Canon

TONER+
www.tonerplus.com.ua

MF4500/MF4400/D500 Series

Service Manual Rev.1

1 2 3 4 5 6 7 8

Application

This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

Corrections

This manual may contain technical inaccuracies or typographical errors due to improvements or changes in products. When changes occur in applicable products or in the contents of this manual, Canon will release technical information as the need arises. In the event of major changes in the contents of this manual over a long or short period, Canon will issue a new edition of this manual.

The following paragraph does not apply to any countries where such provisions are inconsistent with local law.

Trademarks

The product names and company names used in this manual are the registered trademarks of the individual companies.

Copyright

This manual is copyrighted with all rights reserved. Under the copyright laws, this manual may not be copied, reproduced or translated into another language, in whole or in part, without the consent of Canon Inc.

© CANON INC. 2010

Caution

Use of this manual should be strictly supervised to avoid disclosure of confidential information.

Explanation of Symbols

The following symbols are used throughout this Service Manual.

Symbols	Explanation
	Check.
	Check visually.
	Check the noise.
	Disconnect the connector.
	Connect the connector.
	Remove the cable/wire from the cable guide or wire saddle.
	Set the cable/wire to the cable guide or wire saddle.
	Remove the screw.
	Tighten the screw.

Symbols	Explanation
	Remove the claw.
	Insert the claw.
	Use the bundled part.
	Push the part.
	Plug the power cable.
	Turn on the power.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.
   In the diagrams, ▮▮▮ represents the path of mechanical drive; where a signal name accompanies the symbol, the arrow ⟶ indicates the direction of the electric signal.
   The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.

2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low". (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.
   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.
All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.

TONER
www.tonerplus.com.ua

Contents

0 Safety Precautions

CDRH Provisions ---- 0-2
Laser Safety ---- 0-2
About Laser Beams ---- 0-2
Handling Laser Scanner Unit ---- 0-2
Toner Safety ---- 0-3
About Toner ---- 0-3
Handling Adhered Toner ---- 0-3
Notes on Handling Lithium Battery ---- 0-3
Notes on Assembly/Disassembly ---- 0-3

1 Product Overview

Product Lineups ---- 1-2
Main Unit ---- 1-2
Options ---- 1-3
Features ---- 1-4
Features ---- 1-4
Product Specifications ---- 1-4
Main Unit Specifications ---- 1-4
SADF/DADF Specifications ---- 1-6
FAX Specifications ---- 1-6
Name of Parts ---- 1-7
External View ---- 1-7
MF4420n/MF4410/MF4412/D520 ---- 1-7
MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430 - 1-8
MF4580dn/D550 ---- 1-9
Cross Section ---- 1-10
MF4550d/MF4553d/MF4554d/MF4570dn/MF4580dn/D520/D550 ---- 1-10
MF4410/MF4412/MF4420n/MF4430/MF4450/MF4452/MF4453 ---- 1-10
Control Panel ---- 1-11

2 Technical Overview

Basic Configuration ---- 2-2
Configuration function ---- 2-2
Basic Sequence ---- 2-2
Basic Sequence of Operation ---- 2-2
Print Sequence ---- 2-3
Controller System ---- 2-4
Main Controller ---- 2-4
General description ---- 2-4
Engine Controller ---- 2-4
General description ---- 2-4
Service Works ---- 2-5
At parts replacement ---- 2-5
Maintenance ---- 2-5
Notes on service works ---- 2-5
Document Exposure/Feeder System ---- 2-6
Document Exposure System ---- 2-6
Overview ---- 2-6
Major Components ---- 2-6
Document Feeder System ---- 2-7
Overview ---- 2-7
Various Control ---- 2-9
Service Works ---- 2-10
At parts replacement ---- 2-10
Maintenance ---- 2-10
Notes on service works ---- 2-10
Laser Exposure System ---- 2-11
Overview ---- 2-11
Overview ---- 2-11
Controlling the Laser Activation Timing ---- 2-12
Laser ON/OFF Control ---- 2-12
Horizontal Sync Control ---- 2-12
Laser Control ---- 2-13
Auto Power Control (APC) ---- 2-13
Laser Scanner Motor Control ---- 2-13
Overview ---- 2-13
Scanner Motor Fault Detection ---- 2-14

Service Works ---- 2-14
At parts replacement ---- 2-14
Maintenance ---- 2-14
Notes on service works ---- 2-14
Image Formation System ---- 2-15
Overview/Configuration ---- 2-15
Overview ---- 2-15
Print Process ---- 2-15
Static Latent Image Formation Block ---- 2-16
Development Block ---- 2-17
Transfer Block ---- 2-17
Fixing Block ---- 2-18
Drum Cleaning Block ---- 2-18
High-Voltage Control ---- 2-19
Overview ---- 2-19
Generating Primary Charging Bias ---- 2-19
Generating Developing Bias ---- 2-19
Generating Transfer Bias ---- 2-19
Toner Cartridge ---- 2-20
Toner Level Detection ---- 2-20
Specification of Toner level display ---- 2-20
Operation when toner level is Low/Nearly Out ---- 2-20
Toner Cartridge Absence/Presence Detection ---- 2-21
Service Works ---- 2-21
At parts replacement ---- 2-21
Maintenance ---- 2-21
Notes on service works ---- 2-21
Fixing System ---- 2-22
Overview/Configuration ---- 2-22
Overview ---- 2-22
Main Parts of Fixing assembly ---- 2-22
Various Control Mechanisms ---- 2-23
Fixing Temperature Control ---- 2-23
Protective Functions ---- 2-23
Throughput Down Control ---- 2-25
Service Works ---- 2-25
At parts replacement ---- 2-25
Maintenance ---- 2-25
Notes on service works ---- 2-25
Pickup And Feeding System ---- 2-26
Overview ---- 2-26
Overview ---- 2-26
Detecting Jams ---- 2-27
Jam Detection Outline ---- 2-27
Delay Jams ---- 2-28
Stationary Jams ---- 2-30
Other Jams ---- 2-31
Service Works ---- 2-32
At parts replacement ---- 2-32
Maintenance ---- 2-32
Notes on service works ---- 2-32
External And Controls System ---- 2-33
Power Supply ---- 2-33
Power Supply ---- 2-33
Protective Functions ---- 2-33
Service Works ---- 2-34
At parts replacement ---- 2-34
Maintenance ---- 2-34
Notes on service works ---- 2-34

3 Periodical Services

Periodically Replaced Parts ---- 3-2
Periodically Replaced Parts ---- 3-2
Consumables ---- 3-2
Consumables ---- 3-2
Periodical Service ---- 3-3
Scheduled Servicing ---- 3-3
Cleaning ---- 3-3
Printer ---- 3-3
Reader ADF ---- 3-4
SADF ---- 3-4
DADF ---- 3-4

