrinkled, creased, damp, or curled paper.
- Flex, fan, and straighten paper before loading it.
- Do not use paper that has been cut or trimmed by hand.
- Do not mix paper sizes, weights, or types in the same stack.
- Store the paper in an appropriate environment.
- Do not remove trays while the printer is printing.
- Push all trays in firmly after loading paper.
- Make sure the guides in the trays are properly positioned, and are not pressing too tightly against the paper.
- Make sure all printer cables are attached correctly.

Understanding jam messages and locations

- Open doors and covers, and remove trays to access jam locations. The illustration shows possible jam locations. To resolve any jam message, you must clear all paper from the paper path.



	Jam message	Area name
1	Jam at Exit Open Door A	Fuser
2	Jam at Reg. Roll Open Door A	Registration roll on paper feed
3	Jam at Duplexer Open Door A Lift Belt Unit	Duplex unit
4	Jam at Tray 3 Open Tray 3	550-sheet feeder (tray 3)
5	Jam at Tray 2 Open Tray 2 Open Door A	Standard tray or 250-sheet tray (tray 2)
6	Jam at Tray 1 Check Tray 1 Open Door A	Multipurpose feeder (tray 1)
7	Jam at Scanner Open ADF Cover R and Remove Paper Turn the Green Dial to Remove Paper	ADF tray

Clearing tray 1 (MP feeder) jams

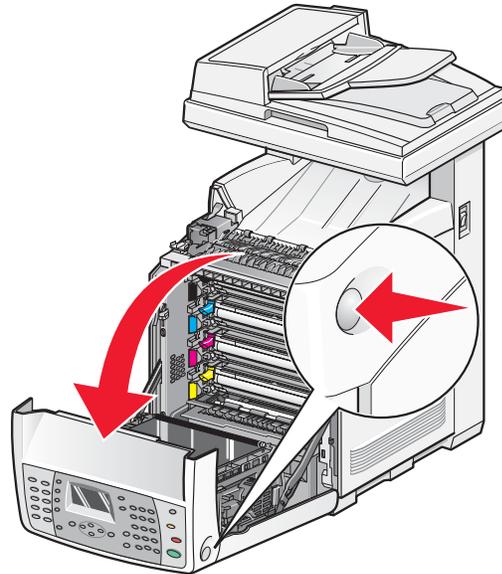
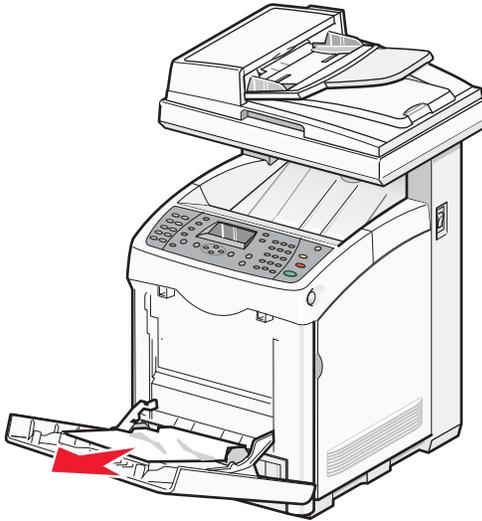
If the paper did not feed from the multipurpose feeder correctly, Jam at Tray 1 appears.

1. Pull the jammed paper out of the MP feeder tray, and then remove any remaining paper from the tray.
2. Push the release button, and gently lower the front door.

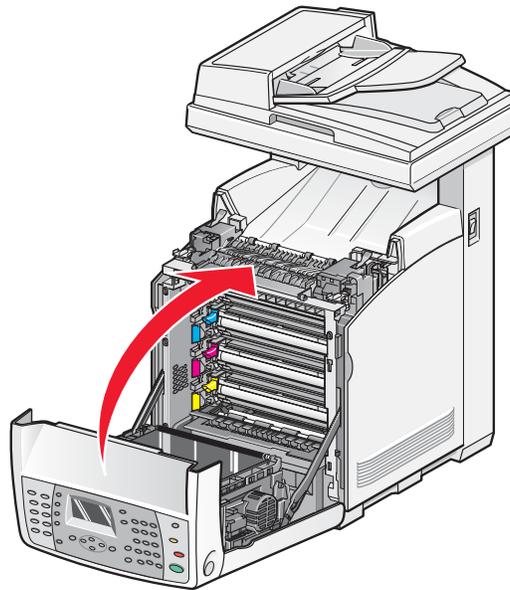
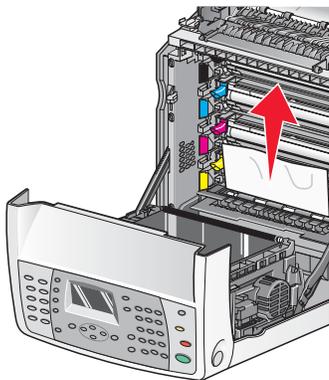


CAUTION

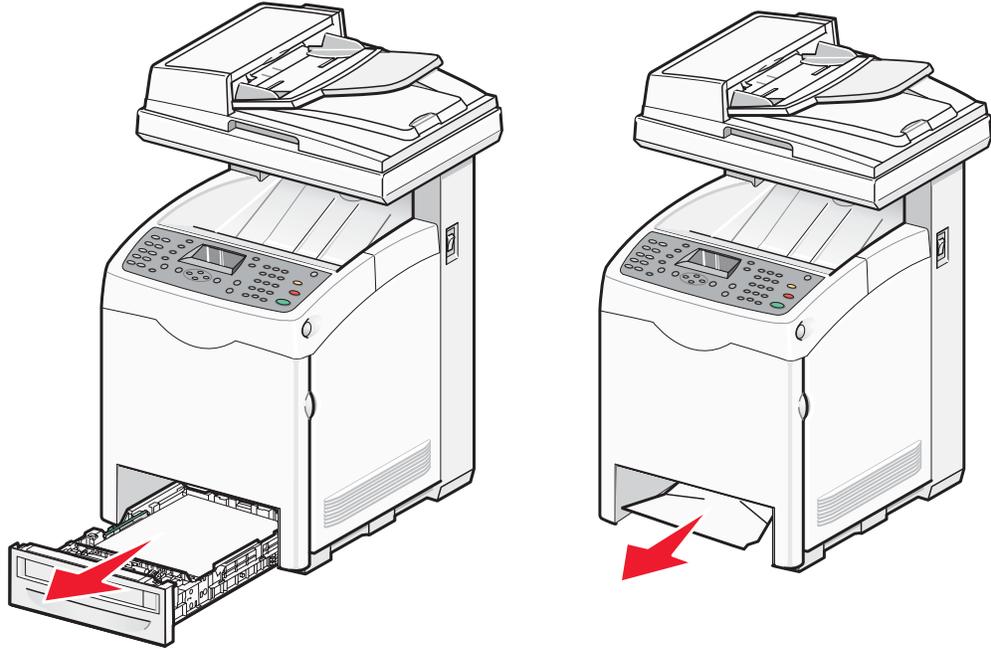
Hot surface: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.



3. Remove any jammed paper from inside the printer.
4. Close the front door.



5. Grasp the handle, and pull tray 2 out. Remove the tray completely.
6. Remove any jammed paper from inside the tray housing.

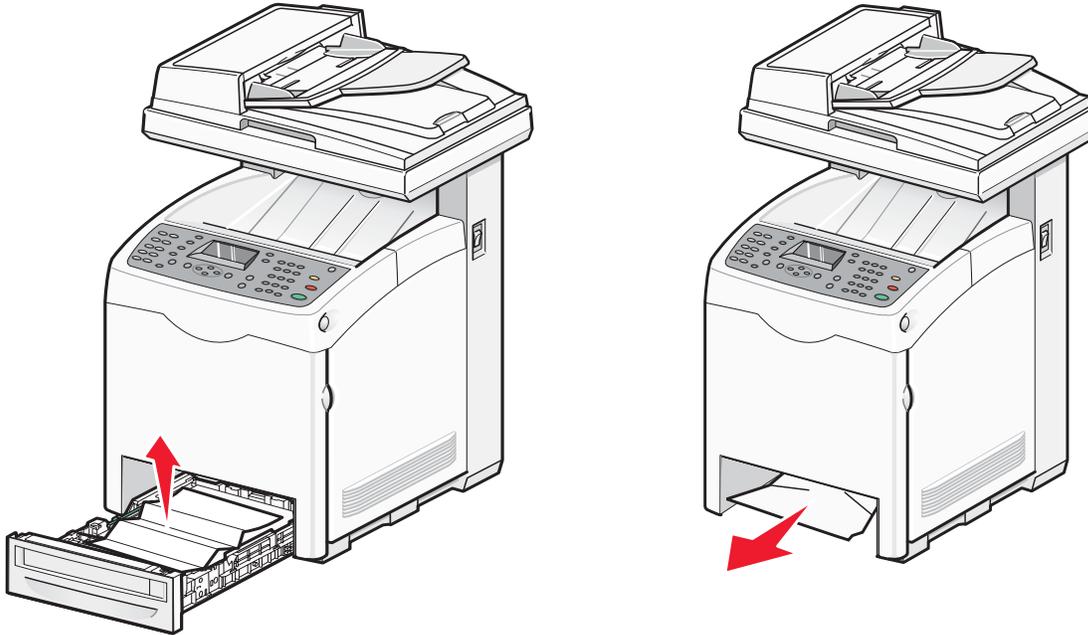


7. Align the tray, and insert it.

Clearing tray 2 jams

If the paper did not feed from tray 2 correctly, the jam is in the tray. Jam at Tray 2 appears.

1. Grasp the handle, and pull Tray 2 out. Remove the tray completely.
2. Remove the jam. The jam could be in the tray or behind the tray area.
 - **Jams in the tray**—Locate the single piece of paper lying on top of the stack. Pull it straight out.
 - **Jams behind the tray area**—Locate the jam on the bottom surface of the tray housing. You may have to reach far under the printer to locate the jam, as shown in the following illustration. Pull the jam straight out.

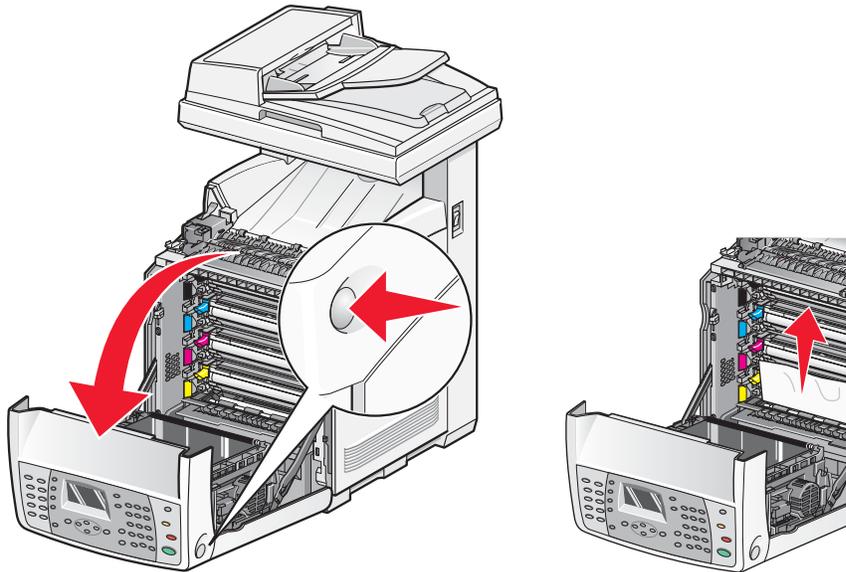


3. Align the tray, and insert it.

- Push the release button, and gently lower the front door.

	CAUTION
Hot surface: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.	

- Remove any jammed paper from inside the printer.

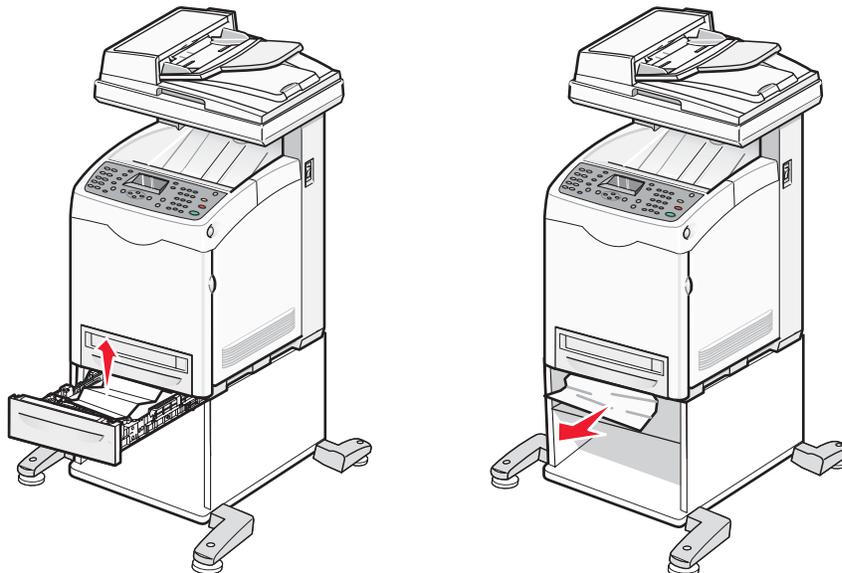


- Close the front door.

Clearing tray 3 jams

If the paper did not feed from tray 3 correctly, the jam is in the tray. Jam at Tray 3 appears.

- Grasp the handle, and pull tray 3 out. Remove the tray completely.
- Remove the jam. The jam could be in the tray or behind the tray area.
 - Jams in the tray**—Locate the single piece of paper lying on top of the stack. Pull it straight out.
 - Jams behind the tray area**—Locate the jam on the bottom surface of the tray housing. You may have to reach far under the printer to locate the jam. Pull the jam straight out.



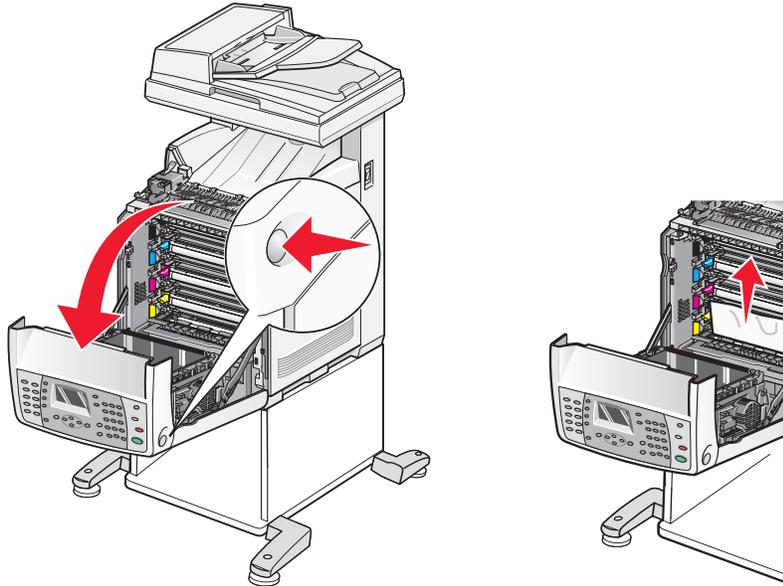
3. Align the tray, and insert it.
4. Push the release button, and gently lower the front door.



CAUTION

Hot surface: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.

5. Remove any jammed paper from inside the printer.



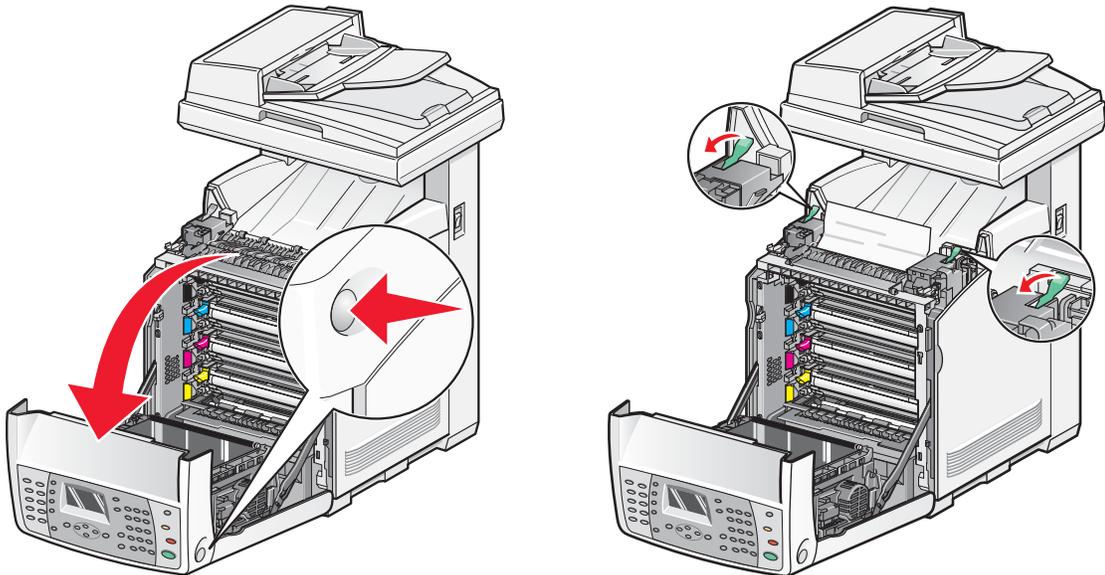
6. Close the front door.

Clearing jams in the fuser

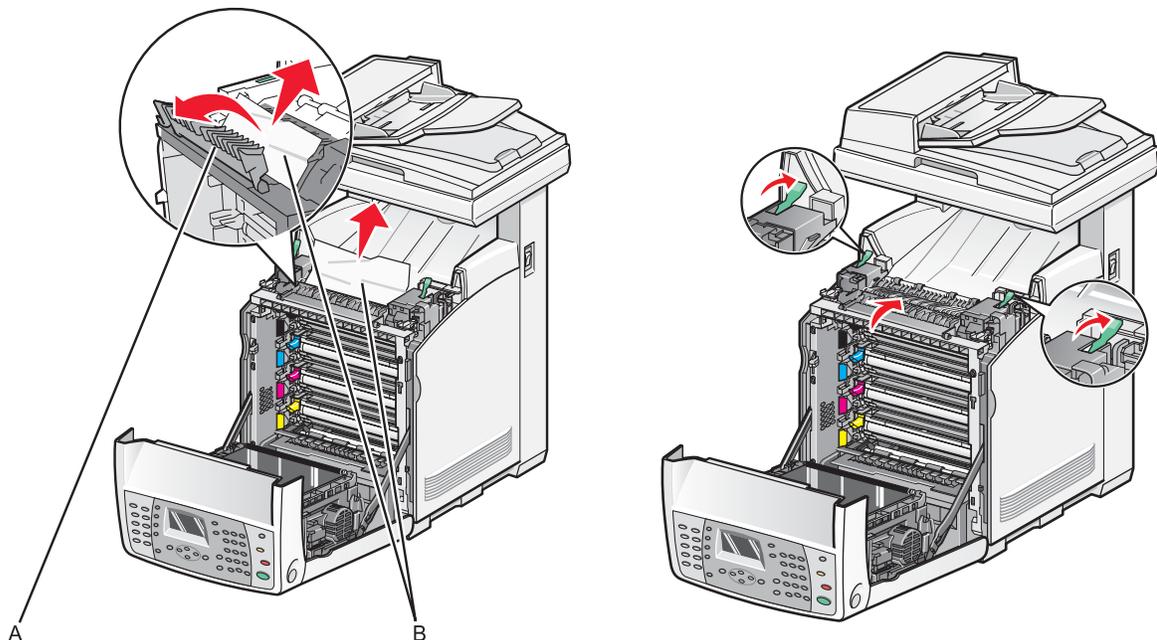
If the paper is jammed in the fuser area, Jam at Exit or Jam at Reg. Roll appears. A Jam at Reg. Roll message indicates the paper is jammed below the fuser. A Jam at Exit message indicates the paper is jammed above the fuser.

	<p>CAUTION</p> <p>Hot surface: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.</p>
---	---

1. Push the release button, and gently lower the front door.
2. Lift the fuser pressure release levers to release tension on the paper.



3. Lift the fuser cover (A), and then remove the jammed paper (B).
4. Close the fuser cover, and then lower the pressure release levers.



5. Close the front door.

Clearing jams in the duplex unit

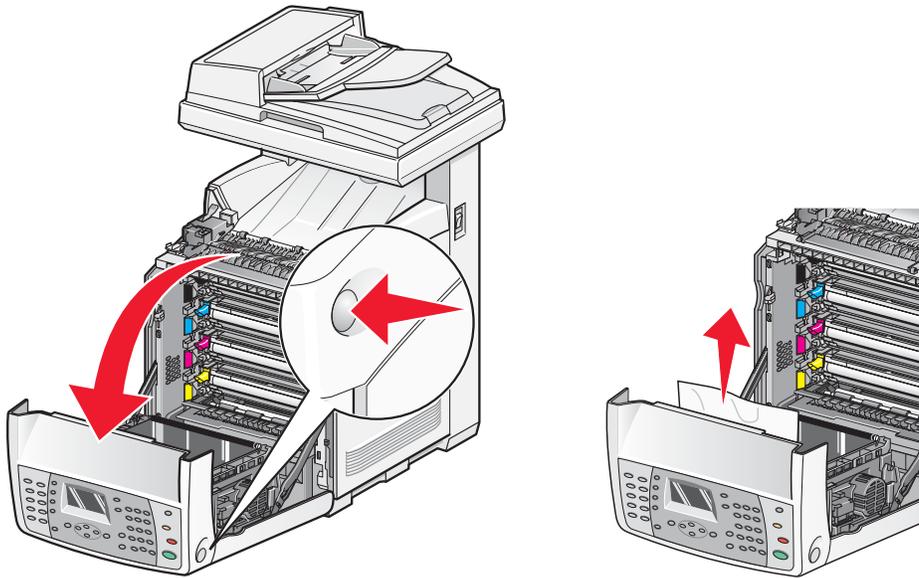
If the paper did not feed through the duplex unit correctly, the jam is in the duplex paper path. Jam at Duplexer appears.



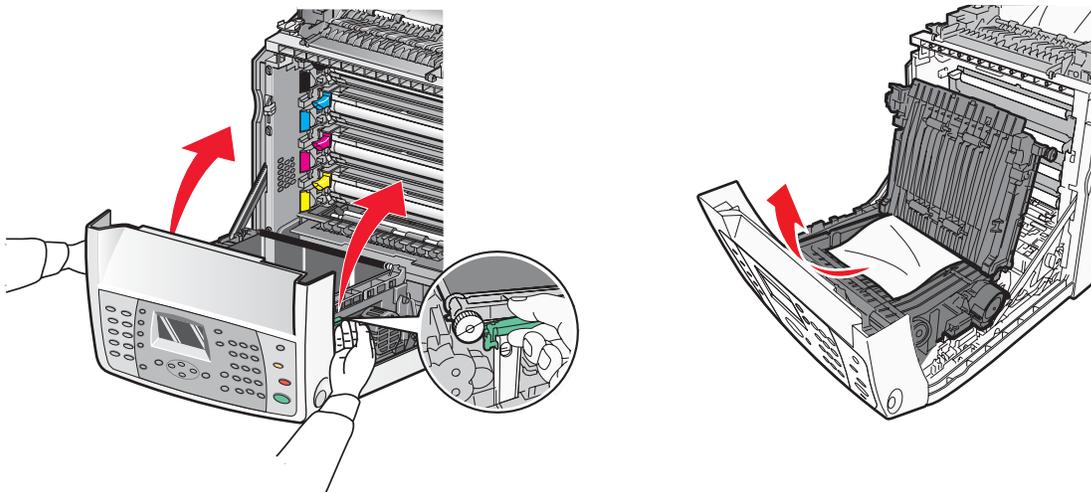
CAUTION

Hot surface: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.

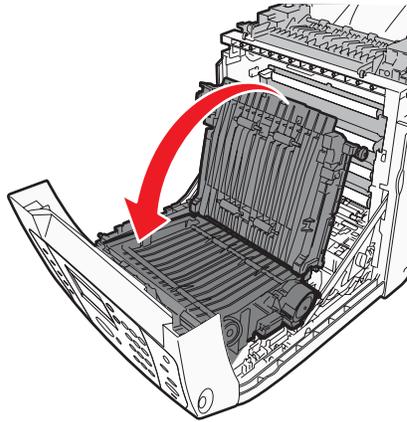
1. Push the release button, and gently lower the front door.
2. Pull out the jammed paper from the duplex unit. If jammed paper cannot be found, go to the next step.



3. Lift the transfer belt unit.
4. Remove any jammed paper from the duplex paper feeder.



5. Close the transfer belt unit.

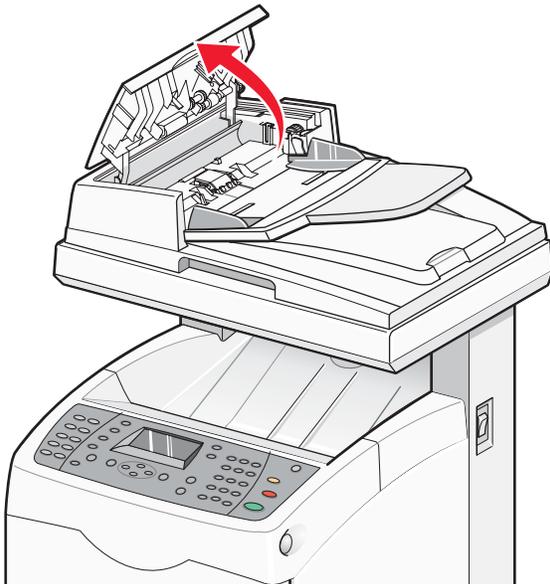


6. Close the front door.

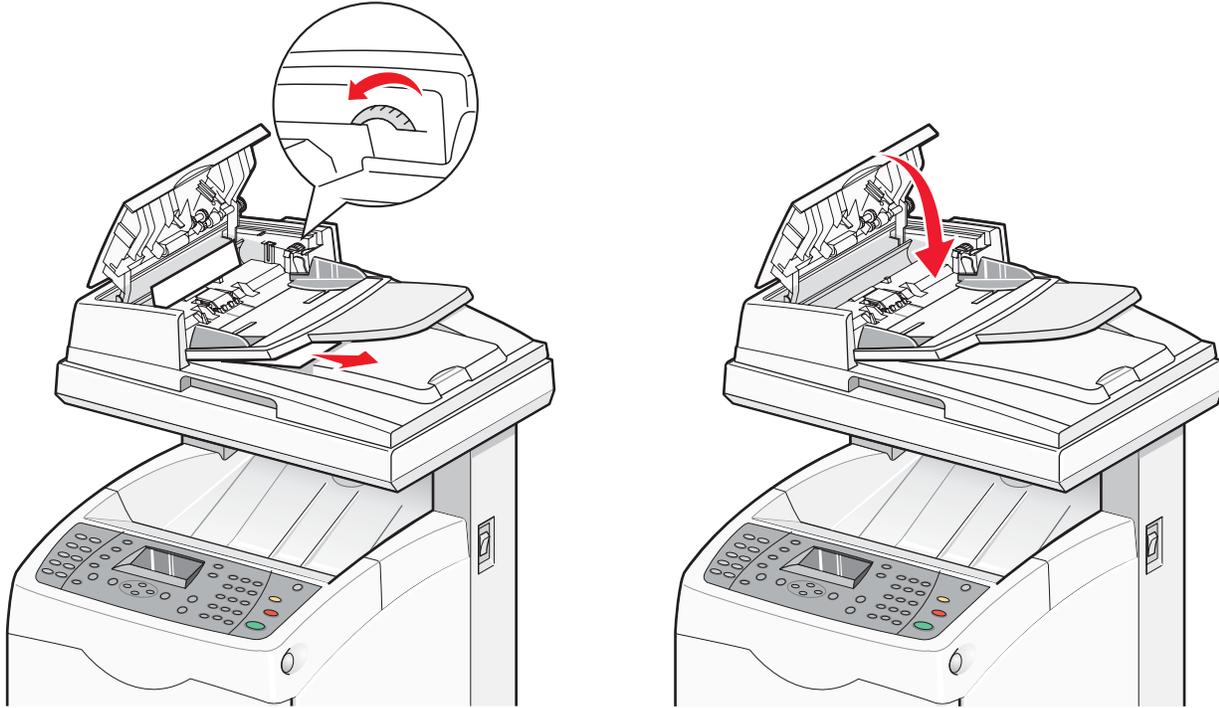
Clearing jams in the ADF

If the paper is jammed in the ADF, Jam at Scanner appears. Remove all jammed paper, and make sure the paper feed tray is not overfull.

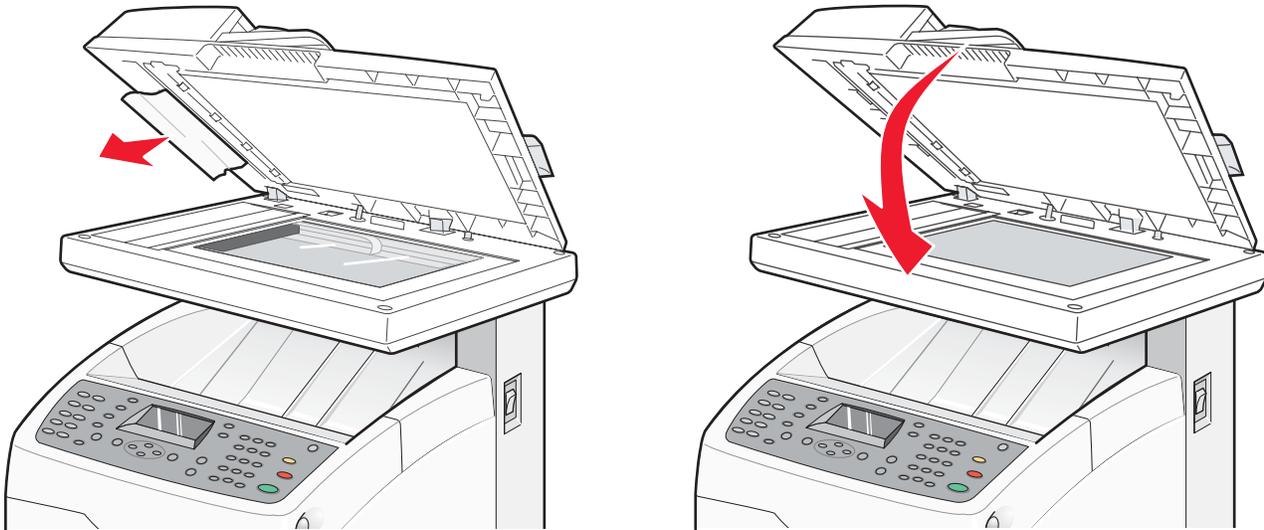
1. Remove all paper from the paper feed tray, and then open the ADF cover.
2. If the jam is in the paper feed area, remove the jam by carefully pulling it up.



3. If the jam is at the paper exit area, turn the dial to remove the jam.
4. Close the ADF cover.



5. Open the scanner cover, and remove any jammed paper from the paper feed area.
6. Close the scanner cover.



7. When all the jammed paper is removed, Return the Removed Original and Press Start appears. Place the original document in the ADF, and then press **Start** to continue with the scan job.

Theory of operation

Fax system

A fax (abbreviation of facsimile) is a device that sends and receives image data using either an analog or a digital telephone line. The following describes the analog line system.

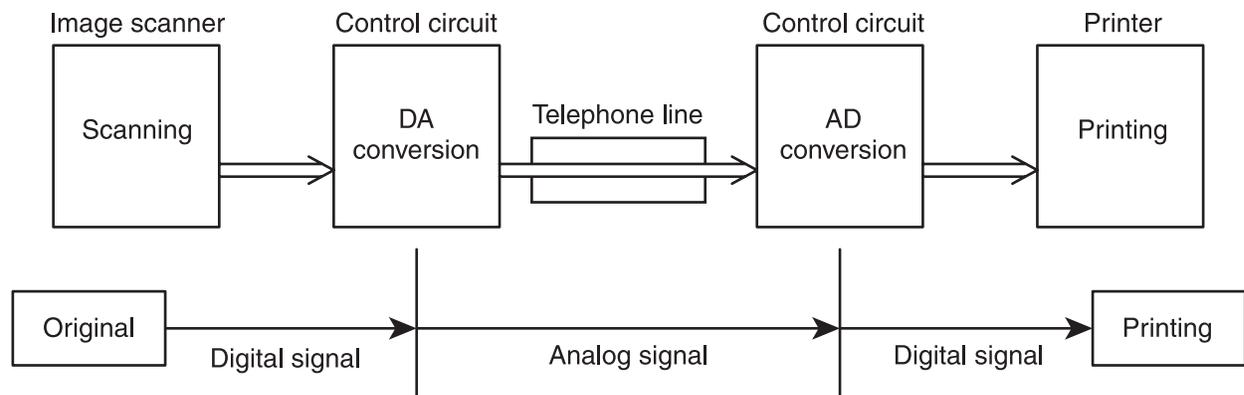
The three basic units of a fax are the scanner (for reading the image), the control circuit, and the printer.

The scanner splits the image into a fine grid, then reads the brightness (white/black) of each cell. This operation is called scanning. The white/black information is converted to a digital signal: bright cells become 1, dark cells 0.

The digital signal from a scanned image is subjected to digital-to-analog conversion (modulation) by the control circuit to enable transmission over an analog telephone line. After conversion, the data is sent as an analog signal. The sound audible during transmission is image data that has become an analog signal, that is, an audio signal.

The analog signal arriving over the telephone line is then subjected to analog-to-digital conversion (demodulation) by the control circuit of the receiving fax machine, and restored to a digital signal.

The black/white information obtained from the analog-to-digital conversion is sent to the printer, where black cells are reproduced on the paper at the positions where they were on the original.



Scanner

The scanner consists of a lamp that illuminates the original document with uniform light and a charged coupled device (CCD) that reads the light reflected from the image.

A CCD is a light-receiving element that produces an electrical signal in response to light. In the case of a fax, a number of CCDs are arranged in a line.

The white areas of the original document reflect the light from the lamp. The black areas reflect no light. The CCDs read the light reflected from the original, outputting sequentially to the control circuit which areas are white and which black as binary data (1/0 digital data: 1 bit).

Note: To scan the original, the CCD device must be shifted a distance of one line after each line is scanned. When the original is scanned on the flatbed glass, the CCD unit is moved with respect to the original. In the case of a fax equipped with the ADF (Automatic Document Feeder), scanning via the ADF is performed by moving the original with the CCD fixed at one position. This is known as constant velocity transport (CVT).

Note: During scanning, the finer the grid into which the original is divided, the greater the scanning precision of the original image. For a G3 fax (normal mode: G3 Normal), scanning is performed at the resolution of eight divisions per millimeter (200 dpi) in the horizontal direction and 3.85 divisions per millimeter in the vertical direction. This means that the 200 dpi in-line CCD unit is shifted approximately four times per millimeter in the vertical direction. For an A4 original, the data amounts to approximately two million pixels. In the high-quality mode (G3 Fine), scanning resolution is eight divisions per millimeter in the horizontal direction and 7.7 divisions per millimeter in the vertical direction, where the data amounts to approximately four million pixels. As resolution increases, the amount of data also increases, lengthening the transmission time.

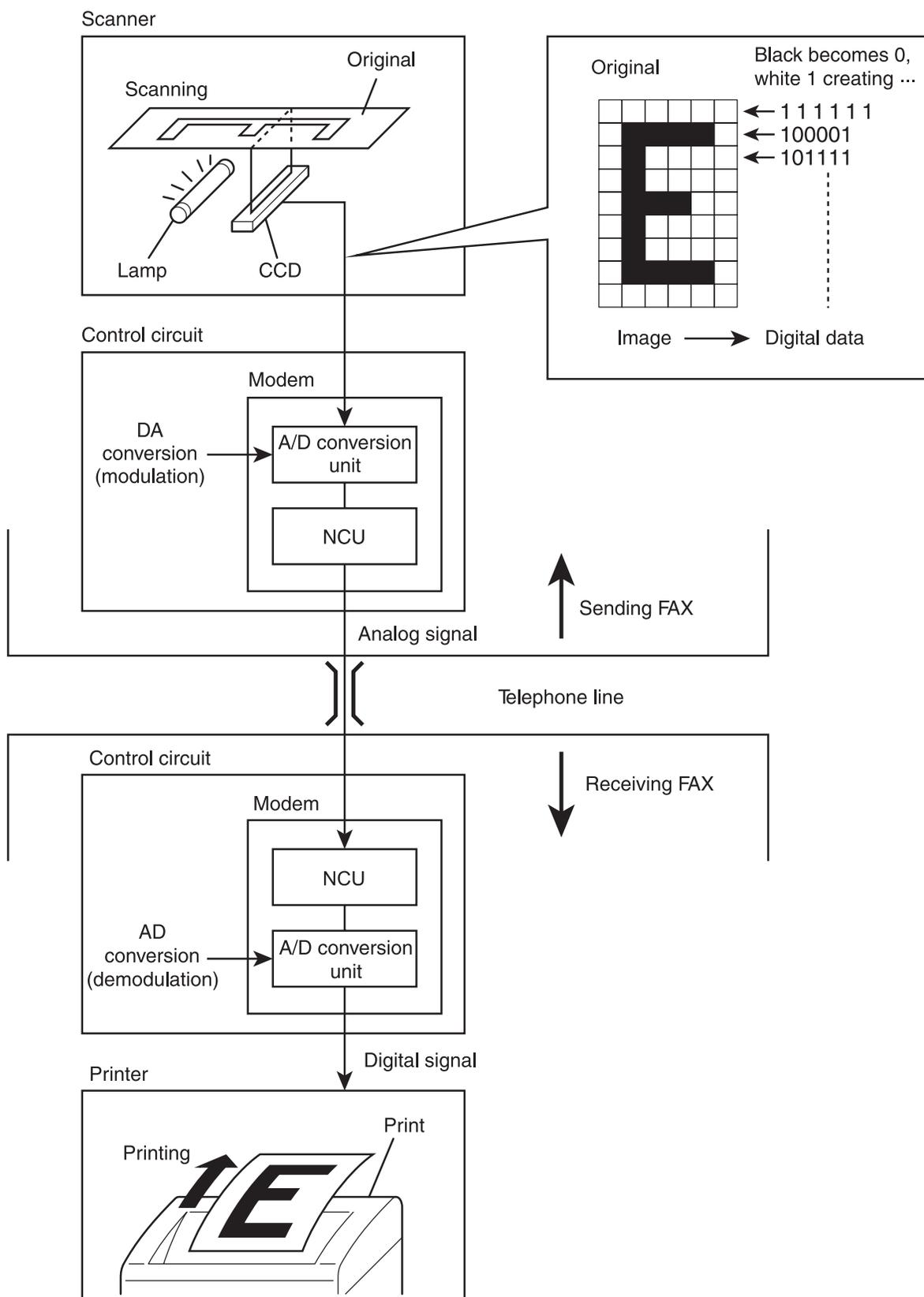
Scanner control circuit

The control circuit executes scanning of image data by controlling the image scanner. A line of CCDs scans the original image one line at a time. When scanning of one horizontal line is completed, the next line below is scanned. As this continues, the original is scanned from end to end one line at a time and converted to digital data as black-and-white information.

Because this image data is a set of digital signals, it cannot be transmitted using an analog telephone line. It must be subjected to digital-to-analog conversion (modulation). On the other hand, the receiving fax machine must perform analog-to-digital conversion to restore the incoming digital data to analog data.

Digital-to-analog conversion, analog signal transmission, analog signal reception, and analog-to-digital conversion are all performed by a modem (modulator/demodulator) in the control circuit. A modem consists of a network control unit (NCU) for connecting to the telephone line and an analog-to-digital conversion unit for performing digital-to-analog and analog-to-digital conversions.

Fax system (detail)



The following is the line connection procedure between two faxes.

- When an AT command (a modem control command) is sent from the control circuit to the modem, the hook switch is activated, and a state is obtained that is identical to that when the handset of a telephone is lifted. A dial tone (400Hz/48VDC) is sent from the local switch. The modem's speaker emits the dial tone as an audible sound.
- After image scanning, the telephone number is automatically dialed and transmitted to the local switch.
- The receiving party's fax automatically answers when it receives the call signal, and the hook switch is activated. The local switch on the receiving party side receives a response signal and stops sending tones to the sending and receiving parties, thereby establishing a communications path between the both parties.

In the case of a telephone call, only voice conversion between the two parties follows. For fax, preparation for delivery of image data is required that includes the following types of exchanges:

- The sending fax indicates that the transmission is a fax transmission.
- The receiving fax indicates that it is ready to receive and also its communications capacity.
- The sending fax then sends data in accordance with the receiving fax's communications capacity.

Once mutual preparation is completed, image data sending and receiving is started. Image data is modulated into an analog signal by the analog-to-digital converter at the sending fax, then sent from its NCU. Image data received by the NCU of the receiving fax is demodulated into a digital signal by its analog-to-digital converter and then sent to the control circuit. When image data reception is completed, the fax automatically disconnects the line (hook is Off). In summary, the NCU automatically executes a series of such operations from hook switch On to hook switch Off.

Note: The control circuit also retains other important functions such as data compression and memory. With data compression, any part of the scanned image data that consists of continuous white or black pixels is encoded into a single element, thus compressing the volume of data. Memory temporarily stores data during transmission and reception.

Printer

The printer prints image data from the control circuit onto the surface of paper. The principle is the same as that of an ordinary printer in that black is applied to specified locations on the paper.

Fax troubleshooting

Because a fax is composed of multiple blocks, pinpointing a fault is problematic. This section describes a simple fault isolation procedure that is based on the contents of Fax system—**“Fax system” on page 3-71**.

Fault occurs

First, try using the copy function. If the copy function's printing results are correct, the probability of a fault in the fax itself is low. The fault is likely in the telephone line or receiving fax. If the fault is in the telephone line, first retry sending. If there is no improvement, contact the telephone company. If the copy function's printing results are incorrect, it can be determined if the fault is in the scanner or printer by operating each unit separately via a computer.

Send fault

1. Problem with printing quality at the receiving fax, such as corrupt image, lines in image, top/bottom cut off.
 - a. **If copy function is normal**
 Cause: Degraded telephone line connection caused by noise, for example; or a fault in receiving fax's printer.
 Corrective action: Determine whether the fault is in the telephone line or at the receiving fax by trying the copy function at the receiving fax.
Note: If the telephone line condition is degraded, white horizontal lines, missing rows, and/or cut-off top/bottom may occur.
Note: Branch connections or incoming call (call waiting) may also cause image corruption.
 - b. **If copy function is faulty**
 Cause: Dirt or fault in scanner.
 Corrective action: Clean the flatbed glass, or repair the scanner. If the original is being sent from the ADF, try executing a copy with the original placed on the flatbed glass. If this solves the problem, the fault is in the ADF.
2. Cannot dial
 Cause: Incorrect connection. Incorrect setup of dial type and/or line type.
 Corrective action: Correct the connection. Reset the dial type and/or line type to correct settings.
Note: If the telephone line condition is degraded, white horizontal lines, missing rows, and/or cut-off top or bottom may occur.
Note: Branch connections or incoming call (call waiting) may also cause image corruption.

Receive fault

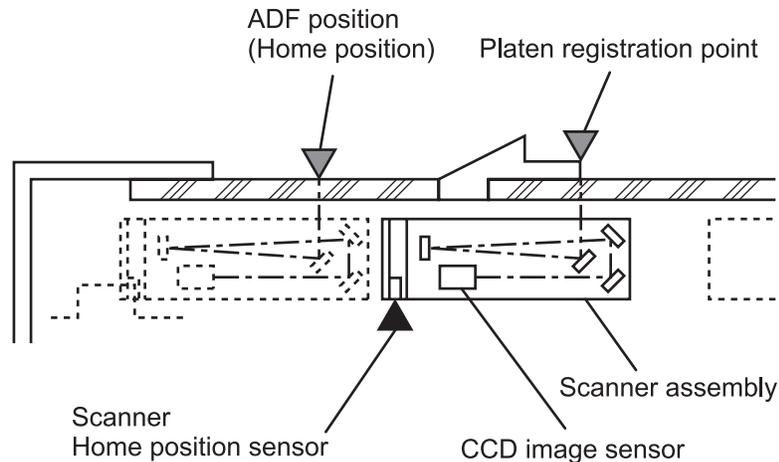
1. Problem with the print quality, such as a corrupt image, lines in the image, or the top or bottom is cut off.
 - a. If the copy function is normal
 Cause: Degraded telephone line connection caused by noise, or so on; or a fault in sending fax's scanner.
 Corrective action: Determine whether the fault is in telephone line or at sending fax by trying copy function at receiving fax.
Note: If the telephone line condition is degraded, white horizontal lines, missing rows, and/or cut-off top/bottom may occur. Branch connections or an incoming call (call waiting) may also cause image corruption.
 - b. If the copy function is faulty
 Cause: Dirt or fault in printer.
 Corrective action: Clean all the parts of printer, or repair the printer.
2. Does not emit the response signal
 Cause: Incorrect connection. Incorrect setup of the dial type, line type, and/or reception mode.
 Corrective action: Correct the connection. Reset the dial type, line type, and/or receive mode to correct settings.
 If a call is made to the fax from a telephone, and the fax does not emit its ringing sound, a telephone line fault is highly probable.

Other problems

- Branch connection (parallel connection)
During fax reception, if the handset of another telephone on a branch connection is lifted, the received image may be corrupted, or a transmission error may occur. Branch connection may also interfere with caller identification, call waiting, and the receiving operation of connected telephones.
- Call waiting
If a call comes in during fax sending or reception, as with branch connections, the image may be corrupted.
- DSL (Digital Subscriber Line)
DSL, a high-speed digital transmission method using existing telephone lines, has several types. These include:
 - ADSL (Asymmetric Digital Subscriber Line) with differing upstream and downstream transmission speeds
 - SDSL (Symmetric Digital Subscriber Line) with symmetrical upstream and downstream transmission speeds
 - VDSL (Very high bit rate Digital Subscriber Line) which features higher speed.
 However, because the line is used for both voice and data transmission, various problems may occur, such as noise during spoken conversation, low sound volume, and mis-dialing. Replacing the splitter may improve the situation.
- Electrical noise
 - If electronic equipment (television, computer, microwave, etc.) or devices equipped with motors are located near a fax, noise from them may degrade the line condition.
 - Also, a telephone line, acting as an antenna, may absorb electric waves generated from wireless or broadcasting equipment.
 - Because fax data is audio data, the line quality affects the quality/stability of image data as well as that of conversation.

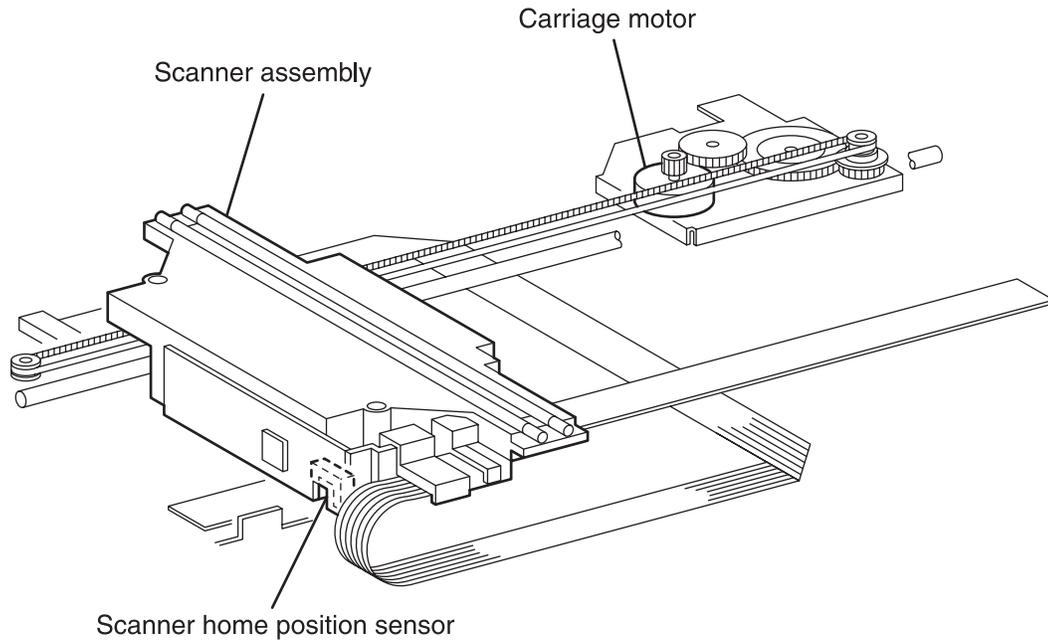
Scanning system

The document scanning section of this machine consists of a scanner that reads a single-sheet document placed on the flatbed glass; and an Auto Document Feeder (ADF) that conveys the pages of a multiple-sheet document. The optical image reflected from the document reaches the CCD image sensor by the light path shown in the figure below.



- **Document scanning at the flatbed**

Shown below is an operational overview of document scanning at the flatbed.



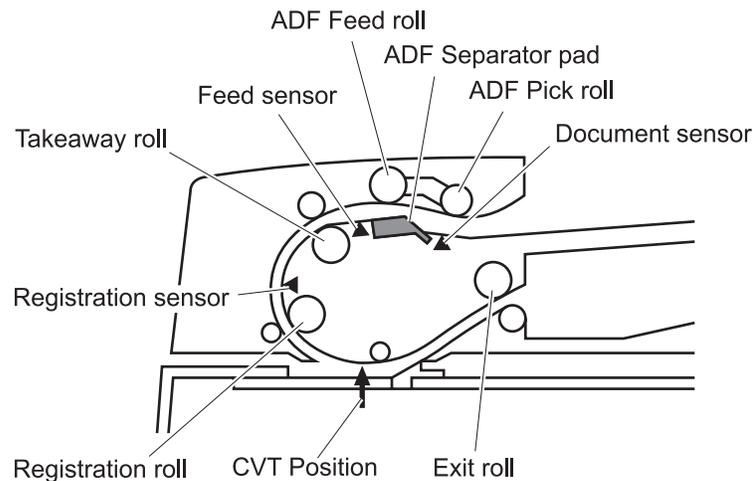
The scanner assembly travels to read the document.

The following are installed on the scanner assembly:

- Exposure Lamp that illuminates light onto the document
- CCD image sensor that reads light reflected from the document
- Lenses and mirrors comprising the light path for the optical image

- **Document scanning at the ADF**

The following describes the document feed path from the ADF.



A document sheet set in the document tray is moved through the feed roll, takeaway roll, and registration roll. The document image is scanned at the ADF position, and the document sheet is ejected through the exit roll.

- **Setting a document**

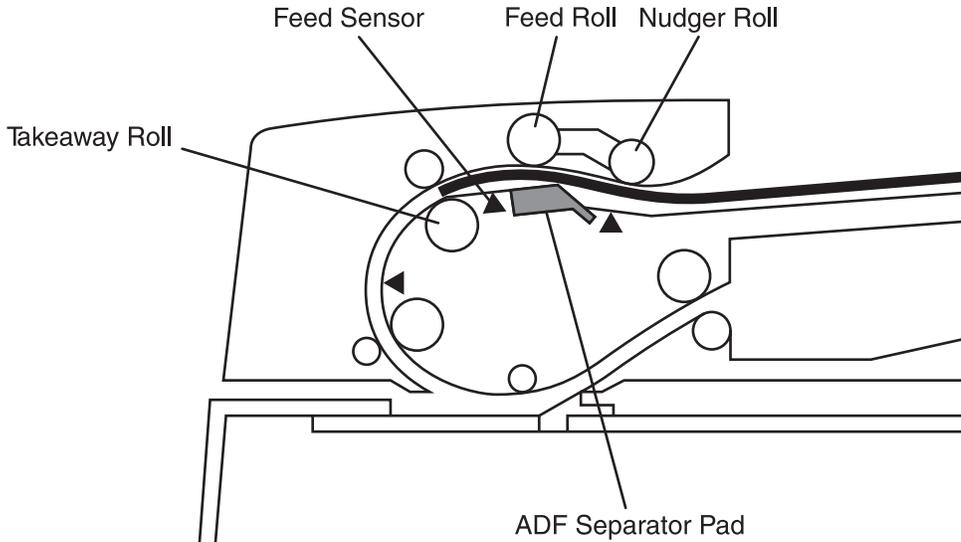
When a document is set in the document tray and pushed into the tray until its lead edge stops, an actuator moves to place the ADF document sensor in the unshielded (unblocked) state, indicating detection of the document.

- **Preparation for feed**

Pressing **Start** with the document set in the tray starts feeding of the document. First, the pick roll moves down and presses onto the document in the document tray to enable document feed. The pick roll moves down with normal rotation of the ADF motor. Upon completion of document feed, the ADF motor reverses rotation to return the pick roll to its normal position.

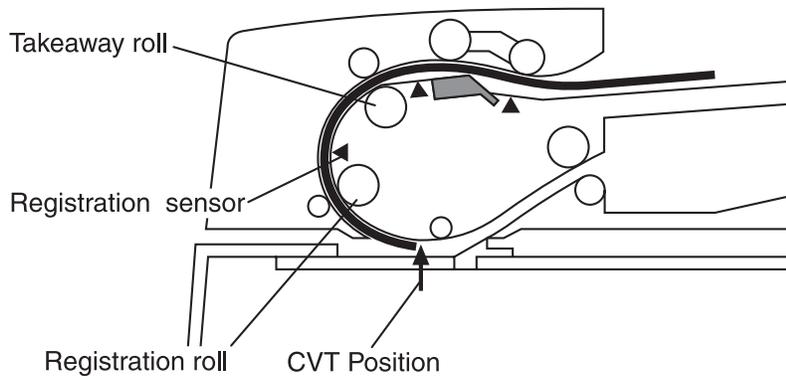
– Prefeed

In the prefeed step, a document sheet is fed from the feed roll to the takeaway roll. When the pick roll is pressed down to the document sheet surface, the ADF motor rotates to drive the pick roll and feed roll. The pick roll feeds the top document sheet in the document tray to the feed roll. The feed roll, nipped by the ADF separator pad, feeds document sheets (coming from the pick roll) one by one. When the feed sensor detects a document sheet, the machine recognizes that feed of the first document sheet is complete.



– Preregistration

In the preregistration step, the document sheet (fed to the takeaway roll in the prefeed step) is fed to the registration roll. The lead edge of the document sheet is then fed from the registration roll to the scan feed reference position (wait position), located upstream from the CVT position, where the document stops. This operation accomplishes registration of the lead edge of the document. When the document sheet is fed to the takeaway roll, the ADF motor drives the takeaway roll. The takeaway roll then feeds the document sheet to the registration roll. When the registration sensor detects the document sheet, the ADF motor rotates to drive the registration roll and exit roll. The registration roll feeds the document sheet (fed from the takeaway roll) to the scan feed reference position.



– **Scan control**

Scanning of the image illuminated with the exposure lamp of the scanner assembly is controlled by changing the feed speed according to the copy magnification.

When the document sheet passes the CVT position at the specified speed, the images on the document sheet are exposed by scanning with the exposure lamp of the scanner assembly, and read by the CCD image sensor.

– **Simplex document**

For simplex document sheets, feed is performed in the following sequence:

1. The document sheet is fed to the takeaway roll. See **“Prefeed” on page 3-78.**
2. The document is fed to the registration roll, and then fed to the scan feed reference position. See **“Preregistration” on page 3-78.**
3. The document sheet is fed at the feed speed corresponding to the selected magnification, and the image on it is scanned with the exposure lamp at the CVT position. See **“Scan control” on page 3-79.**
4. As the image is scanned, the document sheet is fed and ejected by the exit roll that is driven by the ADF motor.

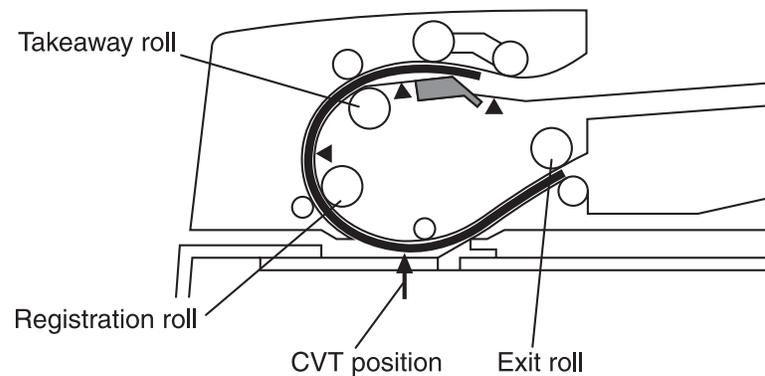
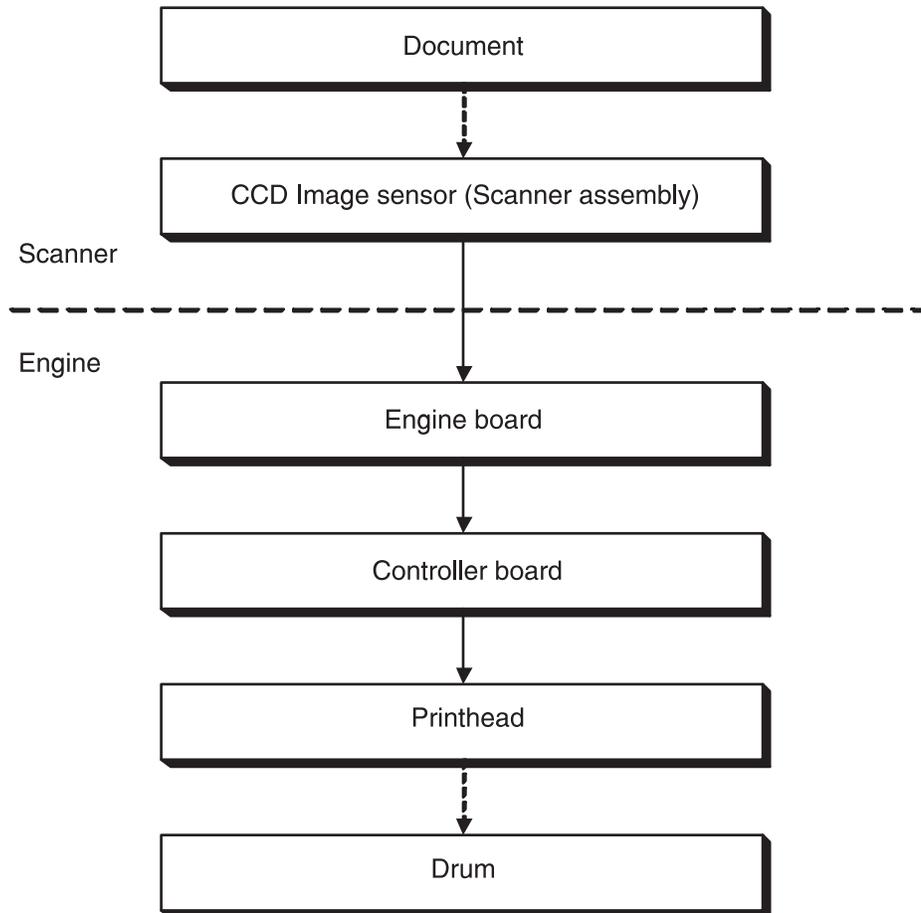


Image data flow

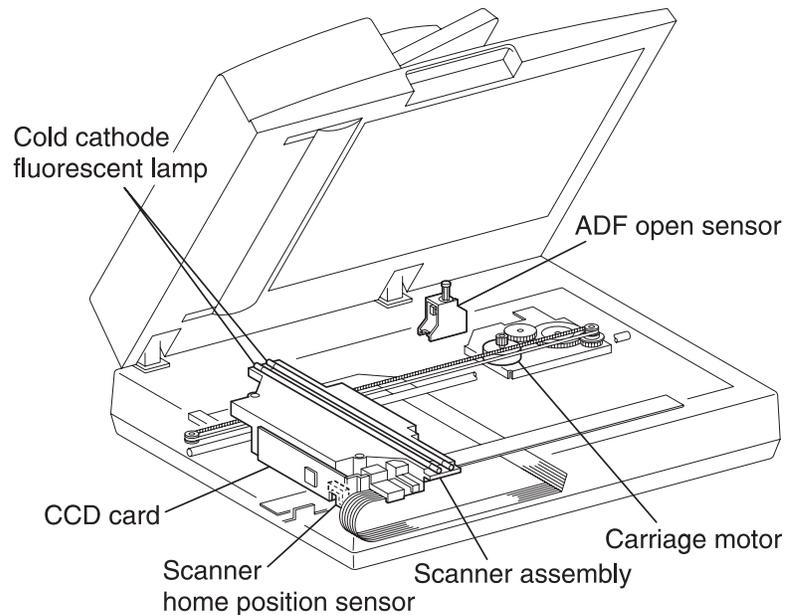
The image data from the document set on the flatbed or ADF goes through the following components before it is printed at the engine section.



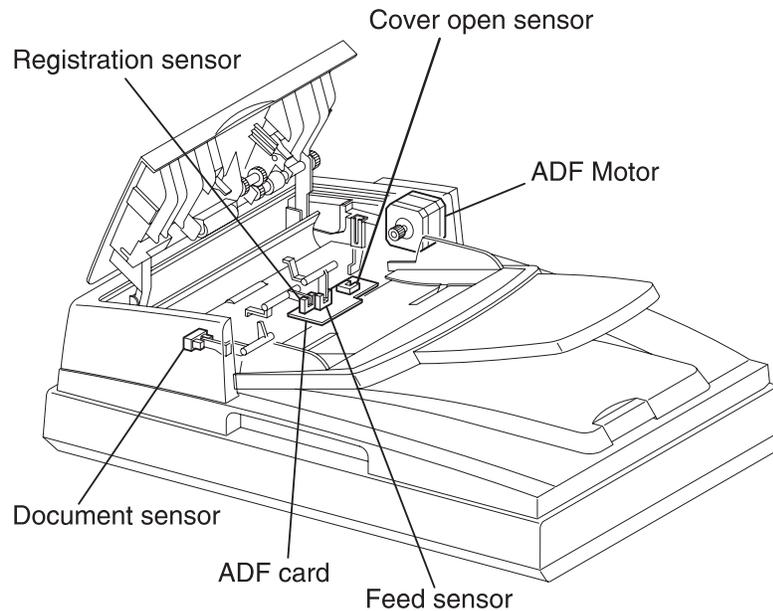
Names and functions of components

The sections below describe the functions of main components of the scanner.

- Flatbed
 - **Open sensor**
A switch that detects whether or not the ADF is open and determines the timing of flatbed document size detection.
 - **Carriage motor**
A stepping motor that drives the scanner assembly.
 - **Scanner home position sensor**
A part of the rear section of the scanner assembly frame functions as an actuator that shields the scanner home position sensor, thus detecting the registration position.
 - **Cold cathode fluorescent lamp (exposure lamp)**
The lamp that exposes the document.
 - **CCD card**
A CCD image sensor that converts optical images into electrical signals.



- ADF (automatic document feeder)
 - **Document sensor**
A sensor that detects the presence or absence of a document on the ADF Document Tray. (Present: Beam is unshielded (unblocked). Absent: Beam is shielded (blocked).)
 - **Cover open sensor**
A switch that detects whether or not the ADF top cover is open.
 - **ADF card**
A card that controls the sensors and motor in the ADF.
 - **Feed sensor**
The feed sensor is installed immediately downstream from the feed roll to detect completion of document feed. (Document present: Shielded (Blocked); Document absent: Unshielded (Unblocked))
 - **Registration sensor**
The registration sensor detects that the preceding document sheet is about to leave the registration roll, thereby determining that the next document feed can be started. (Document present: Shielded (Blocked); Document absent: Unshielded (Unblocked))
 - **ADF motor**
The ADF motor rotates the pick roll, feed roll, takeaway roll, registration roll, and exit roll.



Control

- **Document scanning steps**

A CCD image sensor is used to read image data from the document. To ensure stabilized image reading, the CCD image sensor output is adjusted. Adjustment includes automatic gain control and automatic offset control.

Reference data for adjustment is collected and used to perform compensation on the read image data.

Compensation includes shading compensation, white variation compensation, and black variation compensation. These adjustment and compensation steps are described below.

Reference data is obtained by reading image data from a white reference plate via the CCD image sensor.

- **Automatic gain control—white level variation adjustment**

During automatic gain control, the scanner assembly is moved to the position of the white reference plate, and the exposure lamp is illuminated. The light reflected from the white reference plate is read by the CCD Image Sensor as the white reference value, which is used to adjust CCD image sensor output.

- **Automatic offset control**

Automatic offset control is performed by turning off the exposure lamp after automatic gain control. This state is read by the CCD image sensor as the black reference value, which is used to adjust CCD image sensor output. (The order of automatic gain control and automatic offset control adjustment depends on the model.)

- **Shading compensation**

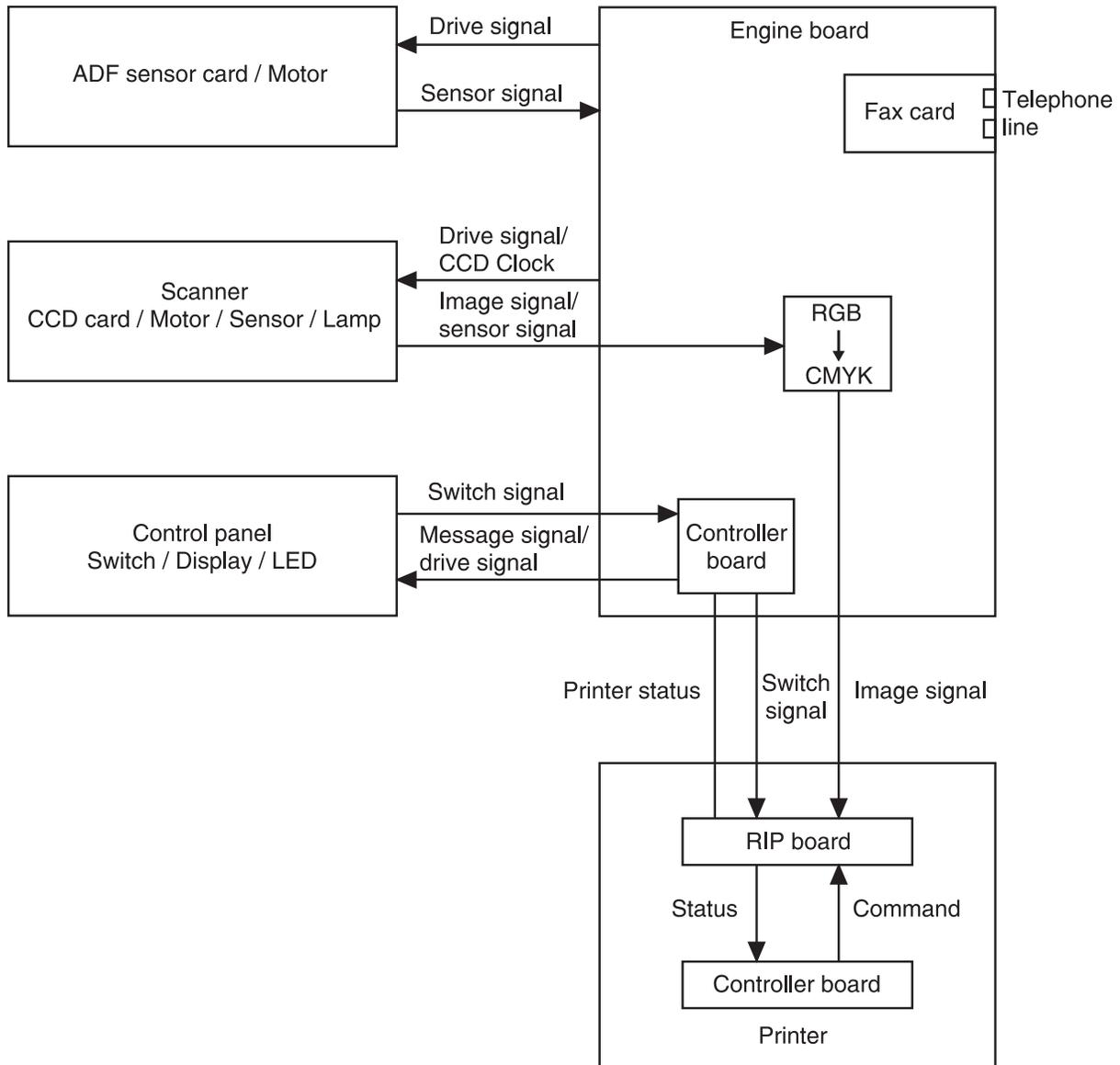
Shading compensation compensates for pixel-by-pixel sensitivity variations and the non-uniformity of lamp light in the fast scanning direction. The automatic gain control and automatic offset control adjustment values are used to compensate for the image data read by the CCD image sensor.

- **CCD image sensor overview**

The CCD image sensor is a four-color image sensor with three lines for the respective colors R (red), G (green), B (blue), and one line for B/W (black and white).

- **System configuration**

The engine board controls the fax, scanner, and ADF. Fax and copy operations are performed according to data entered at the operation panel. The following figure shows the system configuration.

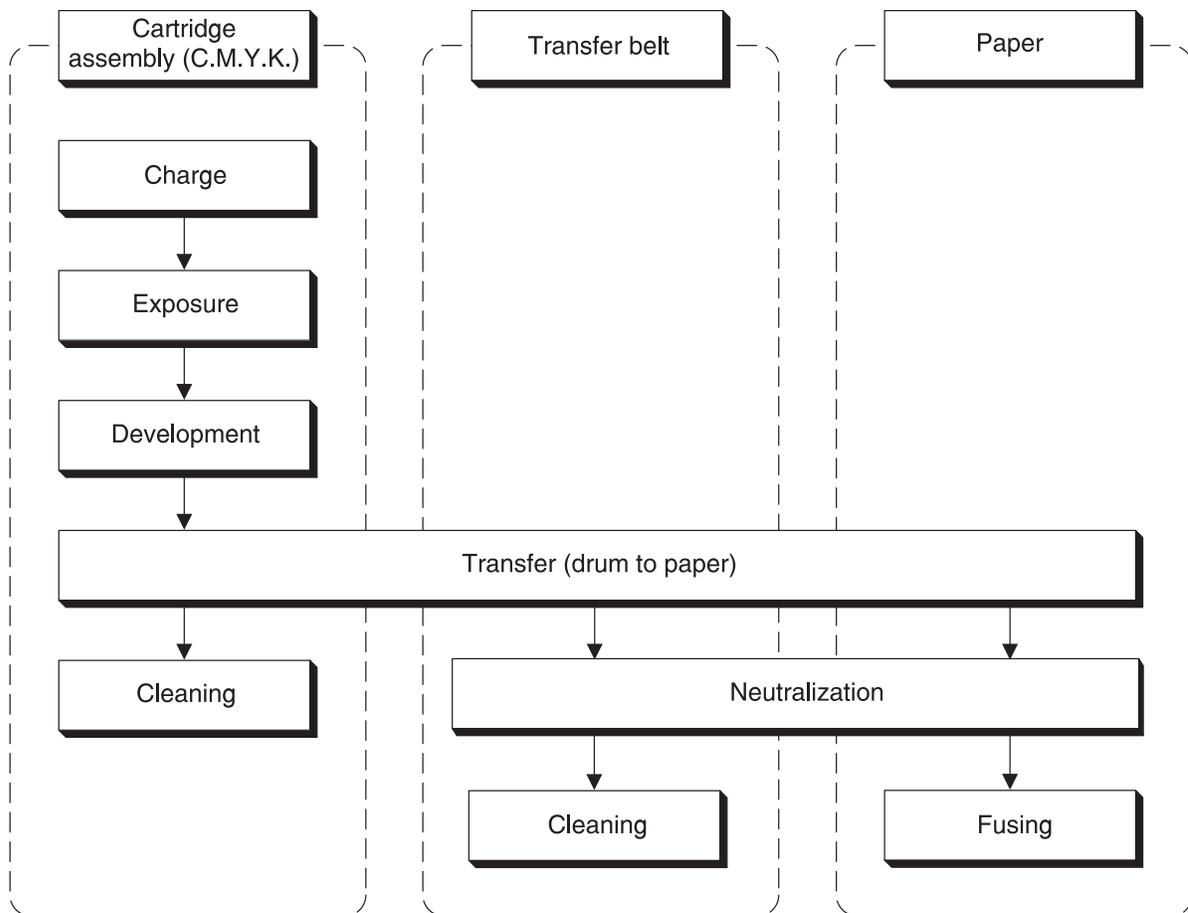


Printing process

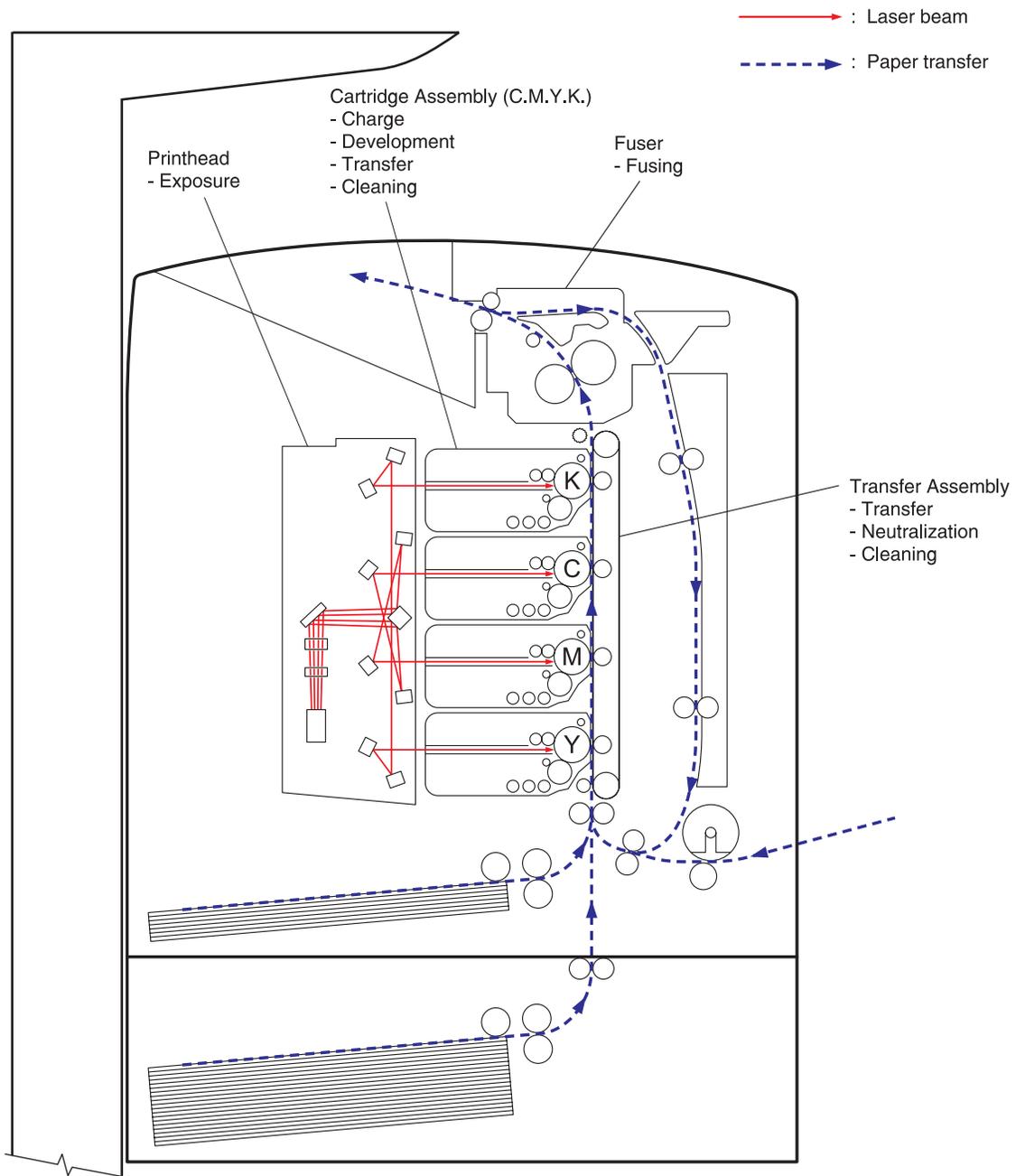
Summary of printing process

This printer is a color laser printer which applies the principle of an electrophotographic recording system. The tandem system comprising the color cartridge array of cyan, yellow, magenta, and black (C, Y, M, and K) creates the toner image. The printing process of this printer is composed of the basic steps as follows:

1. **Charge**—Drum surface is charged with electricity.
2. **Exposure**—Image unit is exposed to laser beams.
3. **Development**—Image is developed with toner.
4. **Transfer**—Four-color finished toner image on the Drum is transferred onto the paper.
5. **Cleaning**—Remaining toner on the drum is collected.
6. **Neutralization**—Electric charge of the paper is eliminated.
7. **Fusing**—Toner on the paper is fixed by heat and pressure.
8. **Cleaning**—Remaining toner on the transfer belt assembly is collected.



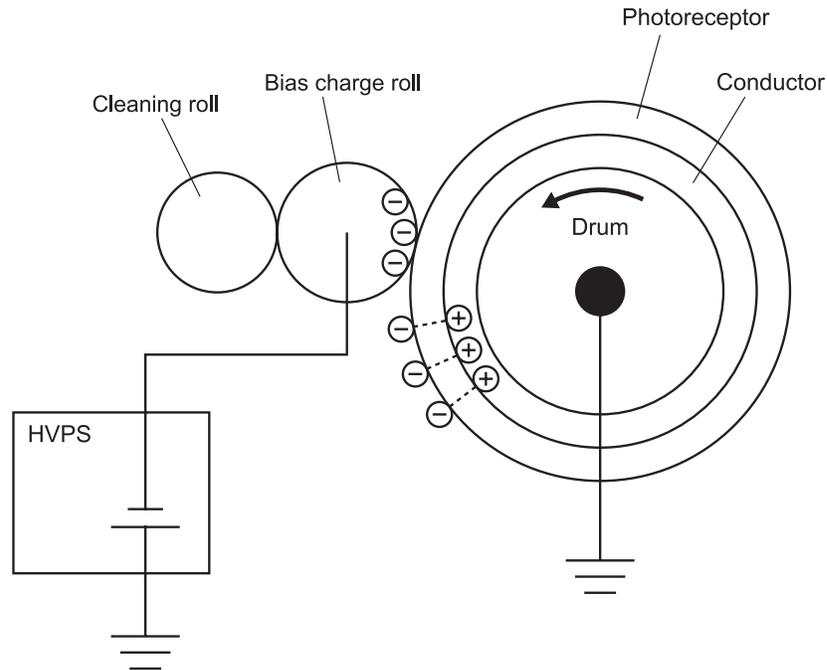
Schematic diagram for printing processes



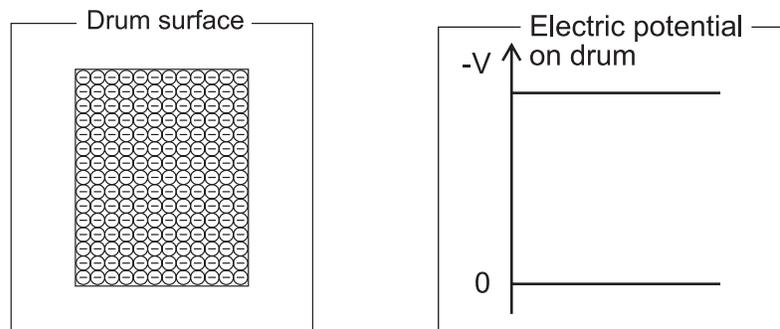
Charging

In the charging process, the drum surface rotating at a constant speed is charged uniformly with negative electricity by discharging of the bias charge roll. This process is performed in parallel for cyan, magenta, yellow, and black colors.

- The bias charge roll is kept in contact with the drum, and rotates following the rotations of the drum. The bias charge roll is a conductive roll, receives discharge voltage from the HVPS, and discharges a negative DC voltage.



- The drum surface is uniformly and negatively charged with DC bias voltage. The drum surface is a photoreceptor (which is an insulator in a dark place and conductor when receiving light) and the drum inside is composed of a conductor.

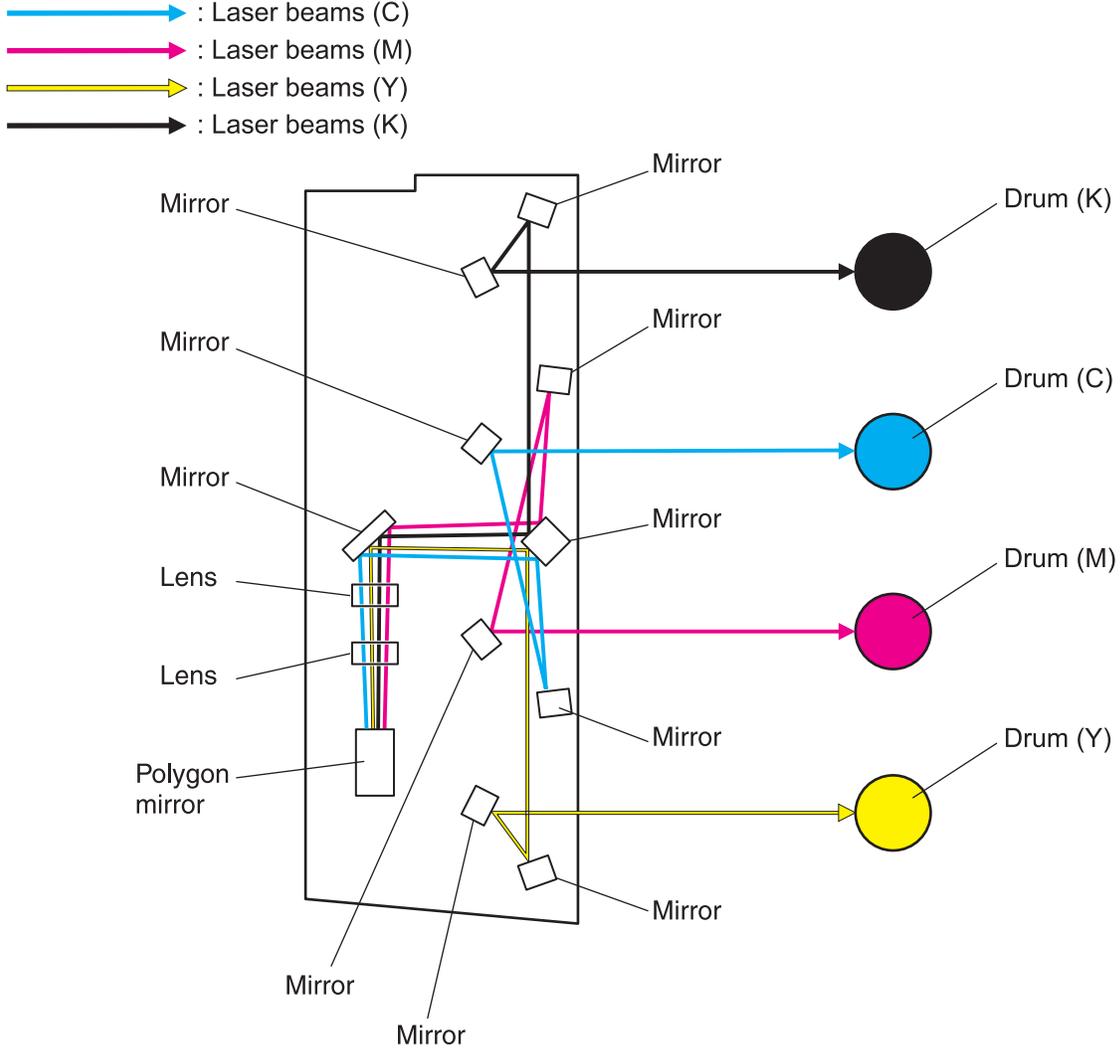


- The bias charge roll cleaner contacts with the bias charge roll to catch the toner.

Exposure

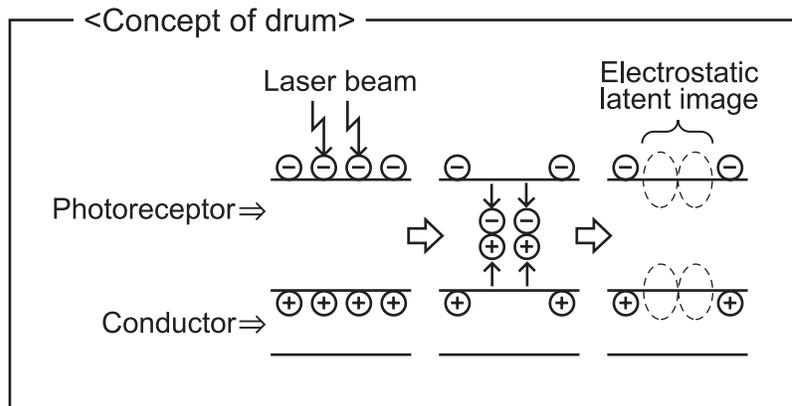
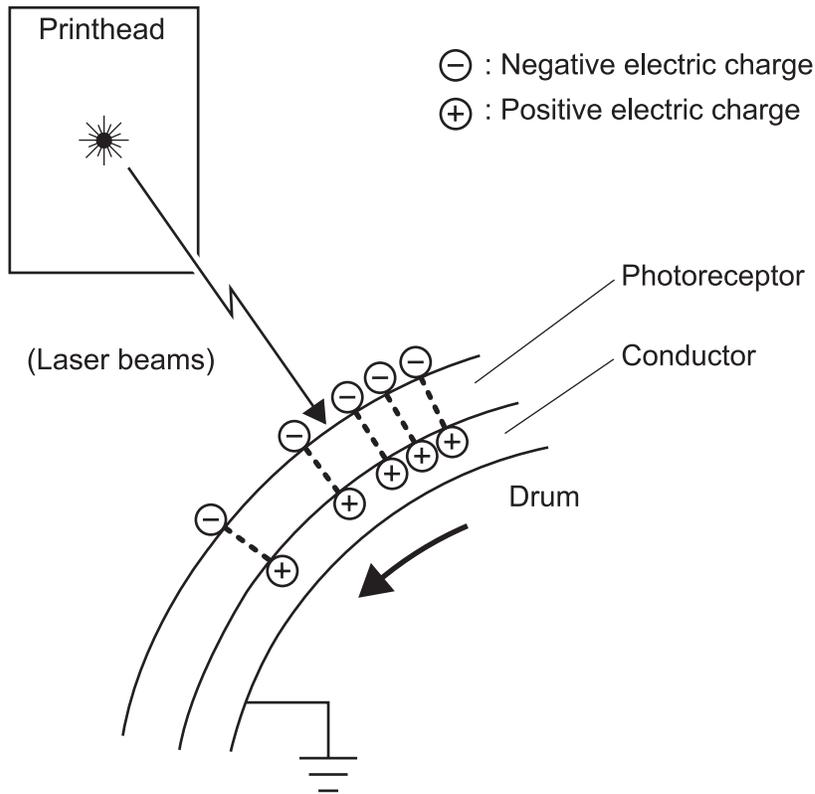
In the exposure process, the drum surface that is charged negatively is scanned by laser beams to form an invisible electrostatic latent image on the drum surface. This process is performed in parallel for cyan, magenta, yellow, and black colors.

- Laser beams are emitted from the laser diode in the printhead. By the rotating polygon mirror, fixed mirror and lens attached to the scanner motor assembly of the printhead, each color of drum surface is scanned from end to end in the axial direction.



- The laser beam radiates according to the printing data (image data) output from the printer controller. The laser beam is output only when printing data is expressed in pixels (micro points comprising characters or pictures). (The laser diode lights up for parts to be developed by toner, and not for parts that are not to be developed.)

The drum surface radiated by the laser beam becomes a conductor, the negative charge on the drum surface flows to the positive side, and the charges negate each other so that the potential on the drum surface drops. The part on the surface where potential drops becomes the electrostatic latent image.



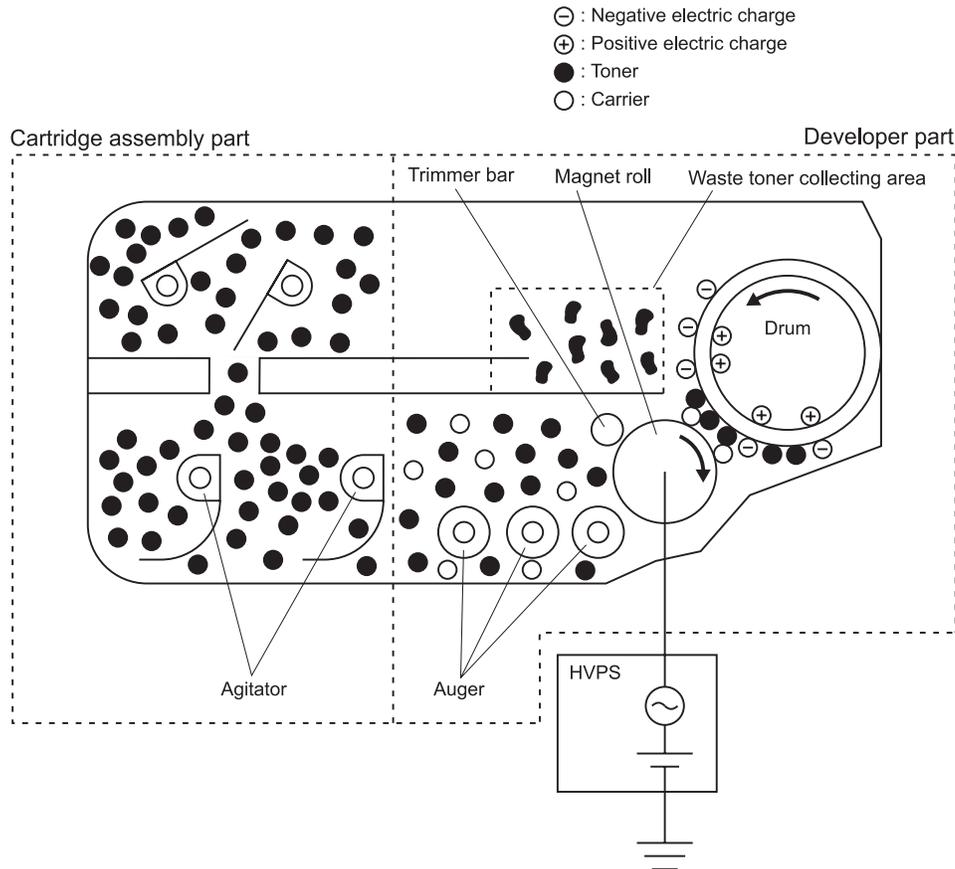
Development

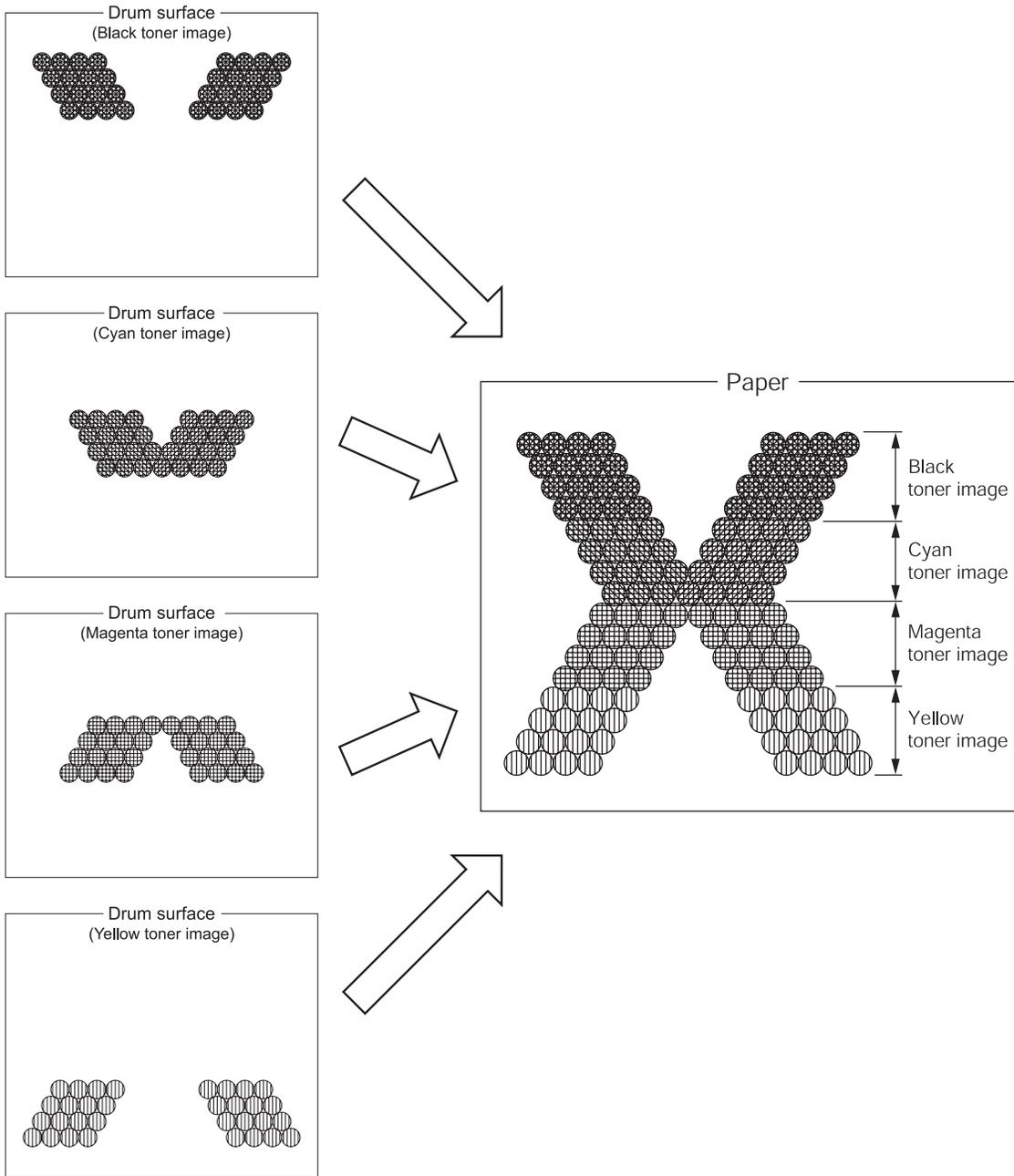
In the development process, toner is electrically attached to the invisible electrostatic latent image on the drum surface to form visible toner image on the drum. This process is performed in parallel for yellow, magenta, cyan, and black color respectively.

- The toner in the cartridge assembly is agitated by the agitator in the cartridge assembly and fed into the developer. The auger is driven by the toner motor and the deve motor in the main drive assembly. The toner to be consumed according to the print count is calculated and fed into the developer. This is called “toner dispensation”, which is controlled by two types of control, “PCDC” and “density”.
- The toner fed into the developer part and the carrier in the developer part are agitated by the auger and supplied to the magnet roll arranged in the vicinity of the drum surface. The toner and carrier are charged by friction due to the agitation (toner in negative, carrier in positive), and they absorb each other electrically. As the carrier is a magnetic substance, it is attracted to the magnet roll having a magnetic force, and a homogeneous layer is formed by the trimmer bar.
- The magnet roll is covered by a thin semi-conductive sleeve over the surface. DB (Developing Bias) voltage is supplied to this semiconductor sleeve from the HVPS. DB voltage is negative DC voltage combined with AC voltage. The magnet roll is kept at constant negative voltage against the photoreceptor layer of the drum by DC voltage. Therefore, at the area on the drum surface where the negative electric charge does not decrease, potential is lower than the magnet roll, while the potential is higher than the magnet roll at the area where the negative charge on the drum surface decreases. The AC voltage shakes the developer on the magnet roll surface, pressing the toner to fly to the drum.

Thus, the toner charged negatively is attracted only by the area where the minus charge has decreased on the drum surface from the magnet roll (electrostatic latent image), and the toner image is formed on the drum.

When the toner is attached, minus charge at that portion increases, potential decreases, and force to attract the toner decreases.

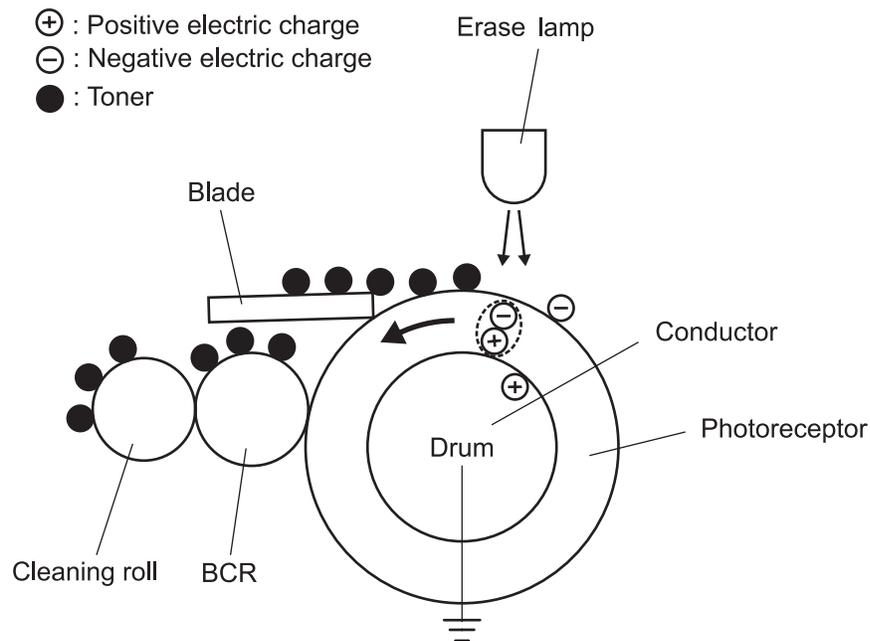




Cleaning (cartridge assembly)

In the cleaning (cartridge assembly) process, excess toner is removed from the drum and bias charge roll surfaces, while excess charge is also eliminated from the drum surface.

- **Drum cleaning**
The cleaning blade contacts the surface of the drum, collecting the excess toner by scraping.
- **Cleaning roll**
The cleaning roll contacts the surface of the bias charge roll, collecting the excess toner by scraping.
- **Charge cleaning**
When the drum is charged by the bias charge roll, any excess charge hinders the drum surface from being uniformly charged, which may lead to print quality problems. The excess charge on the surface of the drum is eliminated by irradiating the light of the erase lamp (LED assembly).



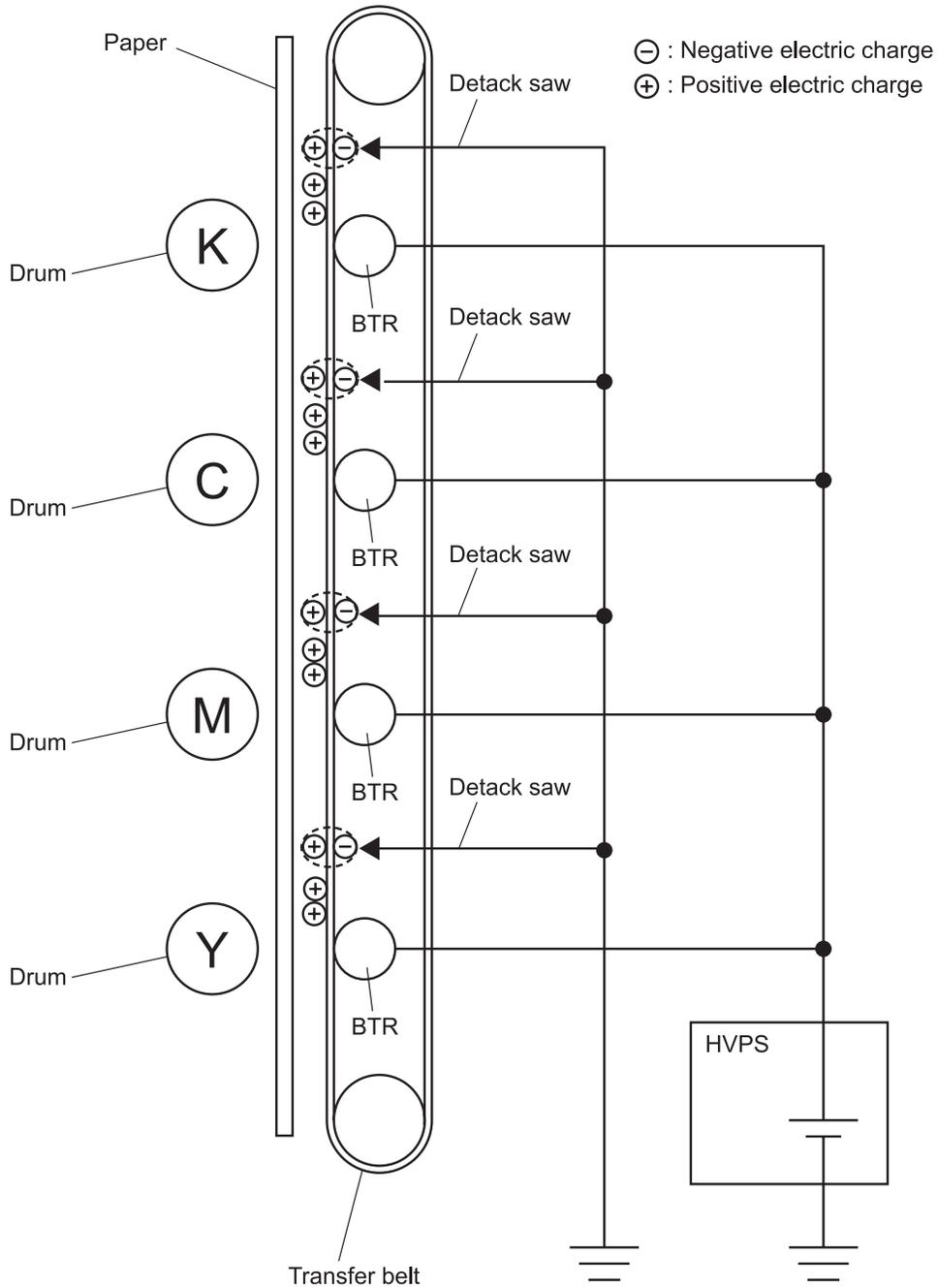
Neutralization

In the neutralization process, the charge on the paper is neutralized or eliminated by the detack saw.

- **Detack saw**

The charge is neutralized (removed), because otherwise the toner on the paper will spread over the surrounding metal surfaces.

The detack saw is a metal sheet that is held at the ground level. The detack saw is installed several millimeters away from the back side of the belt. The charge is neutralized by the detack saw via the belt.

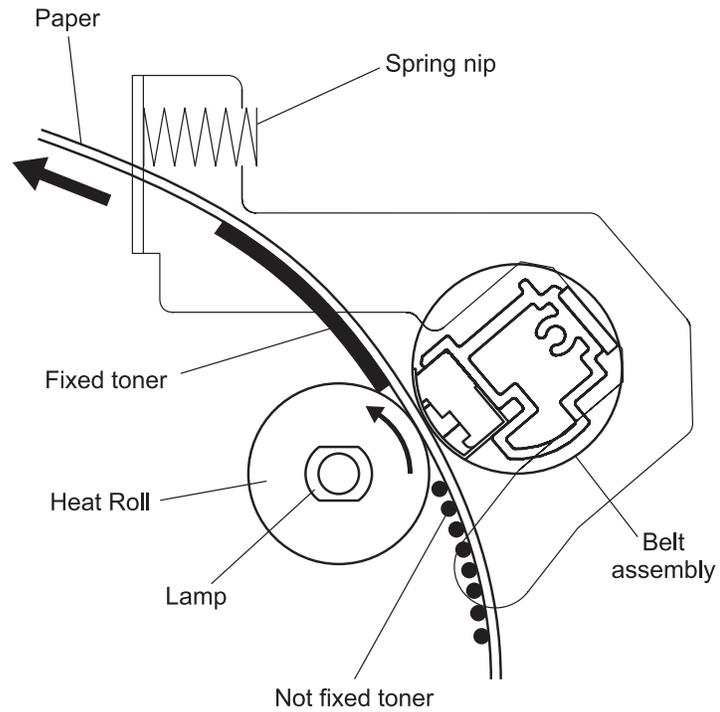


Fusing

In the fusing process, toner is fixed on the paper by heat and pressure.

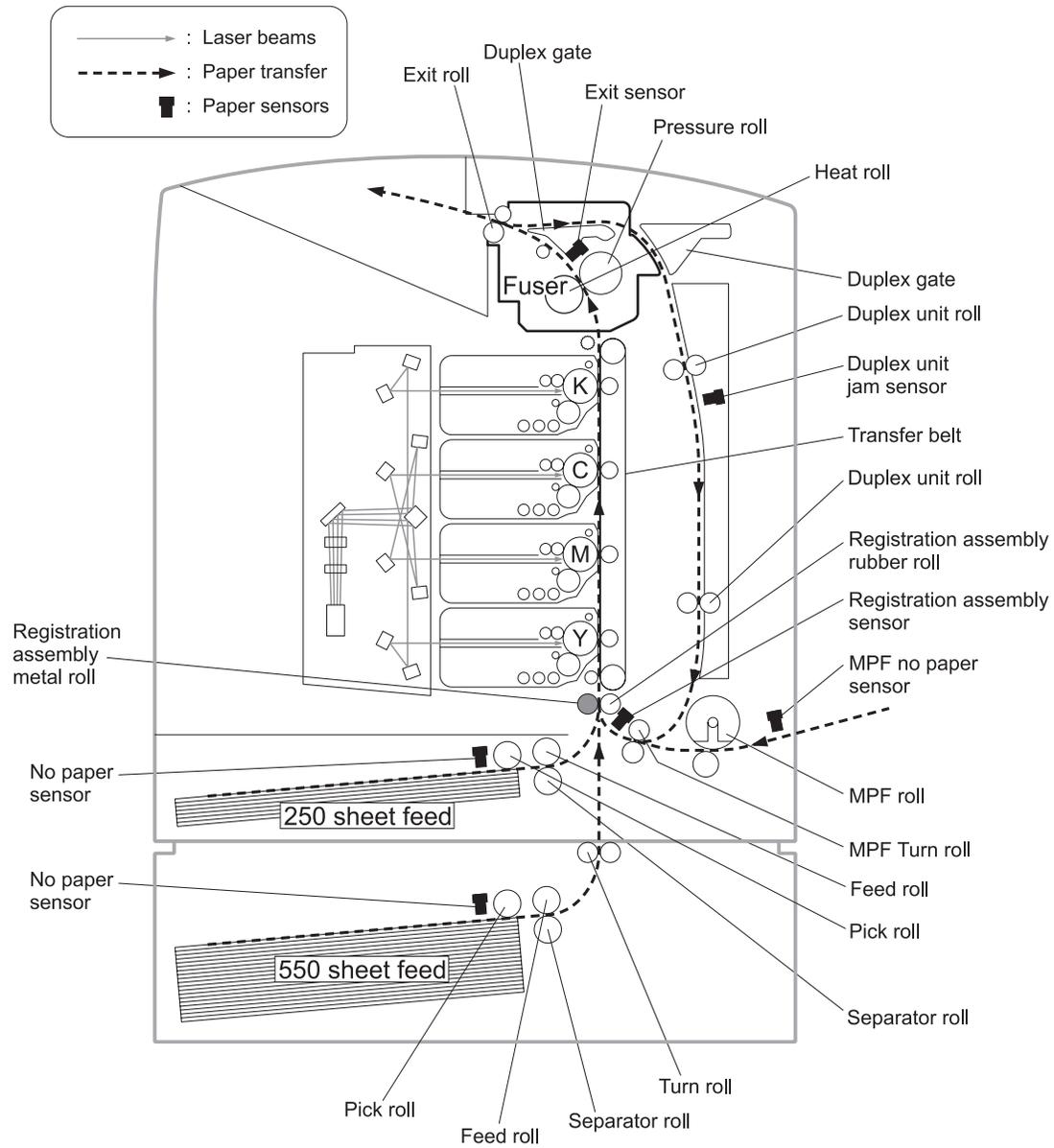
- **Fusing**

Finished toner image transferred from the belt can be easily broken by a finger touch. The toner image is fixed on the paper with the fuser (fusing unit). The toner particles melt by the heat of the heat roll with the heater lamp as the heat source and deposited on the paper under pressure given by the belt opposed against the heat roll.



Paper path

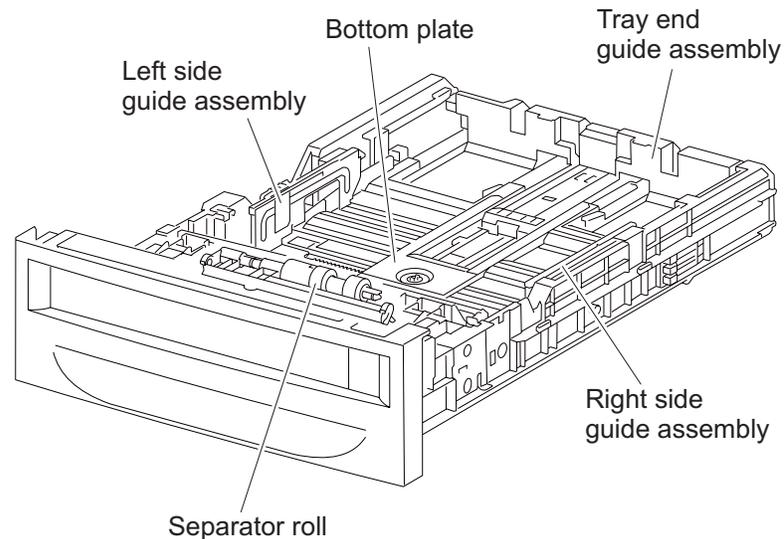
Diagram of the paper path



Functional components

250-sheet paper tray

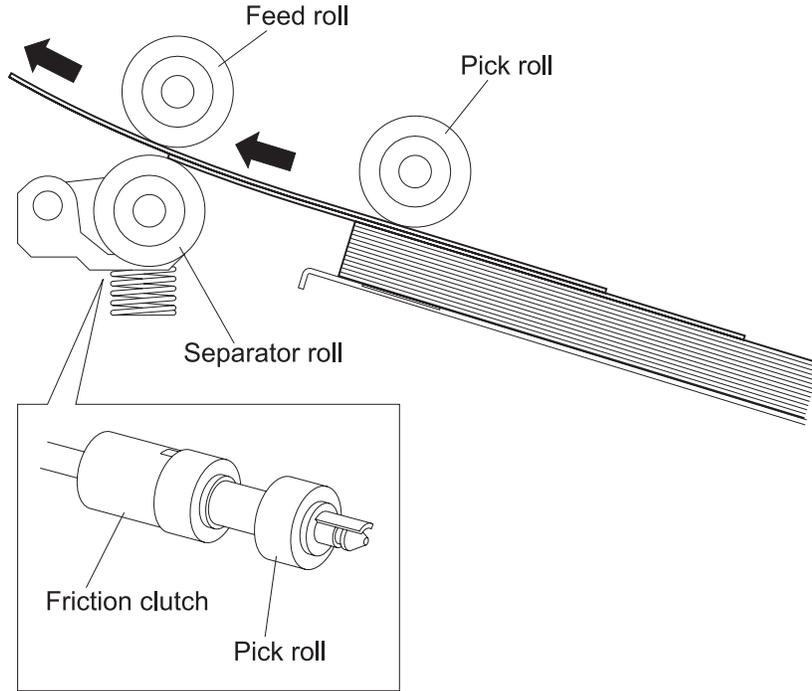
- Left and right side guide assemblies**
 The left and right side guide assemblies can move at a right angle to the paper transfer direction to align the paper width.
- Tray end guide assembly**
 The tray end guide assembly can move in the paper transfer direction to determine the paper size. The off and on size switch assembly varies according to the tray end guide assembly position to detect the paper size.
- Separator roll assembly**
 The separator roll assembly and the feed roll assembly pinch the paper to prevent the feeding of multiple sheets.
- Bottom plate assembly**
 The Bottom plate is locked to the bottom side when the paper tray is pulled out from the paper feeder and unlocked when paper tray is installed to the paper feeder. It pushes the paper against the feed roll using a spring tension.



- **Multiple sheet feed prevention**

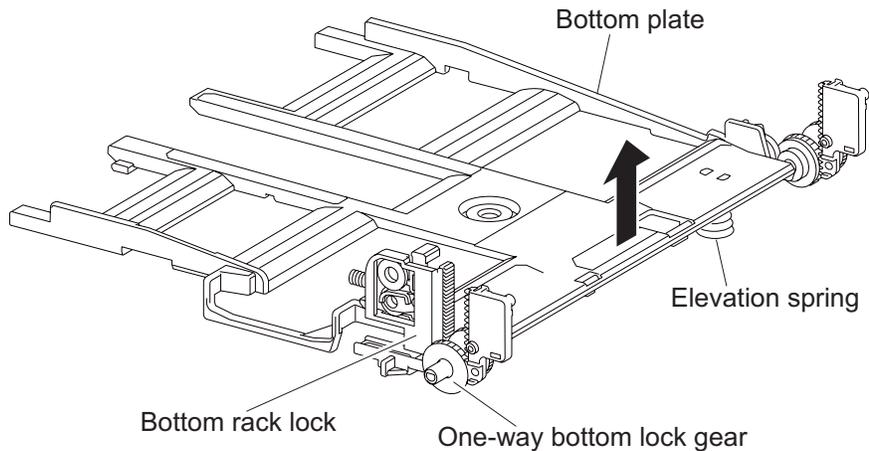
The sheets set in a tray are occasionally stuck together along the edges. The stuck sheets cause a multiple sheet feed or a jam. The sheets are fed by the pick roll to a position between the feed roll and the separator roll. Normally, when only one sheet is fed, both the feed roll and separator roll rotate to allow the sheet to pass. However, when two sheets are fed concurrently, only the feed roll rotates and the separator roll is locked, thereby allowing the upper sheet to pass by and be separated from the lower sheet that is stopped by the friction with the separator roll at rest.

The separator roll is being pushed toward the feed roll by spring pressure, and is controlled by the torque limiter (separator friction clutch) with which it is coupled.



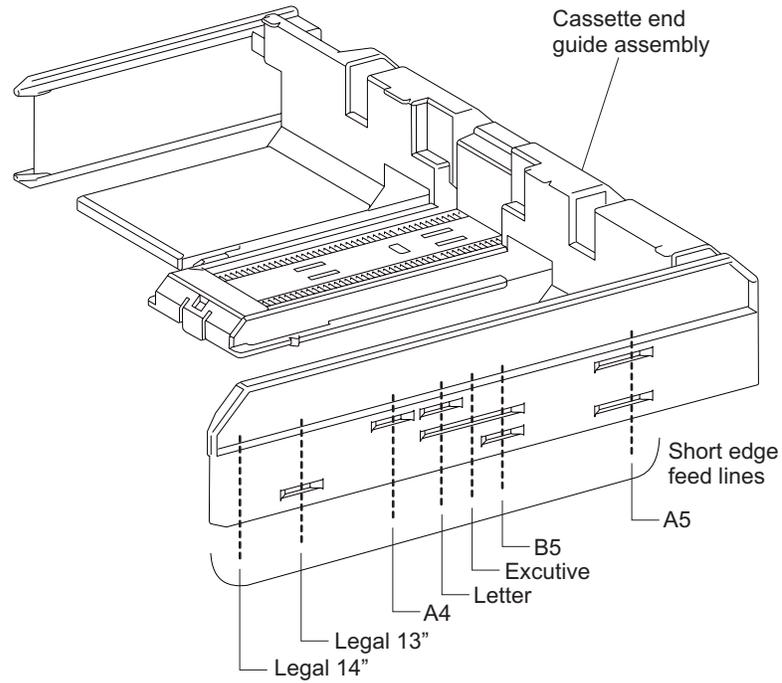
- **Bottom plate operation**

Inserting the paper tray into the feeder section unlocks the one-way bottom lock gear. When the paper tray is pushed in until it stops, the gear teeth of the bottom rack lock and one-way bottom lock gear are out of engagement allowing the bottom plate assembly to rise by the spring pressure of the upper bottom plate.



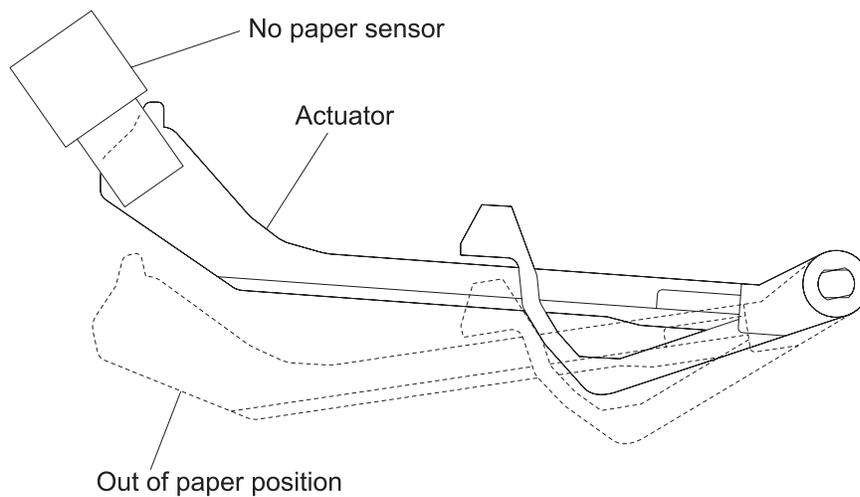
- **Size switch assembly (250-sheet tray)**

The size switch assembly detects paper size and the presence or absence of the paper tray.)
The paper size is decided by the position of the 250-sheet tray end guide assembly.

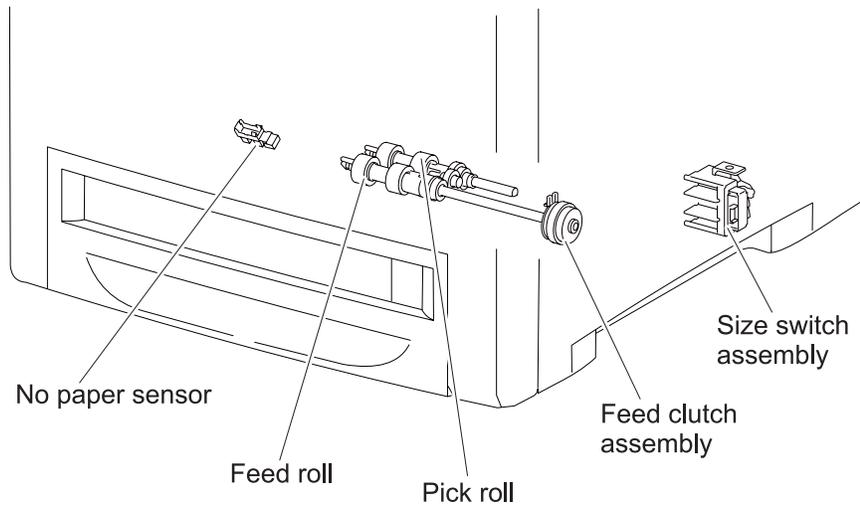


- **No paper sensor (250-sheet tray)**

Detects the existence or non-existence of paper in the paper tray based on the position of the no paper actuator.



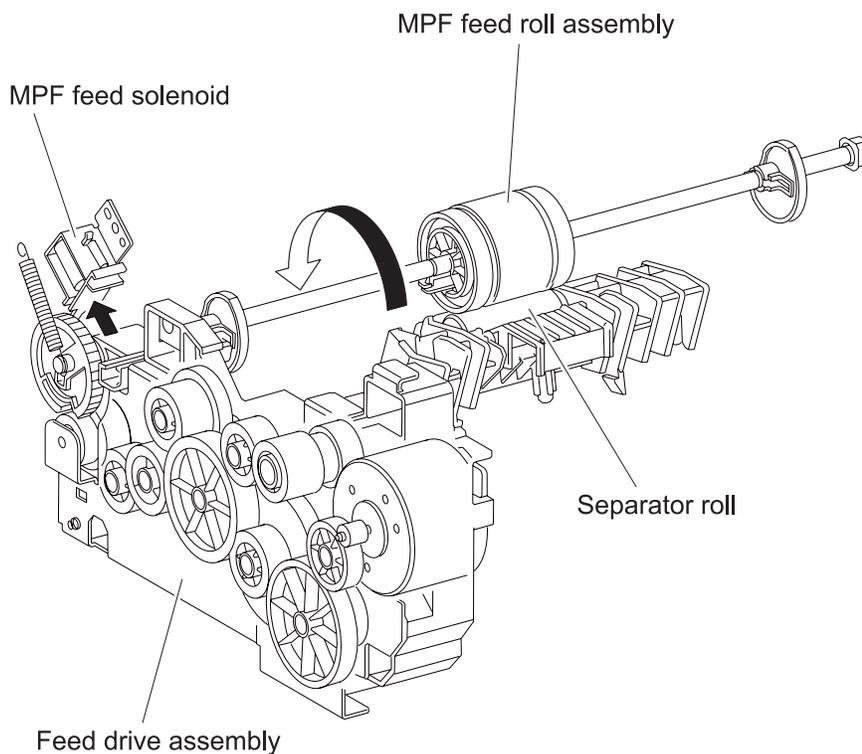
- **Paper feed clutch assembly**
Transmits the drive from the paper handling drive assembly to feed roll assembly.
- **Feed roll assembly**
When the feed clutch assembly operates, the feed roll assembly starts rotating and the feed roll assembly feeds the paper.



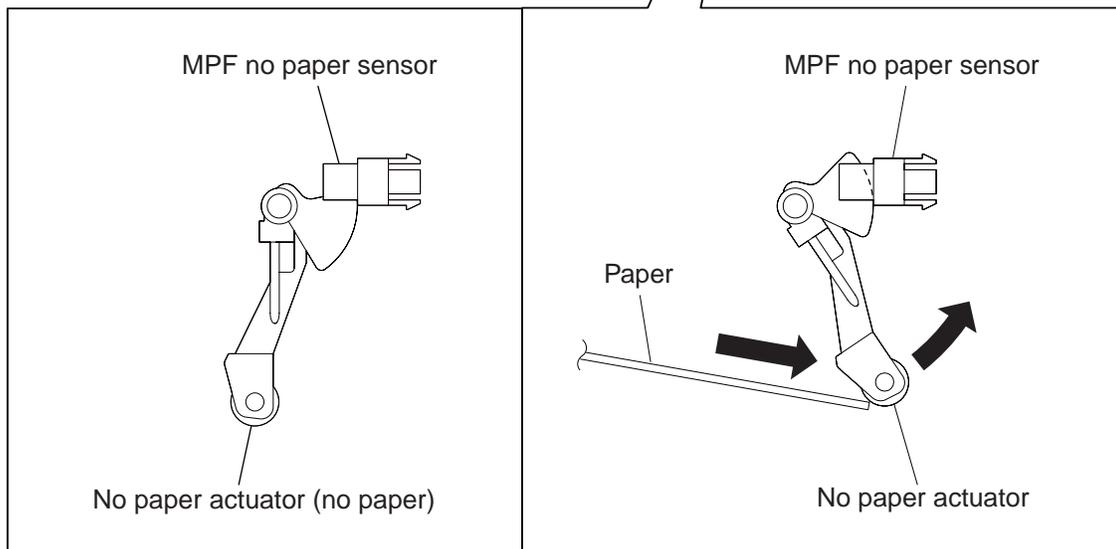
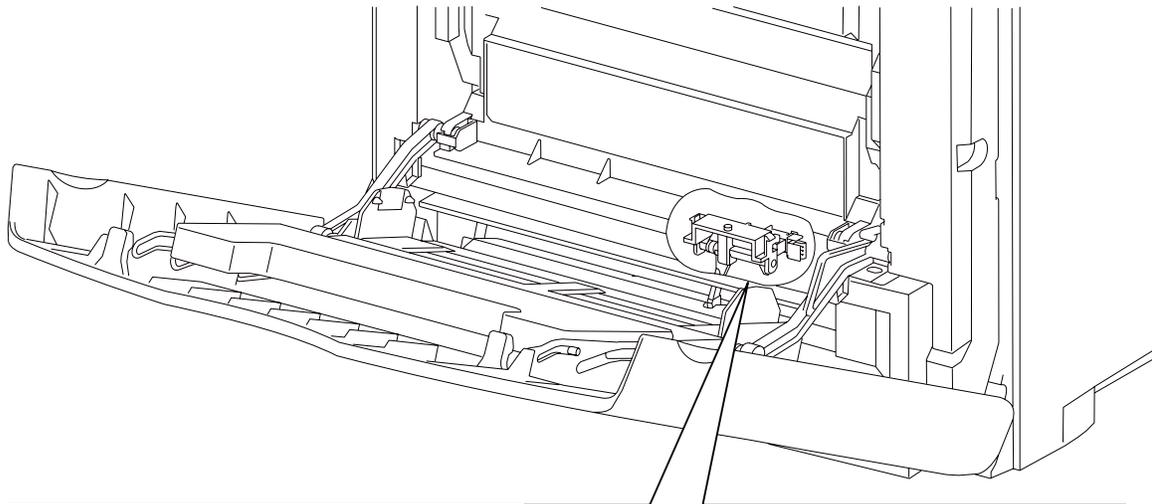
MP feeder and the registration assembly

Major functions:

- **MP feeder feed solenoid**
Controls the drive from the paper handling drive assembly to the MP feeder feed roll assembly.



- **Paper handling turn clutch assembly**
Transmits the drive from the paper handling drive assembly to the turn roll assembly.
- **Turn roll assembly**
The turn roll assembly is rotated by the drive from the paper handling drive assembly through the paper handling turn clutch assembly to feed the paper from the MP feeder or duplex paper path to the registration assembly.
- **MP feeder no paper sensor**
Detects presence or absence of paper in the MP feeder tray by the change in actuator position.



- **Registration sensor**

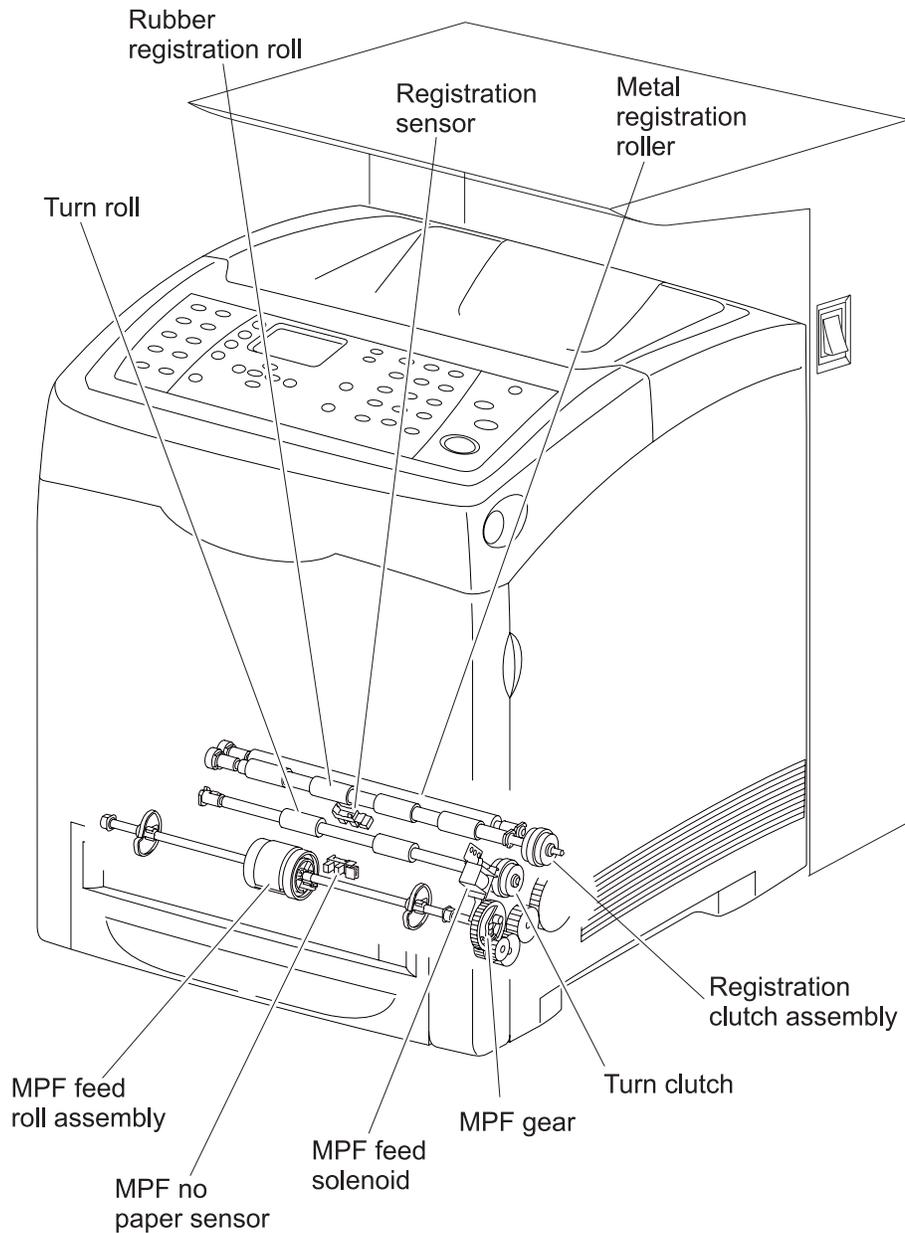
It detects when the paper front end reaches the CHUTE ASSY REGI.

When the paper feeds from the MP feeder, the registration sensor is measuring the paper length (size). The on time of the registration sensor is converted into the paper length. (On: the paper activates the actuator.)

- **Registration clutch assembly**

The registration clutch assembly transmits the driving power from the main drive assembly to the rubber registration roll, and transports the paper from the tray, MP feeder, and duplex path toward the cartridge assembly direction.

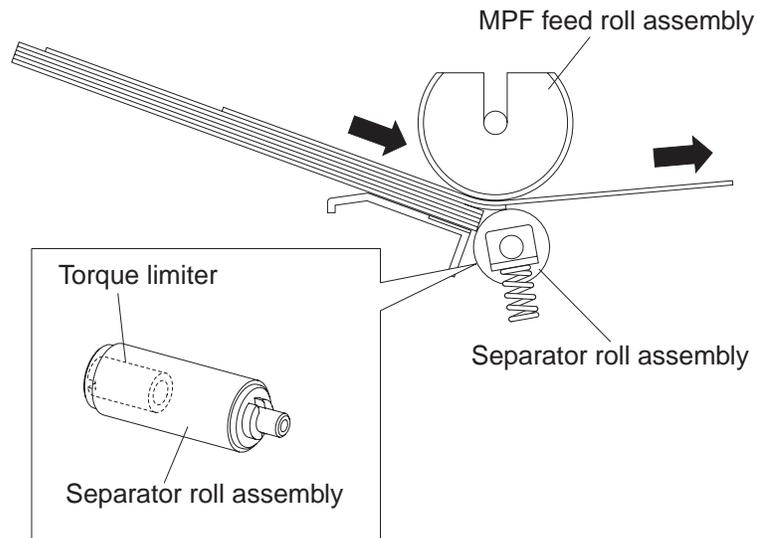
The timing of sheet feed from the registration assembly is adjusted by the duration of the registration clutch assembly operation so that the toner image on the drum can be transferred to the appropriate position on the sheet.



- **Multiple sheet feed prevention**

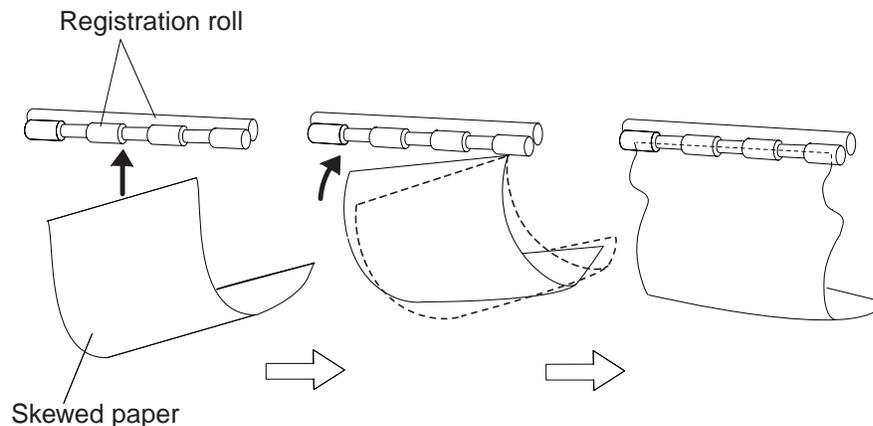
The sheets set in the MP feeder occasionally stick together at the edges. The stuck sheets cause a multiple sheet feed or a jam. Normally both the MP feeder feed roll assembly and separator roll assembly rotate to allow a single sheet to pass. However, when two sheets are fed together, only the MP feeder feed roll assembly rotates, and the separator roll assembly is locked. The locked separator roll fails to stop the lower sheet.

The separator roll assembly is being pushed toward the MP feeder feed roll assembly by spring pressure, and controlled by the torque limiter with which it is coupled.



- **Leading edge registration**

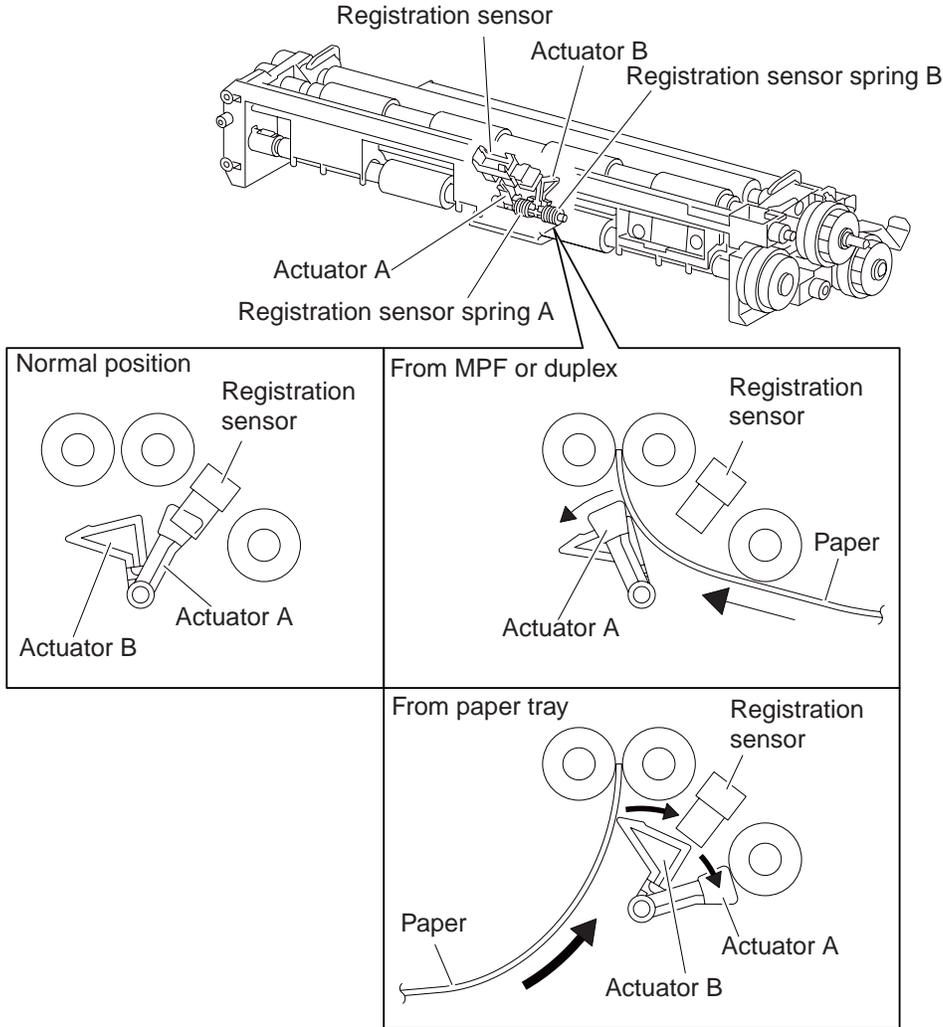
When a sheet is fed from the MP feeder or tray to the toner transfer position, the registration of the sheet may not be correctly maintained due to such troubles as misalignment of lead edges in the tray. To avoid this trouble, the leading edge position needs to be aligned at the registration part before the sheet is fed to the toner transfer position. By thrusting the edge of the sheet coming out of the MP feeder or tray against the registration roll that is at rest, the leading edge of the sheet is registered.



• **Paper detection by the registration sensor**

Since the paper path from the MP feeder/duplex to the registration sensor and that from the paper tray to the registration sensor are different, the registration sensor is provided with the actuator A and actuator B.

- The actuator A detects the sheet fed from the MP feeder/duplex.
- The actuator B detects the sheet fed from the paper tray. However, the movement of the actuator A does not affect the actuator B.



Fuser

The fuser fixes toner which was transferred onto the paper but not fixed by the heat and pressure, and feeds paper before and after being fixed.

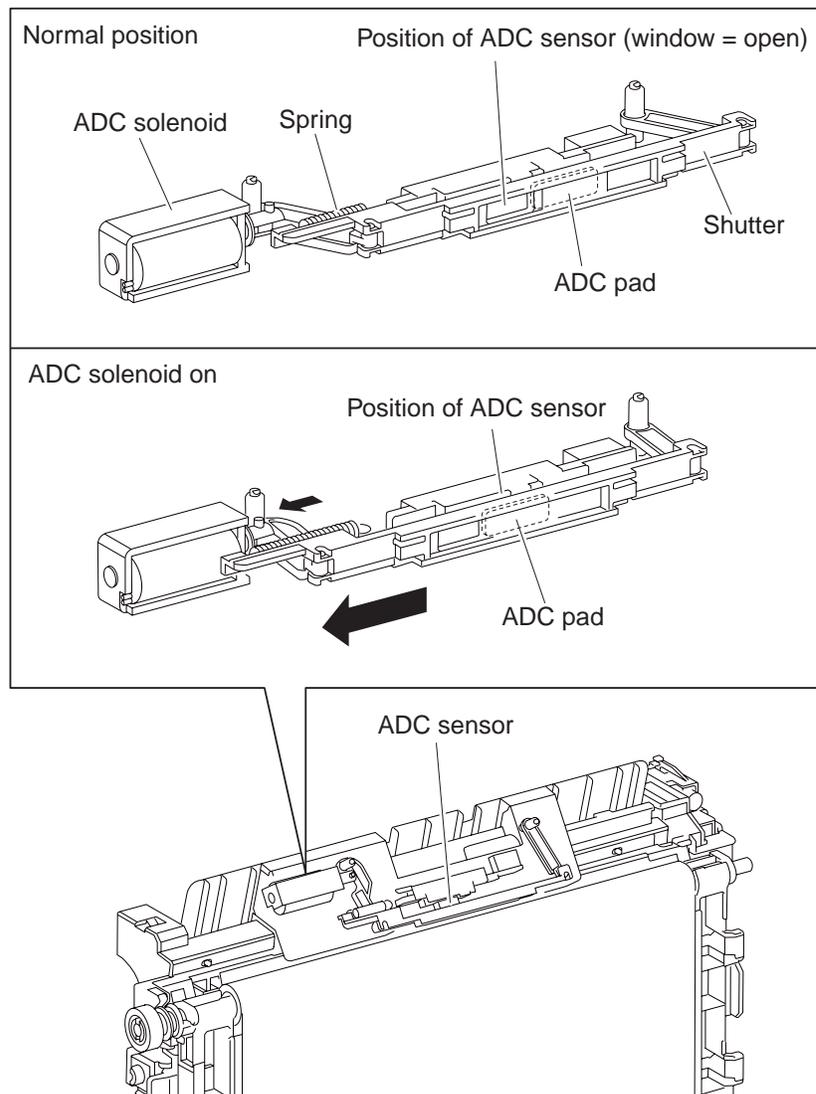
The fuser mainly consists of the following parts:

- Heat roll
- Pressure belt
- Heater lamp
- Exit roll assembly
- Thermostat
- Exit sensor
- Temperature sensor

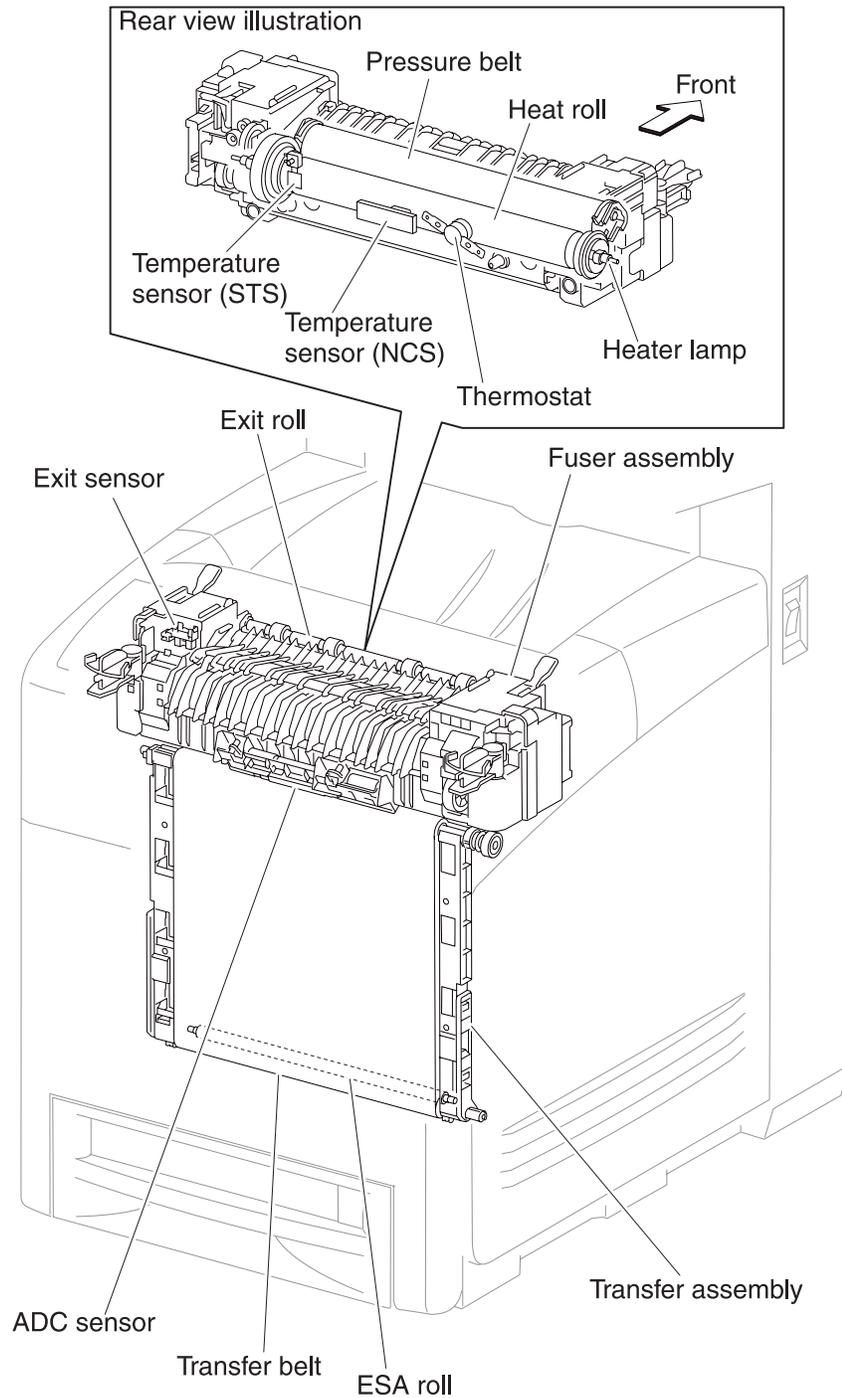
Exit sensor—Detects the passage of print after fixing based on the change of position of the actuator.

Transfer belt assembly

- **Transfer belt**
Belt feeds the paper to the direction of fuser.
- **Density sensor**
The density sensor reads the toner patch on the belt, and converts it to voltage value. The voltage value is used to control the density of toner.
- **Density solenoid**
When turned on, the density solenoid activates the density pad to wipe the density sensor surface clean of contaminants. To activate the density pad, the density solenoid must be turned on for a fixed duration before the density sensor starts reading the toner patches.



- **HVPS (high-voltage power supply)**—The HVPS contact discharges a positive voltage to the paper. The toner transfer efficiency is raised by being positively charged.



Printhead

The printhead is an exposure unit that generates laser beams to form electrostatic latent image on the drum surface.

- **LD card**

The LD card is comprised of four LDs (laser diodes) corresponding to Y, M, C, and K. Each LD converts the electric signals of incoming image data into laser wave or pulse. In order to stabilize the laser light quantity during formation of an electrostatic latent image, the LD card always monitors the laser light quantity to adjust it to the appropriate level. This is called "APC (auto power control)".

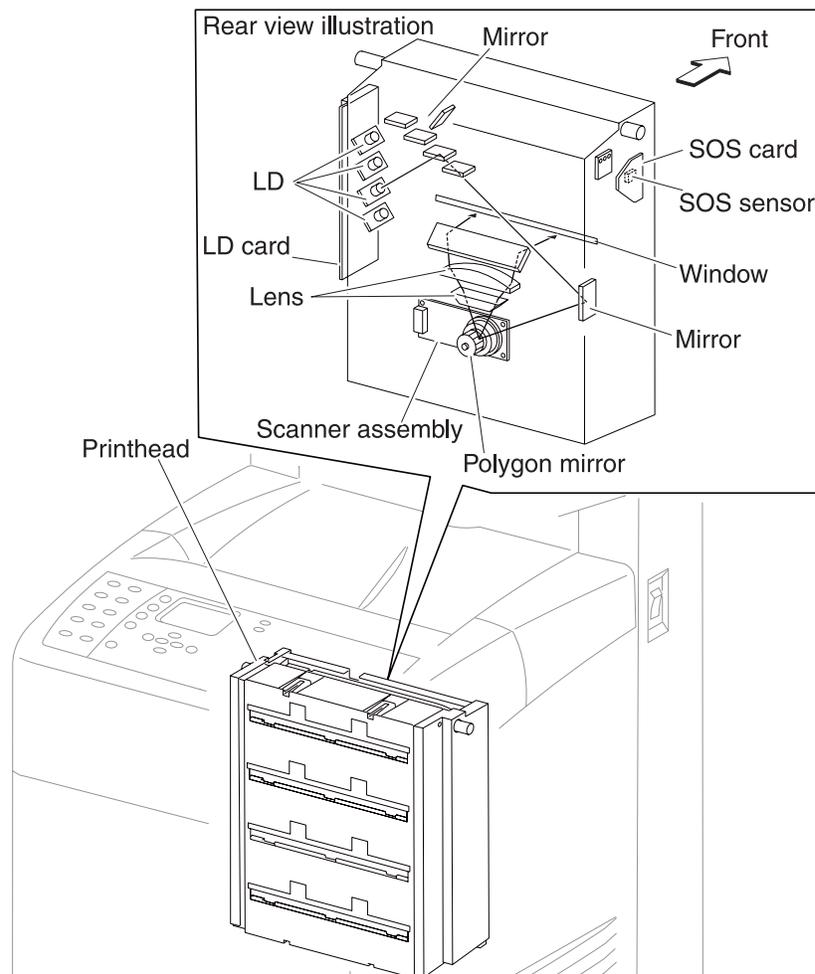
- **Scanner assembly**

The scanner assembly is comprised of the scanner motor that rotates at a constant speed and the polygon mirror that is mounted on the motor shaft. The laser light output from the LD is irradiated onto the polygon mirror via the mirror. The polygon mirror, provided with six reflecting mirror faces, changes the reflection angle of the laser light as it rotates by the scanner motor, thereby allowing the laser light to scan the drum along its axial direction. Scanning is performed using one reflecting mirror face for each line.

The laser light reflected from the polygon mirror reaches the drum surface via the lens, mirror, and window. The lens corrects aberration, the mirror secures an optical path, and the window prevents foreign matters from entering the printhead.

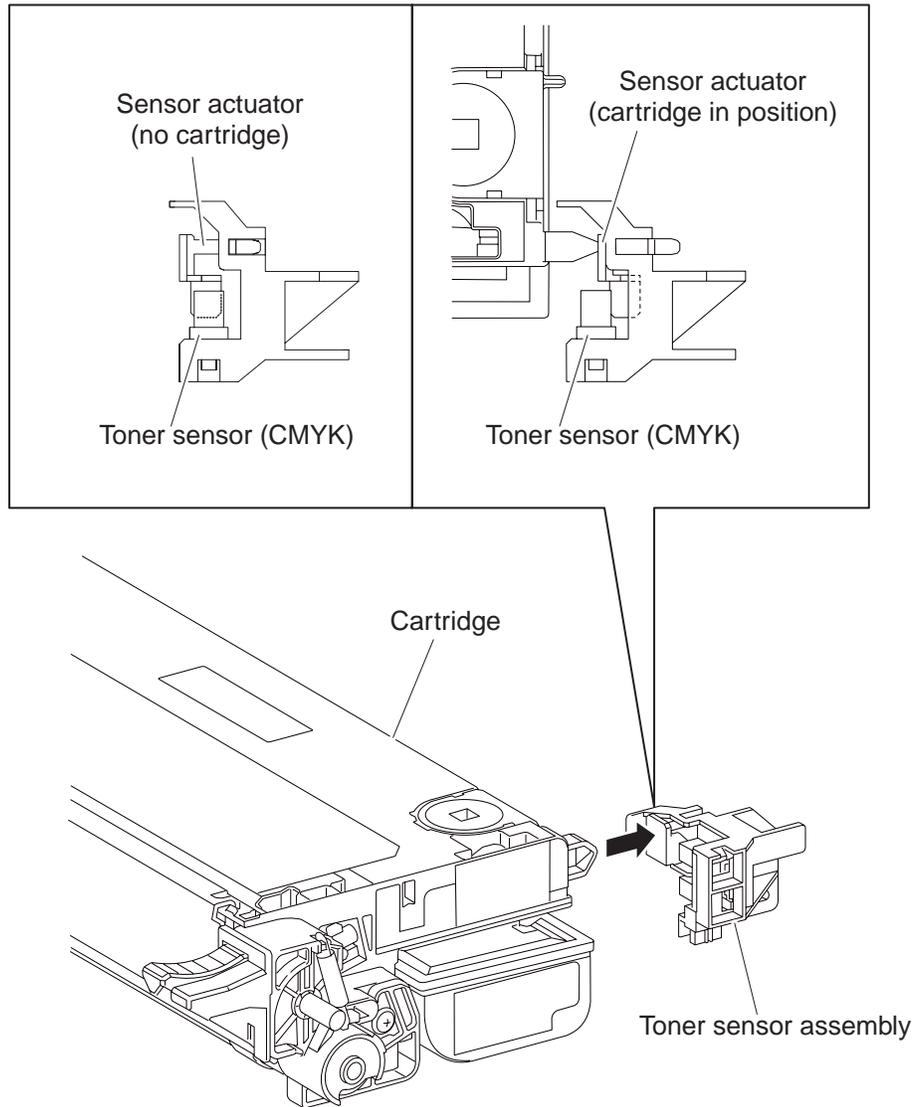
- **SOS card**

The SOS sensor on the SOS (start of scan) card converts an incoming laser beam, upon detection, to an electric signal as the reference signal for starting scanning, and transmits this signal to the controller board. The SOS sensor signals are used to synchronize the starting point of the laser-beam scanning with the starting point of the image writing.



Toner cartridges

- **Toner Smart Chip contact**
The toner Smart Chip contact reads and writes the data of the toner Smart Chip. Printer-specific information is stored.
- **Toner sensors (C, Y, M, and K)**
Detects presence or absence of the toner cartridges.



- **Toner motors (C, Y, M, and K)**

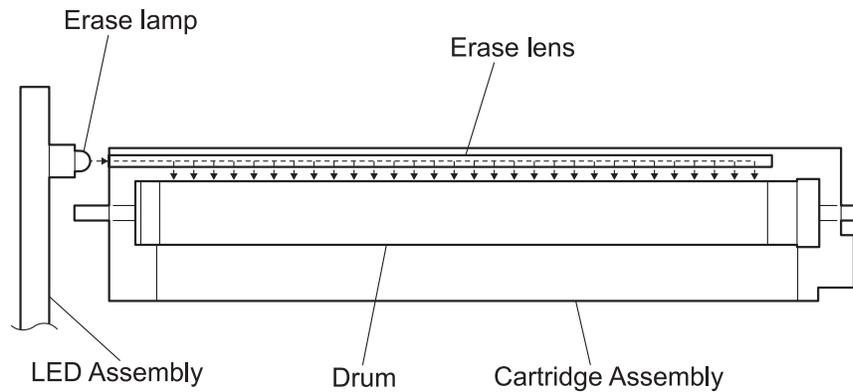
The toner motors supply the drive to the agitator and auger in the toner cartridges, and supplies toner to the developer in the toner cartridges.

- **Toner cartridges**

The toner cartridges contain toner, the developer, and the drum.

- **Erase lamp**

The light of the LED passes through the lens of the toner cartridges and irradiates the drum. The light of the LED eliminates the charge on the drum.



Drive assemblies

- **Main drive assembly**

Supplies the drive to parts as follows:

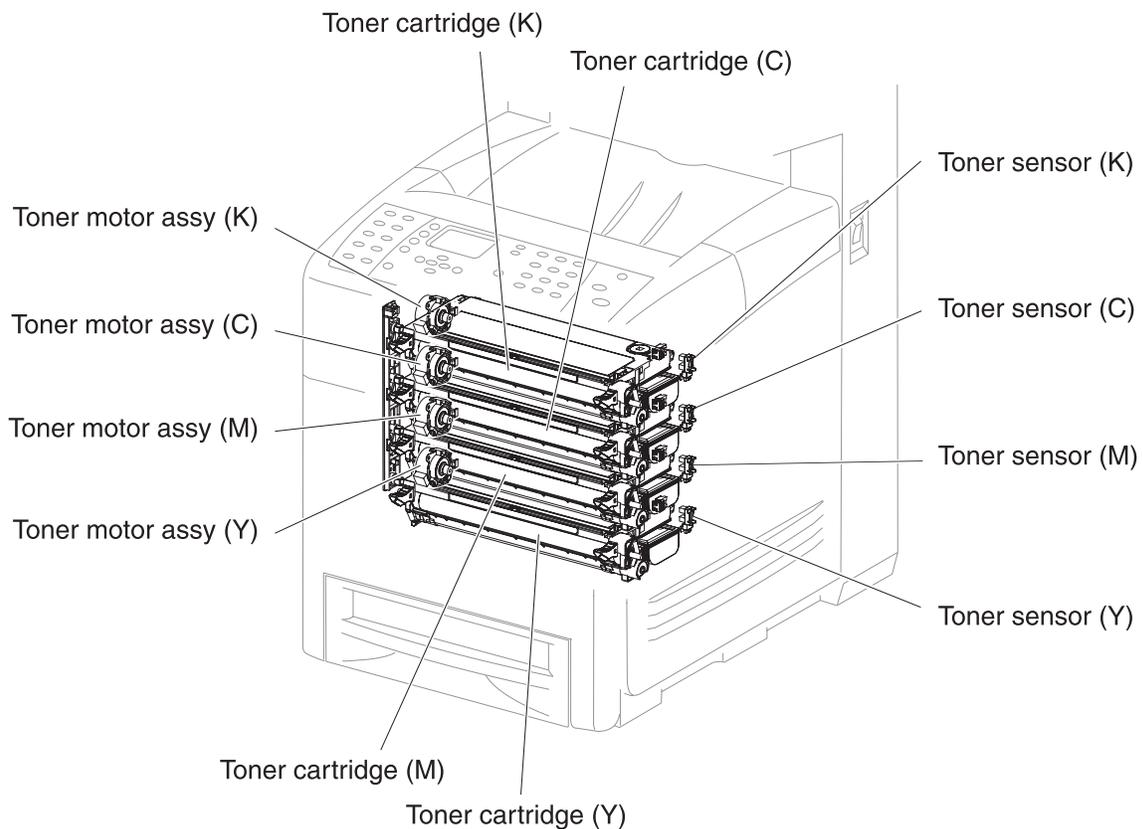
- Main motor
 - Black drum
 - Transfer belt
 - Fuser
- Sub Motor (part of main motor)
 - Yellow, magenta, and cyan drum
 - Black developer
- Developer motor (part of main motor)
 - Yellow, magenta, and cyan developer

- **Exit clutch assembly**

Transmits the drive from the main motor to the exit roll assembly in the fuser. In the backside printing, the exit clutch stops. The exit roll is driven by the duplex motor.

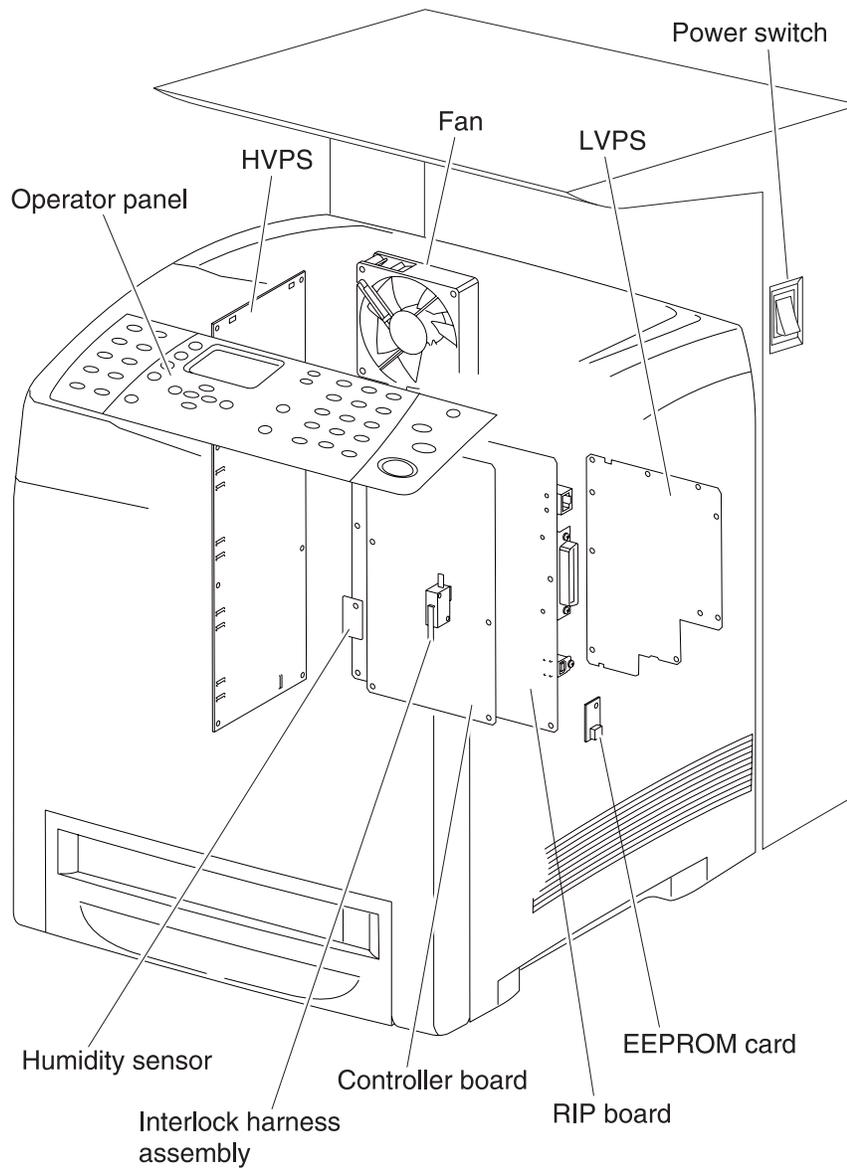
- **Feed drive assembly**

- Standard tray
- MP feeder
- Registration assembly



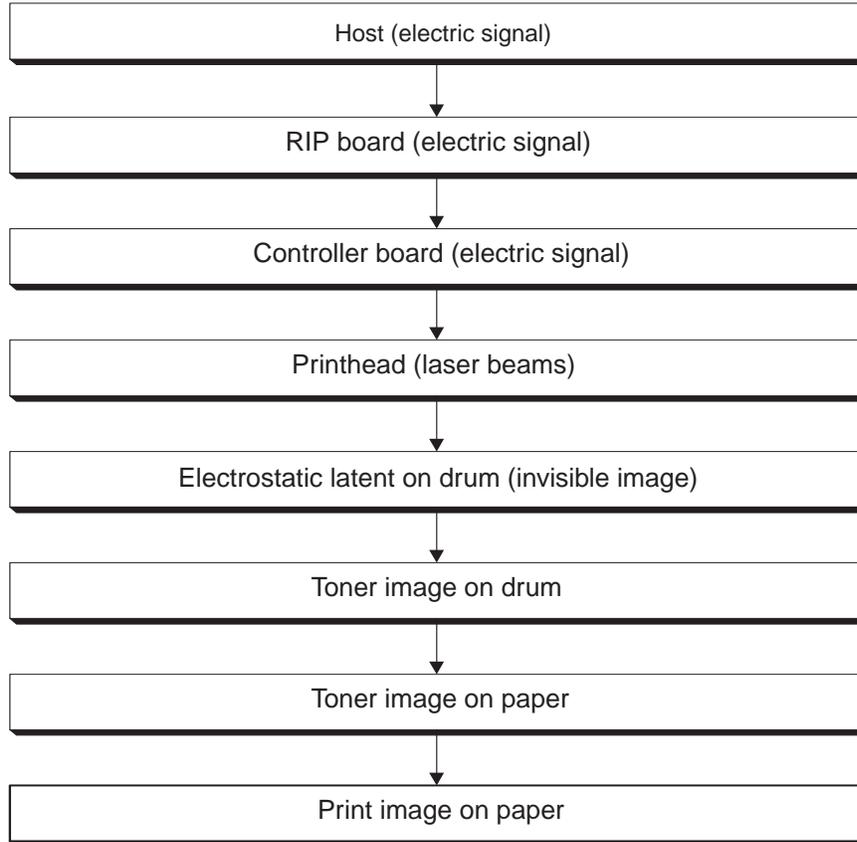
Electrical

- **Fan**
Discharges heat out of the printer to prevent the printer from overheating.
- **Power switch**
The power switch turns the AC power supply of the printer on or off.
- **LVPS (low-voltage power supply)**
The LVPS is provided with two types, 100/120V and 230V. It supplies AC power from the power source to the fuser heater and generates and supplies stable low voltage DC power used for the logic circuit, etc. The LVPS contains the control circuit for the fuser heater in addition to the power circuit.
- **Controller board**
The controller board controls the printing operation based on the communication with the print controller and information from the sensor/switch.
Major functions are as follows:
 - Communication with the RIP.
 - Receive information from the sensors or switches.
 - Control of motor in the main drive assembly and the paper handling drive assembly.
 - Distributing low voltage DC power outputted from LVPS to each component.
- **Control of the printhead.**
- **HVPS (high-voltage power supply)**
Supplies high voltage power to parts in the transfer belt and toner cartridges in order to perform charging, development, and primary transfer of the print process to the following parts in the toner cartridges:
 - Bias charge roll
 - BTR
 - Developer
 - HVPS contact
- **EEPROM card**
Information unique to the printer is stored.
- **RIP board**
The RIP connected to the controller board controls the entire system (diagnostic, interface, and image processing).
- **Humidity sensor**
The humidity sensor reads the temperature/humidity within the printer and converts the values to voltage values.
- **Operator panel**
The operator panel displays the state of the printer using LCD or LED, and operates the printer using the switch.
- **Interlock harness assembly**
The interlock harness assembly is a switch that cuts the +24 V dc power supply to the HVPS or motor, etc. upon the opening of the front cover.



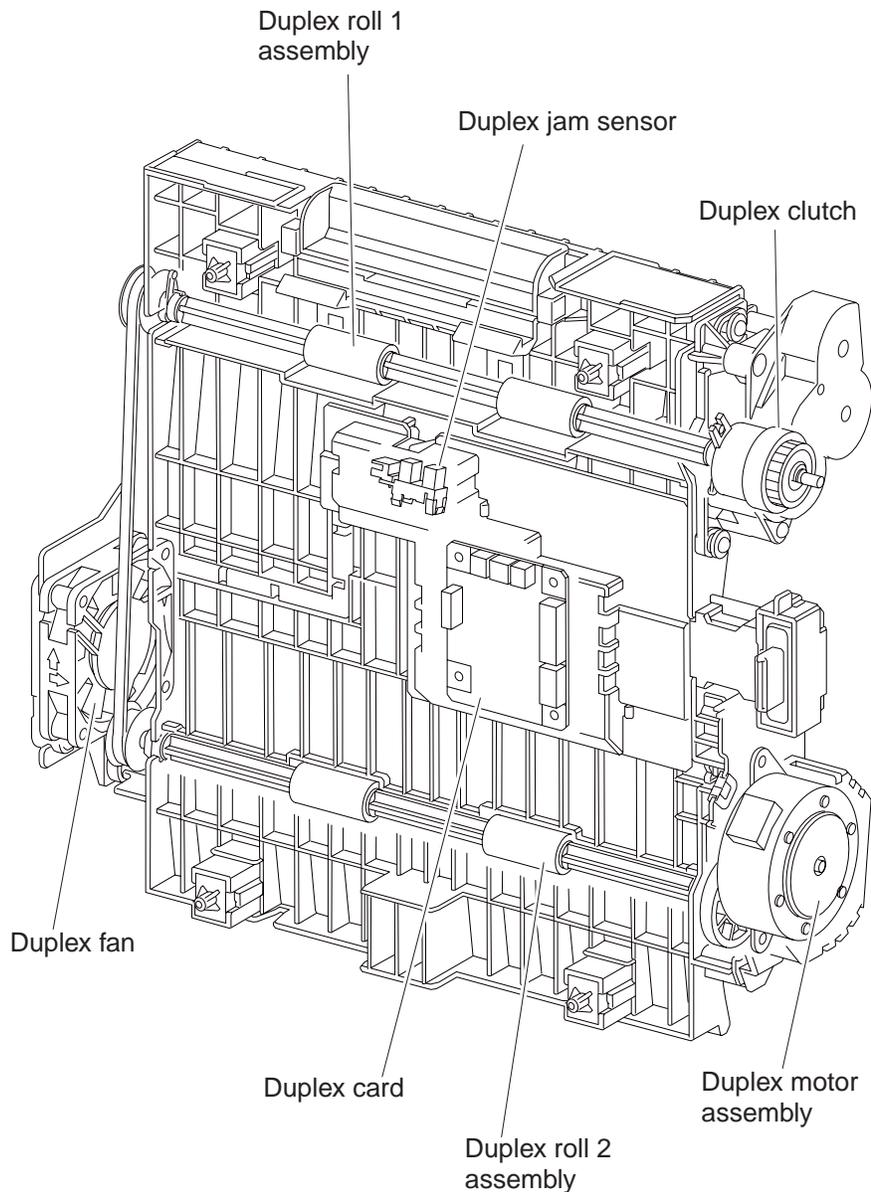
- **Data flow**

Print data (electric signal) from the printer controller flows as shown below until it is turned into a print.



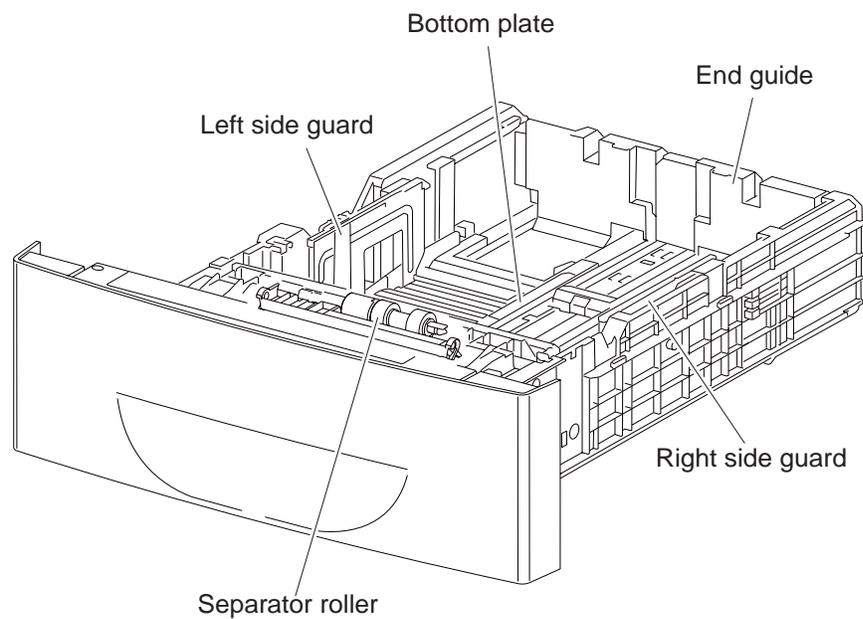
Duplex unit

- **Duplex jam sensor**
The duplex jam sensor detects that paper is carried to the duplex unit.
- **Duplex clutch**
Transmits the drive from the duplex motor to the exit roll assembly in the fuser. When the clutch operates, the exit roll assembly rotates in the reverse direction.
- **Duplex drive assembly**
The duplex drive assembly supplies the driving power to the lower roll (duplex roll 2), the upper roll (duplex roll 1) and the fuser exit roll assembly.
- **Duplex card**
The duplex card controls the motor, the sensor, and the clutch.
- **Duplex fan**
The duplex fan cools the inside of the printer.



550-sheet feeder paper tray

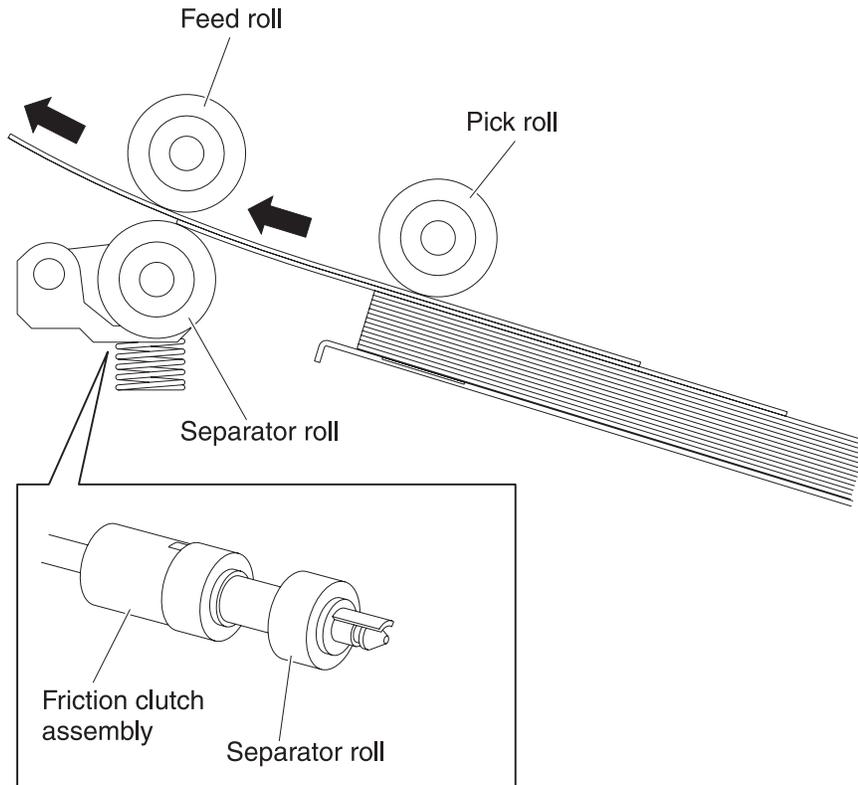
- **Side guide assembly**
The side guide assembly can move at a right angle to the paper transfer direction to align the paper width.
- **Tray end guide assembly**
The tray end guide assembly can move in the paper transfer direction to determine the paper size. The paper size in the tray is determined by the tray end guide assembly position.
- **Separator roll assembly**
The separator roll assembly and the feed roll assembly pinch the paper to feed.
- **Bottom plate assembly**
The bottom plate assembly is locked to the bottom side when the paper tray is pulled out from the paper feeder, and unlocked when the paper tray is installed to the paper feeder. It pushes the paper against the feed roll using a tension spring.



- **Multiple sheet feed prevention**

The sheets set in a tray are occasionally stuck together along the edges. The stuck sheets cause a multiple sheet feed or a jam. The sheets are fed by the pick roll to a position between the feed roll and the separator roll. Normally, when only one sheet is fed, both the feed roll and the separator roll rotate to allow the sheet to pass. However, when two sheets are fed together, only the feed roll rotates and the separator roll is locked, thereby allowing the upper sheet to pass by being separated from the lower sheet that is stopped by the friction with the separator roll at rest.

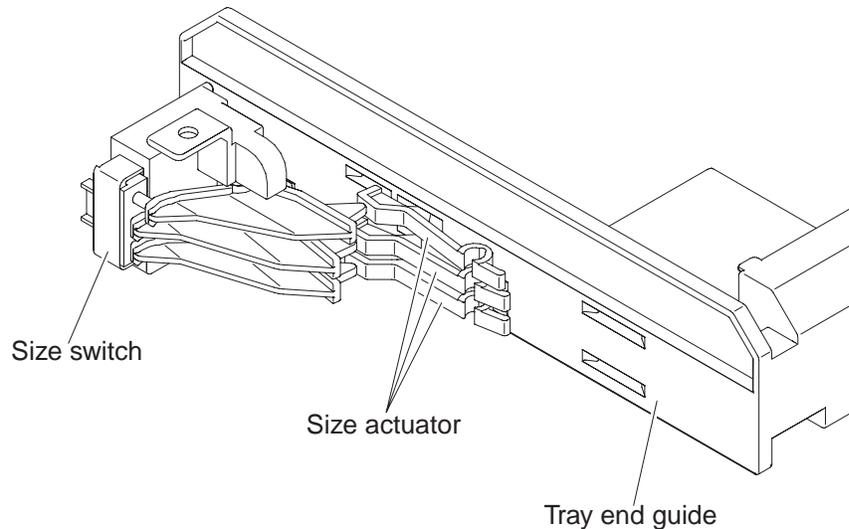
The separator roll is being pushed toward the feed roll by spring pressure and controlled by the torque limiter (separator friction clutch) with which it is coupled.



550-sheet feeder

- **550-sheet size switch assembly**

The 550-sheet feeder size switch assembly detects the paper size and presence or absence of the paper tray. The paper size is decided by the position of the 550-sheet feeder end guide assembly.



- **No paper sensor (550-sheet feeder)**

The no paper sensor detects the presence or absence of paper in the paper tray based on the position of the no paper actuator.

- **Feed clutch assembly (550-sheet feeder)**

The 550-sheet feeder feed clutch assembly transmits the drive from the feeder drive assembly to the feed roll assembly.

- **Feed roll assembly**

When the feed clutch assembly operates, the feed roll starts turning and the feed roll feeds the paper.

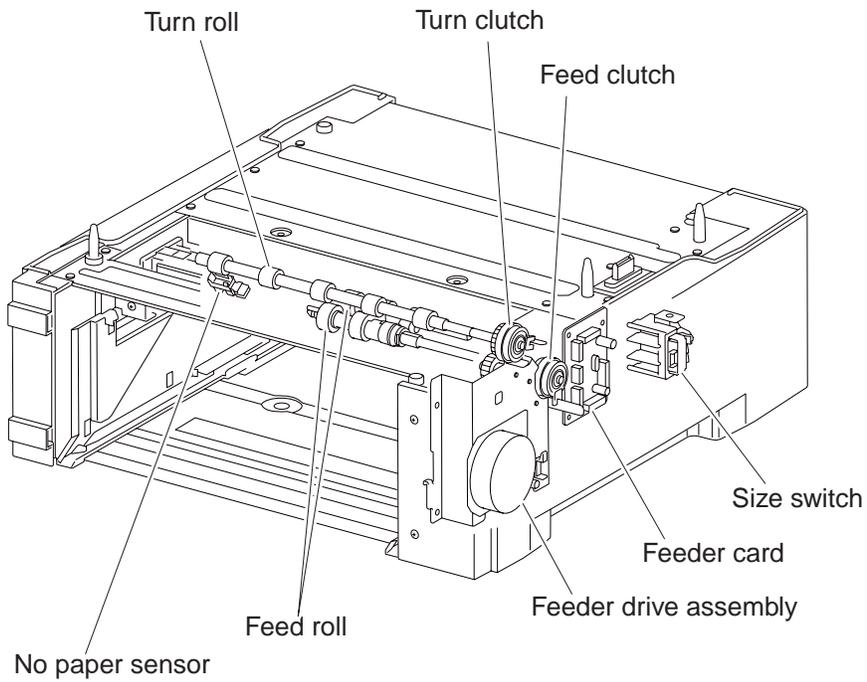
- **Turn clutch assembly**

The turn clutch assembly transmits the drive from the feeder drive assembly to the turn roll assembly.

- **Turn roll assembly**

The turn roll assembly rotates by the drive from the feeder drive assembly through the turn clutch assembly to feed the paper from the paper tray to the printer.

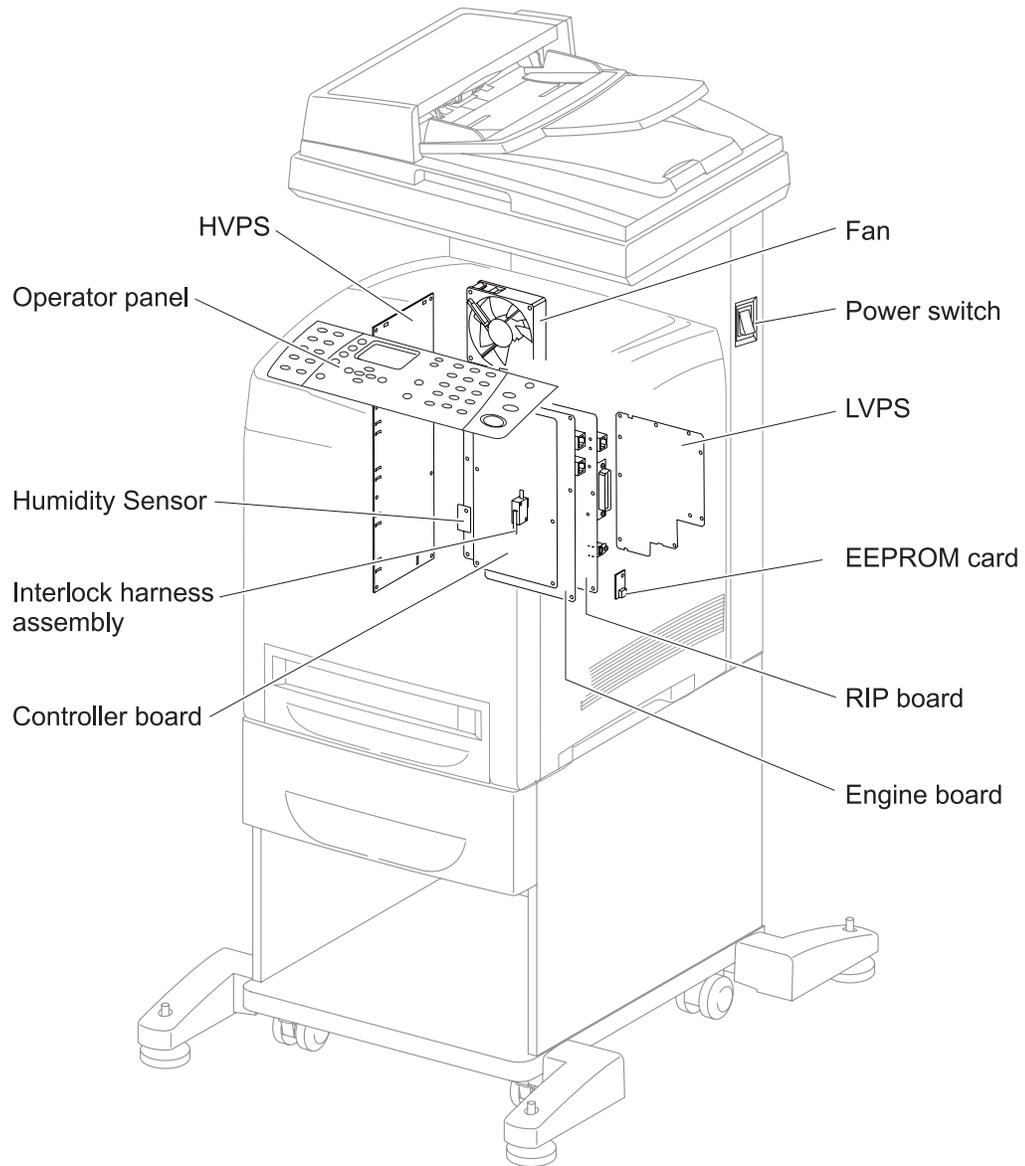
- **Feeder drive assembly**
The feeder drive assembly is driving the rolls of the feeder.
- **550-sheet feeder controller board**
The 550-sheet feeder controller board controls the motor, the sensor, and the clutch.



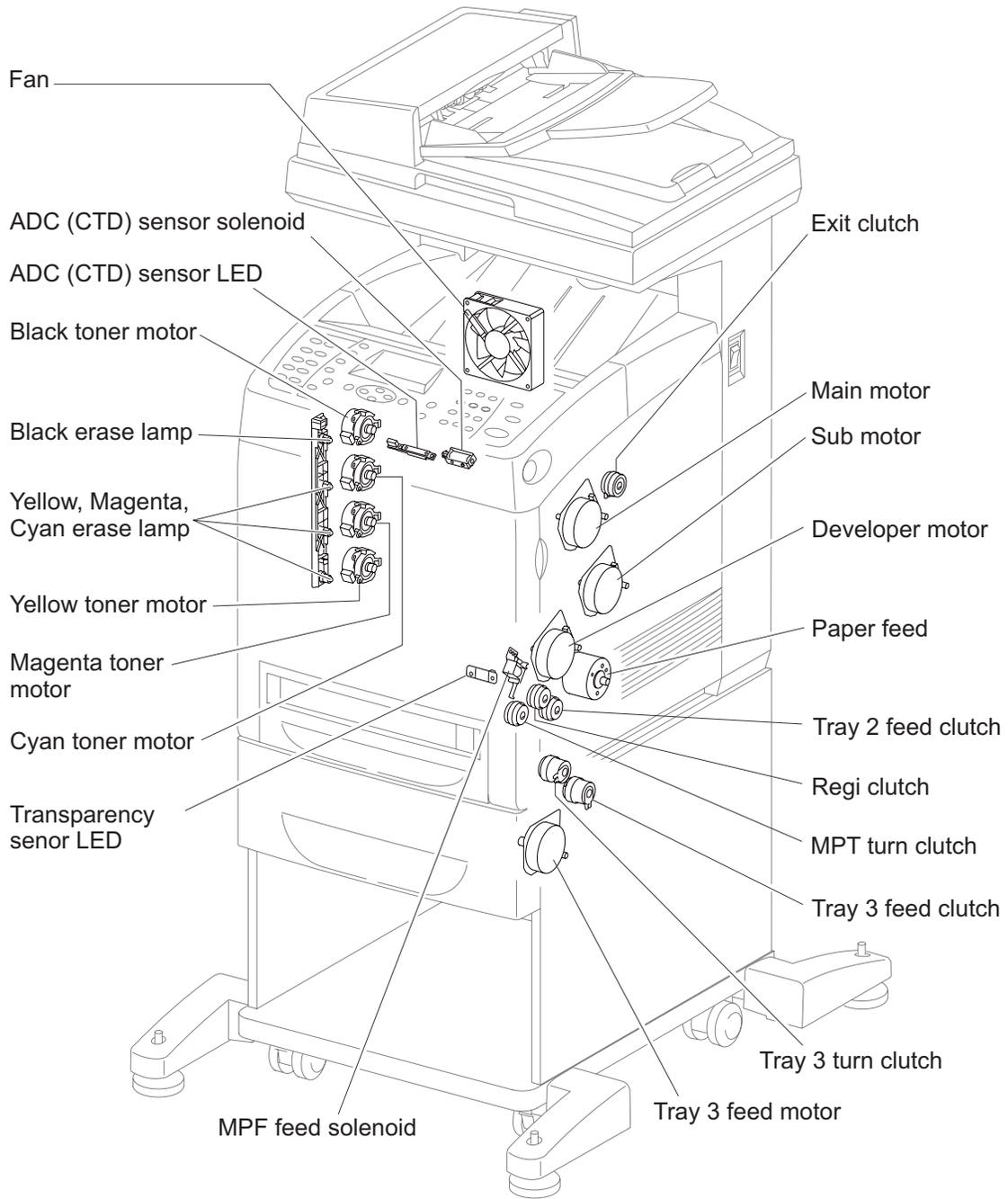
4. Connector locations

Locations

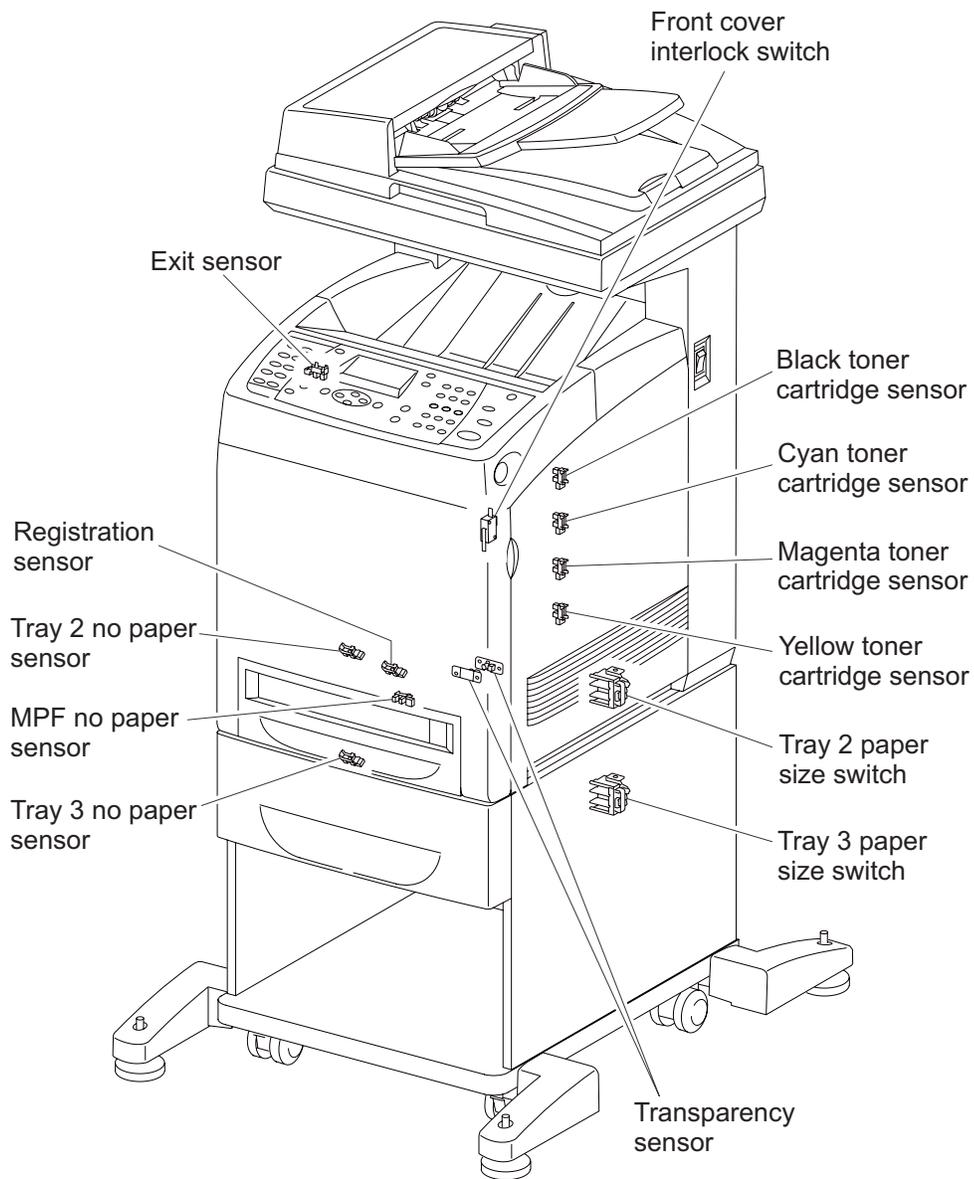
Printer boards



Printer motors



Printer sensors



Controller board connections

Connector Name	Pin no	Signal	Connects to...
P/J 14	1	Fan alarm	P/J 501 - LVPS pin 13
	2	Fan low	P/J 501 - LVPS pin 12
	3	Fan stop	P/J 501 - LVPS pin 11
	4	24V off	P/J 501 - LVPS pin 10
	5	Sleep	P/J 501 - LVPS pin 9
	6	Deep sleep	P/J 501 - LVPS pin 8
	7	LV type	P/J 501 - LVPS pin 7
	8	Fuser ON	LVPS P/J501 pin 5
	9	xHEAT1	LVPS P/J501 pin 6
	10	Ground	P/J 501 - LVPS pin 4
	11	+3.3 V dc	P/J 501 - LVPS pin 3
	12	Ground	P/J 501 - LVPS pin 2
	13	+5V dc	P/J 501 - LVPS pin 1
P/J 15	1	I/J +24 V dc	P/J 502 - LVPS pin 1
	2	Ground	P/J 502 - LVPS pin 2
P/J 10	1		P/J101 - RIP Board pin18
	2	Ground	P/J101 - RIP Board pin17
	3	HSYNC	P/J101 - RIP Board pin16
	4	Ground	P/J101 - RIP Board pin15
	5	VSYNC Y	P/J101 - RIP Board pin14
	6	VSYNC M	P/J101 - RIP Board pin13
	7	VSYNC C	P/J101 - RIP Board pin12
	8	VSYNC K	P/J101 - RIP Board pin11
	9	Ground	P/J101 - RIP Board pin10
	10	S READY	P/J101 - RIP Board pin 9
	11	C READY	P/J101 - RIP Board pin 8
	12	CMD	P/J101 - RIP Board pin 7
	13	STS	P/J101 - RIP Board pin 6
	14	Ground	P/J101 - RIP Board pin 5
	15	Deep Sleep	P/J101 - RIP Board pin 4
	16	+3.3 V dc	P/J101 - RIP Board pin 3
	17	Ground	P/J101 - RIP Board pin 2
	18	TEST PRINT	P/J101 - RIP Board pin 1

Controller board connections (continued)

Connector Name	Pin no	Signal	Connects to...
P/J 11	1	DATA Y	P/J111 - RIP Board pin 8
	2	Ground	P/J111 - RIP Board pin 7
	3	DATA M	P/J111 - RIP Board pin 6
	4	Ground	P/J111 - RIP Board pin 5
	5	DATA C	P/J111 - RIP Board pin 4
	6	Ground	P/J111 - RIP Board pin 3
	7	DATA K	P/J111 - RIP Board pin 2
	8	Ground	P/J111 - RIP Board pin 1
P/J 21	1	Ground	Drive assembly P/J 211 pin11
	2	I/L +24 V dc	Drive assembly P/J 211 pin 10
	3	Ground	Drive assembly P/J 211 pin 9
	4	I/L +24 V dc	Drive assembly P/J 211 pin 8
	5	Ground	Drive assembly P/J 211 pin 7
	6	MAIN MOT ON	Drive assembly P/J 211 pin 6
	7	MAIN MOT ALARM	Drive assembly P/J 211 pin 5
	8	MAIN MOT CLK	Drive assembly P/J 211 pin 4
	9	MAIN MOT LO	Drive assembly P/J 211 pin 3
	10	MAIN MOT CC/CW	Drive assembly P/J 211 pin 2
P/J 22	A1	Ground	Drive assembly P/J 221 pin 10
	A2	I/L +24 V dc	Drive assembly P/J 221 pin 9
	A3	Ground	Drive assembly P/J 221 pin 8
	A4	I/L +24 V dc	Drive assembly P/J 221 pin 7
	A5	Ground	Drive assembly P/J 221 pin 6
	A6	SUB MOT ON	Drive assembly P/J 221 pin 5
	A7	SUB MOT ALARM	Drive assembly P/J 221 pin 4
	A8	SUB MOT CLK	Drive assembly P/J 221 pin 3
	A9	SUB MOT LO	Drive assembly P/J 221 pin 2
	A10	SUB MOT BRAKE	Drive assembly P/J 221 pin 1
	B1	Ground	Drive assembly P/J 222 pin 10
	B2	I/L +24 V dc	Drive assembly P/J 222 pin
	B3	Ground	Drive assembly P/J 222 pin 8
	B4	I/L +24 V dc	Drive assembly P/J 222 pin 7
	B5	Ground	Drive assembly P/J 222 pin 6
	B6	DEV MOT ON	Drive assembly P/J 222 pin 5
	B7	DEV MOT ALARM	Drive assembly P/J 222 pin 4
	B8	DEV MOT CLK	Drive assembly P/J 222 pin 3
	B9	DEV MOT LO	Drive assembly P/J 222 pin 2
	B10	DEV MOT BRAKE	Drive assembly P/J 222 pin 1

Controller board connections (continued)

Connector Name	Pin no	Signal	Connects to...
P/J 18	A1	I/L +24 V dc	P 181- 6 Y Dispenser
	A2	I/L +24 V dc	P 181- 5 Y Dispenser
	A3	Y DISPENSE MOT A	P 181- 4 Y Dispenser
	A4	Y DISPENSE MOT B	P 181- 3 Y Dispenser
	A5	Y DISPENSE MOT XA	P 181- 2 Y Dispenser
	A6	Y DISPENSE MOT XB	P 181- 1 Y Dispenser
	A7	I/L +24 V dc	P 182- 6 M Dispenser
	A8	I/L +24 V dc	P 182- 5 M Dispenser
	A9	M DISPENSE MOT A	P 182- 4 M Dispenser
	A10	M DISPENSE MOT B	P 182- 3 M Dispenser
	A11	M DISPENSE MOT XA	P 182- 2 M Dispenser
	A12	M DISPENSE MOT XB	P 182- 1 M Dispenser
	B1	I/L +24 V dc	P 183- 6 K Dispenser
	B2	I/L +24 V dc	P 183- 5 K Dispenser
	B3	K DISPENSE MOT A	P 183- 4 K Dispenser
	B4	K DISPENSE MOT B	P 183- 3 K Dispenser
	B5	K DISPENSE MOT XA	P 183- 2 K Dispenser
	B6	K DISPENSE MOT XB	P 183- 1 K Dispenser
	B7	I/L +24 V dc	P 184- 6 C Dispenser
	B8	I/L +24 V dc	P 184- 5 C Dispenser
	B9	C DISPENSE MOT A	P 184- 4 C Dispenser
	B10	C DISPENSE MOT B	P 184- 3 C Dispenser
	B11	C DISPENSE MOT XA	P 184- 2 C Dispenser
	B12	C DISPENSE MOT XB	P 184- 1 C Dispenser
P/ J19	1	PULL UP +3.3 V dc	P/J 191 pin 3
	2	Ground	P/J 191 pin 2
	3	CARTRIDGE Y SENSED (L) +3.3 V dc	P/J 191 pin 1
	4	PULL UP +3.3 V dc	P/J 192 pin 3
	5	Ground	P/J 192 pin 2
	6	CARTRIDGE M SENSED (L) +3.3 V dc	P/J 192 pin 1
	7	PULL UP +3.3 V dc	P/J 193 pin 3
	8	Ground	P/J 193 pin 2
	9	CARTRIDGE K SENSED (L) +3.3 V dc	P/J 193 pin 1
	10	PULL UP +3.3 V dc	P/J 191 pin 3
	11	Ground	P/J 191 pin 2
	12	CARTRIDGE C SENSED (L) +3.3 V dc	P/J 191 pin 1

Controller board connections (continued)

Connector Name	Pin no	Signal	Connects to...
P/J 31	1	DATA Y IN	P/J 131 Pin 3
	2	DATA Y OUT	P/J 131 Pin 1
	3	DATA M IN	P/J 132 Pin 3
	4	DATA M OUT	P/J 132 Pin 1
	5	DATA C IN	P/J 133 Pin 3
	6	DATA C OUT	P/J 133 Pin 1
	7	DATA K IN	P/J 134 Pin 3
	8	DATA K OUT	P/J 134 Pin 1
P/J 25	1	I/L +24 V dc	Drive assembly P/J251 Pin 8
	2	I/L +24 V dc	Drive assembly P/J251 Pin 7
	3	Ground	Drive assembly P/J251 Pin 6
	4	Ground	Drive assembly P/J251 Pin 5
	5	+5 V dc	Drive assembly P/J251 Pin 4
	6	PHOT MOT ON(X)+XX V dc	Drive assembly P/J251 Pin 3
	7	PH MOT CLK	Drive assembly P/J251 Pin 2
	8	PH MOT ALARM	Drive assembly P/J251 Pin 1
P/J 24	1	PULL UP +3.3 V dc	Transparency LED P/J241 Pin 1
	2	OHP LED	Transparency LED P/J241 Pin 2
	3	OHP SENSED (L) +3.3 V dc	Transparency sensor P/J2411 Pin 3
	4	Ground	Transparency sensor P/J2411 Pin 4
	5	TEMP	Transparency sensor P/J2411 Pin 5
P/J 23	8	PULL UP +3.3 V dc	Registration sensor - P/J232 Pin 3
	9	Ground	Registration sensor - P/J232 Pin 2
	10	REGI SENSED (L) +3.3 V dc	Registration sensor - P/J232 Pin 1
	11	I/L +24 V dc	Registration clutch - P/J233 Pin 2
	12	REGI CL ON (L) +24 V dc	Registration clutch - P/J233 Pin 1
	17	I/L +24 V dc	Paper feed solenoid- P/J236 Pin 2
	18	FEED SOL ON (L) +24 V dc	Paper feed solenoid - P/J236 Pin 1

Controller board connections (continued)

Connector Name	Pin no	Signal	Connects to...
P/J 27	B1	Ground	Feeder P/J 419 pin10
	B2	Ground	Feeder P/J 419 pin9
	B3	Ground	Feeder P/J 419 pin8
	B4	I/L +24 V dc	Feeder P/J 419 pin7
	B5	I/L +24 V dc	Feeder P/J 419 pin6
	B6	Ground	Feeder P/J 419 pin5
	B7	+3.3 V dc	Feeder P/J 419 pin4
	B8	TRAY SEN	Feeder P/J 419 pin3
	B9	Rxd	Feeder P/J 419 pin2
	B10	Txd	Feeder P/J 419 pin1
	A1	Ground	Transfer belt assembly P/J144 pin1
	A2	+3.3 V dc	Transfer belt assembly P/J144 pin2
	A3	CLOCK	Transfer belt assembly P/J144 pin3
	A4	DATA	Transfer belt assembly P/J144 pin4
	A5	I/L +24 V dc	Transfer belt assembly P/J27213 pin2
	A6	ADC SOL ON (L) I/L +24 V dc	Transfer belt assembly P/J27213 pin1
	A7	+5 V dc	Transfer belt assembly P/J27212 pin5
	A8	ADC SENSOR	Transfer belt assembly P/J27212 pin4
	A9	LED REM	Transfer belt assembly P/J27212 pin3
	A10	ADC V MONI	Transfer belt assembly P/J27212 pin2
A11	Ground	Transfer belt assembly P/J27212 pin1	
B15	I/L +24 V dc	EXIT CLUTCH pin 1	
B16	EXIT CL ON (L) I/L +24 V dc	EXIT CLUTCH pin 2	
B17	DATA	EEPROM card P/J144 pin4	
B18	CLOCK	EEPROM card P/J144 pin3	
B19	+3.3 V dc	EEPROM card P/J144 pin2	
B20	Ground	EEPROM card P/J144 pin1	
P/J 26	1	TEMP	Humidity sensor J261 pin4
	2	Ground	Humidity sensor J261 pin3
	3	HUMI	Humidity sensor J261 pin2
	4	+5 V dc	Humidity sensor J261 pin1

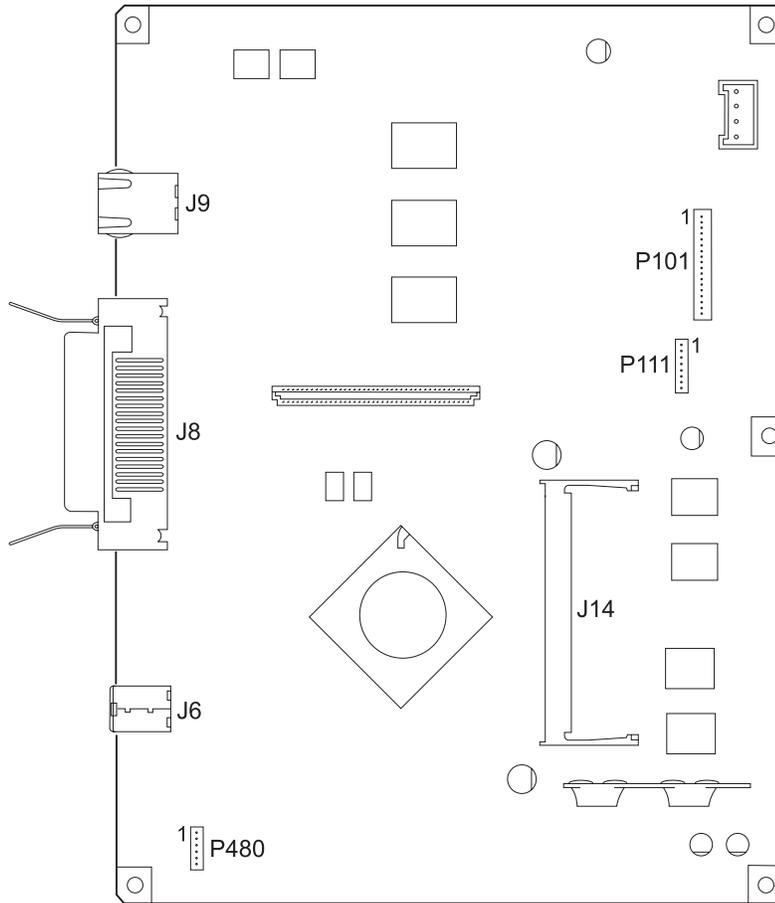
Controller board connections (continued)

Connector Name	Pin no	Signal	Connects to...
P/J16	10	TR MON	HVPS PJ161 pin 1
	9	CF MON	HVPS PJ161 pin 2
	8	COLOR	HVPS PJ161 pin 3
	7	DATA	HVPS PJ161 pin 4
	6	CLK	HVPS PJ161 pin 5
	5	+3.3 V dc	HVPS PJ161 pin 6
	4	Ground	HVPS PJ161 pin 7
	3	+5 V dc	HVPS PJ161 pin 8
	2	Ground	HVPS PJ161 pin 9
	1	I/L +24 V dc	HVPS PJ161 pin 10
P/J 12	1	Ground	Printhead P/J121 pin 20
	2	ROS MOT ON	Printhead P/J121 pin 19
	3	Ground	Printhead P/J121 pin 18
	4	I/L +24 V dc	Printhead P/J121 pin 17
	5	SOS	Printhead P/J121 pin 16
	6	ROS MOT CLK	Printhead P/J121 pin 15
	7	+ 5 V dc LD	Printhead P/J121 pin 14
	8	Ground	Printhead P/J121 pin 13
	9	VREF K	Printhead P/J121 pin 12
	10	VREF C	Printhead P/J121 pin 11
	11	VREF M	Printhead P/J121 pin 10
	12	VREF Y	Printhead P/J121 pin 9
	13	MONIT K	Printhead P/J121 pin 8
	14	MONIT C	Printhead P/J121 pin 7
	15	MONIT M	Printhead P/J121 pin 6
	16	MONIT Y	Printhead P/J121 pin 5
	17	DATA K	Printhead P/J121 pin 4
	18	DATA C	Printhead P/J121 pin 3
	19	DATA M	Printhead P/J121 pin 2
	20	DATA Y	Printhead P/J121 pin 1

Controller board connections (continued)

Connector Name	Pin no	Signal	Connects to...
P/J 17	12	Ground	Fuser P/J 171 pin
	11	+3.3 V dc	Fuser P/J 171 pin
	10	CLK	Fuser P/J 171 pin
	9	DATA	Fuser P/J 171 pin
	8	Ground	Fuser P/J 171 pin
	7	STS	Fuser P/J 171 pin
	6	VC	Fuser P/J 171 pin
	5	VD	Fuser P/J 171 pin
	4	Ground	Fuser P/J 171 pin
	3	Fuser EXIT SENSED(L) +3.3 V dc	Fuser P/J 171 pin
	2	Ground	Fuser P/J 171 pin
	1	PULL UP +3.3 V dc	Fuser P/J 171 pin

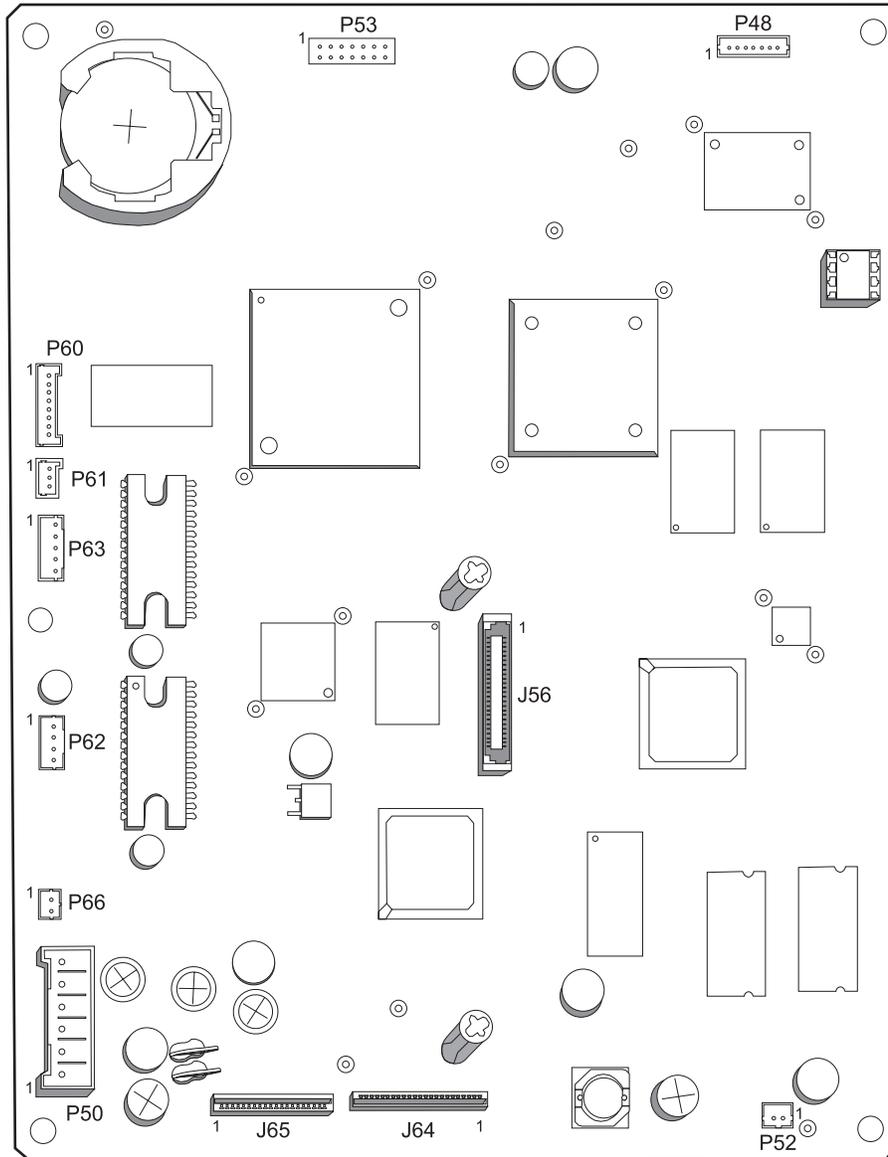
RIP board diagram



RIP board connections

Connector Name	Pin no	Signal	Connects to...
P/J 101	1	TEST PRINT	Controller board P/J10 pin 18
	2	Ground	Controller board P/J10 pin 17
	3	+3.3 V dc	Controller board P/J10 pin 16
	4	DEEP SLEEP	Controller board P/J10 pin 15
	5	Ground	Controller board P/J10 pin 14
	6	STS	Controller board P/J10 pin 13
	7	CMD	Controller board P/J10 pin 12
	8	CREADY	Controller board P/J10 pin 11
	9	SREADY	Controller board P/J10 pin 10
	10	Ground	Controller board P/J10 pin 9
	11	VSYNC K	Controller board P/J10 pin 8
	12	VSYNC C	Controller board P/J10 pin 7
	13	VSYNC M	Controller board P/J10 pin 6
	14	VSYNC Y	Controller board P/J10 pin 5
	15	Ground	Controller board P/J10 pin 4
	16	HSYNC	Controller board P/J10 pin 3
	17	Ground	Controller board P/J10 pin 2
	18		Controller board P/J10 pin 1
P/J 111	1	Ground	Controller board P/J11 pin 8
	2	DATA K	Controller board P/J11 pin 7
	3	Ground	Controller board P/J11 pin 6
	4	DATA C	Controller board P/J11 pin 5
	5	Ground	Controller board P/J11 pin 4
	6	DATA M	Controller board P/J11 pin 3
	7	Ground	Controller board P/J11 pin 2
	8	DATA Y	Controller board P/J11 pin 1
P/J 401	1	+5 V dc	LVPS P/J 40A pin 1
	2	Ground	LVPS P/J 40A pin 2
	3	+3.3 V dc	LVPS P/J 40A pin 3
	4	Ground	LVPS P/J 40A pin 4
P/J 480	6	Ground	ENGINE BOARD P/J48 pin 1
	5	DATA -	ENGINE BOARD P/J48 pin 2
	4	DATA +	ENGINE BOARD P/J48 pin 3
	3	Ground	ENGINE BOARD P/J48 pin 4
	2	Ground	ENGINE BOARD P/J48 pin 5
	1	VBUS	ENGINE BOARD P/J48 pin 6