4 Disassembly/Assembly

Outline ---- 4-2

List of Parts ---- 4-3
External View ---- 4-3
List of External Cover/Interior: DADF Models (MF4580dn/D550) ---- 4-3
List of External Cover/Interior: SADF Models (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430) ---- 4-4
List of External Cover/Interior: Copyboard Models (MF4420n/MF4410/MF4412/D520) ---- 4-6
Main Unit ---- 4-7
Lists of DADF Unit and Reader Unit: FAX Models (MF4580dn) ---- 4-7
Lists of DADF Unit and Reader Unit: Models without FAX (D550) ---- 4-8
Lists of SADF Unit and Reader Unit: FAX Models (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453) ---- 4-8
Lists of SADF Unit and Reader Unit: Models without FAX (MF4430) ---- 4-9
Lists of Copyboard Cover and Reader Unit (MF4420n/MF4410/MF4412/D520) ---- 4-10
List of 2-sided Printer Unit (MF4580dn/MF4550d/MF4570dn/D520/D550) ---- 4-10
List of 1-sided Printer Unit (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-11
Location of Electric parts ---- 4-11
List of DADF Unit ---- 4-11
List of SADF Unit ---- 4-12
List of Reader Unit ---- 4-12
List of 2-sided Printer Unit (MF4580dnMF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-12
List of 1-sided Printer Unit (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410 /MF4412) ---- 4-16
List of Connectors ---- 4-21
DADF Unit (MF4580dn/D550) ---- 4-21
SADF Unit (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430) ---- 4-21
Reader Unit ---- 4-22
2-sided Printer Unit (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) 4-22
1-sided Printer Unit (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-24
External Cover, Interior ---- 4-26
Location of DADF Models (MF4580dn/D550) ---- 4-26
Front Side ---- 4-26
Rear Side ---- 4-27
Location of SADF Models (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430) ---- 4-27
Front Side ---- 4-27
Rear Side ---- 4-28
Location of Copyboard Models (MF4420n/MF4410/MF4412/D520) ---- 4-29
Front Side ---- 4-29
Rear Side ---- 4-30
Removing the Left Cover Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-31
Removing the Left Cover Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-32
Removing the Right Cover Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-33
Removing the Right Cover Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-34
Before Removing the Front Cover Unit ---- 4-35
Removing the Front Cover Unit ---- 4-35
Before Removing the Upper Cover ---- 4-35
Removing the Upper Cover ---- 4-35
Before Removing the Rear Cover

Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)----4-37
Removing the Rear Cover
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)----4-37
Document Exposure/Feeder System ---- 4-39
Location of DADF Unit and Reader Unit (MF4580dn/D550) ----4-39
Location of SADF Unit and Reader Unit (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430)----4-39
Location of Copyboard Cover and Reader Unit (MF4420n/MF4410/MF4412/D520) ----4-40
Before Removing the DADF Unit and Reader Unit----4-40
Removing the DADF Unit and Reader Unit ----4-40
Before Removing the DADF Unit ----4-42
Removing the DADF Unit----4-42
Before Removing the DADF Pickup Unit ----4-44
Removing the DADF Pickup Unit----4-44
Before Removing the DADF Motor Unit----4-48
Removing the DADF Motor Unit ----4-48
Before Removing the DADF Solenoid Unit----4-49
Removing the DADF Solenoid Unit ----4-49
Removing the DADF Pickup Roller Unit ----4-50
Removing the DADF Separation Pad----4-52
Before Removing the SADF Unit and Reader Unit----4-53
Removing the SADF Unit and Reader Unit ----4-53
Before Removing the SADF Unit ----4-55
Removing the SADF Unit----4-55
Before Removing the SADF Pickup Unit----4-57
Removing the SADF Pickup Unit ----4-57
Before Removing the SADF Motor----4-59
Removing the SADF Motor----4-59
Removing the SADF Pickup Roller----4-60
Removing the SADF Separation Pad----4-63
Removing the Copyboard Cover----4-64
Before Removing the Copyboard Cover and Reader Unit ----4-64
Removing the Copyboard Cover and Reader Unit ----4-64
Before Removing the Copyboard Glass
Models with copyboard ----4-66
Removing the Copyboard Glass
Models with copyboard ----4-66
Before Removing the Copyboard Glass
Models with DADF/Models with SADF ----4-68
Removing the Copyboard Glass
Models with DADF/Models with SADF ----4-68
Before Removing the Flatbed Motor Unit----4-70
Removing the Flatbed Motor Unit----4-70
Before Removing the CIS Unit
Models with copyboard ----4-72
Removing the CIS Unit
Models with copyboard ----4-72
Before Removing the CIS unit
Models with DADF/Models with SADF ----4-74
Removing the CIS Unit
Models with DADF/Models with SADF ----4-74
Controller System ---- 4-76
Location of Duplex Models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) 4-76
Location of Single-sided Models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)---4-77
Removing the Control Panel Unit
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)----4-79
Removing the Control Panel Unit
Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520)-4-79
Before Removing the Drive Belt
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)----4-80
Removing the Drive Belt
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/

MF4410/MF4412)----------4-80
Before Removing the Drive Belt
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
D550/D520) ----------4-82
Removing the Drive Belt
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
D550/D520) ----------4-82
Before Removing the Main Motor
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/
MF4410/MF4412)----------4-85
Removing the Main Motor
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/
MF4410/MF4412)----------4-85
Before Removing the Main Motor
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
D550/D520) ----------4-88
Removing the Main Motor
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
D550/D520) ----------4-88
Before Removing the Main Fan
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
D550/D520) ----------4-91
Removing the Main Fan
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
D550/D520) ----------4-91
Before Removing the Engine Controller PCB
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
MF4450/MF4452/MF4453)----------4-93
Removing the Engine Controller PCB
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
MF4450/MF4452/MF4453)----------4-93
Before Removing the Engine Controller PCB
Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520) -
4-96
Removing the Engine Controller PCB
Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520) -
4-96
Before Removing the Main Controller PCB
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
MF4450/MF4452/MF4453)----------4-99
Removing the Main Controller PCB
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
MF4450/MF4452/MF4453)----------4-99
Before Removing the Main Controller PCB
Models without FAX or NET (MF4430/MF4410/MF4412/D550/D520) ----
4-100
Removing the Main Controller PCB
Models without FAX or NET (MF4430/MF4410/MF4412/D550/D520) ----
4-100
Before Removing the Main Controller PCB
Model without FAX, with NET (MF4420n) ---------- 4-102
Removing the Main Controller PCB
Model without FAX, with NET (MF4420n) ---------- 4-102
Before Removing the FAX-NCU PCB
Models with FAX (100V) ---------- 4-102
Removing the FAX-NCU PCB
Models with FAX (100V) ---------- 4-102
Before Removing the FAX-NCU PCB
Models with FAX (120V/230V)---------- 4-103
Removing the FAX-NCU PCB
Models with FAX (120V/230V)---------- 4-103
Before Removing the Pseudo CI PCB
Models with FAX (100V) ---------- 4-103
Removing the Pseudo CI PCB
Models with FAX (100V) ---------- 4-103
Before Removing the Paper Leading Edge Sensor---------- 4-104
Removing the Paper Leading Edge Sensor---------- 4-104
Before Removing the Fixing Delivery/Paper Width Sensor PCB --- 4-107
Removing the Fixing Delivery/Paper Width Sensor PCB---------- 4-107
Before Removing the Toner Sensor and Multi Pickup Sensor Unit
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/
MF4450/MF4452/MF4453)---------- 4-110

Removing the Toner Sensor and Multi Pickup Sensor Unit
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453) ---- 4-110
Before Removing the Multi Pickup Sensor Unit
Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520) - 4-112
Removing the Multi Pickup Sensor Unit
Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520) - 4-112
Before Removing the Speaker
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453) ---- 4-113
Removing the Speaker
Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453) ---- 4-113
Laser Exposure System ----4-115
Location ---- 4-115
Before Removing the Laser Scanner Unit
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-115
Removing the Laser Scanner Unit
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-115
Before Removing the Laser Scanner Unit
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-117
Removing the Laser Scanner Unit
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-117
Image Formation System ----4-119
Location ---- 4-119
Removing the Transfer Roller ---- 4-119
Fixing System ---- 4-121
Location ---- 4-121
Before Removing the Fixing Assembly
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-121
Removing the Fixing Assembly
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-121
Before Removing the Fixing Assembly
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-125
Removing the Fixing Assembly
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-125
Pickup And Feeding System ---- 4-133
Location of Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-133
Location of Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) - 4-133
Before Removing the Pickup Unit
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-134
Removing the Pickup Unit
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-134
Before Removing the Pickup Unit
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-138
Removing the Pickup Unit
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-138
Before Removing the Pickup Tray Unit
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-143
Removing the Pickup Tray Unit
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-143
Before Removing the Pickup Tray Unit
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-145