Engine board diagram



Engine board connections

Connector Name	Pin no	Signal	Connects to...
P/J 52	1	SPK+	SPEAKER
	2	Ground	
P/J 53	1	Ground	Operator panel P/J 202 pin 1
	2	Ground	Operator panel P/J 202 pin 2
	3	+5 V dc	Operator panel P/J 202 pin 3
	4	Ground	Operator panel P/J 202 pin 4
	5	NOT USED	Operator panel P/J 202 pin 5
	6	Ground	Operator panel P/J 202 pin 6
	7	TXD	Operator panel P/J 202 pin 7
	8	RXD	Operator panel P/J 202 pin 8
	9	Ground	Operator panel P/J 202 pin 9
	10	WKUPL (NOT USED)	Operator panel P/J 202 pin 10
	11	+3.3 V dc (NOT USED)	Operator panel P/J 202 pin 11
	12	LED (NOT USED)	Operator panel P/J 202 pin 12
	13	UI RESET	Operator panel P/J 202 pin 13
	14	Ground	Operator panel P/J 202 pin 14
P/J 56	1,2	+3.3 V dc	FAX CARD
	5,6	+1.8 V dc	
	47,48	+5.5 V dc	
P/J 48	1	Ground	RIP BOARD P/J 480 pin 6
	2	DATA +	RIP BOARD P/J 480 pin 5
	3	DATA -	RIP BOARD P/J 480 pin 4
	4	Ground	RIP BOARD P/J 480 pin 3
	5	Ground	RIP BOARD P/J 480 pin 2
	6	VBUS	RIP BOARD P/J 480 pin 1
	7	N.C.	
P/J 63	1	SCN-/A	SCANNER MOTOR
	2	SCN-A	
	3	SCN-/B	
	4	SCN-B	
	5	N.C	

Engine board connections (continued)

Connector Name	Pin no	Signal	Connects to...
P/J 64	1	Ground	CCD CN4 pin1
	2		CCD CN4 pin2
	3		CCD CN4 pin3
	4	Ground	CCD CN4 pin4
	5	ID8-	CCD CN4 pin5
	6	ID8+	CCD CN4 pin6
	7	Ground	CCD CN4 pin7
	8	ID7-	CCD CN4 pin8
	9	ID7+	CCD CN4 pin9
	10	Ground	CCD CN4 pin10
	11	ID6-	CCD CN4 pin11
	12	ID6+	CCD CN4 pin12
	13	Ground	CCD CN4 pin13
	14	ID5-	CCD CN4 pin14
	15	ID5+	CCD CN4 pin15
	16	Ground	CCD CN4 pin16
	17	ID4-	CCD CN4 pin17
	18	ID4+	CCD CN4 pin18
	19	Ground	CCD CN4 pin19
	20	Ground	CCD CN4 pin20
	21	Ground	CCD CN4 pin21
	22	TG	CCD CN4 pin22
	23	Ground	CCD CN4 pin23

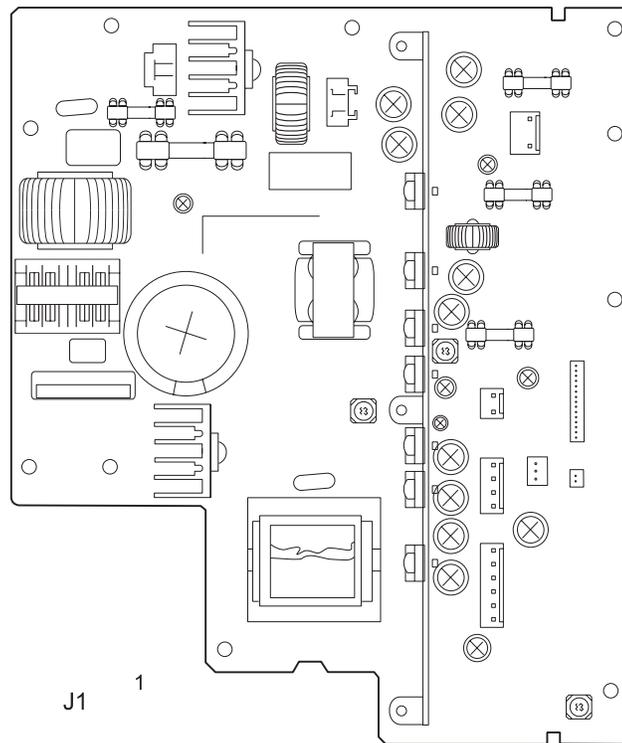
Engine board connections (continued)

Connector Name	Pin no	Signal	Connects to...
P/J 65	1	Ground	CCD CN5 pin1
	2	Ground	CCD CN5 pin2
	3	INV	CCD CN5 pin3
	4	INV	CCD CN5 pin4
	5	+5 V dc	CCD CN5 pin5
	6	Ground	CCD CN5 pin6
	7	+5 V dc	CCD CN5 pin7
	8	Ground	CCD CN5 pin8
	9	+3.3 V dc	CCD CN5 pin9
	10	Ground	CCD CN5 pin10
	11	+3.3 V dc	CCD CN5 pin11
	12	Ground	CCD CN5 pin12
	13	+12 V dc	CCD CN5 pin13
	14	Ground	CCD CN5 pin14
	15	AFE*RST	CCD CN5 pin15
	16	Ground	CCD CN5 pin16
	17	AFEDATA	CCD CN5 pin17
	18	AFECLK	CCD CN5 pin18
	19	AFE*CS	CCD CN5 pin19
	20	HP SENSED(H) +5 V dc	CCD CN5 pin20
P/J62	1	ADF-/A	
	2	ADF-A	
	3	ADF-/B	
	4	ADF-B	
P/J60	1	+5 V dc	
	2	Ground	
	3	REGI SENSED(H) +5 V dc	
	4	READ SENSED(H) +5 V dc	
	5	COVER OPEN SENSED(H) +5 V dc	
	6	+5 V dc	
	7	EMPTY SENSED(H) +5 V dc	
P/J61	1	+5 V dc	
	2	Ground	
	3	ADF OPEN SENSED(H) +5 V dc	

Engine board connections (continued)

Connector Name	Pin no	Signal	Connects to...
PJ50	1	+5 V dc	LVPS P/J40B pin1
	2	Ground	LVPS P/J40B pin2
	3	+3.3 V dc	LVPS P/J40B pin3
	4	Ground	LVPS P/J40B pin4
	5	+24 V dc	LVPS P/J40B pin5
	6	Ground	LVPS P/J40B pin6

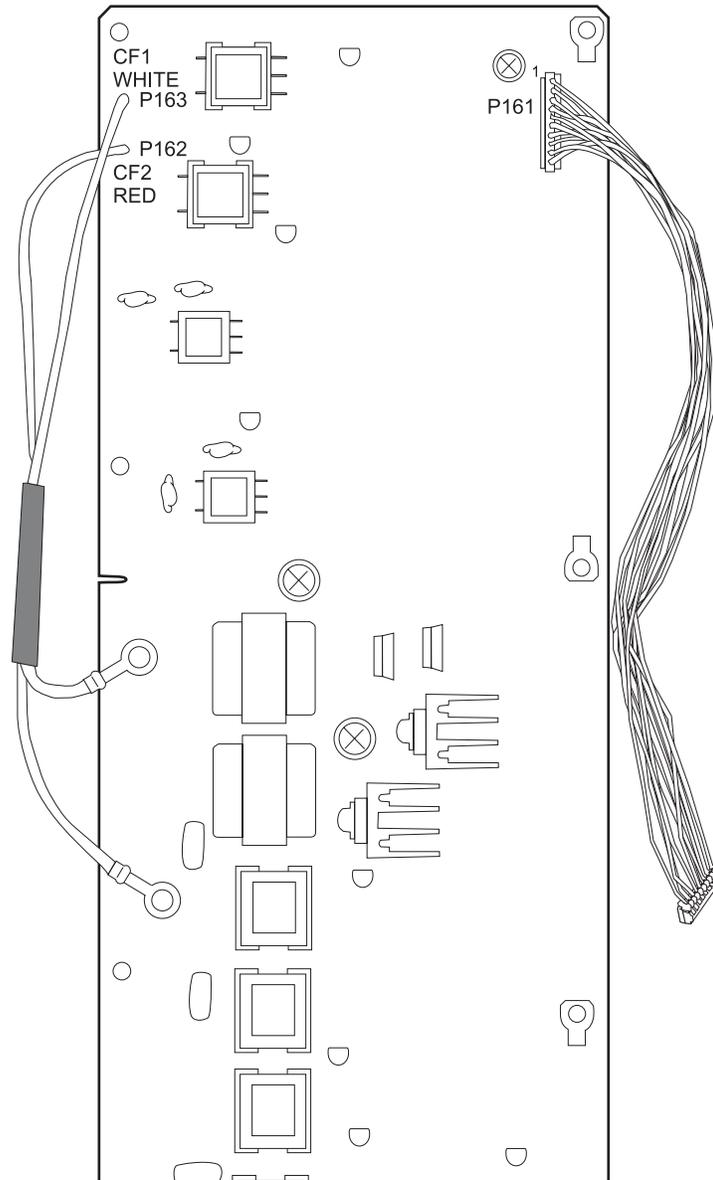
Low-voltage power supply (LVPS) diagram



Connector Name	Pin no	Signal	Connects to...
P/J 48	1	LINE	POWER SWITCH P/J11 pin 1
	2		
	3		POWER SWITCH P/J11 pin 3
P/J503	1	FAN +24 V dc	FAN
	2	FAN ALARM	
	3	Ground	
P/J44	1		Interlock switch
	3	I/L +24 V dc	
P/J40B	1	+5 V dc	Engine Board P/J50 pin1
	2	Ground	Engine Board P/J50 pin 2
	3	+3.3 V dc	Engine Board P/J50 pin 3
	4	Ground	Engine Board P/J50 pin 4
	5	+24 V dc	Engine Board P/J50 pin 5
	6	Ground	Engine Board P/J50 pin 6
P/J40A	1	+5 V dc	RIP Board P/J401 pin 1
	2	Ground	RIP Board P/J401 pin 2
	3	+3.3 V dc	RIP Board P/J401 pin 3
	4	Ground	RIP Board P/J401 pin 4

Connector Name	Pin no	Signal	Connects to...	
P/J501	1	+5 V dc	Controller Board P/J14 pin 13	
	2	Ground	Controller Board P/J14 pin 12	
	3	+3.3 V dc	Controller Board P/J14 pin 11	
	4	Ground	Controller Board P/J14 pin10	
	7	LV TYPE	Controller Board P/J14 pin 7	
	8	DEEP SLEEP	Controller Board P/J14 pin 6	
	9	SLEEP	Controller Board P/J14 pin 5	
	10	+24 V dc OFF	Controller Board P/J14 pin 4	
	11	FAN STOP	Controller Board P/J14 pin 3	
	12	FAN LOW	Controller Board P/J14 pin 2	
	13	FAN ALARM	Controller Board P/J14 pin 1	
	P/J502	1	I/L +24 V dc	Controller Board P/J15 pin 1
		2	Ground	Controller Board P/J15 pin 2
P/J47	3	N HEAT 1	Fuser ASSY P/J171 pin2	
	1	LINE	Fuser ASSY P/J171 pin3	

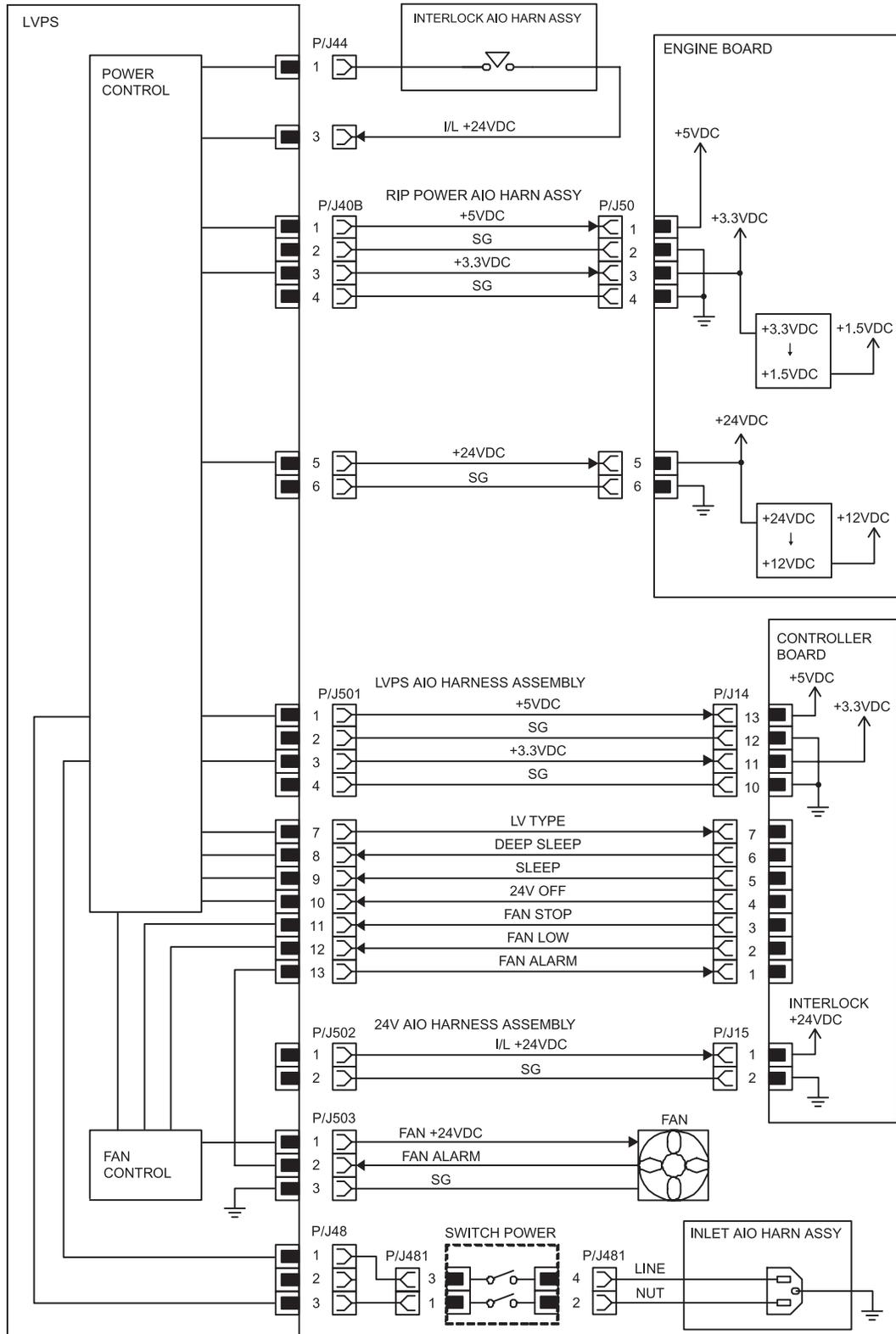
High-voltage power supply (HVPS) diagram



Connector Name	Pin no	Signal	Connects to...
P/J161	1	TR MON	Controller Board P/J16pin 10
	2	CF MON	Controller Board P/J16pin 9
	3	COLOR	Controller Board P/J16 pin 8
	4	DATA	Controller Board P/J16 pin7
	5	CLK	Controller Board P/J16 pin 6
	6	+3.3 V dc	Controller Board P/J16 pin 5
	7	Ground	Controller Board P/J16 pin 4
	8	+5 V dc	Controller Board P/J16 pin 3
	9	Ground	Controller Board P/J16 pin 2
	10	IL +24 V dc	Controller Board P/J16 pin1

Wiring diagrams

DC power supply wiring diagram



DC power supply wiring diagram

Low-voltage power supply (LVPS) and fan signals

Description	Signal line names
Control signal of the LVPS	LV TYPE DEEP SLEEP SLEEP 24V OFF
Drive control signal of the fan	FAN STOP FAN LOW FAN ALARM

LVPS overcurrent protection circuit

This circuit stops all outputs, if the power supply voltage 24 V dc, 5 V dc, or 3.3 V dc is shorted. The circuit is reset, when after the cause of short was removed, the power is turned off, and then on again after a certain time.

LVPS overvoltage protection circuit

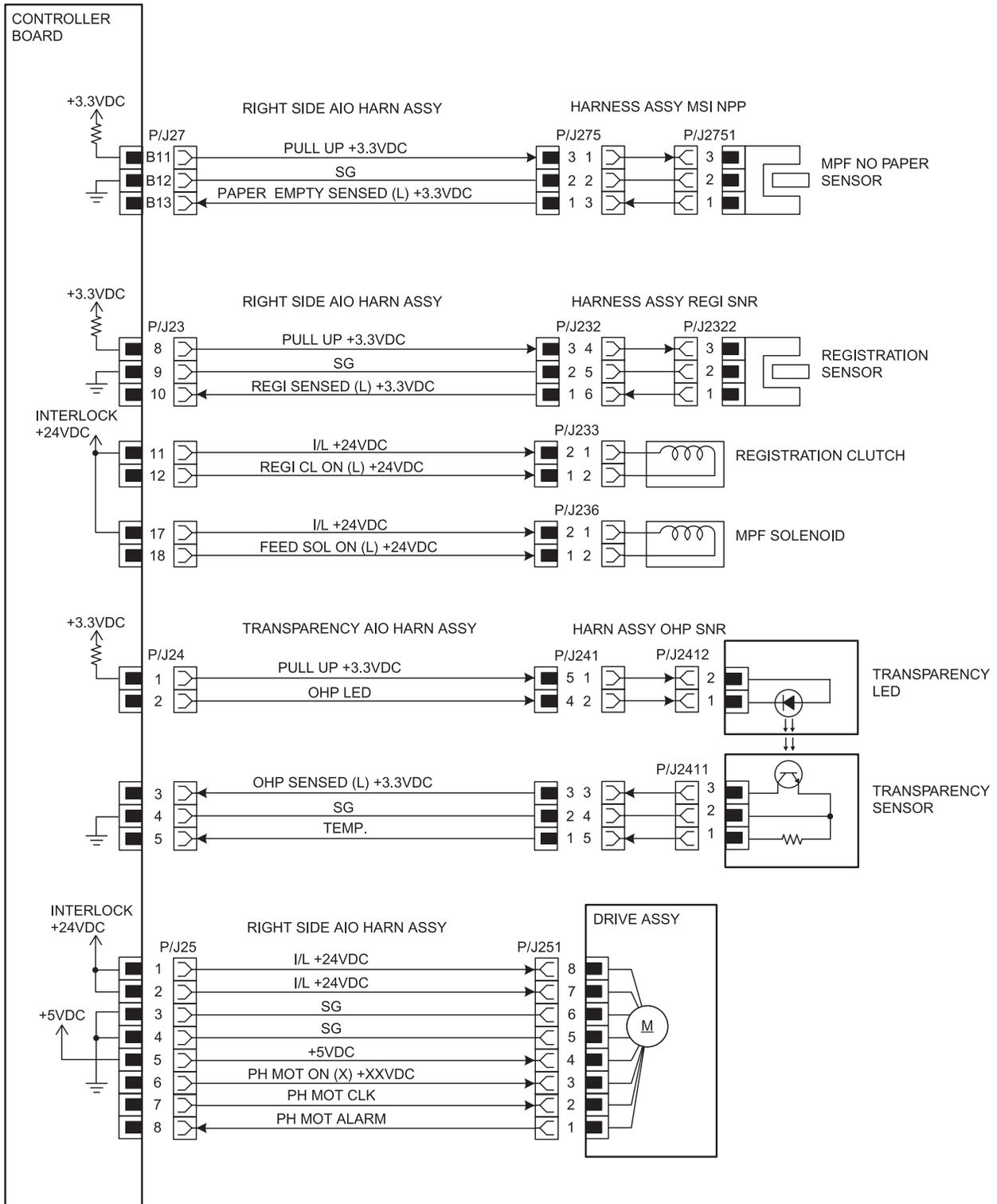
This circuit stops all outputs, if the power supply voltage 24VDC, 5VDC, or 3.3VDC exceeds the specified voltage respectively. At this time, the operating point is 36VDC or less for 24VDC, 7VDC or less for 5VDC, or 7VDC or less for 3.3VDC. The circuit is reset, when the power is turned off, and then on again after a certain time.

Sleep mode and deep sleep mode

The output of the following power supply are stopped according to the these signals.

Signal	Output		
	+24 V dc	+5 V dc	+3.3 V dc
Sleep	ON	ON	ON
Deep sleep	OFF	ON	ON

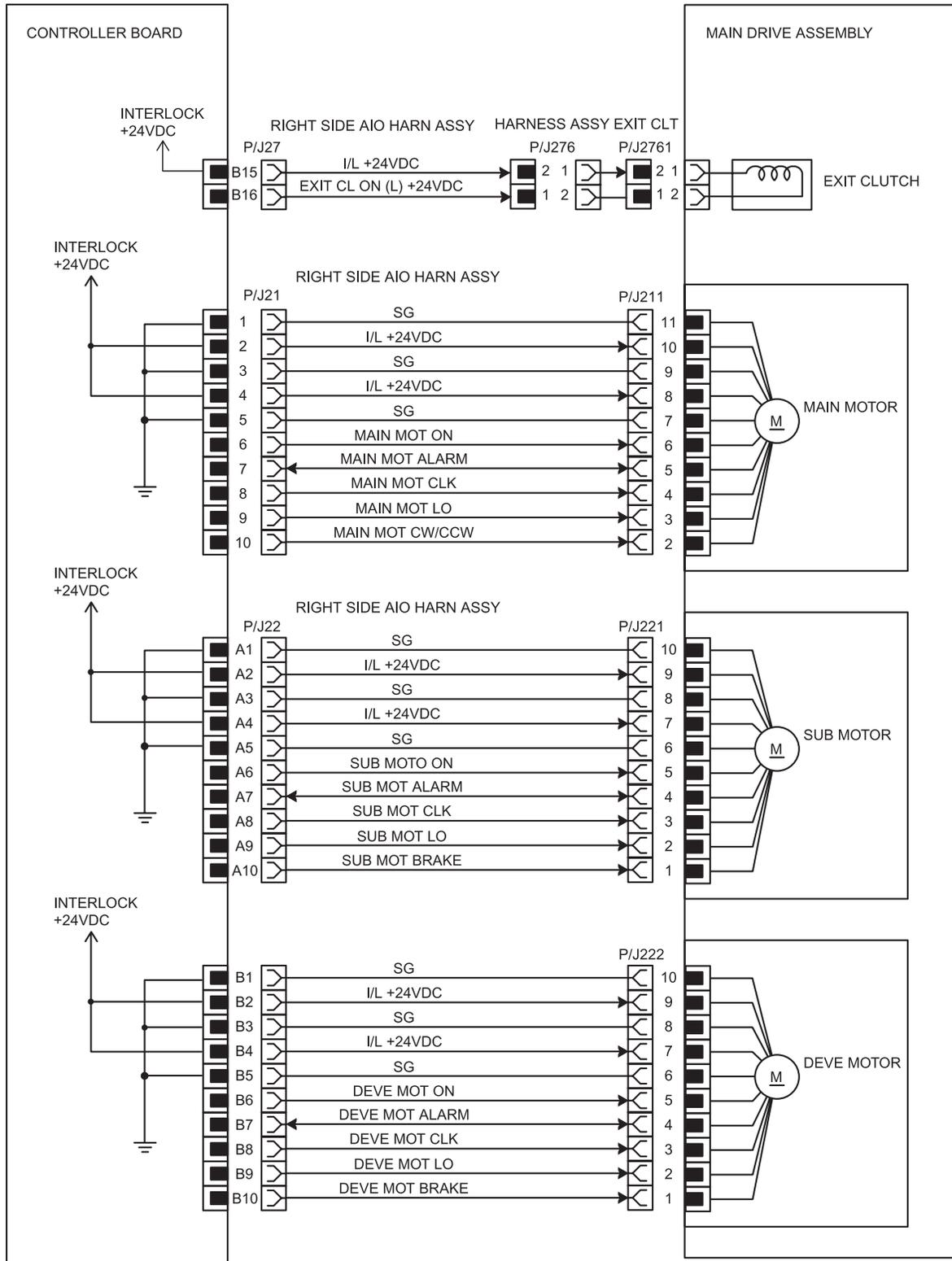
MP feeder and registration wiring diagram



MP feeder and registration wiring diagram

Description	Signal line name
Paper detect signal of the MP feeder by the no paper sensor	PAPER EMPTY SENSED (L) +3.3 V dc
Paper detect signal of the registration part by the registration sensor	REGI SENSED (L) +3.3 V dc
On/off signal of the registration clutch	REGI CL ON (L) +24 V dc
On/off signal of the MP feeder feed solenoid	FEED SOL ON (L) +24 V dc
On/off signal of the transparency LED	OHP LED
Detect signal of the transparency sheet (overhead projector sheet or OHP) by the transparency sensor	OHP SENSED (L) +3.3 V dc
Data on temperature inside the printer.	TEMP.
Drive control signal of the paper feed drive	PH MOT ON (X) +XX V dc PH MOT CLK PH MOT ALARM

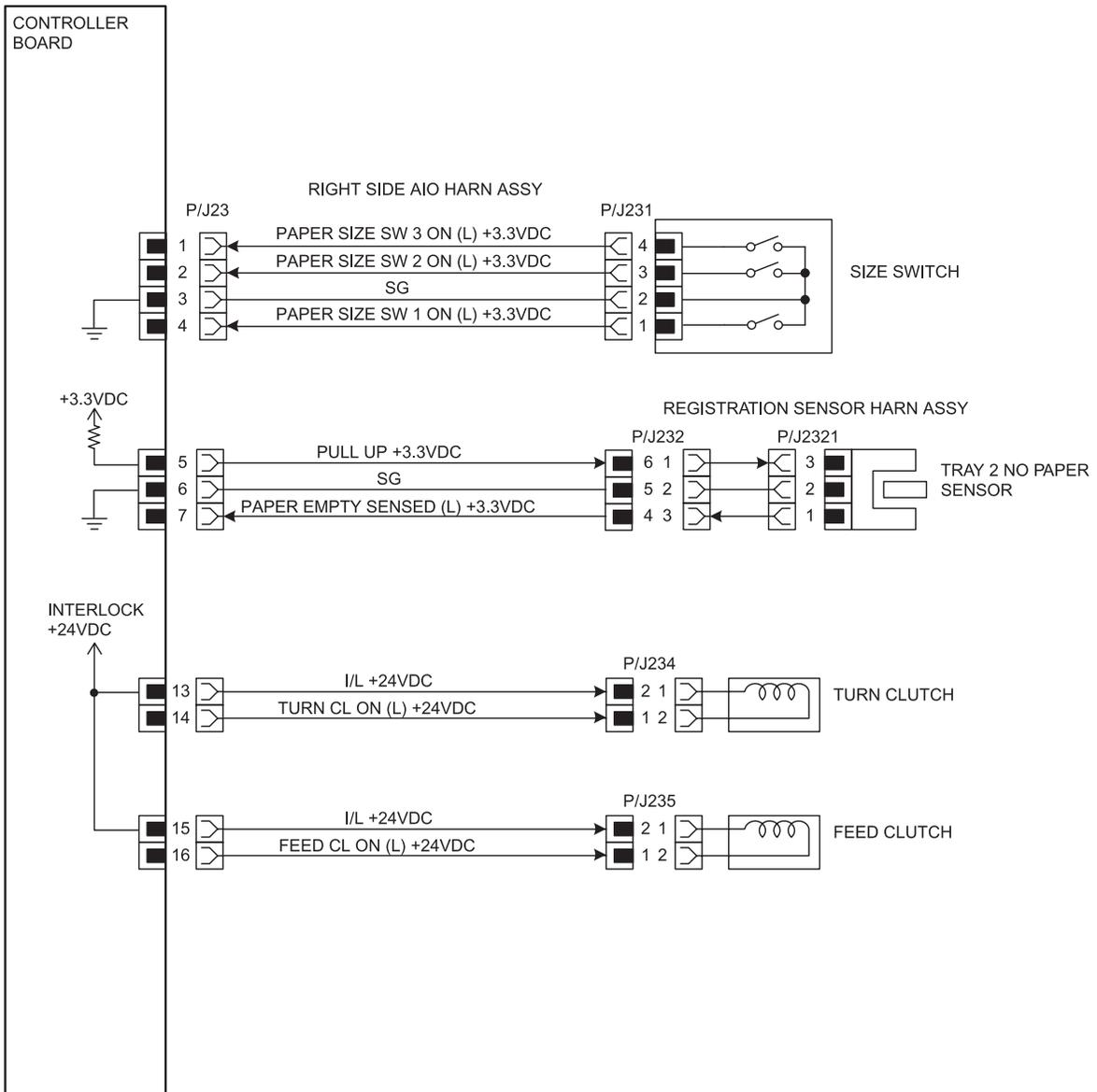
Drives wiring diagram



Drives wiring diagram

Description	Signal line name
Drive control signal of the main motor	MAIN MOT ON MAIN MOT ALARM MAIN MOT CLK MAIN MOT LO MAIN MOT CW/CCW
Drive control signal of the sub motor (part of main motor)	SUB MOT ON SUB MOT ALARM SUB MOT CLK SUB MOT LO SUB MOT BRAKE
Drive control signal of the developer motor (part of main motor)	DEVE MOT ON DEVE MOT ALARM DEVE MOT CLK DEVE MOT LO DEVE MOT BRAKE
On/off signal of the exit clutch	EXIT CL ON (L) +24 V dc

Paper feed wiring diagram

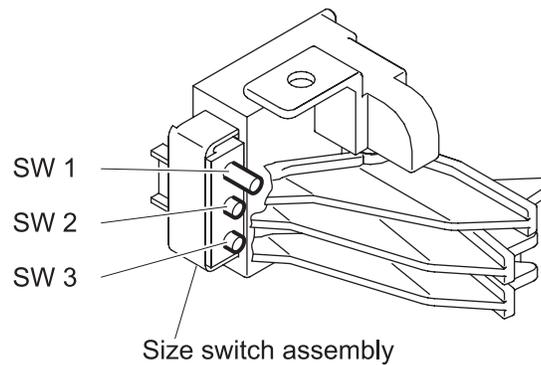


Paper feed wiring diagram

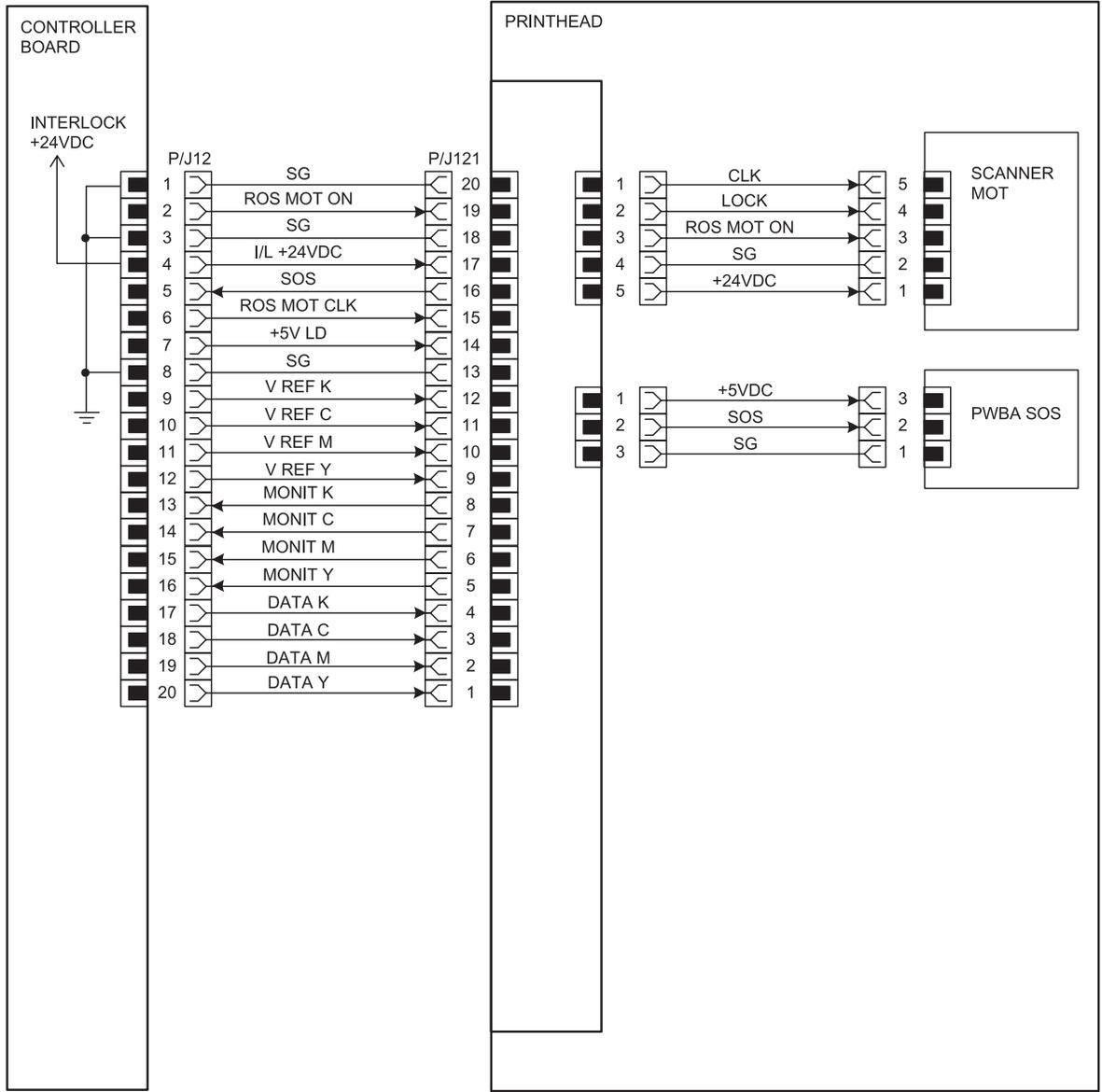
Outline of size switch assembly

The paper size is determined by a combination of the on/off status of the switches SW 1, SW 2, and SW 3 of the size switch assembly.

Paper size	Switches		
	SW 1	SW 2	SW 3
Legal 14" (SEF)	ON	ON	ON
Legal 13" (SEF)	ON	ON	OFF
Executive (SEF)	ON	OFF	ON
B5 (SEF)	ON	OFF	OFF
A4 (SEF)	OFF	ON	ON
Letter (SEF)	OFF	OFF	ON
A5	OFF	ON	OFF
No tray	OFF	OFF	OFF
ON: The actuator is activating the size switch			



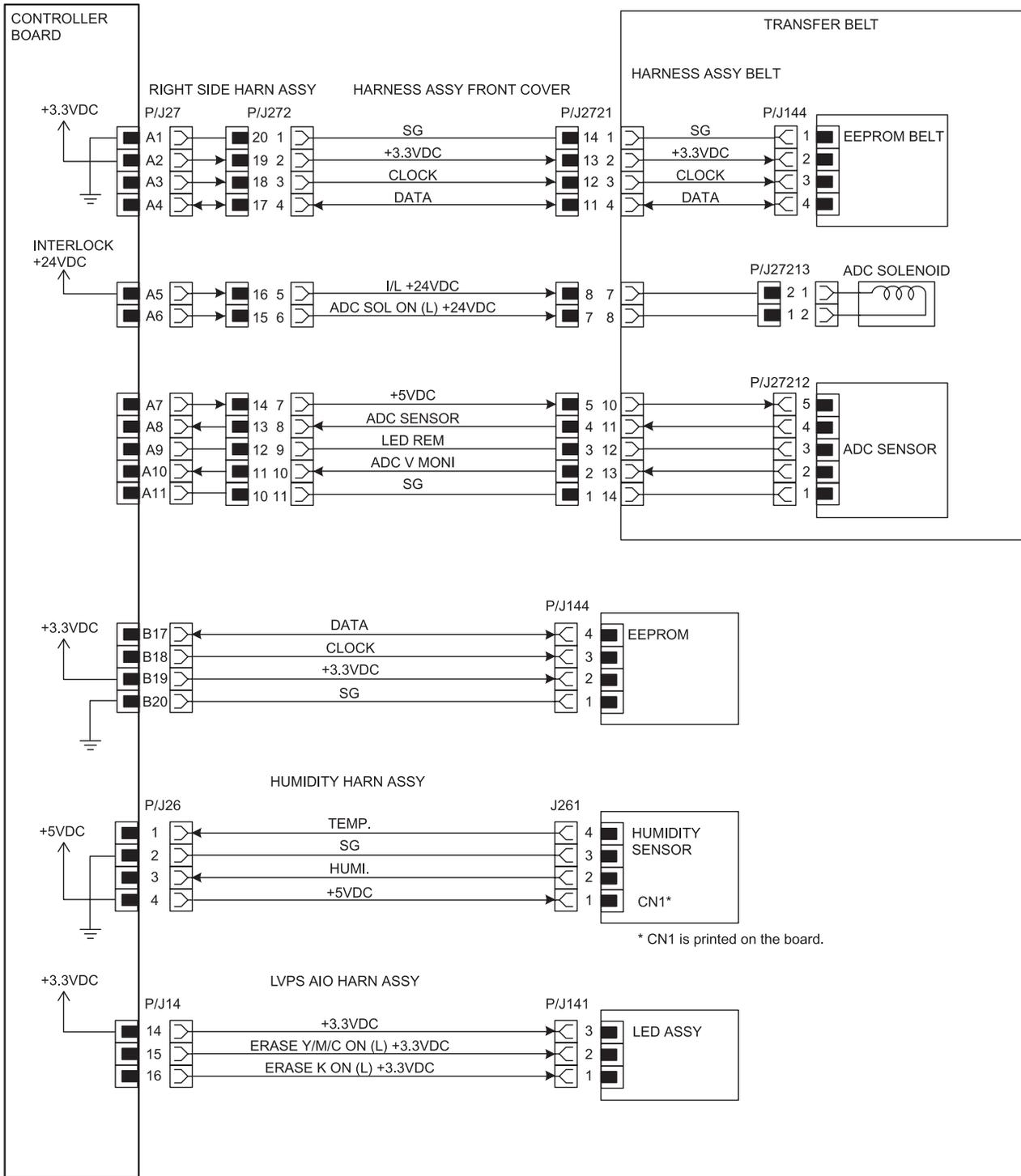
Printhead wiring diagram



Printhead wiring diagram

Description	Signal line name
Drive control signal of the printhead motor	ROS MOT ON ROS MOT CLK
Reference signal for scan start of laser	SOS
Emission control signal of the laser diode	V REF K V REF C V REF M V REF Y
The monitoring voltage of the laser diode	MONIT K MONIT C MONIT M MONIT Y
Video signal of the laser diode	DATA K DATA C DATA M DATA Y

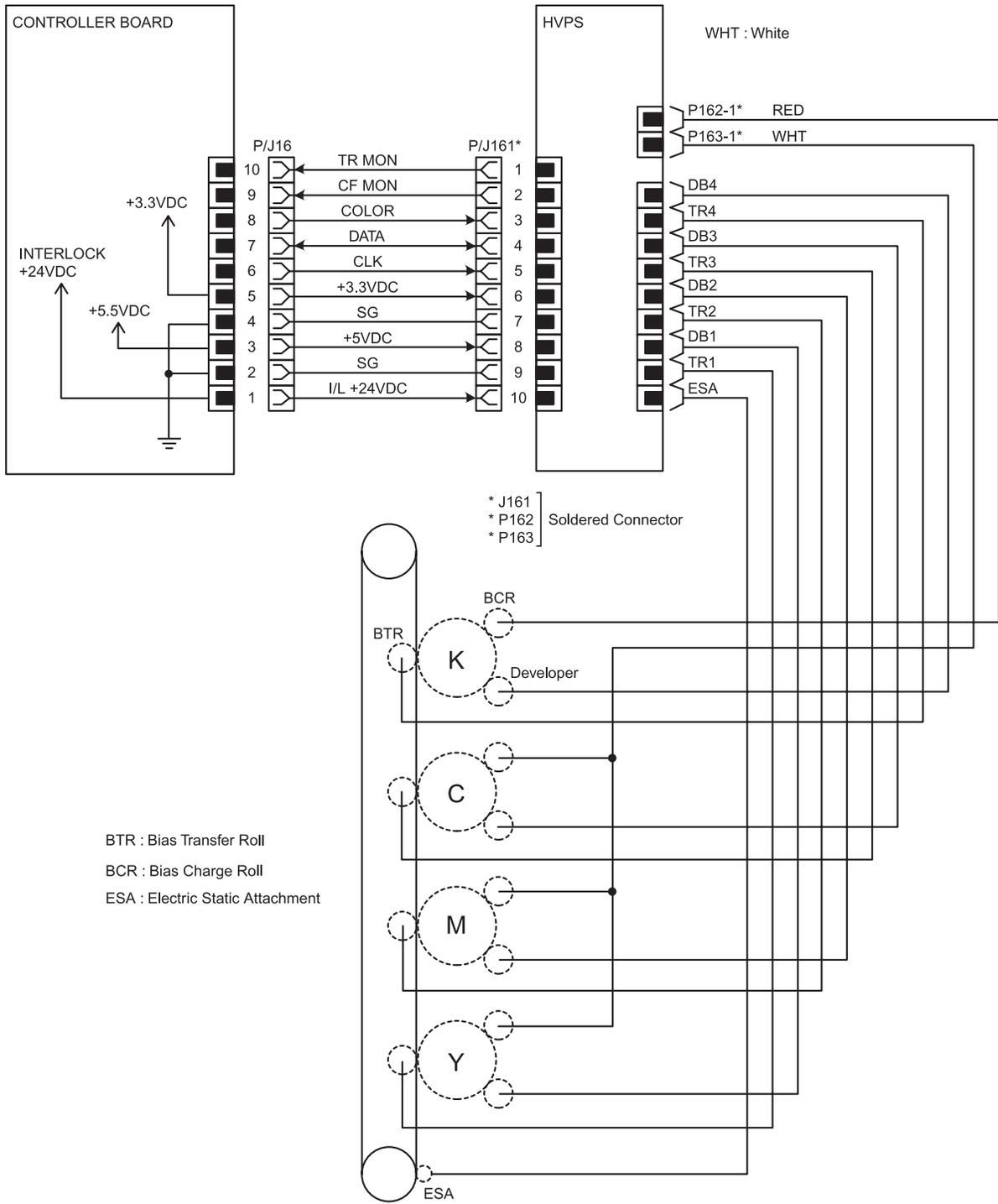
Imaging wiring diagram



Imaging wiring diagram

Description	Signal line name
Control signal of the EEPROM belt	CLOCK DATA
On/off signal of the density solenoid	ADC SOL ON (L) +24 V dc
Toner patch density data measured by the density sensor (analog value)	ADC SENSOR
Remote signal of the LED of density sensor	LED REM
Control signal of the density sensor	ADC V MONI
Control signal of the EEPROM XPRO	DATA CLOCK
Temperature data in the printer by the temperature/humidity sensor (analog value)	TEMP.
Humidity data in the printer by the temperature/humidity sensor (analog value)	HUMI.
On/off signal of the erase lamp	ERASE K ON (L) +3.3 V dc ERASE Y/M/C ON (L) +3.3 V dc

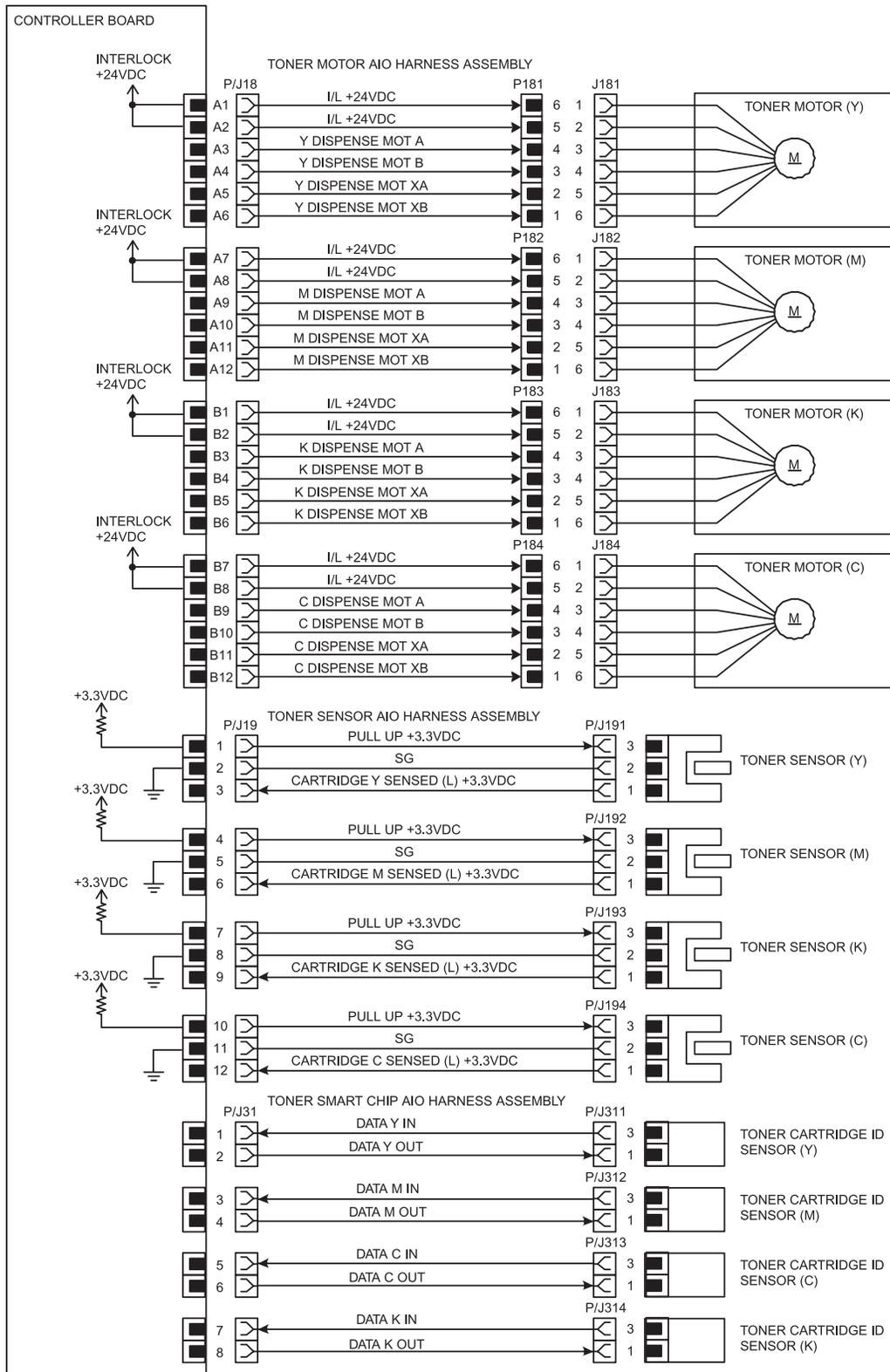
High-voltage power supply (HVPS) wiring diagram



High-voltage power supply wiring diagram

Description	Signal line name
Control signal of the HVPS	TR MON CF MON COLOR DATA CLK

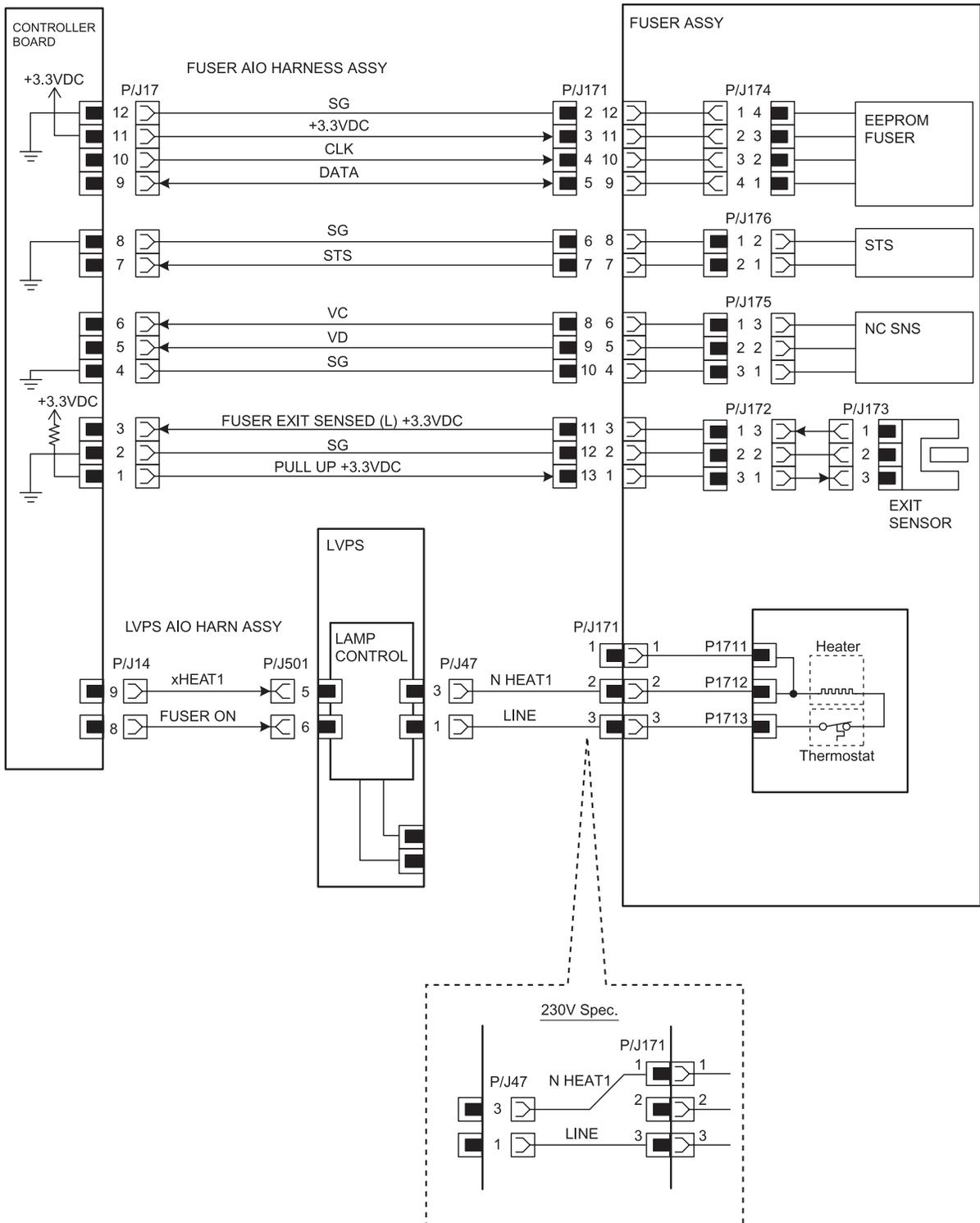
Developer wiring diagram



Developer wiring diagram

Description	Signal line name
Drive control signal of the toner motor (yellow)	Y DISPENSE MOT A Y DISPENSE MOT B Y DISPENSE MOT XA Y DISPENSE MOT XB
Drive control signal of the toner motor (magenta)	M DISPENSE MOT A M DISPENSE MOT B M DISPENSE MOT XA M DISPENSE MOT XB
Drive control signal of the toner motor (black)	K DISPENSE MOT A K DISPENSE MOT B K DISPENSE MOT XA K DISPENSE MOT XB
Drive control signal of the toner motor (cyan)	C DISPENSE MOT A C DISPENSE MOT B C DISPENSE MOT XA C DISPENSE MOT XB
Detection signal of the cartridge sensor (yellow)	CARTRIDGE Y SENSED (L) +3.3 V dc
Detection signal of the cartridge sensor (magenta)	CAR TRIDGE M SENSED (L) +3.3 V dc
Detection signal of the cartridge sensor (black)	CARTRIDGE K SENSED (L) +3.3 V dc
Detection signal of the cartridge sensor (cyan)	CARTRIDGE C SENSED (L) +3.3 V dc
Control signal of the toner Smart Chip sensor (yellow)	DATA Y IN DATA Y OUT
Control signal of the toner Smart Chip sensor (magenta)	DATA M IN DATA M OUT
Control signal of the toner Smart Chip sensor (cyan)	DATA C IN DATA C OUT
Control signal of the toner Smart Chip sensor (black)	DATA K IN DATA K OUT

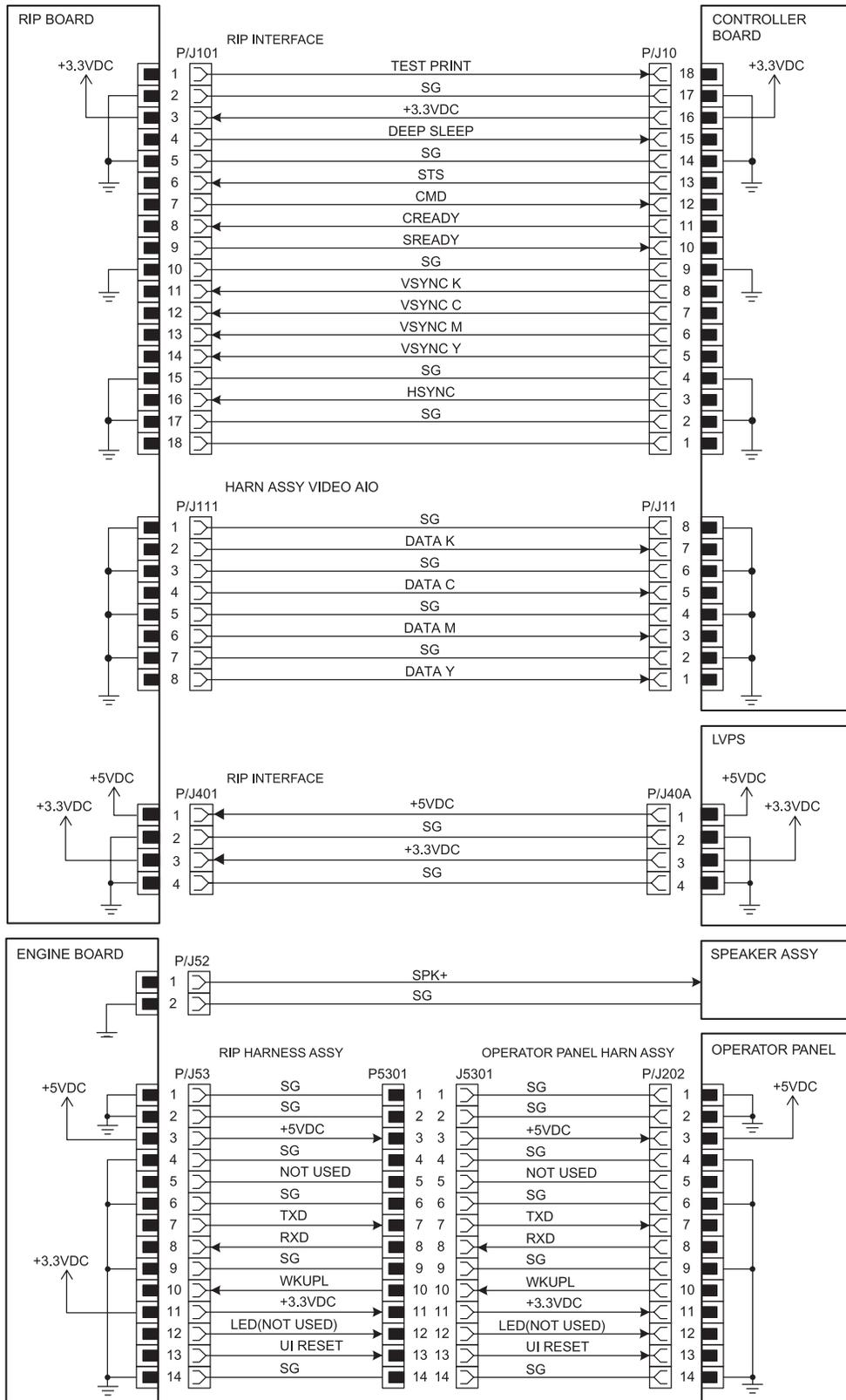
Fuser wiring diagram



Fuser wiring diagram

Description	Signal line name
Control signal of the EEPROM fuser	CLK DATA
Heat roll surface temperature data measured by temperature sensor to detect high temperatures (analog value)	STS
Temperature data measured by temperature sensor for temperature control (analog value)	VC VD
Paper detect signal of the fuser exit by the exit sensor	FUSER EXIT SENSED (L) +3.3 V dc
Lighting signal of fuser lamp	FUSER ON
Test signal of the LVPS (Used in production process only)	Not used Not used

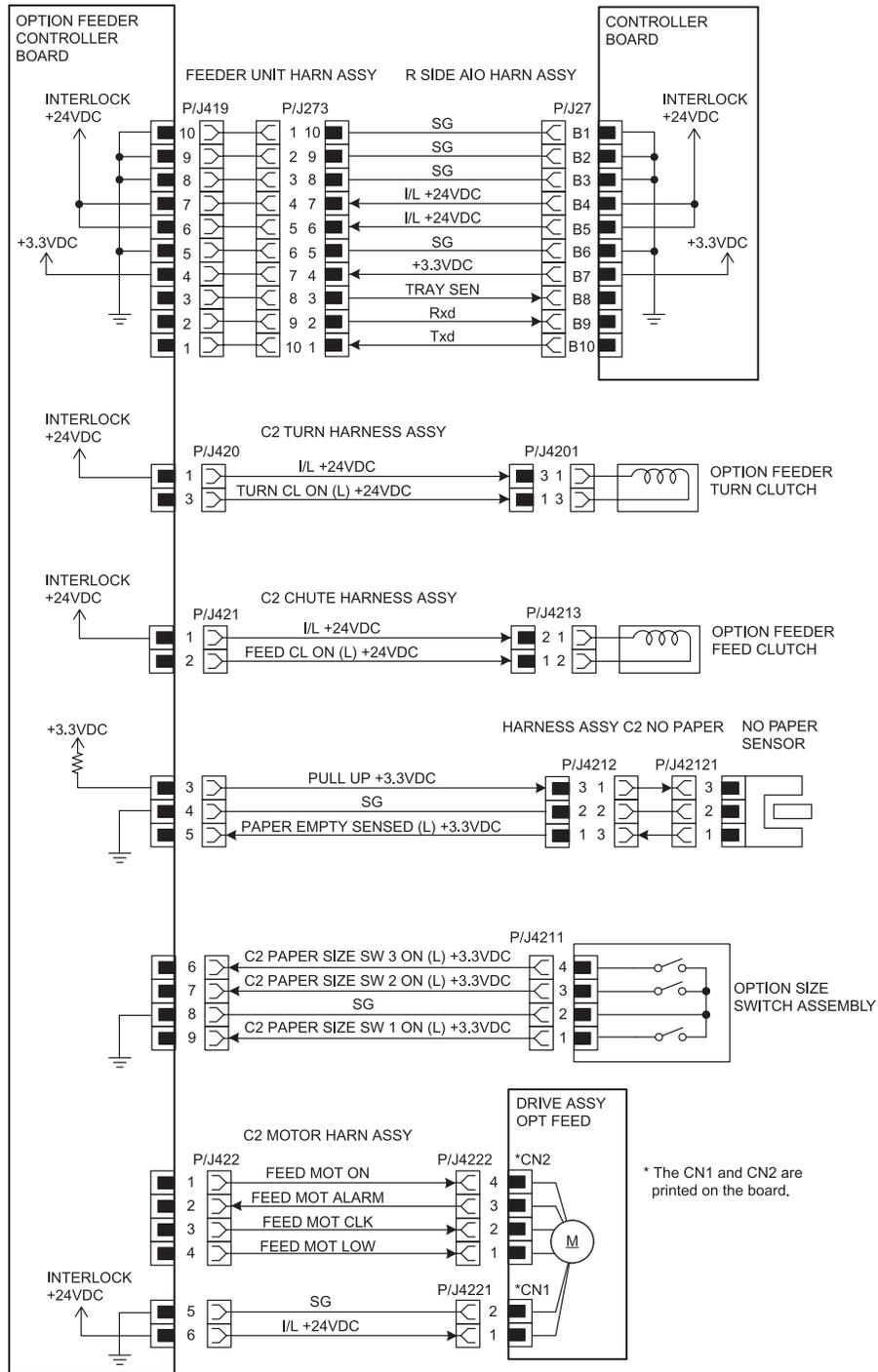
Boards wiring diagrams



Boards wiring diagrams

Description	Signal line name
Control signal for the Test Print mode	TEST PRINT
Control signal for the Deep Sleep mode	DEEP SLEEP
Status signal transmitted fro the controller board to the RIP board	STS
Command signal transmitted from the RIP board to the controller board	CMD
Signal for indicating weather or not the printer is ready for receiving command signal	CREADY SREADY
Signal for indicating registration position of each of images Y, M, C, and K	VSYNC K VSYNC C VSYNC M VSYNC Y
Signal for data	HSYNC
Video data of four colors	DATA K DATA C DATA M DATA Y
Control signal of the operator panel	DATA CLK BACK LIGHT BL +5 V dc
Control signal of the speaker	SPK+
Control signal of the operator panel	TXD RXD
Wake up signal of the operator panel.	WKUP
Reset signal of the operator panel	UI RESET

550-sheet feeder wiring diagram

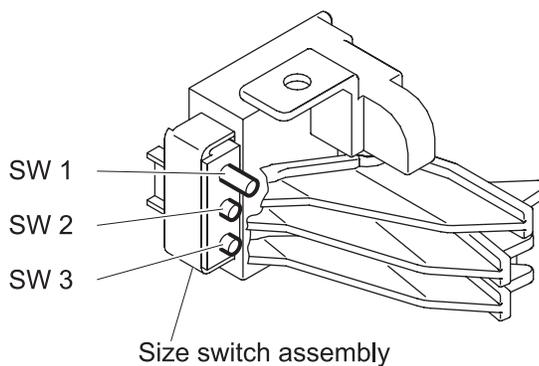


550-sheet feeder wiring diagram

Description	Signal line name
Control signal of the feeder controller card	TRAY SEN Rxd Txd
On/off signal of the turn clutch	TURN CL ON (L) +24 V dc
On/off signal of the feed clutch	FEED CL ON (L) +24 V dc
Paper detect signal of the 550-sheet feeder by the 550-sheet feeder no paper sensor.	PAPER EMPTY SENSED (L) +3.3 V dc
On/off signal of the 550-sheet feeder size switch assembly	PAPER SIZE SW 1 ON (L) +3.3 V dc PAPER SIZE SW 2 ON (L) +3.3 V dc PAPER SIZE SW 3 ON (L) +3.3 V dc
Drive control signal of the feed motor	FEED MOT ON FEED MOT ALARM FEED MOT CLK FEED MOT LOW

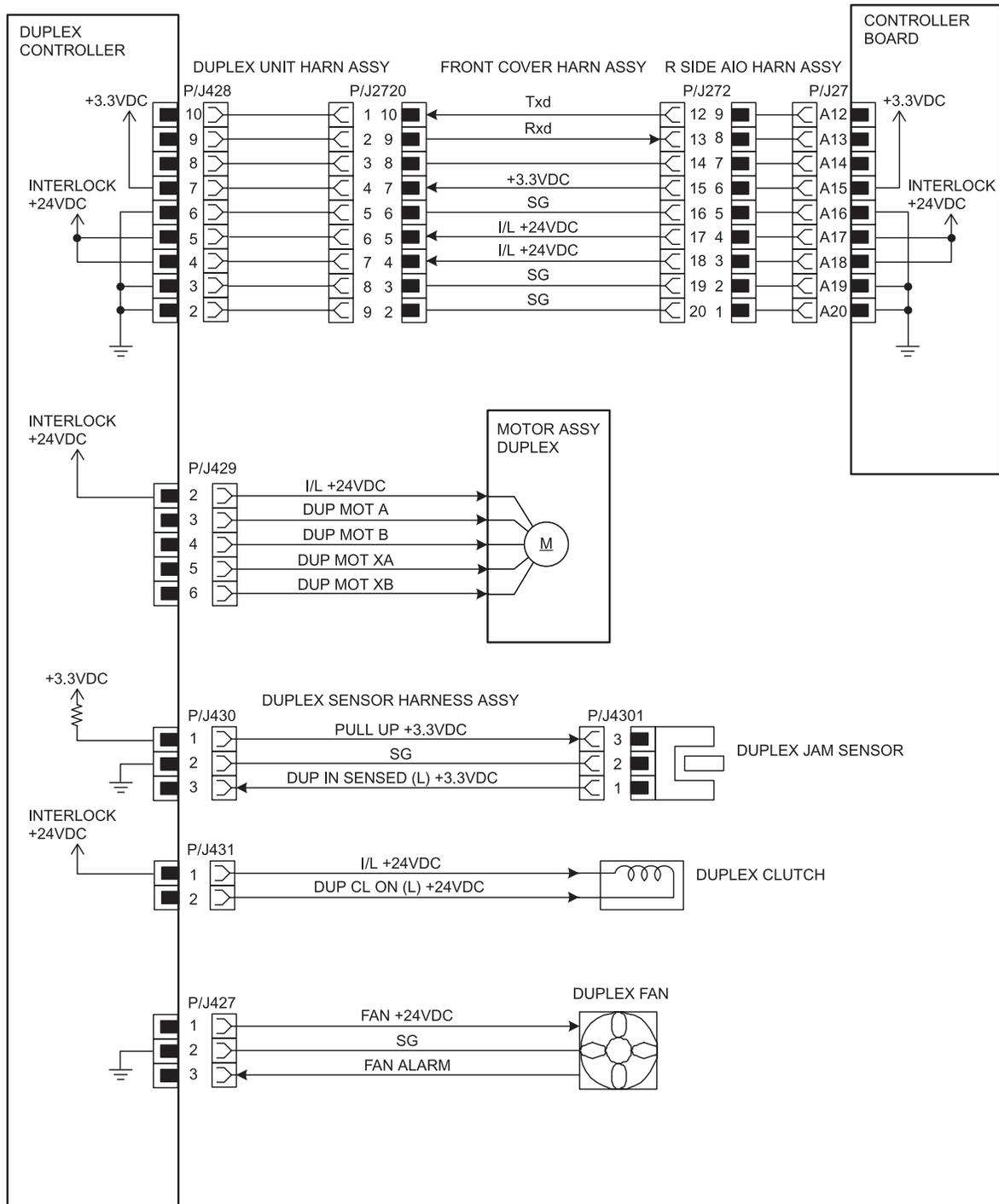
Outline of 550-sheet feeder size switch assembly

The paper size is determined by a combination of the on/off status of the SW 1, SW 2, and SW 3 switches of the 550-sheet feeder size switch assembly.



Paper size	Switches		
	SW 1	SW 2	SW 3
Legal 14" (SEF)	ON	ON	ON
Legal 13" (SEF)	ON	ON	OFF
Executive (SEF)	ON	OFF	ON
B5 (SEF)	ON	OFF	OFF
A4 (SEF)	OFF	ON	ON
LETTER (SEF)	OFF	OFF	ON
A5	OFF	ON	OFF
No tray	OFF	OFF	OFF
ON: the actuator is activating the size switch.			

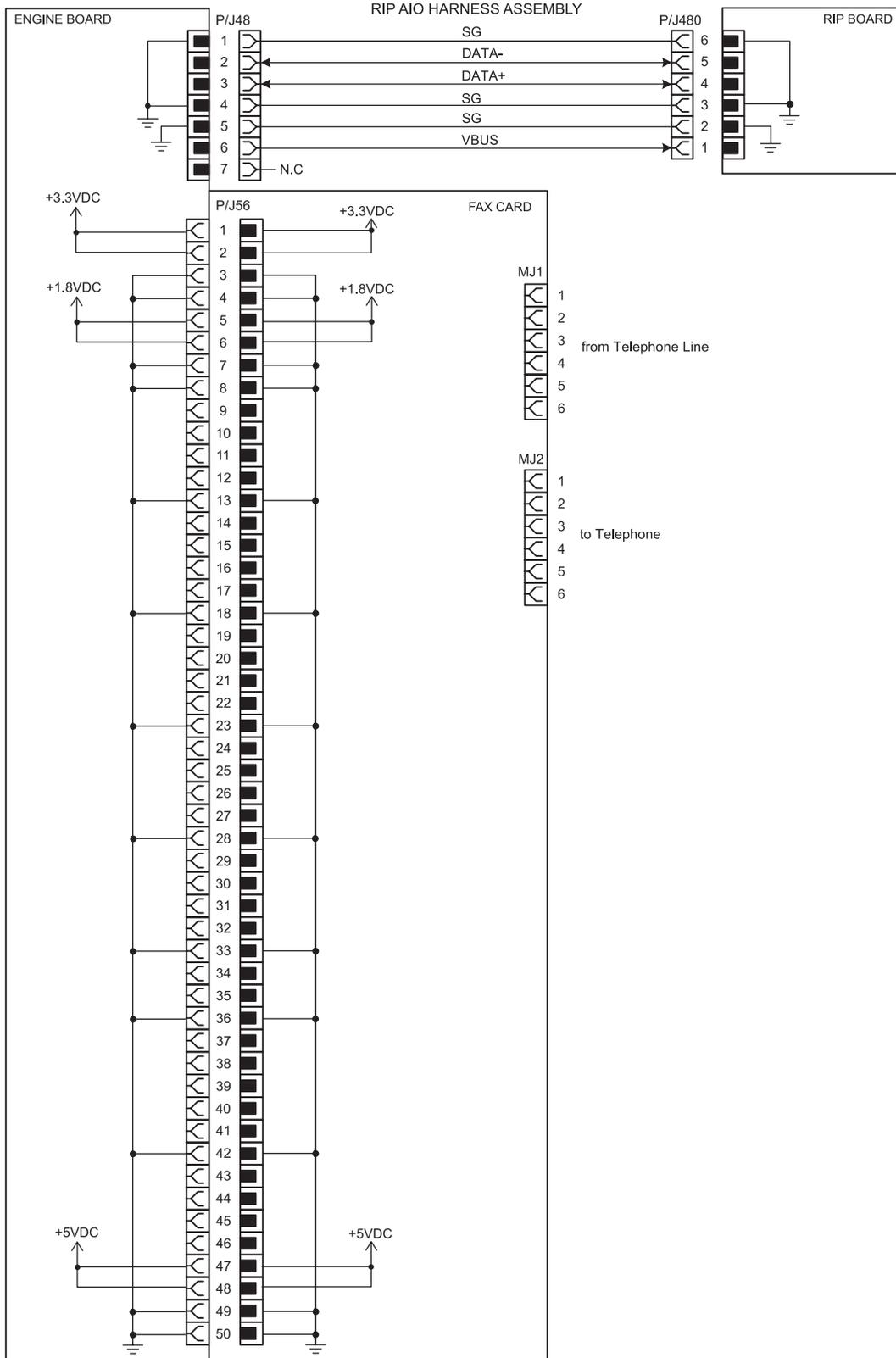
Duplex unit wiring diagram



Duplex unit wiring diagram

Description	Signal line name
Control signal of the duplex card	Txd Rxd
Drive control signal of the duplex motor	DUP MOT A DUP MOT B DUP MOT XA DUP MOT XB
Paper detect signal of the duplex by the duplex jam sensor	DUP IN SENSED (L) +3.3 V dc
On/off signal of the duplex clutch	DUP CL ON (L) +24 V dc
Drive control signal of the duplex fan	FAN +24 V dc FAN ALARM

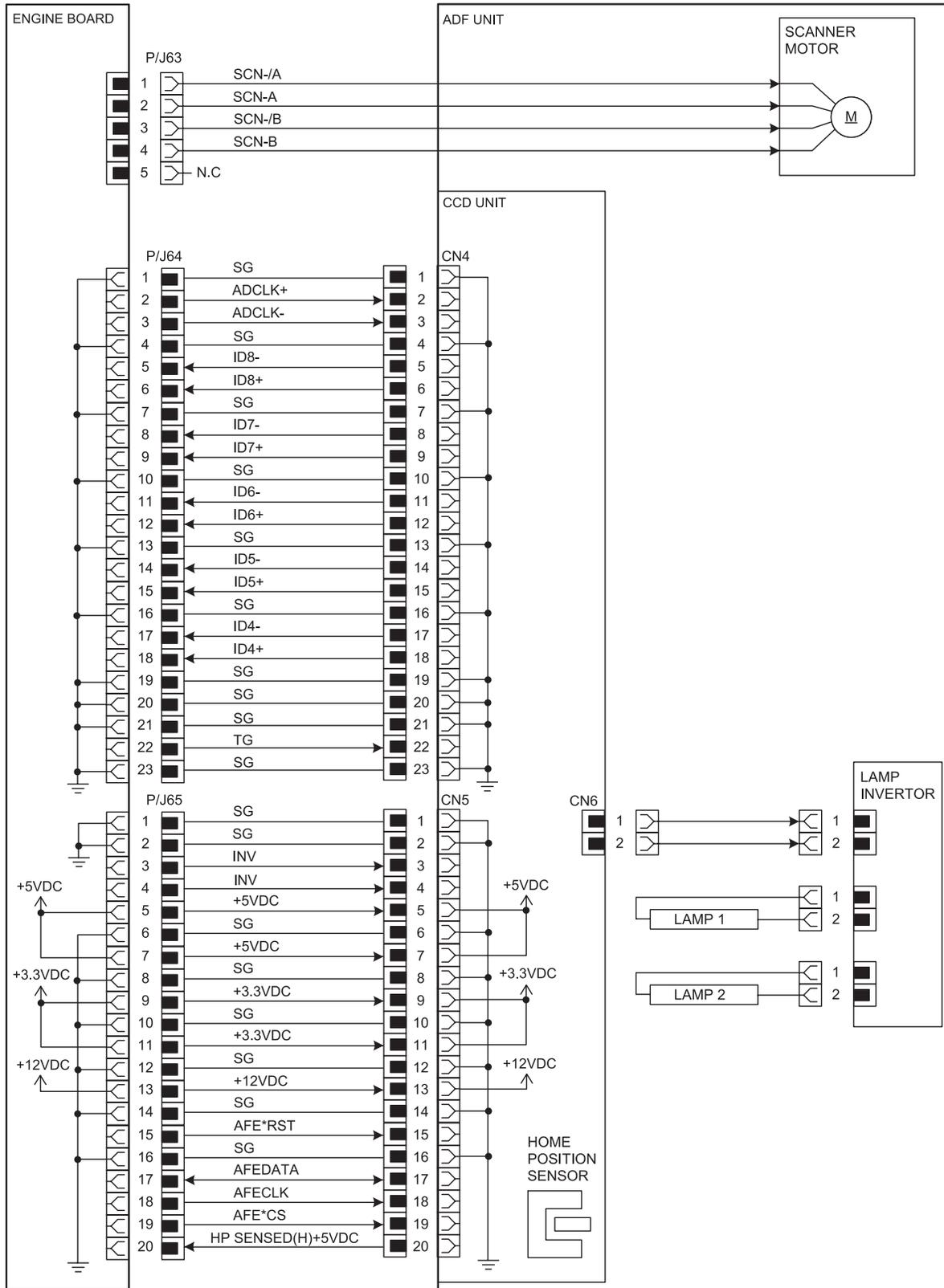
Fax controller wiring diagram



Fax controller wiring diagram

Description	Signal line name
Control signal of the RIP board	DATA+ DATA- VBUS

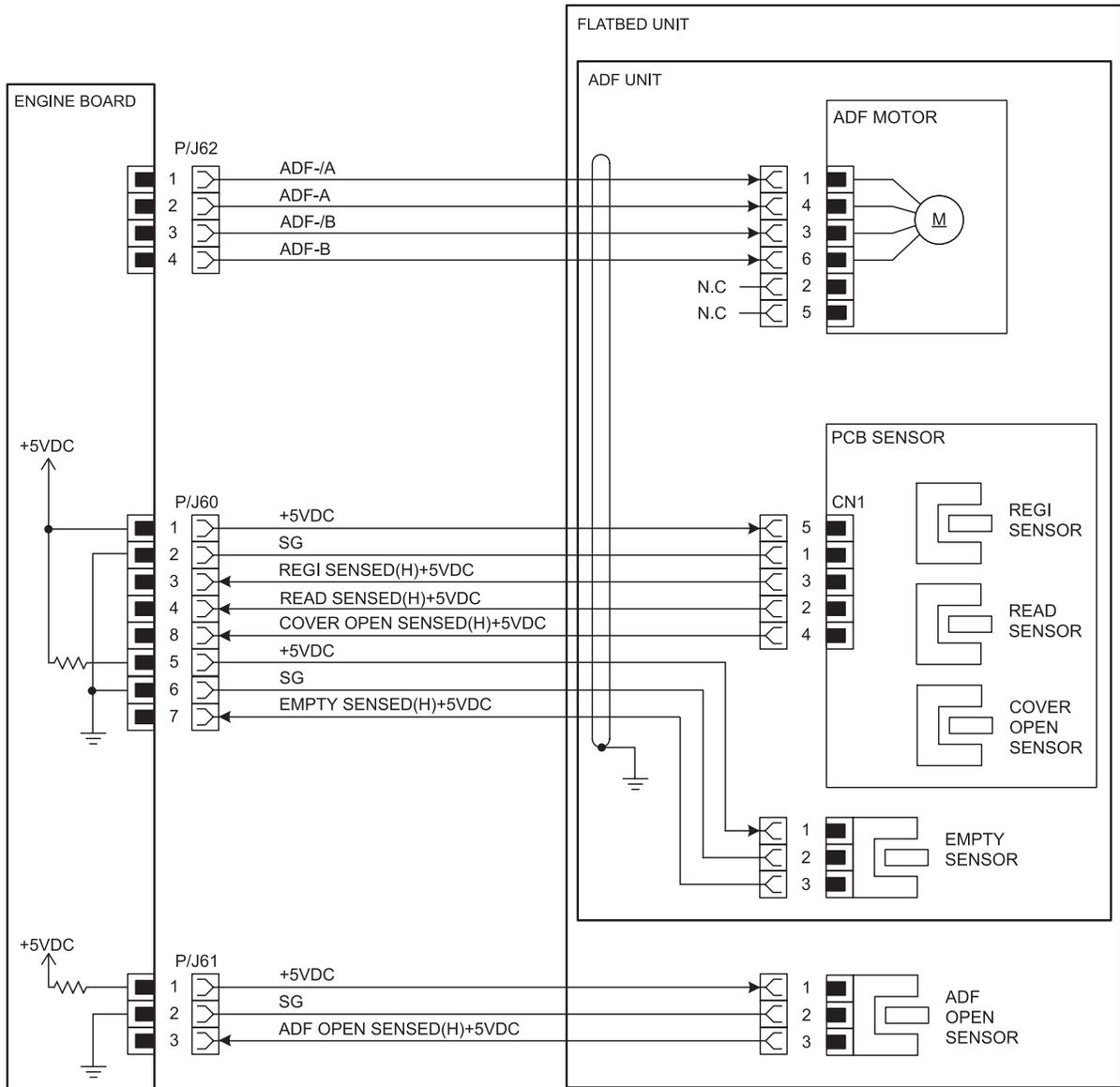
Scanner imaging wiring diagram



Scanner imaging wiring diagram

Description	Signal line name
Drive control signal of the scanner motor	SCN-/A SCN-A SCN-/B SCN-B
Control signal of the scanner board	ADCLK+ ADCLK- TG
Image data of the document by the CCD	ID8- ID8+ ID7- ID7+ ID6- ID6+ ID5- ID5+ ID4- ID4+
Control signal of the lamp inverter	INV
Control signal of the scanner board	AFE*RST AFEDATA AFECLK AFE*CS
Home position signal of the carriage by the sensor	HP SENSED (H) +5 V dc

Automatic document feeder (ADF) wiring diagram



Automatic document feeder (ADF) wiring diagram

Description	Signal line name
Drive control signal of the ADF motor	ADF-/A ADF-A ADF-/B ADF-B
Document detect signal of the registration part by the sensor	REGI SENSED (H) +5 V dc
Document detect signal of the read part by the sensor	READ SENSED (H) +5 V dc
Cover open signal of the ADF cover by the Sensor	COVER OPEN SENSED (H) +5 V dc
Document empty signal of the ADF tray by the sensor	EMPTY SENSED (H) +5 V dc
ADF open signal by the sensor	ADF OPEN SENSED (H) +5 V dc

5. Repair information

Warning: Read the following before handling electronic parts.

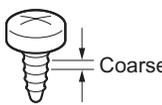
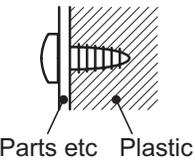
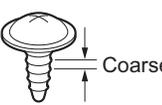
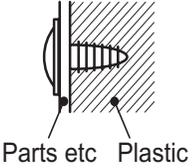
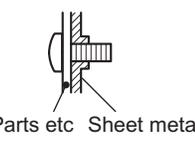
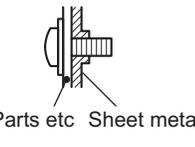
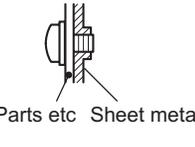
Handling ESD-sensitive parts

Many electronic products use parts that are known to be sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive parts, 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 fewest-possible movements with your body to prevent an increase of static electricity from clothing fibers, carpets, and furniture.
- Put the ESD wrist strap on your wrist. Connect the wrist band to the system ground point. This discharges any static electricity in your body to the machine.
- Hold the ESD-sensitive part by its edge connector shroud (cover); do not touch its pins. If you are removing a pluggable module, use the correct tool.
- Do not place the ESD-sensitive part on the machine cover or on a metal table; if you need to put down the ESD-sensitive part for any reason, first put it into its special bag.
- Machine covers and metal tables are electrical grounds. They increase the risk of damage, because they make a discharge path from your body through the ESD-sensitive part. (Large metal objects can be discharge paths without being grounded.)
- Prevent ESD-sensitive parts from being accidentally touched by other personnel. Install machine covers when you are not working on the machine, and do not put unprotected ESD-sensitive parts on a table.
- If possible, keep all ESD-sensitive parts in a grounded metal cabinet (case).
- Be extra careful in working with ESD-sensitive parts when cold-weather heating is used, because low humidity increases static electricity.

Screw identification table

The following table contains screw types, locations, and quantities necessary to service the printer. Pay careful attention to each screw type location when doing removals. You must install the correct screw type in each location during reassembly.

Type	Shape	Application	Characteristics	Notes	Major application locations
Silver tap screw for plastic			<ul style="list-style-type: none"> • Silver-colored • Thread is coarser than that of the sheet metal type • Screw tip is thin 	Oblique screwing damages the thread, because this screw cuts female threads in the base material as it goes in.	Exit assembly
Black tap screw with flange for plastic			<ul style="list-style-type: none"> • Black-colored • With flange • Thread is coarser than that of the sheet metal type • Screw tip is thin 	Oblique screwing damages the thread, because this screw cuts female threads in the base material as it goes in.	
Silver sheet metal screw			<ul style="list-style-type: none"> • Silver-colored • Diameter of the thread section is uniform 		
Silver sheet metal screw with flange			<ul style="list-style-type: none"> • Gold-colored • Diameter of the thread section is uniform 		Rear cover
Silver sheet metal screw with an external tooth washer			<ul style="list-style-type: none"> • Silver-colored • Provided with an external tooth washer • Diameter of the thread section is uniform 		Mounting positions of the ground wires

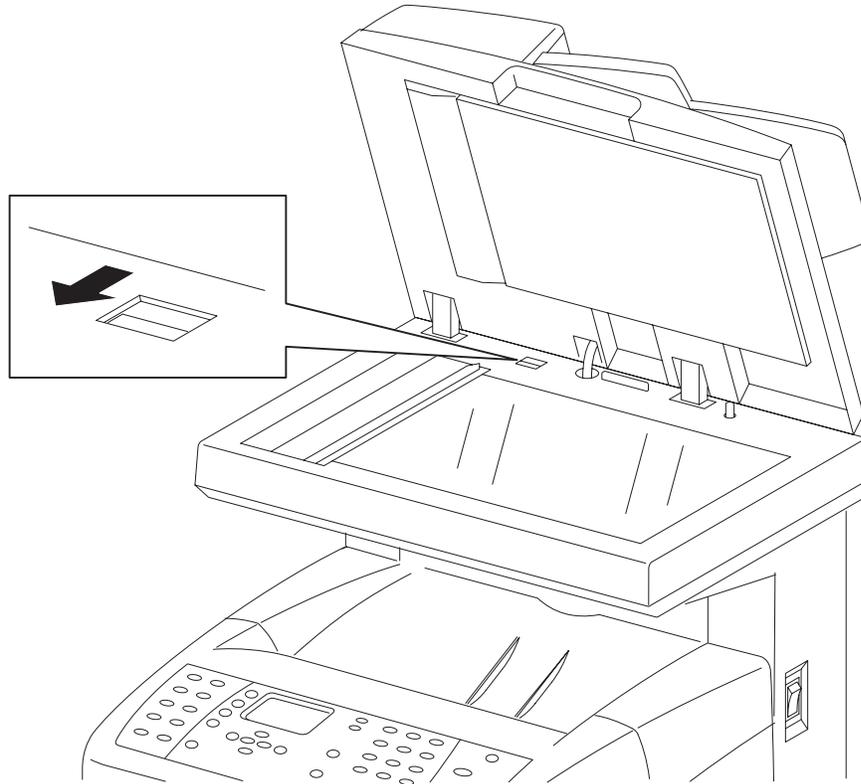
Adjustments

Scanner adjustment

Warning: When replacing the scanner assembly with a new one, make sure that scanner adjustment is performed on the new scanner assembly. The correction values for adjustment are provided on the label at the underside of the scanner.

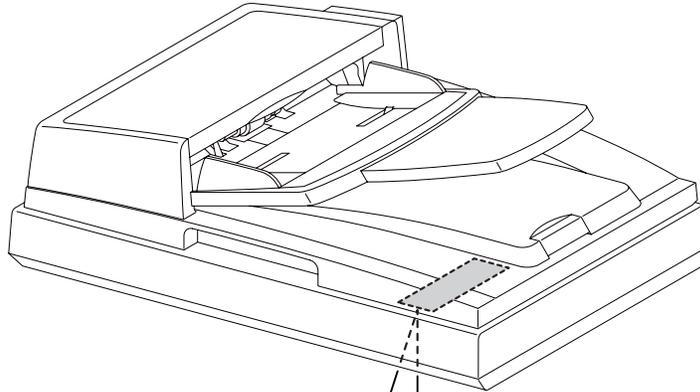
To adjust the scanner:

1. Open the scanner assembly, and move the carriage locking lever forward to the locking position.



2. Turn the scanner upside down. Scanner parameter values are provided on the label at the bottom of the scanner. Write them down so that you can refer to them later.
- Note:** Once the scanner assembly is installed, these values may become inaccessible without removal of the scanner assembly.

Warning: When the unit is upside down, take care not to damage the tray or other parts of the scanner assembly.



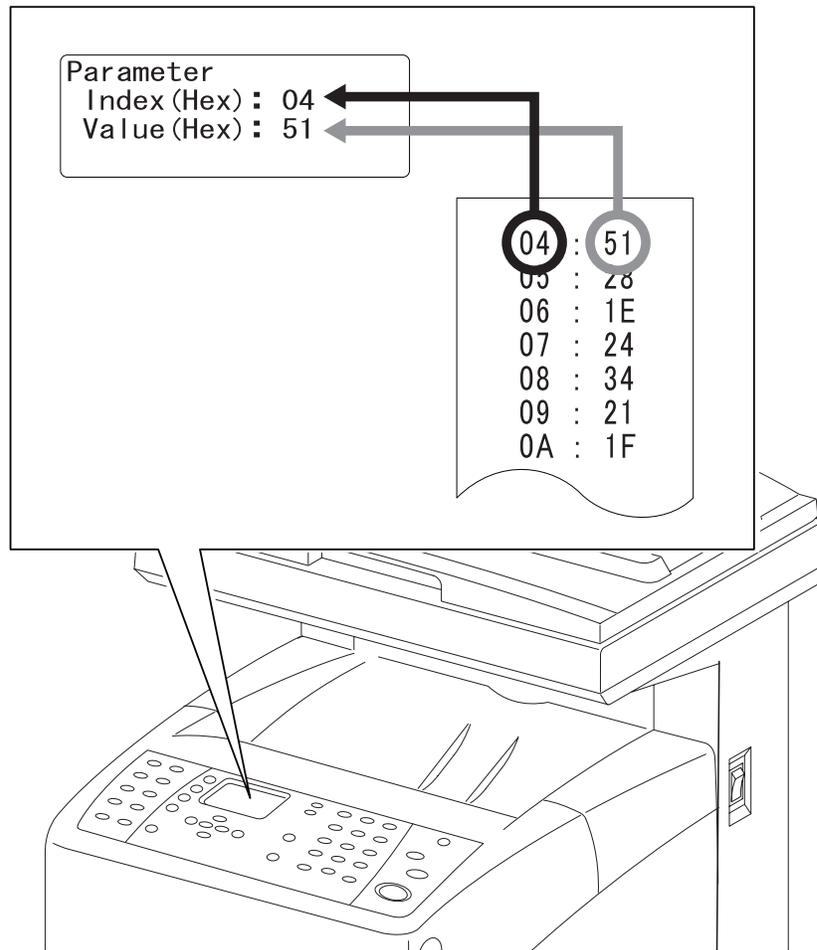
Index(Hex)	Value(Hex)
S/N : FB - GS5LJZ003301 , ADF - GD5LDZ006401	
0x04 : 51	0x08 : 34
0x05 : 28	0x09 : 21
0x06 : 1E	0x0A : 1F
0x07 : 24	

3. Replace the scanner. See **“Installation” on page 5-134**.
- Note:** The scanner assembly adjustment is to be performed whenever the scanner assembly is replaced.
4. Plug the power cord into the printer and the power outlet.
5. Open the assembly, and move the carriage locking lever backward to the unlocked position.
6. Enter Service Mode (press and hold ▲ and ▼. turn on the printer, release the buttons when the menu displays):

```
* Fax / Scanner
Printer Diag
```

7. Select **Fax/Scanner**, and press **OK**.
8. Select **Scanner Maintenance** using ▲ and ▼, and press **OK**.

9. Select **Parameter** using ▲ and ▼, and press **OK**.



10. Select **Index (HEX)**, and press **OK**.
11. Use the arrow buttons to input the value of Index (HEX) you copied down in step 2, and press **OK**.
The cursor automatically advances to **Value (HEX)**.
12. Use the arrow buttons to input the numbers for Value (HEX) that you copied down in step 2, and press **OK**.
13. Press **Back** (↵).
14. Continue inputting the Index (HEX) and Value (HEX) until all values are entered.
15. Select **Complete**, and press **OK**. The Service Mode menu returns to the main screen automatically.

Printer color registration

Color registration can be adjusted by the printer automatically, or you can manually adjust it. Color registration should be adjusted anytime the printer is moved.

Automatic color registration adjustment

Note: An automatic color registration adjustment is performed every time a new print cartridge is installed.

To perform automatic color registration adjustment:

1. On the operator panel, press **System** to access the customer Setup menus.
2. Select **Admin Menu**, and press **OK**.
3. Select **Maintenance**, and press **OK**.
4. Select **Adjust Color Regi**, and press **OK**.
5. Select **Auto Correct**, and press **OK**.
6. Select **Yes**, and press **OK**.

Manual color registration

You can fine-tune color registration by performing a manual adjustment of color registration.

Print the Color Registration Correction Chart

1. On the operator panel, press **System** to access the customer Setup menus.
2. Select **Admin Menu**, and press **OK**.
3. Select **Maintenance**, and press **OK**.
4. Select **Adjust Color Regi**, and press **OK**.
5. Select **Color Regi Chart**, and press **OK**.
6. Press **OK** again to print the Color Registration Correction Chart.

Determining values

From the lines to the right of the Y (yellow), M (magenta), and C (cyan) pattern, find the values of the straightest lines. When "0" is the value nearest the straightest line, you do not need to adjust the color registration. When the value is not "0", enter the values.

Note: You can also use the densest color of the grid to find the straightest lines. The colors printed at the highest density are those next to the straightest lines.

Entering values

Using the operator panel, enter the values that you found in the Color Registration Correction Chart to make adjustments.

1. On the operator panel, press **System** to access the customer Setup menus.
2. Select **Admin Menu**, and press **OK**.
3. Select **Maintenance**, and press **OK**.
4. Select **Adjust Color Regi**, and press **OK**.
5. Select **Color Regi**, and press **OK**.
6. Select **Yellow**, **Magenta**, or **Cyan**, and then press the **OK** button.
7. Press **▲** or **▼** until you reach the value displayed on the Color Registration Correction Chart for that color.
8. Press **OK**, and move the cursor to the next value.

9. Repeat steps 6, 7, and 8 to adjust all three colors.
10. Press **Exit**, and select **Color Regi Chart**, and then press **OK**.
11. Press **OK**.
The Color Registration Correction Chart is printed with the new values.
12. Color registration adjustment is complete when the straightest Y (yellow), M (magenta), and C (cyan) lines are next to the "0" line.
If "0" is not next to the straightest lines, determine the values and adjust again.

Note: After printing the Color Registration Correction Chart, do not turn off the printer until the printer motor has stopped running.

Enabling/Disabling Automatic Color Registration

To enable or disable automatic color registration when each new print cartridge is installed:

1. On the operator panel, press **System** to access the customer Setup menus.
2. Select **Admin Menu**, and press **OK**.
3. Select **Maintenance**, and press **OK**.
4. Select **Auto Regi Adjust**, and press **OK**.
5. Select **On** or **Off**, and press **OK**.

Printhead adjustment

When the printhead is replaced, perform both the Printer Color Registration (see "**Printer color registration**" on page 5-6) and the printer Parameter adjustments (see "**Parameter**" on page 3-54).

Removal procedures

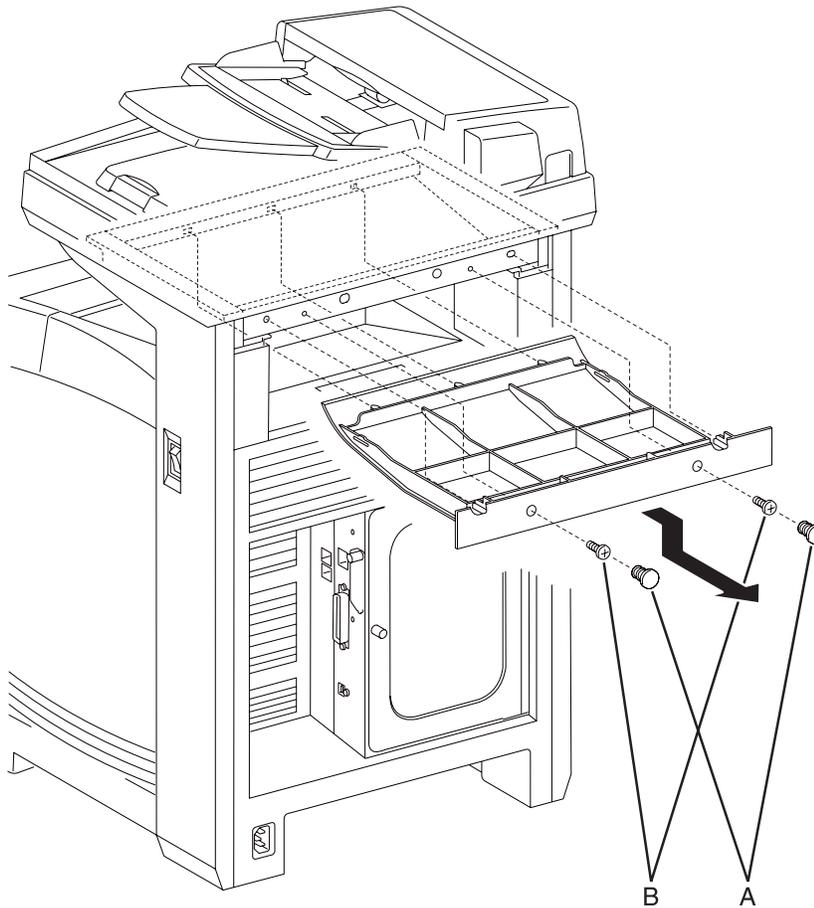
	<p>CAUTION</p> <p>Remove the power cord from the electrical outlet before you connect or disconnect any cable or electronic board or assembly for personal safety and to prevent damage to the printer. Disconnect any connections between the printer and PCs/peripherals.</p>
---	--

	<p>CAUTION</p> <p>The printer weighs approximately 79–88 lbs (36–40 kg) and requires three people to lift safely.</p>
---	--

Note: 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.

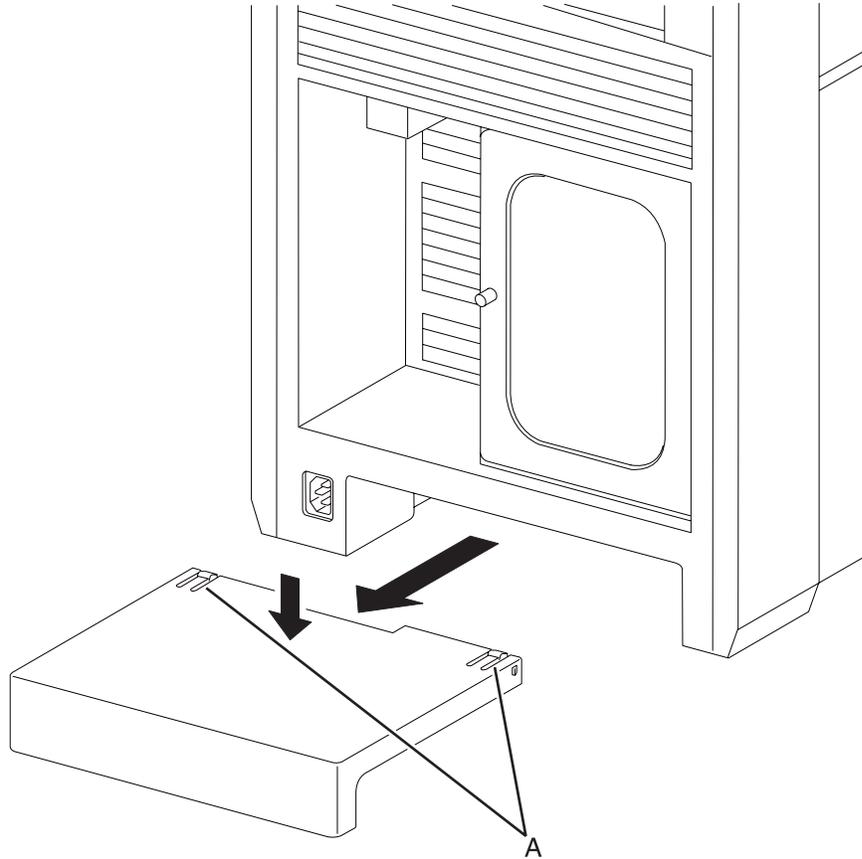
Bottom cover removal

1. Remove the two screw caps (A) from the bottom cover.
Note: Set the screw caps aside for reinstallation.
2. Remove the two screws (B) (silver, 6mm) that attach the bottom cover to the MFP.
3. Release the five tabs on the bottom cover by sliding the bottom cover backward, and then remove the bottom cover.



Tray cover removal

1. Pull the tray cover until it stops.
2. Press down on the center of the tray cover to release the two hooks (A), and then remove the tray cover from the printer.

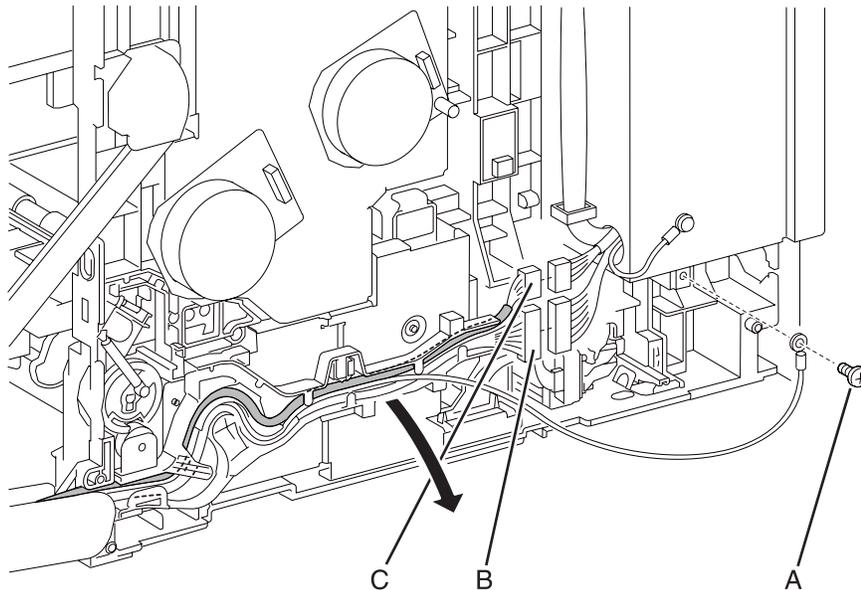


Front cover assembly removal

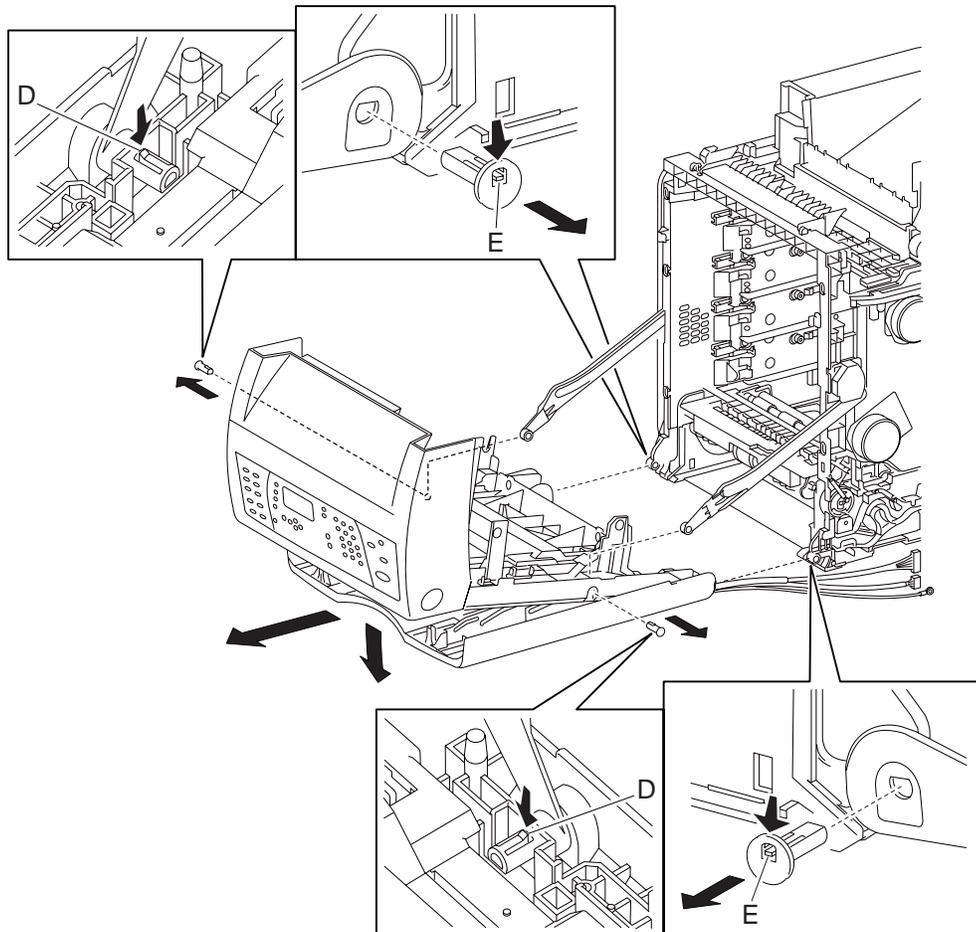
Note: The procedures described below must be performed with the multipurpose feeder (MP feeder) cover assembly attached to the front cover.

1. Open the front cover.
 2. Remove the fuser. See **“Fuser removal”** on page 5-78.
 3. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
 4. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
 5. Remove the inner right pole cover. See **“Inner right pole cover removal”** on page 5-17.
 6. Remove the right pole cover. See **“Right pole cover removal”** on page 5-25.
 7. Remove the right cover. See **“Right cover removal”** on page 5-23.
 8. Remove the screw (A) (silver, 6mm) that attaches the ground wire from the front cover to the frame.
 9. Disconnect the connector (B) (P/J5301) of the harness assembly and the connector (C) (P/J272) of the front cover harness assembly.
- Note:** Leave the junction connector on the printer side cable.
10. Release the ground wire, harness, and the harness assembly of the front cover from the feed drive cable guide.

Note: Take notice of the cable routing for reinstallation.



11. Open the MP feeder cover assembly.
12. Release the hook (D) of the pivot shaft (E) on the left and right sides of the front cover, and then pull out the pivot shaft towards the outside while holding the front cover.
Warning: Be careful not to drop or break the front cover.
13. Remove the front cover from the left door link assembly and right door link assembly on the printer. See **“Left door link assembly removal” on page 5-87** and **“Right door link assembly removal (18)” on page 5-123**.
14. Release the hook of the pivot shaft that attaches the left and right sides of the front cover and the MP feeder cover assembly to the printer, and then pull the pivot shaft out towards the inside.
15. Remove the front cover together with the MP feeder cover assembly.

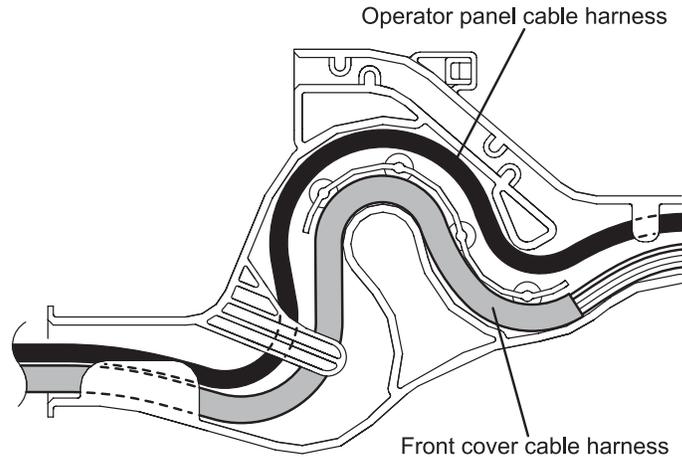


16. Remove and set aside the front cover cable harness. See **“Front cover cable harness removal” on page 5-13**.
Note: The front cover assembly FRU does not include the two harnesses; the front cover cable harness and the operator panel cable harness. These should be removed and reinstalled on the new FRU.
17. Remove and set aside the operator panel cable harness. See **“Operator panel cable harness removal” on page 5-105**.

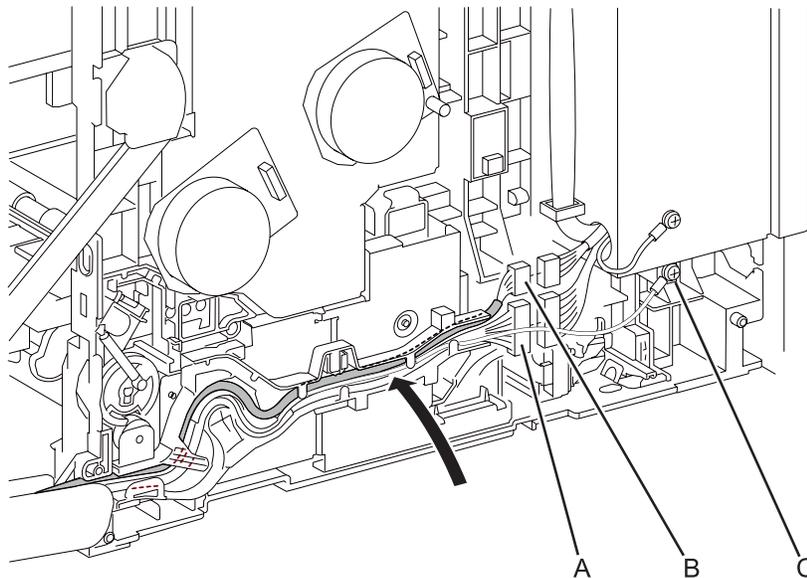
Installation

1. Install the front cover cable harness and the operator panel cable harness in the new front cover assembly FRU.
2. Align the left and right side holes on the front cover and MP feeder cover assembly to the fitting holes on the printer.
3. Insert the MFP pivot shaft into the left and right side holes on the front cover and MP feeder cover assembly, and then secure the MFP pivot shaft with the hooks.
4. Align the left and right side holes of the front cover with the hole of the left door link assembly and the hole on the right door link assembly. With the holes aligned, insert the pivot shafts. Secure the pivot shafts with the hooks.
5. Close the MP feeder cover assembly.
6. Route the ground wire, harness, and front cover cable harness along the paper feed drive cable guide.

Warning: Note the routing of the cables in the illustrations below. If the cables are not secured carefully, the cables may be pinched or damaged.



7. Engage the connector (A) (P/J272) of the harness and the connector (B) (P/J5301) of the harness assembly.
8. Secure the ground wire coming out of the front cover to the printer frame using the screw (C) (silver, 6mm).

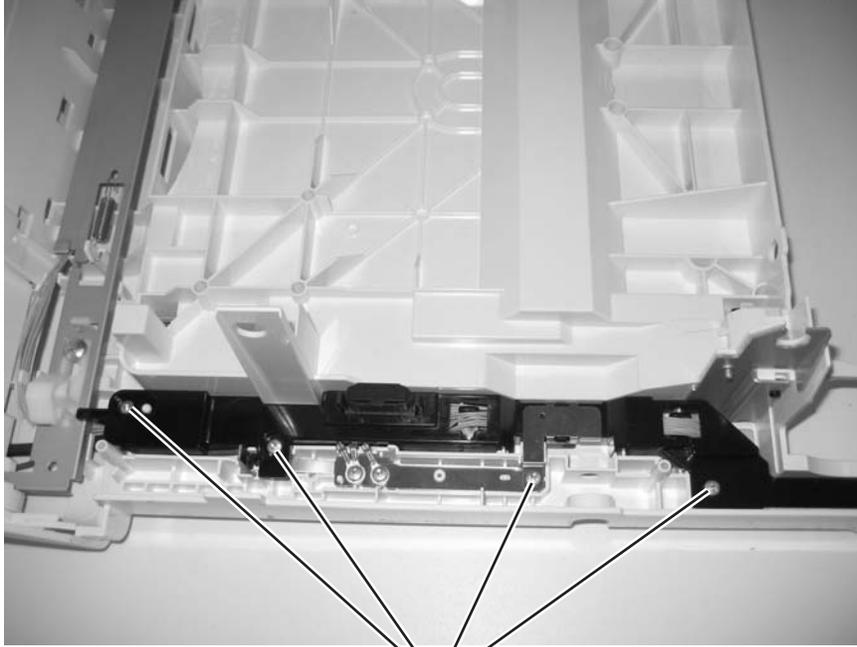


9. Replace the right cover. See **“Installation” on page 5-23.**
10. Remove the MP feeder cover, and set it aside for reinstallation on the new front cover assembly. See **“MP feeder cover assembly removal” on page 5-21.**

Front cover cable harness removal

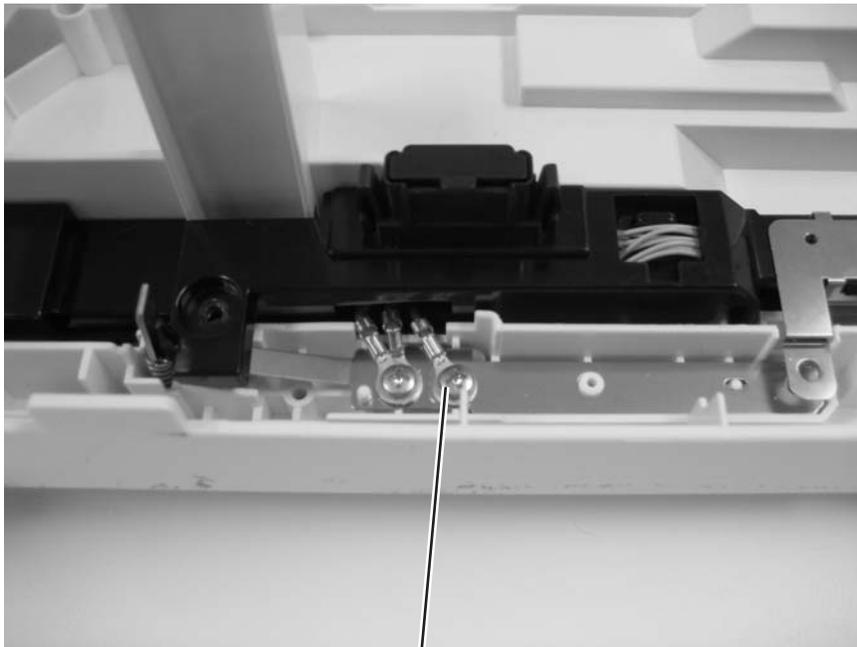
The front cover harness is not a FRU.

1. Remove the four screws (A) securing the black cable cover to the front cover.



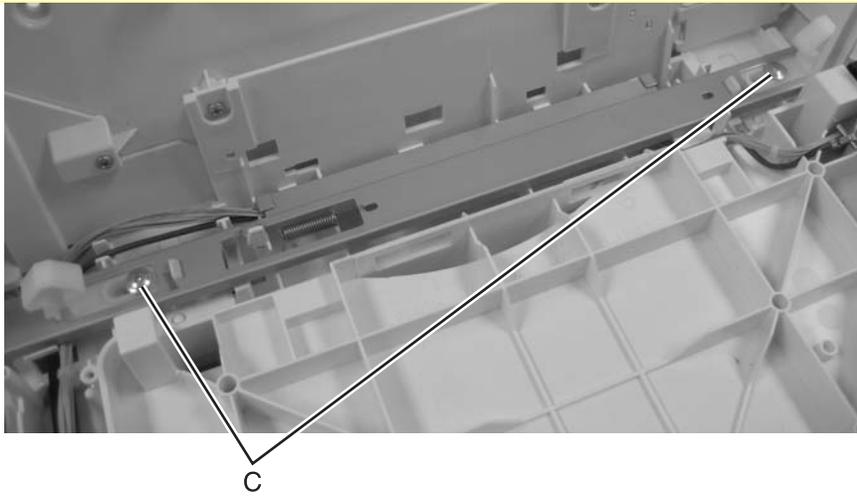
A

2. Remove the screw (B) securing the ground wire to the grounding plate.

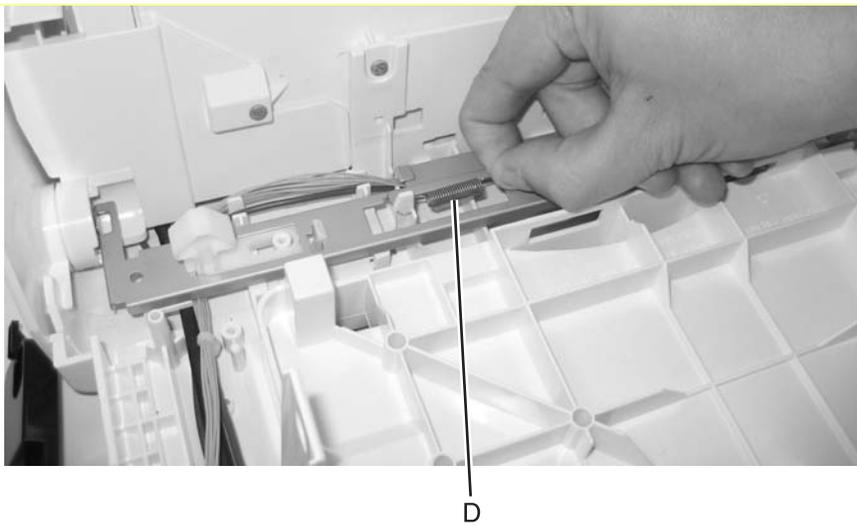


B

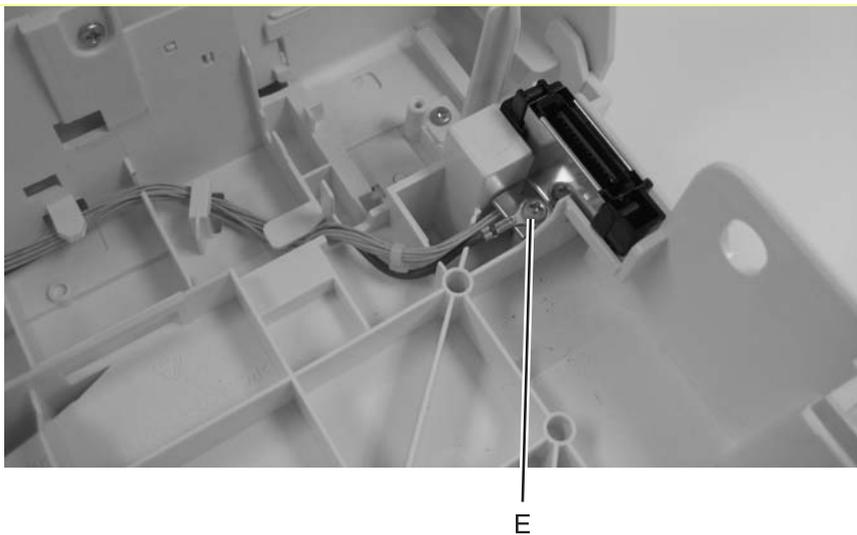
3. Remove the two screws (C) securing the front cover bracket to the front cover.



4. Release the tension spring (D), and remove the front cover bracket.



5. Remove the screw (E) securing the transfer belt connector to the front cover.

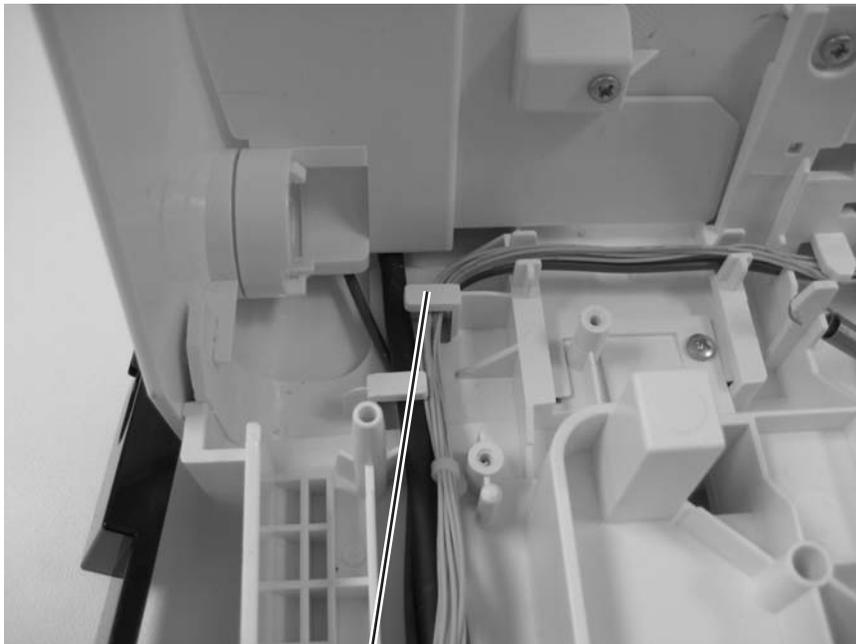


6. Remove the entire harness, black wiring duct, and transfer belt connector as one piece. Reinstall this cable in the new front cover FRU.



Installation note:

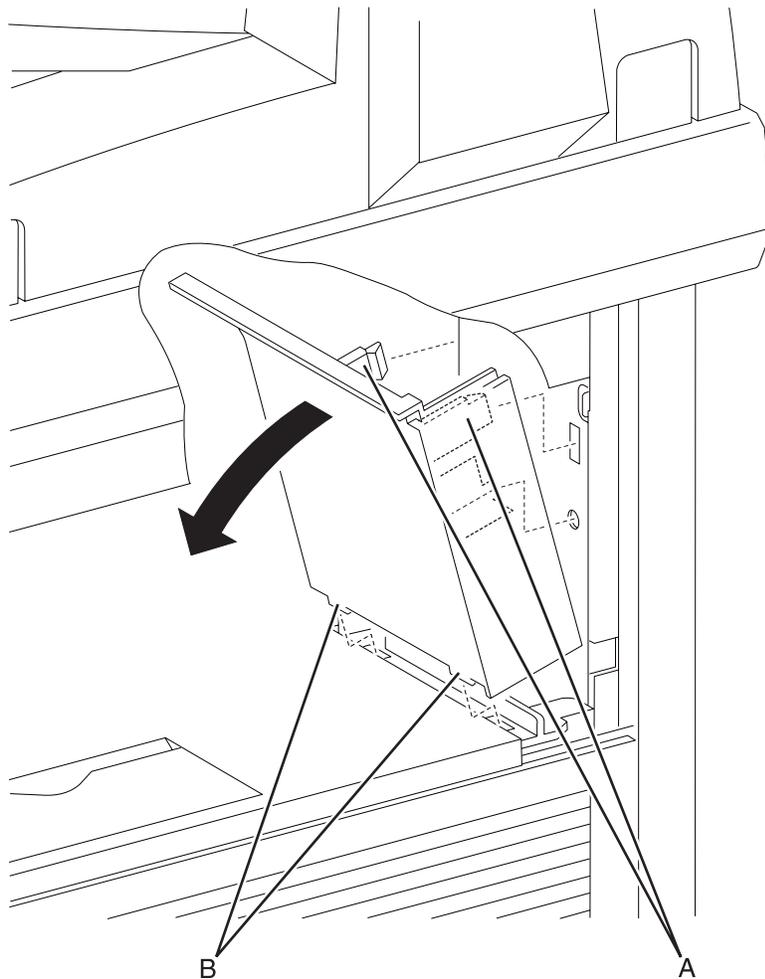
Warning: When replacing the cable harness, make sure the front cover cable harness is routed under the tabs to avoid damage to the cable harness.



F

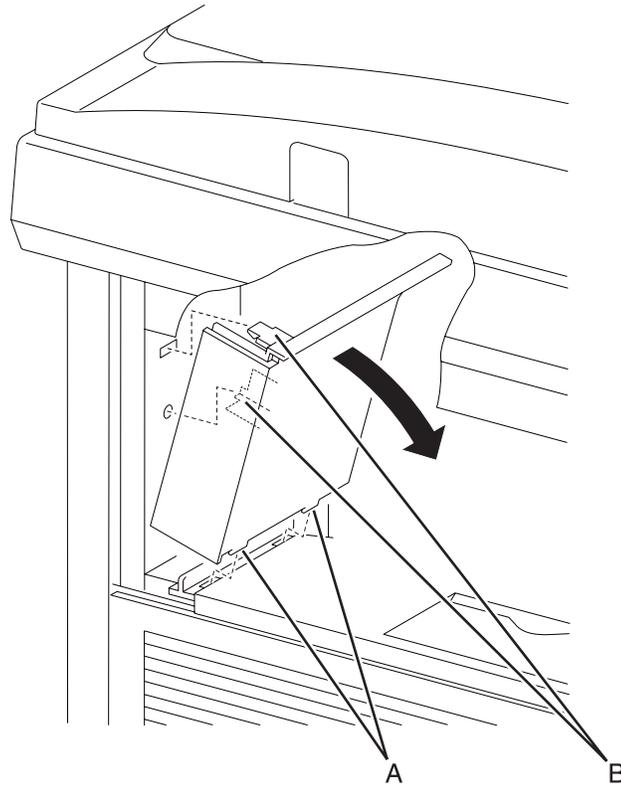
Inner left pole cover removal

1. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
2. Release the two hooks (A) on the rear side of the inner left pole cover from the printer by tilting the inner left pole cover inward.
3. Remove the inner left pole cover from the printer by releasing the two hooks (B) on the underside of the inner left pole cover from the holes on the top cover.



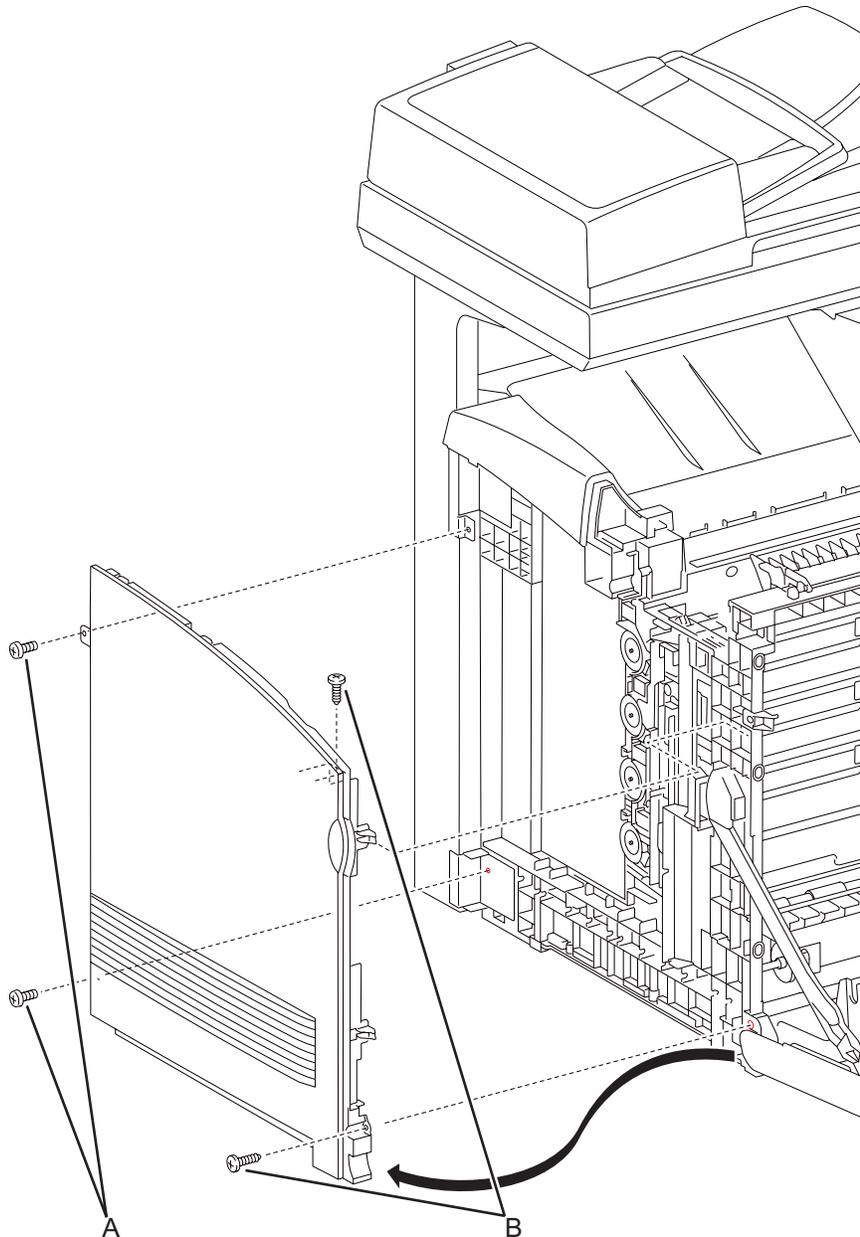
Inner right pole cover removal

1. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
2. Release the hook (A) on the rear side of the inner right pole cover from the printer by tilting the inner right pole cover inward.
3. Release the two hooks (B) on the underside of the inner right pole cover from the holes on the top cover, and remove the inner right pole cover.

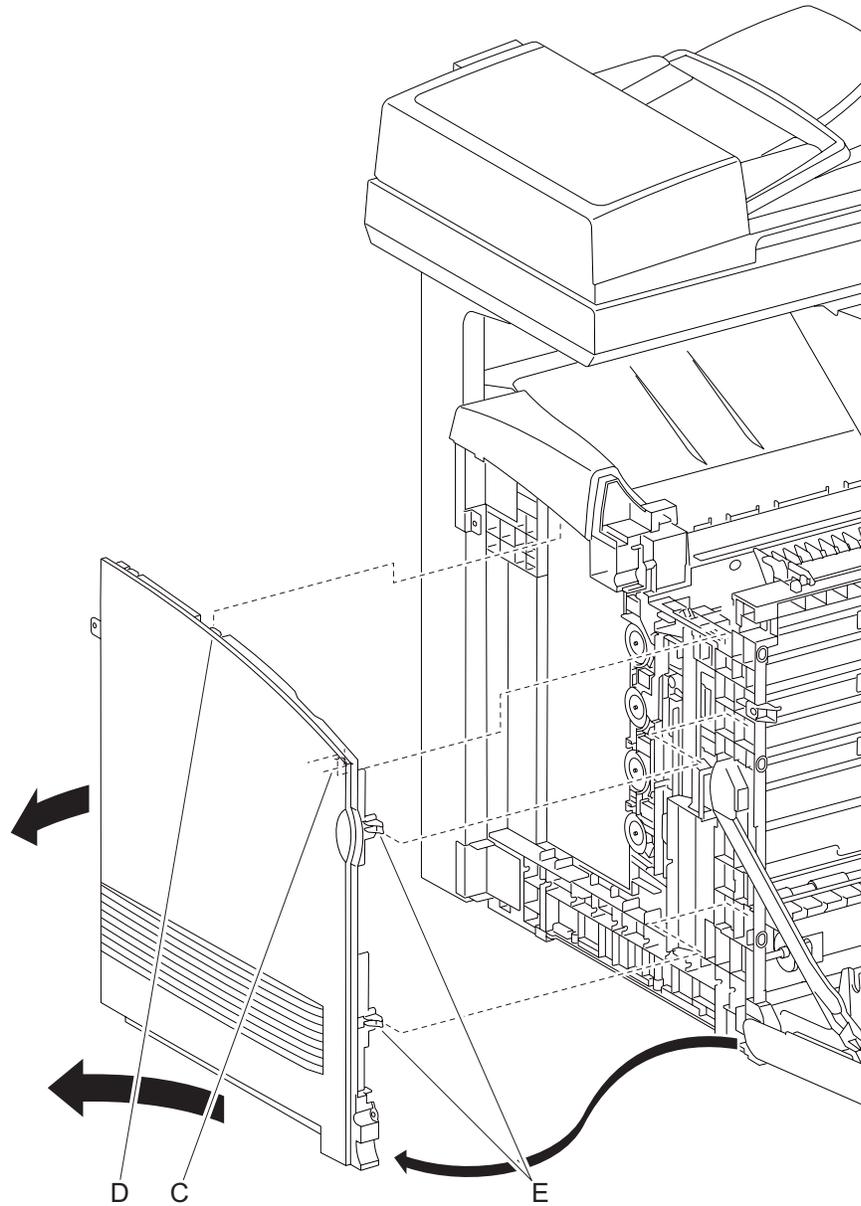


Left cover removal

1. Open the front cover.
2. Remove the fuser. See **“Fuser removal”** on page 5-78.
3. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
4. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
5. Remove the inner left pole cover. See **“Inner left pole cover removal”** on page 5-16.
6. Remove the left pole cover. See **“Left pole cover removal”** on page 5-20.
7. Remove the two screws (A) (silver, tap, 10mm) and the two screws (B) (silver, 6mm) that attach the left cover to the printer.

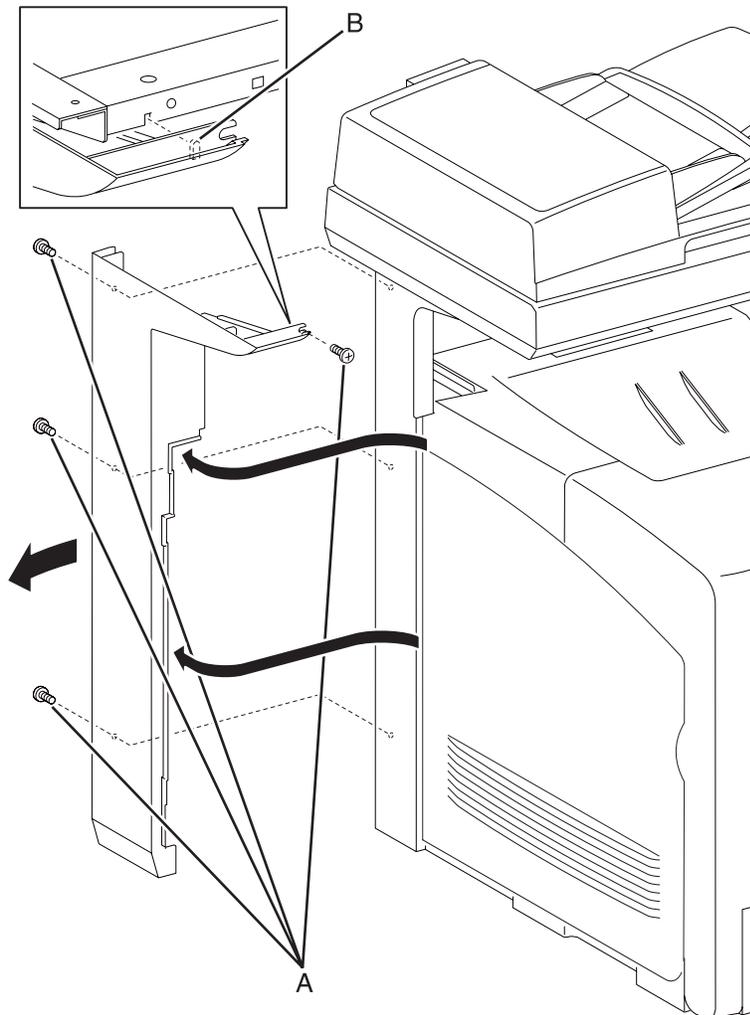


8. Release the holes on the screw mounting positions of the top side of the left cover from the tabs (C) on the MFP.
9. Release from the printer the hook (D) on the rear side of the left cover by sliding the rear section of the left cover outward.
10. Release the two hooks (E) on the front section of the left cover by sliding the left cover diagonally backward, and then remove the left cover.



Left pole cover removal

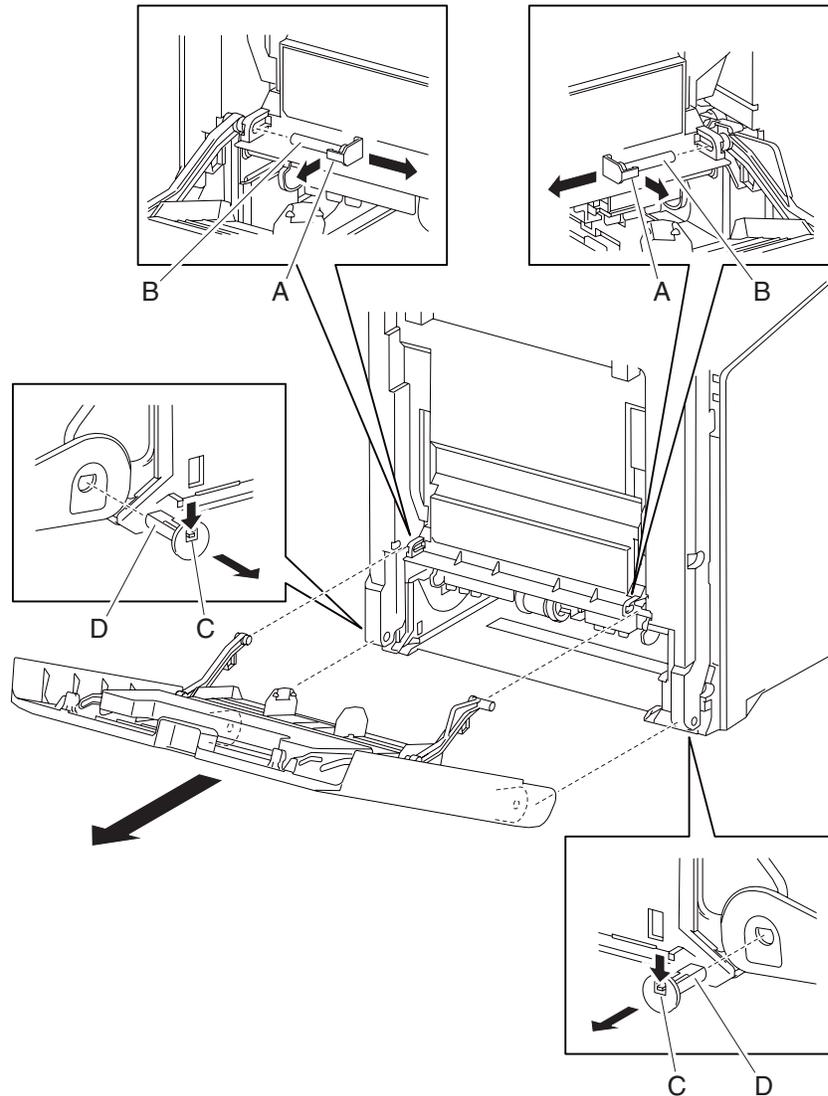
1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner left pole cover. See **“Inner left pole cover removal”** on page 5-16.
4. Remove the four screws (A) (silver, 6mm) that attach the left pole cover to the printer.
5. Release from the printer the lugs on the screw mounting positions on the front section of the left pole cover.
6. Slide the rear section of the left pole cover outward.
7. Release the pin (B) from the notch on the frame. Release the edges from under the rear of the left pole cover and from the rear of the top cover.



8. Remove the left pole cover.

MP feeder cover assembly removal

1. Open the MP feeder cover.
2. Release the left and right tabs (A) on the MP feeder pivot pins (B) that secure the MP feeder link assembly to the front cover, and then pull out the MP feeder pivot pins out towards the inside.
Warning: Make sure you do not drop or damage the MP feeder cover assembly.
3. Release the left and right tabs (C) on the MP feeder pivot pins (D) that attach the MP feeder cover assembly to the front cover, and then pull the MP feeder pivot shafts out towards the inside.



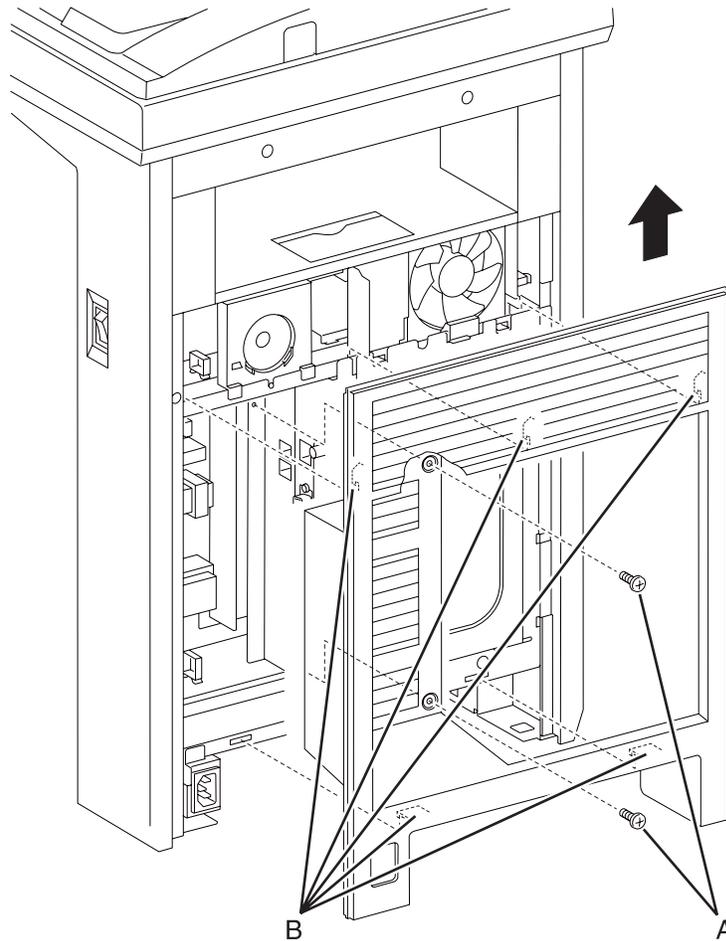
4. Remove the MP feeder cover assembly from the front cover.

Installation

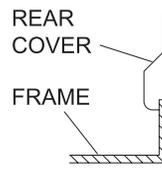
1. Replace the MP feeder cover assembly to the front cover by aligning the left and right side fitting holes on the MP feeder cover assembly with the holes on the front cover.
2. Insert the MP feeder pivot shaft into the left and right side fitting holes on the MP feeder cover assembly, and then secure the MP feeder pivot with the hook.
3. Align the MP feeder link assemblies on the left and right sides of the MP feeder cover assembly with the fitting holes on the front cover. Insert the MP feeder pivot pin, and secure with the hook.
Note: Make sure that the MP feeder lever 1 is on the MP feeder right link assembly.
4. Close the MP feeder cover assembly.

Rear cover removal

1. Remove the two screws (A) (silver, 6mm) that attach the rear cover to the MFP.
2. Release the five hooks (B) on the backside of the rear cover from the printer by lifting up the rear cover slightly.
3. Remove the rear cover from the printer by releasing the rim on the upper section of the rear cover from the inside of the top cover.

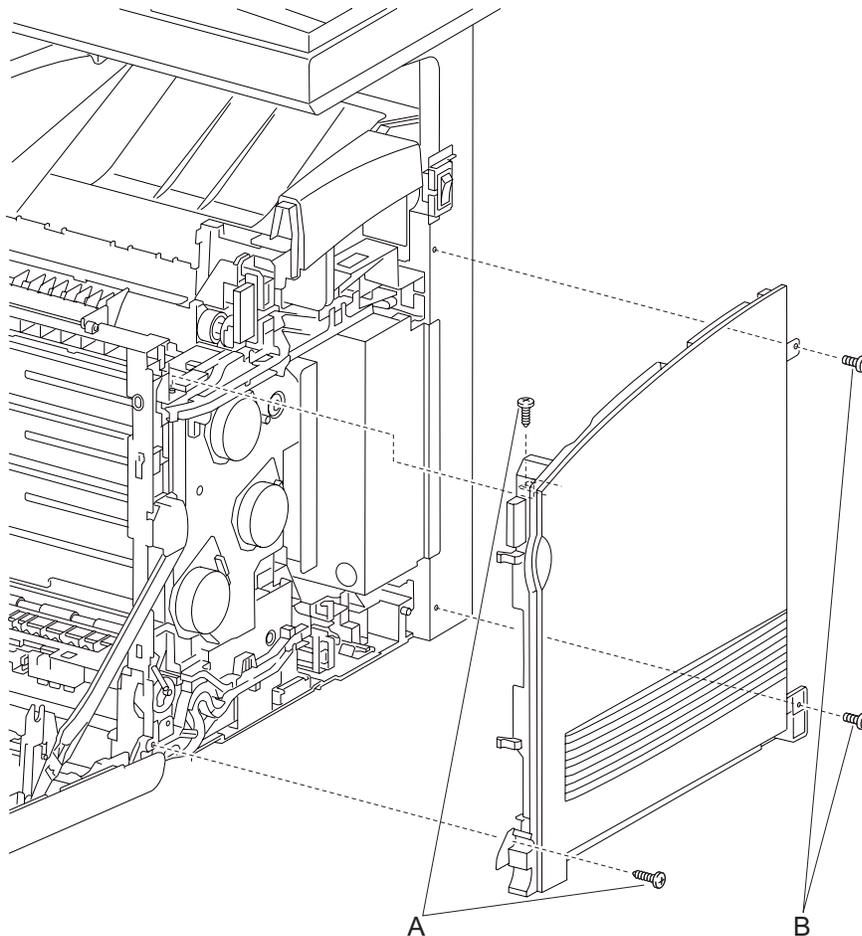


Installation note: Insert the upper side of the rear cover under of the top cover, align the tabs, and then slide the cover down to hook the rear cover to the printer with the five tabs (B).



Right cover removal

1. Open the front cover.
2. Remove the fuser. See **“Fuser removal” on page 5-78.**
3. Remove the rear cover. See **“Rear cover removal” on page 5-22.**
4. Remove the bottom cover. See **“Bottom cover removal” on page 5-8.**
5. Remove the inner right pole cover. See **“Inner right pole cover removal” on page 5-17.**
6. Remove the right pole cover. See **“Right pole cover removal” on page 5-25.**
7. Remove the two screws (A) (silver, tap, 10mm) and the two screws (B) (silver, 6mm) that attach the right cover to the MFP.
8. Release the holes on the screw mounting positions on the top side of the right cover from the bosses (C) on the MFP.
9. Release the hook on the rear side of the right cover from the printer by sliding the rear of the right cover slightly outward.
10. Release the two hooks on the front section of the right cover by sliding the right cover diagonally backward, and then remove the right cover from the printer.

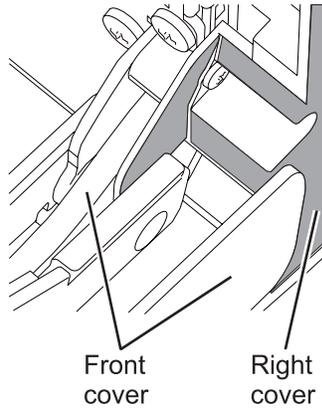


Installation

1. Insert the front side of the right cover between the front cover and the printer. Align the two front side hooks of the right cover with the holes on the printer.
2. Align the mounting hole on the front side of the right cover with the boss of the printer, and then insert the backside hook on the rear side of the right cover into the hole of the printer.

3. Secure the right cover to the right cover to the printer using the two screws (silver, tap, 10mm) and the two screws (silver, 6mm).

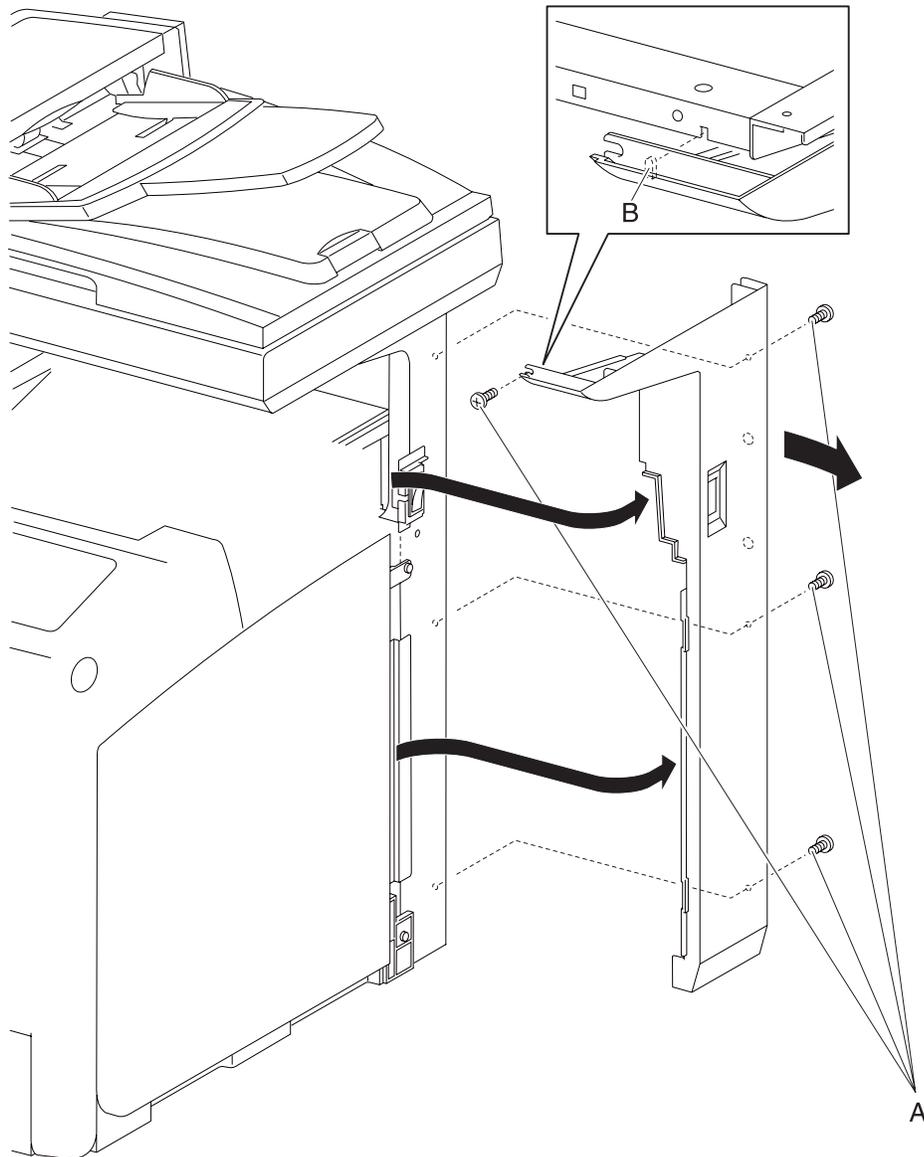
Note: The silver 6mm tap screws are used to secure the rear side of the right cover.



4. Replace the right pole cover.

Right pole cover removal

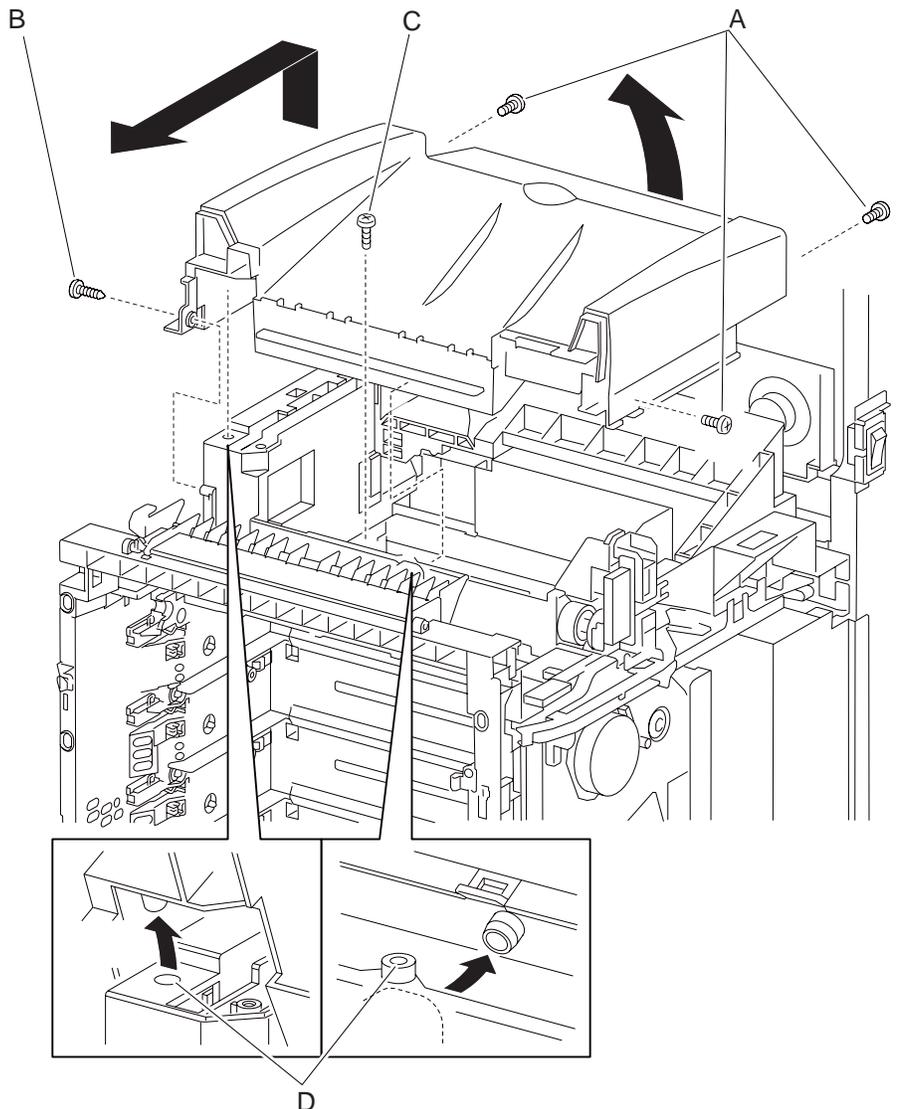
1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner right pole cover. See **“Inner right pole cover removal”** on page 5-17.
4. Remove the four screws (A) (silver, 6mm) that attach the right pole cover to the printer.
5. Release the screw mounting tabs on the front section of the right pole cover.
6. Slide the rear section of the right pole cover outward.
7. Release the tabs (B) on the front section of the right pole cover, and release the edge under the right cover.



8. Remove the right pole cover.

Top cover removal

1. Open the front cover.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner right pole cover. See **"Inner right pole cover removal"** on page 5-17.
6. Remove the right pole cover. See **"Right pole cover removal"** on page 5-25.
7. Remove the right cover. See **"Right cover removal"** on page 5-23.
8. Remove the inner left pole cover. See **"Inner left pole cover removal"** on page 5-16.
9. Remove the left pole cover. See **"Left pole cover removal"** on page 5-20.
10. Remove the left cover. See **"Left cover removal"** on page 5-18.
11. Remove the three screws (A) (silver, 6mm) and the screw (B) (silver, tap, 8mm) that attach the top cover to the printer.
12. Remove the screw (C) (silver, tap, 8mm) that attaches the top cover to the frame.
13. Lift the rear end of the top cover to release the two bosses (D) on the center front and the left front on the top cover from the hook and hole on the printer.
14. Lift the top cover, and slide it forward.
15. Remove the top cover from the printer.



Installation

1. Insert the rear part of the top cover to the printer between the left side of the pole and right side of the pole.
2. Tilt the top cover forward to align the two bosses on the center front and the left front on the top cover with the hook and hole on the printer.
3. Replace the top cover to the printer by swinging the rear end of the top cover down.
4. Secure the top cover to the printer using the three screws (silver, 6mm) and the screw (silver, tap, 8mm).
Note: The silver 8mm tap screw is used to secure the left side of the top cover.
5. Replace the screw (silver tap, 8mm) in the center front.

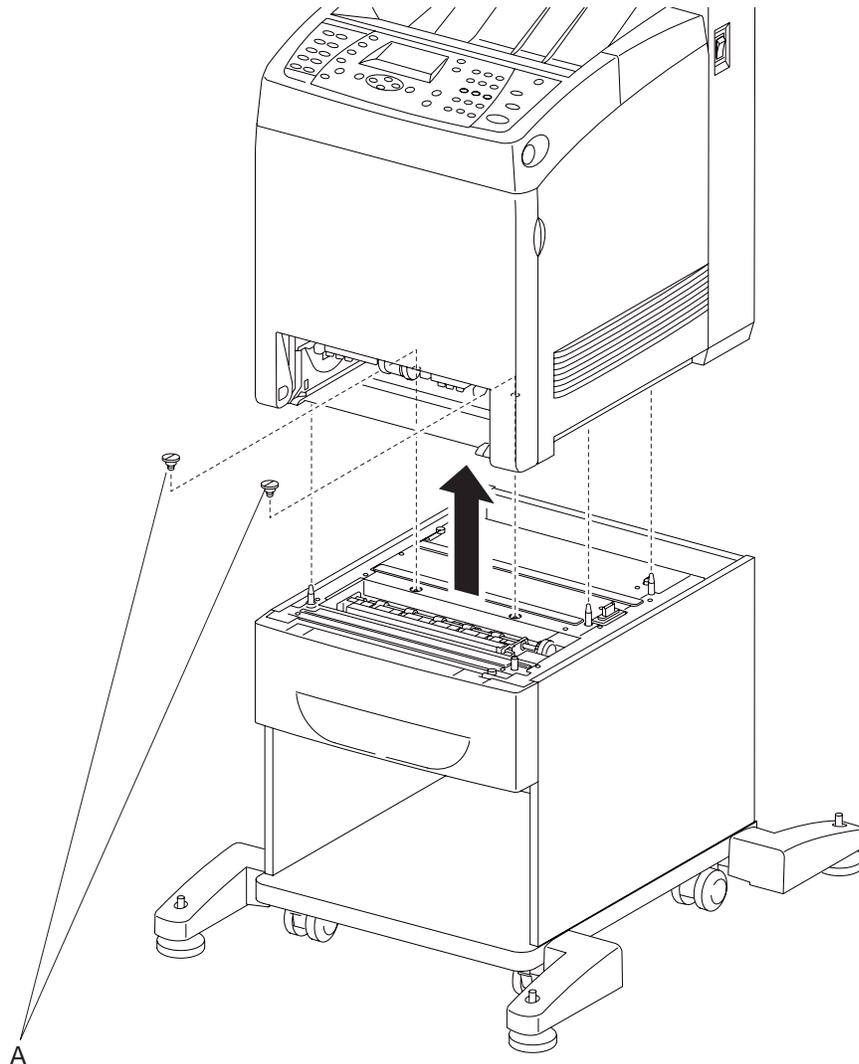
550-sheet feeder removal



CAUTION

The printer weighs approximately 79–88 lbs (36–40 kg) and requires three people to lift safely.

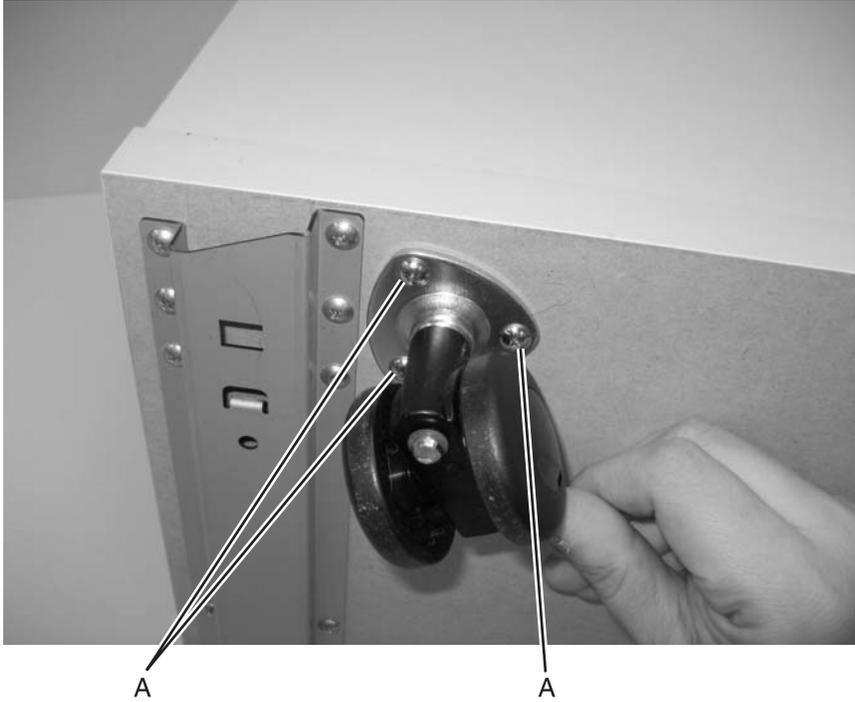
1. Remove the 250-sheet tray from the printer.
2. Remove the two feeder screws (A) that attach the 550-sheet feeder to the printer.
3. Lift the printer to separate it from the 550-sheet feeder.



550-sheet feeder caster removal

Note: There are two different types of caster FRUs. The front right and the rear left are the same and the front left and rear right is the same. Be sure to order the correct caster (one per package). The removal is the same.

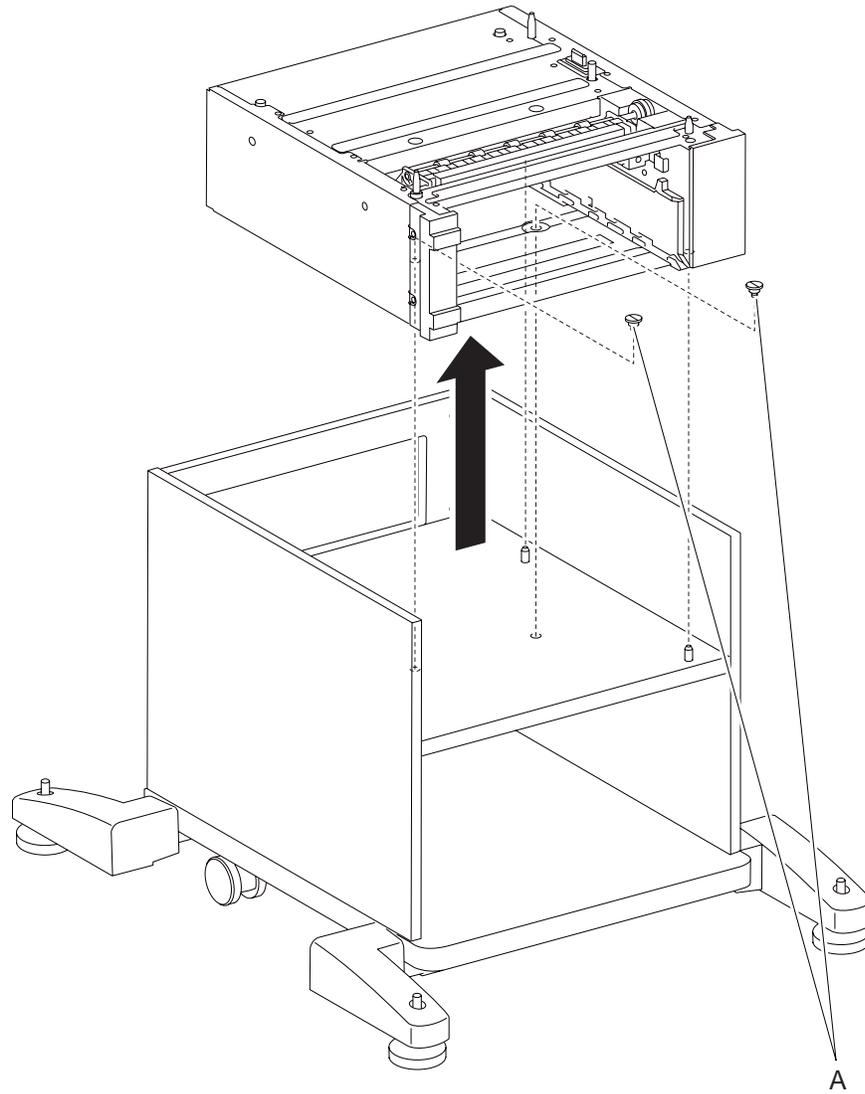
1. Remove the **“550-sheet feeder removal”** on page 5-27.
2. Turn the 550-sheet feeder cabinet on its side so you can access the bottom of the cabinet.
3. Remove the three screws (A) securing the caster on the caster base.



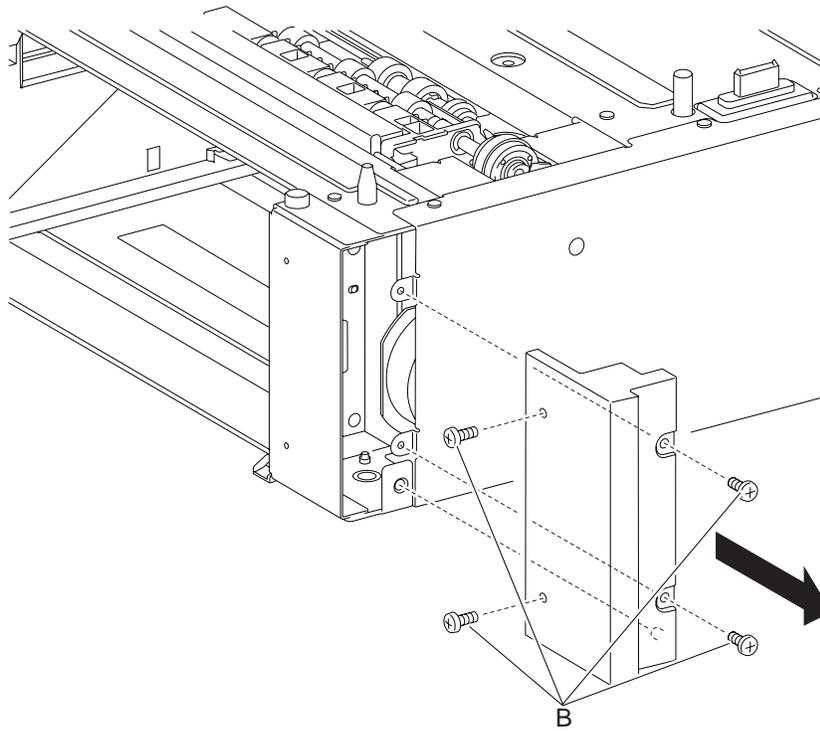
4. Remove the caster.

550-sheet feeder controller board

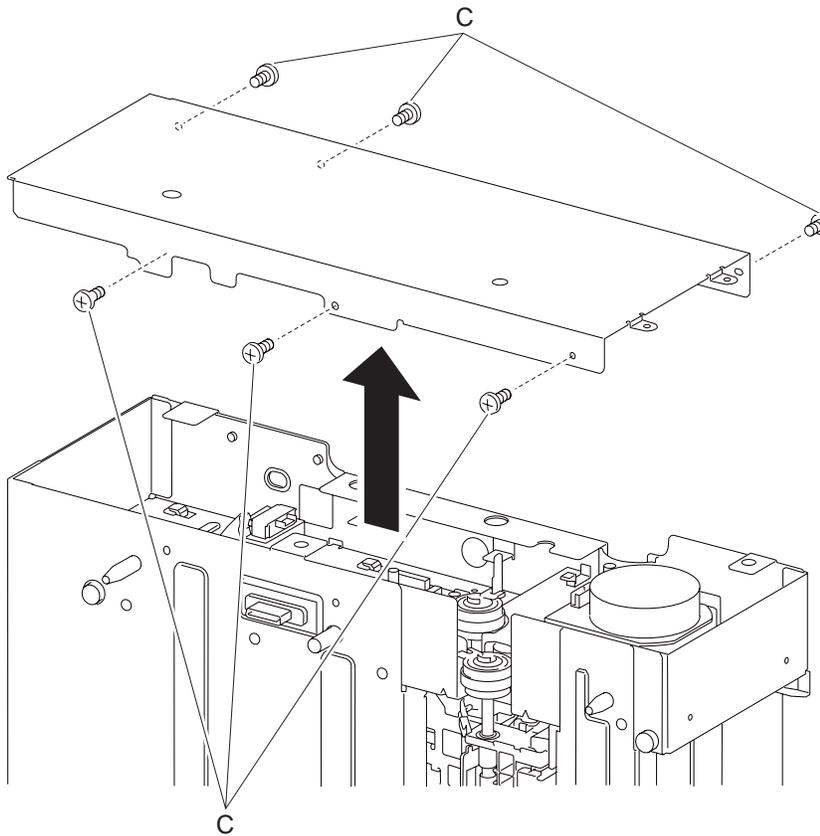
1. Remove the 550-sheet feeder from under the MFP. See **“550-sheet feeder removal”** on page 5-27.
2. Remove the tray extender cover.
3. Remove the 550-sheet feeder tray.
4. Remove the two joint screws (A) that secure the feeder drawer to the cabinet, and lift the 550-sheet feeder drawer out of the cabinet.



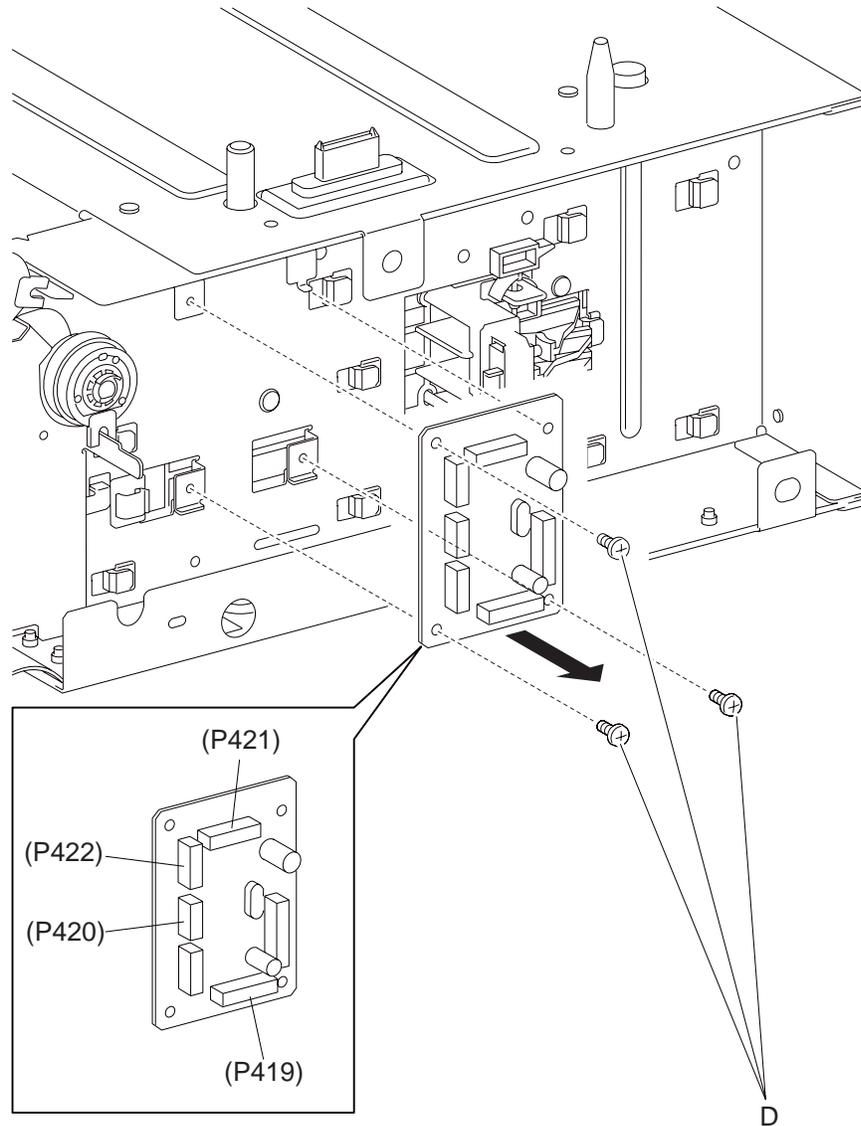
5. Remove the four screws (B) (silver, 6mm) that fix the feeder right front cover to the cabinet.



6. Remove the six screws (C) (silver, 6mm) that fix the feeder right cover to the feeder frame, and remove the feeder right cover from the feeder frame.



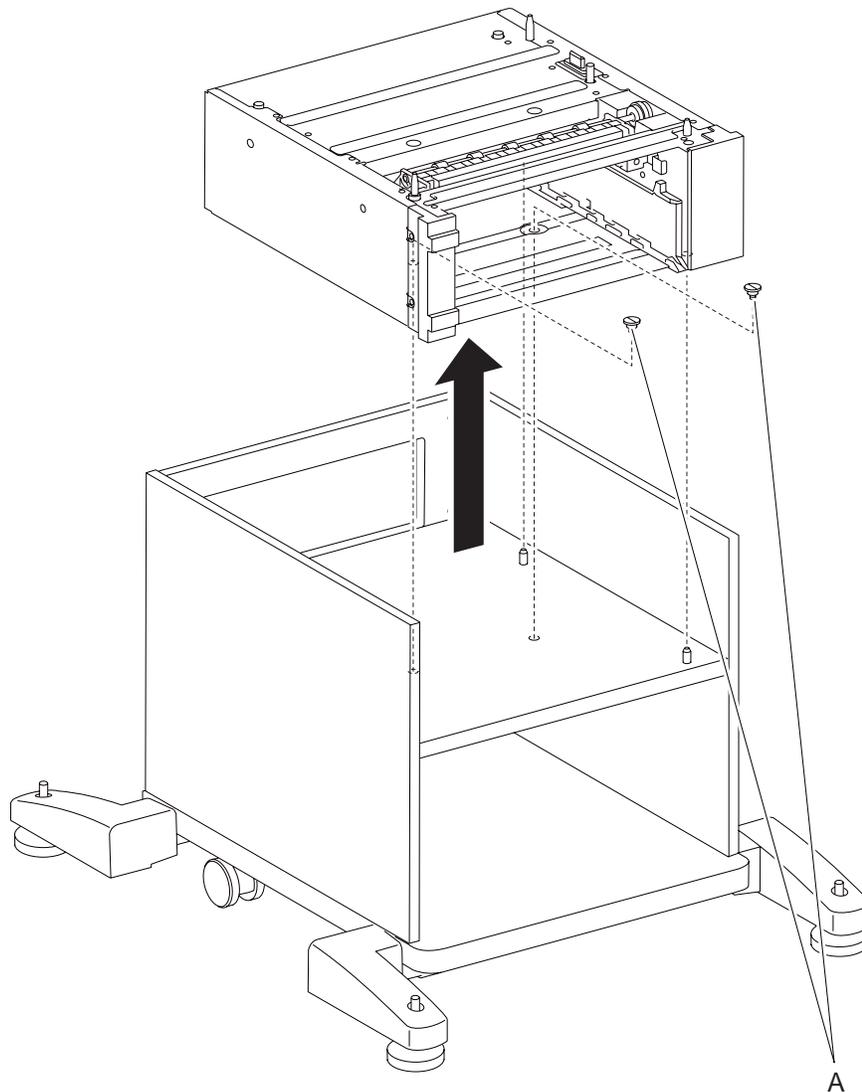
7. Disconnect all the connectors (P/J419, P/J420, P/J421, and P/J422) of the 550-sheet feeder controller card.
8. Remove the three screws (D) (silver, 6mm) that secure the 550-sheet feeder controller card to the feeder frame.
9. Remove the 550-sheet feeder controller card from the feeder frame assembly.



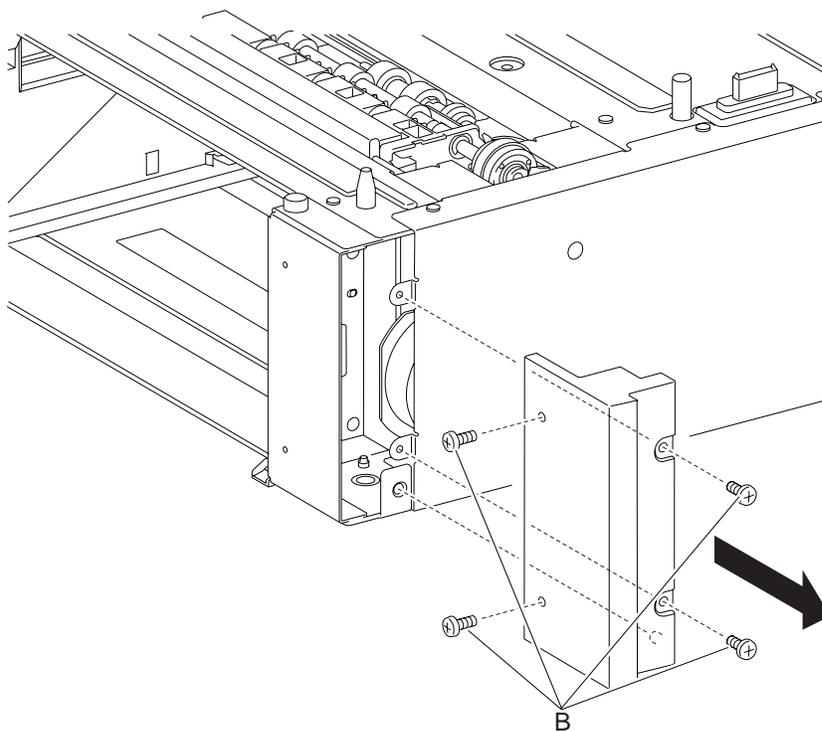
Installation note: Align the positioning hole of the 550-sheet feeder controller card with the convex part of the feeder frame, and attach the 550-sheet feeder controller card.

550-sheet feeder feed clutch removal

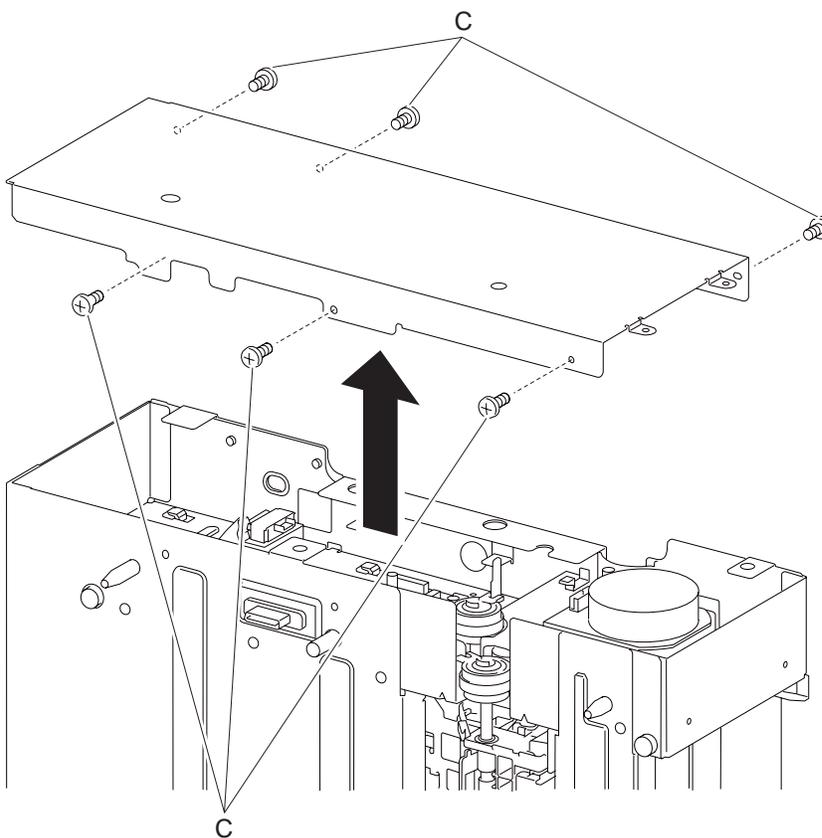
1. Remove the 550-sheet feeder. See **“550-sheet feeder removal”** on page 5-27.
2. Remove the tray extender cover.
3. Remove the two joint screws (A) that secure the feeder drawer to the cabinet, and lift the 550-sheet feeder drawer out of the cabinet.



4. Remove the four screws (B) (silver, 6mm) that fix the feeder right front cover to the cabinet.



5. Remove the six screws (C) (silver, 6mm) that fix the feeder right cover to the feeder frame, and remove the feeder right cover from the feeder frame.



6. Disconnect the connector (P/J4213) located on the harness of the 550-sheet feeder feed clutch.
Note: Leave the junction connector on the feeder frame side of the cable.
7. Release the clamp that attaches the harness of the 500-sheet feeder feed clutch, and remove the harness.
8. Remove the KL-ring that attaches the 550-sheet feeder feed clutch to the feeder shaft.
9. Remove the 550-sheet feeder feed clutch from the feeder shaft.

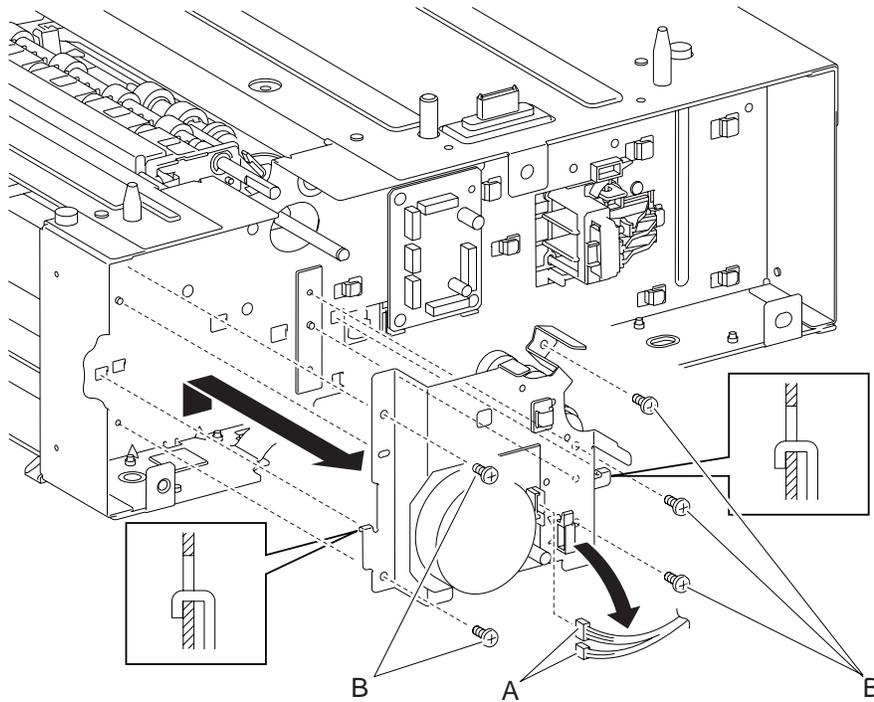
Installation note:

When the 550-sheet feeder turn clutch and 550-sheet feeder feed clutch are removed at the same time, be careful not to confuse their installation locations:

Harness name	Harness and groove color
Feed clutch harness assembly	Yellow
Turn clutch harness assembly	Blue

550-sheet feeder drive assembly removal

1. Remove the 550-sheet feeder turn clutch. See **“550-sheet feeder turn clutch removal” on page 5-42.**
2. Remove the 550-sheet feeder feed clutch. See **“550-sheet feeder feed clutch removal” on page 5-32.**
Note: Begin at step 6. Steps 1 through 5 are the same as the turn clutch removal.
3. Disconnect the two connectors (A) (P/J4221 and P/J4222) that are connected to the 550-sheet feeder drive assembly.
4. Release the clamp on the 550-sheet feeder drive assembly, and remove the harness that was connected to the 550-sheet feeder drive assembly.
5. Remove the five screws (B) (silver, 6mm) that attach the 550-sheet feeder drive assembly to the feeder frame.
6. Remove the 550-sheet feeder drive assembly from the feeder frame.



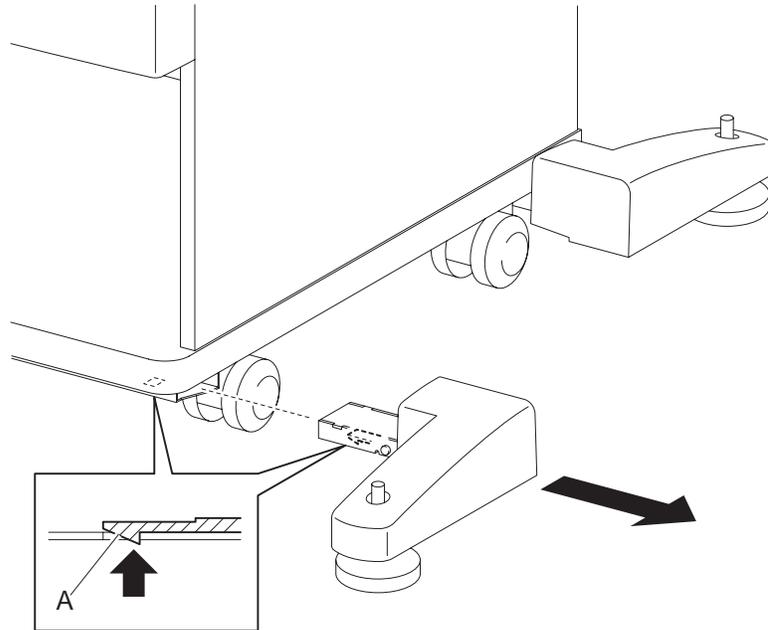
550-sheet feeder foot removal

The foot FRUs act as stabilizers for the MFP. There are two foot FRUs:

- Front left and rear right (one per package)
- Front right and rear left (one per package)

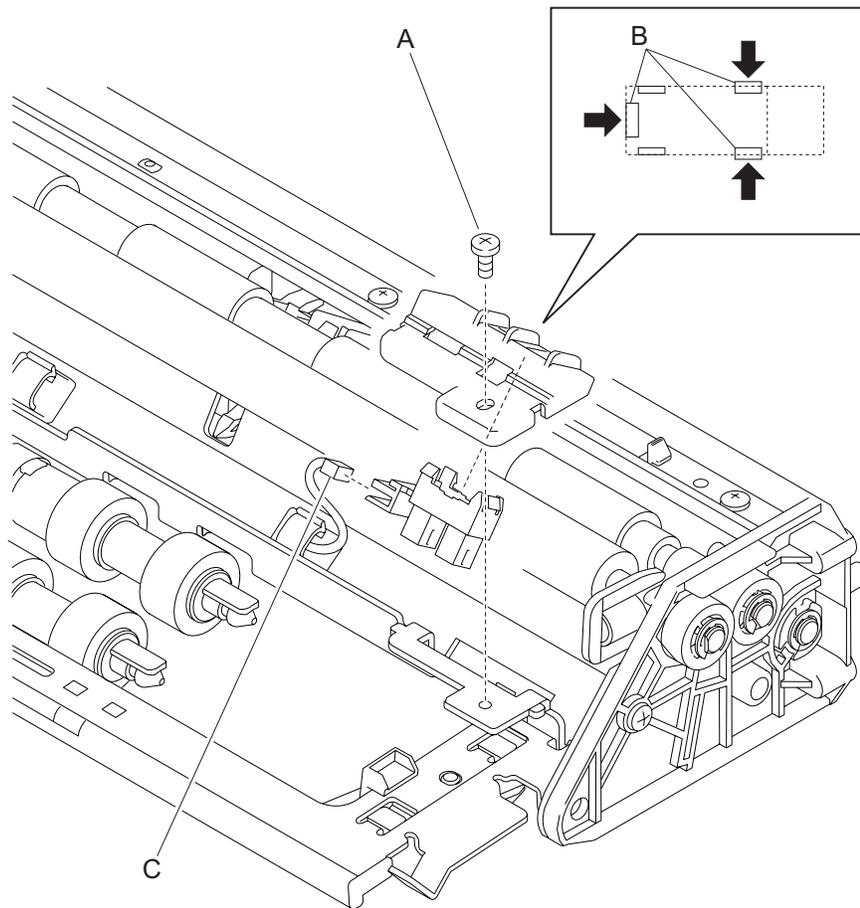
Note: Remove the foot (feet) the same way for each of the four corners of the MFP.

1. Pull the foot to release the latch (A).
2. Remove the foot.



550-sheet feeder no paper sensor removal

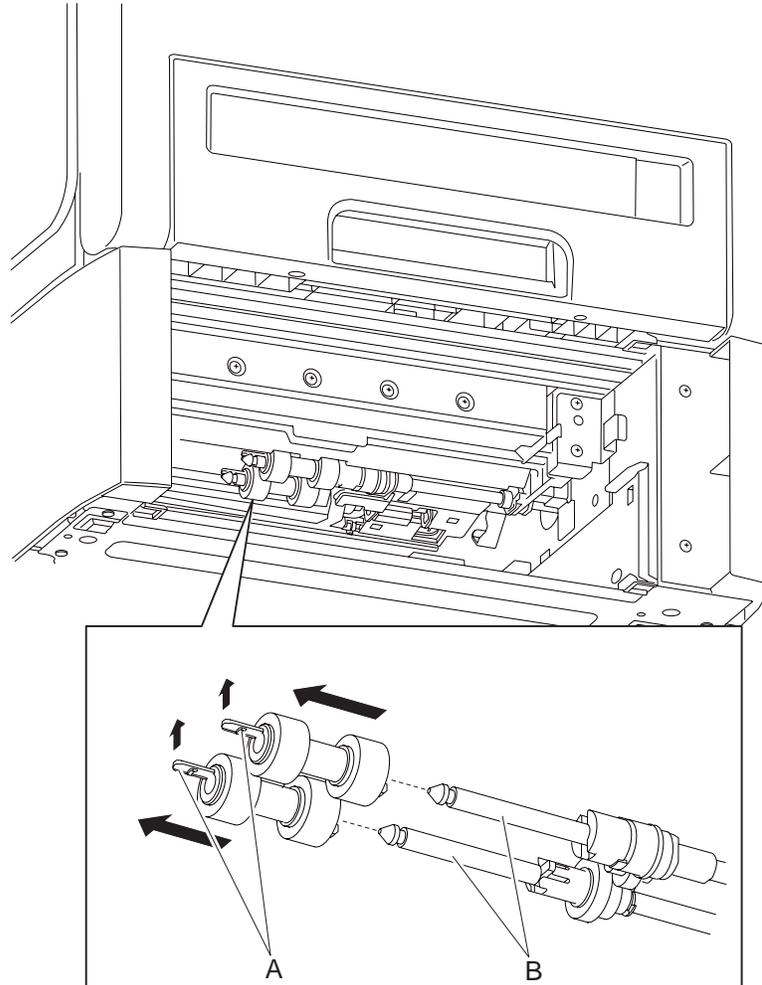
1. Remove the 550-sheet feeder tray assembly.
2. Remove the 550-sheet feeder. See **"550-sheet feeder removal"** on page 5-27.
3. Remove the screw (A) (silver, 6mm) that attaches the no paper sensor bracket to the 550-sheet feeder, and remove the no paper sensor bracket.
4. Release the three tabs (B) that attach the no paper sensor to the no paper sensor bracket, and remove the no paper sensor.
5. Disconnect the connector (C) (P/J42121) from the no paper sensor.



550-sheet feeder feed roll kit removal

The FRU is the same as the feed roll kit for the 250-sheet tray.

1. Remove the 550-sheet feeder tray.
2. Release the latches (A) of the feed rolls, and then remove the rolls from the shafts (B).

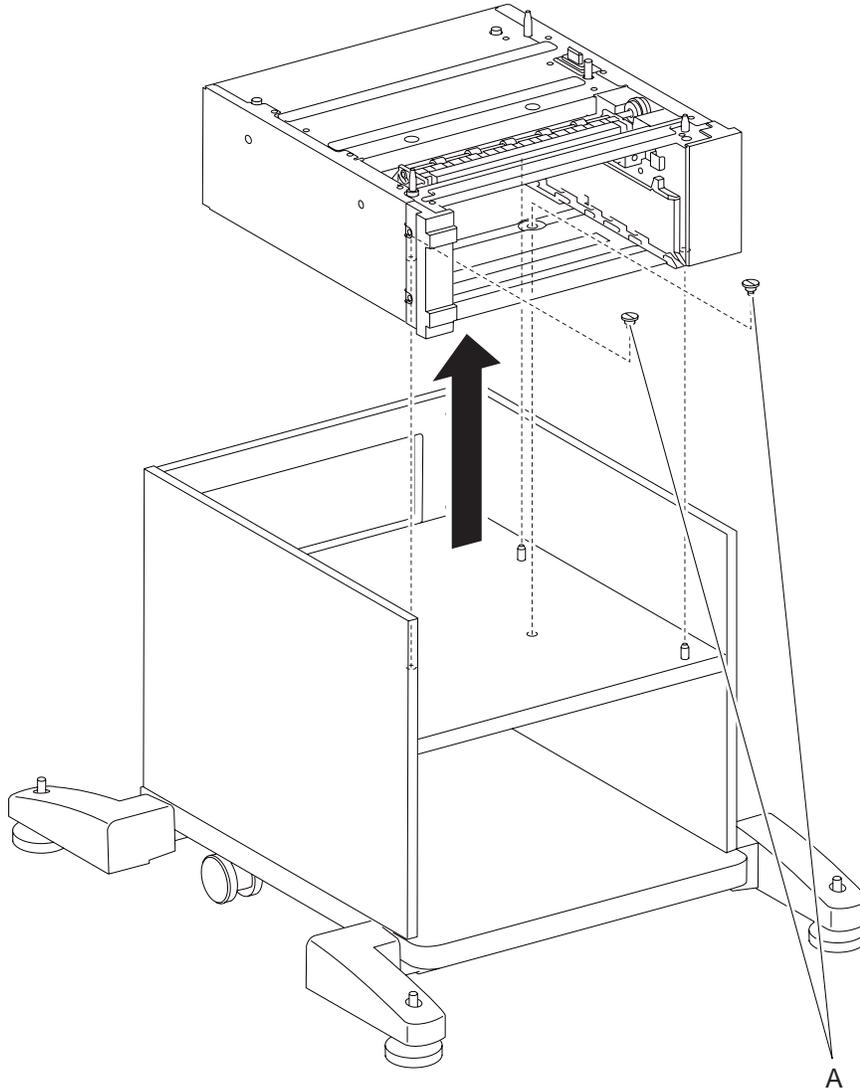


Installation

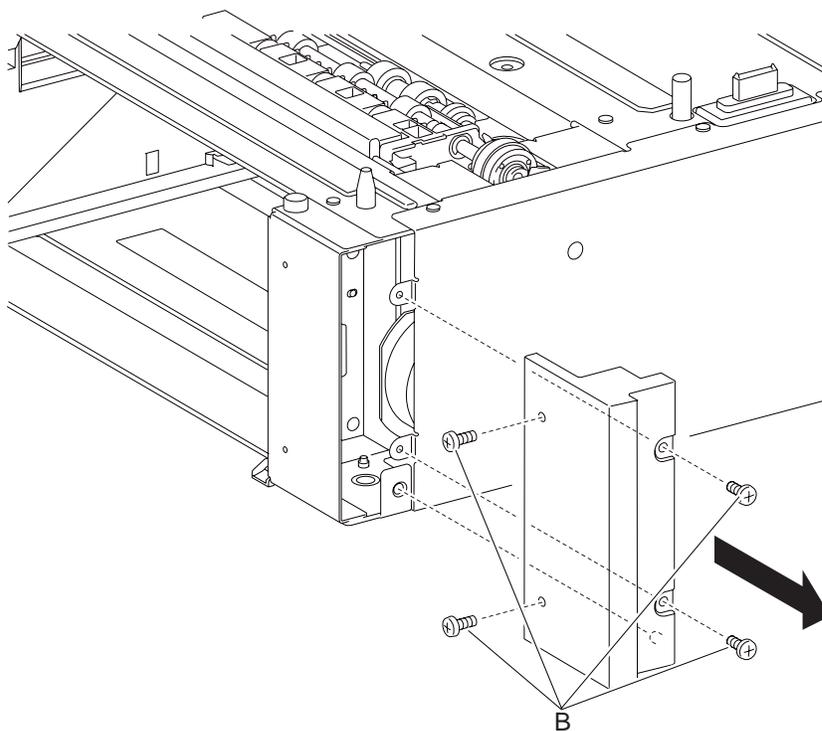
1. Slide the 550-sheet feeder tray feed rolls onto the shafts so that the lugs on the 550-sheet feeder tray feed rolls are aligned with the notches on the roll assembly gear nudgers and clutch one-way feed.
2. Lock the hooks on the other end of the feed rolls into the grooves on the shafts.
3. Replace the 550-sheet feeder tray to the 550-sheet feeder assembly.

550-sheet feeder size switch assembly removal

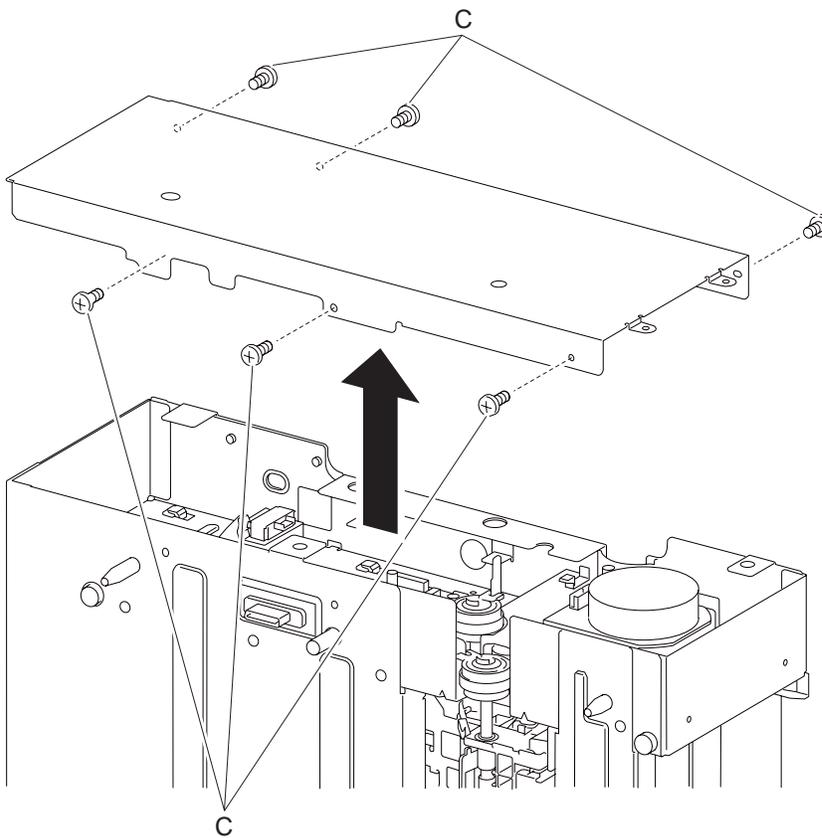
1. Remove the 550-sheet feeder. See **“550-sheet feeder removal”** on page 5-27.
2. Remove the tray extender cover.
3. Remove the two joint screws (A) that secure the feeder drawer to the cabinet, and lift the 550-sheet feeder drawer out of the cabinet.



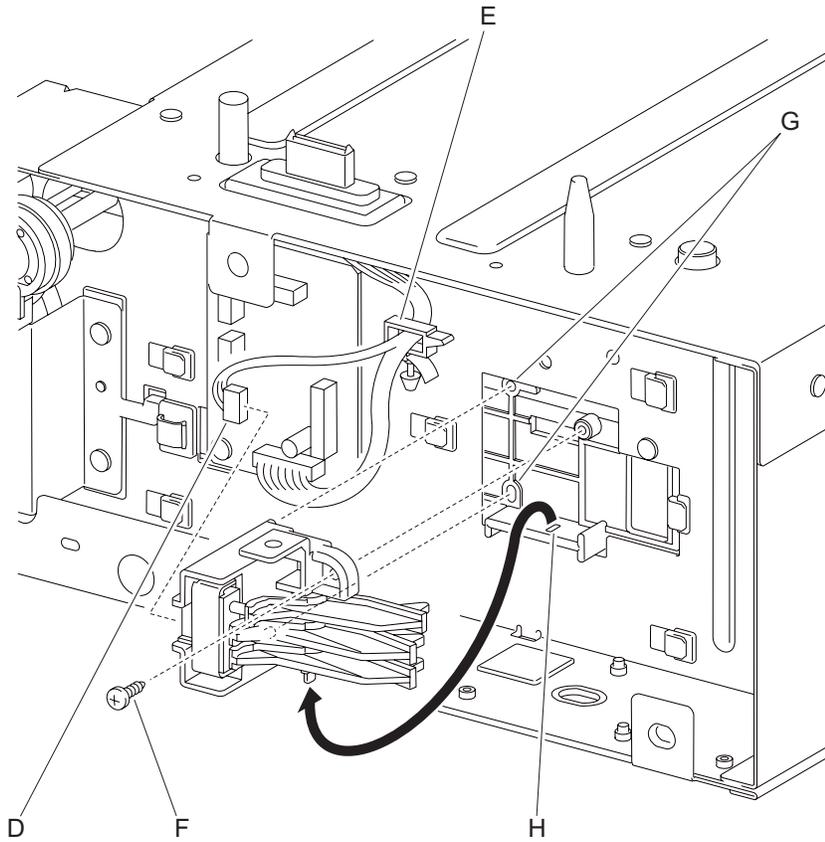
4. Remove the four screws (B) (silver, 6mm) that fix the feeder right front cover to the cabinet.



5. Remove the six screws (C) (silver, 6mm) that fix the feeder right cover to the feeder frame, and remove the feeder right cover from the feeder frame.

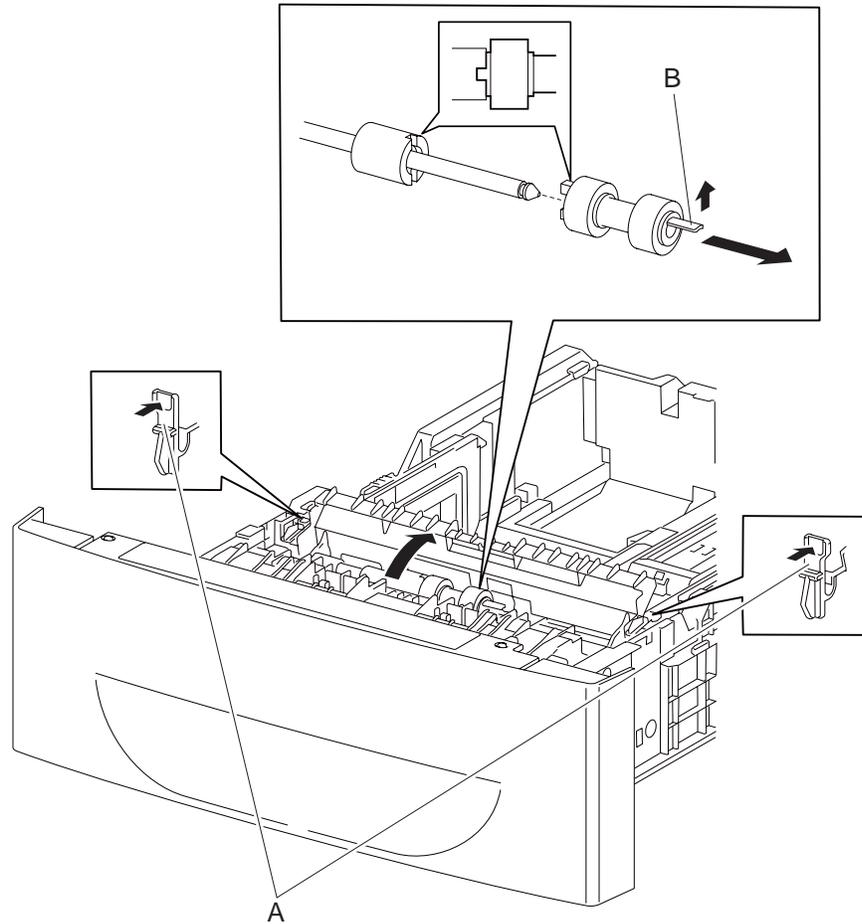


6. Disconnect the connector (A) (P/J4211) on the 550-sheet feeder size switch assembly.
Note: Leave the junction connector on the feeder frame side of the cable.
7. Release the harness and the 550-sheet feeder size switch assembly from the cable clamp (B).
8. Remove the screw (C) (silver, tap, 8mm) that attaches the 550-sheet feeder size switch assembly to the 550-sheet right tray guide.
9. Remove the 550-sheet feeder size switch assembly by releasing the two pins (D) and the underside tab (E).



550-sheet feeder tray separator roll removal

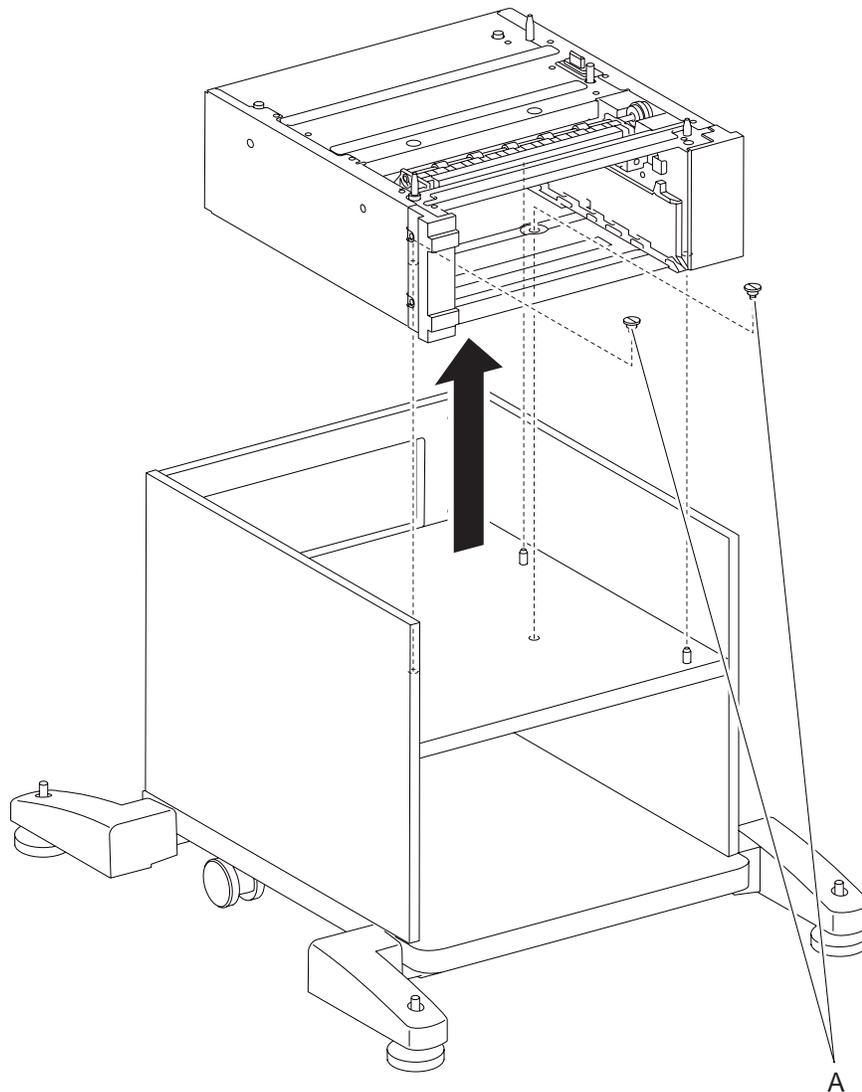
1. Remove the 550-sheet feeder tray from the 550-sheet feeder.
2. Release the left and right latches (A) on the tray separator cover, and then open the cover.
3. Release the latch (B) on the end of the 550-sheet feeder tray separator roll, and then remove the separator roll from the separator shaft.



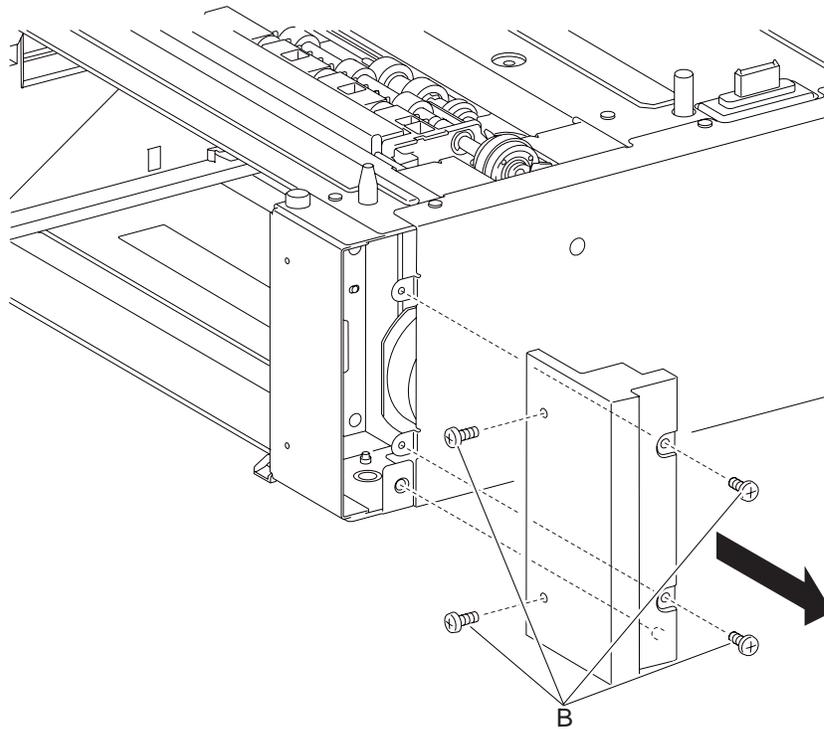
Installation note: Make sure the separator roll *snaps* into place.

550-sheet feeder turn clutch removal

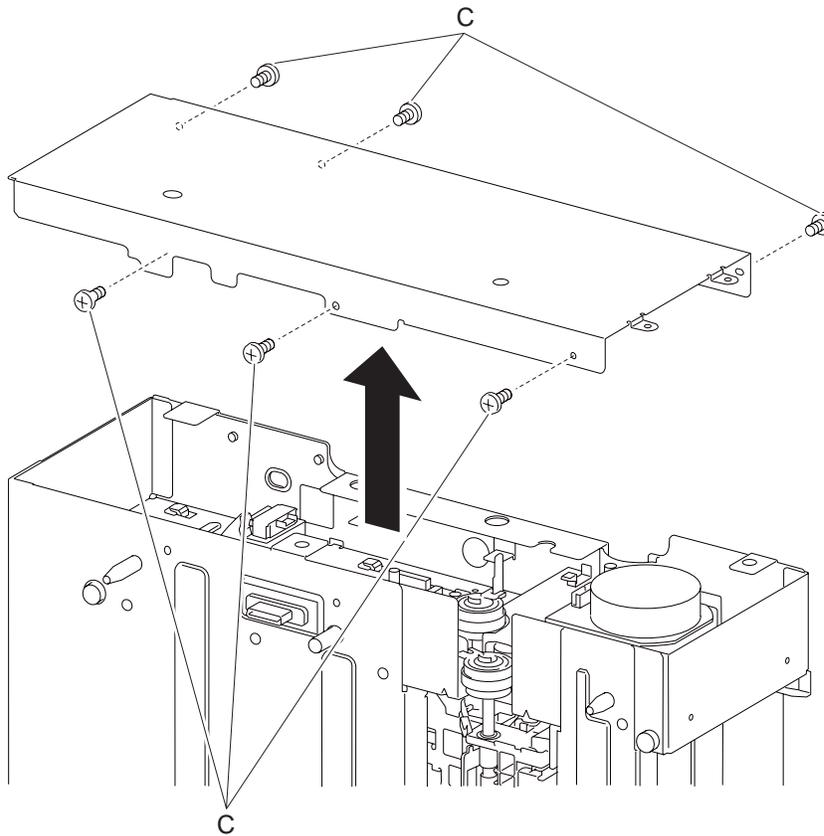
1. Remove the 550-sheet feeder. See **“550-sheet feeder removal”** on page 5-27.
2. Remove the tray extender cover.
3. Remove the two joint screws (A) that secure the feeder drawer to the cabinet, and lift the 550-sheet feeder drawer out of the cabinet.