Removing the Pickup Tray Unit
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-145
Removing the Pickup Roller ---- 4-147
Before Removing the Pickup Solenoid
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-148
Removing the Pickup Solenoid
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-148
Before Removing the Pickup Solenoid
Single-sided models(MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-151
Removing the Pickup Solenoid
Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412) ---- 4-151
Removing the Separation Pad ---- 4-154
Before Removing the Duplex Feed Unit
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-155
Removing the Duplex Feed Unit
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-155
Before Removing the Duplex Reverse Solenoid
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-156
Removing the Duplex Reverse Solenoid
Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520) ---- 4-156

5 Adjustment

Mechanical Adjustment ---- 5-2
Confirming Nip Width ---- 5-2

6 Trouble Shooting

Test Print ---- 6-2
Test Print Function ---- 6-2
Trouble Shooting Items ---- 6-3
Image Faults ---- 6-3
Smudged/Streaked ---- 6-3
Version Upgrade ---- 6-4
Overview ---- 6-4
Preparation ---- 6-4
System Requirements ---- 6-4
Preparation ---- 6-5
Downloading System Software ---- 6-5

7 Error Codes

Overview ---- 7-2
Error Codes ---- 7-3

8 Service Mode

Overview ---- 8-2
Entering Service Mode. ---- 8-2
Service Mode Menu ---- 8-2
Screen flow of Service mode ---- 8-2
COPIER ---- 8-3
DISPLAY ---- 8-3
VERSION ---- 8-3
CCD ---- 8-3
I/O ---- 8-3
R-CON ---- 8-3
ADJUST ---- 8-4
ADJ-XY ---- 8-4
CCD ---- 8-4
FUNCTION ---- 8-5
CLEAR ---- 8-5
MISC-R ---- 8-5
MISC-P ---- 8-5
SYSTEM ---- 8-5
PARAM ---- 8-5
SPLMAN ---- 8-6
OPTION ---- 8-6

BODY ---- 8-6
COUNTER ---- 8-7
TOTAL ---- 8-7
PICK-UP ---- 8-7
FEEDER ---- 8-7
JAM ---- 8-7
FEEDER ---- 8-8
ADJUST ---- 8-8
FUNCTION ---- 8-8
FAX ---- 8-9
List of SSSW ---- 8-9
List of Menu ---- 8-10
List of NUM ---- 8-11
List of NCU ---- 8-11
TONE/PULSE ---- 8-11
TONE/PULSE ---- 8-11
2nd DIAL TONE ---- 8-12
BUSY TONE0 ---- 8-12
BUSY TONE1 ---- 8-12
REORDER TONE ---- 8-13
AUTO RX ---- 8-13
CNG DETECT ---- 8-13
RKEY ---- 8-13
PBX DIAL TONE ---- 8-14
PBX BUSY TONE ---- 8-14
TESTMODE ---- 8-15
SYSTEM ---- 8-15
DRAM ---- 8-15
SPEAKER ---- 8-15
SCAN ---- 8-15
ADJUST ---- 8-15
SENSOR ---- 8-15
ADFTEST ---- 8-16
BOOKFEED ---- 8-16
FAX ---- 8-16
MODEM ---- 8-16
FACULTY ---- 8-17
PANEL ---- 8-17
NETWORK ---- 8-17
SSSW ---- 8-17

9 Appendix

Service Tools ---- 9-2
Solvent/Oil List ---- 9-3
General Circuit Diagram ---- 9-4
General Timing Chart ---- 9-5

Safety Precautions

- CDRH Provisions
- Laser Safety
- Toner Safety
- Notes on Handling Lithium Battery
- Notes on Assembly/ Disassembly

F-0-1

MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/
MF4453/MF4430/MF4420n/MF4550d/MF4410/MF4412/D550/D520
Series

TONER
www.tonerplus.com.ua

CDRH Provisions

Food and Drug CDRH (Center for Devices and Radiological Health) under FDA (Food and Drug Administration) enforced provisions of the section for laser and laser products on August 2, 1976. These provisions are applicable to all laser products manufactured or assembled after August 1, 1976 and allow only products certified their compliance with the provisions to market in the US. Each product shall have affixed the applicable label as shown below to follow the labeling requirements prescribed in CDRH provisions.

Note that the wording included in labels is different depending on laser product classifications.

CANON INC.
30–2,SHIMOMARUKO,3–CHOME,OHTA–KU,TOKYO, 146.JAPAN
MANUFACTURED :
THIS PRODUCT CONFORMS WITH DHHS RADIATION PERFORMANCE STANDARD 21CFR CHAPTER1 SUBCHAPTER J.

F-0-2

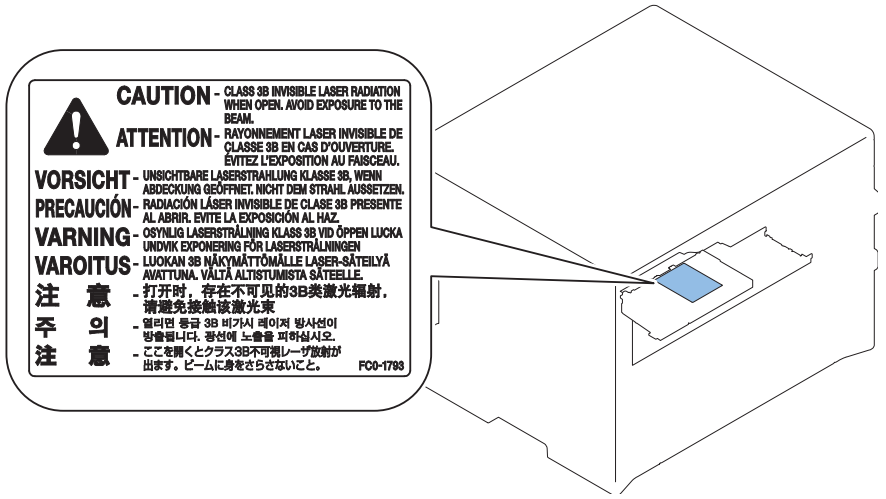
Laser Safety

About Laser Beams

Laser radiation may be hazardous to human. The laser scanner unit mounted in this device is sealed in the protective housing and the external cover to prevent laser beams from leaking to the environment. As long as the device is operated under normal conditions, users are safely guarded from laser leaks.

Handling Laser Scanner Unit

Before providing service works for the laser scanner unit and its peripherals, ensure to turn off the power of the device.
Any cover with potential dangers of laser beam reflection has affixed the caution label at the position shown in the figure below.



F-0-3

Toner Safety

About Toner

Toner is a nontoxic matter composed of plastic, iron and a trace of pigments.

⚠

Never throw toner in flames to avoid explosion.

Handling Adhered Toner

- Use dry tissue paper to wipe off toner adhered to skin or clothes and wash in water.
- Never use warm water for cleaning up toner to prevent toner particles from being able to soak into fibers permanently.
- Toner particles are reactive with vinyl polymers. Avoid contacting these materials.