4. Remove the four screws (B) (silver, 6mm) that fix the feeder right front cover to the cabinet.



5. Remove the six screws (C) (silver, 6mm) that fix the feeder right cover to the feeder frame, and remove the feeder right cover from the feeder frame.



6. Disconnect the connector (P/J4201) located on the harness of the 550-sheet feeder turn clutch.
Note: Leave the junction connector on the 550-sheet feeder frame side cable.
7. Release the two clamps that fix the harness of the 550-sheet feeder turn clutch, and remove the harness.
8. Remove the KL-ring that fixes the 550-sheet feeder turn clutch to the feeder turn roll assembly.
9. Remove the 550-sheet feeder turn clutch from the 550-sheet feeder turn roll assembly.

Installation note:

When the 550-sheet feeder turn clutch and 550-sheet feed clutch are removed at the same time, be careful not to confuse their installation locations:

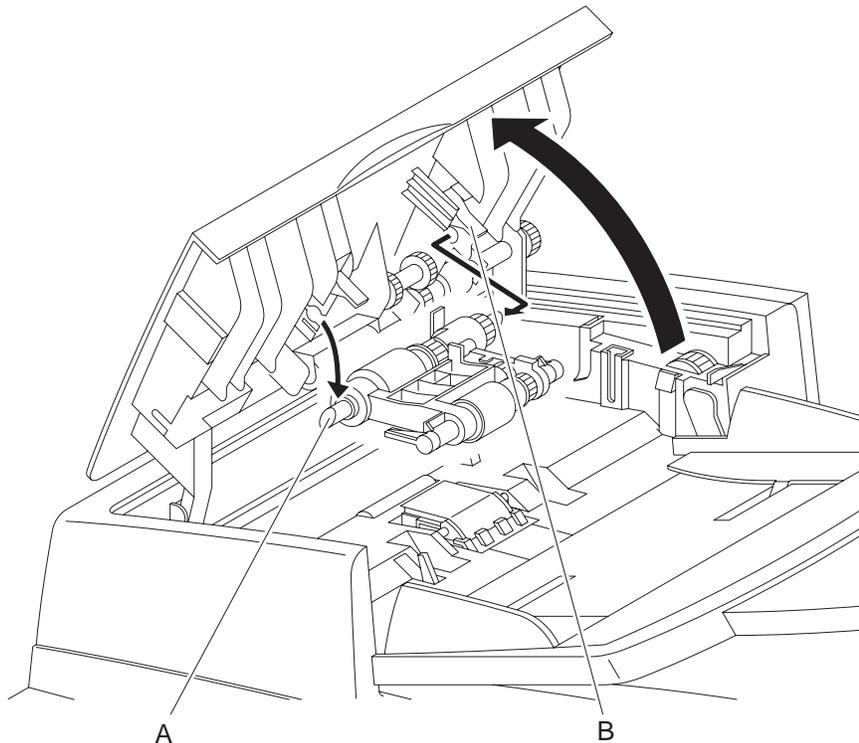
Harness name	Harness and groove color
Feed clutch harness assembly	Yellow
Turn clutch harness assembly	Blue

ADF maintenance kit removal

The ADF maintenance kit contains the ADF feed roll, the ADF separator pad, and the ADF separator spring.

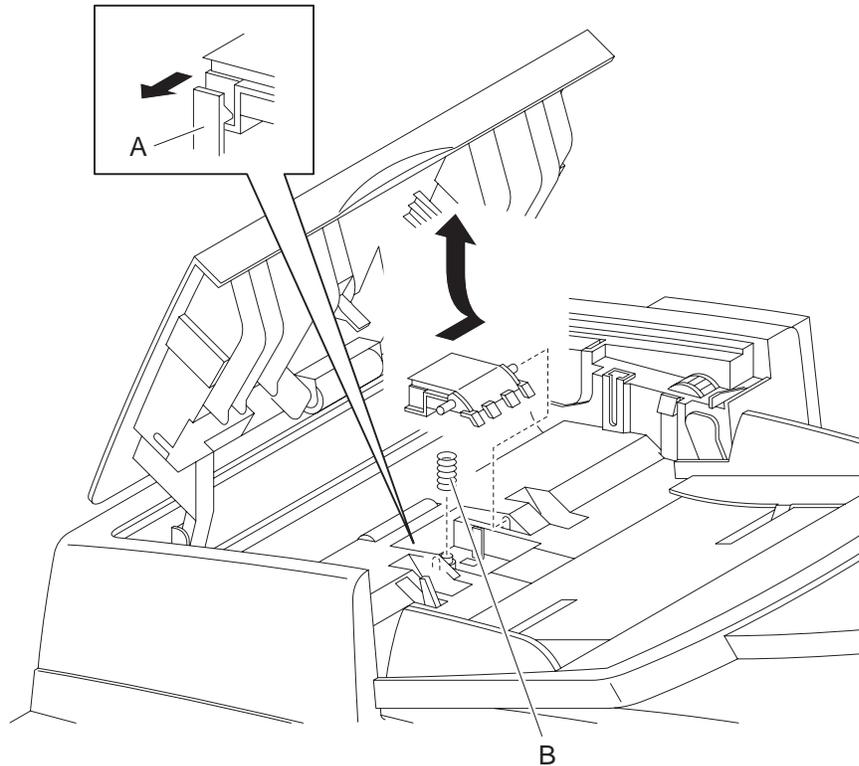
ADF feed roll

1. Open the cover of the ADF assembly.
2. Press the latch (A) on the end of the front shaft of the ADF feed roll from the ADF assembly.
3. Press the latch (B) holding the rear shaft of the ADF feed roll, and remove the feed roll.



ADF separator pad and spring

1. Release the latch (A) that attaches the ADF separator pad to the ADF assembly.
2. Slide the ADF separator pad backward until the front shaft of the ADF separator pad is released from the hole on the ADF assembly, and then release the rear shaft to remove the ADF separator pad.
3. Remove the ADF separator spring (B) from the boss on the ADF assembly.

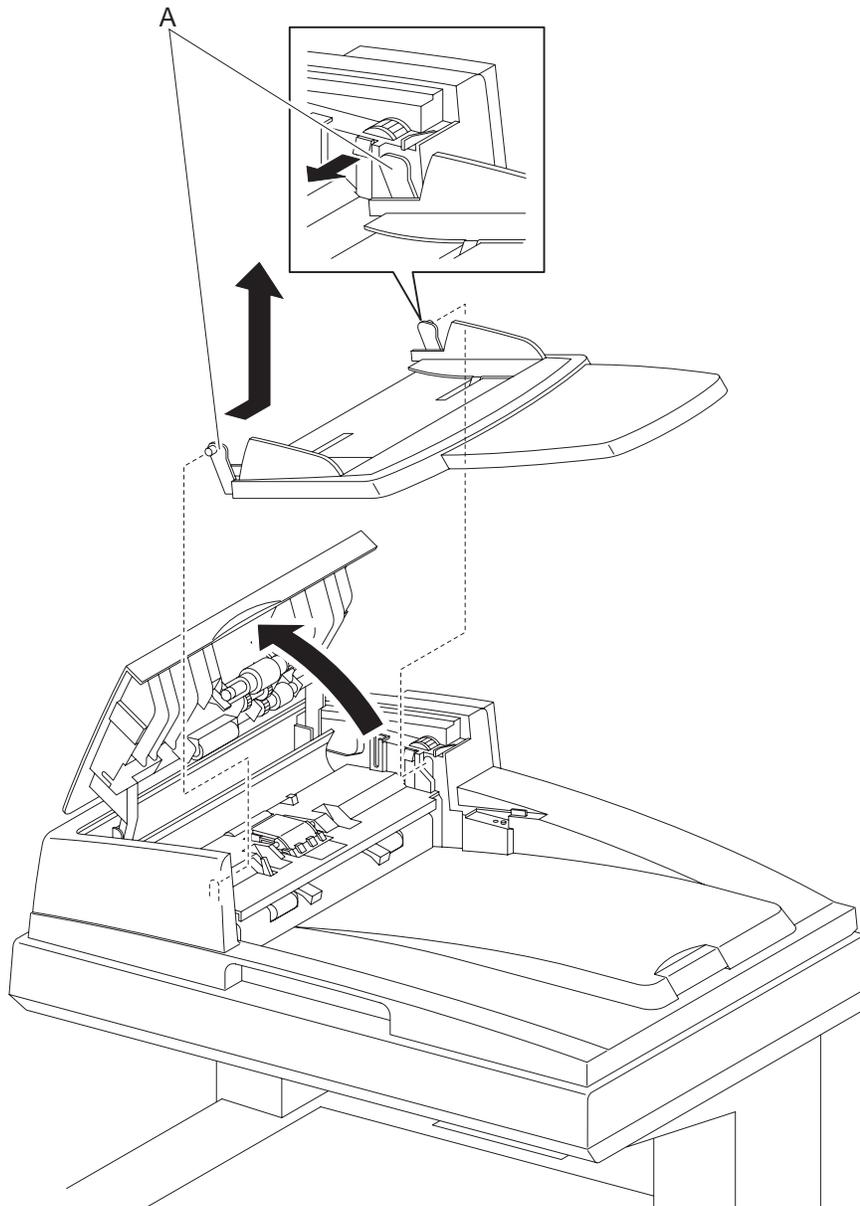


Installation

1. Align the ADF separator spring with the lug of the ADF assembly.
2. Insert the rear side shaft of the ADF separator pad into the bearing of the ADF assembly, and then insert the front side shaft of the ADF separator pad into the bearing of the ADF assembly. Secure the ADF separator pad with the hook.
3. Replace the ADF feed roll holder to the ADF feed roll.
4. Insert the rear side shaft of the ADF feed roll into the bearing of the ADF assembly, and then insert the front side shaft of the ADF feed roll into the bearing of the ADF assembly.
5. Remove the ADF feed roll holder from the ADF feed roll by pinching the front and rear side tabs of the ADF feed roll holder.
6. Close the cover of the ADF assembly.

ADF tray assembly removal

1. Open the cover of the ADF assembly.
2. Bend the rear side mounting section of the ADF tray assembly, release the boss of the ADF tray assembly from the hole of the ADF assembly.
3. Release the front side boss of the ADF tray assembly from the hole of the ADF assembly, and then remove the ADF tray assembly.



Installation

1. Align the front side boss of the main tray kit with the hole of the ADF assembly.
2. Align the boss of the main tray kit with the hole of the ADF assembly by bending the rear side mounting section of the main tray kit.
3. Close the cover of the ADF assembly.

Controller board removal

Warning: Always perform the NVM Save before attempting to remove or replace the controller board. Otherwise the data may be lost.

Use a wristband to protect the board from electrostatic damage.

NVM Save

This process saves data temporarily from the controller board to the RIP board. Perform this process whenever you remove or replace the controller board.

1. Press and hold ▲ and ▼, turn on the printer, and release the buttons when the menu displays.

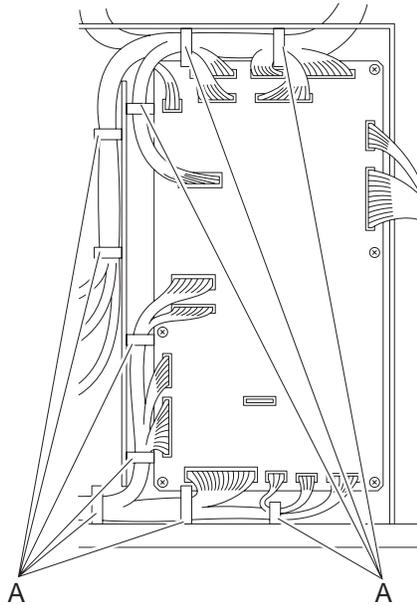
* Fax / Scanner
Printer Diag

2. Select **Printer Diag**, and press **OK**.
3. Select **Engine Diag**, and press **OK**.
4. Select **NVM Settings**, and press **OK**.
5. Select **Save NVM to ESS**, and press **OK**.
6. Press **OK** to confirm.
7. After NVM Save is complete, *Saved* is displayed.
8. Press **Stop/⊙** three times.
9. Select **Complete**, and press **OK**.
10. Press **OK** until the original Service Mode menu appears (shown above).
11. Turn off the power.
12. Remove the power cord from the electrical outlet.

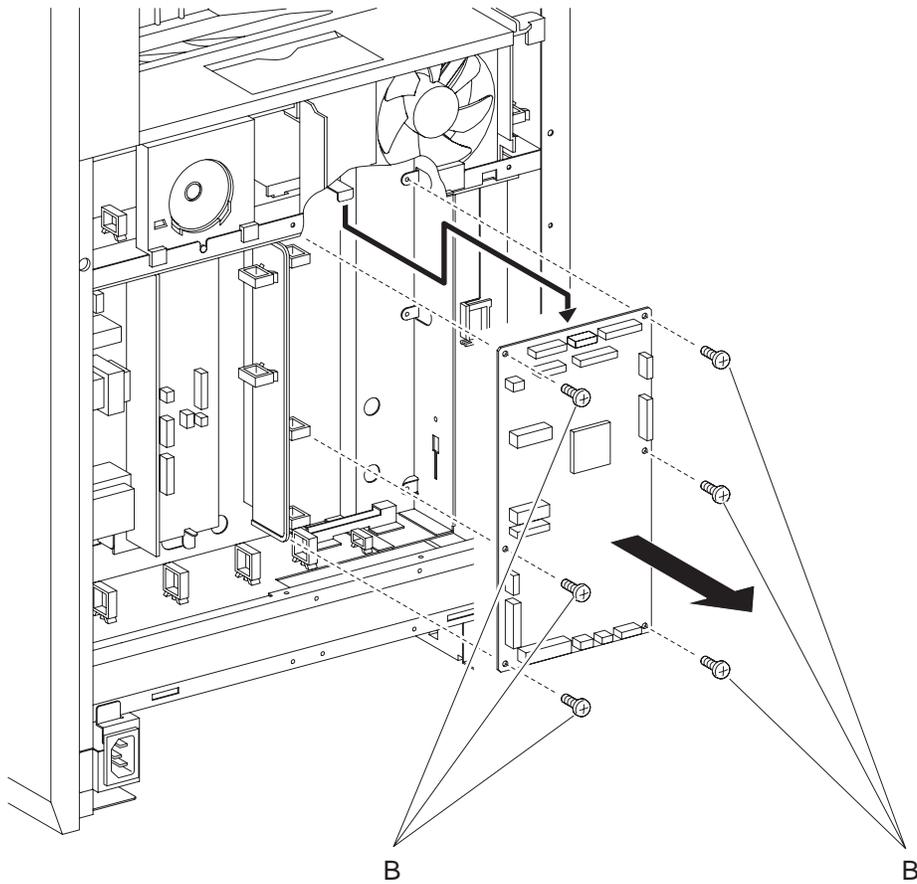
Once the NVM Save has been performed successfully, remove the controller board:

1. With the power still off, open the front cover.
2. Remove the fuser. See **“Fuser removal” on page 5-78**.
3. Remove the rear cover. See **“Rear cover removal” on page 5-22**.
4. Remove the bottom cover. See **“Bottom cover removal” on page 5-8**.
5. Remove the inner left cover. See **“Inner left pole cover removal” on page 5-16**.
6. Remove the left pole cover. See **“Left pole cover removal” on page 5-20**.
7. Remove the left cover. See **“Left cover removal” on page 5-18**.
8. Remove the RIP board cage. See **“RIP board cage removal” on page 5-128**.
9. Remove the engine board cage. See **“Engine board cage removal” on page 5-66**.
10. Remove the humidity sensor. See **“Humidity sensor removal” on page 5-85**.

11. Disconnect all the connectors of the controller board.
12. Release the harnesses from the clamps (A). Note the routing of all cable harnesses.



13. Remove the six screws (B) (silver, 6mm) that attach the controller board to the printer.



14. Remove the controller board from the printer.

Installation

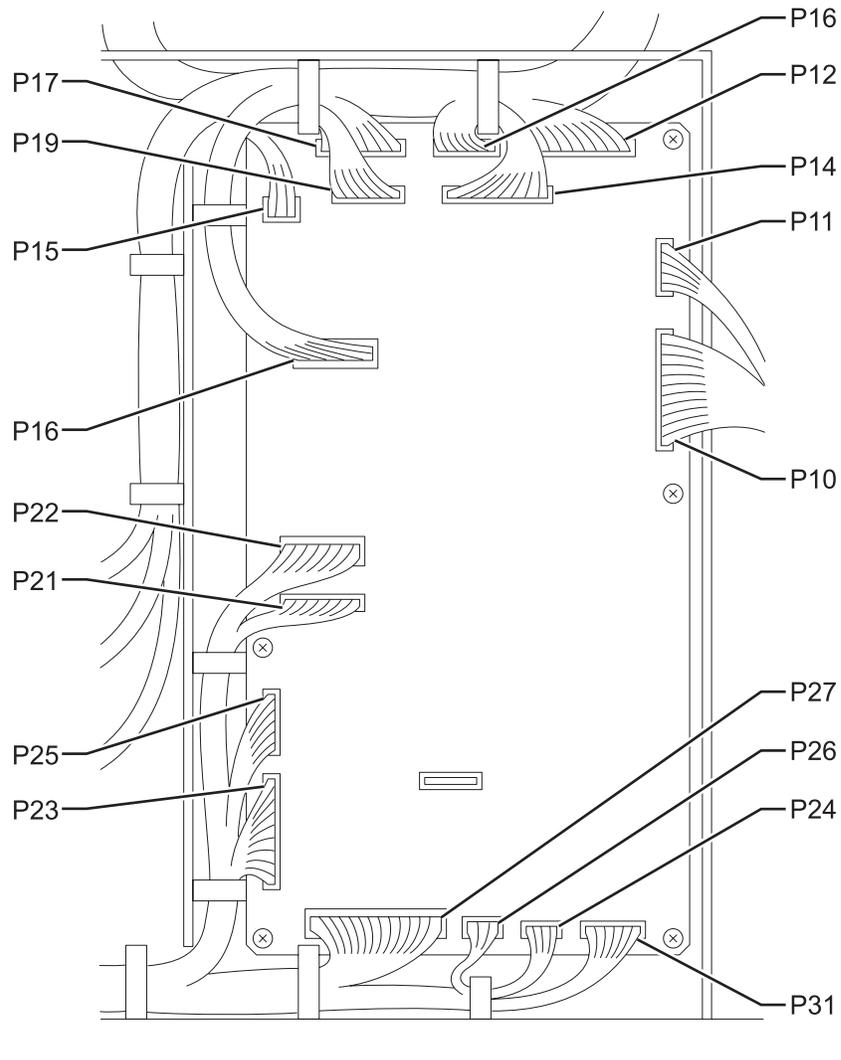
1. Replace the controller board to the printer by shifting it upward after attaching the under part of the controller board to the printer.

Note: Insert the upper part of the controller board into the backside tab on the printer.

2. Secure the controller board using the six screws (silver, 6mm).

3. Engage all the connectors of the controller board.

Note: See the diagram below that shows the connectors:



4. Secure all the harnesses with the clamps.
5. Perform NVM Load. See **“NVM Load” on page 5-50**.

Warning: When the controller board is removed or replaced with a new one, perform the following steps:

NVM Load

This process copies information back to the new controller board.

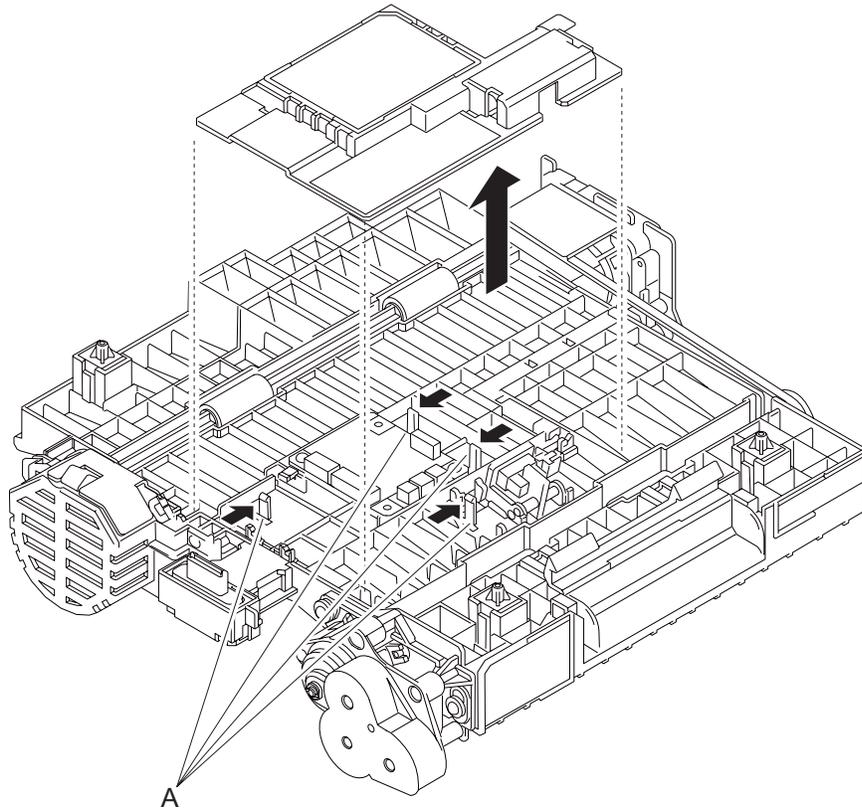
1. Plug the power cord into the outlet, and turn on the printer.
2. Press and hold ▲ and ▼, turn on the printer, and release the buttons when the menu displays.



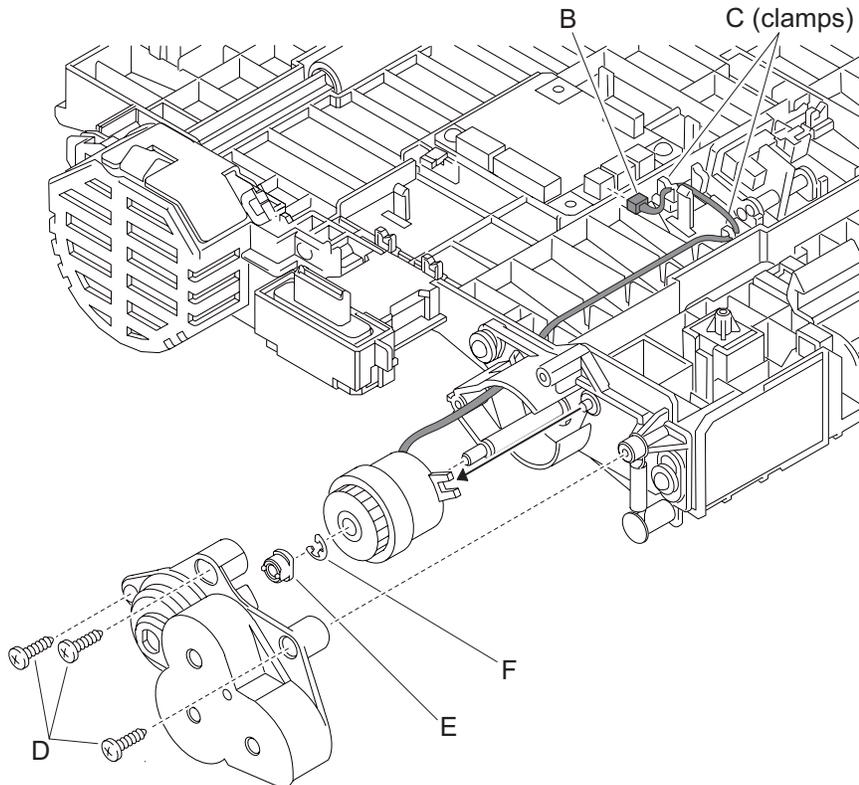
3. Select **Printer Diag**, and press **OK**.
4. Select **Engine Diag**, and press **OK**.
5. Select **NVM Settings**, and press **OK**.
6. Select **Load NVM from ESS** (RIP board), and press **OK**.
7. Press **OK** twice to confirm.
When the process is complete, Loaded is displayed.
8. Press **Stop/** (stop button icon) three times.
9. Select **Complete**, and press **OK**.
10. Press **OK** until the original Service Mode menu appears (shown above).
The printer restarts (POR).

Duplex clutch removal

1. Open the front cover assembly.
2. Remove the transfer belt assembly. See **“Transfer belt removal” on page 5-146.**
3. Remove the duplex unit. See **“Duplex unit removal” on page 5-62.**
4. Release the four hooks (A) that secure the duplex card cover to the duplex unit, and remove the duplex card cover.



5. Disconnect the cable to the duplex clutch (B) (P/J431) at the duplex card.
6. Release the two clamps (C) that attach the harness of the duplex clutch to the duplex unit, and remove the harness from the groove.
7. Remove the two screws (D) (silver, tap, 10mm) that attach the gear assembly to the duplex clutch bracket.
8. Remove the gear assembly from the duplex clutch bracket.
9. Remove the bearing (E) from the shaft of the duplex roll 1 assembly.
Note: Make sure not to lose the bearing.
10. Remove the E-ring (F) that secures the duplex clutch to the duplex roll 1 assembly.
11. Remove the duplex clutch by pulling the harness of the duplex clutch from the hole on the side of the duplex unit.



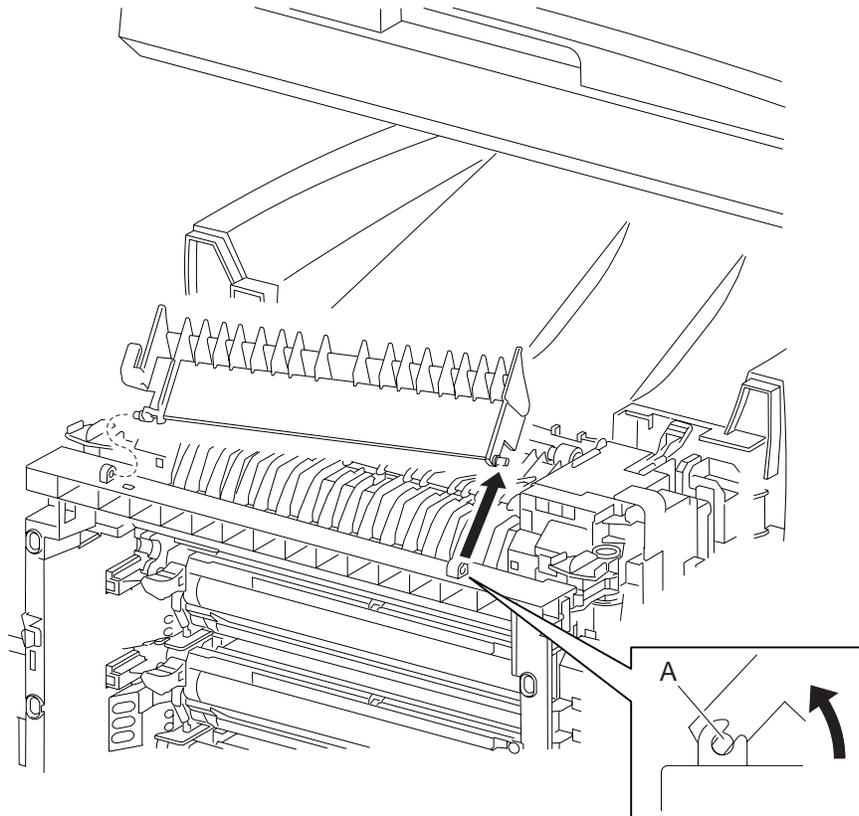
Installation

1. Replace the duplex clutch harness into the hole on the side of the duplex unit.
2. Replace the duplex clutch into the shaft of the duplex roll 1 assembly, and insert the concave part of the duplex unit into the pin of the duplex clutch bracket to attach.
3. Secure the duplex clutch to the duplex roll 1 assembly using an E-ring.
4. Replace the bearing to the shaft of the duplex roll 1 assembly.
5. Secure the gear assembly to the duplex clutch bracket using the three screws (silver, tap, 10mm).
6. Put the harness of the duplex clutch through the groove of the duplex unit.
7. Engage the connector (P/J431) of the duplex clutch on the duplex card, and secure with two clamps.
8. Replace the duplex card cover.
9. Replace the duplex unit.
10. Replace the transfer belt assembly.
11. Close the front cover assembly.

Duplex gate removal

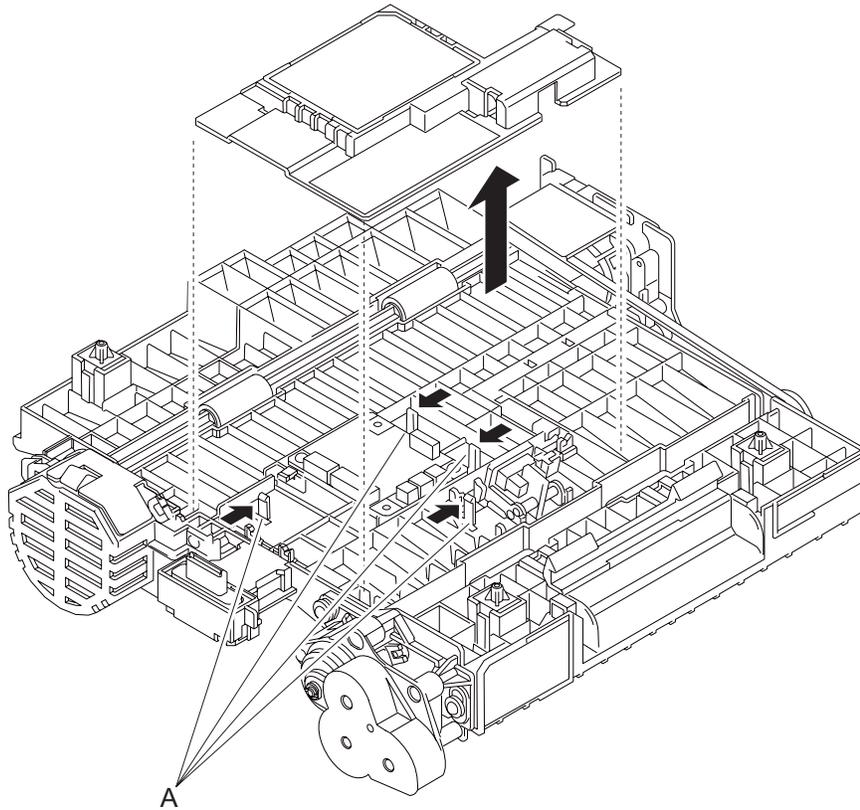
	<p>CAUTION</p> <p>The fuser is very hot. Take added care not to get burned when performing the service operation.</p>
---	--

1. Open the front cover.
2. Open the duplex gate to about 45° so that the flat faces (A) of the right side pivot of the duplex gate come parallel with the U-shaped notch.
3. Pull out the right side pivot of the duplex gate from the U-shaped notch diagonally backward.
4. Pull out the left side pivot of the duplex gate from the hole on the printer.

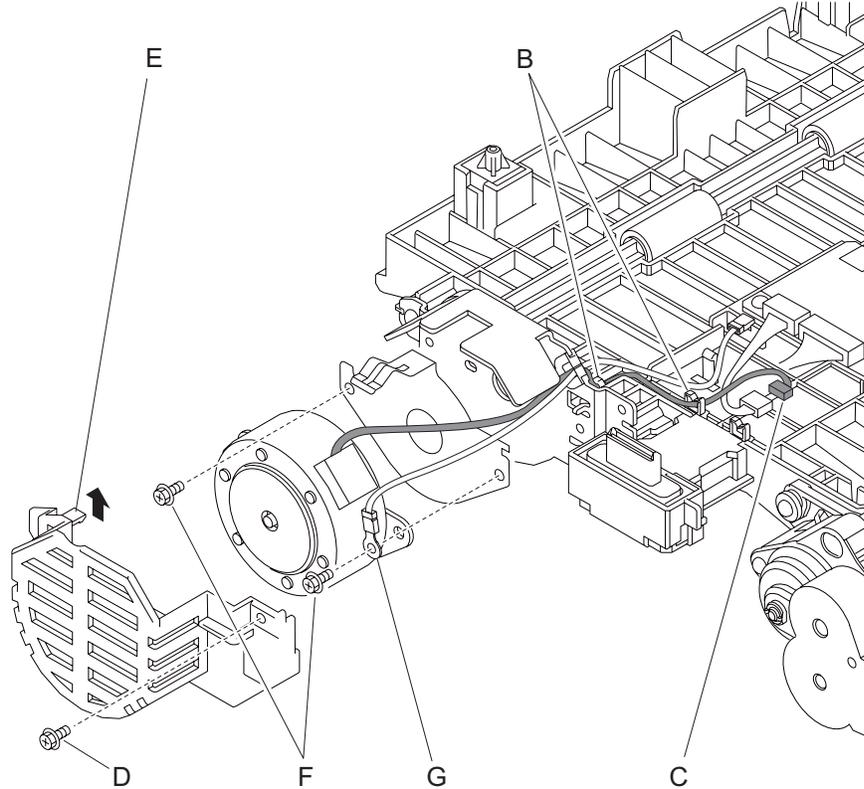


Duplex motor assembly removal

1. Open the front cover assembly.
2. Remove the transfer belt assembly. See **“Transfer belt removal” on page 5-146.**
3. Remove the duplex unit. See **“Duplex unit removal” on page 5-62.**
4. Release the four hooks (A) that secure the duplex card cover to the duplex unit, and remove the duplex card cover.



5. Release the duplex motor assembly harness by opening two clamps (B).
6. Disconnect the connector (C) (P/J429) from the intermediate connector connected from the duplex motor assembly.
7. Remove the screw (D) (silver, with flange, 6mm) that attaches the duplex drive cover to the duplex motor bracket, release the hook (E), and remove the duplex drive cover.
8. Remove the two screws (F) (silver, with flange, 6mm) that attach the duplex motor assembly to the duplex motor bracket together with the ground wire (G), and remove the duplex motor assembly together with the duplex grounding plate.

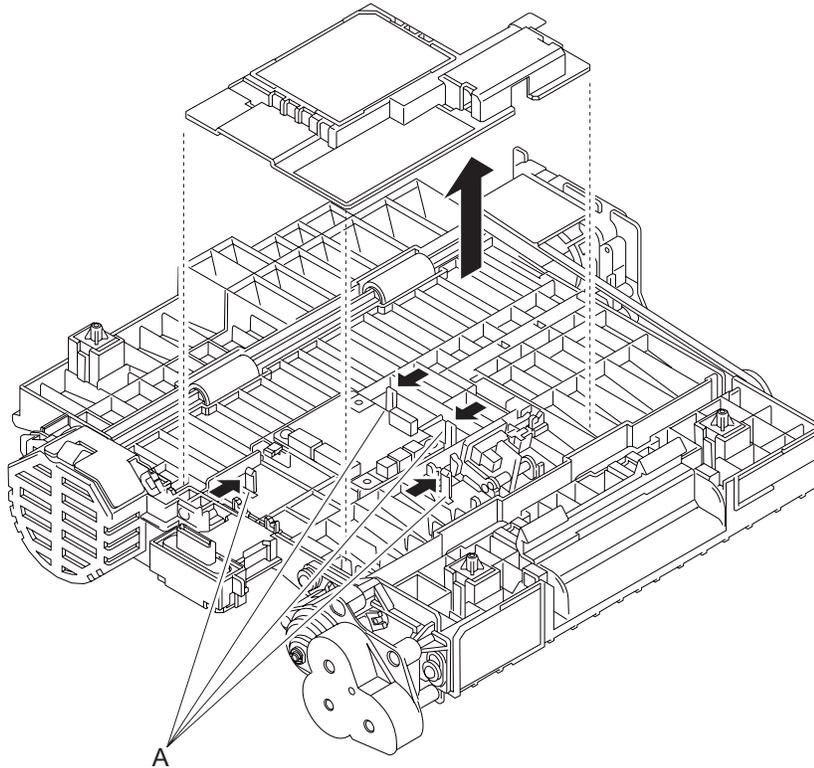


Installation

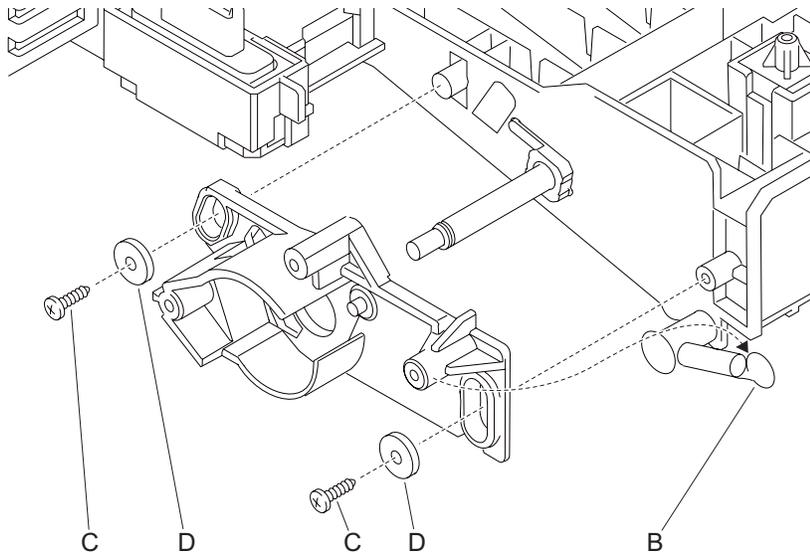
1. Secure the duplex grounding plate and the duplex motor assembly to the duplex motor bracket together with the ground wire using the two screws (silver, with flange, 6mm).
2. Secure the duplex drive cover to the duplex motor bracket using the hook and the single screw (silver, with flange, 6mm).
3. Engage the connector (P/J429) of the duplex motor assembly to the intermediate connector.
4. Replace the harness of the duplex motor assembly to the clamps for three positions.
5. Replace the duplex card cover.
6. Replace the duplex unit.
7. Replace the transfer belt assembly.
8. Close the front cover assembly.

Duplex roll 1 assembly removal

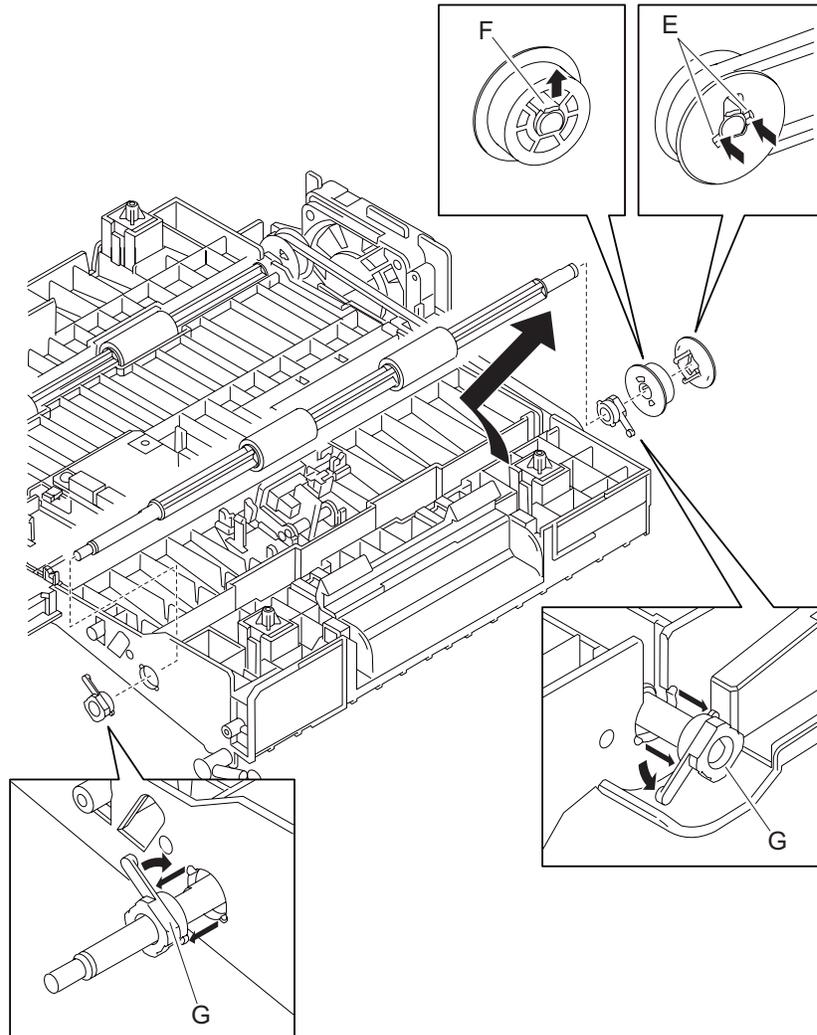
1. Open the front cover assembly.
2. Remove the transfer belt assembly. See **“Transfer belt removal”** on page 5-146.
3. Remove the duplex unit. See **“Duplex unit removal”** on page 5-62.
4. Release the four hooks (A) that secure the duplex card cover to the duplex unit, and remove the duplex card cover.



5. Remove the duplex clutch. See **“Duplex clutch removal”** on page 5-51.
6. Remove the duplex spring (B) from the duplex clutch bracket.
7. Remove the two screws (C) (silver, tap, 10mm) that attach the duplex clutch bracket to the duplex unit, and remove it together with the duplex clutch washer (D).
8. Remove the duplex clutch bracket from the duplex unit.



9. Use a small screwdriver to release the two hooks (E) of the upper pulley flange, and remove the belt from the duplex pulley.
10. Remove the duplex belt from the duplex pulley.
11. Release the hook (F) of the duplex pulley, and remove from the shaft of the duplex roll 1 assembly.
12. Remove the duplex bearing (G) that secures the shaft on the right and left sides of the duplex roll 1 assembly by rotating in the direction shown by the arrow.
13. Shift the duplex roll 1 assembly to the left temporarily, and remove the shaft of the duplex roll 1 assembly by releasing it from the bearing on the right side of the duplex unit.

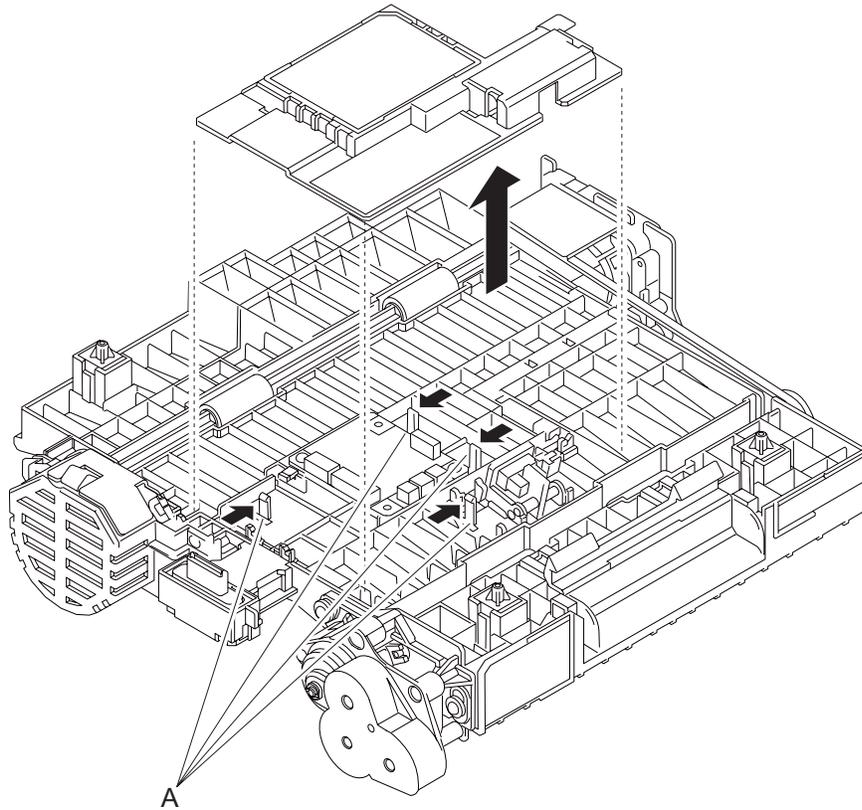


Installation

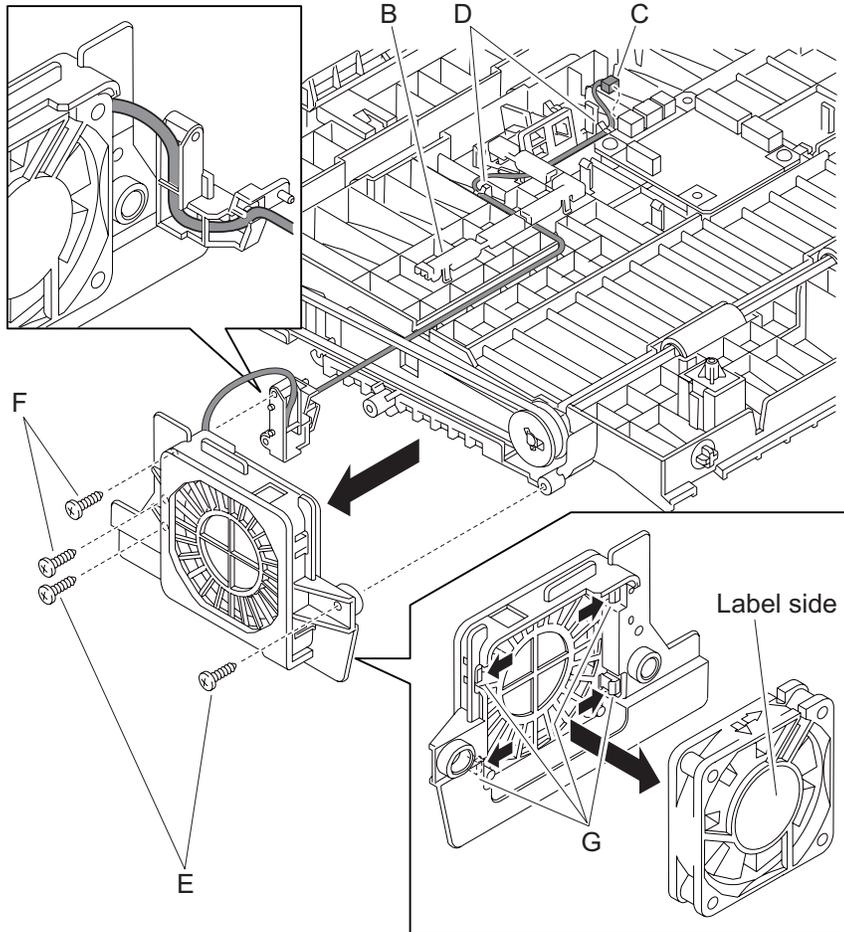
1. Insert the shaft of the duplex roll 1 assembly into the bearing on the left side of the duplex unit, move the shaft to the right to engage the shaft in the slot, and attach the duplex roll 1 assembly.
2. Insert the duplex bearing into the shaft on the right and left sides of the duplex roll 1 assembly, align the tab of the duplex bearing with the notch on the side of the duplex unit, and attach.
3. Replace the duplex pulley to the shaft of the duplex roll 1 assembly, and fix the hook of the duplex pulley to the groove of the shaft.
4. Replace the duplex belt to the duplex pulley.
5. Secure the upper pulley flange to the duplex pulley for two positions with hooks.
6. Replace the duplex clutch bracket together with the duplex clutch washer using the two screws (silver, tap, 10mm).
7. Replace the duplex spring to the duplex clutch bracket.
8. Replace the duplex clutch.
9. Replace the duplex card cover.
10. Replace the duplex unit.
11. Replace the transfer belt assembly.
12. Close the front cover assembly.

Duplex roll 2 assembly removal

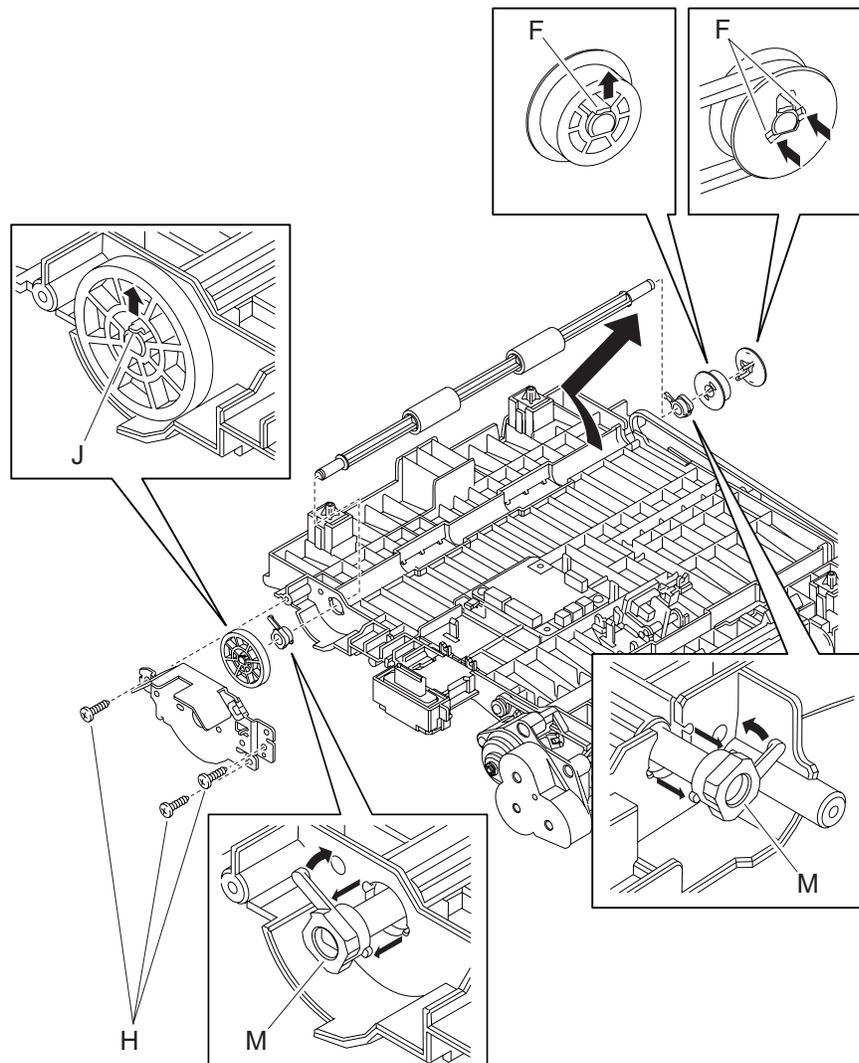
1. Open the front cover assembly.
2. Remove the transfer belt assembly. See **“Transfer belt removal” on page 5-146.**
3. Remove the duplex unit. See **“Duplex unit removal” on page 5-62.**
4. Release the four hooks (A) that secure the duplex card cover to the duplex unit and remove the duplex card cover.



5. Release the four hooks that attach the cable harness cover (B) and remove the cable harness cover.
 6. Disconnect the connector (C) (P/J427) of the duplex fan located on the top of the PWBA DUP-H
 7. Release the two clamps (D) that attach the harness of the duplex fan to the duplex unit and remove the harness.
 8. Remove the two screws (E) (silver, tap, 10mm) that attach the duplex fan bracket to the duplex unit.
 9. Remove the duplex fan bracket together with the duplex fan from the duplex unit.
 10. Remove the two screws (F) (silver, tap, 10mm) that fix the duplex fan harness cover to the duplex fan bracket, release the harness and remove the duplex fan harness cover.
 11. Release the four hooks (G) that fix the duplex fan to the duplex fan bracket and remove the duplex fan.
- Note:** During reinstallation, make sure the label on the fan is installed facing towards the duplex unit.

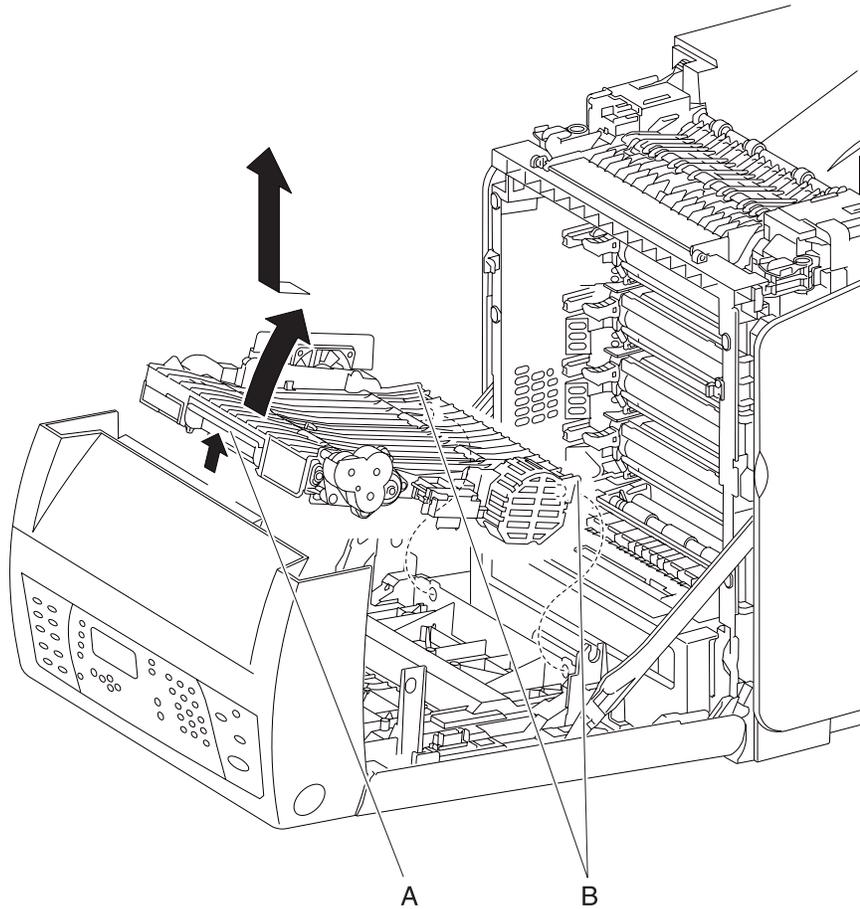


12. Remove the duplex motor assembly. See **"Duplex motor assembly removal"** on page 5-54.
13. Remove the three screws (H) (silver, tap, 10mm) that attach the duplex motor bracket to the duplex unit, and remove the duplex motor bracket.
14. Release the hook (J) of the duplex gear, and remove from the shaft of the duplex roll 2 assembly.
15. Use a small screwdriver to release the two hooks (K) of the upper pulley flange, and remove it from the duplex pulley.
16. Remove the duplex belt from the duplex pulley.
17. Release the hook (L) of the duplex pulley, and remove it from the shaft of the duplex roll 2 assembly.
18. Remove the duplex bearing (M) that attaches the shaft on the right and left sides of the duplex roll 2 assembly by rotating in the direction shown by the arrow.
19. Shift the duplex roll 2 assembly to the left temporarily and remove the shaft of the duplex roll 2 assembly by releasing it from the bearing on the right side of the duplex unit.



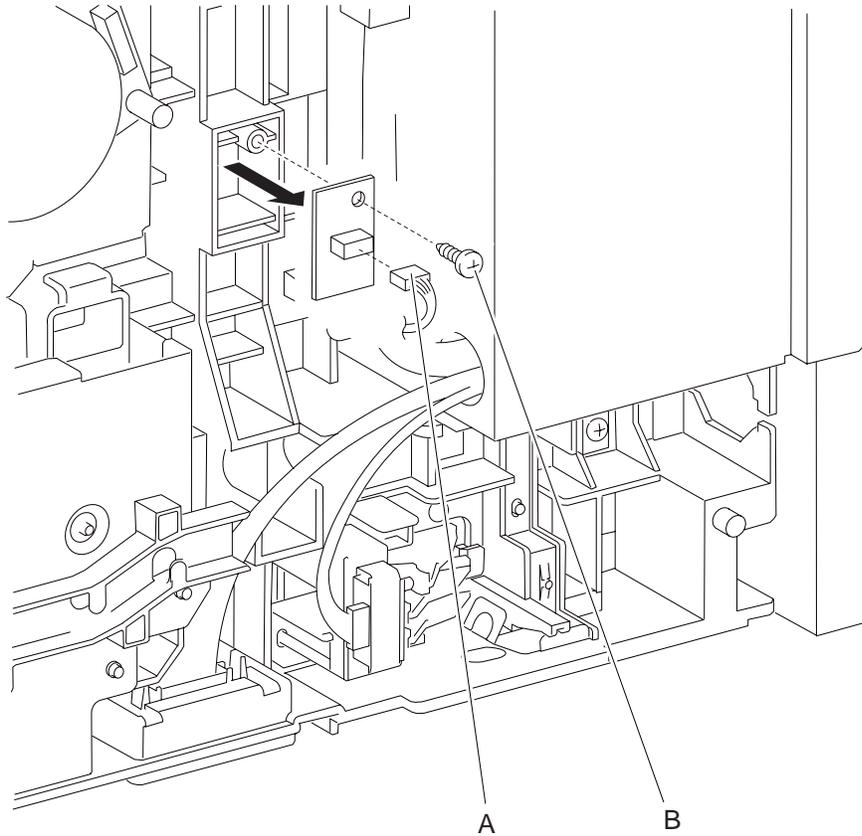
Duplex unit removal

1. Open the front cover.
2. Remove the transfer belt. See **“Transfer belt removal” on page 5-146.**
3. Pull the lever (A) to release the duplex unit, and then raise the duplex unit.
4. Release the two bosses (B) on the backside of the duplex unit from the holes on the front cover, and then remove the duplex unit.



EEPROM card removal

1. Open the front cover.
2. Remove the fuser. See **“Fuser removal”** on page 5-78.
3. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
4. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
5. Remove the inner right pole cover. See **“Inner right pole cover removal”** on page 5-17.
6. Remove the right pole cover. See **“Right pole cover removal”** on page 5-25.
7. Remove the right cover. See **“Right cover removal”** on page 5-23.
8. Disconnect the connector (A) (P/J144) of the EEPROM card.
9. Remove the screw (B) (silver, tap 10mm) that attaches the EEPROM card to the printer.



10. Remove the EEPROM card from the printer.

Engine board removal

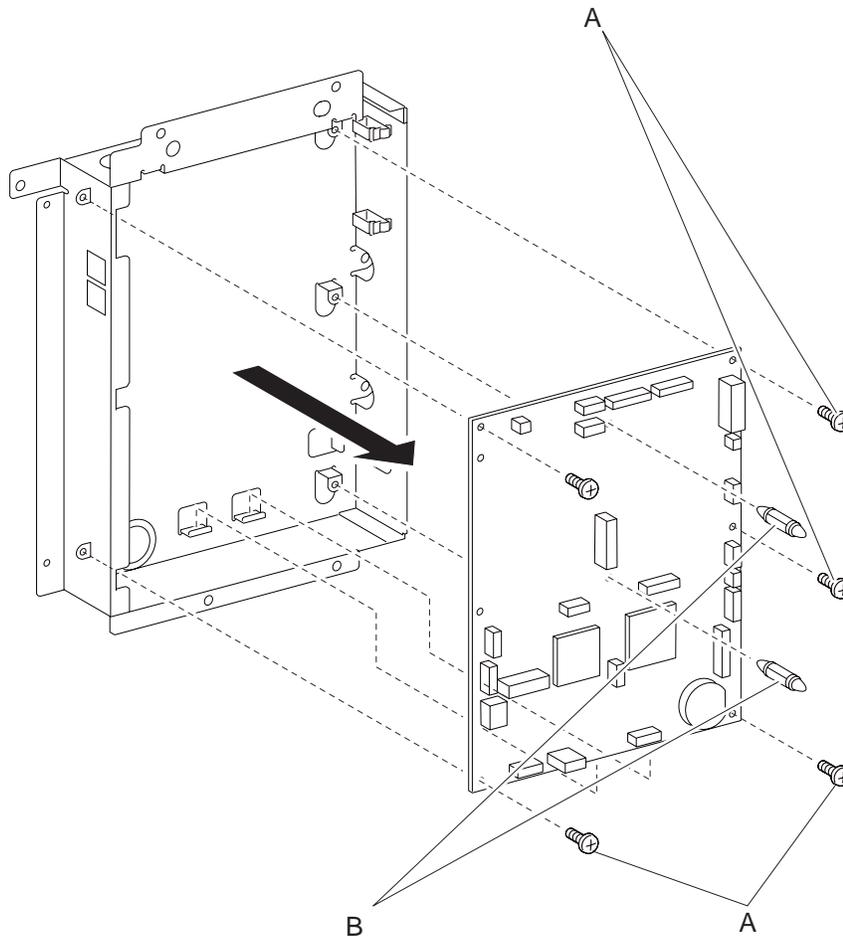


CAUTION

This product contains a lithium battery. THERE IS A RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE. Discard used batteries according to the battery manufacturer's instructions and local regulations.

Warning: Use a wristband to protect the engine board from electrostatic damage. See **“Handling ESD-sensitive parts”** on page 5-1.

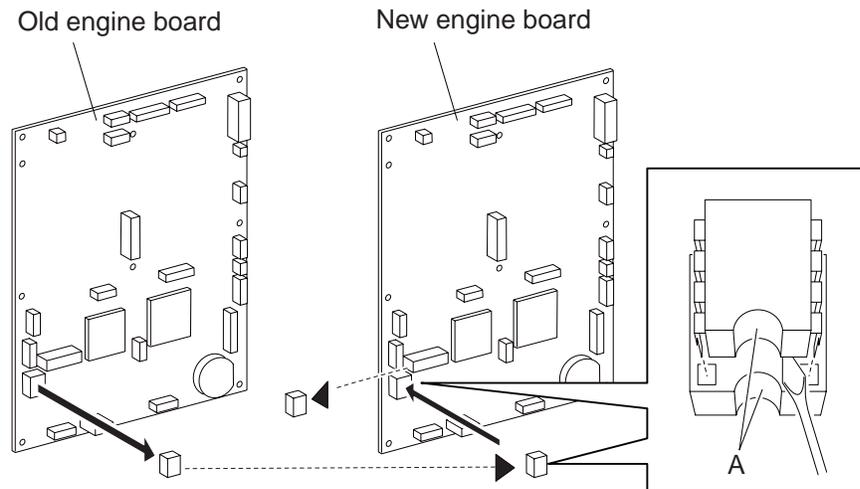
1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner left pole cover. **“Inner left pole cover removal”** on page 5-16.
4. Remove the left pole cover. See **“Left pole cover removal”** on page 5-20.
5. Remove the RIP board cage. See **“RIP board cage removal”** on page 5-128.
6. Remove the engine board cage. See **“Engine board cage removal”** on page 5-66.
7. Remove the fax card. See **“Fax card removal”** on page 5-73.
8. Remove the five screws (A) (silver, 6mm) that attach the engine board to the engine board cage.
9. Remove the engine board from the engine board cage.
10. Remove the fax supports (B) from the engine board by releasing the hooks.



Installation

Note: When the engine board is replaced with a new one, remove the original NVM and install it on the new engine board. These steps are not required when no replacement is performed. Do not press the board when removing the NVM ROM. Take care not to bend the terminal section of NVM when performing the step described below.

1. Remove the NVM, using a miniature screwdriver or the like, from the IC socket on the old engine board that was removed from the printer.
2. Remove the NVM from the IC socket on the new engine board using a miniature screwdriver or the like.
Note: Do not use the NVM removed from the new engine board. Note the orientation of the NVM card.
3. Install the NVM that was removed from old engine board on the IC socket of the new engine board with its notch aligned with the notch in the IC socket.
Note: Orient the NVM the same way the unused NVM was oriented.



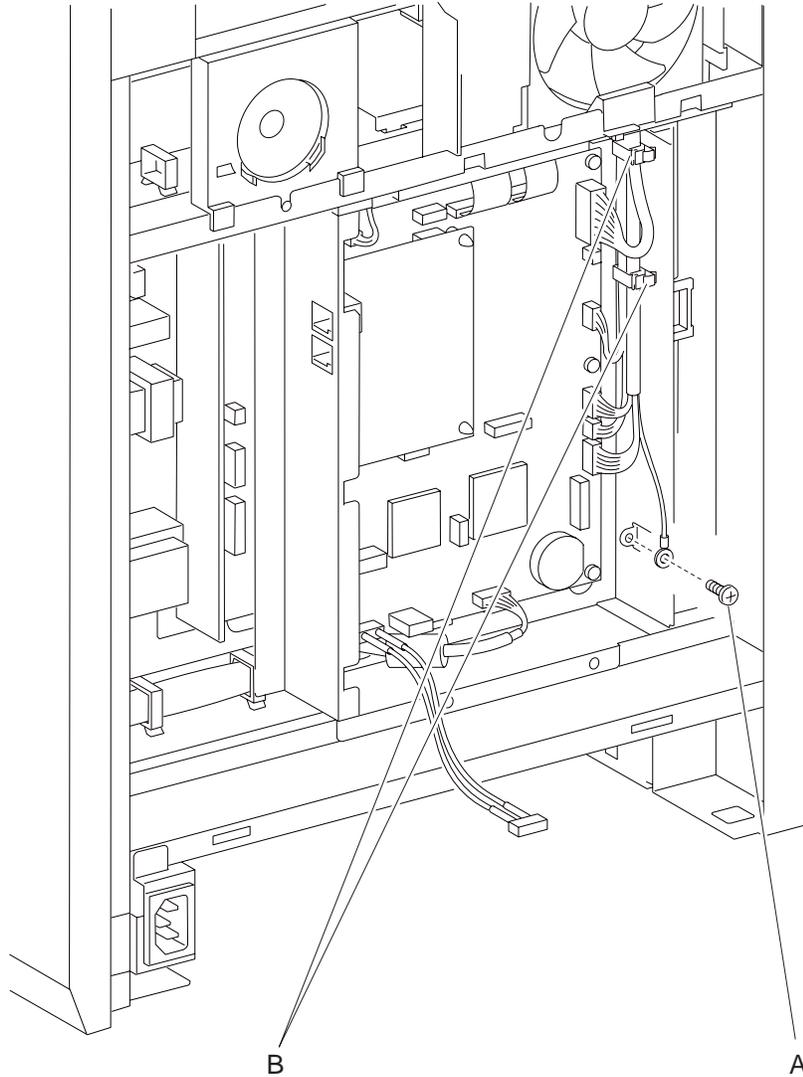
4. Replace the two fax supports to the engine board.
5. Replace the fax card.
6. Replace the engine board into the engine board cage.
Note: Rest the engine board upon the two hooks of the engine board cage.
7. Secure the engine board using the five screws (silver, 6mm).

When the engine board is replaced with a new one, perform the following steps from the customer menu.

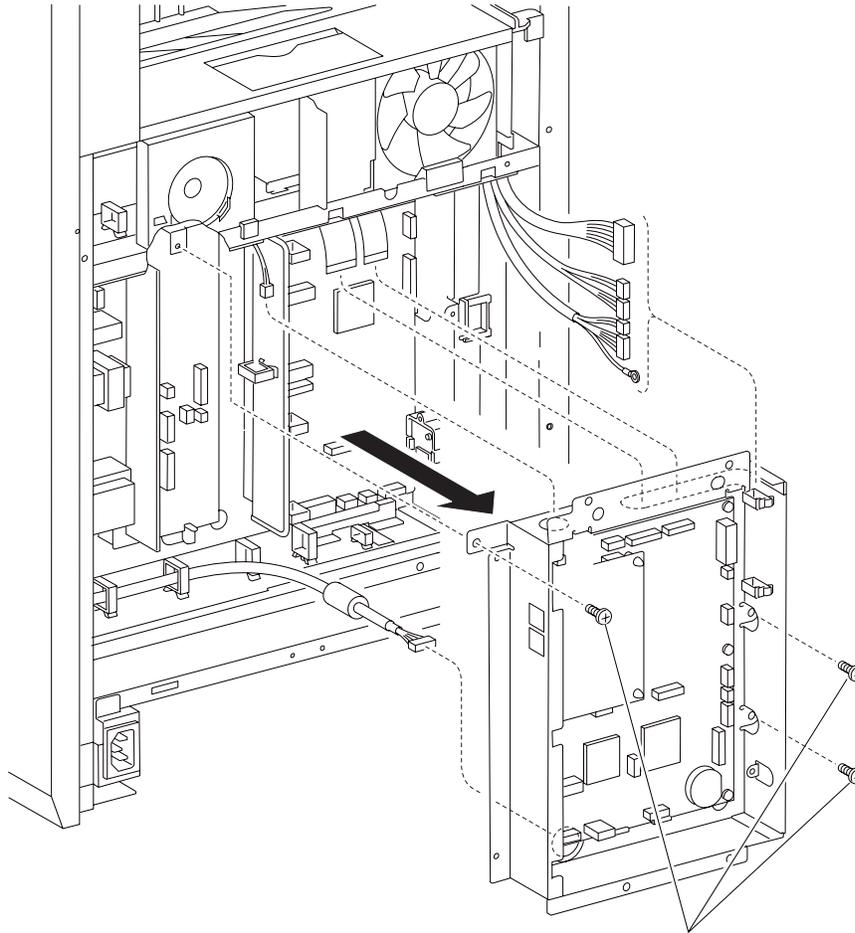
1. Press **System**.
2. Select the **Admin Menu**, and press **OK**.
3. Select **Fax Settings**, and press **OK**.
4. Select **Country**, and press **OK**.
5. Select your country, and press **OK**.
6. Select **Yes**, and press **OK** key to start the system initialization.
The menu returns to the main screen automatically.

Engine board cage removal

1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner left cover. See **“Inner left pole cover removal”** on page 5-16.
4. Remove the left pole cover. See **“Left pole cover removal”** on page 5-20.
5. Remove the RIP board cage. See **“RIP board cage removal”** on page 5-128.
6. Disconnect all the connectors of the engine board.
7. Remove the screw (A) (silver, 6mm) that attaches the ground wire of the scanner assembly to the engine board cage.
8. Release the harnesses from the clamps (B). Take note of the cable routing for reinstallation.



9. Remove the three screws (C) (silver, 6mm) that attach the engine board cage to the printer.
10. Remove the engine board cage together with the engine board and fax card. Gently pull the cable harnesses through the hole in the cage.

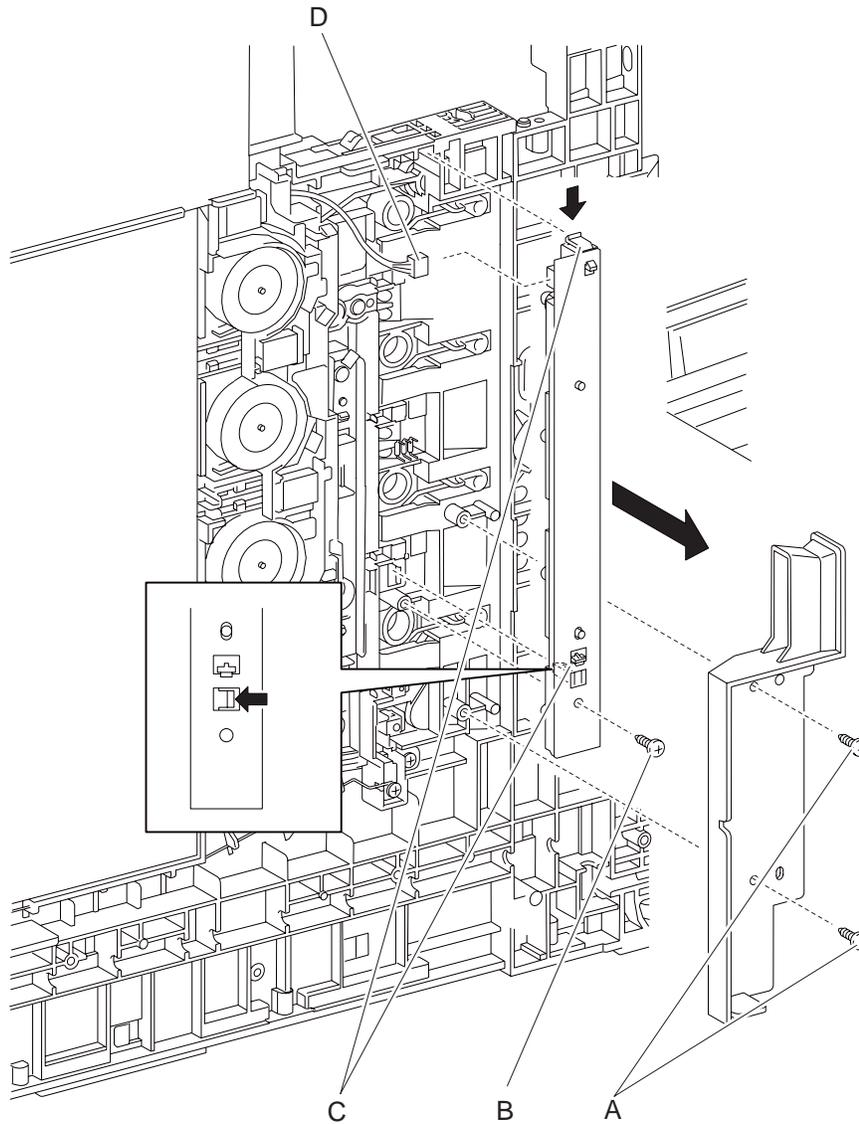


Installation notes

1. Route all the harness through the holes of the engine board cage.
2. Replace the engine board cage in the MFP together with the engine board and the fax card by aligning the two hooks of the engine board cage to the holes of the MFP.
Note: Make sure that the harness will not be pinched between the engine board cage and the printer.
3. Secure the engine board cage to the MFP using the three screws (silver, 6mm).
4. Secure the ground wire with the screw (silver, 6mm).
5. Plug in all the connectors on the engine board.
6. Route the cables and secure all the harnesses in the clamps.

Erase lamp assembly removal

1. Open the front cover.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner left pole cover. See **"Inner left pole cover removal"** on page 5-16.
6. Remove the left pole cover. See **"Left pole cover removal"** on page 5-20.
7. Remove the left cover. See **"Left cover removal"** on page 5-18.
8. Remove the two screws (A) (silver, tap, 8mm) that attach the duct side left to the printer.
9. Remove the duct side left from the printer.
10. Remove the screw (B) (silver, tap, 10mm) that attaches the erase lamp assembly to the printer.
11. Remove the erase lamp assembly from the printer by releasing the two hooks (C).
12. Disconnect the connector (D) (P/J141) of the erase lamp assembly.

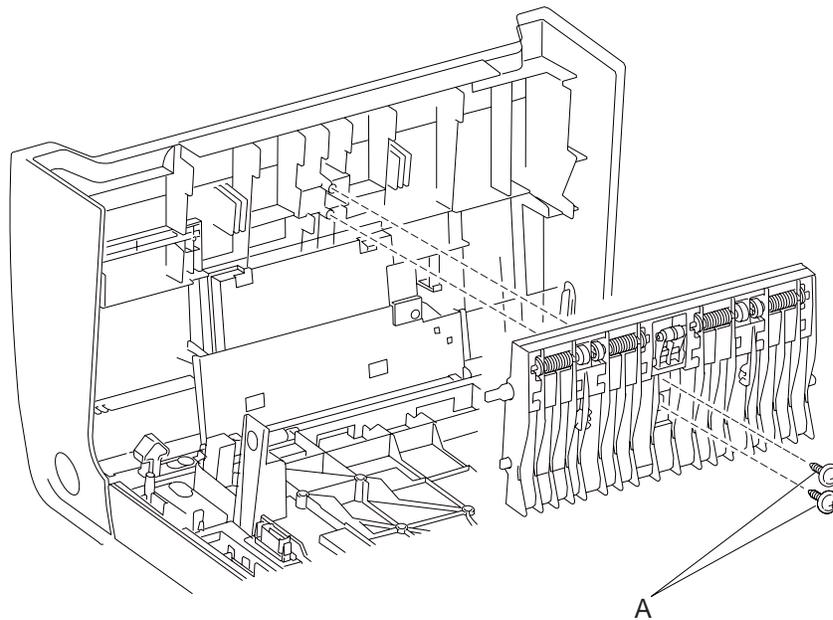


Installation

1. Connect the connector (P/J141) of the erase lamp assembly.
2. Align the four LEDs on the erase lamp assembly with the holes on the MFP, and then secure the erase lamp assembly with the two hooks.
3. Replace the screw (silver, tap, 10mm) that attaches the erase lamp assembly to the printer.
4. Replace the left side duct by aligning the two holes on the left side duct with the bosses on the printer.
5. Replace the two screws (silver, tap, 8mm) to secure the left side duct to the printer.

Exit assembly removal

1. Open the front cover.
2. Remove two screws (A) (black, with flange, tap, 10mm) that attach the exit assembly to the front cover.
3. Remove the exit assembly from the front cover.



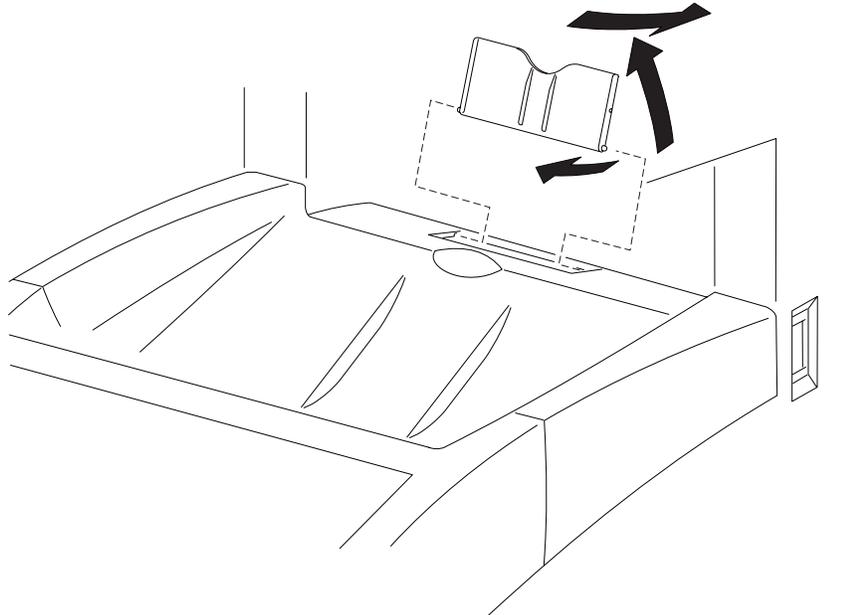
Installation

1. Replace the exit assembly to the front cover by aligning the two springs of the exit assembly with the ribs on the front cover.
2. Secure the exit assembly to the front cover using the two screws (black, with flange, tap, 10mm).
3. Close the front cover.

Extension cover removal

1. Open the extension cover.
2. Remove the extension cover by bending it carefully, and removing its left and right bosses from the holes on the top cover.

Warning: Be careful not to damage the bosses on the extension cover.



Installation

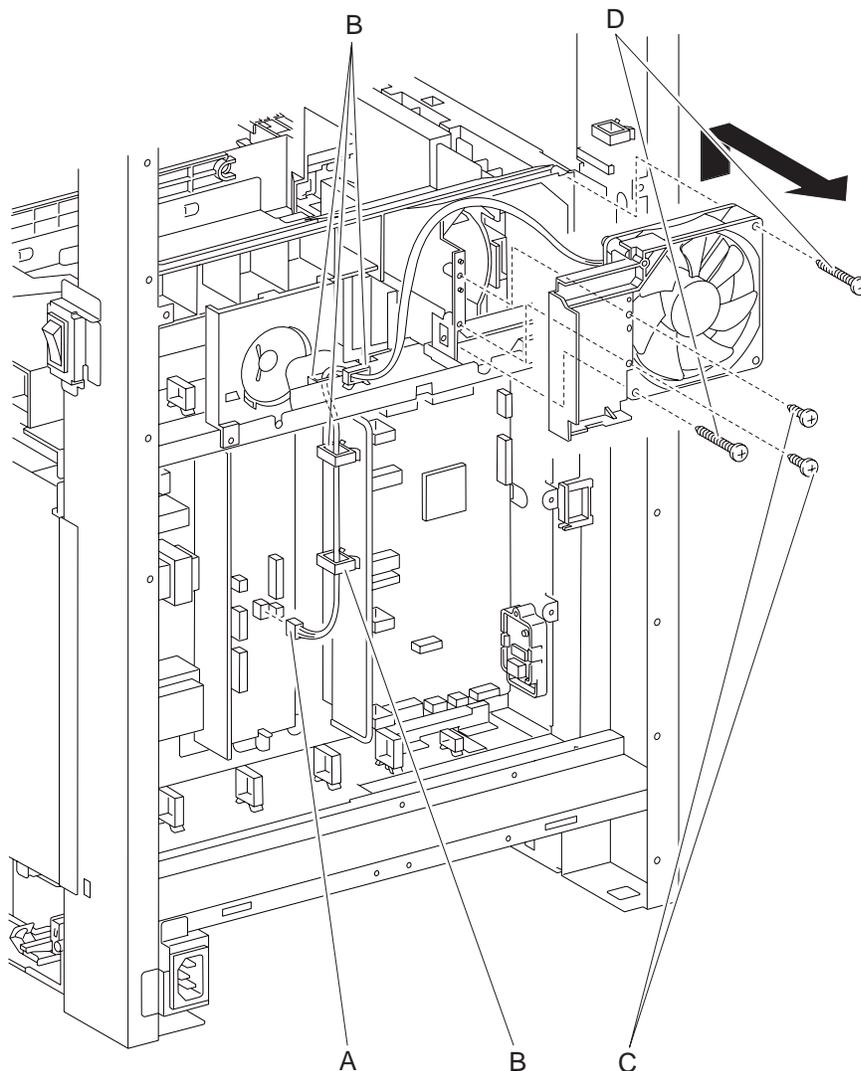
1. Insert one of the bosses of the extension cover, at its open position, into the hole on the top cover, and then carefully bend the extension cover to slip the other boss into place.

Warning: Be careful not to damage the boss on the extension cover.

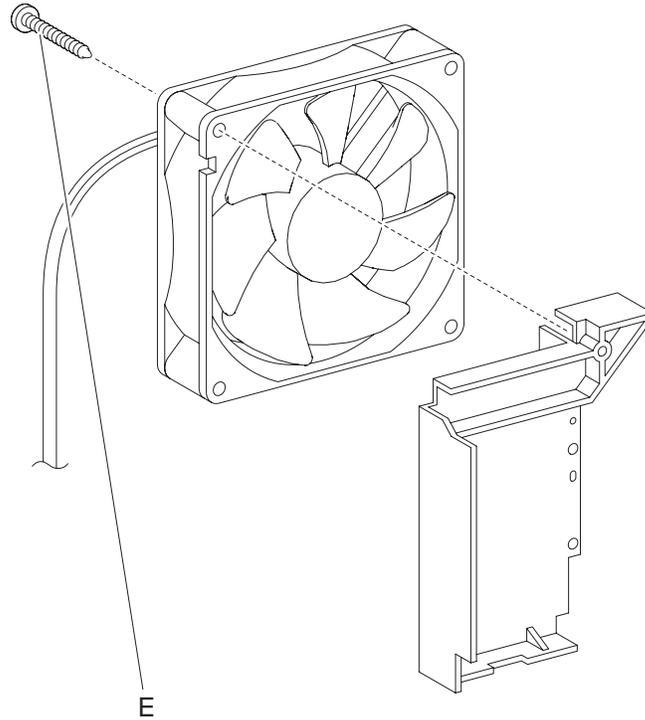
2. Close the extension cover.

Fan assembly removal

1. Open the front cover.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner right pole cover. See **"Inner right pole cover removal"** on page 5-17.
6. Remove the right pole cover. See **"Right pole cover removal"** on page 5-25.
7. Remove the right cover. See **"Right cover removal"** on page 5-23.
8. Remove the inner left cover. See **"Inner left pole cover removal"** on page 5-16.
9. Remove the left pole cover. See **"Left pole cover removal"** on page 5-20.
10. Remove the left cover. See **"Left cover removal"** on page 5-18.
11. Remove the top cover. See **"Top cover removal"** on page 5-26.
12. Remove the RIP board cage. See **"RIP board cage removal"** on page 5-128.
13. Remove the engine board cage. See **"Engine board cage removal"** on page 5-66.
14. Disconnect the connector (A) (P/J503) of the fan from the low-voltage power supply.
15. Release the harness of the fan from the four clamps (B) and pull it out of the hole on the printer.
16. Remove the two screws (C) (silver, tap, 8mm) that attach the plate duct to the printer.
17. Remove the two screws (D) (silver, tap, 32mm) that attach the fan to the printer.
18. Remove the plate duct and fan from the printer.



19. Remove the screw (E) (silver, tap, 32mm) that attaches the plate duct to the fan.
20. Remove the plate duct from the fan.



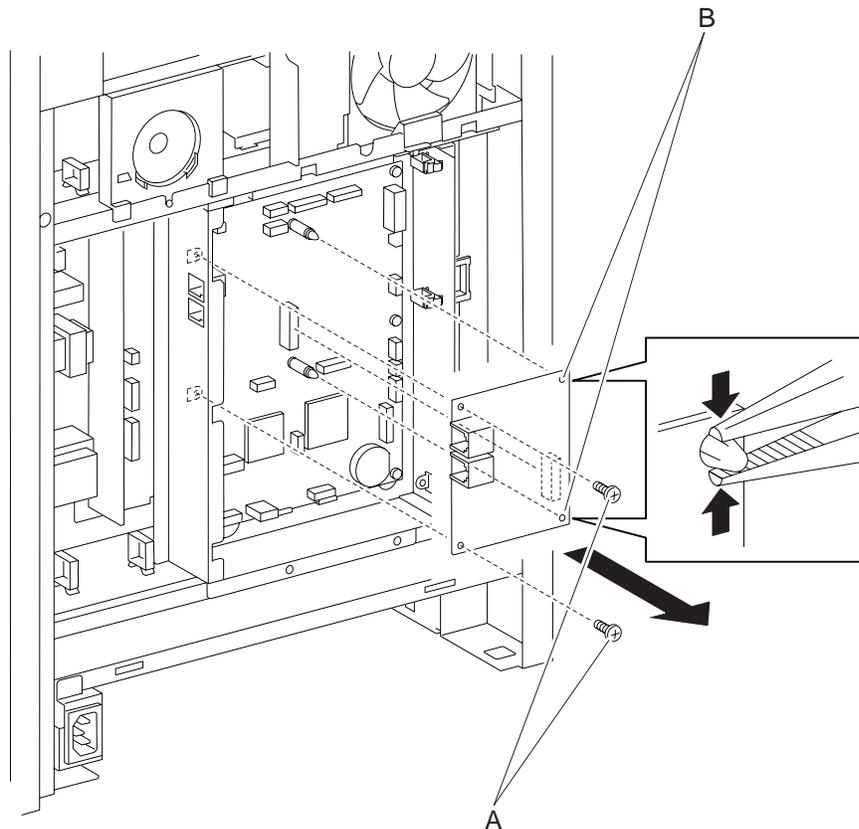
Installation notes:

Note: When performing the step described below, take care to check the orientation of the fan. Replace the plate duct to the opposite side of the label surface.

Align the lug of the plate duct with the notch of the fan, and replace the plate duct to the fan.

Fax card removal

1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner left cover. See **“Inner left pole cover removal”** on page 5-16.
4. Remove the left pole cover. See **“Left pole cover removal”** on page 5-20.
5. Remove the RIP board cage. See **“RIP board cage removal”** on page 5-128.
6. Remove the two screws (A) (silver, 6mm) that attach the fax card to the engine board cage.
7. Remove the fax card from the engine board by releasing the hooks (B) on the fax supports.

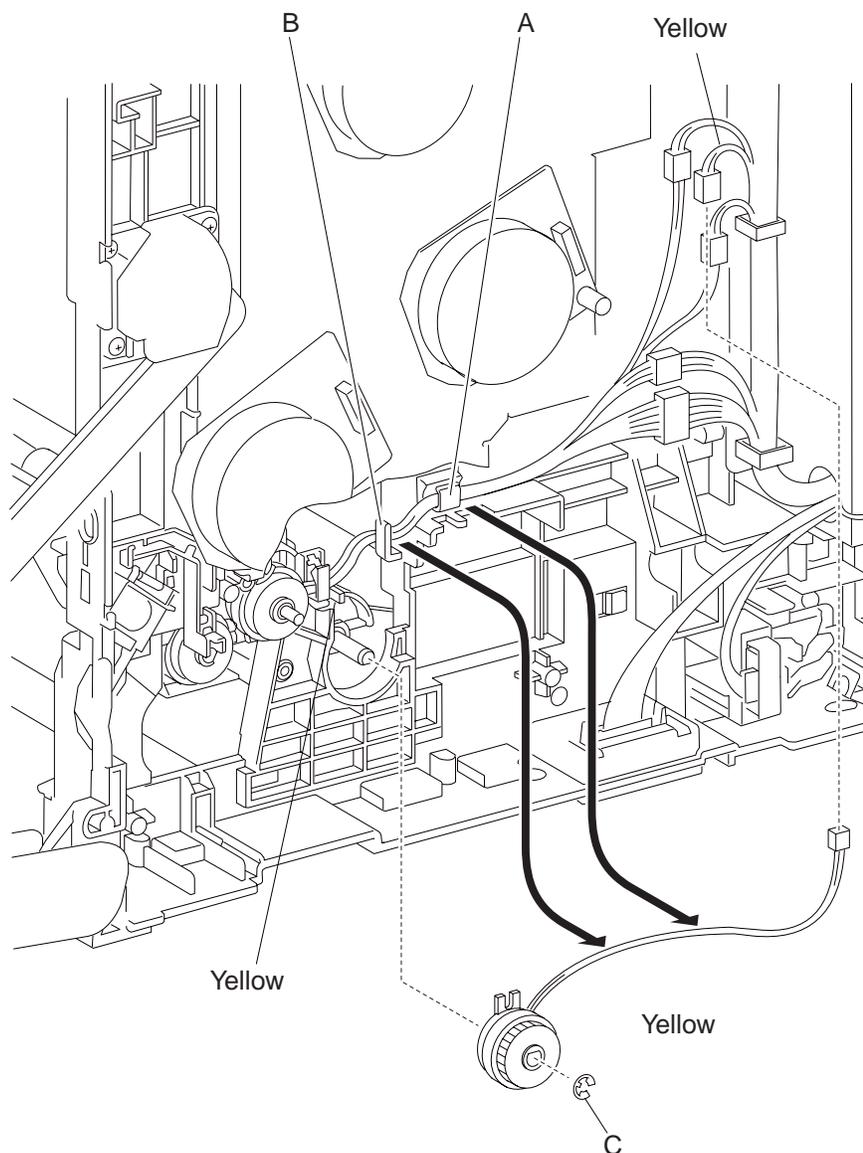


Installation

1. Align the two holes on the fax card with the two fax supports on the engine board so that the connectors on the fax card are visible from the square holes on the engine board cage.
2. Secure the fax card with the two screws (silver, 6mm).

Feed clutch removal

1. Open the front cover assembly.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner right pole cover. See **"Inner right pole cover removal"** on page 5-17.
6. Remove the right pole cover. See **"Right pole cover removal"** on page 5-25.
7. Remove the right cover. See **"Right cover removal"** on page 5-23.
8. Remove the feed drive assembly. **"Feed drive assembly removal"** on page 5-75.
9. Disconnect the connector (P/J235) of the feed clutch.
Note: Leave the junction connector on the printer side cable.
10. Release the harness (yellow) of the feed clutch assembly from the clamp and the hook on the frame of the printer.
11. Remove the E-ring that fixes the feed clutch assembly to the paper feed assembly.



12. Remove the feed clutch assembly from the paper feed assembly.

Installation

When replacing the clutches, match the harness color of the clutch with that of the fitting groove of the clutch.

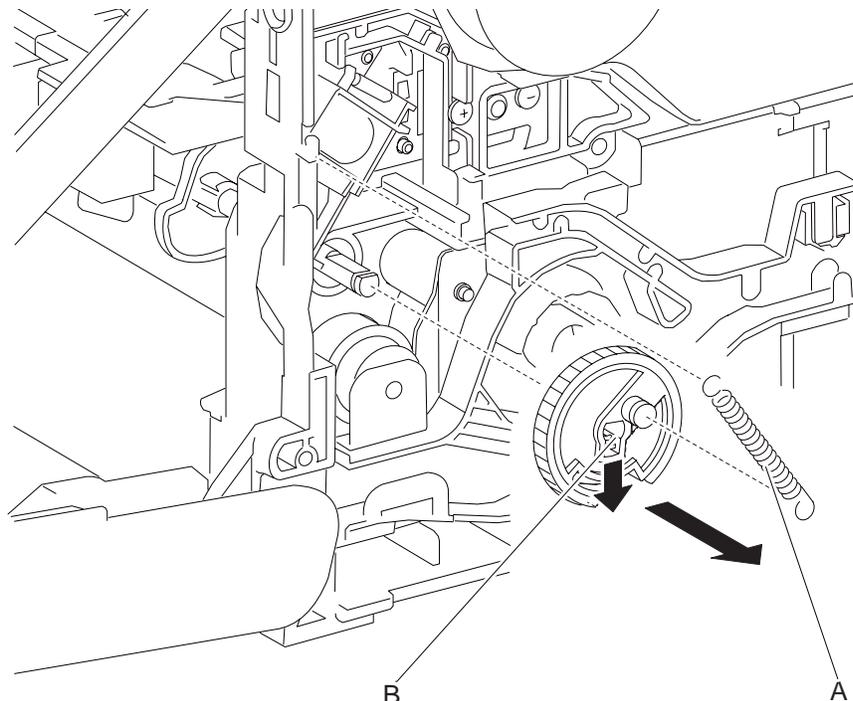
Harness name	Harness and groove color
Registration clutch harness assembly	Gray
Feed clutch harness assembly	Yellow
Turn clutch harness assembly	Blue

1. Insert the feed clutch into the feed shaft, and attach the feed clutch by placing its concave section in the positioning rib (yellow) provided on the paper feed assembly frame.
2. Secure the feed clutch to the paper feed assembly using an E-ring.
3. Route the harness (yellow) of the feed clutch to the hook provided on the printer frame and fix it with a clamp. When engaging the connectors of the clutches, match the color of the clutch harness with that of the harness on the printer side.
4. Engage the connector (P/J235) of the feed clutch.

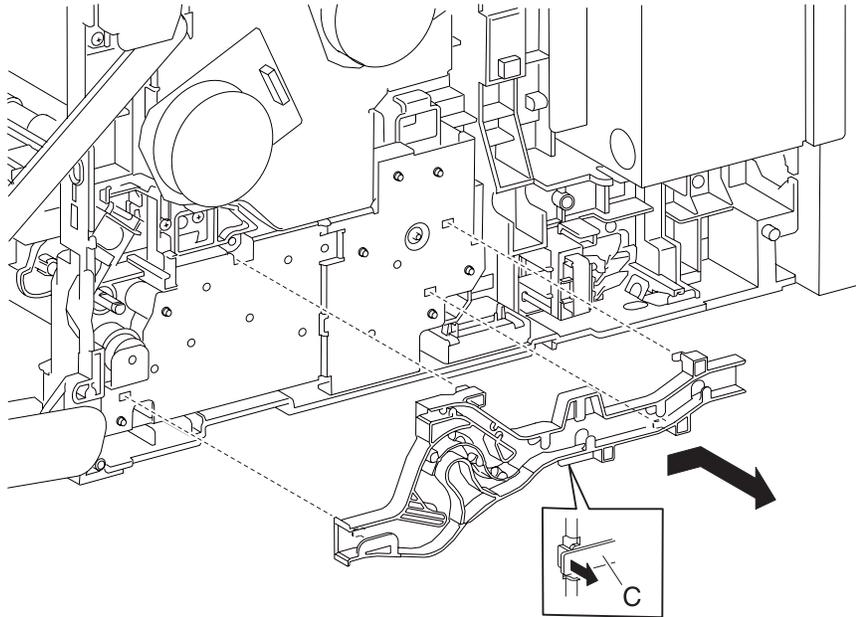
Feed drive assembly removal

For the 250-sheet tray.

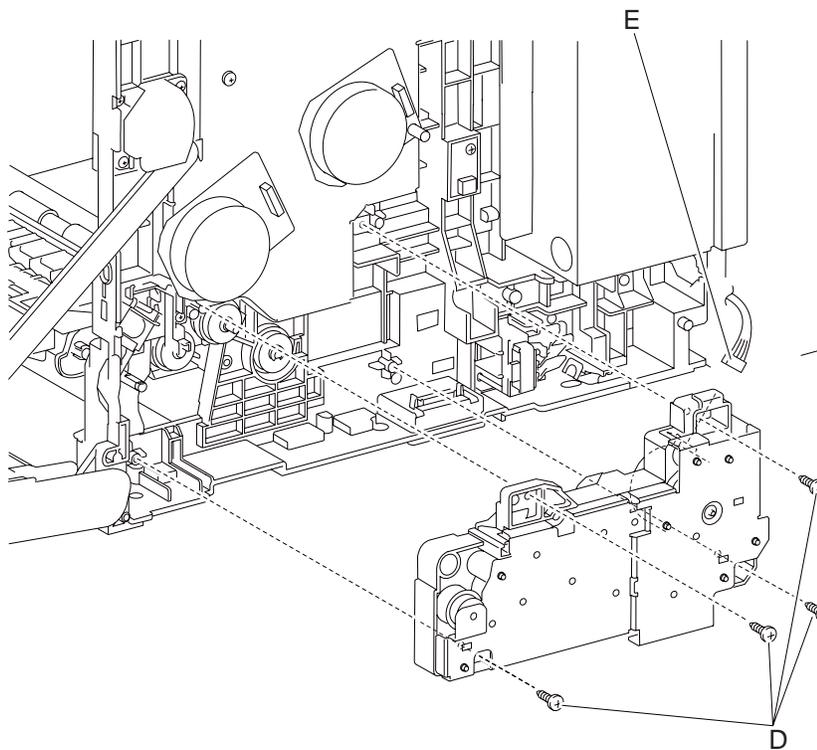
1. Open the front cover.
2. Remove the fuser. See **“Fuser removal” on page 5-78.**
3. Remove the rear cover. See **“Rear cover removal” on page 5-22.**
4. Remove the bottom cover. See **“Bottom cover removal” on page 5-8.**
5. Remove the inner right pole cover. See **“Inner right pole cover removal” on page 5-17.**
6. Remove the right pole cover. See **“Right pole cover removal” on page 5-25.**
7. Remove the right cover. See **“Right cover removal” on page 5-23.**
8. Remove the MP feeder feed spring (A) from the printer.
9. Remove the MP feeder gear from the MP feeder shaft by releasing the hook (B) on the MP feeder gear.
10. Remove all the harnesses from the feed drive duct. Note the routing for reinstallation.



- 11.** Remove the feed drive duct from the feed drive assembly by releasing the hook (C) on the feed drive duct and moving it slightly backward.



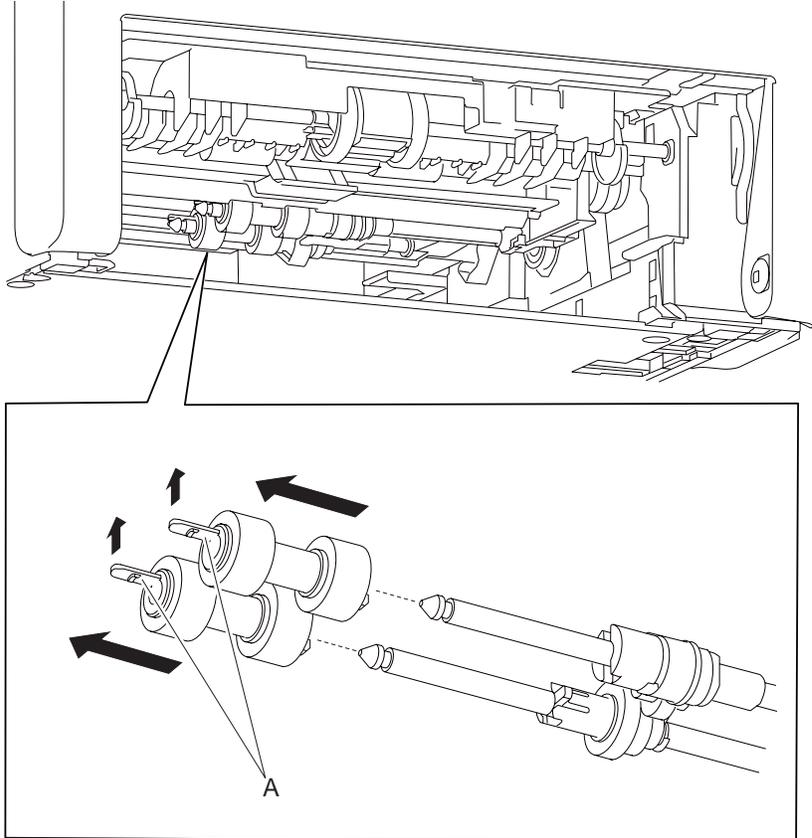
- 12.** Remove the four screws (D) (silver, tap, 10mm) that attach the feed drive assembly to the printer.
13. Remove the feed drive assembly from the printer far enough to access the cable harness.
14. Disconnect the connector (E) (P/J251) of the feed drive assembly
15. Remove the paper feed assembly.



Feed roll kit removal—250-sheet tray assembly

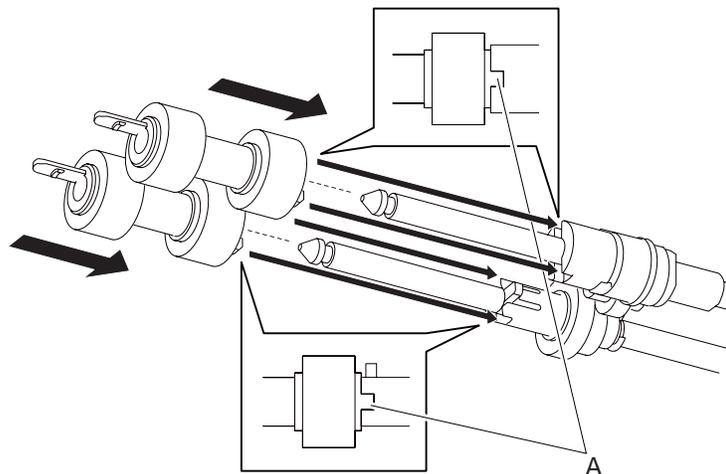
This FRU is the same as the 550-sheet feeder feed roll kit.

1. Remove the 250-sheet tray from the printer.
2. Release the hooks (A) of the feed rolls and remove the feed rolls from the shafts.



Installation

1. Slide the feed rolls onto the shafts so that the lugs on the feed rolls are aligned with the notches on the pick roll gear assembly and clutch one-way feed.
2. Lock the hooks on the other end of the feed rolls into the grooves on the shafts.



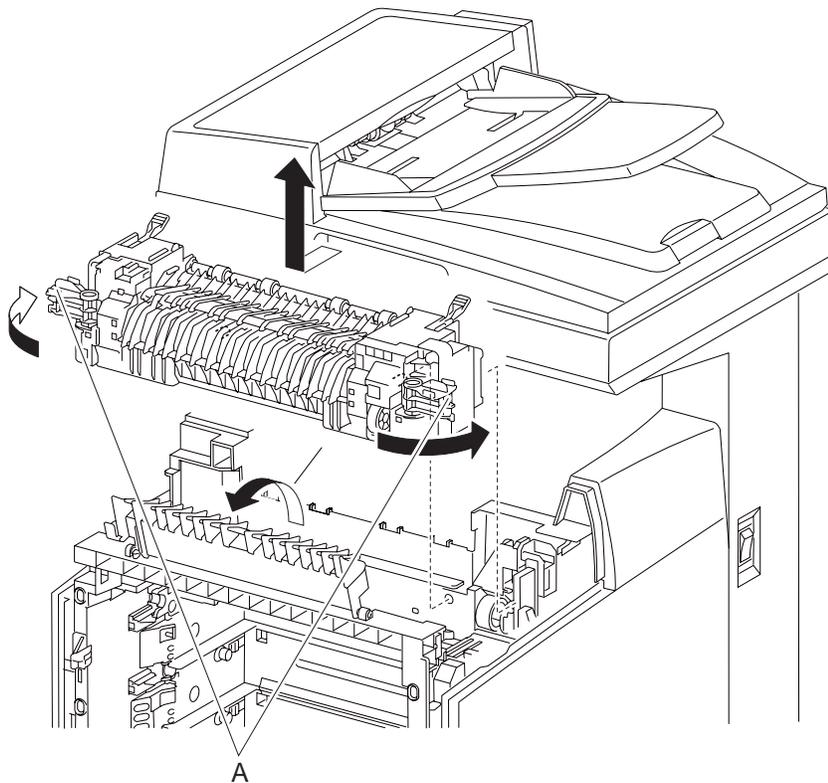
3. Reinstall the 250-sheet tray.

Fuser removal

	<p>CAUTION</p> <p>The fuser is very hot. Take added care not to get burned when performing the service operation.</p>
---	--

The fuser is not a FRU.

1. Open the front cover.
2. Open the duplex gate.
3. Release the lock by rotating the left and right levers (A) of the fuser to the outside direction.
4. Disengage the bosses and disconnect the connector (P/J171) of the fuser by moving the fuser slightly toward you.
5. Remove the fuser upward.



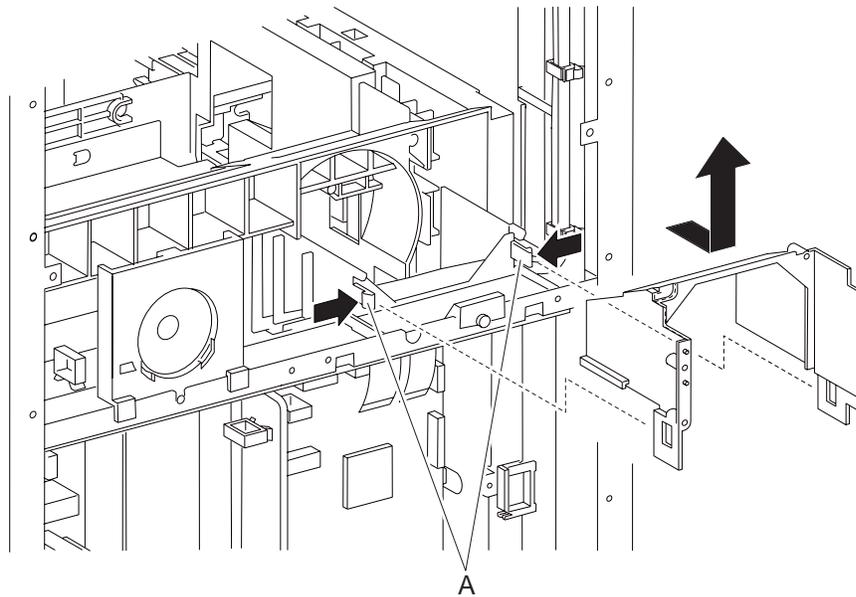
Installation

1. Place the fuser on the MP feeder.
2. Insert the two rear side bosses of the fuser into the holes on the printer by moving the fuser slightly backward, engage the connector (P/J171) of the fuser.
3. Rotate the left and right levers of the fuser inward.
4. Close the duplex gate.
5. Close the front cover.

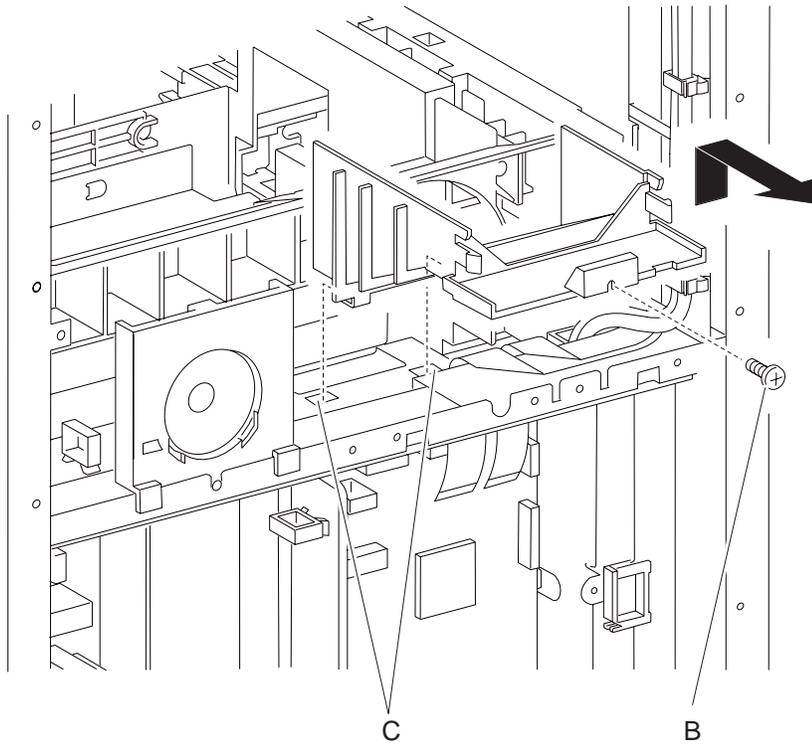
High-voltage power supply (HVPS) removal



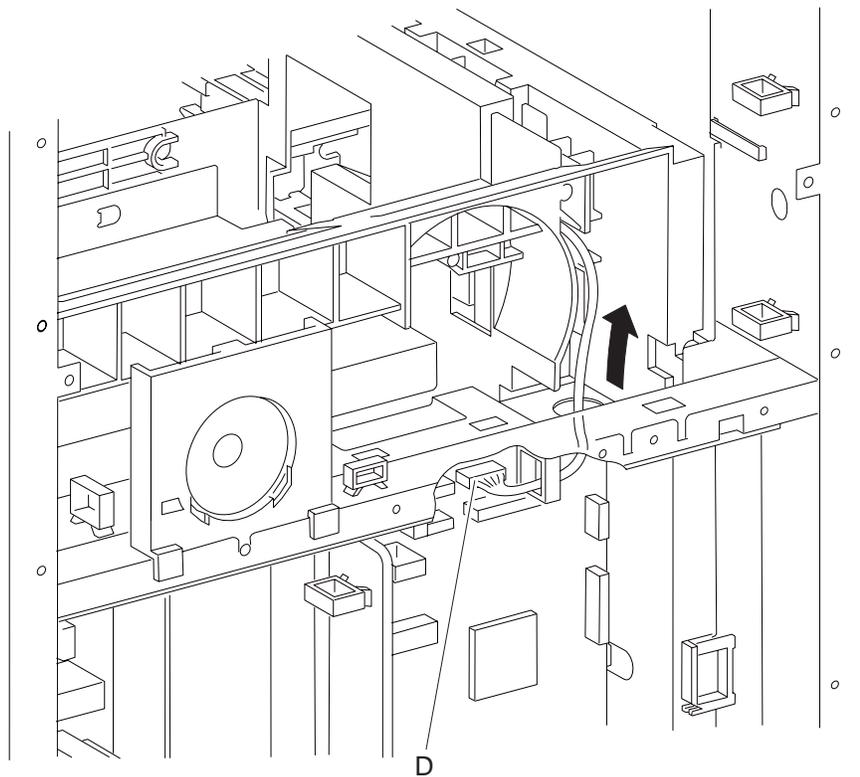
1. Open the front cover.
 2. Remove the fuser. See **“Fuser removal” on page 5-78.**
 3. Remove the rear cover. See **“Rear cover removal” on page 5-22.**
 4. Remove the bottom cover. See **“Bottom cover removal” on page 5-8.**
 5. Remove the inner right pole cover. See **“Inner right pole cover removal” on page 5-17.**
 6. Remove the right pole cover. See **“Right pole cover removal” on page 5-25.**
 7. Remove the right cover. See **“Right cover removal” on page 5-23.**
 8. Remove the inner left cover. See **“Inner left pole cover removal” on page 5-16.**
 9. Remove the left pole cover. See **“Left pole cover removal” on page 5-20.**
 10. Remove the left cover. See **“Left cover removal” on page 5-18.**
 11. Remove the top cover. See **“Top cover removal” on page 5-26.**
 12. Remove the RIP board cage. See **“RIP board cage removal” on page 5-128.**
 13. Remove the engine board cage. See **“Engine board cage removal” on page 5-66.**
 14. Remove the fan. See **“Fan assembly removal” on page 5-71.**
- Note:** It is not necessary to remove the connector and harness of the fan.
15. Release the two hooks (A) of the duct lower that attach the duct upper, and then slide the duct upper backward to remove it.



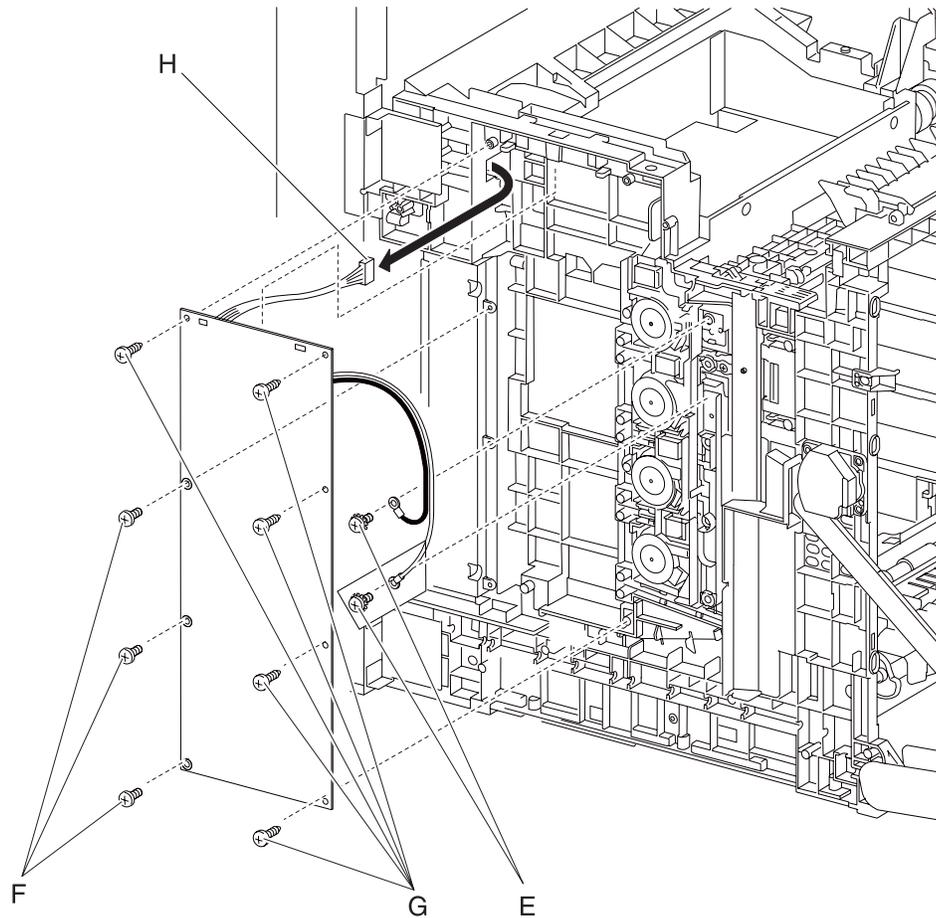
16. Remove the screw (B) (silver, 6mm) that attaches the duct lower to the MP feeder.
17. Release the two hooks on the bottom of the lower duct from the holes (C) of the printer, and remove the lower duct.



18. Disconnect the connector (D) (P/J16) of the high-voltage power supply from the controller board.



19. Remove the two screws (E) (silver, with washer, 6mm) that attach the two harnesses of the high-voltage power supply.
20. Remove the five screws (F) (silver, tap, 10mm) and the three screws (G) (silver, 6mm) that attach the high-voltage power supply to the printer.
21. Remove the high-voltage power supply by releasing the upper part of the high-voltage power supply from the two lugs on the printer.
22. Pull out the connector (H) of the high-voltage power supply from the hole on the printer.



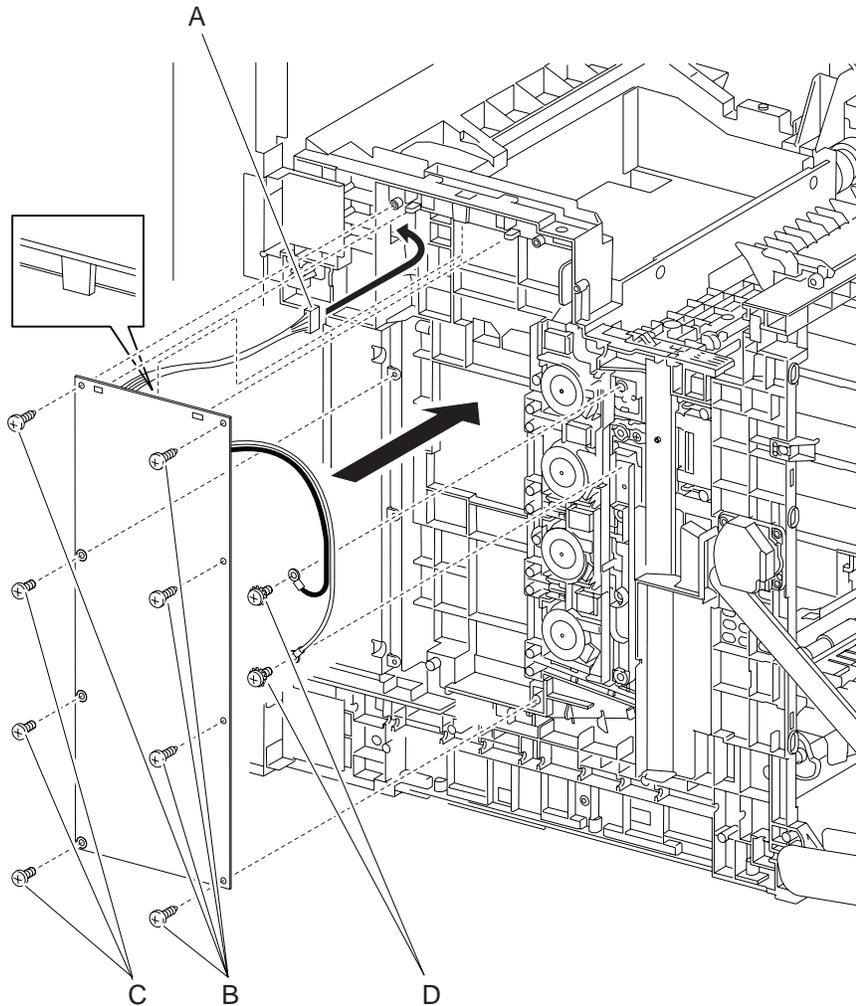
Installation

1. Pass the connector (A) of the high-voltage power supply (HVPS) through the hole on the printer.
2. Replace the high-voltage power supply by aligning the two holes on the upper part of the high-voltage power supply with the bosses on the printer and inserting the upper part of the high-voltage power supply into the backside tab on the printer.
3. Secure the high-voltage power supply (HVPS) with the five screws (B) (silver, tap, 10mm) and the three screws (C) (silver, 6mm).

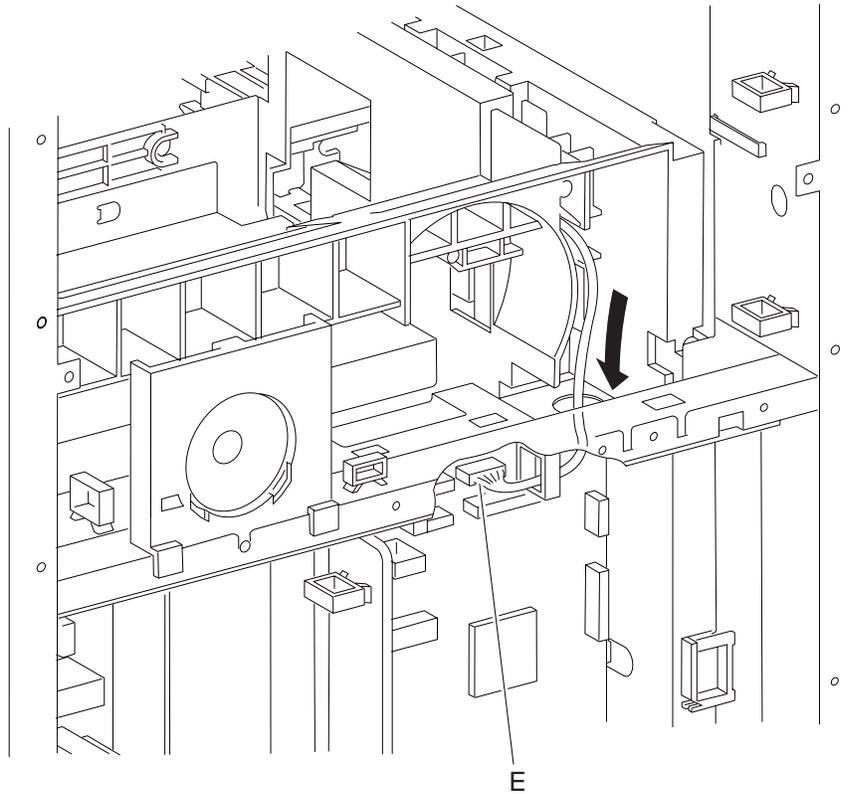
Note: Use the three 6mm silver screws on the white bearing surfaces.

4. Secure the two harnesses of the high-voltage power supply (HVPS) using the two screws (D) (silver, with washer, 6mm).

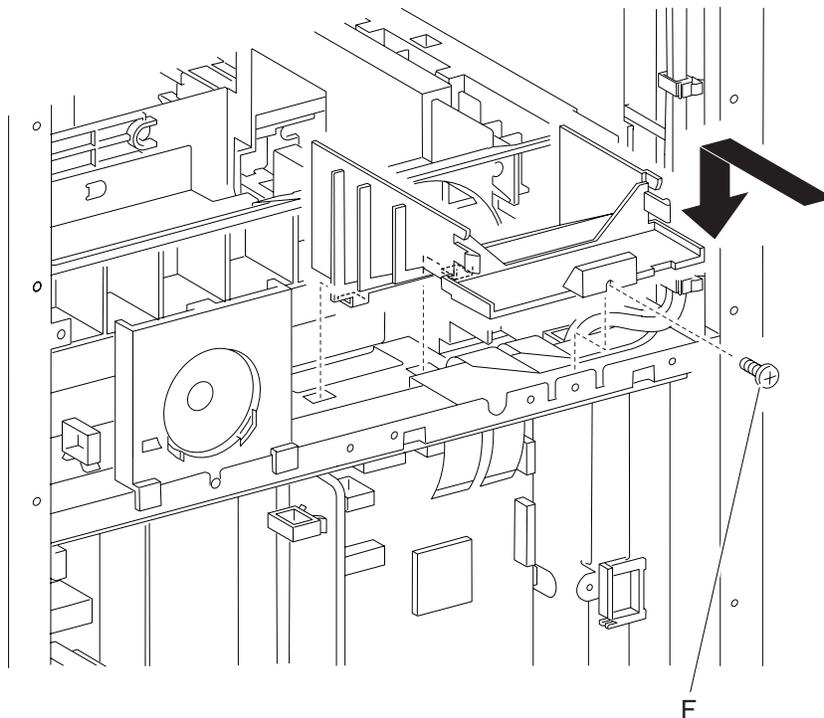
Note: The red harness goes on the upper side and the white harness on the lower side.



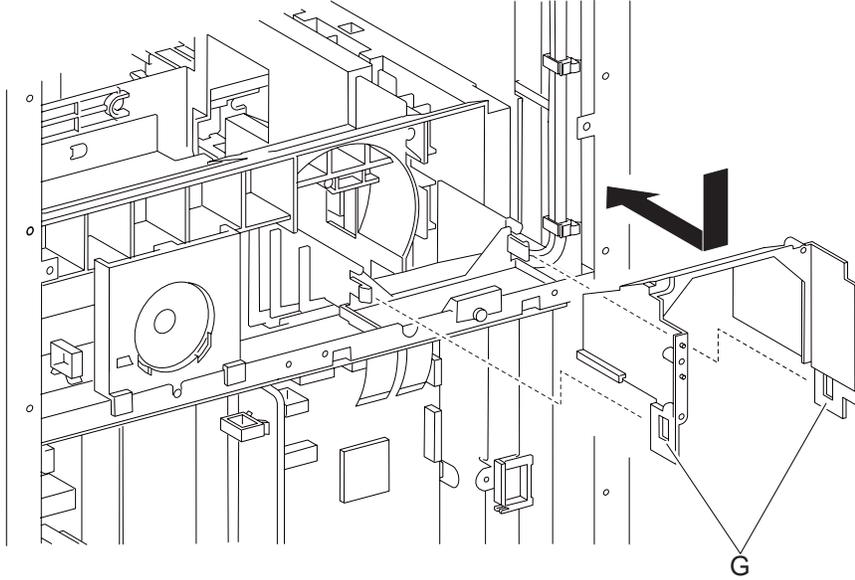
5. Route the harness of the high-voltage power supply through the hole of the printer.
6. Connect the connector (E) (P/J16) of the high-voltage power supply to the connector of the controller board.



7. Insert the two hooks of the duct lower into the hole of the printer, and then replace the duct lower to the printer.
8. Secure the duct lower to the printer using the screw (F) (silver, 6mm).

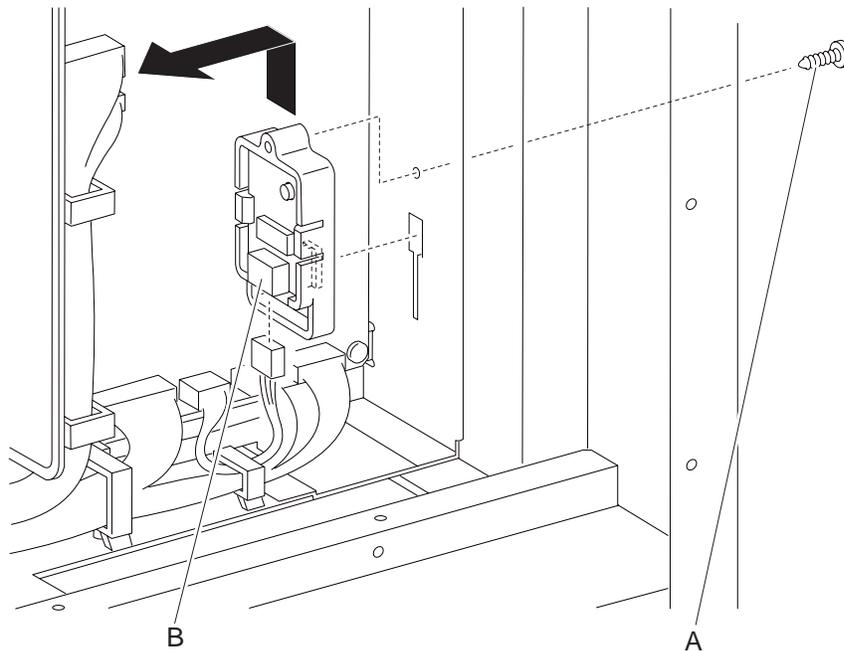


9. Place the upper duct on the lower duct. Slide the upper duct forward until the upper duct is hooked by the two hooks (G).

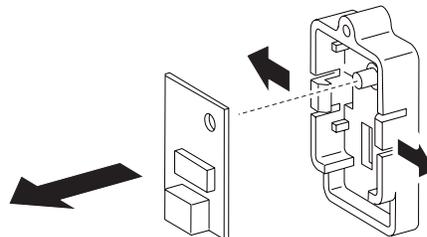


Humidity sensor removal

1. Open the front cover.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner left cover. See **"Inner left pole cover removal"** on page 5-16.
6. Remove the left pole cover. See **"Left pole cover removal"** on page 5-20.
7. Remove the left cover. See **"Left cover removal"** on page 5-18.
8. Remove the RIP board cage. See **"RIP board cage removal"** on page 5-128.
9. Remove the engine board cage. See **"Engine board cage removal"** on page 5-66.
10. Remove the screw (A) (silver, tap, 10mm) that attaches the humidity sensor bracket to the printer.
11. Remove the humidity sensor bracket together with the humidity sensor by sliding the humidity sensor bracket upward until its hooks are released from the holes on the printer.
12. Disconnect the connector (B) (P/J261) of the humidity sensor.

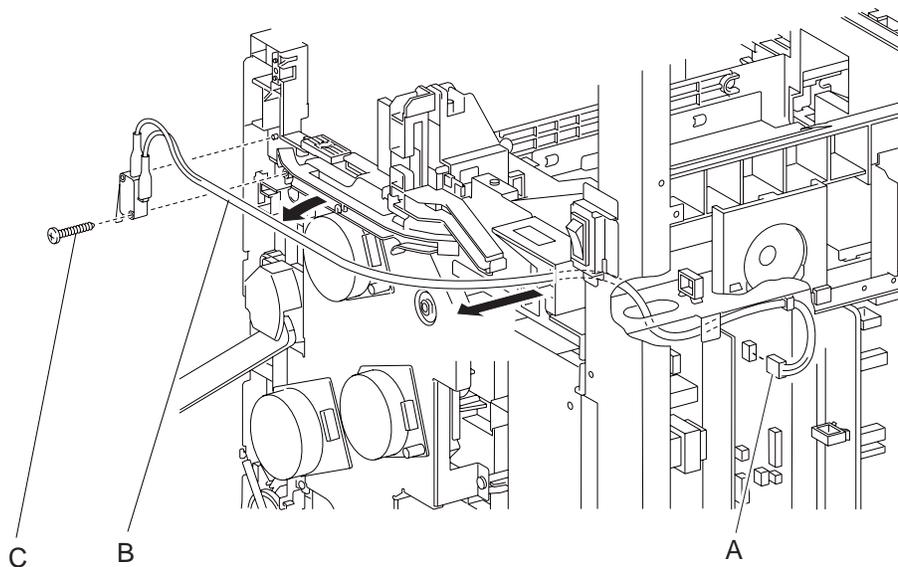


13. Remove the humidity sensor from the humidity sensor bracket by releasing the hooks on the humidity sensor bracket.



Interlock harness removal

1. Open the front cover.
2. Remove the fuser. See **"Fuser removal" on page 5-78.**
3. Remove the rear cover. See **"Rear cover removal" on page 5-22.**
4. Remove the bottom cover. See **"Bottom cover removal" on page 5-8.**
5. Remove the inner right pole cover. See **"Inner right pole cover removal" on page 5-17.**
6. Remove the right pole cover. See **"Right pole cover removal" on page 5-25.**
7. Remove the right cover. See **"Right cover removal" on page 5-23.**
8. Remove the inner left cover. See **"Inner left pole cover removal" on page 5-16.**
9. Remove the left pole cover. See **"Left pole cover removal" on page 5-20.**
10. Remove the left cover. See **"Left cover removal" on page 5-18.**
11. Remove the top cover. See **"Top cover removal" on page 5-26.**
12. Remove the RIP board cage. See **"RIP board cage removal" on page 5-128.**
13. Remove the engine board cage. See **"Engine board cage removal" on page 5-66.**
14. Disconnect the connector (A) (P/J44) of the interlock harness from the low-voltage power supply.
15. Release the cables of the interlock harness from the clamp and pull it out of the hole on the printer.
16. Remove the interlock harness (B) from the main drive cable guide.
17. Remove the screw (C) (silver, tap, 16mm) that attaches the interlock harness to the printer.
18. Remove the interlock harness.



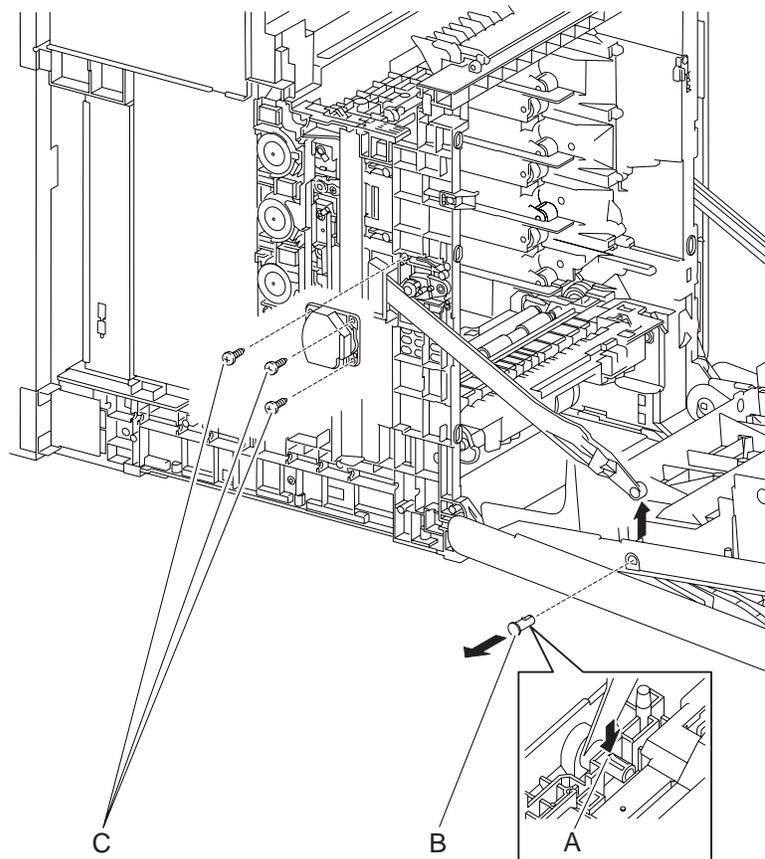
Installation

1. Replace the interlock harness by aligning the hole on the interlock harness with the boss on the printer.
2. Secure the interlock harness to the printer using the screw (silver, tap, 16mm).
3. Route the harness of the interlock harness to the main drive cable guide.
4. Route the harness of the interlock harness through the hole of the printer.
5. Engage the connector (P/J44) of the interlock harness to the low-voltage power supply.
6. Secure the harness of the interlock harness with the clamp.

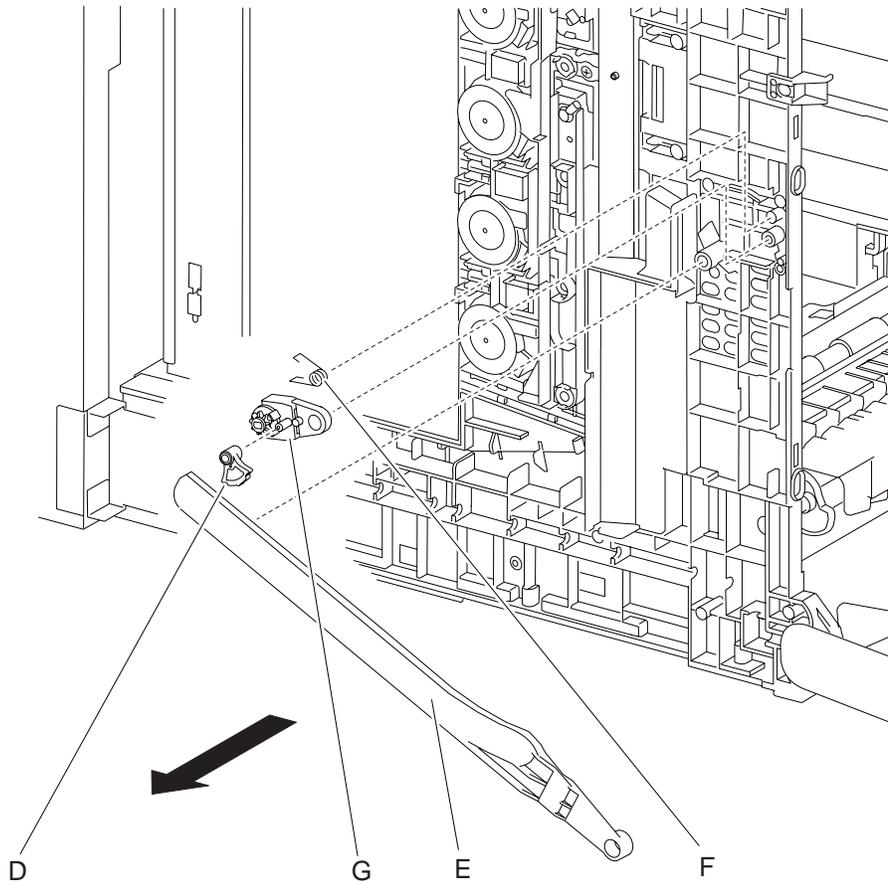
Left door link assembly removal

Also see **“Right door link assembly removal (18)”** on page 5-123.

1. Open the front cover
2. Remove the fuser. See **“Fuser removal”** on page 5-78.
3. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
4. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
5. Remove the inner left cover. See **“Inner left pole cover removal”** on page 5-16.
6. Remove the left pole cover. **“Left pole cover removal”** on page 5-20.
7. Remove the left cover. **“Left cover removal”** on page 5-18
8. Release the latch (A) of the pivot shaft that attaches the left door link to the front cover, and then remove the left door link from the front cover by pulling the pivot shaft (B) to the outside.
9. Remove the three screws (C) (silver, tap, 8mm) that attach the left link support to the printer.
10. Remove the left link support from the printer.



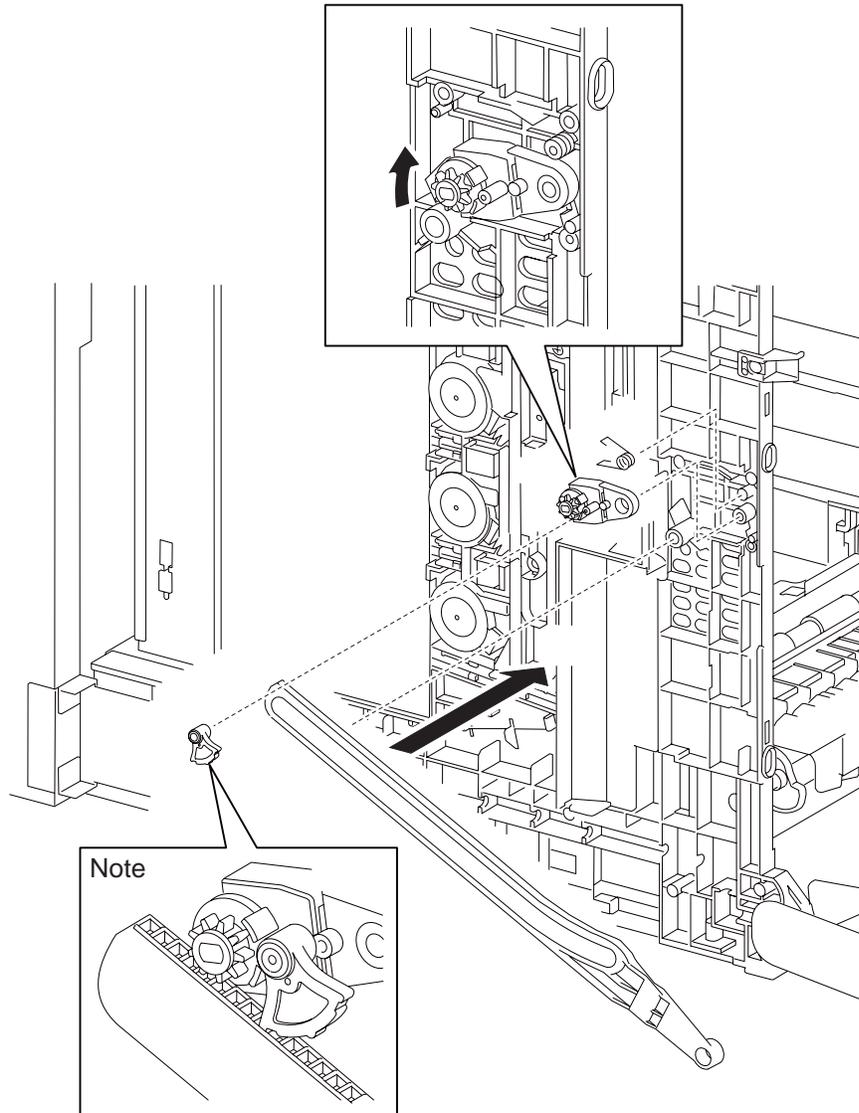
11. Remove the release lever (D) from the printer.
12. Remove the left link (E) from the printer.
13. Remove the spring support (F) from the printer.
14. Remove the damper holder (G) from the printer together with the oil damper.



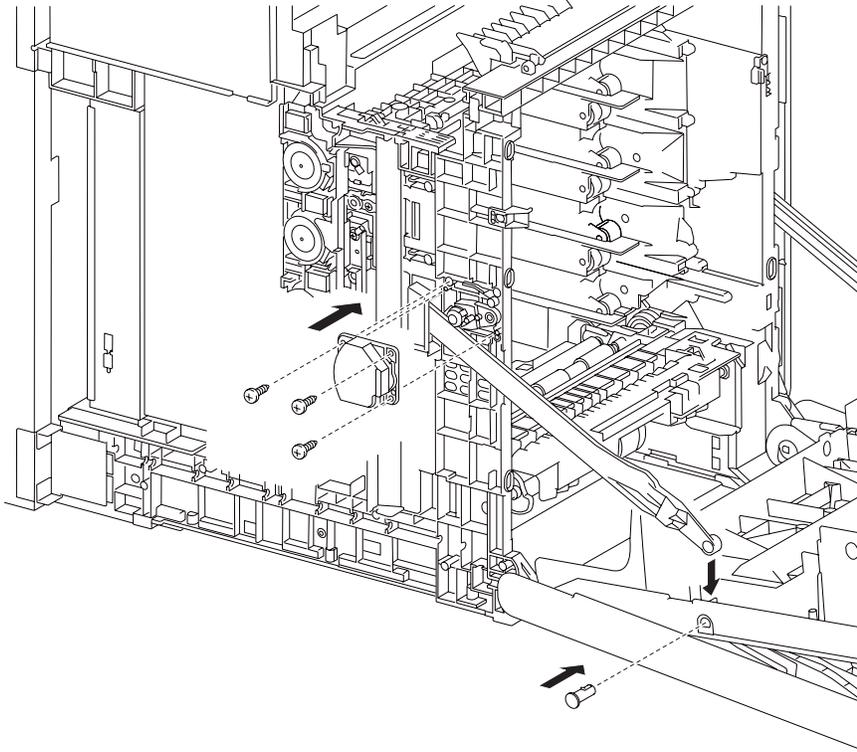
Installation notes

1. Replace the damper holder to the printer together with the oil damper.
2. Replace the spring support to the printer.
3. Replace the left door link by aligning the backside groove on the left door link with the boss on the printer, and pulling the oil damper slightly upward.
4. Replace the lever release to the holder damper.

Note: Pay attention to the orientation of the release lever. Make sure that the longer hollow boss of the release lever faces the damper holder.



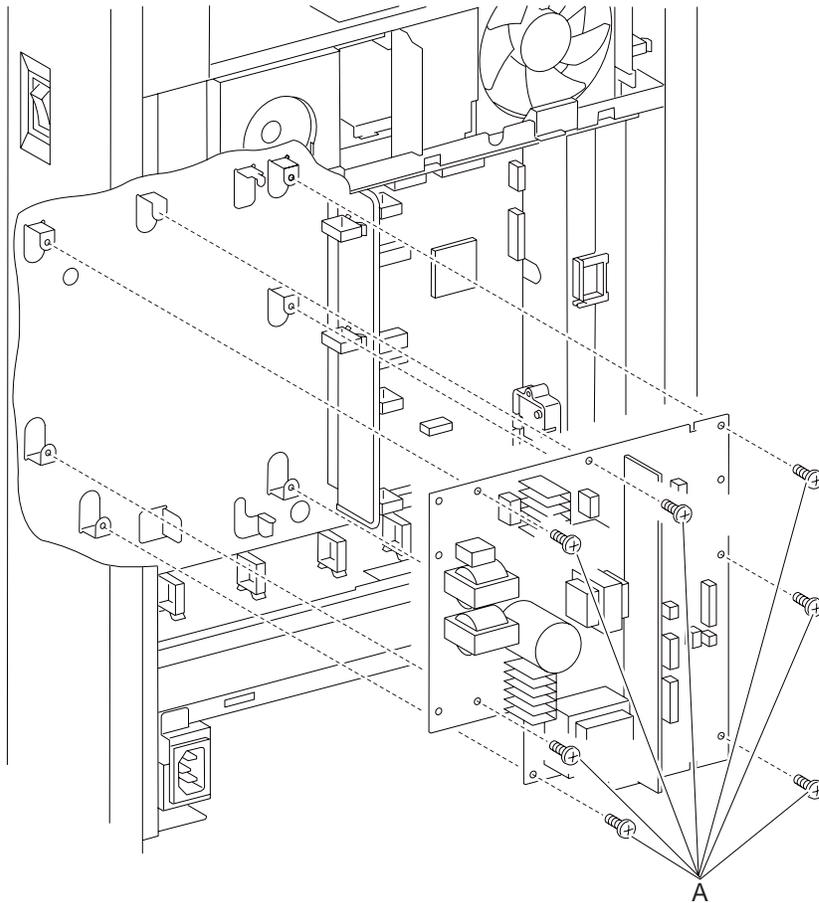
5. Replace the left link support by aligning the two holes of the left link support with the bosses on the printer.
6. Secure the left link support using the three screws (silver, tap, 8mm).
7. Align the fitting hole on the left door link with the left side fitting hole on the front cover. Insert the pivot shaft and secure with the hook.



Low-voltage power supply (LVPS) removal



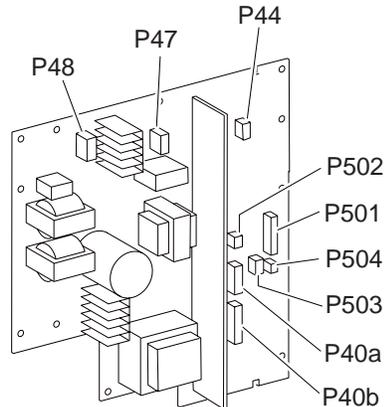
1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner left cover. See **“Inner left pole cover removal”** on page 5-16.
4. Remove the left pole cover. See **“Left pole cover removal”** on page 5-20.
5. Remove the RIP board cage. See **“RIP board cage removal”** on page 5-128.
6. Remove the engine board cage. See **“Engine board cage removal”** on page 5-66.
7. Disconnect all the connectors of the low-voltage power supply.
8. Remove the seven screws (A) (silver, 6mm) that attach the low-voltage power supply to the printer.



9. Remove the low-voltage power supply from the printer.

Installation

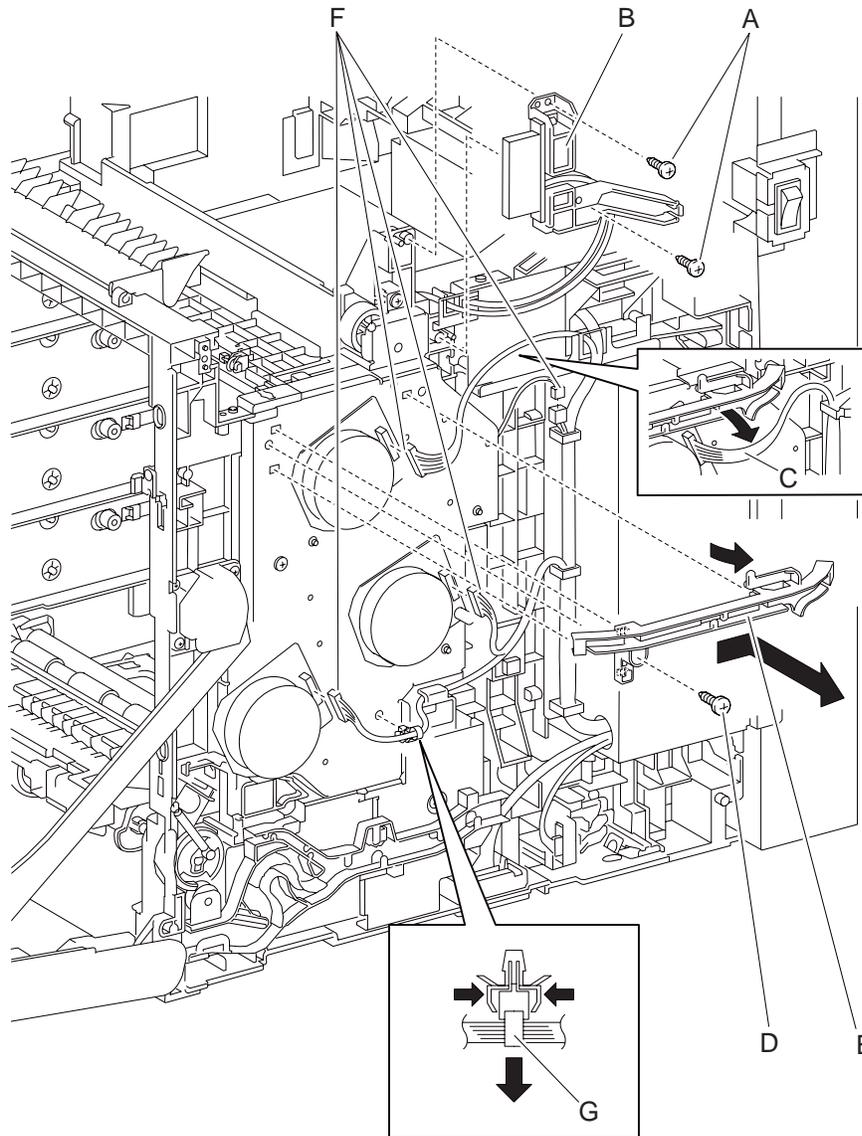
1. Align the two notches of the low-voltage power supply with the hooks of the printer, and replace the low-voltage power supply in the printer.
2. Secure the low-voltage power supply to the printer using the seven screws (silver, 6mm).
3. Engage all the connectors of the low-voltage power supply.



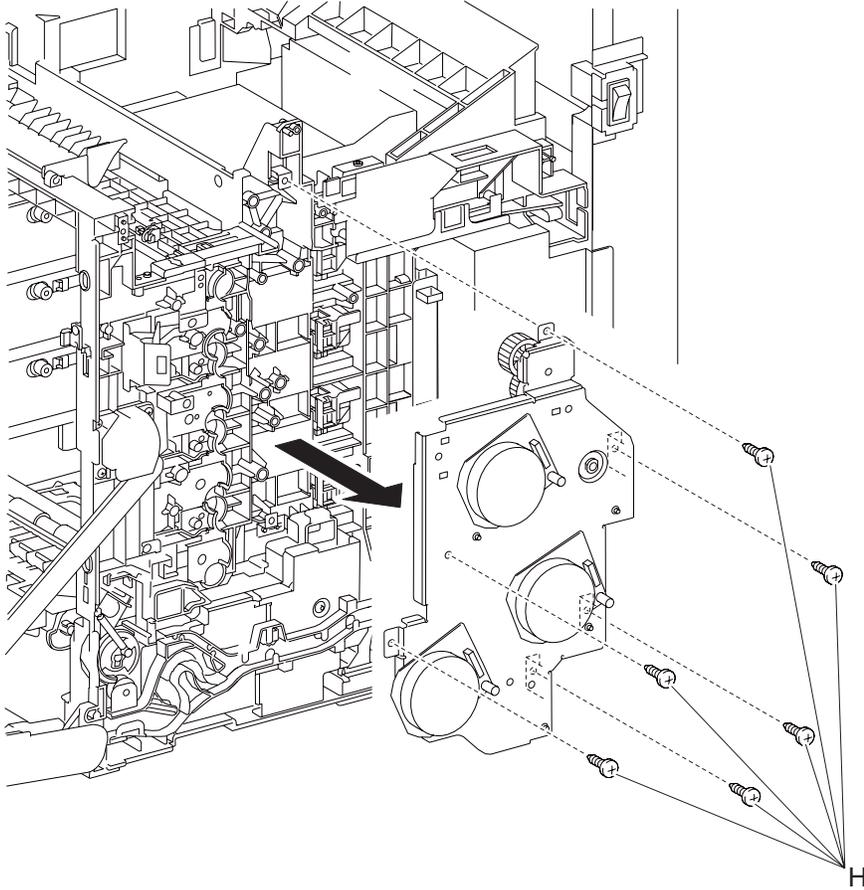
Main drive removal

1. Open the front cover.
 2. Remove the fuser. See **"Fuser removal" on page 5-78.**
 3. Remove the rear cover. See **"Rear cover removal" on page 5-22.**
 4. Remove the bottom cover. See **"Bottom cover removal" on page 5-8.**
 5. Remove the inner right pole cover. See **"Inner right pole cover removal" on page 5-17.**
 6. Remove the right pole cover. See **"Right pole cover removal" on page 5-25.**
 7. Remove the right cover. See **"Right cover removal" on page 5-23.**
 8. Remove the inner left cover. See **"Inner left pole cover removal" on page 5-16.**
 9. Remove the left pole cover. See **"Left pole cover removal" on page 5-20.**
 10. Remove the left cover. See **"Left cover removal" on page 5-18.**
 11. Remove the top cover. See **"Top cover removal" on page 5-26.**
 12. Remove the interlock harness. See **"Interlock harness removal" on page 5-86.**
- Note:** It is not necessary to disconnect the connector of the interlock harness.

13. Remove the two screws (A) (silver, tap, 10mm) that attach the fuser bracket to the printer.
14. Remove the fuser bracket (B) from the printer.
Note: Be careful not to move the fuser bracket from the printer too far because it is connected with the cable harness.
15. Release the main drive harness (C) from the main drive cable guide.
16. Remove the screw (D) (silver, tap, 10mm) that attaches main drive to the printer.
17. Remove the main drive cable guide (E) from the main drive by releasing the tabs on the main drive cable guide, and sliding the main drive cable guide backward.
18. Disconnect the four connectors (F) (P/J211, P/J221, P/J222, and P/J2761) from the main drive.
19. Remove the harness (G) from the main drive together with the clamp.



20. Remove the six screws (H) (silver, tap, 10mm) that attach the main drive to the printer.
21. Remove the main drive from the printer.



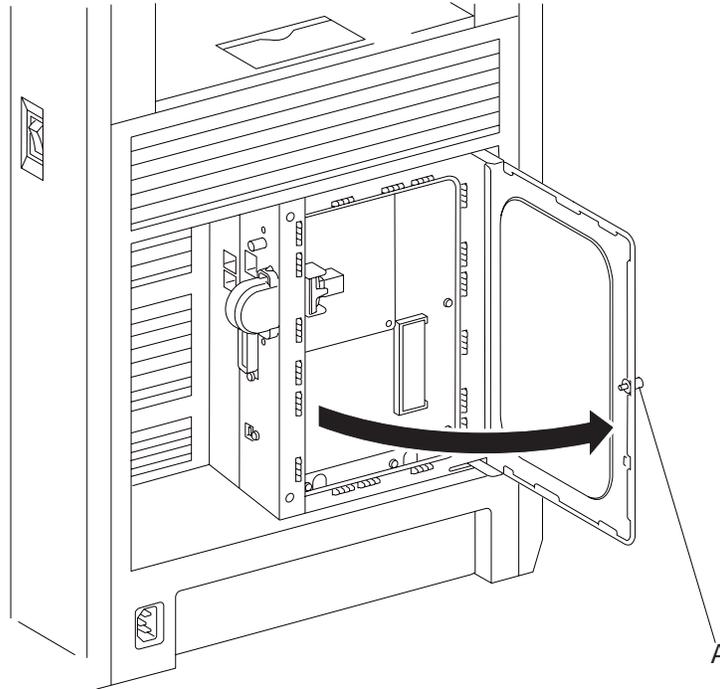
Installation

1. Replace the main drive by aligning the gear of each drive of the main drive with the holes on the printer.
2. Secure the main drive to the printer using the six screws (silver, tap, 10mm).
3. Replace the clamp and harness together to the main drive.
Note: The harness of the connector to be attached to the developer motor must be routed through the hook above the feed drive assembly.
4. Engage the connector (P/J211) of the main motor, the connector (P/J221) of the sub motor, the connector (P/J222) of the developer motor, and the connector (P/J2761) of the exit clutch in the main drive.
5. Replace the main drive cable guide by aligning its three hooks into the holes on the main drive, and lock the bosses by sliding the main drive cable guide forward.
6. Replace the remaining screw (silver, tap, 10mm) that attaches the main drive to the printer.
7. Route the main drive harness through the main drive cable guide.
8. Replace the fuser bracket by aligning its two holes with the bosses on the printer.
9. Secure the fuser bracket using the two screws (silver, tap, 10mm).

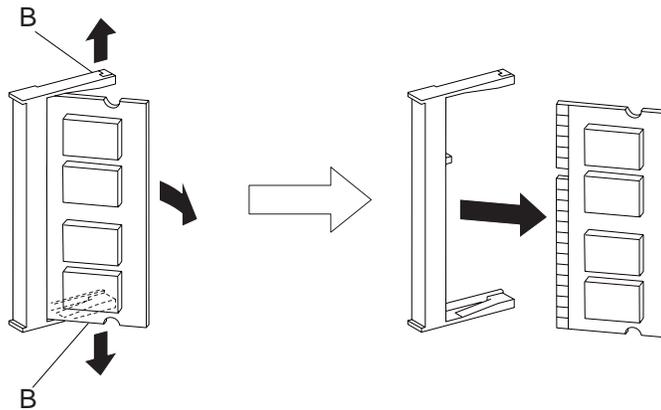
Memory card removal

Warning: Use a wristband to protect the memory card from electrostatic damage. See **“Handling ESD-sensitive parts”** on page 5-1.

1. Loosen the knurling screw (A), and then open the RIP board shield window.



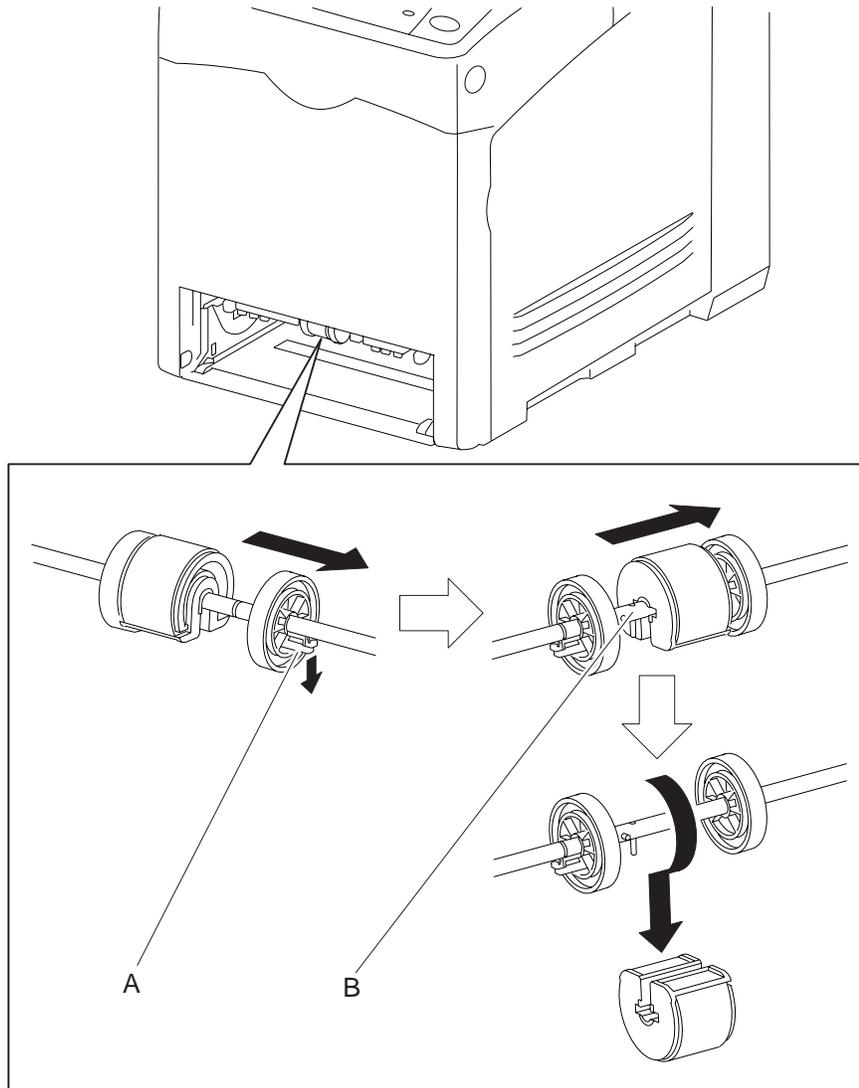
2. Gently spread open both the tabs (B) on the socket holding the memory card until the memory card *snaps* up slightly.



3. Remove the memory card.

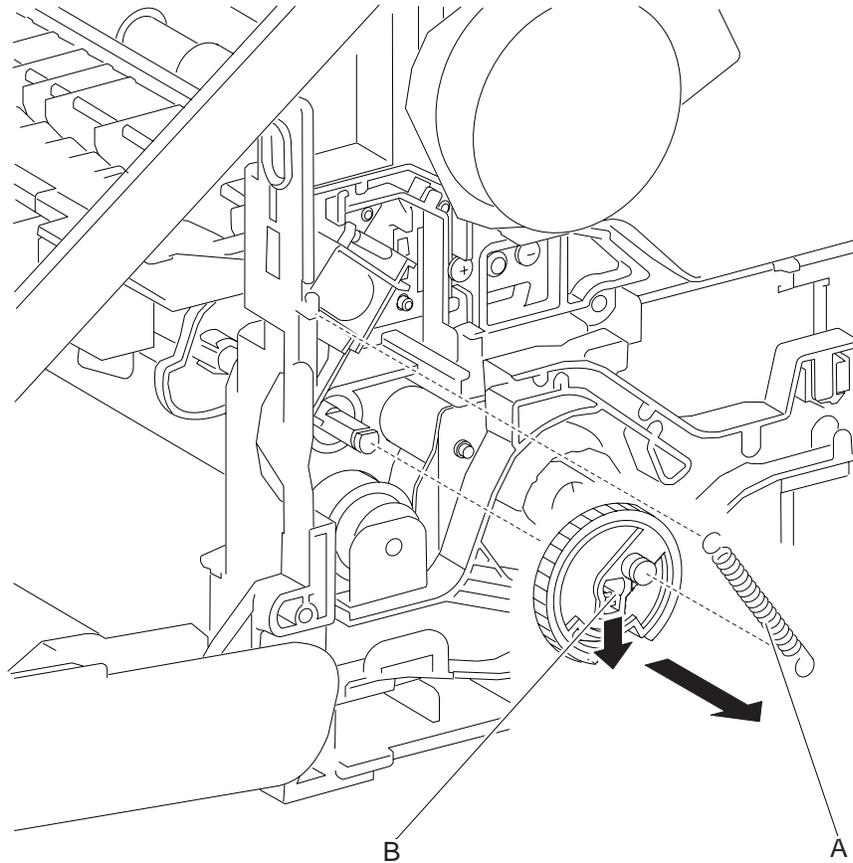
MP feeder feed roll removal

1. Remove the 250-sheet tray from the printer.
2. Release the hook (A) on the MP feeder feed roll on the right of the MP feeder roll, and slide the MP feeder feed roll to the right.
3. Slide the MP feeder feed roll to the right to release the groove on the MP feeder feed roll from the vertical pin (B) mounted on the MP feeder shaft.
4. Remove the MP feeder roll from the MP feeder shaft by rotating the MP feeder feed roll 180°.

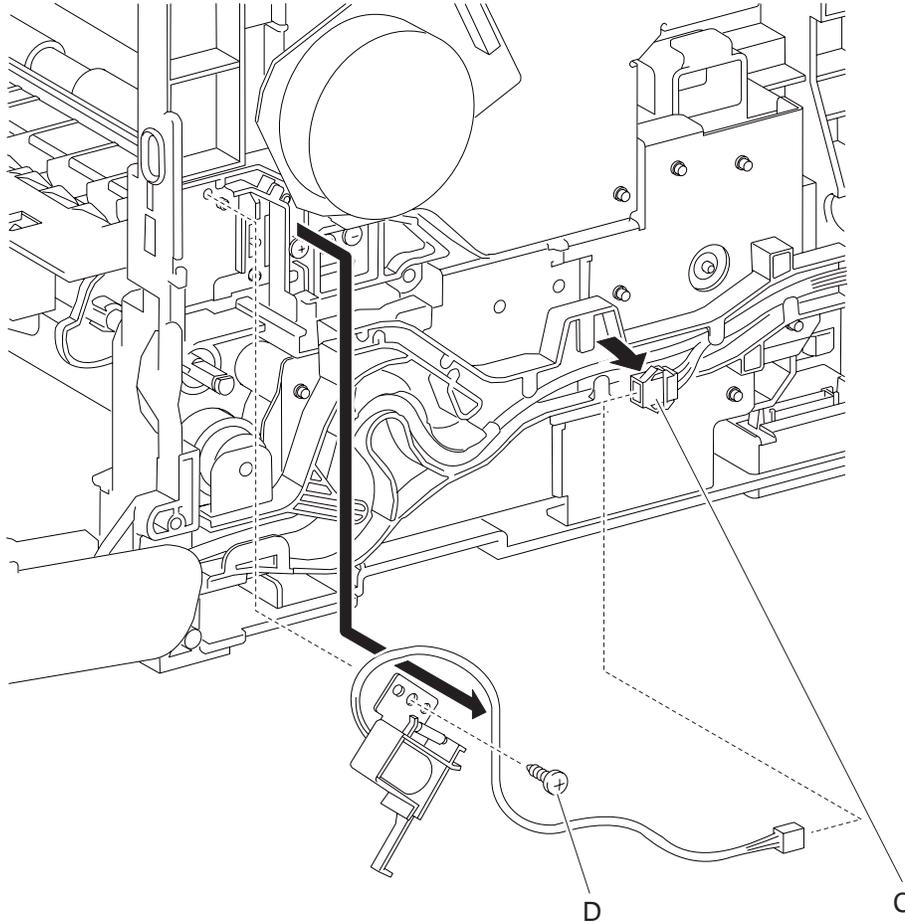


MP feeder feed solenoid removal

1. Open the front cover.
2. Remove the fuser. See **“Fuser removal”** on page 5-78.
3. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
4. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
5. Remove the inner right pole cover. See **“Inner right pole cover removal”** on page 5-17.
6. Remove the right pole cover. **“Right pole cover removal”** on page 5-25.
7. Remove the right cover. **“Right cover removal”** on page 5-23.
8. Remove the MP feeder feed spring (A) from the printer.
9. Remove the MP feeder gear from the MP feeder shaft by releasing the hook (B) on the MP feeder gear.



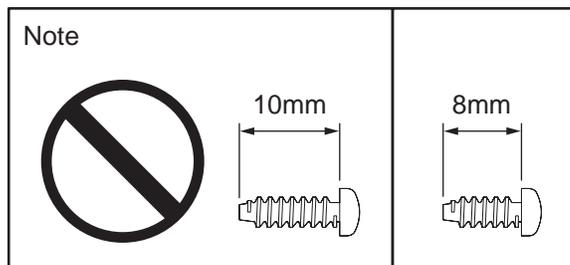
10. Leave the junction connector on the printer side cable, and disconnect the connector (C) (P/J256) of the MP feeder feed solenoid.
11. Remove the harness of the MP feeder feed solenoid from the MFP solenoid duct and feed drive duct.
12. Remove the screw (D) (silver, tap, 8mm) that attaches the MP feeder feed solenoid to the printer.



13. Remove the MP feeder feed solenoid from the printer.

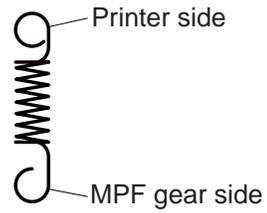
Installation

1. Replace the MP feeder feed solenoid to the printer by aligning the two holes on the MP feeder feed solenoid with the bosses on the printer.
2. Secure the MP feeder feed solenoid to the printer using the screw (silver, tap, 8mm).
Warning: Be sure to use the 8mm screws to secure the MP feeder feed solenoid. Using 10mm screws may damage the frame.



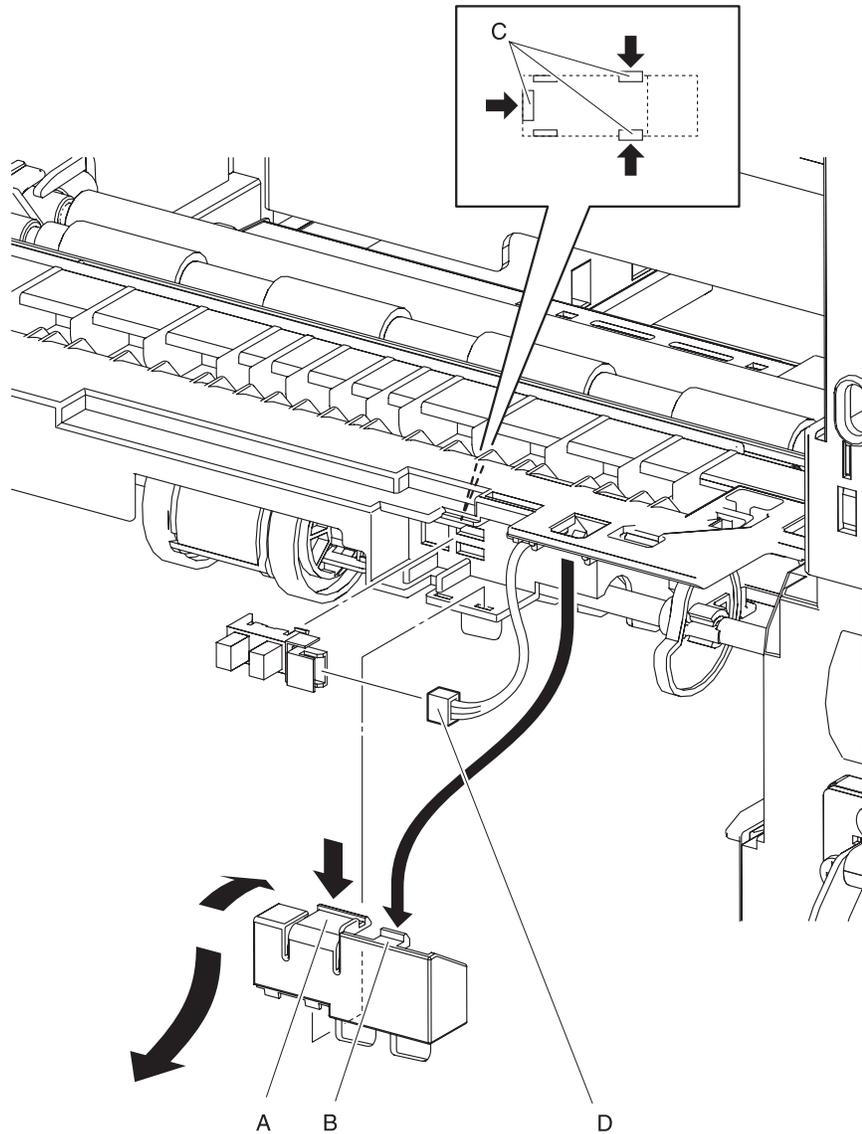
3. Route the harness of the MP feeder feed solenoid to the duct MP feeder solenoid and feed drive duct.

4. Connect the connector (P/J256) of the MP feeder feed solenoid.
Note: The harness color of the MP feeder feed solenoid (gray) does not match that of the printer harness (yellow).
5. Replace the MP feeder gear to the MP feeder shaft and lock the hook on the MP feeder gear into the groove on the MP feeder shaft.
Note: It is easier to put the D-cut surface of the MP feeder shaft on the top.
6. Anchor the MP feeder feed spring to the printer and MP feeder gear.
Note: Attach the hyper-elliptic side of the MP feeder feed spring to the MP feeder gear.



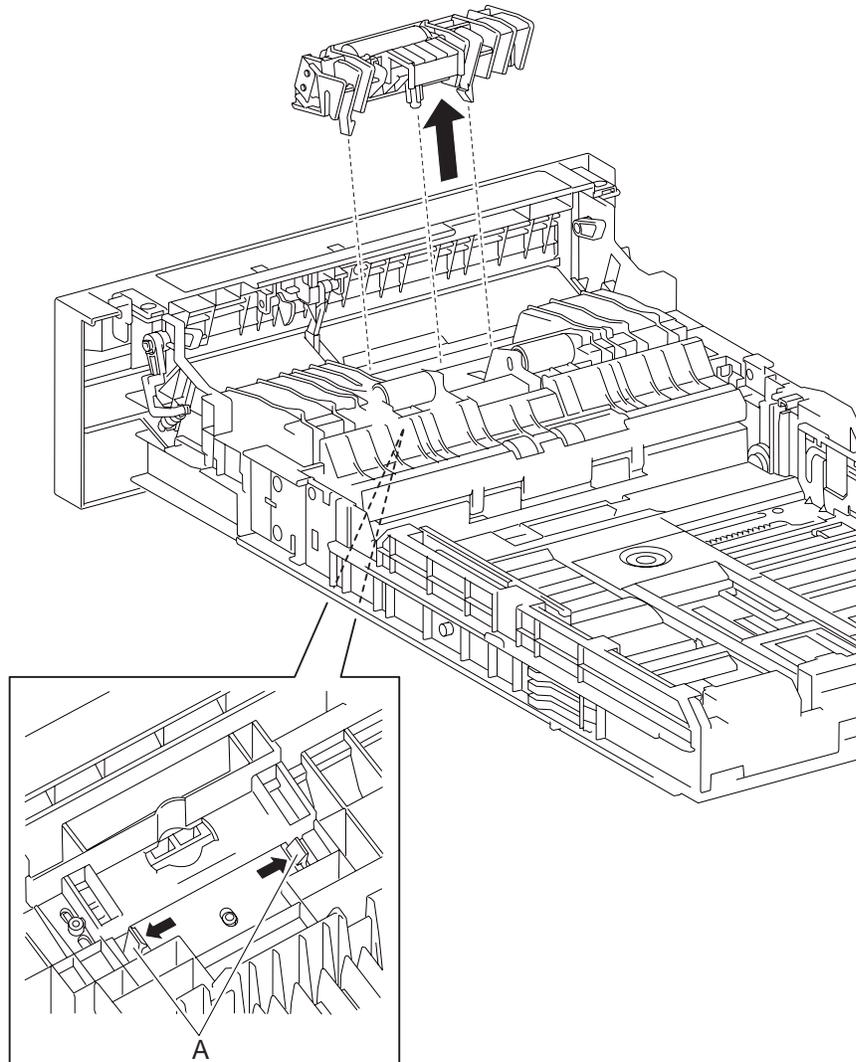
MP feeder no paper sensor removal

1. Remove the 250-sheet tray assembly.
2. Open the front cover assembly.
3. Remove the transfer belt. See **“Transfer belt removal” on page 5-146.**
4. Release the tab (A) on the sensor cover.
5. Remove the sensor cover by rotating the sensor cover backward with the lower side of the sensor cover being the pivot, and removing the rib (B) on the upper right side of the sensor cover from the MP feeder.
6. Release the three tabs (C) that attach the MP feeder no paper sensor to the MP feeder, and remove the MP feeder no paper sensor.
7. Disconnect the connector (D) (P/J2751) from the MP feeder no paper sensor.



MP feeder separator roll assembly removal

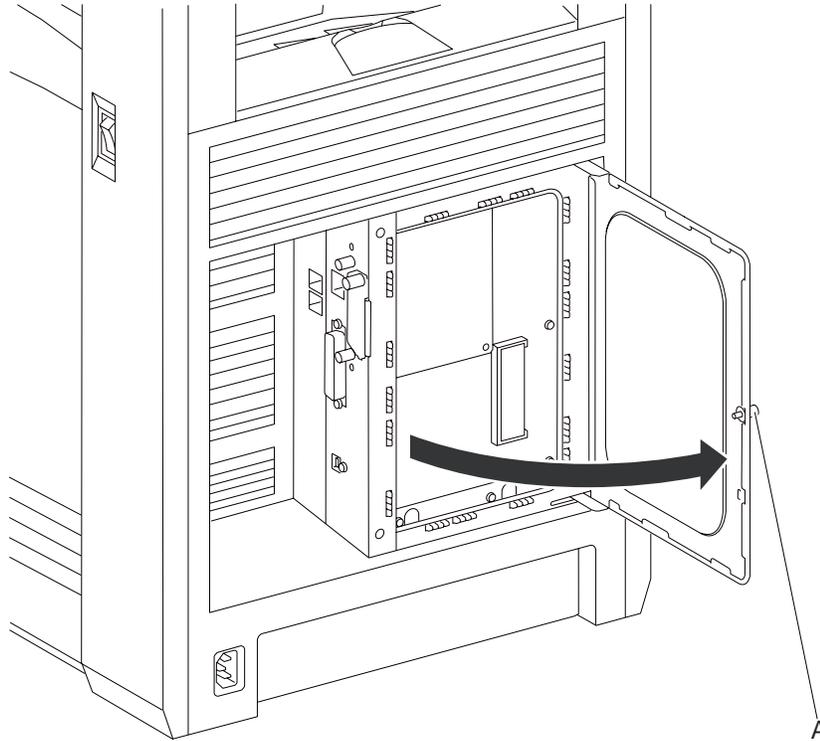
1. Remove the 250-sheet tray from the printer.
2. Release the two backside hooks (A) of the MP feeder separator roll assembly, and then remove the MP feeder separator roll assembly from the 250-sheet tray.



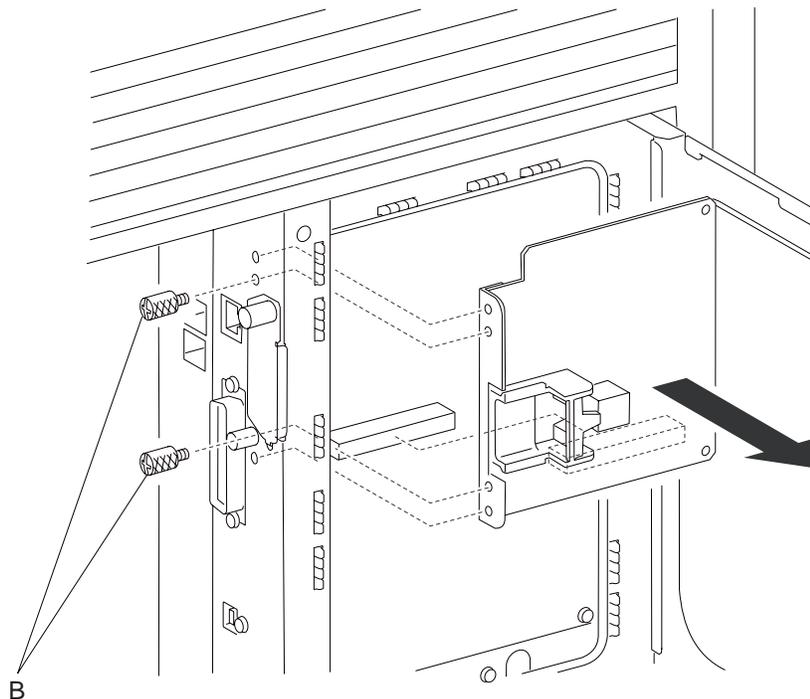
Multi-Protocol Network Card removal

Warning: Use a wristband to protect the Multi-Protocol Network Card from electrostatic damage. See **“Handling ESD-sensitive parts” on page 5-1.**

1. Loosen the knurling screw (A), and then open the RIP board shield.



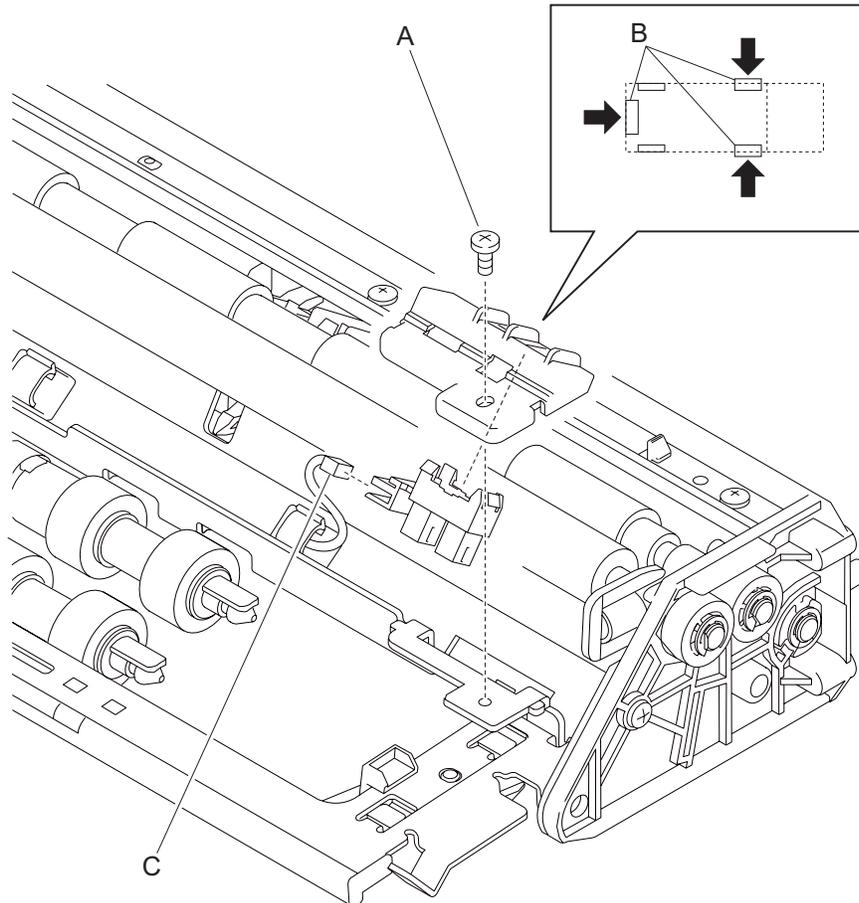
2. Remove the two knurling screws (B) that attach the Multi-Protocol Network Card to the printer.



3. Remove the Multi-Protocol Network Card from the RIP board.

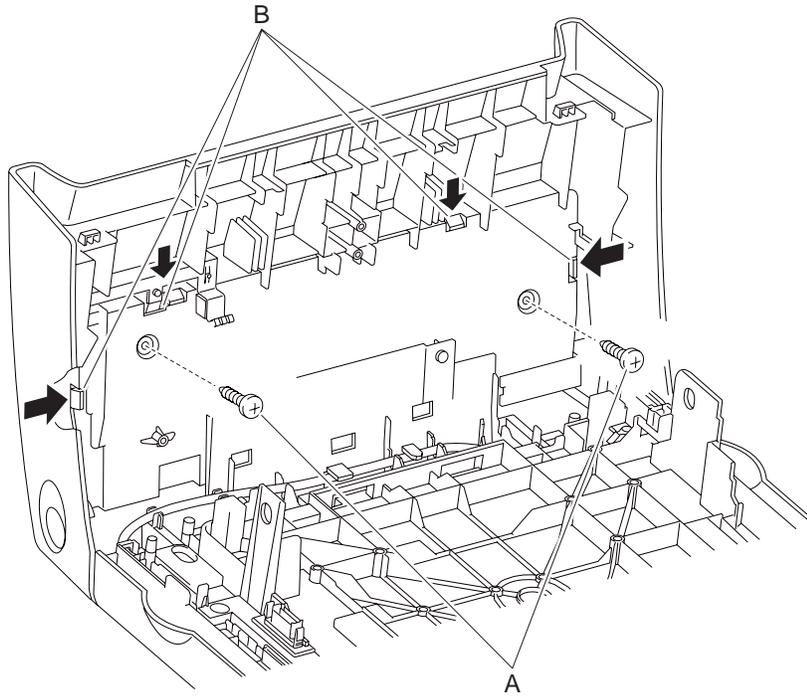
No paper sensor removal

1. Remove the paper feed assembly. See **"Paper feed assembly removal"** on page 5-108.
2. Remove the screw (A) (silver, 8mm) that attaches the no paper sensor bracket to the paper feed assembly, and remove the no paper sensor bracket.
3. Release the three hooks (B) that attach the no paper sensor to the no paper sensor bracket, and remove the no paper sensor.
4. Disconnect the connector (C) (P/J2321) from the no paper sensor.

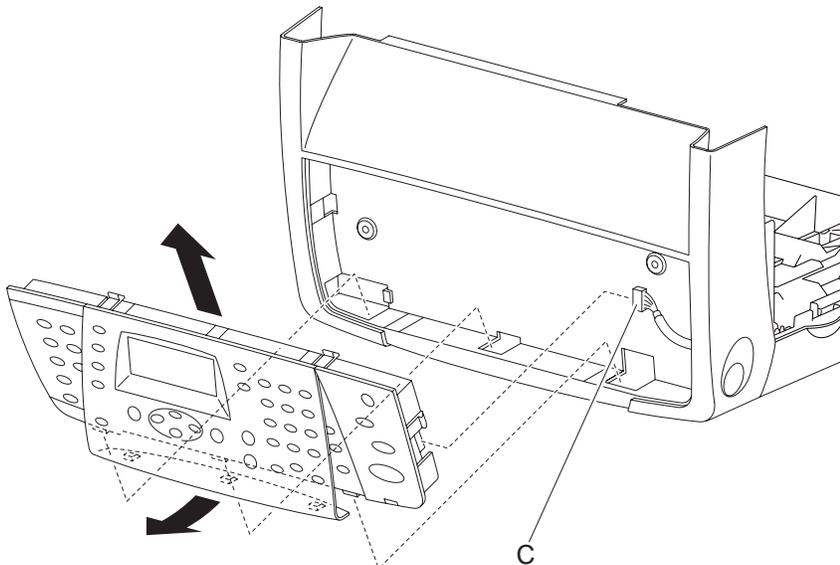


Operator panel removal

1. Open the front cover.
2. Remove the exit assembly. **“Exit assembly removal” on page 5-69.**
3. Remove the two screws (A) (silver, tap, 10mm) that attach the operator panel to the front cover.
Note: Take care not to move the operator panel to far from the front cover so the operator panel cable harness is not stretched or damaged.
4. Release the five hooks (B) that attach the operator panel to the front cover.
Warning: Do not to drop or damage the operator panel.



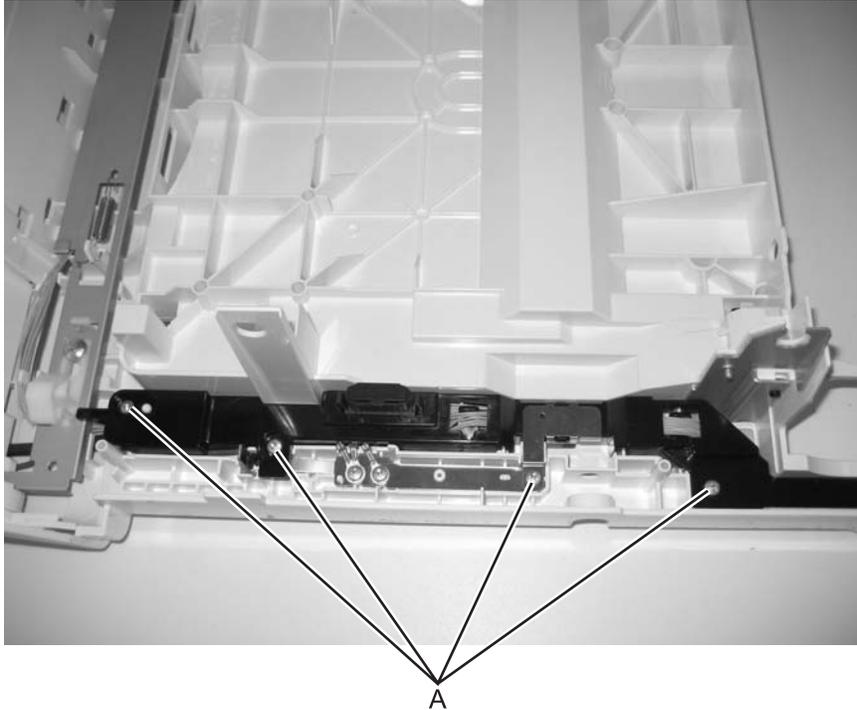
5. Disconnect the connector (C) (P/J202), and remove the operator panel.



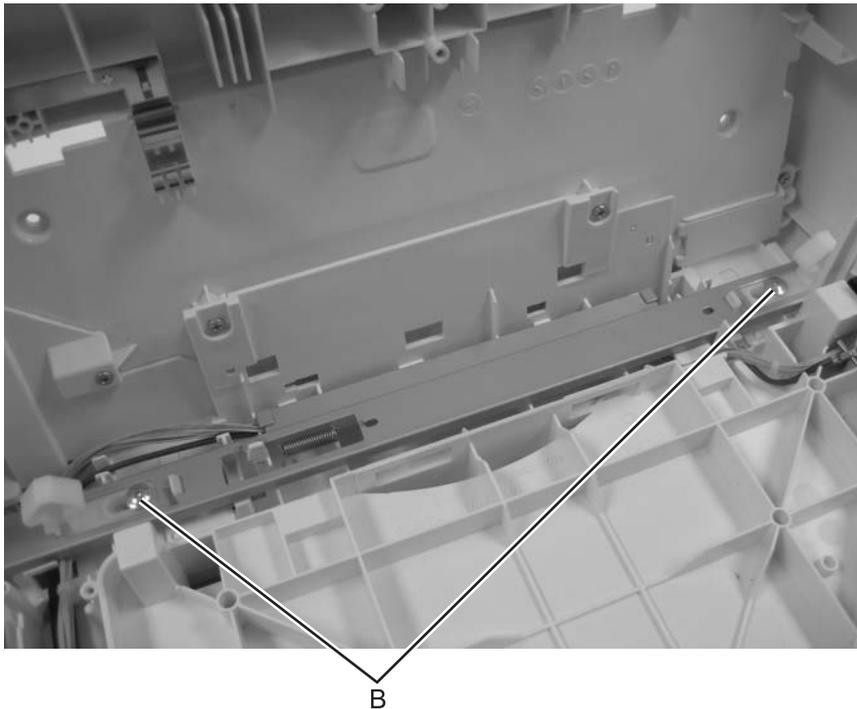
Operator panel cable harness removal

This harness is not a FRU.

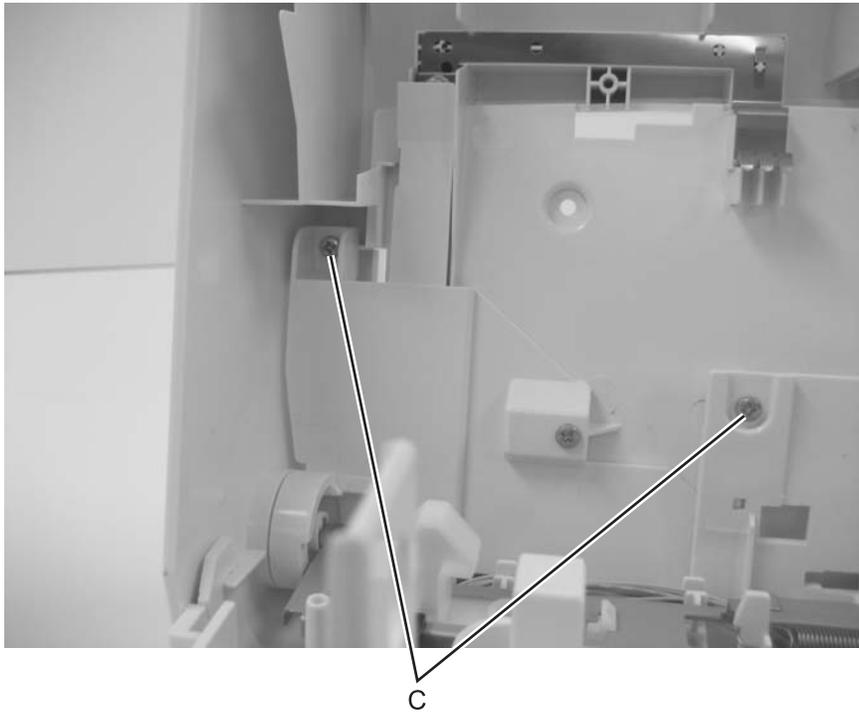
1. Open the front cover assembly.
2. Remove the four screws (A) securing the black cable cover to the front cover.



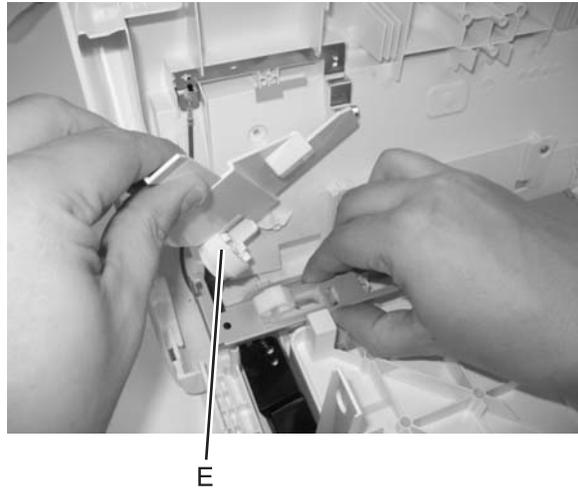
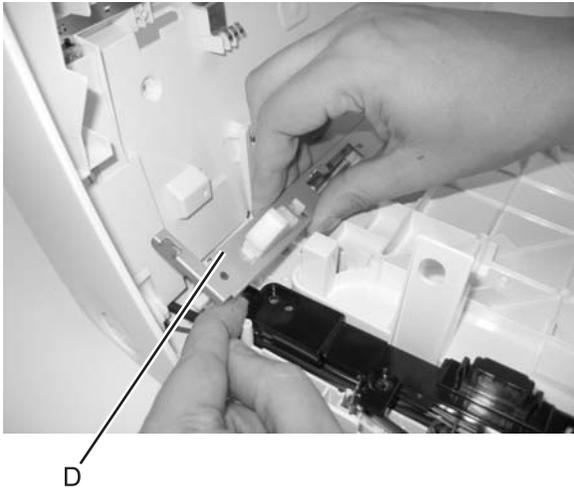
3. Remove the two screws (B) securing the front cover bracket to the front cover.



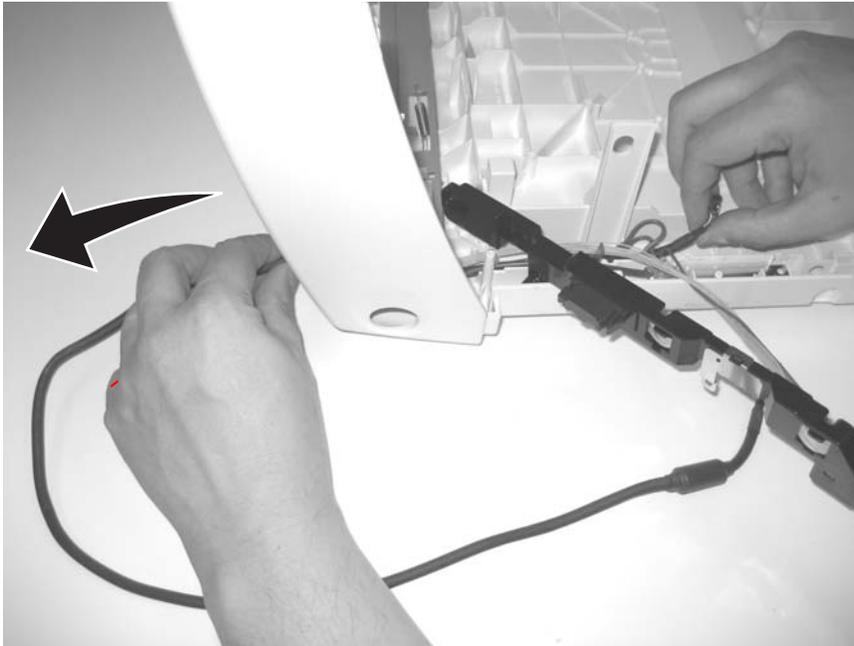
4. Remove the two screws (C) securing the front cover release button to the front cover.



5. Pull the front cover bracket (D) away from the front cover release button and remove the front cover release button (E).

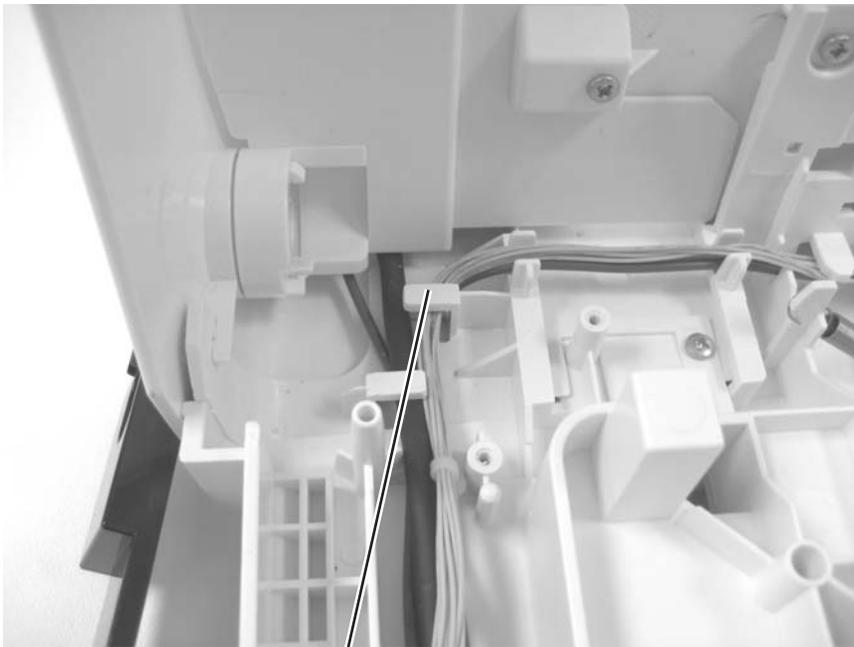


6. To remove the cable harness, gently pull the operator panel harness through the top of the front cover.



Installation note:

Warning: When replacing the cable harness, make sure the operator panel cable harness is routed under the tabs, to avoid damage to the cable harness

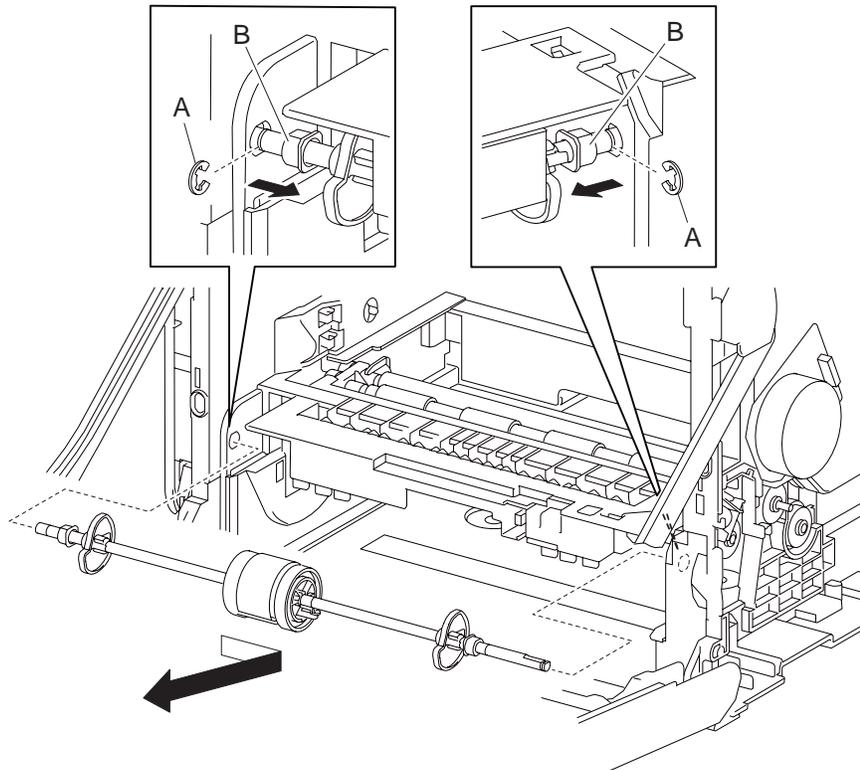


F

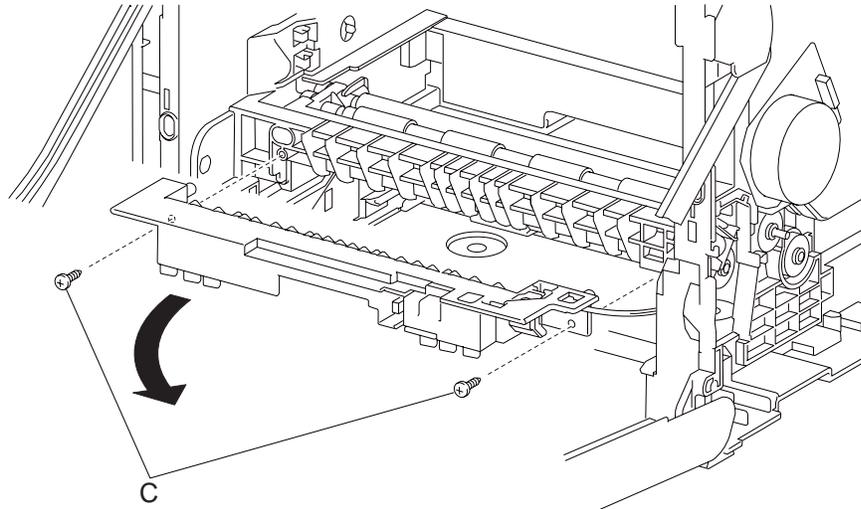
Paper feed assembly removal

1. Open the front cover.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner right pole cover. See **"Inner right pole cover removal"** on page 5-17.
6. Remove the right pole cover. See **"Right pole cover removal"** on page 5-25.
7. Remove the right cover. See **"Right cover removal"** on page 5-23.
8. Remove the feed drive assembly. See **"Feed drive assembly removal"** on page 5-75.
9. Remove the E-rings (A) that attach the bearings on the left and right sides of the MP feeder roll assembly, and then remove the bearings (B) to the inside.
10. Remove the MP feeder roll assembly by sliding it to the right and pulling out its left side shaft from the left side hole on the printer and then pulling it out to the lower left.

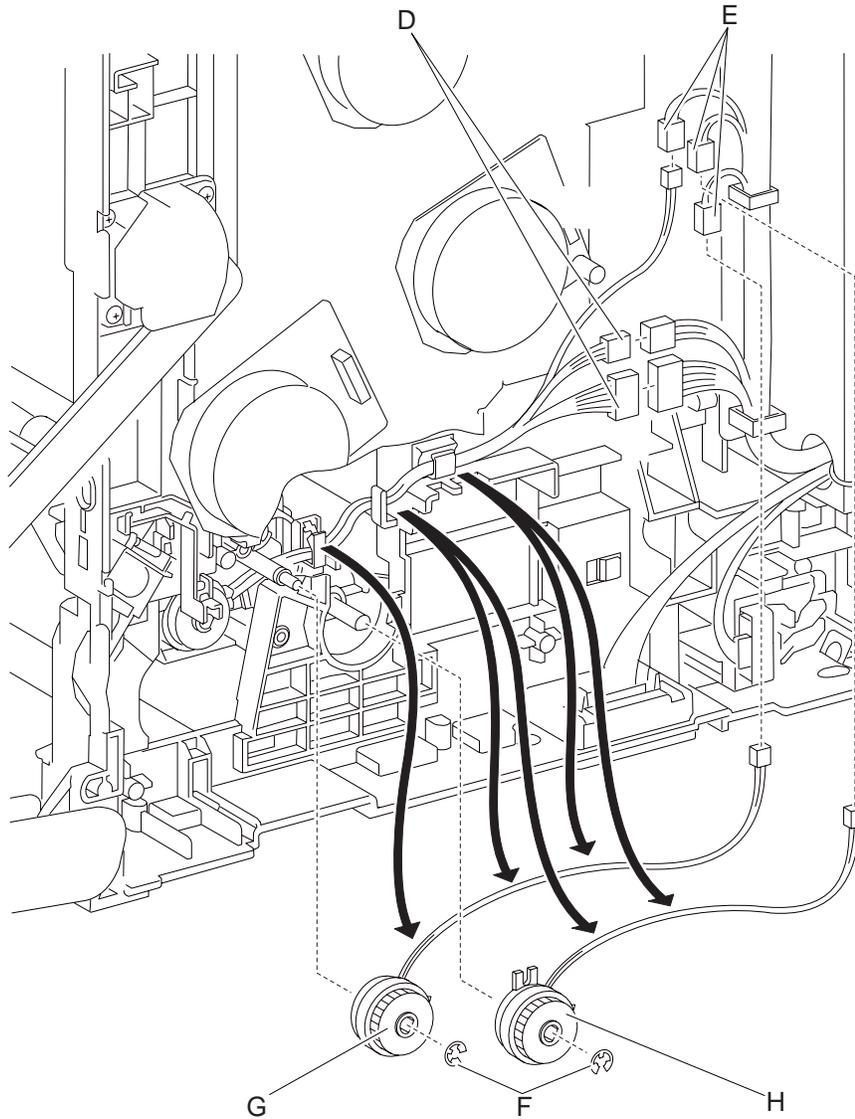
Note: Be careful not to drop, or lose the grounding bearing and the bearing.



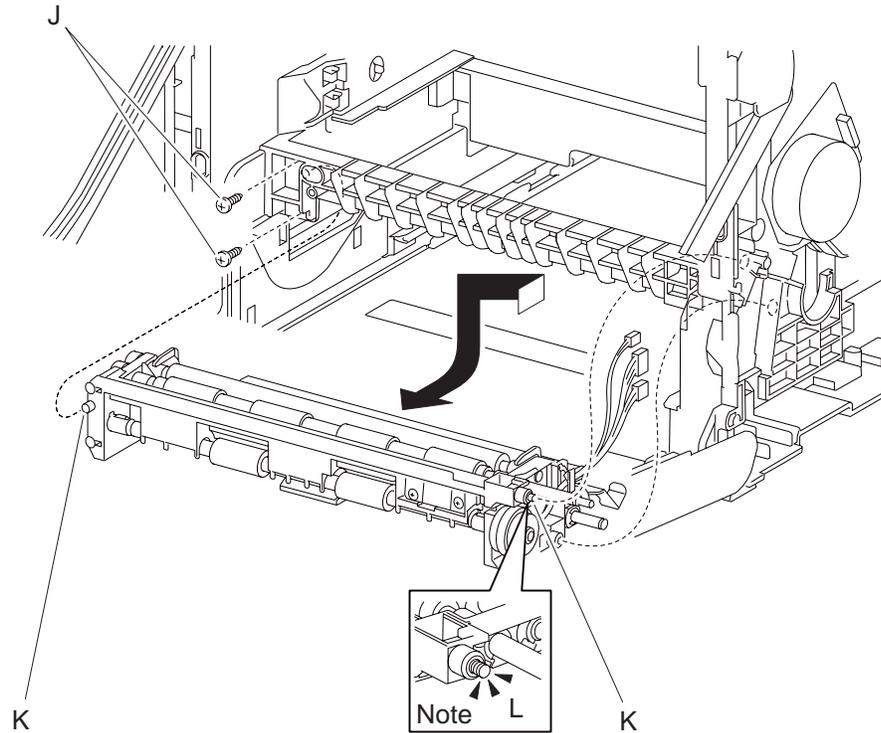
11. Remove the two screws (C) (silver, tap, 10mm) that attach the MP feeder to the printer.
Note: It is not necessary to remove the sensor photo and cover sensor.
12. Remove the MP feeder from the printer.
Note: Make sure not to move the MP feeder from the printer too far because they are still connected with the harness.



13. Disconnect the connectors (D) (P/J232 and P/J241) of the paper feed assembly.
Note: Leave the junction connector on the printer side cable.
14. Disconnect the connector (E) (P/J233) of the registration clutch assembly, the connector (P/J235) of the feed clutch assembly, and the connector (P/J234) of the turn clutch assembly.
15. Release each harness from the clamps on the paper feed assembly and printer. Note the routing.
16. Remove the E-rings (F) that attach the registration clutch assembly and the feed clutch assembly to the paper feed assembly.
17. Remove the registration clutch assembly (G) and the feed clutch assembly (H) from the paper feed assembly.



18. Remove the two screws (J) (silver, tap, 10mm) that attach the paper feed assembly to the printer.
Note: When using a screwdriver, it may be easier to close the front cover.
19. Release the left side pin (K) on the paper feed assembly from the hole on the printer.
Note: Be careful not to drop or lose the grounding spring (L) on the right side of the paper feed assembly.
20. Move the paper feed assembly slightly backward to the left and release the two pins (One is provided with the grounding spring.) on the right side from the hole on the printer.
21. Remove the paper feed assembly from the printer by pulling out its right pivot and clutch from the hole on the printer.