Notes on Handling Lithium Battery

⚠

Replacing with wrong battery types may cause explosion.

Follow instructions to dispose used batteries properly.

Notes on Assembly/Disassembly

Follow the items below to assemble/disassemble the device.

1. Disconnect the power plug to avoid any potential dangers during assembling/disassembling works.
2. If not specially instructed, reverse the order of disassembly to reinstall.
3. Ensure to use the right screw type (length, diameter, etc.) at the right position when assembling.
4. To keep electric conduction, binding screws with washers are used to attach the grounding wire and the varistor. Ensure to use the right screw type when assembling.
5. Unless it is specially needed, do not operate the device with some parts removed.
6. Never remove the paint-locked screws when disassembling.

TONER
www.tonerplus.com.ua

Product Overview

- Product Lineups
- Features
- Product Specifications
- Name of Parts

Product Lineups

Main Unit

Model		MF4580dn	MF4570dn
Config		4in1 DADF+N	4in1 SADF+N
Design			
ADF	DADF	Yes	-
	SADF	-	Yes
	PLATEN	-	-
Engine	2-Sided	Yes	Yes
	1-Sided	-	-
LAN port		Yes	Yes
FAX		Yes	Yes

T-1-1

Model		MF4550d/MF4553d/MF4554d
Config		4in1 SADF
Design		
ADF	DADF	-
	SADF	Yes
	PLATEN	-
Engine	2-Sided	Yes
	1-Sided	-
LAN port		-
FAX		Yes

T-1-2

Model		D550	D520
Config		3in1 DADF	3in1 Pla
Design			
ADF	DADF	Yes	-
	SADF	-	-
	PLATEN	-	Yes
Engine	2-Sided	Yes	Yes
	1-Sided	-	-
LAN port		-	-
FAX		-	-

T-1-3

Model		MF4450/MF4452/MF4453	MF4430
Config		4in1 SADF	3in1 SADF
Design			
ADF	DADF	-	-
	SADF	Yes	Yes
	PLATEN	-	-
Engine	2-Sided	-	-
	1-Sided	Yes	Yes
LAN port		-	-
FAX		Yes	-

T-1-4

Model		MF4420n	MF4410/MF4412
Config		3in1 Pla+N	3in1 Pla
Design			
ADF	DADF	-	-
	SADF	-	-
	PLATEN	Yes	Yes
Engine	2-Sided	-	-
	1-Sided	Yes	Yes
LAN port		Yes	-
FAX		-	-

T-1-5

Options

- Hand Set Only FAX Model

TONER
www.tonerplus.com.ua

Features

Features

1. Small-size, high-speed monochrome printer
   This equipment has a compact body that realizes high-speed print of 25 ppm.

2. Automatic duplex print
   Automatic two-sided printing is available with standard equipped duplex unit.

3. Reduction in standby time and energy consumption
   This equipment employs on-demand fixing where the heater activates only during printing, resulting in a reduction in standby time and energy consumption on this mode.

4. Realization of noise reduction and stable image quality
   This equipment employs a belt drive method for transmitting the drive of the main motor. This enables lower noise and more stable image quality compared to the conventional gear drive method. (See NOTE)

5. Improved Usability
   In this equipment maintenance (jam removal, replacing the cartridge) can be performed by accessing one point of the delivery tray.

Note:
Changing the drive method from gear to belt reduces uneven pitch due to varied rotation speed of the photosensitive drum, which realizes stable image quality.

Product Specifications

Main Unit Specifications

Copyboard	Fixed
Device Installation	Desktop
Light source	LED (RGB)
Image scanning	CIS (color)
Photoreceptor	OPC drum (φ24)
Light exposure method	Laser beam exposure (semiconductor laser)
Charging method	Roller charging
Developing method	Toner projection developing method
Transfer method	Direct transfer to transfer member
Separation method	Curvature separation
Paper feed method	Pickup Tray : Semilunar-shaped Pickup Roller + Pad separation method (pressure release mechanism is not available)
	Multi-purpose Tray : Semilunar-shaped Pickup Roller + Pad separation method (pressure release mechanism is not available)
Paper delivery method	Face-down
Drum cleaning method	Cleaning blade
Fixing method	On-demand method with Ceramic Heater
Toner supply method	All-in-one cartridge with drum
Toner level sensor	Yes (magnetic sensor method) FAX models only
Document types	Sheets, Book, Height of document : 20 mm, Weight: up to 2 Kg
Maximum document size	Fixation : to A4
	ADF : to LGL
Image size magnification	100 % magnification
	A configuration, reduction : A4 -> B5, B5 -> A5, A4 -> A5
	A configuration, enlargement : A5 -> A4, A5 -> B5, B5 -> A4
	Inch configuration, reduction : LGL -> LRT
	Zoom : 25 to 400 % (1 % increment)
Reading resolution	Text/photo : 300 dpi x 300 dpi (default)
	Text/photo : 600 dpi x 600 dpi
	Text : 600 dpi x 600 dpi
	Photo : 600 dpi x 600 dpi
Print resolution	600 dpi x 600 dpi
Warm-up Time	MF4580dn/MF4470dn/MF4550d/MF4553d/MF4454d/MF4450/ MF4452/MF4453/MF4420n 12seconds or less MF4430/MF4410/MF4412/D550/D520 10 seconds or less (Temperature: 20 deg C humidity: 65% RH; from when the machine is turned on with the main power switch to when the standby display appears)
First print time	5.8 seconds or less (LTR)/6 seconds or less (A4)

Print Speed	MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520
	26 ppm (LTR)/25 ppm (A4)
	MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412
	24 ppm (LTR)/23 ppm (A4)
Copy speed	MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520
	26 ppm (LTR)/25 ppm (A4)
	MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412
	24 ppm (LTR)/23 ppm (A4)
Available paper size in Pickup Tray	Fixed size : A4, B5, A5, LGL, LTR, Statement, Executive, Officio, B-officio, M-officio, Government-Letter, Government-Legal, Foolscap, A-foolscap, Envelope COM10, Envelope C5, Envelope B5, Envelope DL
	Custom paper size : Width : 76.2 to 216 mm, Length : 210 to 356 mm
Available paper size in multi-purpose tray	Fixed size : A4, B5, A5, LGL, LTR, Statement, Executive, Officio, B-officio, M-officio, Government-Letter, Government-Legal, Foolscap, A-foolscap, Envelope COM10, Envelope Monarch, Envelope C5, Envelope B5, Envelope DL, Index Card
	Custom paper size : Width : 76.2 to 216 mm, Length : 210 to 356 mm
Paper types for Pickup Tray	Plain paper (60 to 90 g/m^2), Heavy paper (91 to 163 g/m^2), Transparency, Labels, Envelope, Postcard
Multi-Purpose Tray	Plain paper (60 to 90 g/m^2), Heavy paper (91 to 163 g/m^2), Transparency, Labels, Envelope, Postcard
Stack capacity of Pickup Tray	About 250 sheets (Nomal paper : 60 to 80 g/m^2)
Stack capacity of Multi-purpose Tray	1 sheet
Delivery tray stacking capacity	About 100 sheets (Nomal paper : 60 to 80 g/m^2)
Allowable environmental temperature	10 - 30 deg C
Allowable humidity	20 - 80 %
Duplex method	Yes
Interface	Standard : Hi-Speed USB/USB, Option :none
Hard Disk	Standard : none, Option : none
Memory	Standard : 4MB, Option : none
Power rating	AC100 V(±10 %) 50/60 Hz (±2 Hz)
	AC120-127 V, +/-10 % (50, 60 Hz +/-2 Hz)
	AC220-240 V, +/-10 % (50, 60 Hz +/-2 Hz)
Maximum power consumption	100 V model : 890 W
	120 V model : 1090W
	230 V model : 1220 W
Power consumption	100 V model : 480 W
	120 V model : 470 W
	230 V model : 500 W