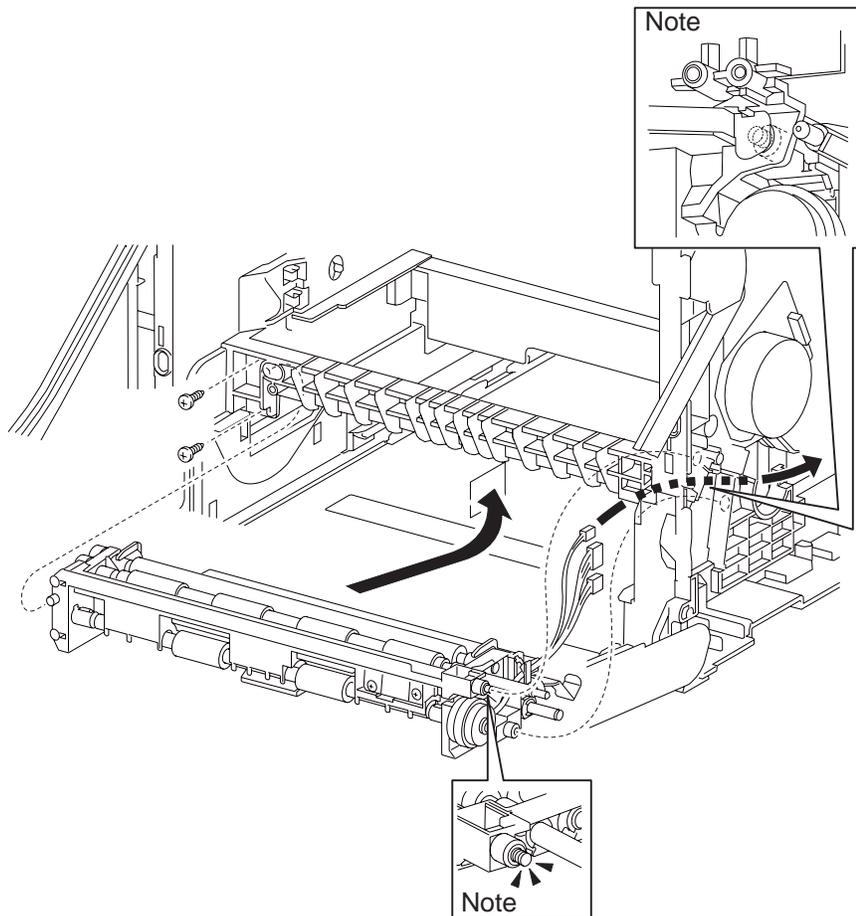


Installation

1. Insert the paper feed assembly diagonally into the printer so that the right side of the paper feed assembly goes in first.
Note: Be careful not to drop and lose the grounding spring on the right side of the paper feed assembly. Check that the grounding spring on the right side of the paper feed assembly is in contact with the grounding plate of the printer.
2. Route the harness with the two connectors coming from the paper feed assembly and the connector of the turn clutch assembly out of the hole on the printer from inside.
3. Insert the bearing, the clutch, and the two bosses (one is provided with the grounding spring.) on the right side of the paper feed assembly to the holes on the printer.
4. Insert the left side boss of the paper feed assembly into the hole on the printer.

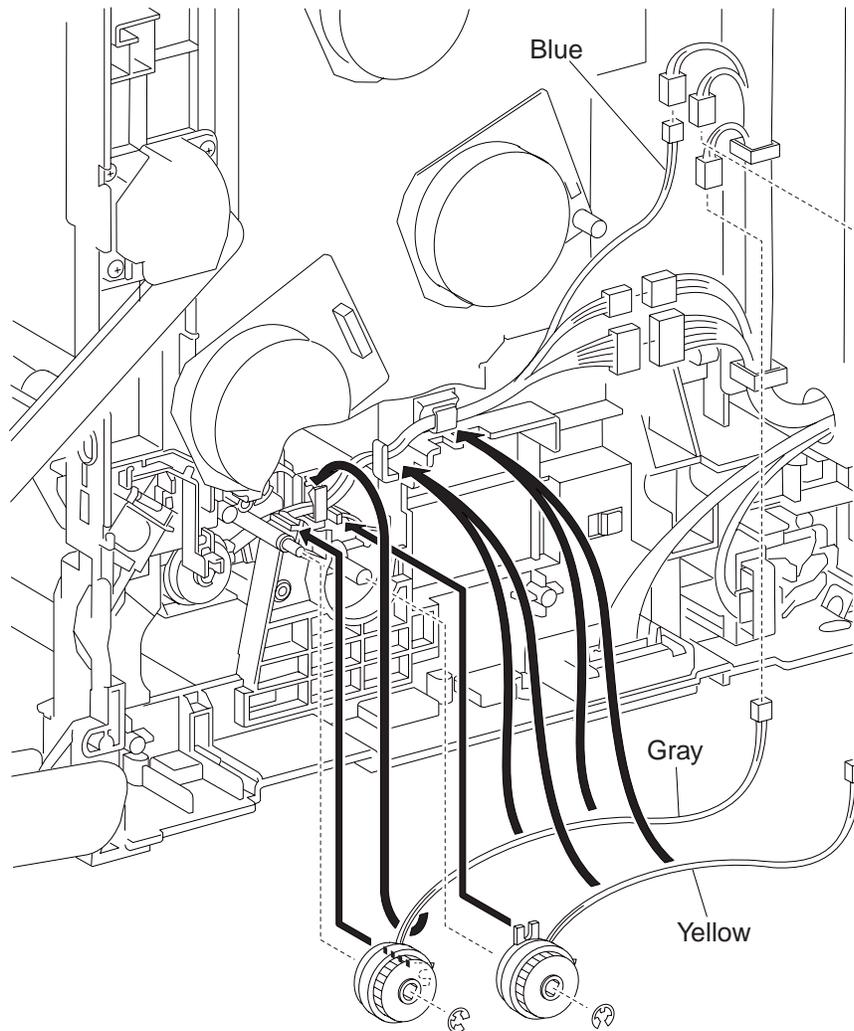
5. Secure the paper feed assembly to the printer using the two screws (silver, tap, 10mm).Continues to the next page.
Note: When replacing the clutch, match the harness color of the clutch with that of the fitting groove of the clutch.

Harness name	Harness and groove color
Registration clutch harness assembly	Gray
Feed clutch harness assembly	Yellow
Turn clutch harness assembly	Blue

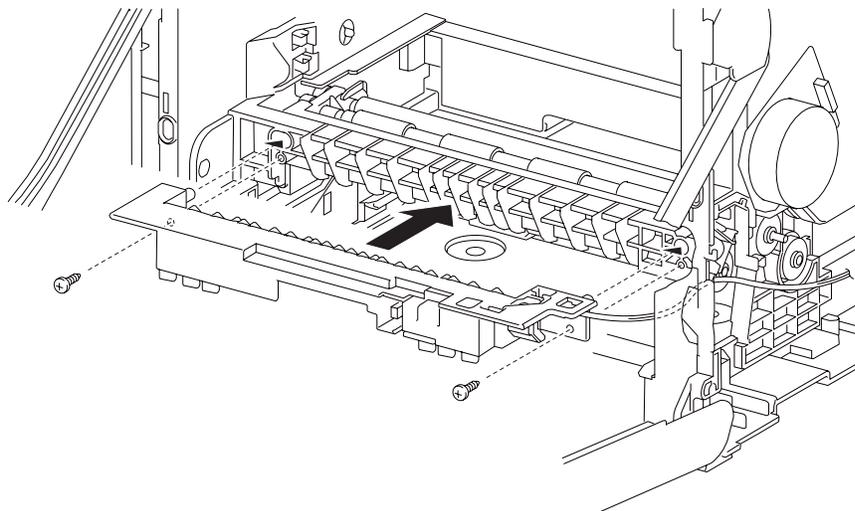


6. Replace the feed clutch assembly to the paper feed assembly by aligning the fitting groove the feed clutch assembly with the lug on the paper feed assembly.
7. Replace the registration clutch assembly to the printer by aligning the fitting groove on the registration clutch assembly with the lug on the printer.
8. Replace the registration clutch assembly and feed clutch assembly to the paper feed assembly using the E-rings.
9. Route the harnesses along the printer and bind them with the clamps on the paper feed assembly and the printer. When engaging the connectors of the clutches, match the color of the clutch harness with that of the harness on the printer side.
10. Engage the connector (P/J233) of the registration clutch assembly, the connector (P/J235) of the feed clutch assembly, and the connector (P/J234) of the turn clutch assembly.

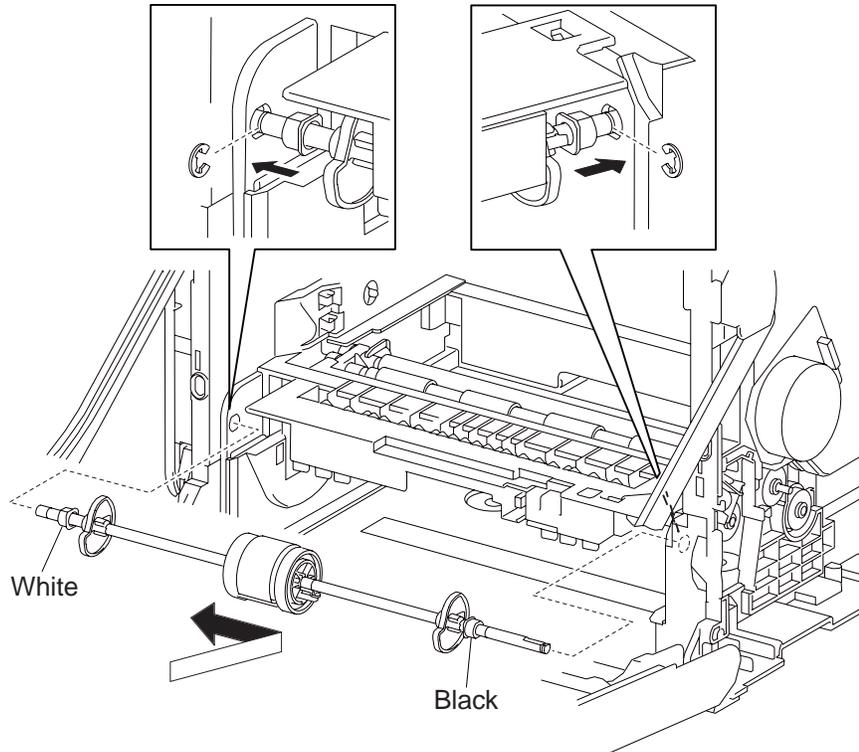
11. Engage the connectors (P/J232 and P/J241) of the paper feed assembly.



12. Replace the MP feeder by aligning the two bosses on the MP feeder with the holes on the printer.
Note: Make sure that the harness is not pinched or caught between the MP feeder and the printer.
 13. Secure the MP feeder to the printer using the two screws (silver, tap, 10mm).

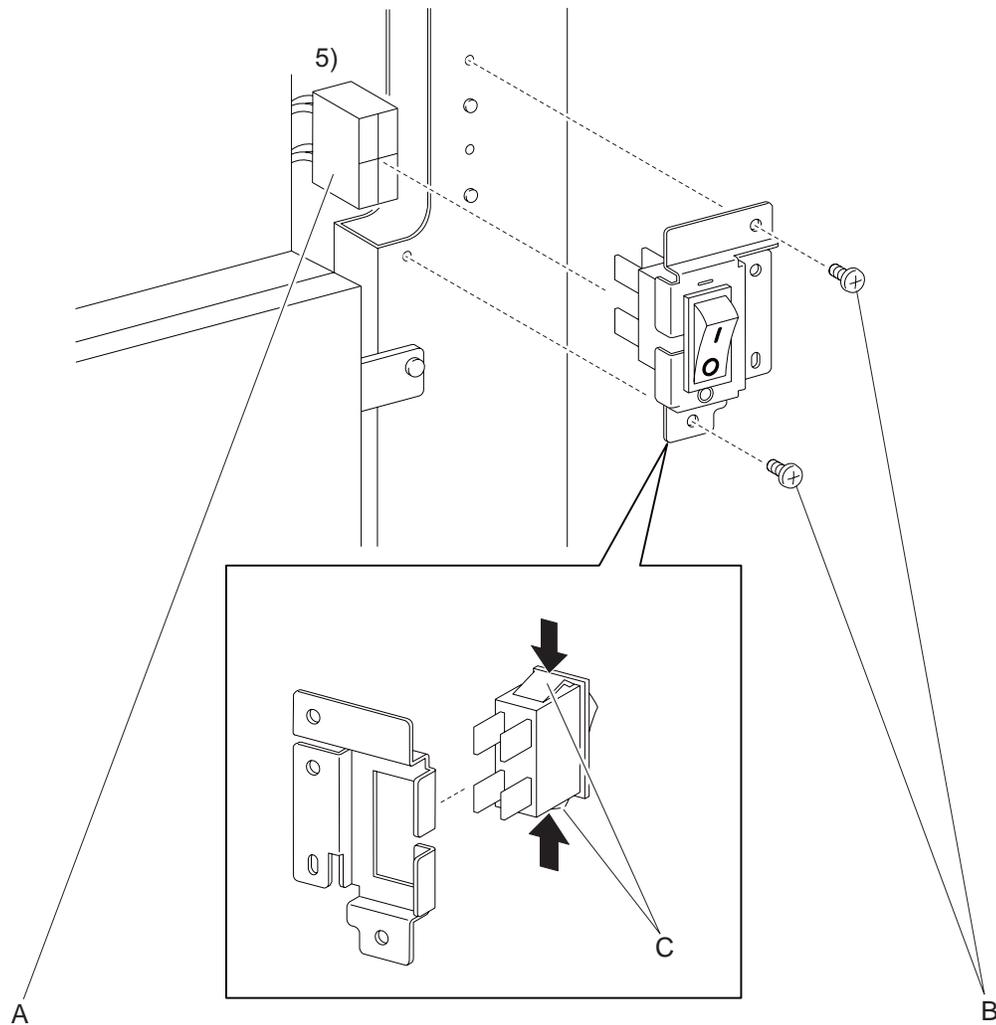


14. Replace the MP feeder roll assembly inserting the right and left ends of the MP feeder roll assembly into the holes on the printer.
Note: Make sure that the color of each bearing is correct. The color of the right bearing is black. The color of the left bearing is white.
15. Slide the left and right of the bearings outward into the holes on the printer, and secure using the E-rings.



Power switch

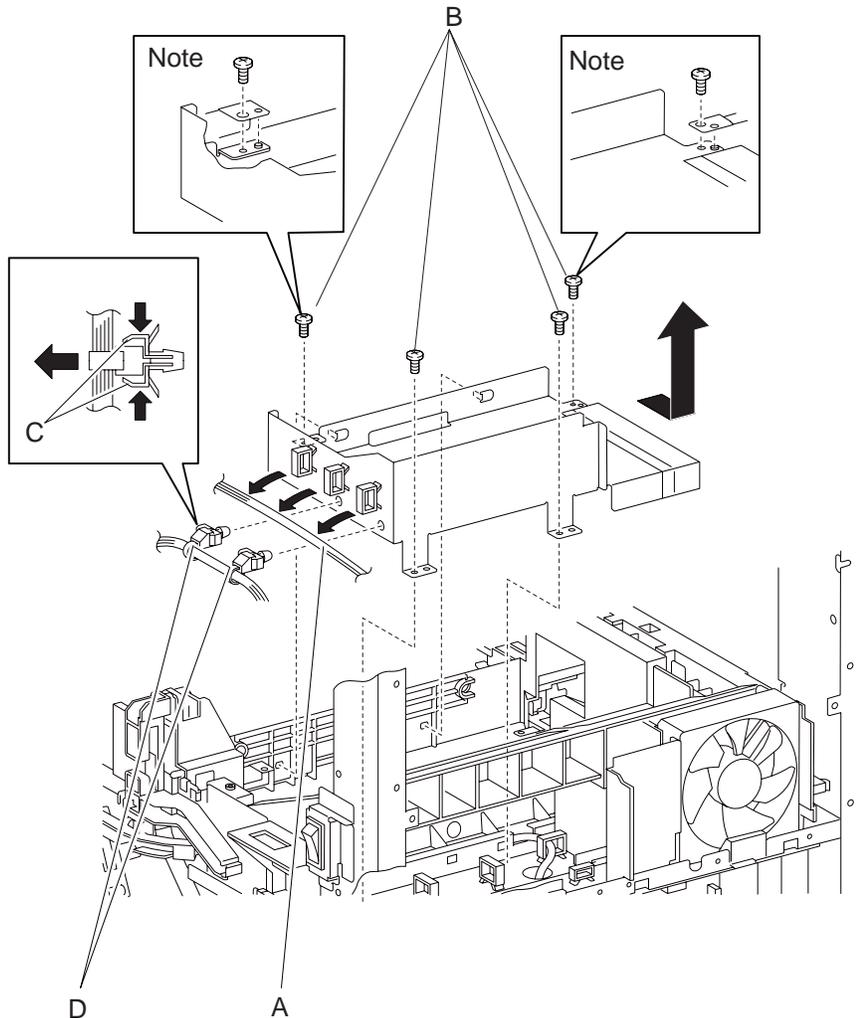
1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner right pole cover. See **“Inner right pole cover removal”** on page 5-17.
4. Remove the right pole cover. See **“Right pole cover removal”** on page 5-25.
5. Disconnect the connector (A) (P/J481) of the power switch.
6. Remove the two screws (B) (silver, 6mm) that attach the main switch bracket to the printer.
7. Remove the main switch bracket from the printer together with the power switch.
8. Remove the power switch from the main switch bracket by releasing the hooks (C) on the power switch.



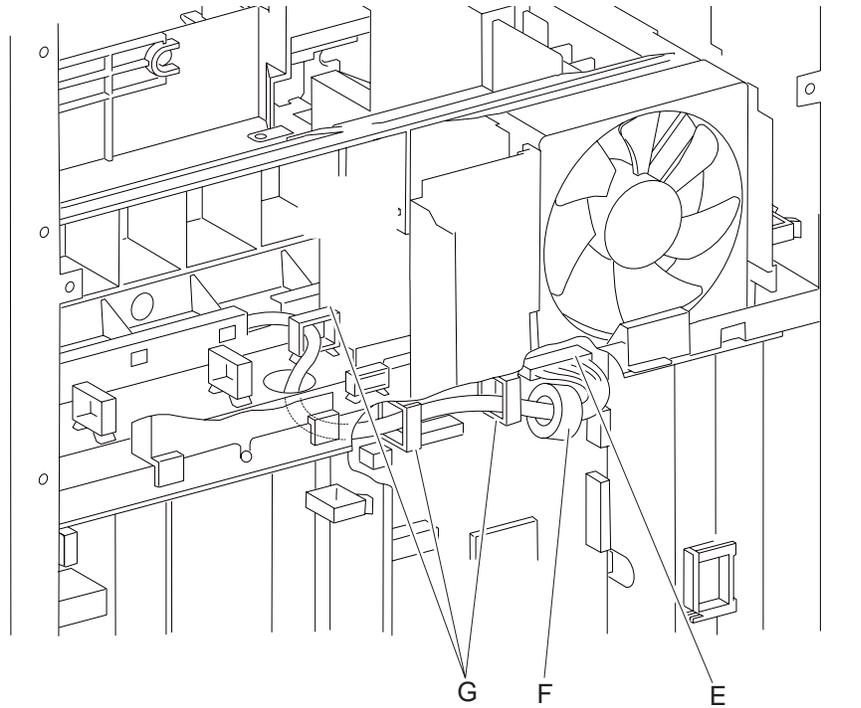
Installation notes: When replacing the power switch, align the On/Off mark of the power switch with the mark on the frame.

Printhead assembly removal

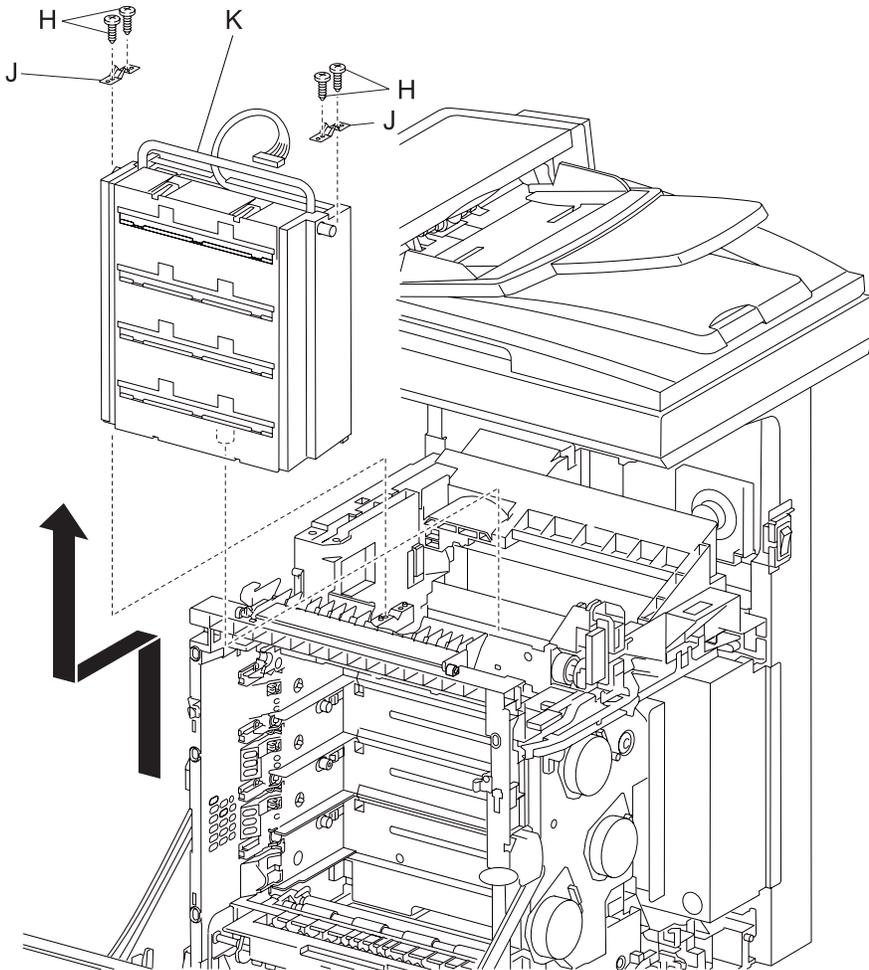
1. Open the front cover.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner right pole cover. See **"Inner right pole cover removal"** on page 5-17.
6. Remove the right pole cover. See **"Right pole cover removal"** on page 5-25.
7. Remove the right cover. See **"Right cover removal"** on page 5-23.
8. Remove the inner left cover. See **"Inner left pole cover removal"** on page 5-16.
9. Remove the left pole cover. See **"Left pole cover removal"** on page 5-20.
10. Remove the left cover. See **"Left cover removal"** on page 5-18.
11. Remove the top cover. See **"Top cover removal"** on page 5-26.
12. Remove the RIP board cage. See **"RIP board cage removal"** on page 5-128.
13. Remove the engine board cage. See **"Engine board cage removal"** on page 5-66.
14. Release the fuser harness assembly (A) from the three clamps on the grounding frame assembly.
15. Remove the four screws (B) (silver, 6mm) that attach the grounding frame assembly to the printer.
16. Pull up the two hooks on the front side of the grounding frame assembly from the holes of the printer by sliding the grounding frame assembly backward, and then remove the grounding frame assembly.
17. Press on the latches (C) to remove the two clamps (D) attached to the fuser AIO harness assembly from the grounding frame assembly.



18. Disconnect the printhead harness connector (P/J12) (E) from the controller board, and remove the toroid (F) from the harness.
19. Release the printhead harness from the three clamps, (G) and then pull the harness from the hole of the printer.



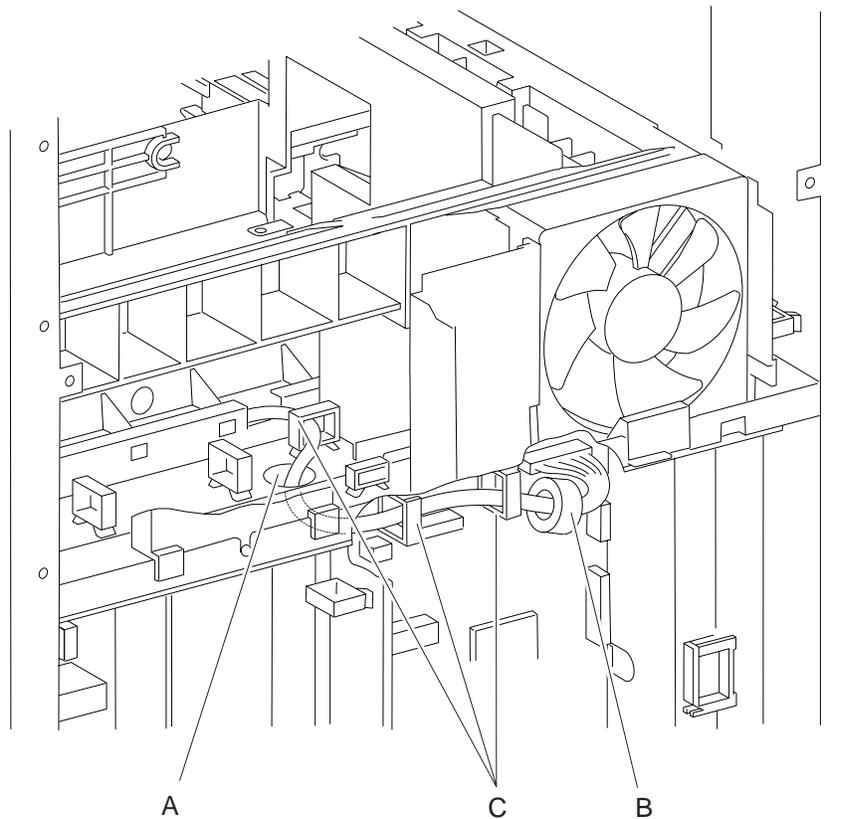
20. Remove the four screws (H) (silver, tap, 10mm) that attach the two printhead springs (J) to the printer on the left and right sides.
21. Remove the left and right printhead springs.
22. Remove the printhead by pulling up slowly on the handle (K).



Note: When the printhead is replaced, perform both the Printer Color Registration (see **“Printer color registration”** on page 5-6) and the printer Parameter adjustments (see **“Parameter”** on page 3-54).

Installation

1. Holding the printhead by the handle, insert the printhead makes sure to align the bottom pin of the printhead with the hole on the printer.
 2. Place the two printhead springs onto the left and right side posts on the printhead so that the holes of printhead springs are aligned with the pins on the printer.
 3. Secure the printhead springs to the printer using the four screws (silver, tap, 10mm).
 4. Route the printhead harness through the hole (A) of the printer.
 5. Replace the toroid (B) on the printhead harness, and then connect the connector (P/J12) to the controller board.
 6. Secure the printhead harness with the three clamps (C).
- Note:** When securing the clamps, make sure that the grounding frame assembly is under the grounding plate.

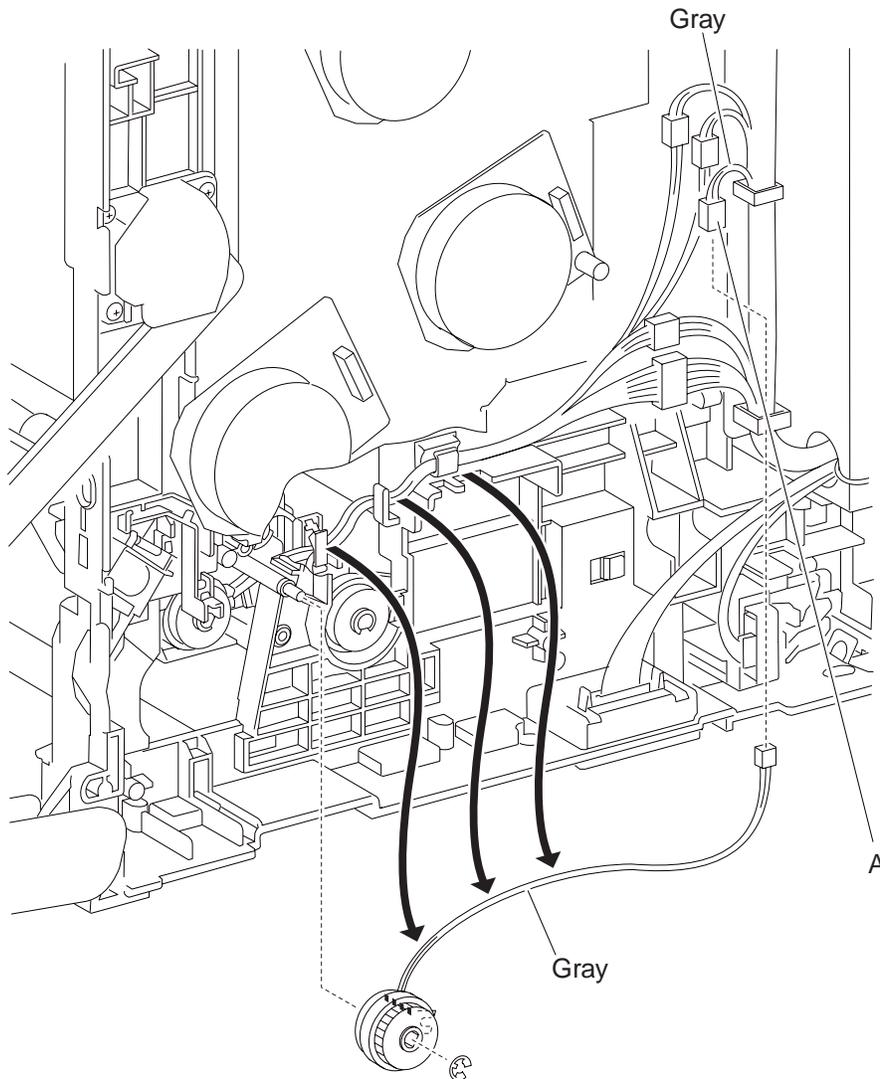


7. Align the hole of the grounding frame assembly with the boss of the printer by inserting the two hooks on the front side of the grounding frame assembly into the holes of the printer.
8. Secure the grounding frame assembly to the printer using the four screws (silver, 6mm).
9. Replace the two clamps on the fuser AIO harness assembly to the grounding frame assembly.
10.)Secure the harness of the harness assembly fuser AIO with the three clamps on the grounding frame assembly.

Note: When the printhead is replaced, perform both the Printer Color Registration (see **“Printer color registration” on page 5-6**) and the printer Parameter adjustments (see **“Parameter” on page 3-54**).

Registration clutch removal

1. Open the front cover assembly.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner right pole cover. See **"Inner right pole cover removal"** on page 5-17.
6. Remove the right pole cover. See **"Right pole cover removal"** on page 5-25.
7. Remove the right cover. See **"Right cover removal"** on page 5-23.
8. Remove the feed drive assembly. See **"Feed drive assembly removal"** on page 5-75.
9. Disconnect the connector (A) (P/J233) of the registration clutch.
Note: Leave the junction connector on the printer side cable.
10. Release the harness (gray) of the registration clutch from the clamp and the hook on the frame of the printer and from the clamp of the paper feed assembly.
11. Remove the E-ring that fixes the registration clutch to the paper feed assembly.



12. Remove the registration clutch from the paper feed assembly.

Installation

Note: When replacing the clutches, match the color of the harness for the clutch with the color of the fitting groove on the clutch.

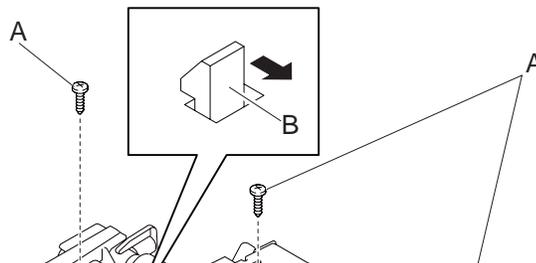
Harness name	Harness and groove color
Registration clutch harness assembly	Gray
Feed clutch harness assembly	Yellow
Turn clutch harness assembly	Blue

1. Insert the harness (gray) of the registration clutch through the gap of the printer frame, and place it through the paper feed assembly clamp.
2. Insert the registration clutch to the shaft section of the rubber registration roll, and attach registration clutch by inserting its concave section into the positioning rib (gray) provided on the printer frame.
3. Secure the registration clutch to the paper feed assembly using an e-ring.
4. Route the registration clutch harness (gray) through the cable restraints and clamp on the printer frame. When engaging the clutch connectors, match the color of the clutch harness with the color of the harness on the printer side.
5. Connect the connector (P/J233) on the registration clutch.

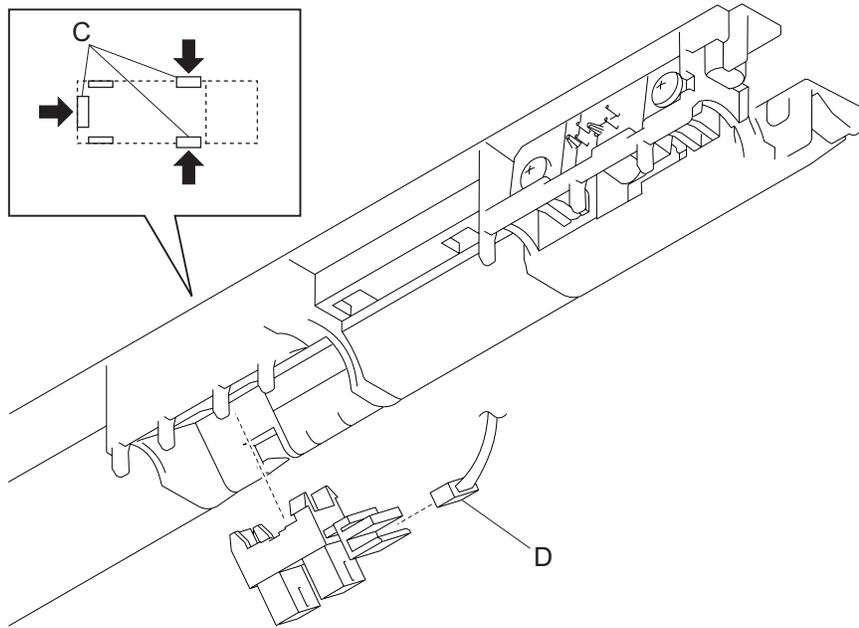
Registration sensor removal

1. Remove the paper feed assembly. See **“Paper feed assembly removal” on page 5-108.**
2. Remove the turn clutch assembly. See **“Turn clutch assembly removal” on page 5-151.**
3. Remove the turn roll assembly. See **“Turn roll assembly removal” on page 5-152.**
4. Remove the three screws (A) (silver, tap, 8mm) that attach the upper registration cable guide.

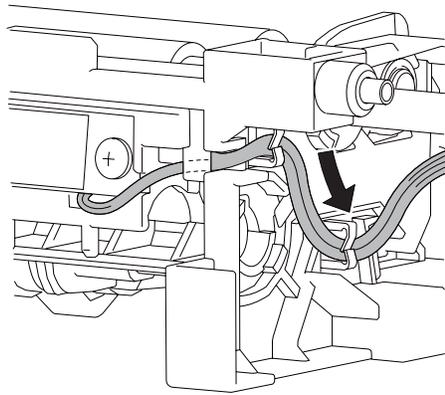
Note: Since the upper registration cable guide is still cabled to the harness, be careful not pull or damage the cables or connectors.
5. Release the latch (B) at the upper side of the upper registration cable guide, and pull the left side of the upper registration cable guide toward you.



6. Release the hooks (C) at three locations that attach the registration sensor to the upper registration cable guide, and remove the registration sensor.
7. Disconnect the connector (D) (P/J2322) at the registration sensor.



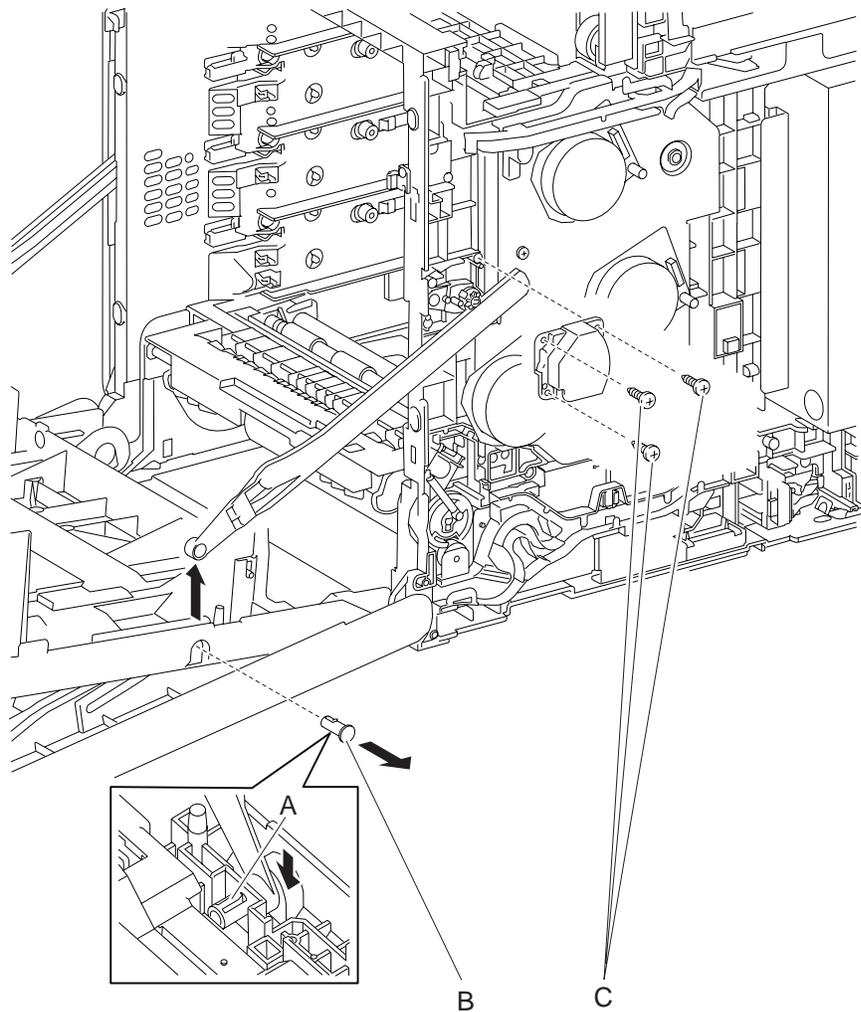
Installation note: Make sure the cable is routed correctly and that any slack on the harness coming out from the right side of the upper registration cable guide is carefully removed.



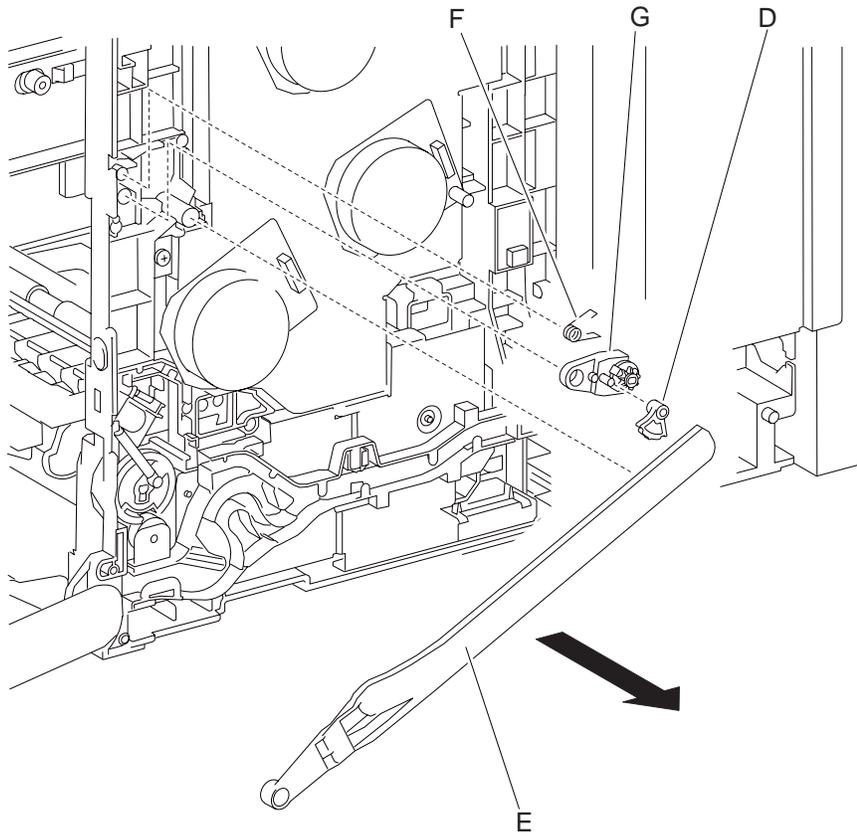
Right door link assembly removal (18)

Also see **“Left door link assembly removal”** on page 5-87.

1. Open the front cover.
2. Remove the fuser. See **“Fuser removal”** on page 5-78.
3. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
4. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
5. Remove the inner right pole cover. See **“Inner right pole cover removal”** on page 5-17.
6. Remove the right pole cover. See **“Right pole cover removal”** on page 5-25.
7. Remove the right cover. See **“Right cover removal”** on page 5-23.
8. Release the latch (A) on the pivot shaft that attaches the right link to the front cover, and then pull the pivot shaft (B) to the outside and remove the right link from the front cover.
9. Remove the three screws (C) (silver, tap, 8mm) that attach the right link support to the printer.
10. Remove the right link support from the printer.



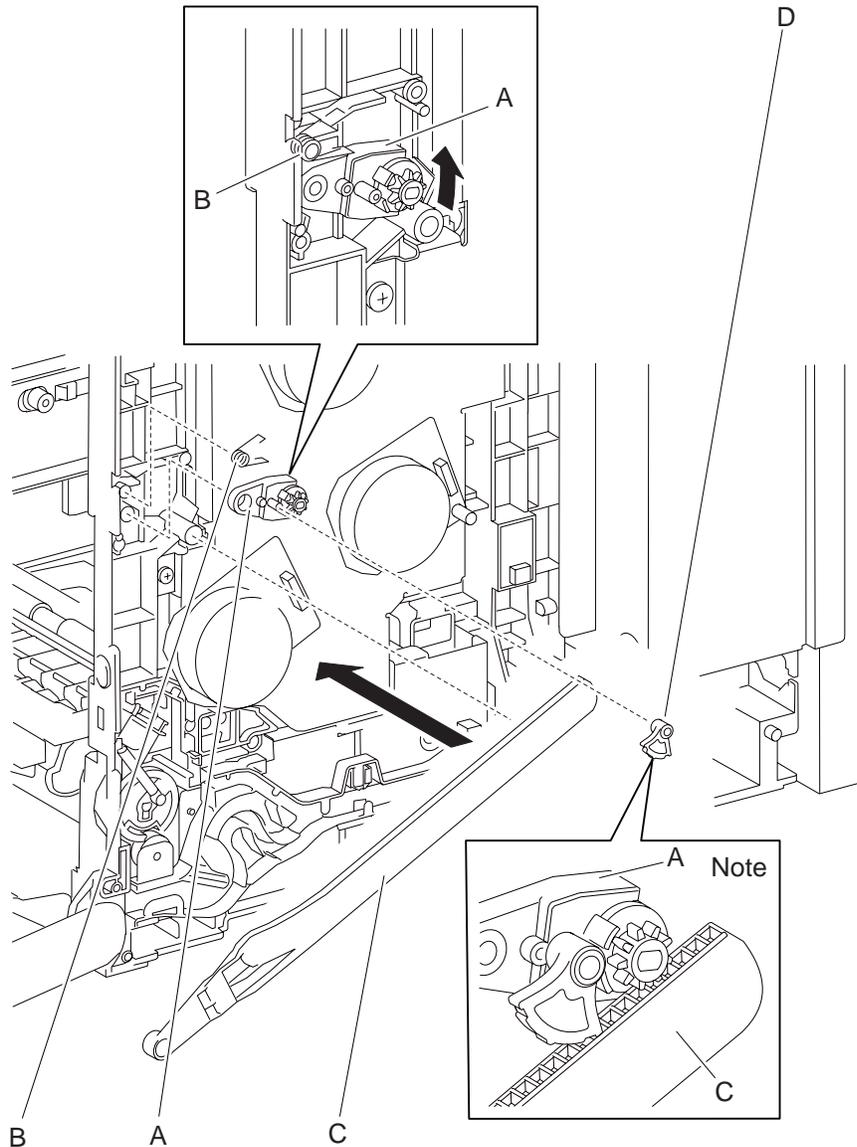
11. Remove the lever release (D) from the printer.
12. Remove the right link (E) from the printer.
13. Remove the support spring (F) from the printer.
14. Remove the damper holder (G) from the printer together with the oil damper.



Installation

1. Replace the damper holder (A) and oil damper into the printer.
2. Replace the support spring (B) in the printer.
3. Replace the right door link (C) by aligning the backside groove on the right door link with the pin on the printer and then pulling the oil damper slightly upward.
4. Replace the lever release (D) on the holder damper.

Note: Pay attention to the orientation of the release lever. Make sure that the longer hollow boss of the release lever faces the damper holder.

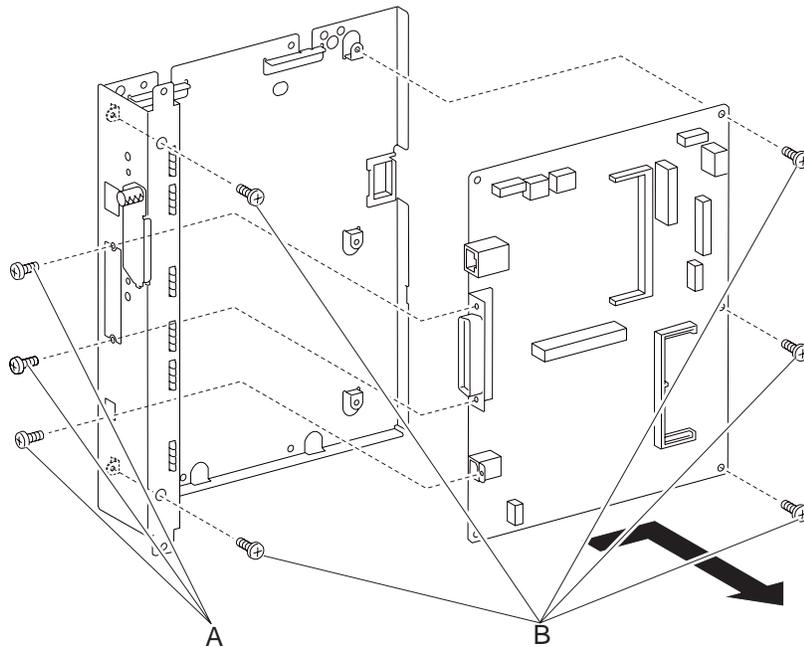


5. Replace the right link support by aligning the two holes on the right link support with the bosses on the printer.
6. Secure the right link support to the printer using the three screws (silver, tap, 8mm).
7. Align the fitting hole on the right door link with the right side fitting hole on the front cover. Insert the pivot shaft and secure using the hook.

RIP board removal

Warning: Use a wristband to protect the electronic board from electrostatic damage. See **“Handling ESD-sensitive parts”** on page 5-1.

1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner left cover. See **“Inner left pole cover removal”** on page 5-16.
4. Remove the left pole cover. See **“Left pole cover removal”** on page 5-20.
5. Remove the RIP board cage. See **“RIP board cage removal”** on page 5-128.
6. Remove the three screws (A) (silver, 6mm) that attach the connector section of the RIP board to the RIP board cage.
7. Remove the five screws (B) (silver, 6mm) that attach the RIP board to the RIP board cage.



8. Remove the RIP board from the RIP board cage.

Installation notes

Warning: When the RIP board is replaced with a new one, the NVM ROM must be switched (steps 1 through 4). These steps are not required when the RIP board is removed and the **same** board is replaced.

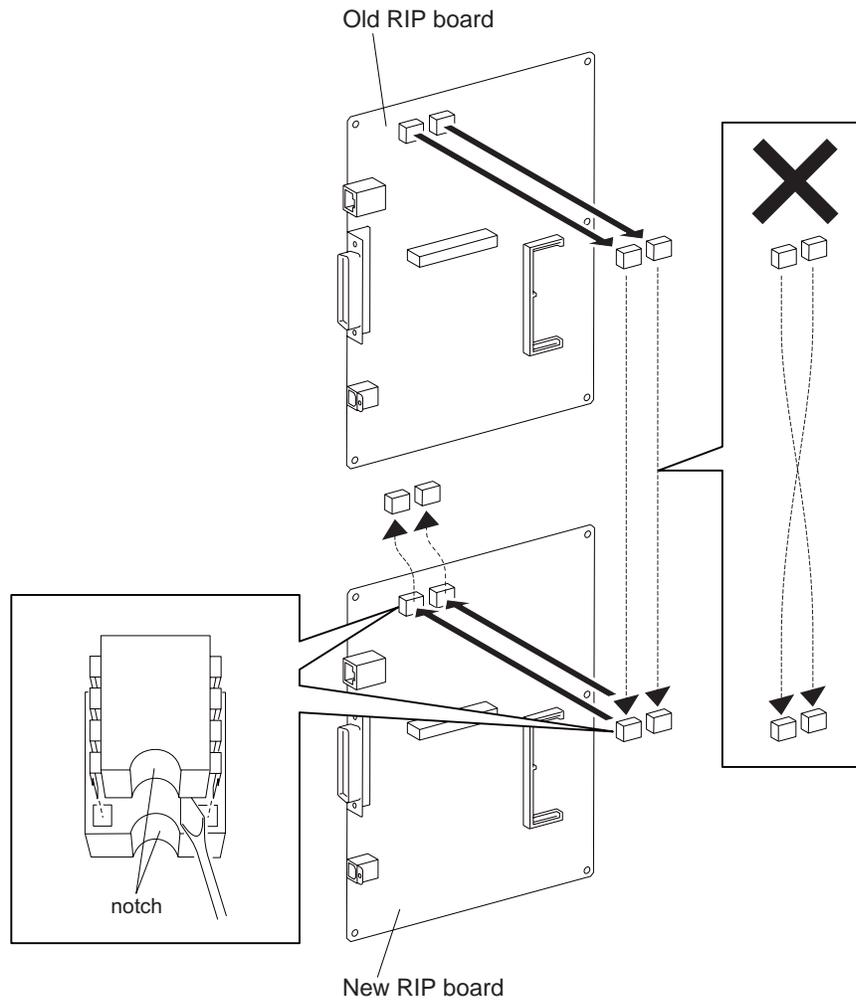
Warning:

- There are two NVM ROM chips on the board. Do not switch their locations.
- Do not press against the board when removing the NVM ROM chips. You could damage the circuits.
- Do not bend the terminal section of NVM chips.

1. Use a small flat-bladed screwdriver, or something similar, to remove the left NVM chip from the IC socket on the old RIP board you just removed from the printer.
2. Use a small flat-bladed screwdriver, or something similar, to remove the left NVM chip from the IC socket on the new RIP board.

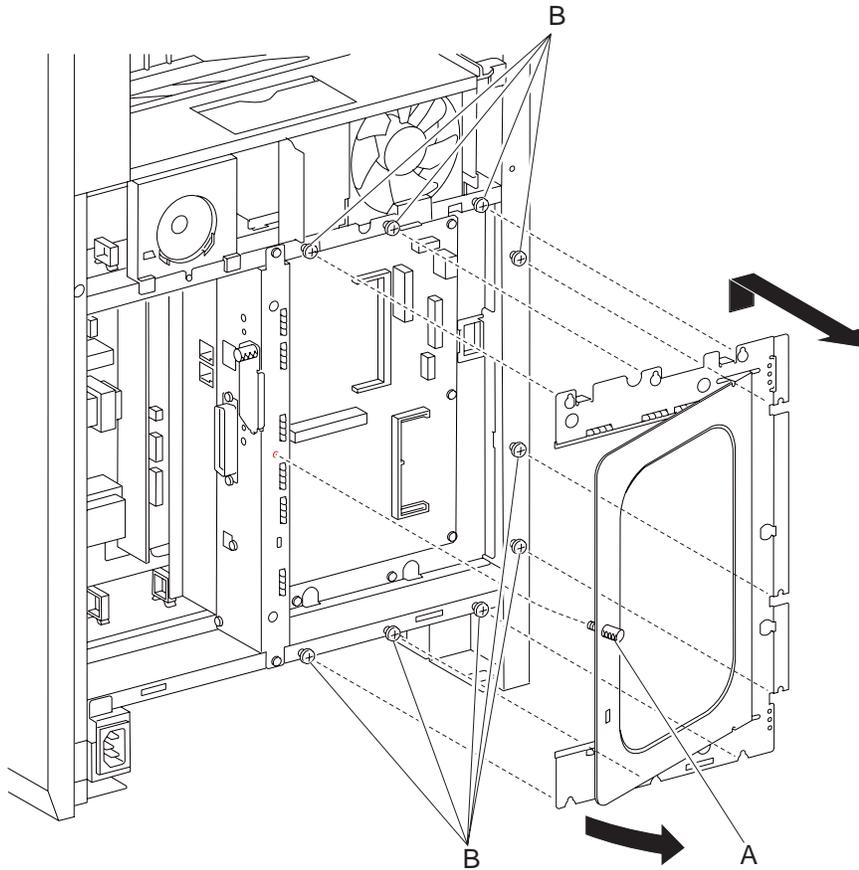
Note: Do not use either NVM chip removed from the new RIP board. Ensure that the orientation of the NVM chip is correct when performing the following step.

3. Install the left NVM chip that was removed from old RIP board on the left IC socket of the new RIP board with its notch aligned with the notch in the IC socket.
4. Repeat for the right NVM chips.

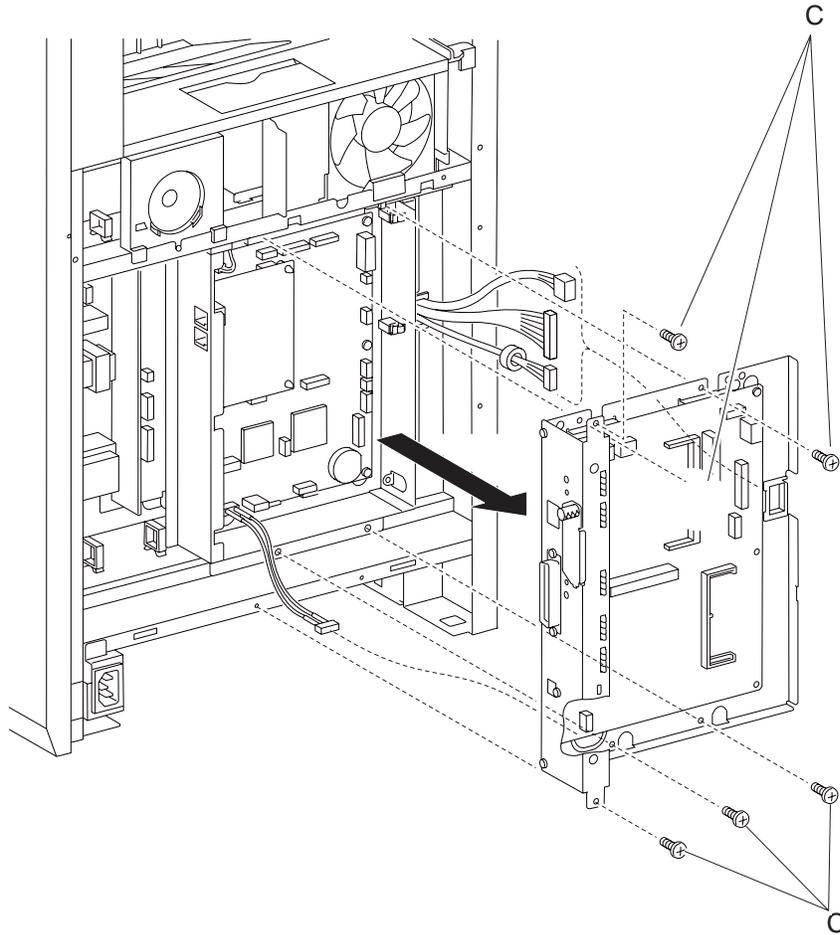


RIP board cage removal

1. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
2. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
3. Remove the inner left pole cover. See **“Inner left pole cover removal”** on page 5-16.
4. Remove the left pole cover. See **“Left pole cover removal”** on page 5-20.
5. Loosen the knurling screw (A), and then open the RIP board cage cover.
6. Loosen the nine screws (B) that attach the RIP board cage cover assembly window to the printer.
7. Remove the RIP board cage cover assembly window from the printer by sliding the cover slightly upward until the U-shaped grooves are disengaged from the nine screws.



8. Disconnect all the connectors of the RIP board.
9. Remove the six screws (C) (silver,6mm) that attach the engine board cage to the MFP.
10. Pull out the engine board cage slightly forward, and then release the three harnesses on the right from the clamp saddle (LES-1017).
11. Disconnect the connector of the RIP board harness assembly from the RIP board.
12. Remove from the printer the engine board cage together with the RIP board while pulling the RIP board harness assembly through the hole on the engine board cage.

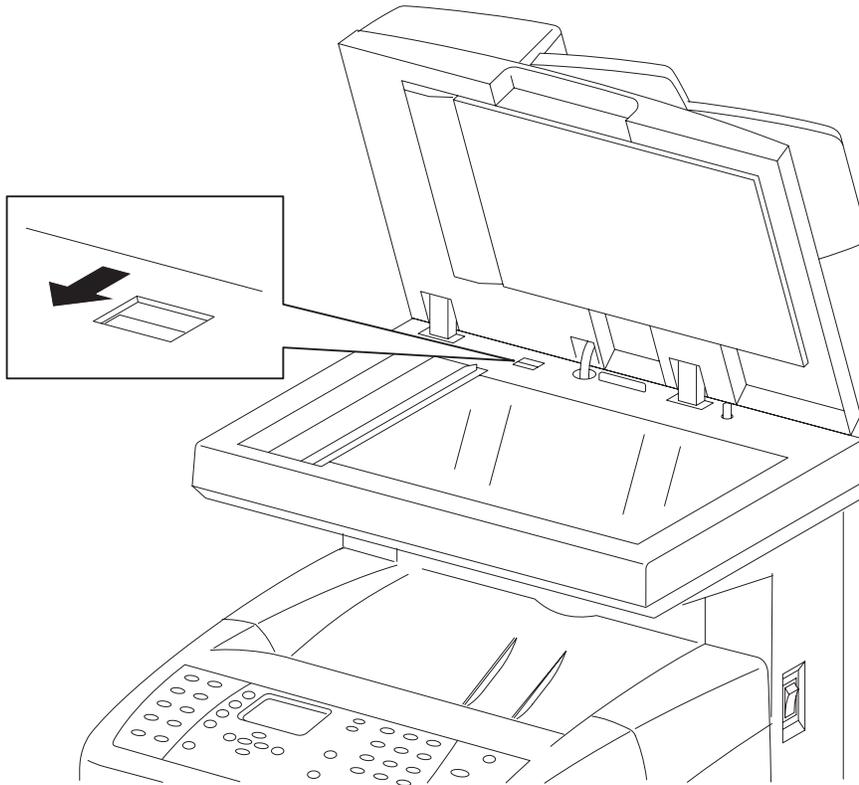


Installation notes:

- Replace all toroids.
- Be careful to route the cables and make sure the cables are not crimped or trapped between the cage and frame.

Scanner assembly removal

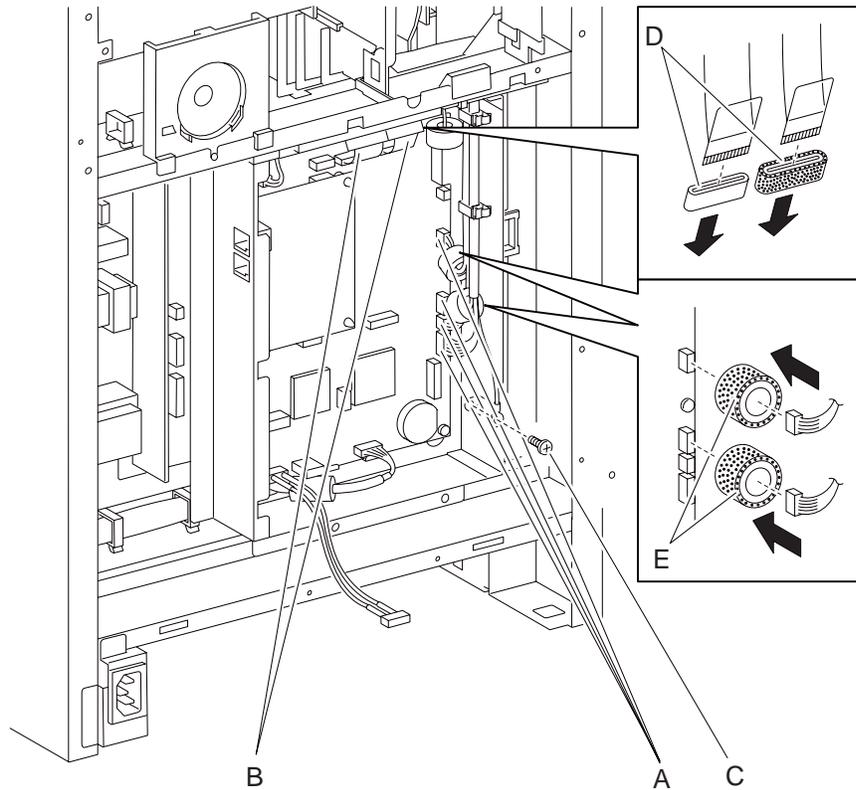
1. Open the scanner assembly and move the carriage locking lever forward to the locked position.



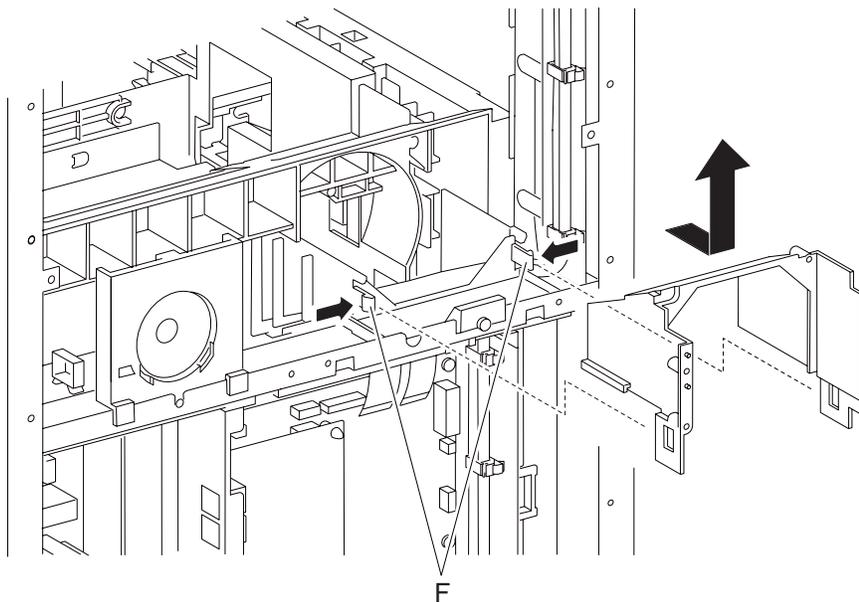
2. Open the front cover.
3. Remove the fuser. See **"Fuser removal"** on page 5-78.
4. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
5. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
6. Remove the inner right pole cover. See **"Inner right pole cover removal"** on page 5-17.
7. Remove the right pole cover. See **"Right pole cover removal"** on page 5-25.
8. Remove the right cover. See **"Right cover removal"** on page 5-23.
9. Remove the inner left pole cover. See **"Inner left pole cover removal"** on page 5-16.
10. Remove the left pole cover. See **"Left pole cover removal"** on page 5-20.
11. Remove the left cover. See **"Left cover removal"** on page 5-18.
12. Remove the top cover. See **"Top cover removal"** on page 5-26.
13. Remove the RIP board cage. See **"RIP board cage removal"** on page 5-128.
14. Remove the fan assembly. See **"Fan assembly removal"** on page 5-71.

Note: It is not necessary to remove the connector and harness of the fan assembly.

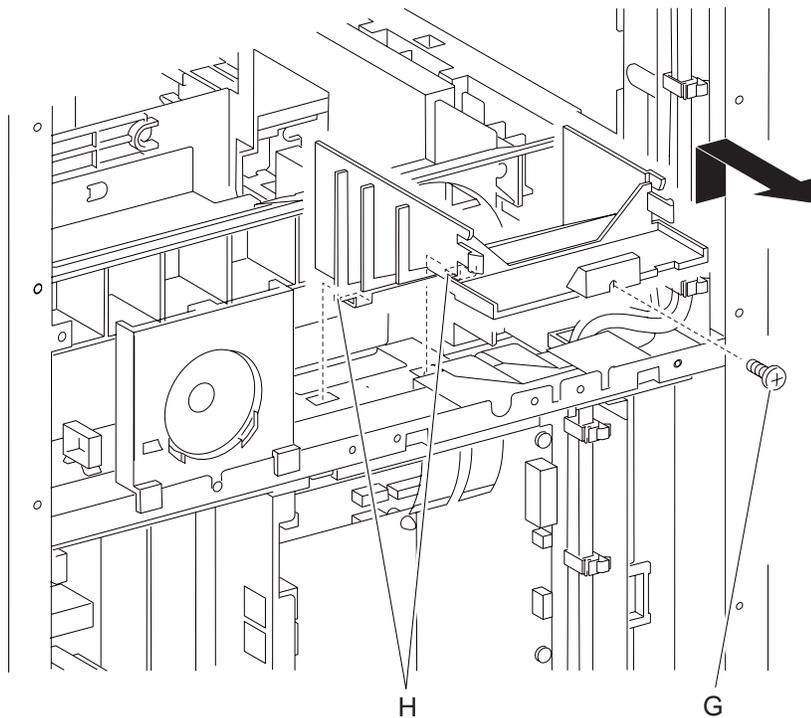
15. Disconnect the four connectors (A) (P/J60, P/J61, P/J62, and P/J63) and two flat cables (B) (P/J64 and P/J65) of the scanner assembly from the engine board.
16. Remove the screw (C) (silver, 6mm) that attaches the ground wire of the scanner assembly to the engine board cage.
17. Remove the two toroids (D) from the two flat cables. Set them aside for reinstallation.
18. Remove the two toroids (E) on the connectors (J62, J63) from the harness. Set them aside for reinstallation.



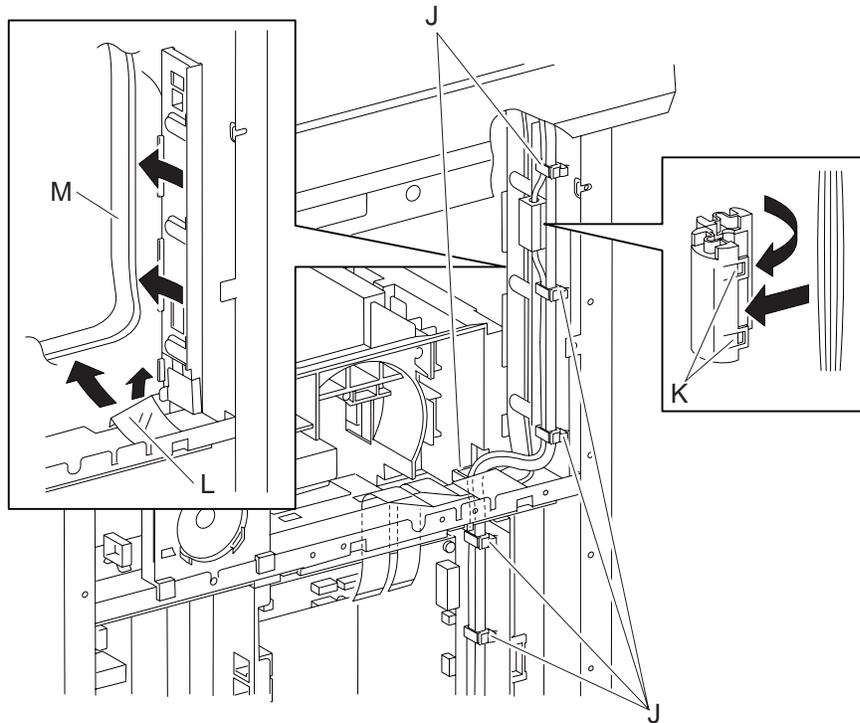
19. Remove the upper duct by releasing the two hooks (F) on the duct lower and sliding the upper duct backward.



20. Remove the screw (G) (silver, 6mm) that attaches the lower duct to the printer.
21. Release the two hooks (H) on the bottom of the lower duct from the holes of the printer, and remove the lower duct.

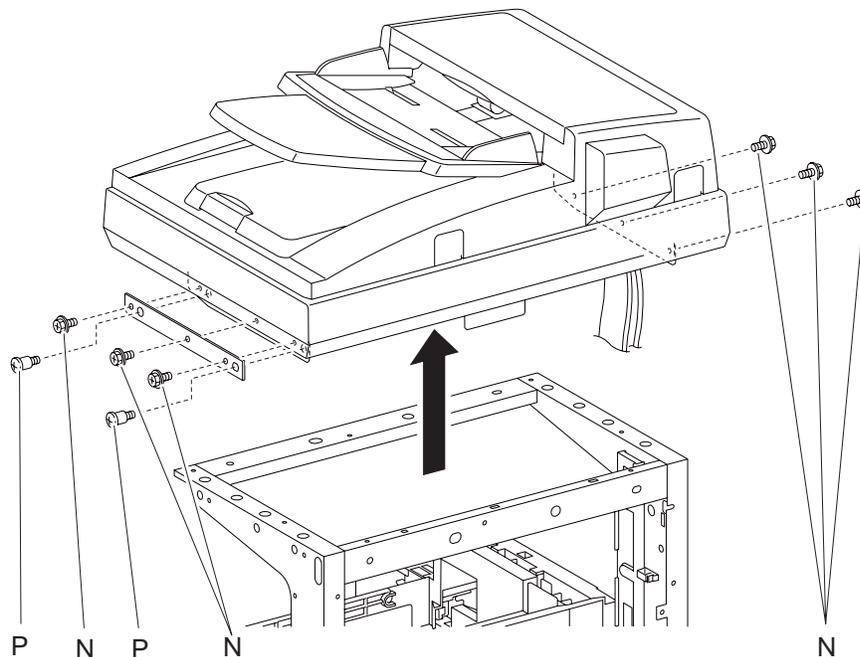


22. Release the harness of the scanner assembly from the six clamps (J) and pull it out of the slot on the fax plate assembly.
23. Release the two hooks (K) on the core SFT-25SN, remove the core SFT-25SN from the harness.
24. Release the two flat cables (L) from the under side of the film.
25. Release the two flat cables (M) from the ribbon cable guide.



26. Remove the six screws (N) (silver, with flange, 6mm) that attach the scanner assembly to the printer.
27. Remove the two screws (P) that attach the plate sub to the printer.
28. Carefully lift the scanner assembly from the printer.

Warning: Make sure that the scanner harness assembly is not be pinched or damaged inside the printer.

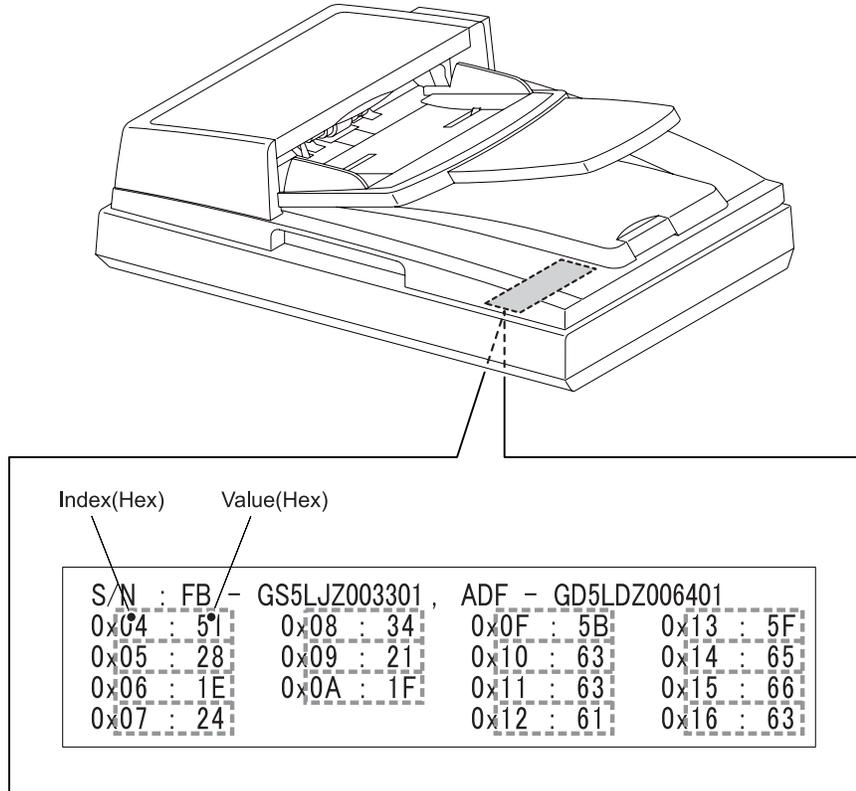


Installation

Warning: When replacing the scanner assembly with a new one, ensure that a correction adjustment is performed on the new scanner assembly. See “**Scanner adjustment**” on page 5-3. The correction values for adjustment are provided on the label at the under side of the scanner.

Warning: The steps described below should be performed before installing the new scanner assembly to the printer main body. Otherwise, these steps will be difficult to perform. When you check the label on the scanner, take care not to damage the tray or other parts of the scanner assembly.

Note: Turn the scanner upside down. Scanner parameter values are provided on the label at the bottom of the scanner. Note them down first so that you can refer to them from your operating position. The correction values in the illustration are examples only and not the actual values.

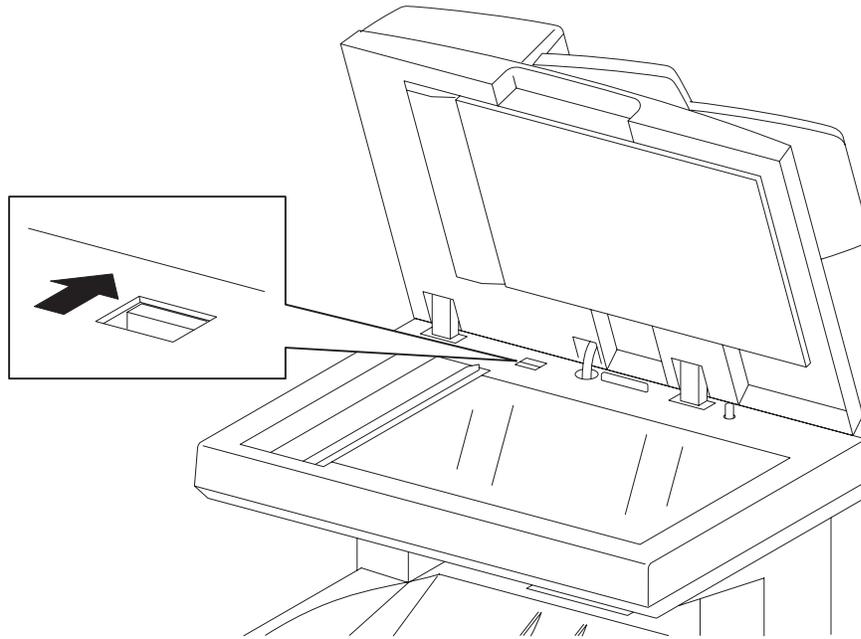


29. Turn the scanner right side up.
30. Route the harness and flat cables of the scanner assembly to the printer, and then replace the scanner assembly to the printer.

Note: Make sure that the harness is not pinched between the scanner assembly and the printer.
31. Secure the sub plate to the printer using the two screws.
32. Make sure that the plate sub is installed in direction as shown in the figure.
33. Secure the scanner assembly to the printer using the six screws (silver, with flange, 6mm).
34. Route the two flat cables to the ribbon cable guide.
35. Make sure that the narrower flat cable comes on top of the wider one.
36. Route the two flat cables through the under side of the film.
37. Route the harness of the scanner assembly to the printer through the slot of the plate assembly fax AIO. Attach the core SFT-25SN at the position shown in the illustration.

Note: Make sure that the harness comes on top at the point where the harness and flat cable of the scanner assembly overlap each other.
38. Attach the harness (not covered with a protection tube) coming from the scanner assembly to the core SFT-25SN.
39. Secure the harness of the scanner assembly with the six clamps.

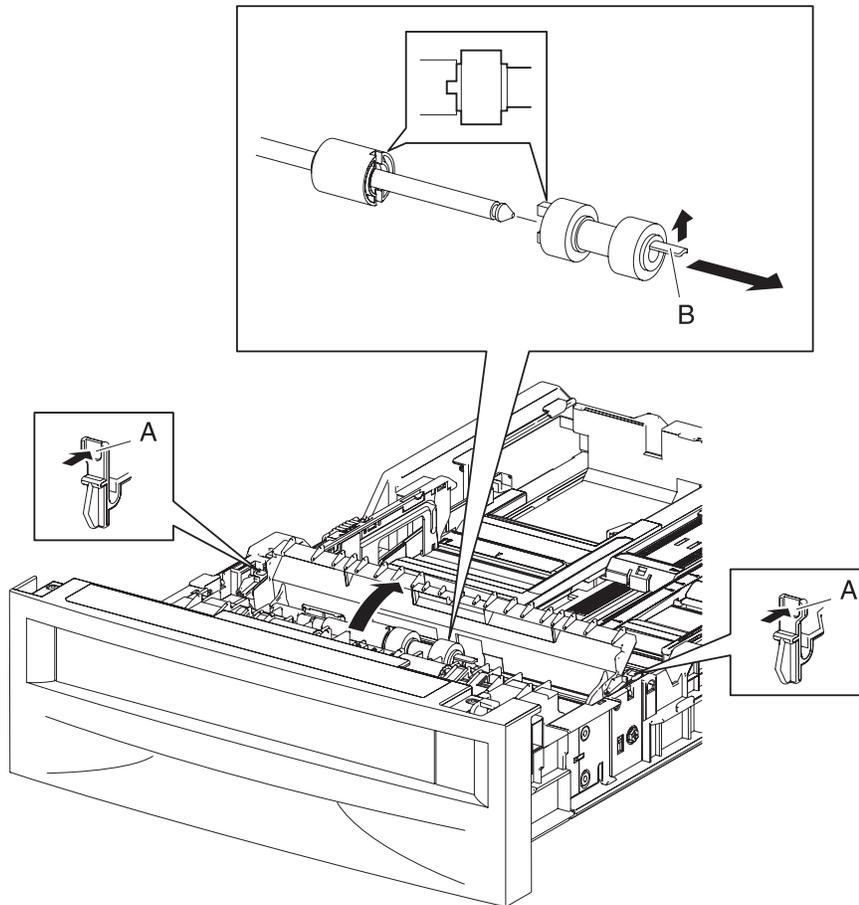
40. Replace the lower duct to the printer by inserting the two hooks of the lower duct into the holes of the printer.
41. Secure the lower duct to the printer using the screw (silver, 6mm).
42. Place the upper duct on the lower duct. Slide the upper duct forward until the upper duct is hooked by the two hooks.
43. Attach the toroid FRC27-12-1.3 to the wider flat cable.
44. Attach the toroid FRC27 to the narrower flat cable.
45. Attach the toroid SC-18 to each harness of the connectors (J62, J63).
46. Secure the ground wire of the scanner assembly to the engine board cage using the screw (silver, 6mm).
47. Engage the four connectors (P/J60, 61, 62, 63) of the harness and connect the two flat cables (P/J64, 65) to the engine board.
48. Replace the fan assembly. See **“Installation notes:” on page 5-72.**
49. Open the assembly and move the carriage locking lever back to the unlocked position.



Warning: After installation of the scanner assembly, you must perform the scanner adjustment. See **“Scanner adjustment” on page 5-3.**

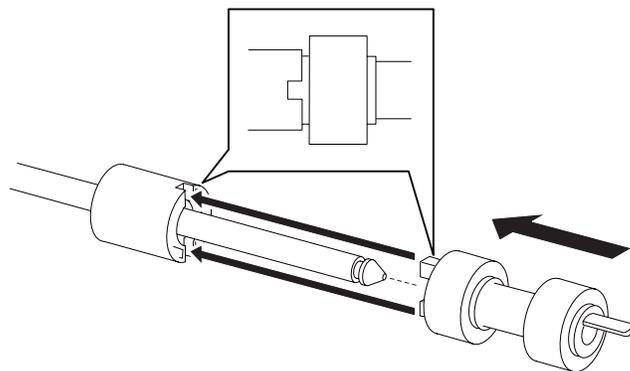
Separator roll removal—250-sheet tray assembly

1. Remove the 250-sheet tray from the printer.
2. Release the left and right latches (A) of the tray cover, and then open the tray cover.
3. Release the latch (B) on the separator roll, and then remove the separator roll from the separator shaft.



Installation

1. Slide the separator roll onto the separator shaft so that the tab on the separator roll is aligned with the notch on the separator friction clutch. Secure the latch on the other end of the separator roll into the groove on the shaft.

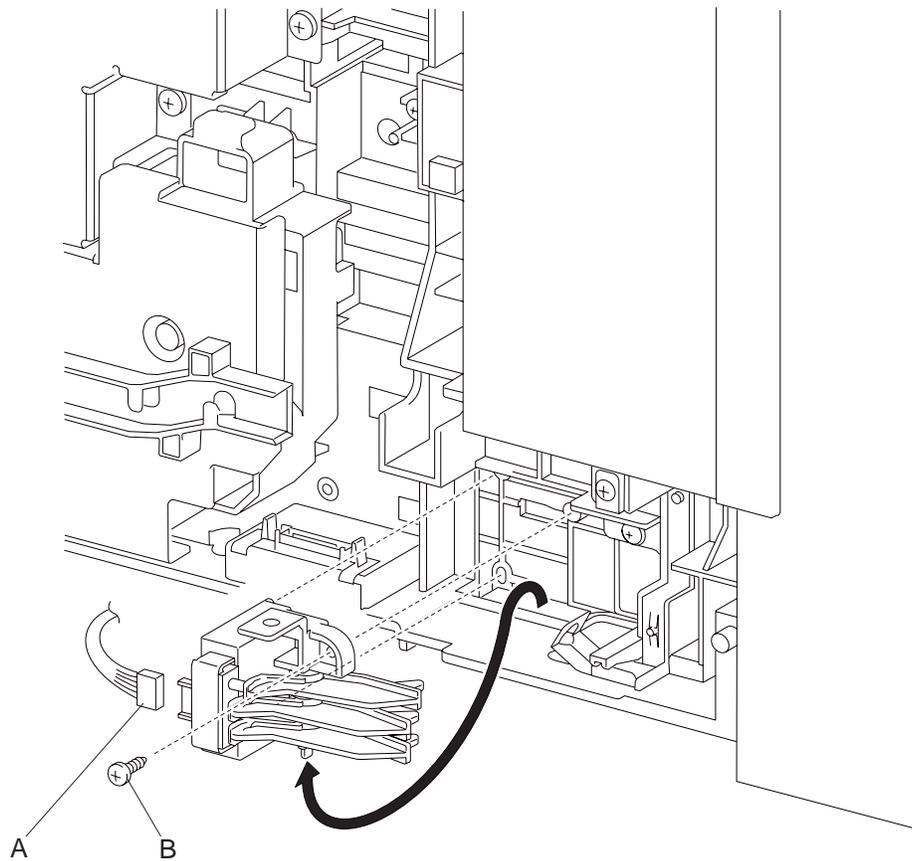


2. Close the tray cover.
3. Reinstall the 250-sheet tray.

Size switch assembly removal

This size switch assembly is for the 250-sheet tray.

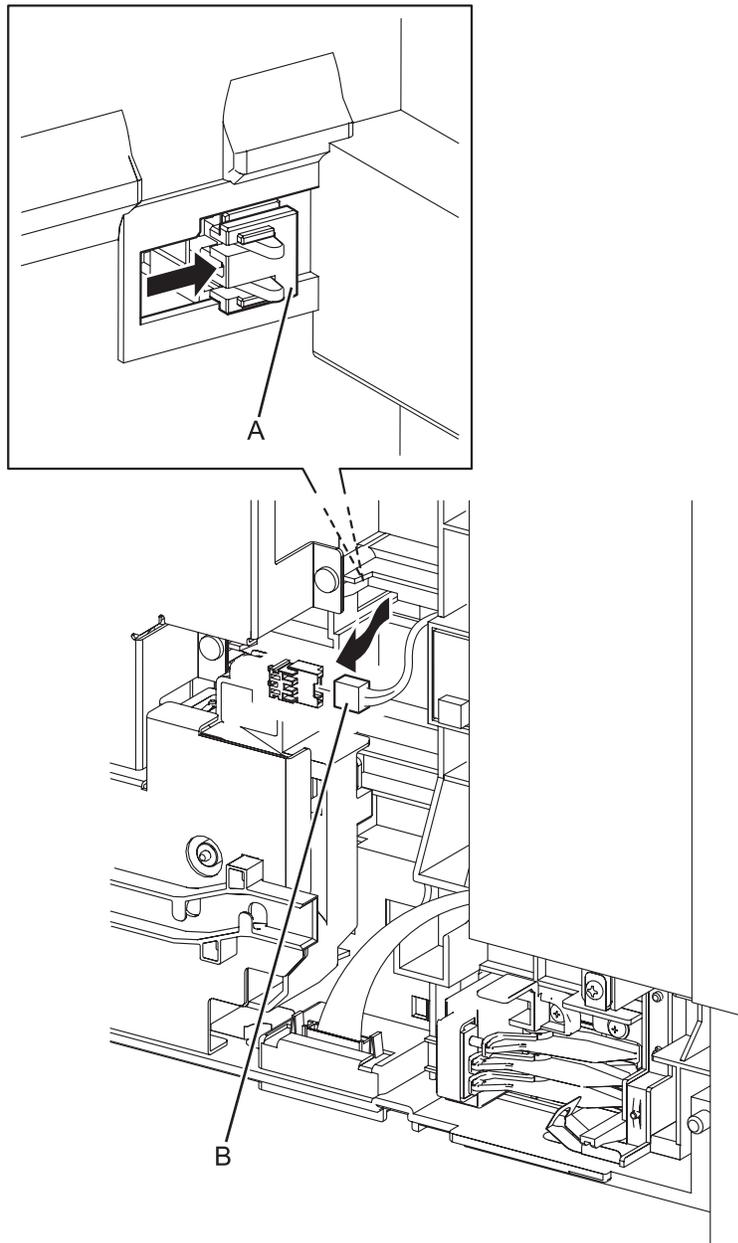
1. Open the front cover.
2. Remove the fuser. See **"Fuser removal" on page 5-78.**
3. Remove the rear cover. See **"Rear cover removal" on page 5-22.**
4. Remove the bottom cover. See **"Bottom cover removal" on page 5-8.**
5. Remove the inner right pole cover. See **"Inner right pole cover removal" on page 5-17.**
6. Remove the right pole cover. See **"Right pole cover removal" on page 5-25.**
7. Remove the right cover. See **"Right cover removal" on page 5-23).**
8. Disconnect the connector (A) (P/J231) of the size switch assembly.
9. Remove the screw (B) (silver, tap, 10mm) that attaches the size switch assembly to the printer.
10. Remove the size switch assembly by releasing the two bosses and the underside tab of the size switch assembly from the holes on the printer.



Smart Chip contact removal

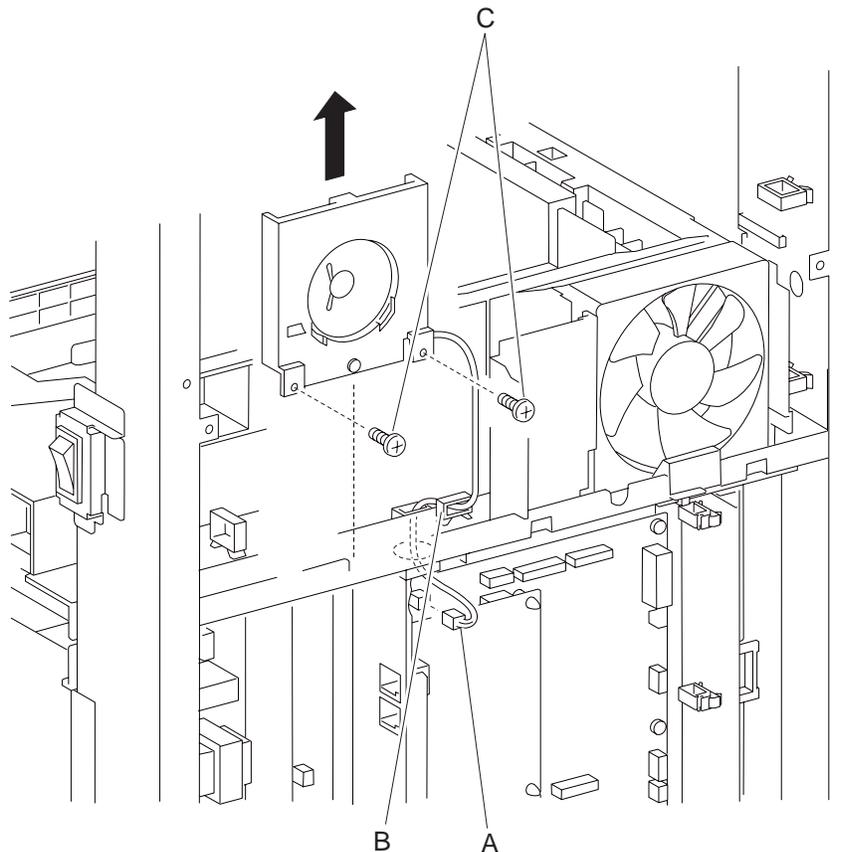
The Smart Chip contact is not a FRU and the removal information is included for diagnostic use.

1. Open the front cover assembly.
2. Remove the fuser. See **“Fuser removal” on page 5-78.**
3. Remove the rear cover. See **“Rear cover removal” on page 5-22.**
4. Remove the bottom cover. See **“Bottom cover removal” on page 5-8.**
5. Remove the inner right pole cover. See **“Inner right pole cover removal” on page 5-17.**
6. Remove the right pole cover. See **“Right pole cover removal” on page 5-25.**
7. Remove the right cover. See **“Right cover removal” on page 5-23.**
8. Remove the toner cartridges. See **“Toner cartridge removal” on page 5-141.**
9. Shift the Smart Chip contact (A) to the right, and remove the Smart Chip contact from the printer.
10. Disconnect the Smart Chip contact connector (B), and remove the Smart Chip contact.



Speaker assembly removal

1. Open the front cover.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the rear cover. See **"Rear cover removal"** on page 5-22.
4. Remove the bottom cover. See **"Bottom cover removal"** on page 5-8.
5. Remove the inner right pole cover. See **"Inner right pole cover removal"** on page 5-17.
6. Remove the right pole cover. See **"Right pole cover removal"** on page 5-25.
7. Remove the right cover. See **"Right cover removal"** on page 5-23.
8. Remove the inner left cover. See **"Inner left pole cover removal"** on page 5-16.
9. Remove the left pole cover. See **"Left pole cover removal"** on page 5-20.
10. Remove the left cover. See **"Left cover removal"** on page 5-18.
11. Remove the top cover. See **"Top cover removal"** on page 5-26.
12. Remove the RIP board cage. See **"RIP board cage removal"** on page 5-128.
13. Disconnect the connector (A) (P/J52) of the speaker assembly from the engine board.
14. Release the harness of the speaker assembly from the two clamps (B) and pull them out of the hole on the printer.
15. Remove the two screws (C) (silver, 6mm) that attach the speaker assembly to the printer.
16. Remove the speaker assembly from the printer by sliding it upward.



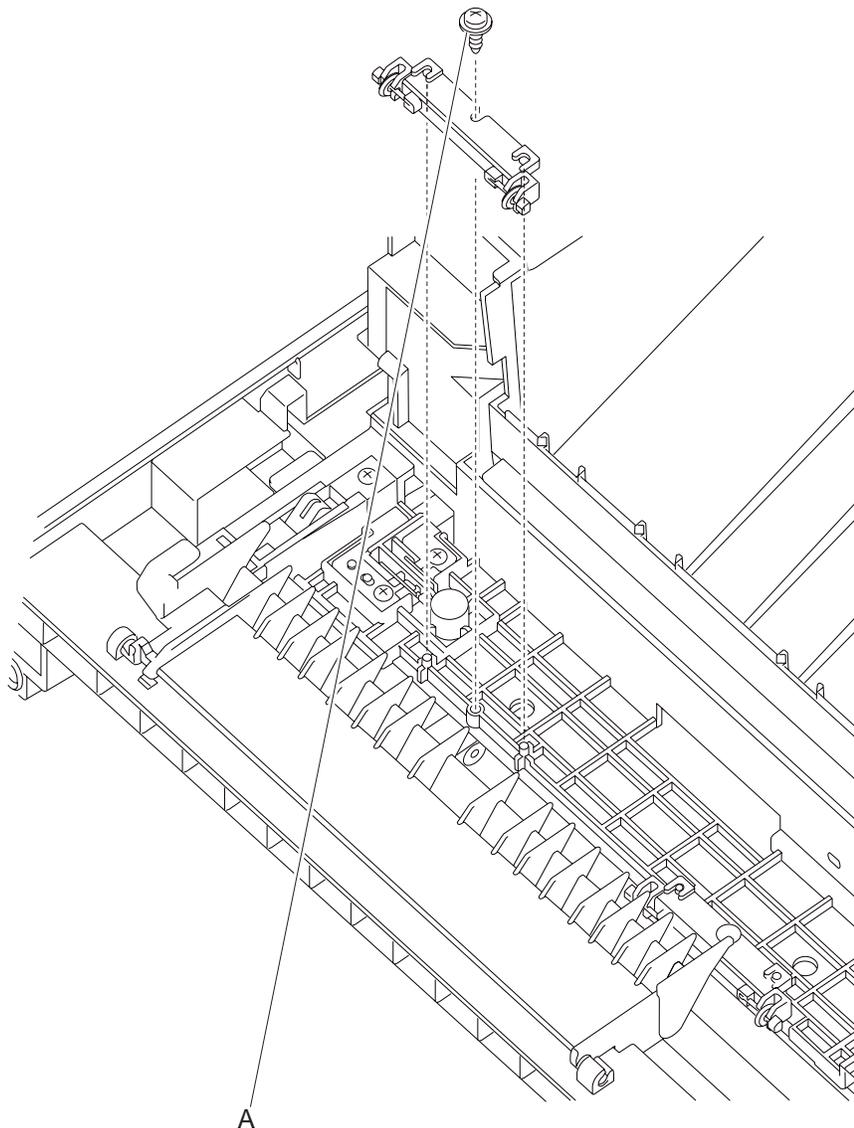
Installation

1. Align the lug of the speaker assembly with the U-shaped notch of printer frame.
2. Secure the speaker assembly to the printer using the two screws (silver, 6mm).
3. Route the harness of the speaker assembly through the hole of the printer.
4. Engage the connector (P/J52) to the connector of the engine board.
5. Secure the harness of the speaker assembly with the two clamps.

Spur assembly removal

This removal procedure is similar for the left and right sides of the spur assembly.

1. Open the front cover.
2. Remove the fuser. See **"Fuser removal"** on page 5-78.
3. Remove the screw (A) (silver, with flange, tap, 8mm) that attaches the spur assembly to the printer.



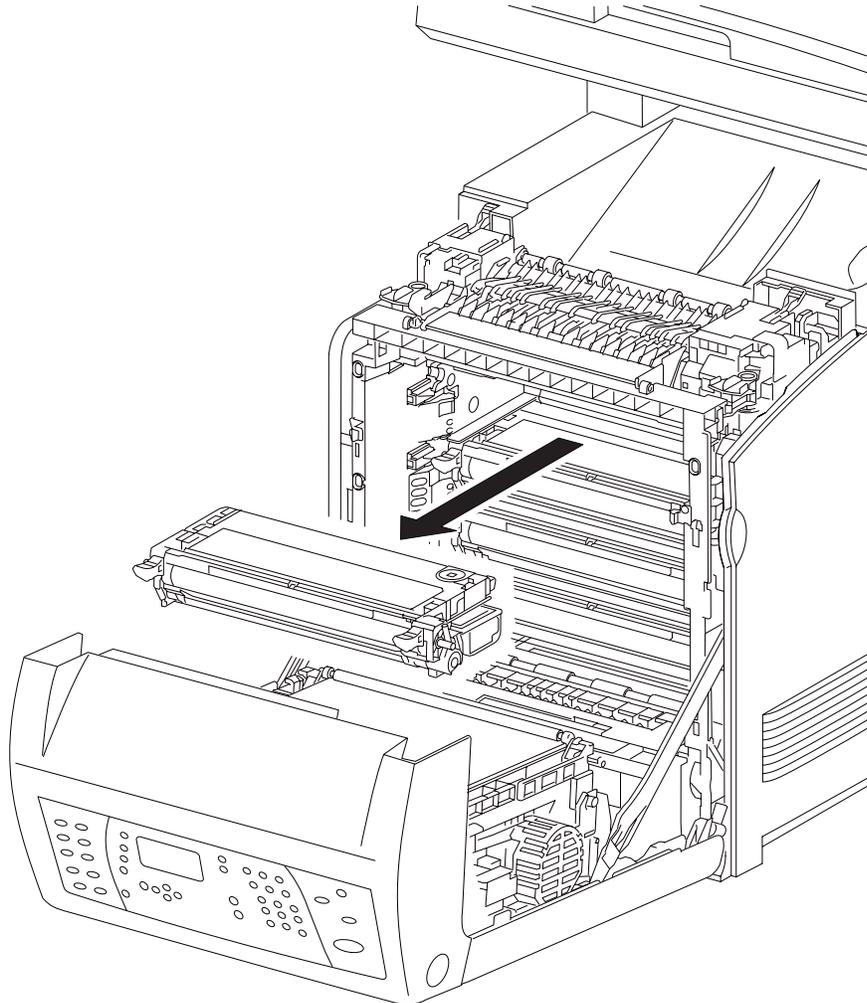
4. Remove the spur assembly from the printer.

Toner cartridge removal

Note: The toner cartridges are not a FRU.

The toner cartridge removal below is similar for all toner cartridges (cyan, magenta, yellow, and black). Only the position of the color cartridge differs.

1. Open the front cover.
2. Grasp the left and right handles of the toner cartridge and pull it toward you.



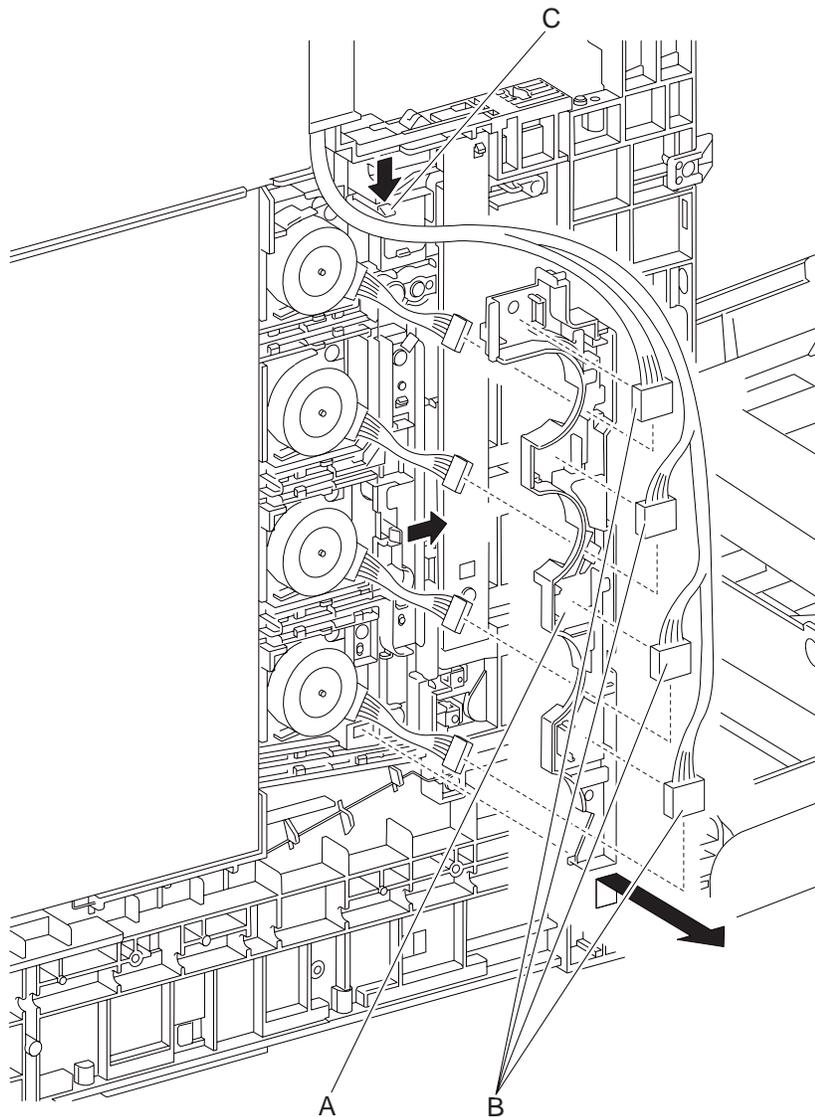
Installation note: If several or all of the toner cartridges are removed, replace them in the following order (from the bottom up):

Yellow
Magenta
Cyan
Black

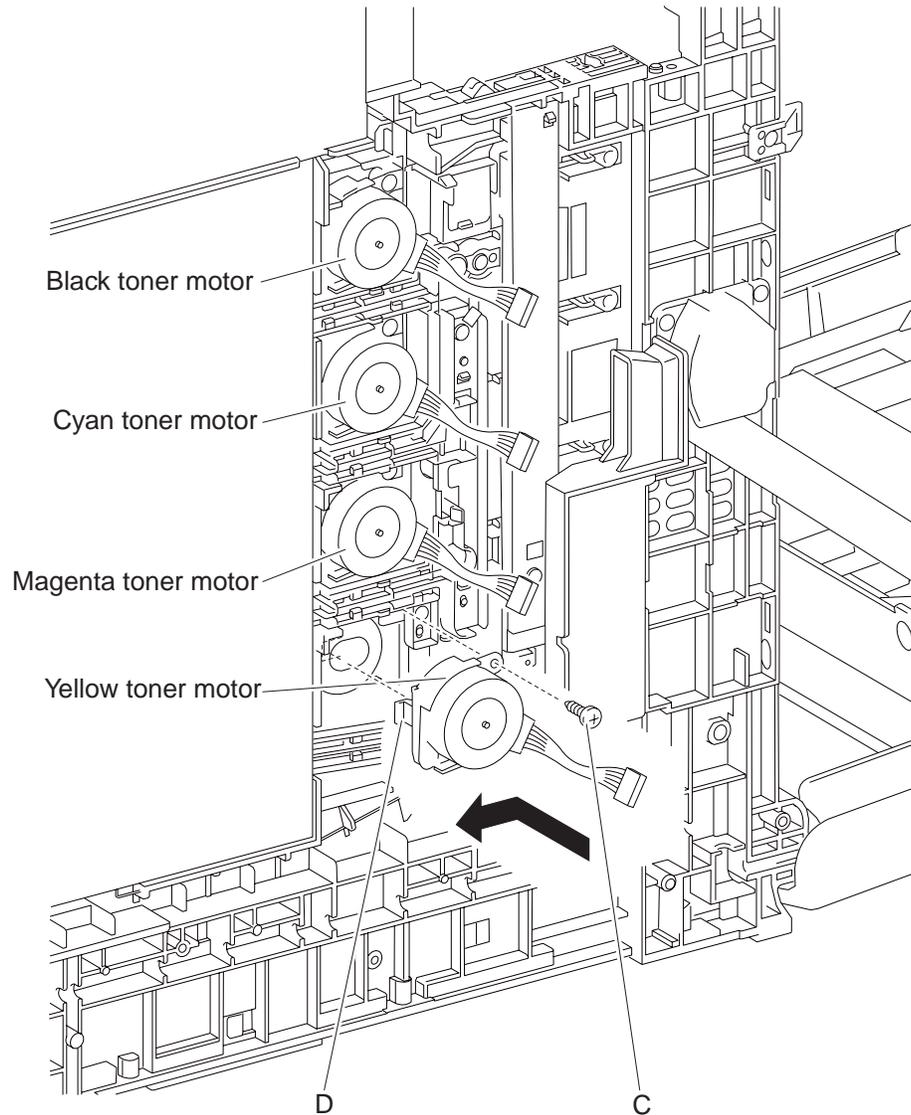
Toner motor removal

Note: Described below is the removal procedure common among the toner motors (cyan, magenta, yellow, and black).

1. Open the front cover.
 2. Remove the fuser. See **"Fuser removal" on page 5-78.**
 3. Remove the rear cover. See **"Inner left pole cover removal" on page 5-16.**
 4. Remove the bottom cover. See **"Bottom cover removal" on page 5-8.**
 5. Remove the inner left cover. See **"Left cover removal" on page 5-18.**
 6. Remove the left pole cover. See **"Left pole cover removal" on page 5-20.**
 7. Remove the left cover. **"Left cover removal" on page 5-18.**
 8. Remove the four sets of connectors and the toner motor harness from the motor harness cable guide (A), and disconnect the four sets of connectors for the toner motors (B).
- Note:** Leave the junction connector on the printer-side cable.
9. Release the two hooks (C) that attach the motor harness cable guide to the printer.
 10. Release the lug on the motor harness cable guide from the printer by moving the motor harness cable guide slightly upward. Pass the four sets of connectors for the toner motor through the hole on the motor harness cable guide, and then remove the motor harness cable guide.



11. Remove the screw (C) (silver, tap, 10mm) that attaches the toner motor to the printer.
12. Release the tab (D) on the toner motor by moving the toner motor slightly toward you.