Ozone emission	Initial : average 0.01 ppm or less
	After use : average 0.035 ppm
Dimensions (W x D x H)	MF4580dn/D550 390 x 429 x 361 mm MF4570dn/MF4550d/MF4553d/MF4454d/MF4452/MF4453/MF4450/MF4430 390 x 421 x 370 mm MF4420n/MF4410/MF4412/D520 390 x 414 x 301 mm
Weight	MF4580dn : Approx 13.4 kg MF4570dn : Approx 12.3 kg MF4550d/MF4453d/MF4454d : Approx 11.8 kg MF4450/MF4452/MF4453 : Approx 11.7 kg MF4430 : Approx 11.5 kg MF4420n : Approx 10.4 kg MF4410/MF4412 : Approx 10.3 kg D550 : Approx 13.0 kg D520 : Approx 10.5 kg(including toner cartridges)

T-1-6

SADF/DADF Specifications

Document setting direction	face-up method	
Document setting position	Center reference	
Document type	Sheet document	
Document size	Size : A4R/B5R/A5/B6 (landscape)/LGL/LTRR	
	2-sided : A4R/B5R/A5/LTRR/LGL/B6 (landscape only)	
	Feed direction : 127 mm to 356 mm	
	Width direction : 148 mm to 216 mm	
Document processing mode	SADF : 1-sided document -> 1-sided copy, 1-sided document -> 2-sided copy	
	DADF : 1-sided document -> 1-sided copy, 1-sided document -> 2-sided copy, 2-sided document -> 1-sided copy, 2-sided document -> 2-sided copy	
Document weight	Continuous feed	1-sided : 50 to 105 g/m^2
	Continuous reading	2-sided : 60 to 105 g/m^2
Document reading method	Stream reading	
Document stack capacity	DADF Ssize : 50 Sheets/Lsize : 10 Sheets	
	SADF Ssize : 35 Sheets/Lsize : 10 Sheets	
Mixed paper reading	None	
Document AE sensor	None	
Document size sensor	None	
Stamp function	None	
Document feed speed (at reading)	100 % 129.3 mm/s DADF	
	112.75 mm/s SADF	
Document processing speed (At A4, LTR)	1-sided constant speed, 22 ipm (sheets/min), DADF	
	20 ipm (sheets/min), SADF	

T-1-7

FAX Specifications

Communication Protocol	Super G3
Modem speed	33.6 kbps
Data compression method	MH, MR, MMR
Dial method	One-touch dial : 4
	Abbreviation dial : 100
	Group dial : 50
	Address book dial
	Normal dial : entry by numeric keypad
	Auto redial
	Manual redial
	Concurrent transmission : 114
Reception method	Auto reception
	Remote reception by a telephone
Report output	TX Report
	Communication Management Report (to be output automatically for every 40 communications)
	RX Report

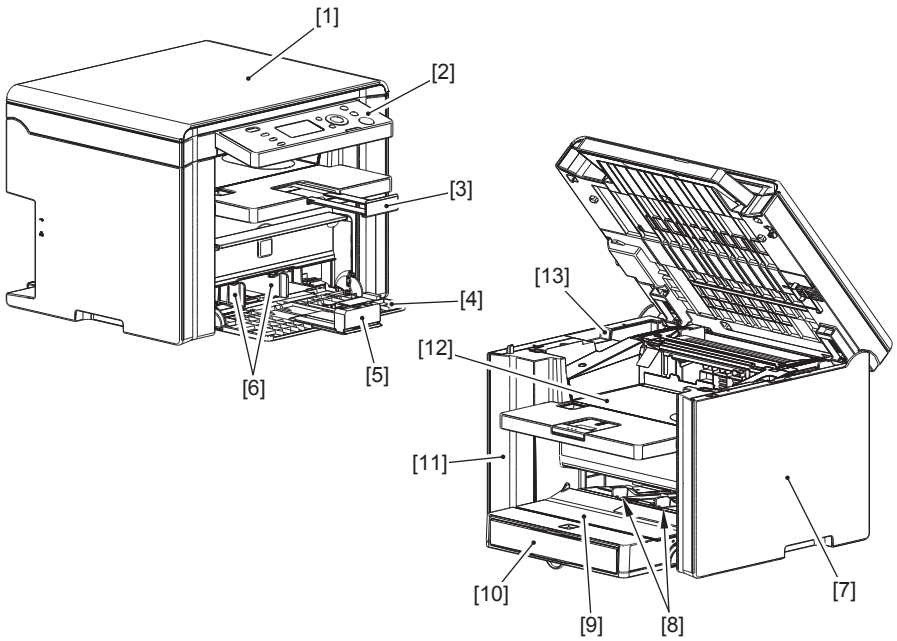
T-1-8

Name of Parts

External View

MF4420n/MF4410/MF4412/D520

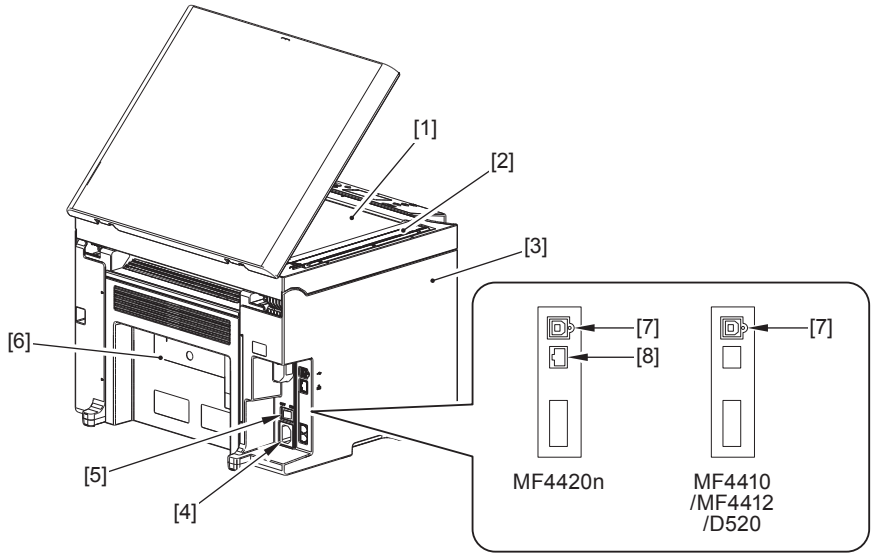
Front Side



F-1-1

No.	Name	No.	Name
[1]	Copyboard Cover	[8]	Multi-Purpose Tray Paper Guides
[2]	Control Panel Unit	[9]	Multi-Purpose Tray
[3]	Delivery Auxiliary Tray	[10]	Tray Cover
[4]	Pickup Tray	[11]	Front Cover Unit
[5]	Trailing Edge Paper Guides	[12]	Delivery Tray
[6]	Pickup Tray Paper Guides	[13]	Upper Cover
[7]	Right Cover		

Rear Side



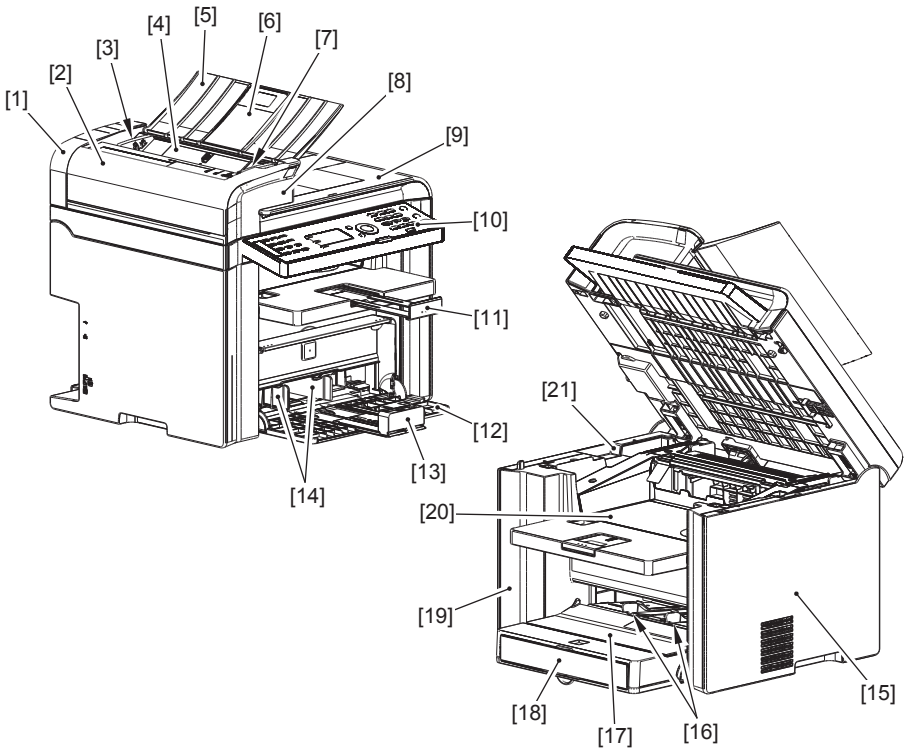
F-1-2

No.	Name
[1]	Copyboard Glass
[2]	Copyboard Upper Cover
[3]	Left Cover
[4]	Power Supply Cord Slot
[5]	Power Switch
[6]	Rear Cover
[7]	USB Device Port
[8]	LAN Port

TONER
www.tonerplus.com.ua

MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430

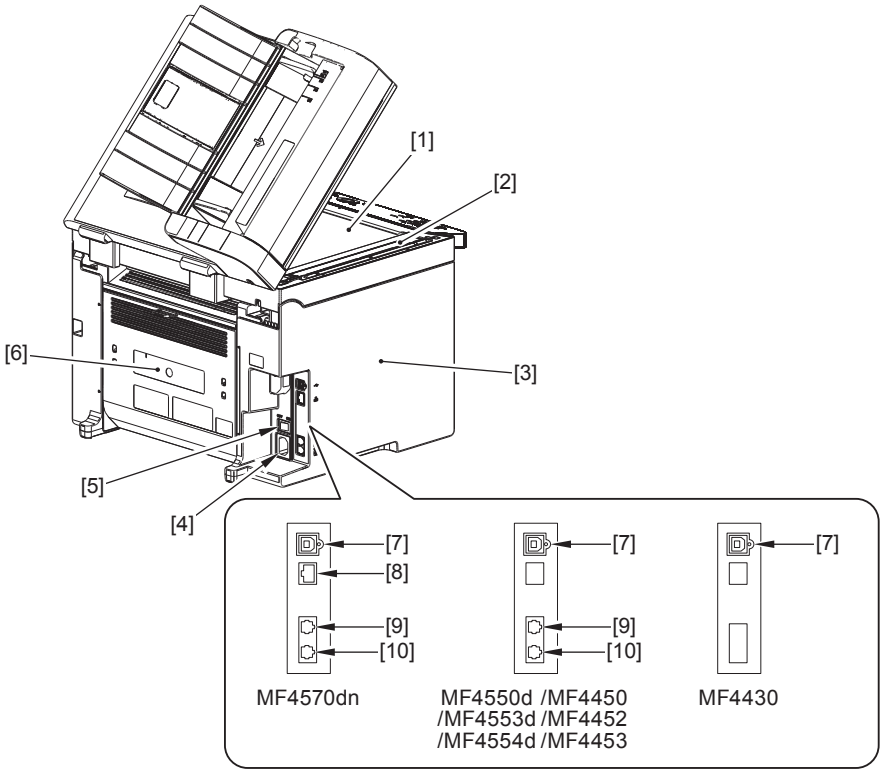
Front Side



F-1-3

No.	Name
[1]	SADF Rear Cover
[2]	SADF Upper Cover
[3]	Side Guide Plate (Rear)
[4]	Original Feed Tray
[5]	Original Feed Auxiliary Tray
[6]	Original Feed Auxiliary Extension Tray
[7]	Side Guide Plate (Front)
[8]	SADF Front Cover
[9]	Original Delivery Tray
[10]	Control Panel Unit
[11]	Delivery Auxiliary Tray
[12]	Pickup Tray
[13]	Trailing Edge Paper Guides
[14]	Pickup Tray Paper Guides
[15]	Right Cover
[16]	Multi-Purpose Tray Paper Guides
[17]	Multi-Purpose Tray
[18]	Tray Cover
[19]	Front Cover Unit
[20]	Delivery Tray
[21]	Upper Cover

Rear Side

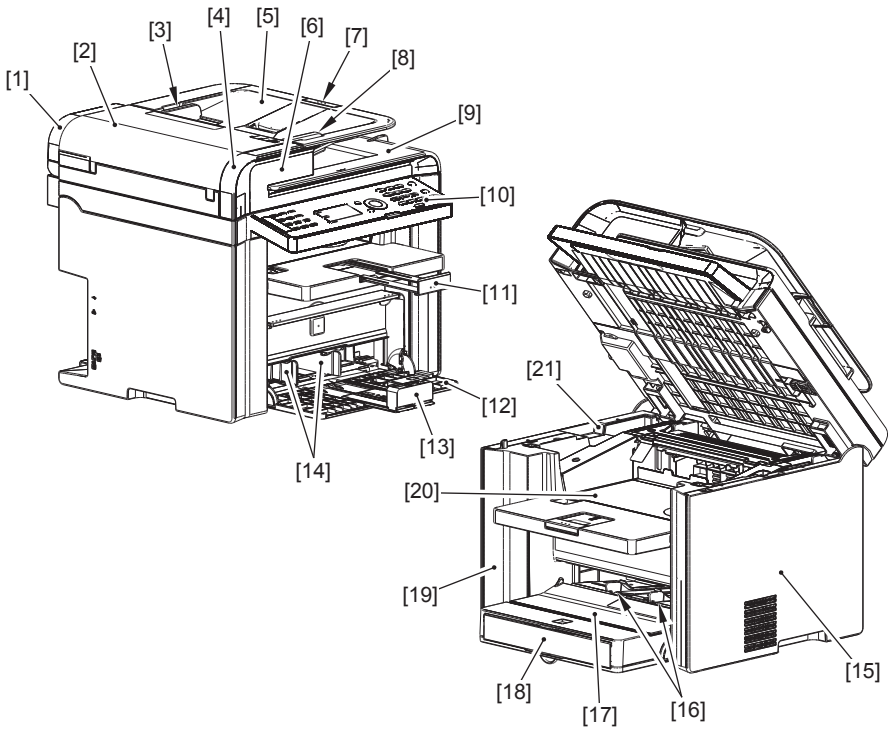


F-1-4

No.	Name
[1]	Copyboard Glass
[2]	Copyboard Upper Cover
[3]	Left Cover
[4]	Power Supply Cord Slot
[5]	Power Switch
[6]	Rear Cover
[7]	USB Device Port
[8]	LAN Port
[9]	External Device Jack
[10]	Telephon Line Jack