13. Remove the toner motor from the printer.

Installation

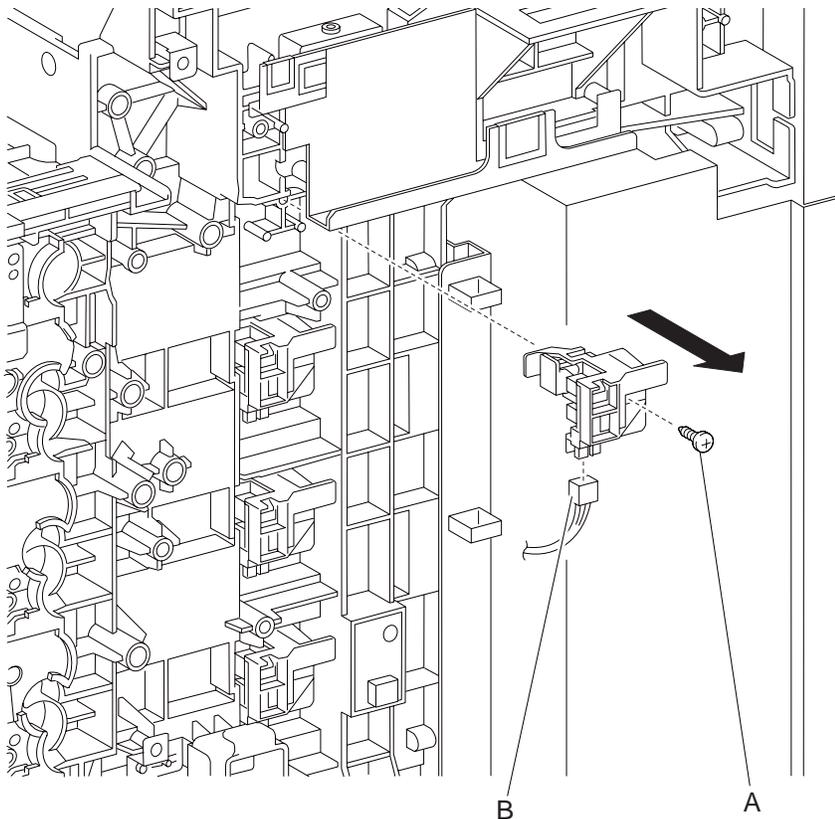
Described below is the replacement procedure common among toner motors (cyan, magenta, yellow, and black).

1. Replace the toner motor to the printer by aligning the tab of the toner motor with the hole on the printer and moving it slightly backward.
2. Secure the toner motor to the printer using the screw (silver, tap, 10mm).
3. Pass the four sets of connectors of the toner motor through the hole of the duct harness motor.
4. Align the tab of the duct harness motor with the hole on the printer, and secure the duct harness motor with the two hooks on the printer.
5. Engage the four sets of connectors of the toner motor and route the harness along the duct harness motor.

Toner sensor assembly (black) removal

For removal and replacement of the cyan, magenta, and yellow toner sensor assemblies, see **“Toner sensor assembly (cyan, magenta, yellow) removal”** on page 5-145.

1. Open the front cover.
2. Remove the fuser. See **“Fuser removal”** on page 5-78.
3. Remove the rear cover. See **“Rear cover removal”** on page 5-22.
4. Remove the bottom cover. See **“Bottom cover removal”** on page 5-8.
5. Remove the inner right pole cover. See **“Inner right pole cover removal”** on page 5-17.
6. Remove the right pole cover. See **“Right pole cover removal”** on page 5-25.
7. Remove the right cover. See **“Right cover removal”** on page 5-23.
8. Remove the inner left cover. See **“Inner left pole cover removal”** on page 5-16.
9. Remove the left pole cover. See **“Left pole cover removal”** on page 5-20.
10. Remove the left cover. See **“Left cover removal”** on page 5-18.
11. Remove the top cover. See **“Top cover removal”** on page 5-26.
12. Remove the interlock harness. See **“Interlock harness removal”** on page 5-86.
13. Remove the main drive. **“Main drive removal”** on page 5-92.
14. Remove the screw (A) (silver, tap, 10mm) that attaches the black toner sensor assembly to the printer.
15. Remove the black toner sensor assembly from the printer.
16. Disconnect the connector (B) (P/J193) of the black toner sensor assembly.



Installation

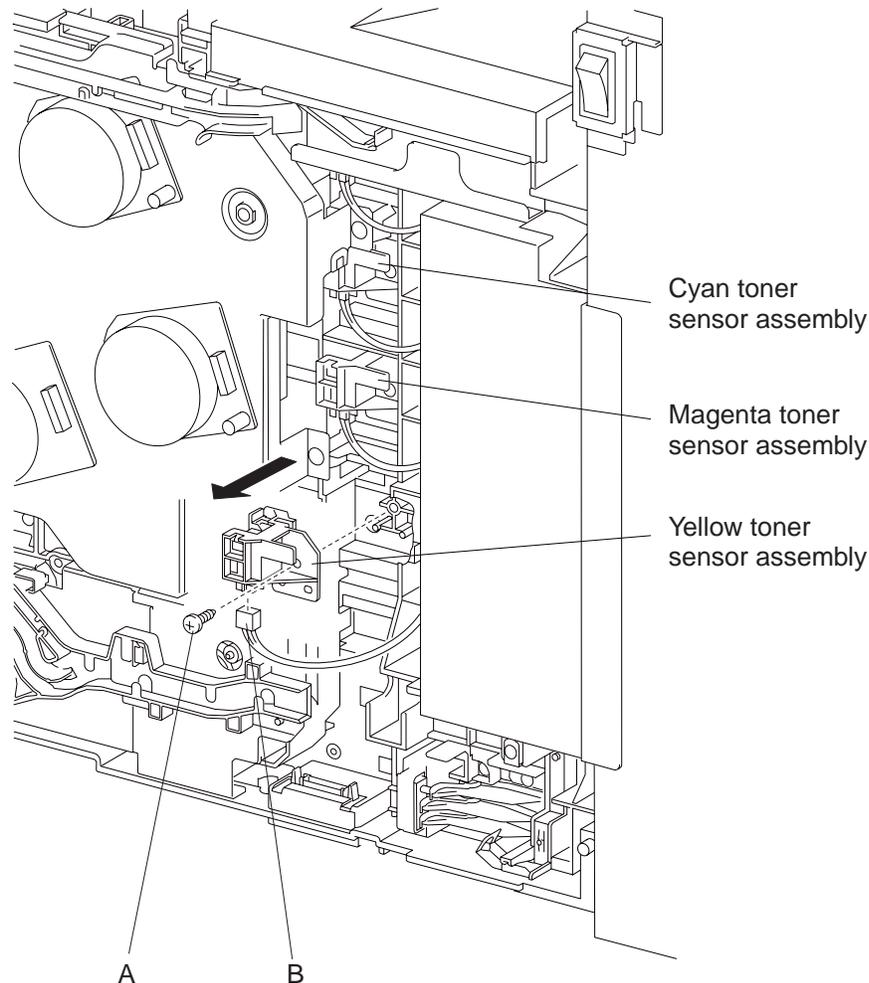
1. Engage the connector (P/J193) of the black toner sensor assembly.
2. Replace the toner sensor assembly by aligning the two holes on the toner sensor assembly with the bosses on the printer.
3. Secure the toner sensor assembly to the printer using the screw (silver, tap, 10mm).

Toner sensor assembly (cyan, magenta, yellow) removal

For removal and replacement of the black toner sensor assembly, see **“Toner sensor assembly (black) removal” on page 5-144**

Note: Described below is the removal procedure common among toner sensor assemblies (cyan, magenta, and yellow).

1. Open the front cover.
2. Remove the fuser. See **“Fuser removal” on page 5-78**.
3. Remove the rear cover. See **“Rear cover removal” on page 5-22**.
4. Remove the bottom cover. See **“Bottom cover removal” on page 5-8**.
5. Remove the inner right pole cover. See **“Inner right pole cover removal” on page 5-17**.
6. Remove the right pole cover. See **“Right pole cover removal” on page 5-25**.
7. Remove the right cover. See **“Right cover removal” on page 5-23**.
8. Remove the screw (silver, tap, 10mm) that attaches the toner cartridge assembly to the printer.
9. Remove the toner cartridge assembly from the printer.
10. Disconnect the connector of the toner cartridge assembly.

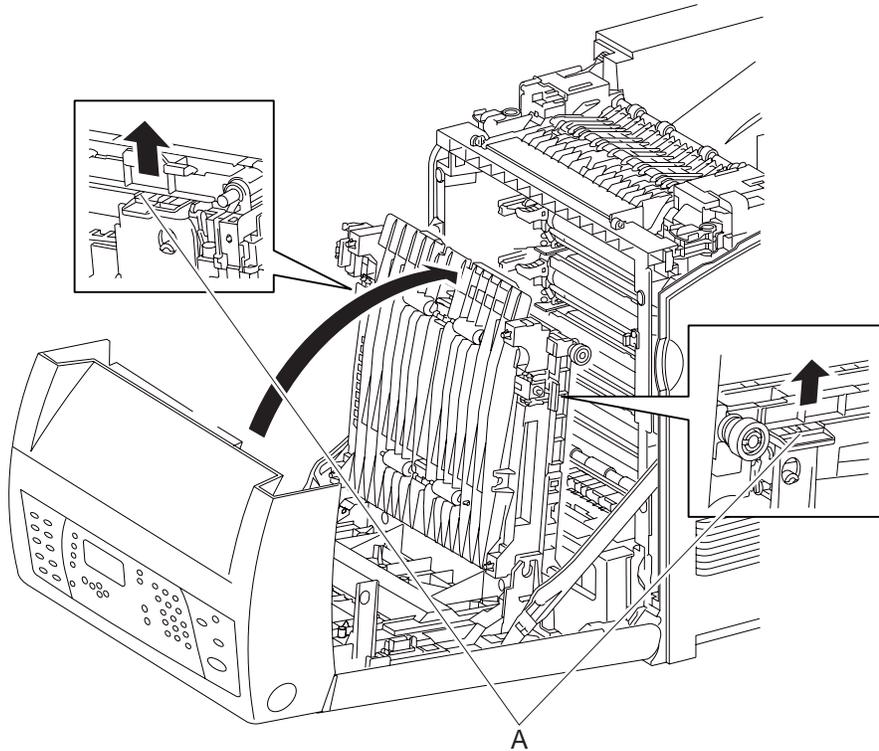


Installation

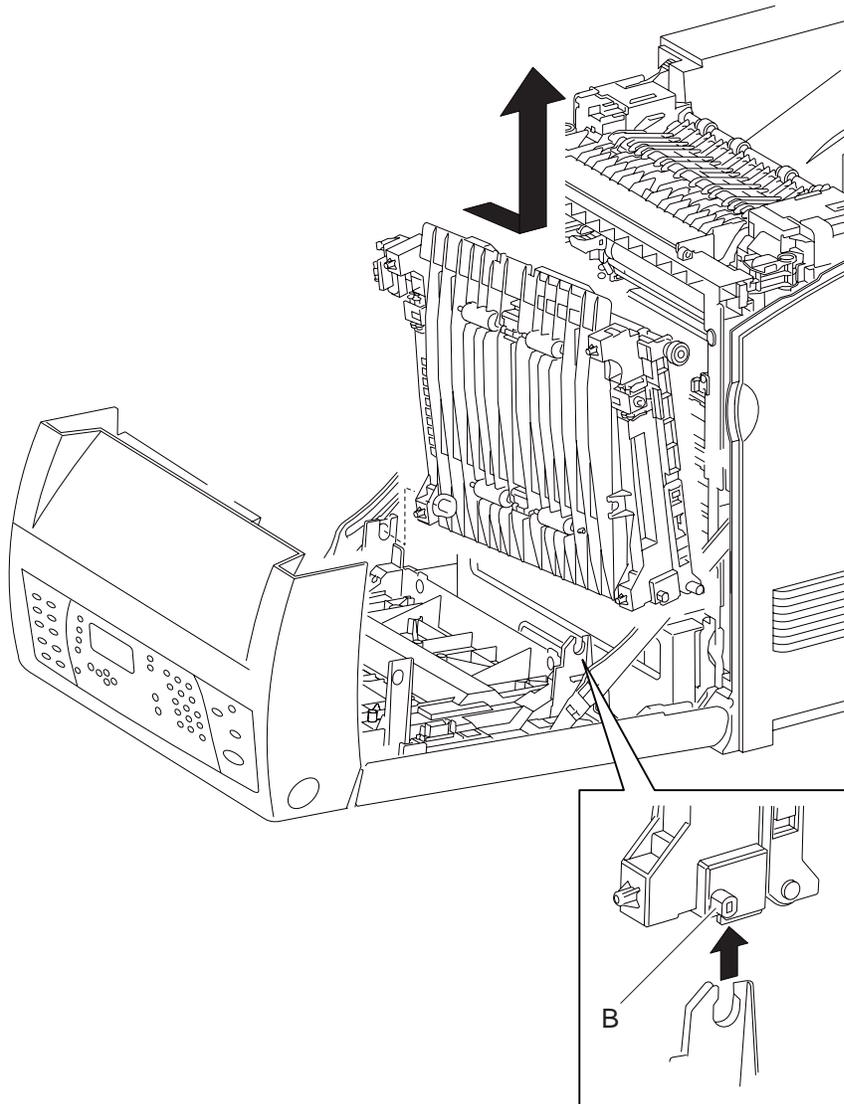
1. Engage the connector of the toner sensor assembly.
2. Align the two holes on the toner sensor assembly with the bosses on the printer.
3. Secure the toner sensor assembly to the printer using the screw (silver, tap, 10mm).

Transfer belt removal

1. Open the front cover.
2. Release the lock by pulling up the levers (A) on the left and right sides of the transfer belt, and raise the transfer belt upright.



3. Remove the transfer belt by releasing the right side tab (B) from the U-shaped notch of the front cover, and pulling out the left side tab on the transfer belt from the hole on the front cover.



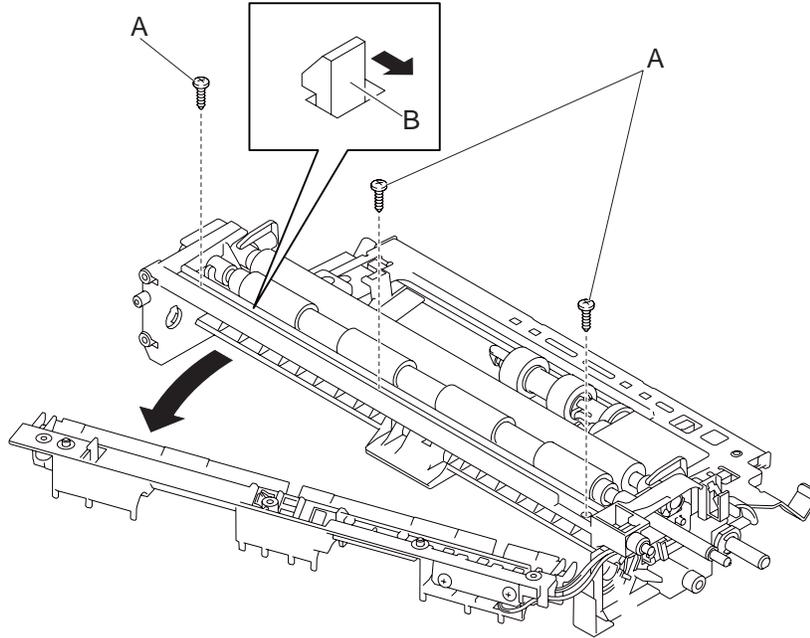
Installation

1. Replace the transfer belt by inserting the left side boss on the transfer belt into the hole on the front cover and then inserting the right side boss on the transfer belt into the U-shaped groove on the front cover.
2. Tilt the transfer belt slowly, and then secure with the left and right levers.
3. Close the front cover.

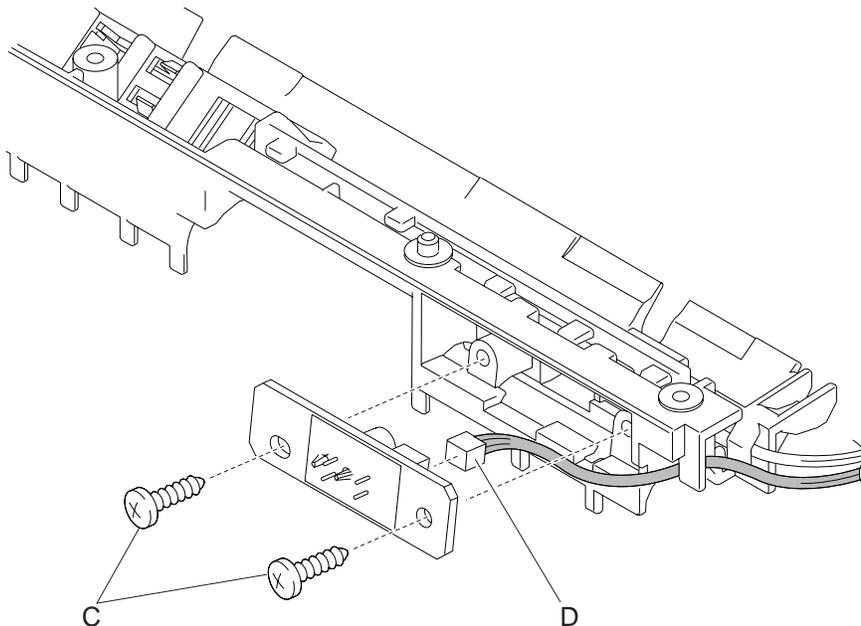
Transparency sensor LED removal

1. Remove the paper feed assembly. See **"Paper feed assembly removal"** on page 5-108.
2. Remove the turn clutch. See **"Turn clutch assembly removal"** on page 5-151.
3. Remove the turn roll assembly. See **"Turn roll assembly removal"** on page 5-152.
4. Remove the three screws (A) (silver, tap, 8mm) that fix the upper registration cable guide.

Warning: Because the upper registration cable guide is still connected to the harness, be careful to avoid applying excessive load to the harness and to the connectors.
5. Release the hook (B) at the upper side of the upper registration cable guide, and pull the left side of the upper registration cable guide toward you.

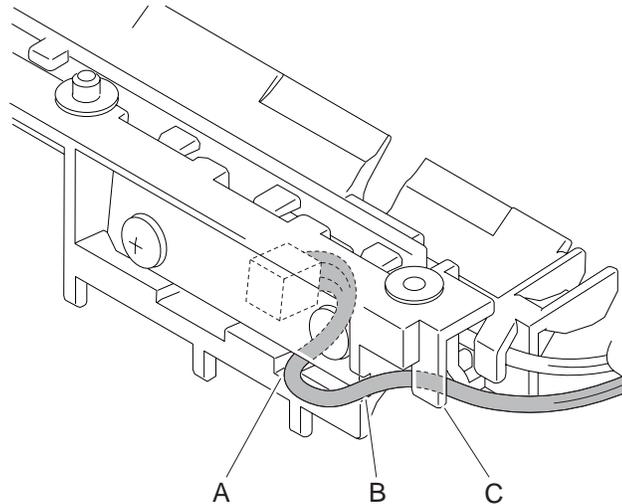


6. Remove the two screws (C) (silver, tap, 8mm) that attach the transparency sensor LED to the upper registration cable guide.
7. Disconnect the connector (D) (P/J2412) of the transparency sensor LED.

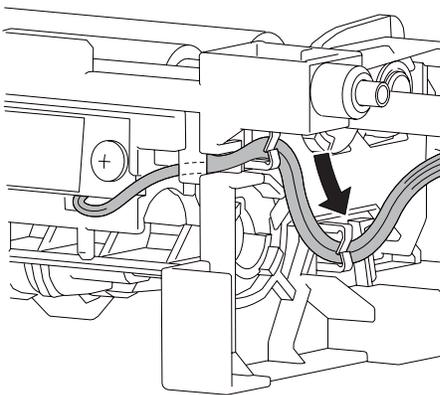


Installation

1. Connect the connector (P/J2412) of the transparency sensor LED, pull the transparency sensor assembly harness toward you from the notch of the upper registration cable guide.
2. Secure the transparency sensor LED to the upper registration cable guide using the two screws (silver, tap, 8mm).
3. Route the transparency assembly harness through the notches (A) and (B), and the retainer (C).

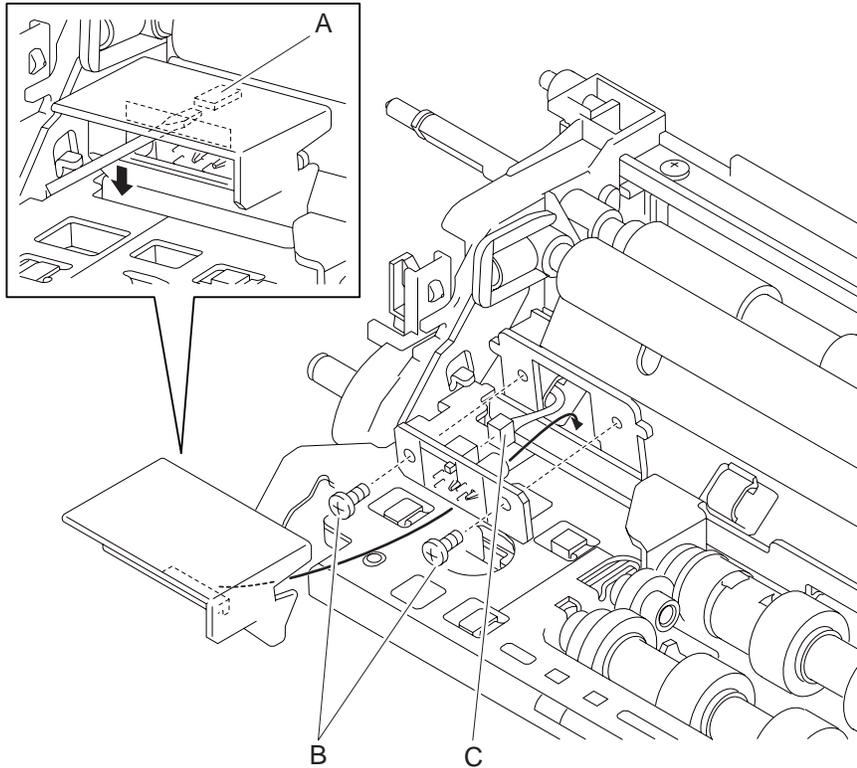


4. Close the upper registration cable guide, which has been open, and attach the hook at the upper side of the upper registration cable guide.
5. Secure the upper registration cable guide using the three screws (silver, tap, 8mm).
Note: When there is a slack with the harness coming out from the right side of the upper registration cable guide, remove such slack by lightly pulling the harness.



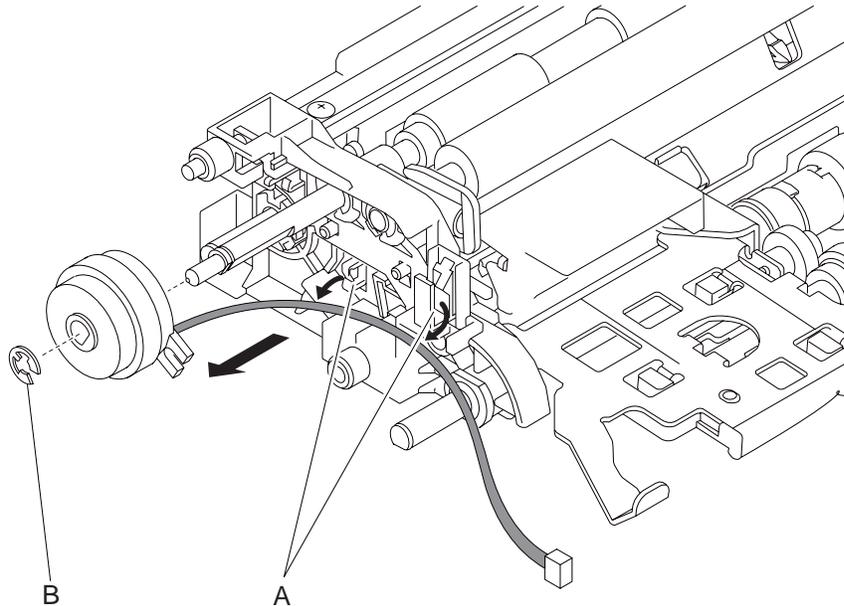
Transparency sensor removal

1. Remove the paper feed assembly. See **“Paper feed assembly removal” on page 5-108.**
2. Release the hook (A) by inserting a small screw driver, or something similar, into the square hole of the transparency sensor cover, and remove the transparency sensor cover.
3. Remove the two screws (B) (silver, 6mm) that attach the transparency sensor to the paper feed assembly.
4. Disconnect the connector (C) (P/J2411) of the transparency sensor.



Turn clutch assembly removal

1. Remove the paper feed assembly. See **“Paper feed assembly removal”** on page 5-108.
2. Release the clamps at two locations (A) that fix the harness section of the turn clutch assembly, and remove the harness of the turn clutch assembly.
3. Remove the E-ring (B) that fixes the turn clutch assembly to the paper feed assembly.
4. Remove the turn clutch assembly from the paper feed assembly.

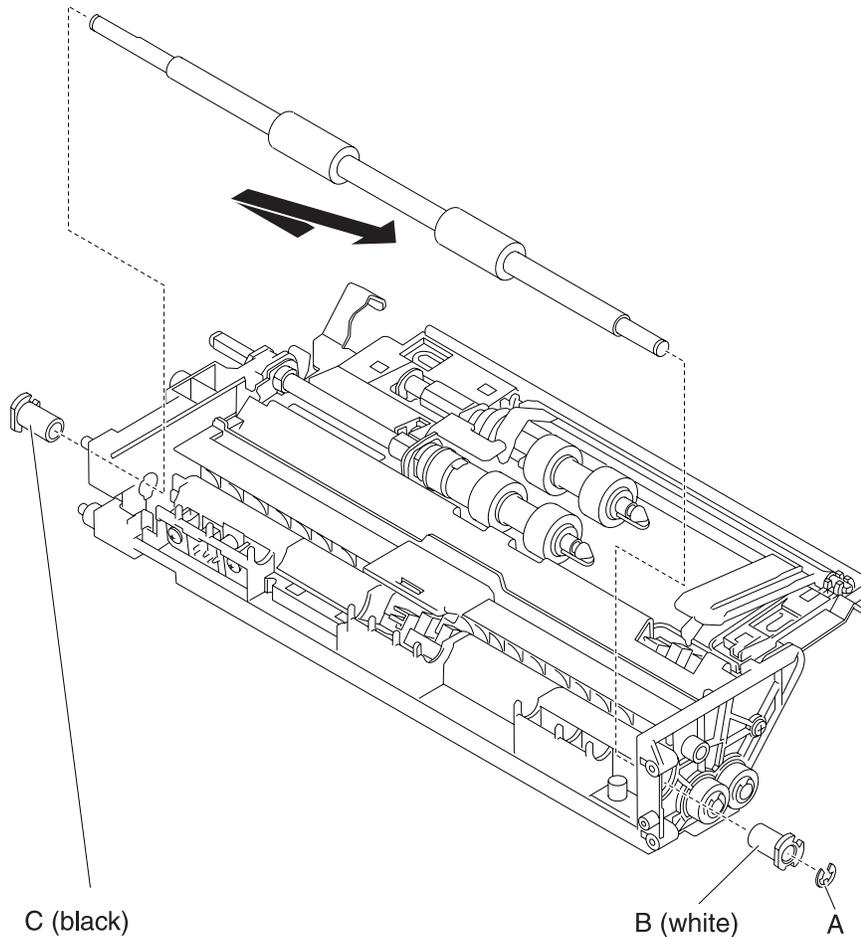


Installation note:

Bring the hole position of the turn clutch assembly to the D-cut surface of the shaft section of the turn roll assembly, and attach the turn clutch assembly by inserting the convex section of the paper feed assembly into the concave section of the turn clutch assembly.

Turn roll assembly removal

1. Remove the paper feed assembly. **“Paper feed assembly removal” on page 5-108.**
2. Remove the turn clutch assembly. See **“Turn clutch assembly removal” on page 5-151.**
3. Remove the E-ring that secures the shaft section of the turn roll assembly.
4. Remove the white registration bearing that attaches the shaft section of the turn roll assembly.
5. Remove the black registration bearing that attaches the shaft section of the turn roll assembly.
6. Shift the turn roll assembly to the left so that the shaft section of the turn roll assembly separates from the right side bearing section of the registration cable guide, and shift it to the right to remove the turn roll assembly.



Installation

Replace the two bearings so that the white one comes on the right side and the black one comes on the left side looking from the direction of the illustration.

6. Preventive maintenance

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

Safety inspection guide

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

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

Check the following items:

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

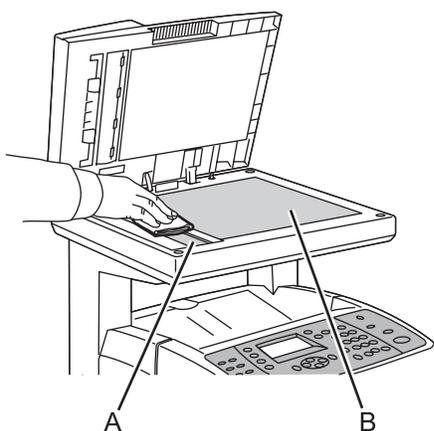
Cleaning the MFP

This section describes how to clean the printer in order to maintain it in good condition and print clean printouts all the time.

	<p>CAUTION</p> <p>Unplug the MFP from the electrical outlet before you begin.</p>
--	--

Cleaning the document glass

Use a moistened lint-free cloth only to clean both the ADF glass (A) and the flatbed glass (B). Do not use any kind of cleaning agent to clean the glass.



Cleaning the exterior

Clean the exterior of the printer about once a month. Wipe the parts with a wet but well-wrung soft cloth. Then wipe with another dry soft cloth. For stubborn stains, apply a small amount of neutral detergent, and gently wipe the stain off.

Note: Do not spray the detergent directly on the printer. The liquid detergent may enter the printer through a gap and cause problems. Never use cleaning agents other than water or neutral detergent.

Cleaning the interior

Warning: Always follow all warning and instructions that are marked on or supplied with the equipment.!

After clearing paper jams or replacing the print cartridge, inspect the inside of the printer before closing the covers.

- Remove any remaining pieces of paper
- Remove any dust or stains with a dry clean cloth

7. Parts catalog

How to use this parts catalog

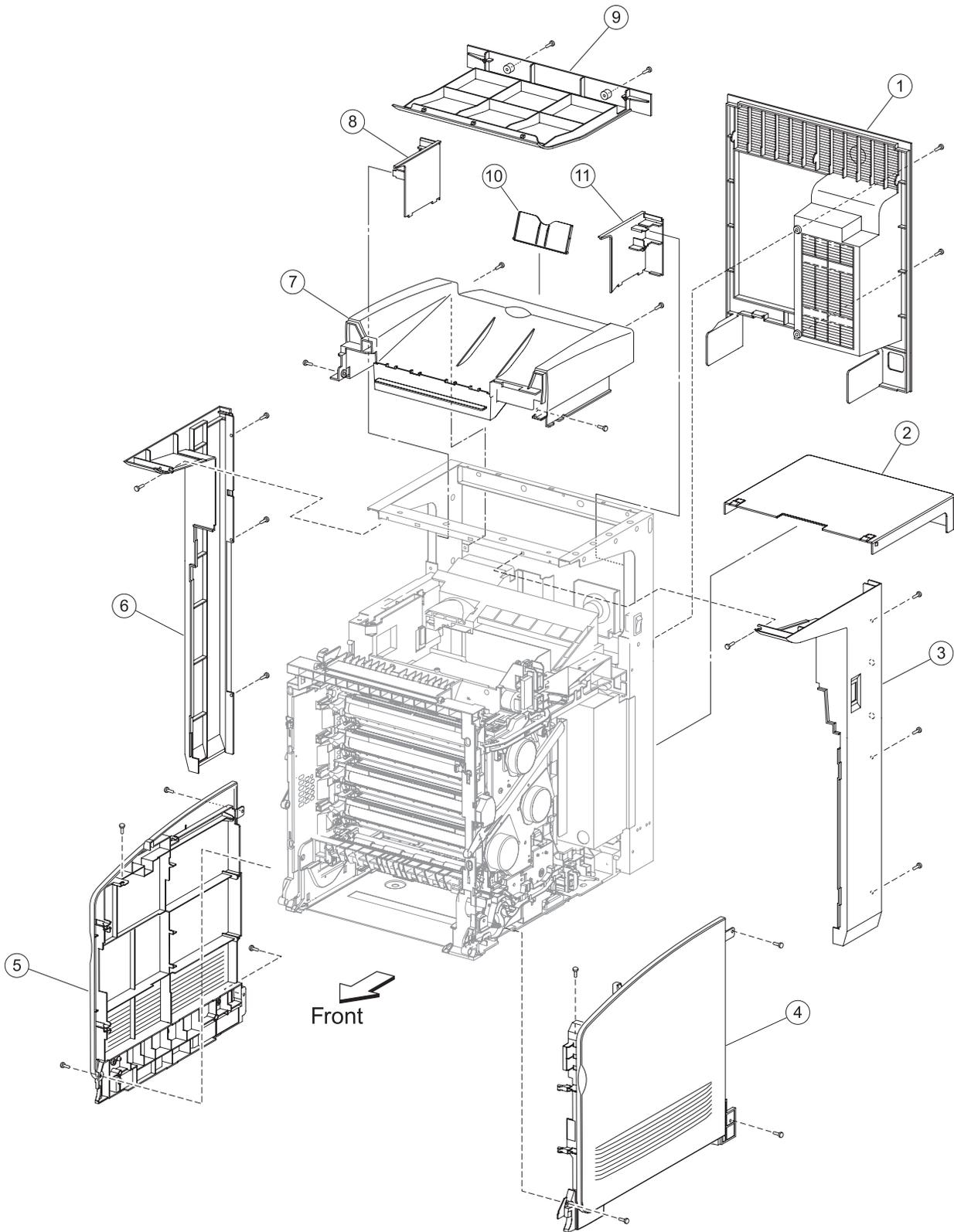
The following legend is used in the parts catalog:

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

- **Asm-index:** Identifies the assembly and the item in the diagram. For example, 3-1 indicates Assembly 3 and item number 1 in the table.
- **Part number:** Identifies the unique number that identifies this FRU.
- **Units/mach:** Refers to the number of units actually used in the base machine or product.
- **Units/FRU:** Refers to the number of units packaged together and identified by the part number.
- **NS:** (Not shown) in the Asm-Index column indicates that the part is procurable but is not pictured in the illustration.
- **PP:** (Parts Packet) in the parts description column indicates the part is contained in a parts packet.
- Model information used in the parts catalog:

Machine type and model	Description
7105-135	Lexmark X560 MFP

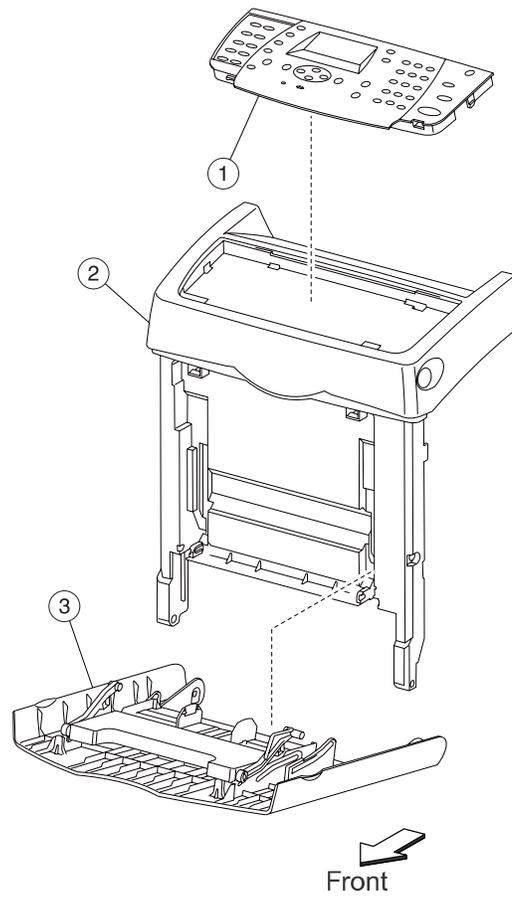
Assembly 1: Covers



Assembly 1: Covers

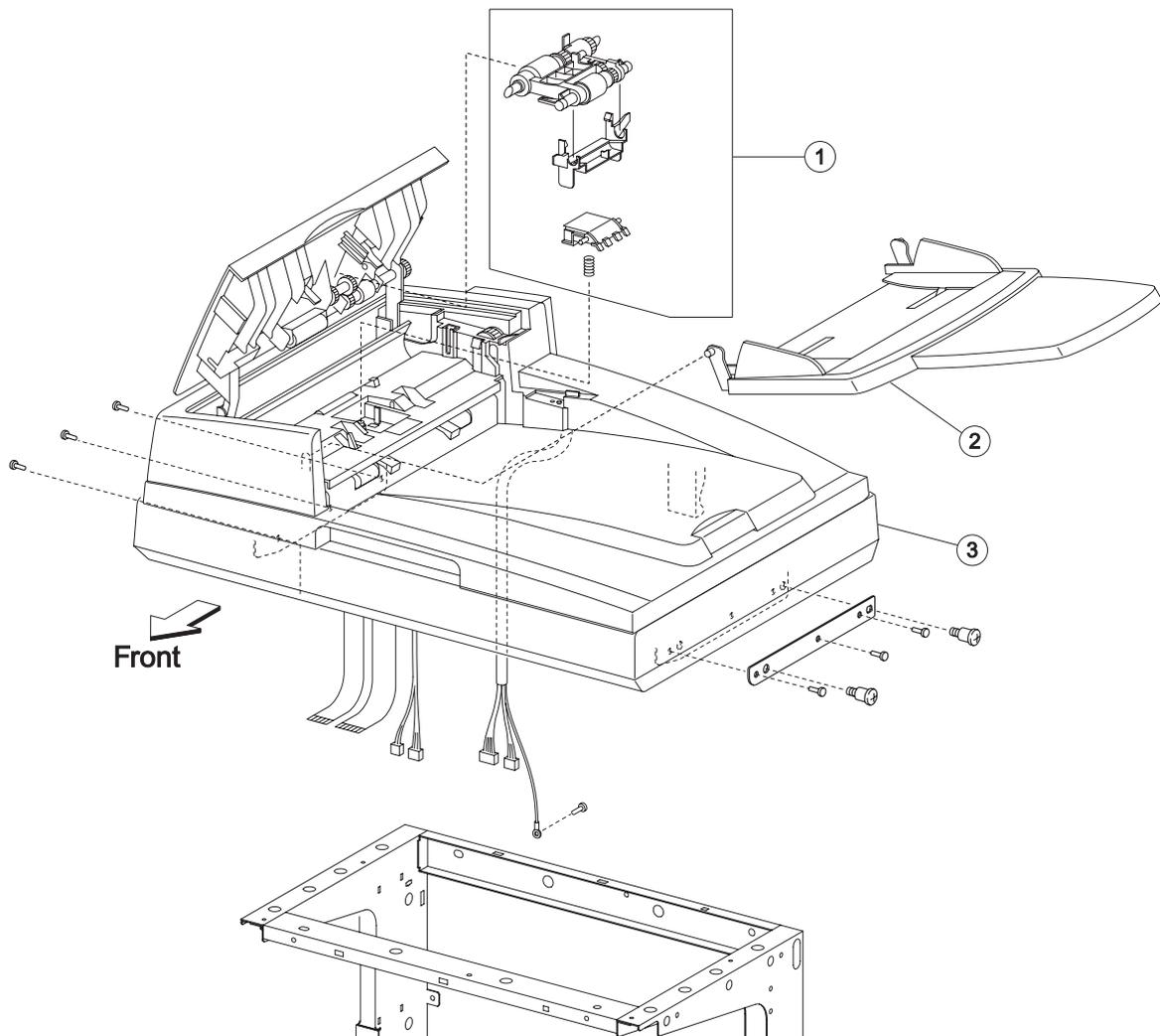
Asm-index	Part number	Units/MFP	Units/FRU	Description
1—1	40X4894	1	1	Rear cover
2	40X4895	1	1	Tray cover
3	40X4896	1	1	Right pole cover
4	40X4897	1	1	Right cover
5	40X4898	1	1	Left cover
6	40X4899	1	1	Left pole cover
7	40X4889	1	1	Top cover
8	40X4891	1	1	Inner left pole cover
9	40X4893	1	1	Bottom cover
10	40X4890	1	1	Extension cover
11	40X4892	1	1	Inner right pole cover
NS	40X4881	1	4	Feet (four in package)

Assembly 2: Front cover and operator panel



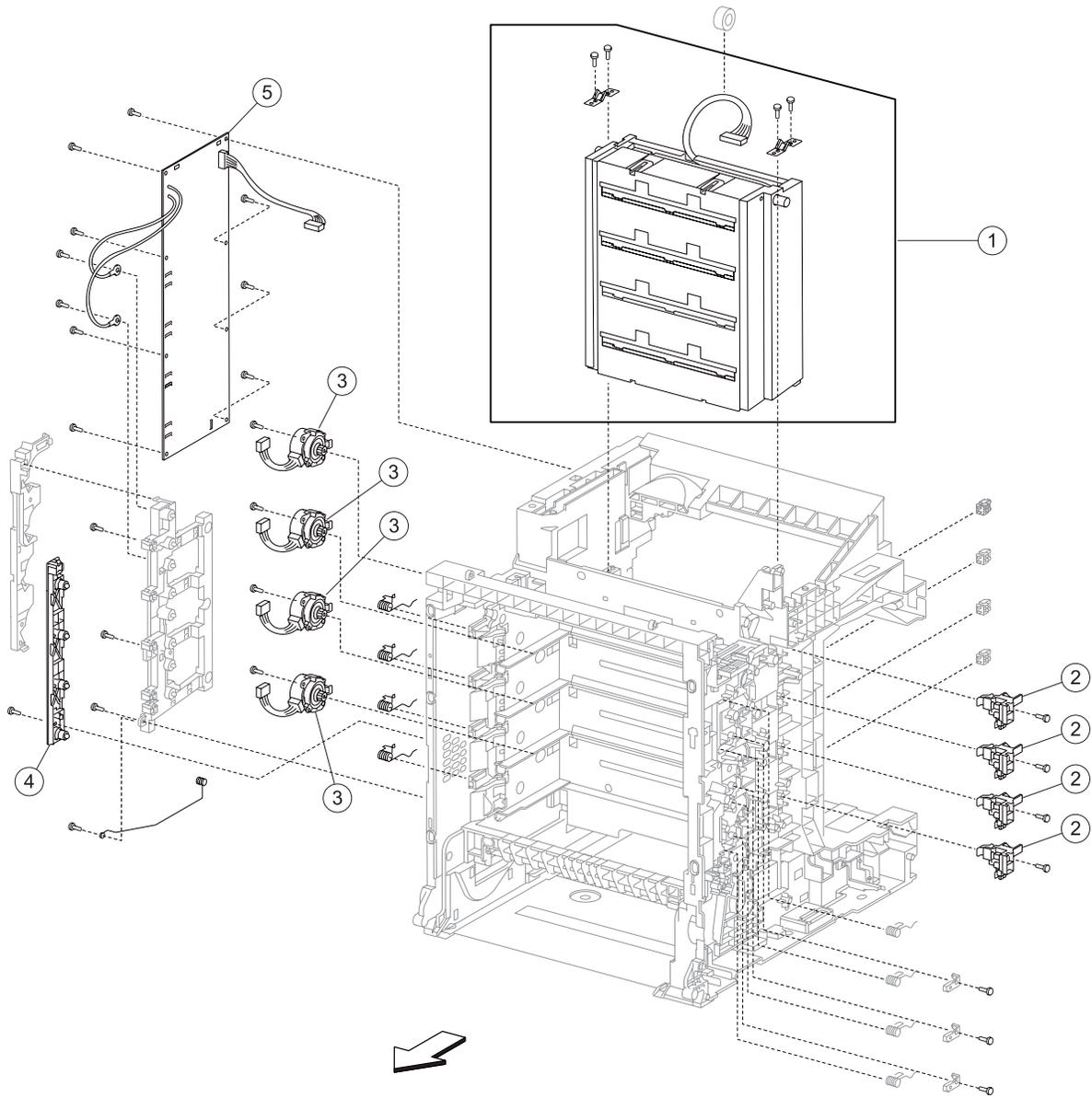
Asm-index	Part number	Units/MFP	Units/FRU	Description
2—1	40X4900	1	1	Operator panel
2	40X4902	1	1	Front cover assembly
3	40X4903	1	1	MP feeder cover assembly
NS	40X4884	2	1	Shaft pivot (one per package)

Assembly 3: Scanner



Asm-index	Part number	Units/MFP	Units/FRU	Description
3—1	40X4924	1	1	ADF maintenance kit
2	40X4919	1	1	ADF tray assembly
3	40X4920	1	1	Scanner assembly

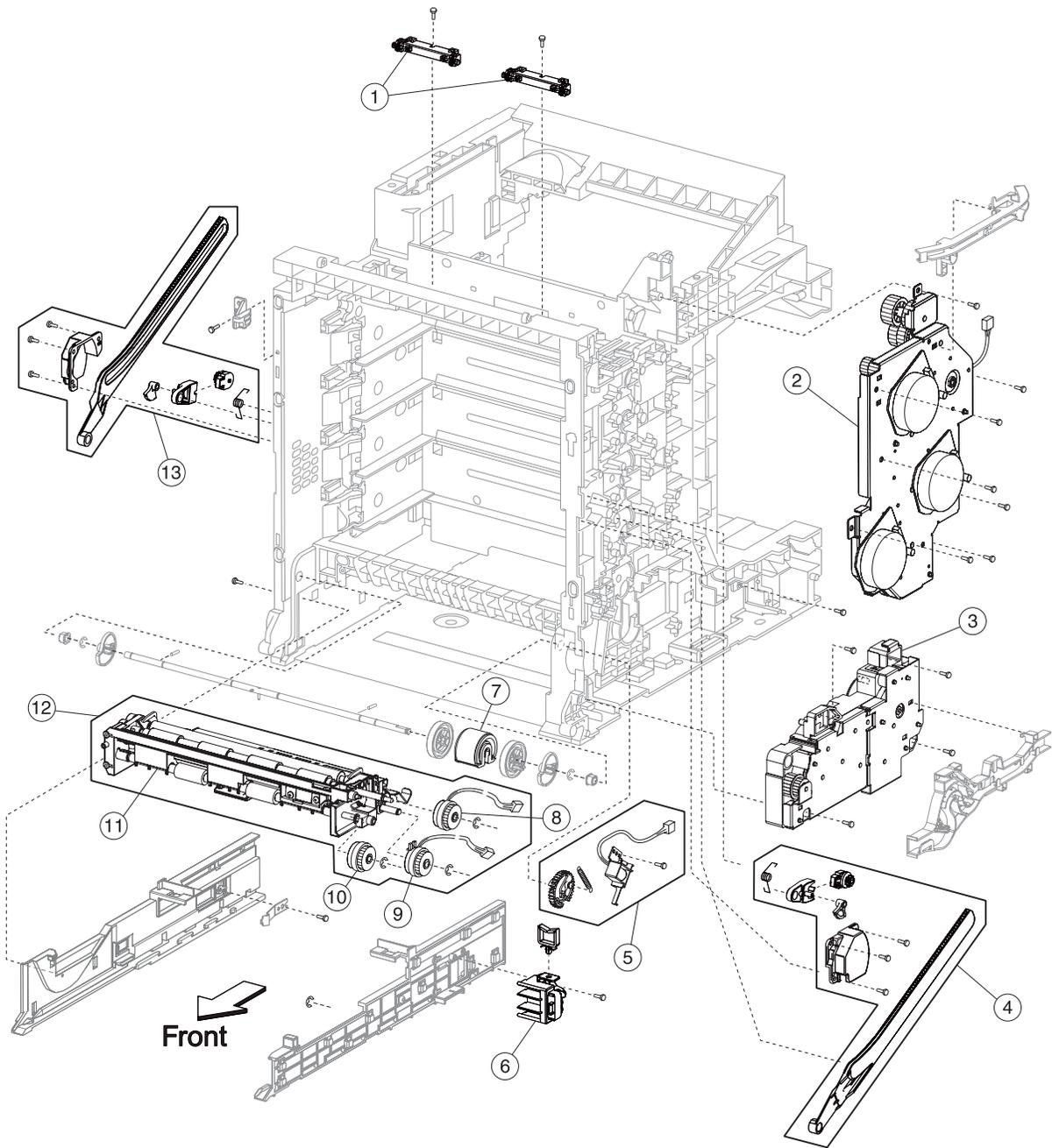
Assembly 4: Imaging



Assembly 4: Imaging

Asm-index	Part number	Units/MFP	Units/FRU	Description
4—1	40X4904	1	1	Printhead assembly
2	40X4869	1	1	Toner sensor assembly
3	40X4870	1	1	Toner motor
4	40X4871	1	1	Erase lamp assembly
5	40X4872	1	1	High-voltage power supply (HVPS)
NS	40X4786	1	1	Plate A latch
NS	40X4785	1	1	Plate AD latch

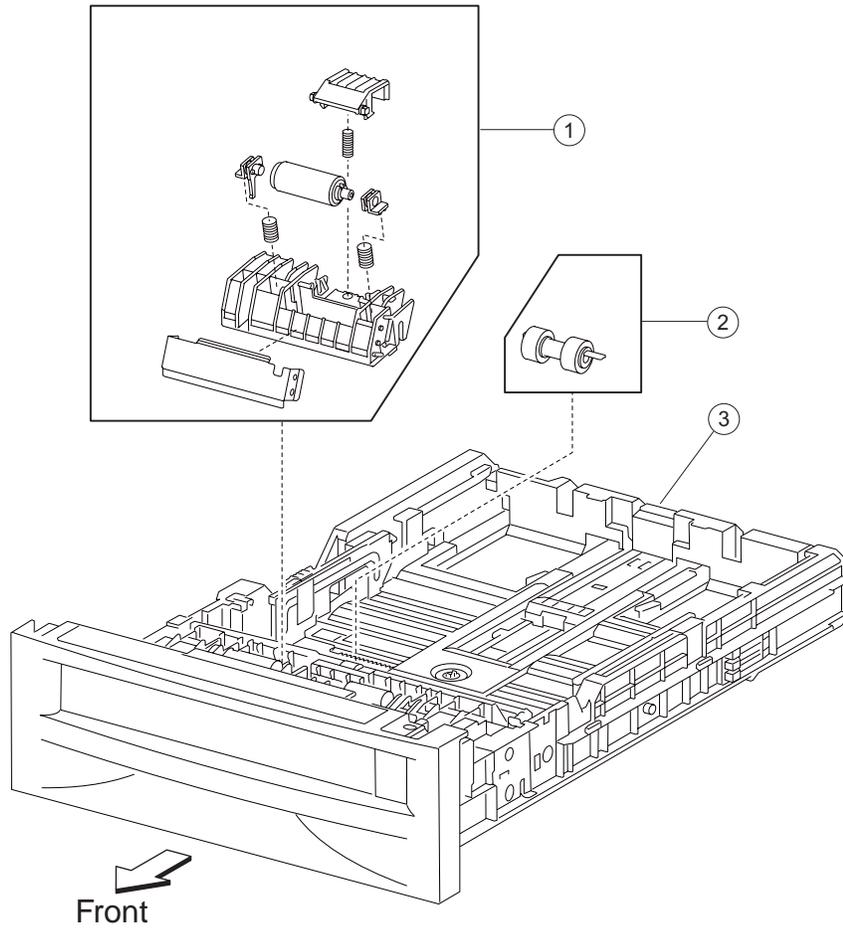
Assembly 5: Paper transport



Assembly 5: Paper transport

Asm-index	Part number	Units/MFP	Units/FRU	Description
5—1	40X4877	1	1	Spur assembly
2	40X4882	1	1	Main drive assembly
3	40X4883	1	1	Feed drive assembly (PH drive)
4	40X4880	1	1	Right door link assembly
5	40X4864	1	1	Feed solenoid
6	40X4878	1	1	Size switch assembly
7	40X4865	1	1	MP feeder feed kit
8	40X4863	1	1	Feed clutch
9	40X4923	1	1	Registration clutch
10	40X5080	1	1	Turn clutch
11	40X4867	1	1	Paper feed assembly w/o clutches
12	40X4921	1	1	Paper feed assembly with clutches
13	40X4879	1	1	Left door link assembly
NS	40X5082	1	1	Transparency sensor
NS	40X5081	1	1	Transparency LED

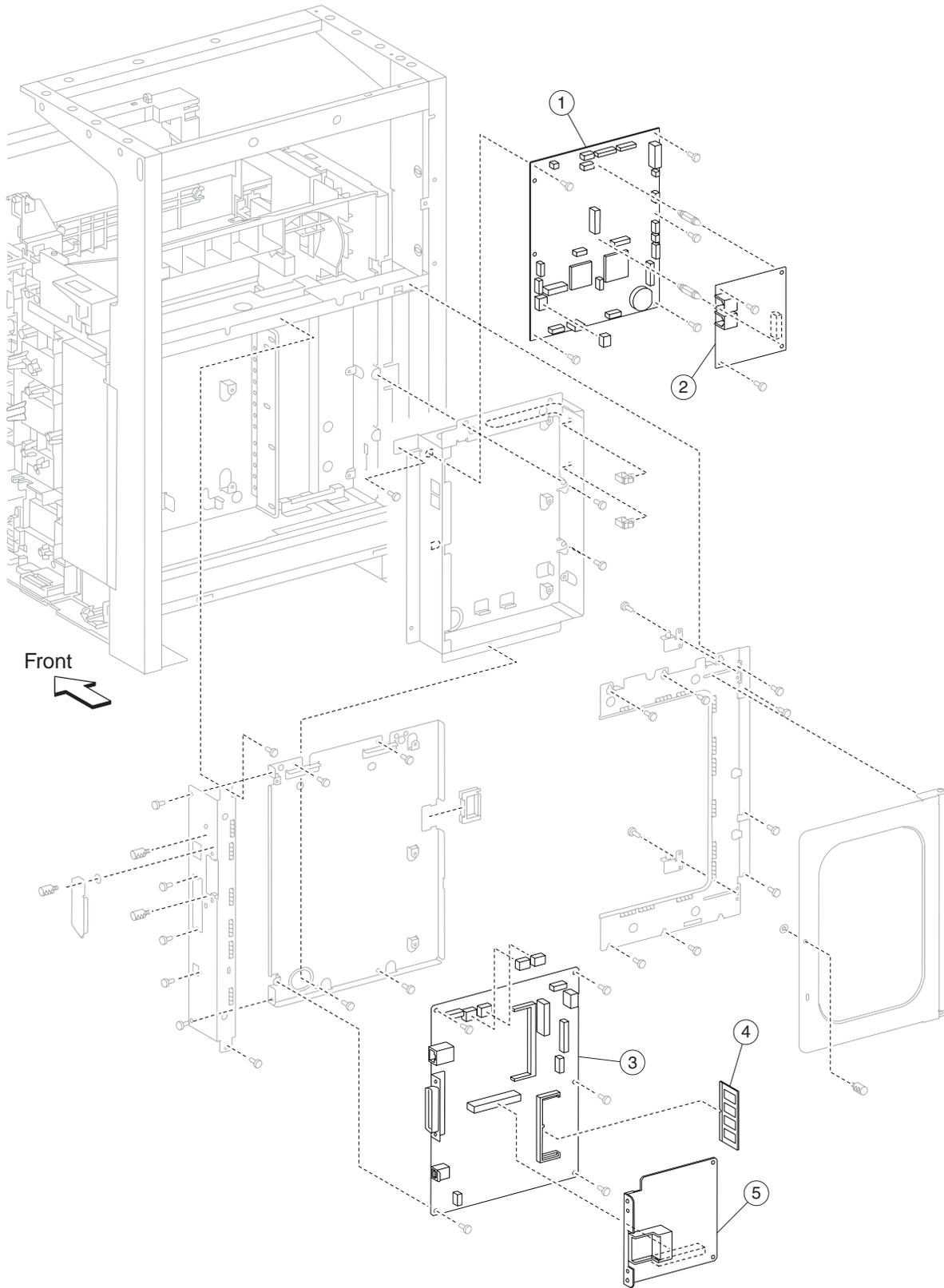
Assembly 6: 250-sheet tray assembly



Assembly 6: 250-sheet tray

Asm-index	Part number	Units/MFP	Units/FRU	Description
6—1	40X4862	1	1	MP feeder separator roll kit
2	40X4866	1	1	Feed roll kit (250- and 550-sheet tray)
3	40X4859	1	1	250-sheet tray assembly

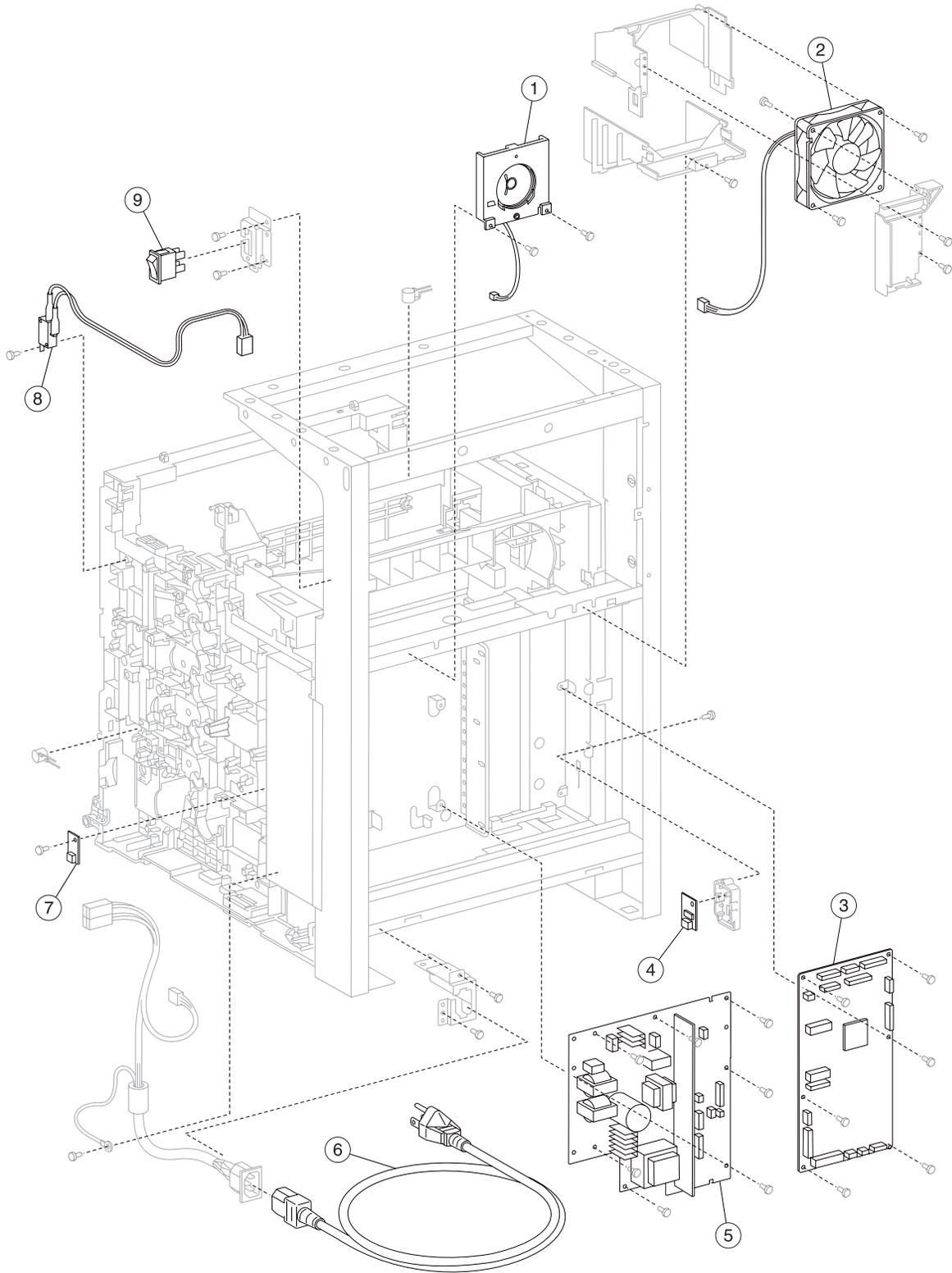
Assembly 7: Electrical 1



Assembly 7: Electrical 1

Asm-index	Part number	Units/MFP	Units/FRU	Description
7—1	40X4905	1	1	Engine board
2	40X4906	1	1	Fax card
3	40X4907	1	1	RIP board
4	40X5301	1	1	256MB DIMM
4	40X5302	1	1	512MB DIMM
4	40X5303	1	1	1G DIMM
5	40X5091	1	1	Multi-Protocol Network Card

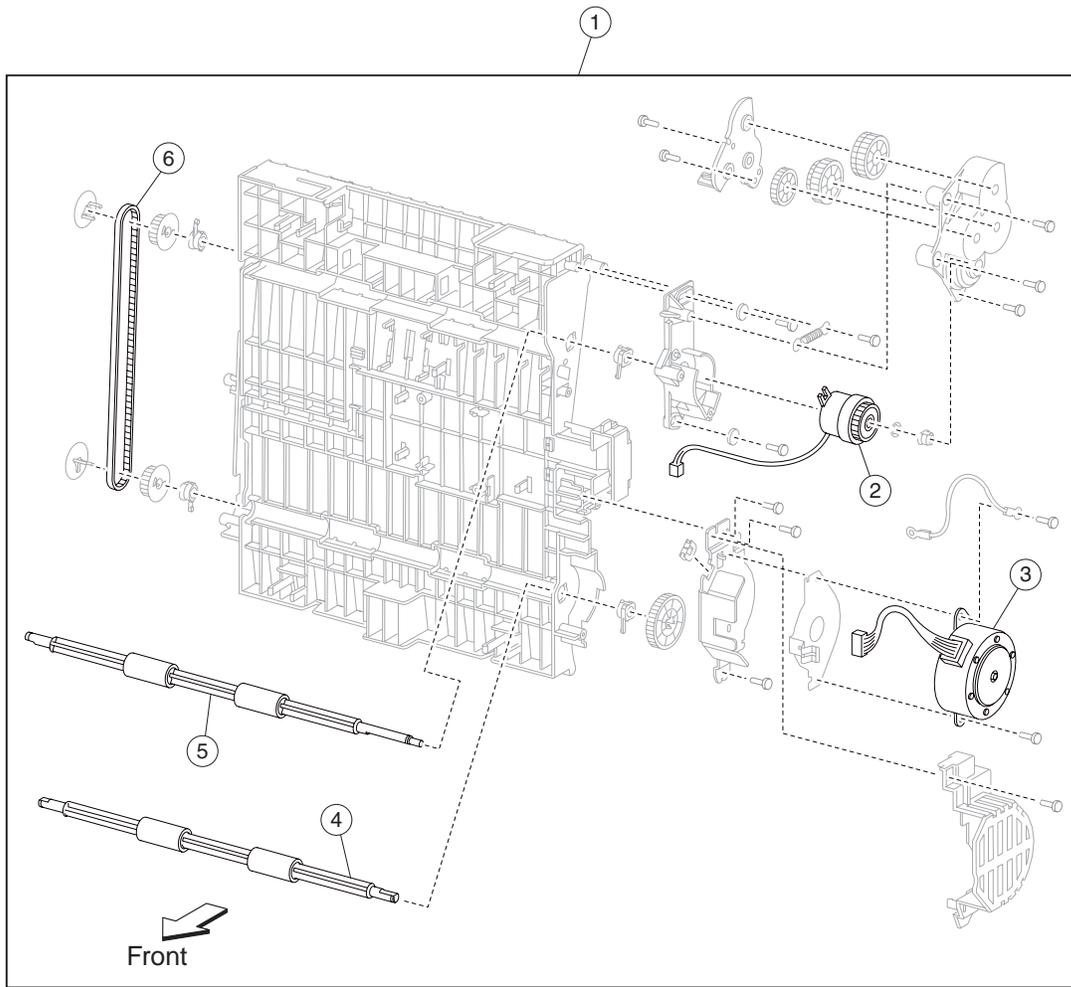
Assembly 8: Electrical 2



Assembly 8: Electrical 2

Asm-index	Part number	Units/MFP	Units/FRU	Description
8—1	40X4910	1	1	Speaker assembly
2	40X4911	1	1	Fan assembly
3	40X4913	1	1	Controller board
4	40X4912	1	1	Humidity sensor
5	40X4914	1	1	115 V Low-voltage power supply (LVPS)
5	40X4915	1	1	230 V Low-voltage power supply (LVPS)
6	40X0269	1	1	Power cord, straight (8 ft)—U.S.
6	40X0288	1	1	Power cord, HV, straight (8 ft)—Argentina
6	40X0301	1	1	Power cord, straight (8 ft)—Australia, New Zealand
6	40X1767	1	1	Power cord, HV, straight (8 ft)—Brazil
6	40X0273	1	1	Power cord, HV, straight (8 ft)—Chili
6	40X1774	1	1	Power cord, HV, straight (8 ft)—Denmark
6	40X0275	1	1	Power cord, HV, straight (8 ft)—Israel
6	40X0273	1	1	Power cord, HV, straight (8 ft)—Italy
6	40X1773	1	1	Power cord, HV, straight (8 ft)—South Africa
6	40X0271	1	1	Power cord, HV, straight (8 ft)—U.K., Ireland
6	40X1772	1	1	Power cord, straight (8 ft)—Switzerland
6	40X1766	1	1	Power cord, straight (8 ft)—Bolivia, Peru
6	40X0303	1	1	Power cord, straight (8 ft)—PRC
6	40X1792	1	1	Power cord, straight (8 ft)—Korea
6	40X1791	1	1	Power cord, straight (8 ft)—Taiwan
7	40X4886	1	1	EEPROM XPRO
8	40X4908	1	1	Interlock harness
9	40X4909	1	1	Power switch

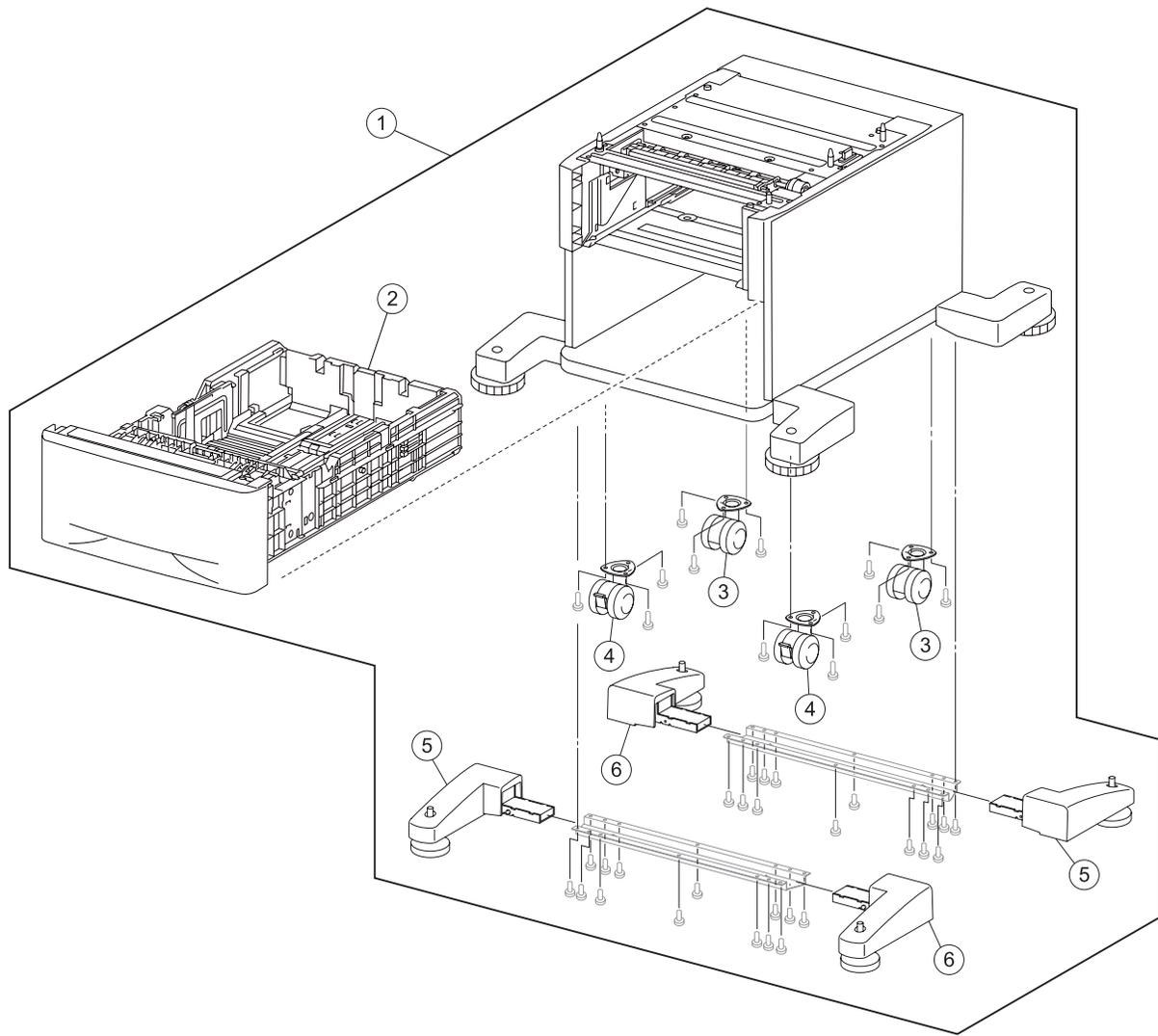
Assembly 9: Duplex



Assembly 9: Duplex unit

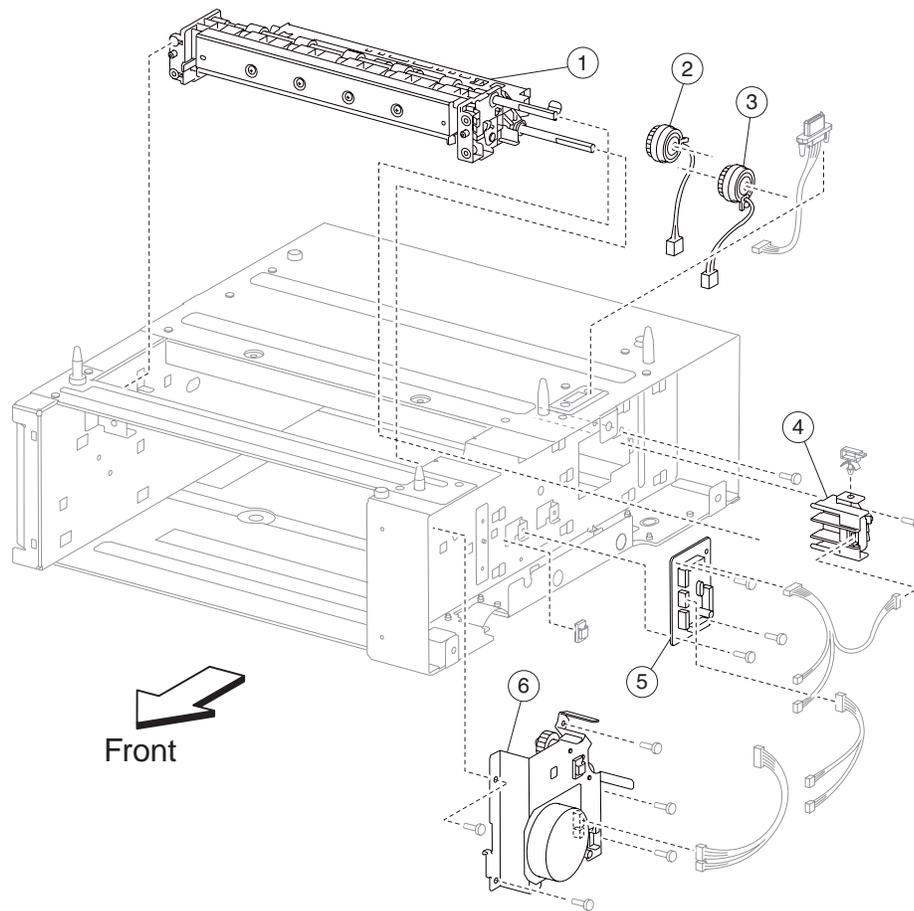
Asm-index	Part number	Units/ option	Units/ FRU	Description
9—1	40X4885	1	1	Duplex unit, complete
2	40X5074	1	1	Duplex clutch
3	40X5077	1	1	Duplex motor
4	40X5076	1	1	Duplex roll 2
5	40X5075	1	1	Duplex roll 1
6	40X5073	1	1	Duplex belt

Assembly 10: 550-sheet feeder 1



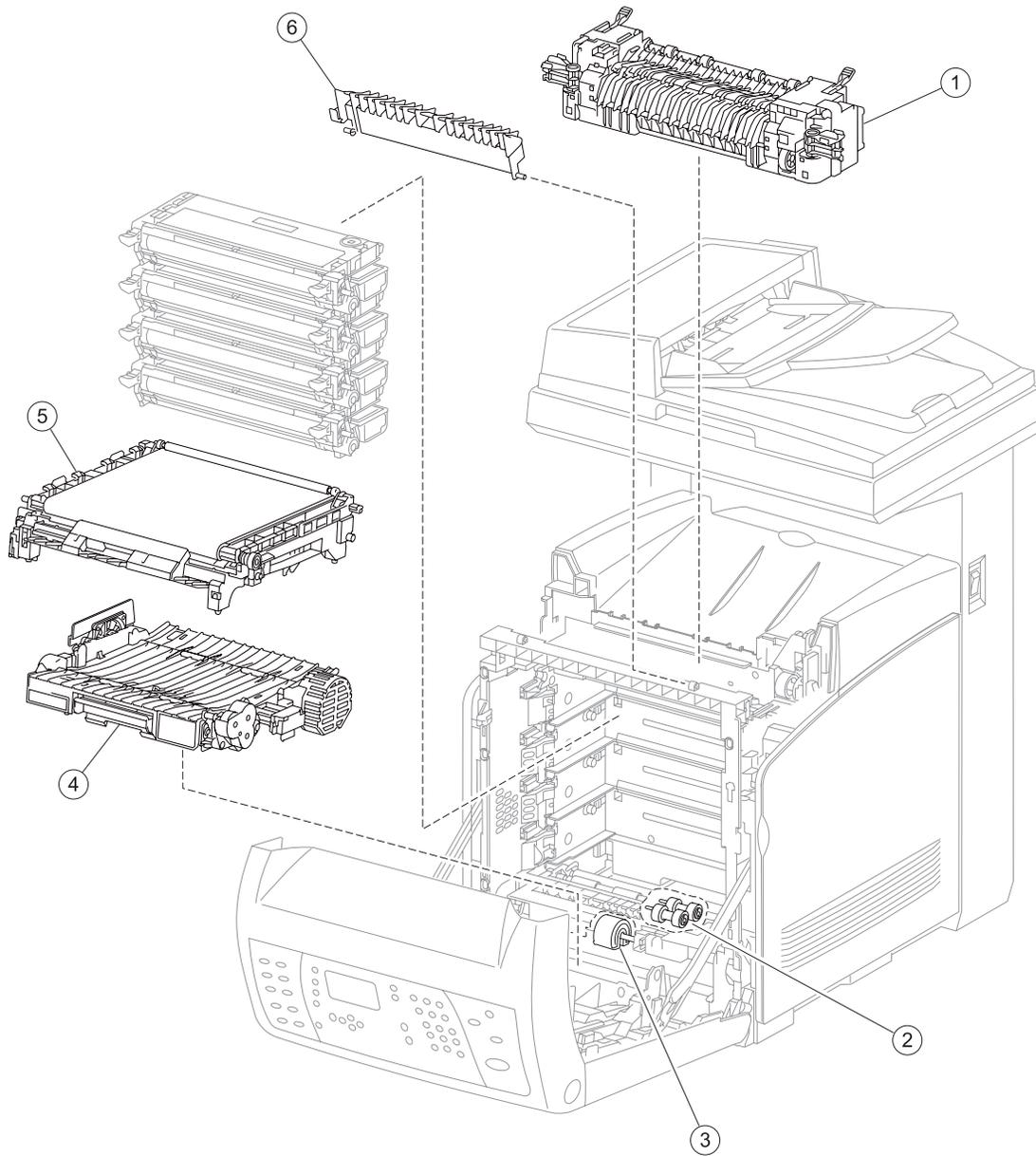
Asm-index	Part number	Units/ option	Units/ FRU	Description
10-1	40X4916	1	1	550-sheet feeder, complete
2	40X4888	1	1	550-sheet feeder tray
3	40X5084	2	1	Caster, non-locking (rear)
4	40X5085	2	1	Caster, locking (front)
5	40X5087	2	1	Feeder foot (front right or rear left)
6	40X5086	2	1	Feeder foot (front left or rear right)

Assembly 11: 550-sheet feeder 2



Asm-index	Part number	Units/option	Units/FRU	Description
11—1	40X4922	1	1	Option paper feed assembly
2	40X5088	1	1	Turn clutch
3	40X5089	1	1	Feed clutch
4	40X4878	1	1	Size switch assembly
5	40X5078	1	1	Option feeder controller board
6	40X5079	1	1	Option feeder drive assembly

Assembly 12: Options and supplies



Assembly 12: Options and supplies

Asm-index	Part number	Units/ option	Units/ FRU	Description
1	40X4860	1	1	115 V fuser
1	40X4861	1	1	230 V fuser
2	40X4866	1	1	Feed roll kit (250- and 550-sheet tray)
3	40X4865	1	1	MP feeder feed kit
4	40X4885	1	1	Duplex unit
5	40X4868	1	1	Transfer belt
6	40X4874	1	1	Duplex gate
NS	40X4924	1	1	ADF maintenance kit
NS	40X4862	1	1	MP feeder separator roll kit
NS	40X4859	1	1	250-sheet tray
NS	40X4888	1	1	550-sheet feeder tray
NS	7377732	1	1	Relocation kit
NS	40X5301	1	1	256MB DIMM
NS	40X5302	1	1	512MB DIMM
N/S	40X5303	1	1	1GB DIMM
NS	40X5090	1	1	Screw kit

Index

Numerics

- 250-sheet tray assembly
 - feed roll kit removal **4-77**
 - feed roll removal **4-77**
 - parts catalog **7-10**
 - separator roll **4-136**
 - theory of operation **3-97**
- 550-sheet feeder
 - see feeder (550-sheet)

A

- abnormal noise service check **2-60**
- acronyms **1-9**
- ADF (automatic document feeder)
 - ADF maintenance kit **4-44**
 - supported media sizes **1-5**
 - theory of operation **3-82**
 - tray removal **4-46**
 - wiring diagram **5-50**
- ADF maintenance kit **7-21**
- adjustments
 - color registration (printer) **4-6**
 - printhead adjustment (note) **4-7**
 - printhead registration (Parameter) **3-54**
 - scanner adjustment **4-3**
- automatic color registration **4-6**

C

- caster (550-sheet feeder) **4-28**
- cleaning **6-1**
- color registration correction chart **4-6**
- configurations **1-1**
- controller board
 - connectors **5-5**
 - diagram **5-4**
 - parts catalog **7-14**
 - removal **4-47**
 - theory of operation **3-111**

D

- density sensor test **3-43, 3-44**
- diagnostic mode
 - see service mode
- diagnostics
 - print quality service checks **2-121**
 - service checks **2-29**
 - service error codes **2-4**
 - symptom table **2-2**
- duplex unit
 - duplex clutch removal **4-51**
 - duplex gate removal **4-53**
 - duplex motor assembly **4-54**
 - duplex roll 1 assembly removal **4-56**
 - duplex roll 2 assembly removal **4-59**
 - parts catalog **7-16, 7-21**

- removal **4-62**
- theory of operation **3-114**
- wiring diagrams **5-44**

E

- EEPROM card
 - removal **4-63**
- electrical noise service check **2-70**
- engine board
 - connectors **5-15**
 - diagram **5-14**
 - parts catalog **7-12**
 - removal **4-64**
- envelopes, guidelines **1-4**
- error code table **2-4**
- ESD-sensitive parts **4-1**
- extension cover, removal **4-70**

F

- fan
 - Fan Test **3-34**
 - parts catalog **7-14**
 - removal **4-71**
- fax
 - fax card removal **4-73**
 - Parameter settings (registration) **3-10**
 - parts catalog **7-12**
 - theory of operation **3-71**
- feed clutch
 - 250-sheet tray removal **4-74**
 - 550-sheet feeder removal **4-32**
 - parts catalog **7-8**
- feed drive assembly (PH drive) **7-8**
 - parts catalog **7-8**
 - PH Motor Test **3-31**
 - removal **4-75**
 - service check **2-75**
- feed roll kit
 - 250-sheet tray assembly **4-77**
 - 550-sheet feeder **4-37**
- feed roll, MP feeder roll removal **4-96**
- feeder (550-sheet)
 - caster **4-28**
 - controller board removal **4-29**
 - drive assembly removal **4-34**
 - feed clutch removal **4-32**
 - feed roll kit removal **4-37**
 - foot removal **4-35**
 - no paper sensor **4-36**
 - parts catalog **7-18**
 - removal **4-27**
 - separator roll removal **4-41**
 - separator roller removal **4-41**
 - size switch assembly removal **4-38**
 - theory of operations **3-115, 3-117**

turn clutch removal **4-42**
 wiring diagrams **5-42**
 field replacement kit **7-21**
 front cover assembly
 installation **4-12**
 parts catalog **7-4**
 removals **4-10**

fuser

parts catalog **7-21**
 removal **4-78**
 theory of operation **3-104**
 wiring diagram **5-38**

H

Hex Dump **3-49**

high-voltage power supply (HVPS)

connectors **5-21**
 diagram **5-21**
 installation **4-82**
 parts catalog **7-6**
 removal **4-79**
 theory of operation **3-111**

humidity sensor

parts catalog **7-14**
 removal **4-85**

I

Information Pages **3-1**

installation

550-sheet feeder feed roll **4-37**
 ADF feed roller, separator pad, and separator spring
4-45
 ADF tray assembly **4-46**
 controller board **4-49**
 duplex clutch **4-52**
 duplex motor assembly **4-55**
 duplex roll 1 assembly **4-58**
 engine board **4-65**
 engine board cage removal **4-67**
 erase lamp assembly removal **4-69**
 exit assembly **4-69**
 extension cover **4-70**
 fax card **4-73**
 feed clutch **4-75**
 feed roll (250-sheet tray assembly) **4-77**
 front cover assembly **4-12**
 fuser **4-78**
 high-voltage power supply (HVPS) **4-82**
 interlock harness **4-86**
 left door link assembly **4-89**
 low-voltage power supply (LVPS) **4-92**
 main drive **4-94**
 MP feeder cover assembly **4-21**
 MP feeder feed solenoid **4-98**
 paper feed assembly **4-111**
 printhead assembly **4-119**
 registration clutch **4-121**
 right cover **4-23**
 right door link assembly **4-125**
 RIP board **4-126**

scanner assembly **4-134**
 separator roll—250-sheet tray assembly **4-136**
 speaker assembly **4-139**
 toner motor **4-143**
 toner sensor assembly (black) **4-144**
 toner sensor assembly (cyan, magenta, yellow) **4-145**
 top cover **4-27**
 transfer belt **4-147**
 transparency sensor LED **4-149**
 interlock harness
 parts catalog **7-14**
 removal **4-86**

L

labels, guidelines **1-4**

LED assembly

see erase lamp assembly

lithium battery **ii-xvii, 4-64**

locations

boards **5-1**
 motors **5-2**
 sensors **5-3**

low-voltage power supply (LVPS)

connectors **5-19**
 diagram **5-19**
 installation **4-92**
 parts catalog **7-14**
 removal **4-91**
 signals **5-23**
 theory of operation **3-111**

M

main drive

parts catalog **7-8**
 removal **4-92**

maintenance kit, ADF **7-21**

manual color registration **4-6**

media

guidelines **1-4**
 media path **3-96**
 supported sizes—printer **1-6**
 supported sizes—scanner **1-5**
 supported types **1-7**
 supported weight **1-7**

memory card

parts catalog **7-21**
 removal **4-95**

menus

customer **2-161**
 service mode **3-1**

models **1-1**

MP feeder (multipurpose feeder)

cover assembly removal **4-21**
 feed solenoid installation **4-98**
 feed solenoid removal **4-97**
 parts catalog **7-4**
 separator roller removal **4-101**
 theory of operation **3-100**

Multi-Protocol Network Card (MPC)

- parts catalog [7-12](#)
- removal [4-102](#)
- service check [2-98](#)

N

no paper sensor

- 250-sheet tray [4-103](#)
- 550-sheet feeder [4-36](#)
- MP feeder [4-100](#)

noise service check [2-60](#), [2-70](#)NVM Load [4-50](#)NVM Save [4-47](#)**O**

operator panel

- button descriptions [2-158](#)
- menus [2-161](#)
- parts catalog [7-4](#)
- removal [4-104](#)
- service check [2-102](#)

options and features

- description [1-1](#)
- parts catalog [7-20](#)

Ppackaging [7-21](#)

paper

- guidelines [1-4](#)
- paper path [3-96](#)
- supported sizes—printer [1-6](#)
- supported sizes—scanner [1-5](#)
- supported types [1-7](#)
- supported weight [1-7](#)

paper feed assembly

- installation [4-111](#)
- parts catalog [7-8](#)
- removal [4-108](#)

paper guide

- see extension cover

paper jams

- clearing jams [3-60](#)
- jam at exit, registration roll [2-89](#)
- jam at scanner service check [2-80](#)
- jam at tray 2 service check [2-81](#)
- jam service check (duplex unit) [2-87](#)
- jam service check (feeder) [2-82](#)
- jam service check (tray 2) [2-83](#)
- jam service check (tray 3) [2-85](#)
- paper path [3-96](#)

paper path [3-96](#)

Parameter

- fax and scanner [3-10](#), [4-134](#)
- printer (printhead) [3-54](#)

parts catalog

- 250-sheet tray [7-10](#)
- 550-sheet feeder 1 [7-18](#)
- 550-sheet feeder 2 [7-19](#)
- covers [7-2](#)
- duplex [7-16](#)

electrical 1 [7-12](#)electrical 2 [7-14](#)front cover and operator panel [7-4](#)imaging [7-6](#)options and supplies [7-20](#)paper transport [7-8](#)scanner [7-5](#)parts packet, screws [7-21](#)power cords [7-14](#)

print quality

afterimage service check [2-146](#)background (fog) service check [2-147](#)blank print service check [2-127](#)color registration (color shift) service check [2-155](#)faint print (low contrast) service check [2-125](#)horizontal blank lines or bands service check [2-133](#)horizontal stripes service check [2-138](#)magnification incorrect (distortion) service check [2-157](#)paper damage service check [2-151](#)partial lack service check [2-141](#)printer color registration [4-6](#)quality test pages [3-51](#)repeating marks and lines [2-123](#)scanner adjustment [4-3](#)skew service check [2-149](#)solid black service check [2-129](#)spots service check [2-143](#)toner does not fix service check [2-154](#)vertical blank lines service check [2-131](#)vertical stripes service check [2-135](#)

printhead assembly

parts catalog [7-6](#)printer registration [3-54](#)removal [4-116](#)theory of operation [3-107](#)wiring diagram [5-30](#)**Q**

quality test pages

black 20% ESS [3-53](#)CMY 20% ESS [3-53](#)cyan 20% ESS [3-52](#)gradation ESS [3-54](#)grid 2 ESS [3-52](#)magenta 20% ESS [3-52](#)no image IOT [3-51](#)pattern IOT [3-51](#)yellow 20% ESS [3-53](#)**R**

registration clutch

parts catalog [7-8](#)removal [4-120](#)registration, theory of operation [3-100](#)relocation kit [7-21](#)

removals

550-sheet feeder **4-27**
 550-sheet feeder caster **4-28**
 550-sheet feeder controller board **4-29**
 550-sheet feeder drive assembly **4-34**
 550-sheet feeder feed clutch **4-32**
 550-sheet feeder feed roll kit **4-37**
 550-sheet feeder foot **4-35**
 550-sheet feeder no paper sensor **4-36**
 550-sheet feeder size switch assembly **4-38**
 550-sheet feeder tray separator roll **4-41**
 550-sheet feeder turn clutch **4-42**
 ADF maintenance kit **4-44**
 ADF tray assembly **4-46**
 controller board **4-47**
 covers
 bottom cover **4-8**
 front cover assembly **4-10**
 inner left pole cover **4-16**
 inner right pole cover **4-17**
 left cover **4-18**
 left pole cover **4-20**
 MP feeder cover assembly **4-21**
 rear cover **4-22**
 right cover **4-23**
 right pole cover **4-25**
 top cover **4-26**
 tray cover **4-9**
 duplex clutch **4-51**
 duplex gate **4-53**
 duplex motor assembly **4-54**
 duplex roll 1 assembly **4-56**
 duplex roll 2 assembly **4-59**
 duplex unit **4-62**
 EEPROM card **4-63**
 engine board **4-64**
 engine board cage **4-66**
 erase lamp assembly **4-68**
 exit assembly **4-69**
 extension cover **4-70**
 fan assembly **4-71**
 fax card **4-73**
 feed clutch **4-74**
 feed drive assembly **4-75**
 feed roll kit (250-sheet tray) **4-77**
 front cover cable harness **4-13**
 fuser **4-78**
 high-voltage power supply (HVPS) **4-79**
 humidity sensor **4-85**
 interlock harness **4-86**
 left door link assembly **4-87**
 low-voltage power supply (LVPS) **4-91**
 main drive **4-92**
 memory card **4-95**
 MP feeder feed roll **4-96**
 MP feeder feed solenoid **4-97**
 MP feeder no paper sensor **4-100**
 MP feeder separator roll assembly **4-101**
 Multi-Protocol Network Card (MPC) **4-102**

no paper sensor (250-sheet tray) **4-103**
 operator panel **4-104**
 operator panel cable harness **4-105**
 paper feed assembly **4-108**
 power switch **4-115**
 printhead assembly **4-116**
 registration clutch **4-120**
 right door link assembly **4-123**
 RIP board **4-126**
 RIP board cage **4-128**
 scanner assembly **4-130**
 separator roll **4-136**
 size switch assembly—250-sheet tray **4-137**
 Smart Chip contact **4-138**
 speaker assembly **4-139**
 spur assembly **4-140**
 toner cartridge **4-141**
 toner motor **4-142**
 toner sensor assembly (black) **4-144**
 toner sensor assembly (cyan, magenta, yellow) **4-145**
 transfer belt **4-146**
 transparency sensor **4-150**
 transparency sensor LED **4-148**
 turn clutch assembly **4-151**
 turn roll assembly **4-152**
 RIP board
 connections **5-13**
 diagram **5-12**
 parts catalog **7-12**
 removal **4-126**
 theory of operation **3-111**

S

safety information **ii-xvii**
 safety inspection guide **6-1**
 scanner assembly
 adjustment **4-3**
 cleaning **6-1**
 Parameter settings (registration) **3-10**
 parts catalog **7-5**
 removal **4-130**
 specifications **1-2**
 supported media sizes **1-5**
 theory of operation **3-76**
 wiring diagram **5-50**
 wiring diagrams **5-48**
 screws
 identification table **4-2**
 parts packet **7-21**
 sensors
 humidity sensor **4-85**
 no paper (MP feeder) **4-100**
 no paper sensor (250-sheet tray) **4-103**
 no paper sensor (550-sheet feeder) removal **4-36**
 toner sensor assembly (black) **4-144**
 toner sensor assembly (cyan, magenta, yellow) **4-145**
 transparency **4-150**
 separator pad, ADF maintenance kit **4-44**

separator roll
 250-sheet tray assembly **4-136, 7-10**
 550-sheet feeder assembly **4-41, 7-10**

service checks **2-29**
 Abnormal noise
 during printing **2-63**
 during standby **2-62**

AC power **2-103**
 DC power **2-103**
 IIT Error **2-111**
 Illegal Settings **2-79**
 Multiple feed **2-98**
 print quality **2-121**
 afterimage **2-146**
 aspect ratio **2-157**
 background **2-147**
 black page **2-129**
 blank print **2-127**
 distortion **2-157**
 faint print **2-125**
 feeding problems **2-122**
 horizontal blank lines **2-133**
 horizontal stripes **2-138**
 hunting (wavy) **2-156**
 paper damage **2-151**
 partial blank areas **2-141**
 registration **2-155**
 repeating marks and lines **2-123**
 skew **2-149**
 specifications **2-122**
 specks **2-143**
 toner smears **2-154**
 vertical blank lines **2-131**
 vertical stripes **2-135**

Protocol Error **2-104**
 Server Error **2-112**

service error codes **2-4**

Service Mode
see also tests
 Fax/Scanner Diag
 Back Up Data **3-13**
 Board Test **3-3**
 Information **3-9**
 Parameter **3-10**
 Scanner Maintenance **3-9**

Printer Diag
 Engine Diag **3-18**
 ESS Diag **3-15**
 Exit Mode **3-59**
 Installation **3-48**
 Life Counters **3-58**
 Parameter **3-54**
 Print Info **3-48**
 Test Print **3-51**

service mode
 entering **3-1**
 fax/scanner diag/board test **3-3**
 menu map **3-2**

size switch assembly
 parts catalog—250-sheet tray **7-8**
 removal, 250-sheet tray **4-137**
 removal, 550-sheet feeder **4-38**
 switch settings **5-29**

Smart Chip contact, removal **4-138**

speaker assembly
 parts catalog **7-14**
 removal **4-139**

specifications
 dimensions **1-3**
 electronic **1-2**
 environment **1-3**
 supported media sizes—printer **1-6**
 supported media sizes—scanner **1-5**
 supported media types **1-7**
 supported media weights **1-7**

symptom table **2-2**
 system (menus) **2-161**

T

tests—printer
 ADC (CTD) Sensor LED **3-44**
 ADC (CTD) Sensor Solenoid **3-43**
 ASIC Test **3-17**
 Black 20% ESS (test page) **3-53**
 Clear All Auditor PV **3-50**
 Clear All NVM **3-50**
 Clear Job History **3-50**
 CMY 20% ESS (test page) **3-53**
 CodeROM Test **3-15**
 CRU Sensor Y (cartridge) **3-22**
 CRU SensorC (cartridge) **3-25**
 CRU SensorK (cartridge) **3-24**
 CRU SensorM (cartridge) **3-23**
 Cyan 20% ESS (test page) **3-52**
 Deve Motor Test **3-32**
 Display Counter **3-49**
 DRAM Test **3-16**
 Drum Erase Lamp K **3-45**
 Drum Erase Lamp YMC **3-45**
 Duplex Clutch **3-42**
 Duplex Fan **3-46**
 Duplex Jam Sensor **3-18**
 Duplex Motor Test **3-33**
 EEPROM Test **3-16**
 Engine Test **3-17**
 Exit Clutch **3-46**
 Exit Sensor Test **3-19**
 Fan Test **3-34**
 Fast Scan 2 K to C **3-58**
 Fast Scan 2 K to M **3-58**
 Fast Scan 2 K to Y **3-58**
 Fast Scan Duplex **3-57**
 Fast Scan K to C **3-56**
 Fast Scan K to M **3-56**
 Fast Scan K to Y **3-56**
 Fast Scan MPT (MP feeder) **3-56**
 Fast Scan Tray 2 (250-sheet) **3-57**
 Fast Scan Tray 3 (550-sheet) **3-57**

- FontROM **3-16**
- Gradation ESS (test page) **3-54**
- Grid 2 ESS (test page) **3-52**
- Hex Dump **3-49**
- Info Page **3-48**
- Interlock Switch **3-21**
- Load NVM from ESS **3-47**
- MAC+PHY Test **3-17**
- Magenta 20% ESS (test page) **3-52**
- Main Motor Test **3-29**
- MPT No Paper (MP feeder) **3-26**
- No Image IOT (test print) **3-51**
- OHP Sensor LED (transparency) **3-45**
- Pattern IOT (test print) **3-51**
- PH Motor **3-31**
- Pixel Counter **3-49**
- Print Counter **3-50**
- Print NVM Info **3-48**
- Print Settings **3-48**
- Regi Clutch Test **3-39**
- Regi Sensor Test **3-20**
- Save NVM to ESS **3-47**
- Serial No. **3-48**
- Slow Scan 1200 MYC **3-55**
- Slow Scan 600 MYC **3-55**
- Slow Scan K to P **3-54**
- Sub Motor Test **3-30**
- Test Print **3-51**
- Tone Correction **3-49**
- Toner Motor (C) **3-37**
- Toner Motor (K) **3-38**
- Toner Motor (M) **3-36**
- Toner Motor (Y) **3-35**
- Tray 1 Feed Solenoid (MP feeder) **3-40**
- Tray 1 Turn Clutch (MP feeder) **3-39**
- Tray 2 Motor Test **3-31**
- Tray 2 No Paper (250-sheet) **3-27**
- Tray 2 Paper Size (250-sheet) **3-27**
- Tray 2 Turn Clutch (250-sheet) **3-40**
- Tray 3 Feed Clutch (550-sheet) **3-41**
- Tray 3 Feed Motor Test (550-sheet) **3-34**
- Tray 3 Low Paper **3-25**
- Tray 3 No Paper **3-26**
- Tray 3 Paper Size (550-sheet) **3-28**
- Tray 3 Turn Clutch (550-sheet) **3-41**
- Yellow 20% ESS (test page) **3-53**
- tests—scanner/fax
 - 1st. Fire Test **3-3**
 - 2nd Fire Test **3-4**
 - All Clear (backup data) **3-13**
 - All Test (boards) **3-3**
 - Data Send **3-8**
 - Dial Pulse Send **3-7**
 - Document Clear (backup data) **3-14**
 - DTMF Continuous **3-6**
 - DTMF Individually **3-7**
 - FPGA Test **3-4**
 - Hook Set Test **3-6**
 - Hook Toggle Test **3-5**
 - Line Current **3-8**
 - Line Voltage **3-8**
 - Parameter (manual correction) **3-10**
 - Parameter (scanner registration) **3-10**
 - Relay Set Test **3-5**
 - Relay Toggle Test **3-5**
 - Ring Back Tone **3-7**
 - Scan Counter **3-9, 3-10**
 - Scan Counter Clear **3-10**
 - Single Tone Test **3-6**
 - System Clear (backup data) **3-13**
 - System Data Init (backup data) **3-14**
 - User Clear (backup data) **3-13**
 - User&System Clear (backup data) **3-13**
 - Version **3-9**
 - White Balance **3-9**
- theory
 - fax system **3-71**
 - functional components
 - 250-sheet tray **3-97**
 - 550-sheet feeder **3-117**
 - 550-sheet feeder tray **3-115**
 - drive assemblies **3-110**
 - duplex unit **3-114**
 - electrical **3-111**
 - exit sensor **3-104**
 - fuser **3-104**
 - MP feeder **3-100**
 - printhead **3-107**
 - registration assembly **3-100**
 - toner cartridges **3-108**
 - transfer belt **3-105**
 - printing process **3-85**
 - scanning system **3-76**
- toner cartridge
 - removal **4-141**
 - theory of operation **3-108**
- toner motor
 - motor test **3-35, 3-36, 3-37, 3-38**
 - parts catalog **7-6**
 - removal **4-142**
- toner sensor assembly
 - parts catalog **7-6**
 - removal (black) **4-144**
 - removal (cyan, magenta, yellow) **4-145**
 - sensor test **3-22, 3-23, 3-24, 3-25**
- tools required **1-8**
- transfer belt
 - density sensor test **3-43, 3-44**
 - installation **4-147**
 - parts catalog **7-21**
 - removal **4-146**
 - service check **2-48, 2-49, 2-119**
- transparencies, guidelines **1-4**
- transparency LED
 - parts catalog **7-8**
 - sensor test **3-45**

transparency sensor
LED removal **4-148**
parts catalog **7-8**
removal **4-150**
sensor test **3-45**

tray 2
see 250-sheet tray assembly

turn clutch assembly
parts catalog **7-8**
removals **4-151**

W

wiring diagrams
550-sheet feeder **5-42**
ADF **5-50**
boards **5-40**
DC power supply **5-22**
developer **5-36**
drives **5-26**
duplex unit **5-44**
fax controller **5-46**
fuser **5-38**
high-voltage power supply **5-34**
imaging **5-33**
MP feeder and registration **5-24**
paper feed **5-28**
printhead assembly **5-30**
scanner imaging **5-48**

Part number index

P/N	Description	Page
40X0269	Power cord, straight (8 ft)—U.S. -----	7-15
40X0271	Power cord, HV, straight (8 ft)—U.K., Ireland -----	7-15
40X0273	Power cord, HV, straight (8 ft)—Chili, Italy -----	7-15
40X0275	Power cord, HV, straight (8 ft)—Israel -----	7-15
40X0288	Power cord, HV, straight (8 ft)—Argentina -----	7-15
40X0301	Power cord, straight (8 ft)—Australia, New Zealand -----	7-15
40X0303	Power cord, straight (8 ft)—PRC -----	7-15
40X1766	Power cord, straight (8 ft)—Bolivia, Peru -----	7-15
40X1767	Power cord, HV, straight (8 ft)—Brazil -----	7-15
40X1772	Power cord, straight (8 ft)—Switzerland -----	7-15
40X1773	Power cord, HV, straight (8 ft)—South Africa -----	7-15
40X1774	Power cord, HV, straight (8 ft)—Denmark -----	7-15
40X1791	Power cord, straight (8 ft)—Taiwan -----	7-15
40X1792	Power cord, straight (8 ft)—Korea -----	7-15
40X4785	Plate AD latch -----	7-7
40X4786	Plate A latch -----	7-7
40X4859	250-sheet tray assembly -----	7-11, 7-21
40X4860	115 V fuser -----	7-21
40X4861	230 V fuser -----	7-21
40X4862	MP feeder separator roll kit -----	7-11, 7-21
40X4863	Feed clutch -----	7-9
40X4864	Feed solenoid -----	7-9
40X4865	MP feeder feed kit -----	7-9, 7-21
40X4866	Feed roll kit -----	7-11, 7-21
40X4867	Paper feed assembly w/o clutches -----	7-9
40X4868	Transfer belt assembly -----	7-21
40X4869	Toner sensor assembly -----	7-7
40X4870	Toner motor -----	7-7
40X4871	Erase lamp assembly -----	7-7
40X4872	High-voltage power supply (HVPS) -----	7-7
40X4874	Duplex gate -----	7-21
40X4877	Spur assembly -----	7-9
40X4878	Size switch assembly -----	7-9, 7-19
40X4879	Left door link assembly -----	7-9
40X4880	Right door link assembly -----	7-9
40X4881	Feet (four in package) -----	7-3
40X4882	Main drive assembly -----	7-9
40X4883	Feed drive assembly -----	7-9
40X4884	Shaft pivot -----	7-4
40X4885	Duplex unit -----	7-17, 7-21
40X4886	EEPROM XPRO -----	7-15
40X4888	550-sheet feeder tray -----	7-18, 7-21
40X4889	Top cover -----	7-3
40X4890	Extension cover -----	7-3
40X4891	Inner left pole cover -----	7-3
40X4892	Inner right pole cover -----	7-3
40X4893	Bottom cover -----	7-3
40X4894	Rear cover -----	7-3
40X4895	Tray cover -----	7-3
40X4896	Right pole cover -----	7-3
40X4897	Right cover -----	7-3
40X4898	Left cover -----	7-3
40X4899	Left pole cover -----	7-3
40X4900	Operator panel -----	7-4

40X4902	Front cover assembly	7-4
40X4903	MP feeder cover assembly	7-4
40X4904	Printhead assembly	7-7
40X4905	Engine board	7-13
40X4906	Fax card	7-13
40X4907	RIP board	7-13
40X4908	Interlock harness	7-15
40X4909	Power switch	7-15
40X4910	Speaker assembly	7-15
40X4911	Fan assembly	7-15
40X4912	Humidity sensor	7-15
40X4913	Controller board	7-15
40X4914	115 V Low-voltage power supply (LVPS)	7-15
40X4915	230 V Low-voltage power supply (LVPS)	7-15
40X4916	550-sheet feeder, complete	7-18
40X4919	ADF tray assembly	7-5
40X4920	Scanner assembly	7-5
40X4921	Paper feed assembly with clutches	7-9
40X4922	Option paper feed assembly	7-19
40X4923	Registration clutch	7-9
40X4924	ADF maintenance kit	7-5, 7-21
40X5073	Duplex belt	7-17
40X5074	Duplex clutch	7-17
40X5075	Duplex roll 1	7-17
40X5076	Duplex roll 2	7-17
40X5077	Duplex motor	7-17
40X5078	Option feeder controller board	7-19
40X5079	Option feeder drive assembly	7-19
40X5080	Turn clutch	7-9
40X5081	Transparency LED	7-9
40X5082	Transparency sensor	7-9
40X5084	Caster, non-locking (rear)	7-18
40X5085	Caster, locking (front)	7-18
40X5086	Feeder foot (front left or rear right)	7-18
40X5087	Feeder foot (front right or rear left)	7-18
40X5088	Turn clutch	7-19
40X5089	Feed clutch	7-19
40X5090	Screw kit	7-21
40X5091	Multi-Protocol Network Card	7-13
40X5301	256MB DIMM	7-13, 7-21
40X5302	512MB DIMM	7-13, 7-21
40X5303	1GB DIMM	7-13, 7-21
7377732	Relocation kit	7-21