MF4580dn/D550

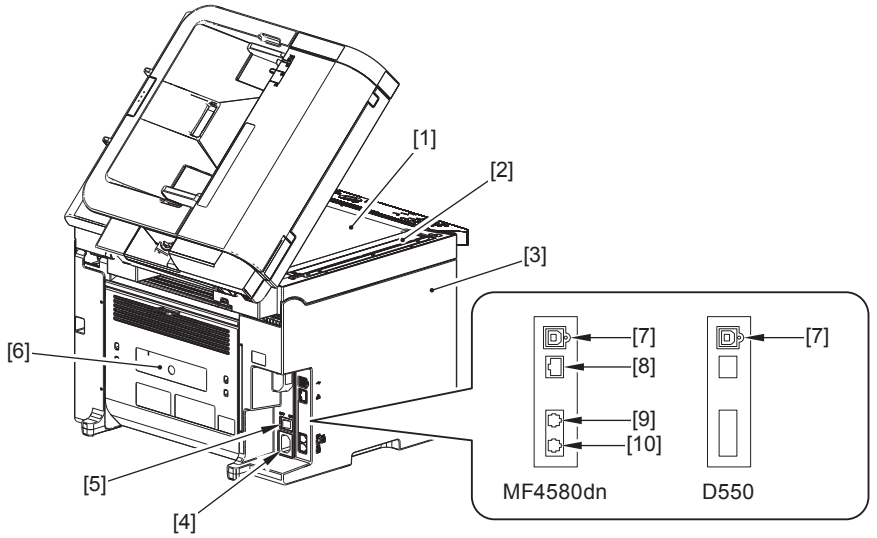
Front Side



F-1-5

No.	Name
[1]	DADF Rear Cover
[2]	DADF Upper Cover
[3]	Side Guide Plate (Rear)
[4]	DADF Front Upper Cover
[5]	Original Feed Tray
[6]	DADF Front Cover
[7]	Original Feed Auxiliary Tray
[8]	Side Guide Plate (Front)
[9]	Original Delivery Tray
[10]	Control Panel Unit
[11]	Delivery Auxiliary Tray
[12]	Pickup Tray
[13]	Trailing Edge Paper Guides
[14]	Pickup Tray Paper Guides
[15]	Right Cover
[16]	Multi-Purpose Tray Paper Guides
[17]	Multi-Purpose Tray
[18]	Tray Cover
[19]	Front Cover Unit
[20]	Delivery Tray
[21]	Upper Cover

Rear Side



F-1-6

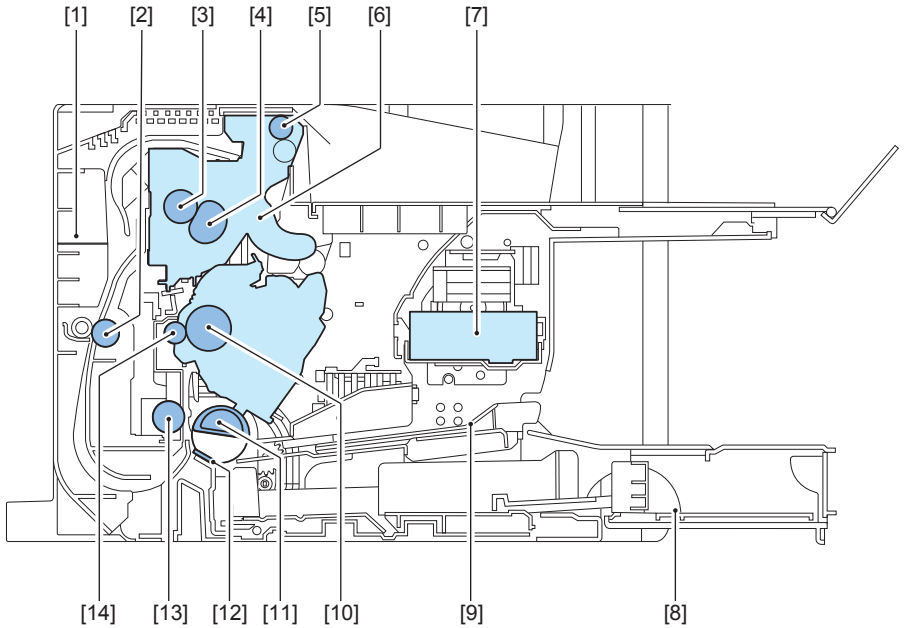
No.	Name
[1]	Copyboard Glass
[2]	Copyboard Upper Cover
[3]	Left Cover
[4]	Power Supply Cord Slot
[5]	Power Switch
[6]	Rear Cover
[7]	USB Device Port
[8]	LAN Port
[9]	External Device Jack
[10]	Telephone Line Jack

TONER
www.tonerplus.com.ua

Cross Section

MF4550d/MF4553d/MF4554d/MF4570dn/MF4580dn/D520/D550

Printer

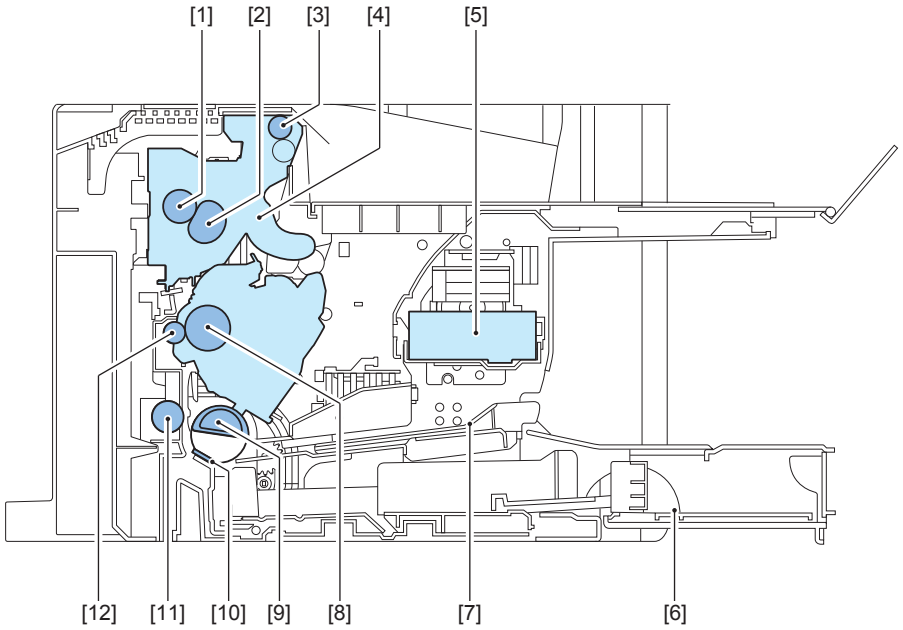


F-1-7

No.	Name	No.	Name
[1]	Duplex Feed Unit	[8]	Pickup Tray
[2]	Duplex Feed Roller	[9]	Multi-Purpose Tray
[3]	Fixing Pressure Roller	[10]	Photosensitive Drum
[4]	Fixing Film Unit	[11]	Pickup Roller
[5]	Delivery Roller	[12]	Separation Pad
[6]	Fixing Assembly	[13]	Feed Roller
[7]	Laser Scanner Unit	[14]	Transfer Roller

MF4410/MF4412/MF4420n/MF4430/MF4450/MF4452/MF4453

Printer

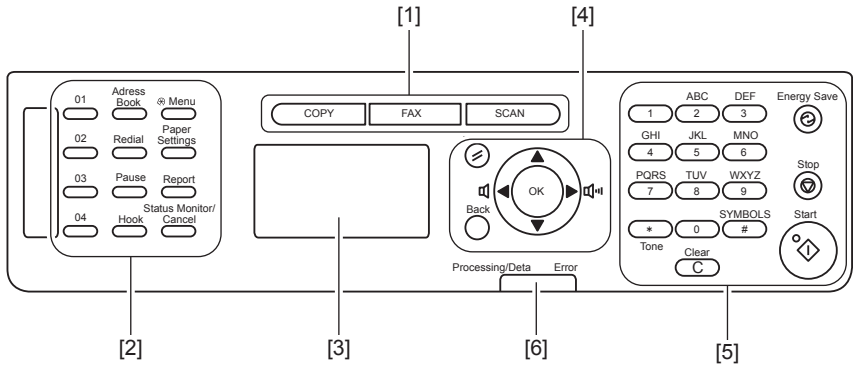


F-1-8

No.	Name
[1]	Fixing Pressure Roller
[2]	Fixing Film Unit
[3]	Delivery Roller
[4]	Fixing Assembly
[5]	Laser Scanner Unit
[6]	Pickup Tray
[7]	Multi-Purpose Tray
[8]	Photosensitive Drum
[9]	Pickup Roller
[10]	Separation Pad
[11]	Feed Roller
[12]	Transfer Roller

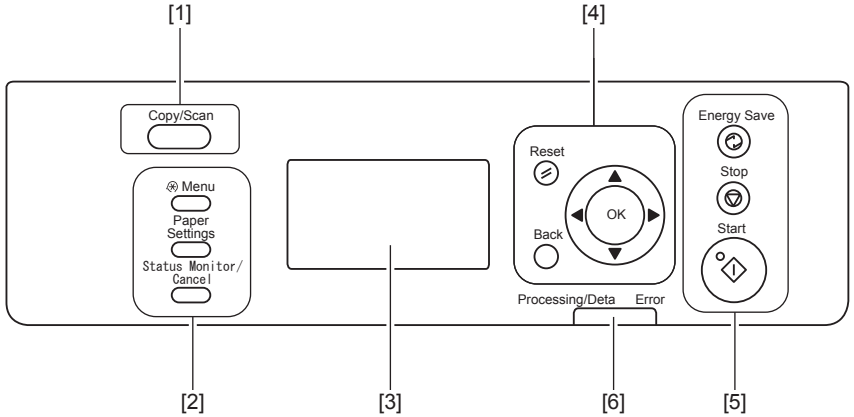
Control Panel

MF4580dn/MF4570dn/MF4550d/MF4450



F-1-9

MF4430/MF4420n/MF4410



F-1-10

(1)	Mode switching keys	Press to switch the mode to copy, fax*1, or scan.
(2)	[One-touch Speed Dial] keys *1 ([01]/[02]/[03]/[04] keys)	Press to specify recipients registered under one-touch keys.
	[Address Book] key *1	Press to search recipients registered under one-touch keys or coded dial codes.
	[Redial] key *1	When faxing, press to redial the last number.
	[Pause] key *1	When entering a fax number, press ot insert a pause.
	[Hook] key *1	Press to dial a number without lifting the telephone handset.
	[Menu] key	Press to specify or register various settings.
	[Paper Settings] key	Press to specify paper size and type for the paper cassette or multi-purpose tray.
	[Report] key *1	Press to manually print reports and lists. You can also specify whether to print a report automatically.
	[Status Monitor/Cancel] key	Press to view or cancel jobs. You can also check the status of the network*2 and machine.
(3)	LCD	During normal operation, displays messages and prompts. When adjusting the settings, displays your selections, text, and numbers.
(4)	[Reset] key	Press to reset the settings. (Press to reset the copy/scan/fax *1 mode to the standard mode.)
	[Back] key	Press to return to the previous screen.
	[▲] key	Press to scroll up or to increase a value.
	[▼] key	Press to scroll down or to decrease a value.
	[◄] key	Press to return to the previous screen or move the cursor to the left. While fax communication sound is ringing, press to decrease the volume.
	[►] key	Press to proceed to the next screen or move the cursor to the right. While fax communication sound is ringing, press to increase the volume.
	[OK] key	Press to confirm an action or setting.
(5)	Numeric keys *1 ([0]-[9] keys)	Enter letters and numbers.
	[*] key *1	Press to switch the character entry mode. When sending a fax, press to switch between pulse and tone dialing.
	[#] key *1	Press to enter symbols.
	[Clear] key *1	Deletes letters and numbers.
	[Energy Saver] key	Press to manually set or cancel the Sleep mode. The Energy Saver lignt will be green when in Sleep mode..
	[Stop] key	Press to cancel jobs
	[Start] key	Press to start copying, scanning, or sending a fax *1.
(6)	[Processing/Data] indicator	The indicator blinks while sending or receiving faxes and remains lit when jobs are waiting in memory.
	[Error] indicator	The indicator blinks when an error occurs.

T-1-9

*1 This key or function can be used only in MF4580dn/MF4570dn/MF4550d/MF4450.

*2 This function can be used only in MF4580dn/MF4570dn/MF4420n.

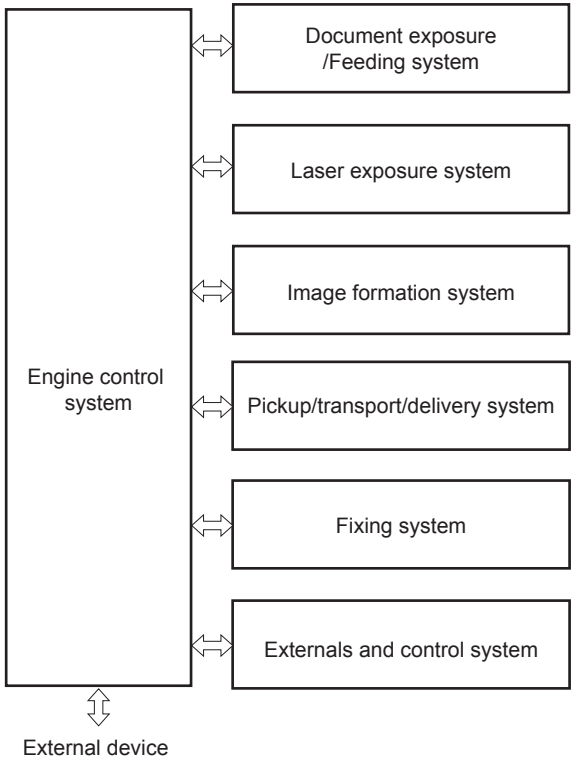
2 Technical Overview

- Basic Configuration
- Controller System
- Document Exposure/Feeder System
- Laser Exposure System
- Image Formation System
- Fixing System
- Pickup And Feeding System
- External And Controls System

Basic Configuration

Configuration function

The machine may be broadly divided into the following 7 functional blocks: engine control system, document exposure/feeding system, laser exposure system, image formation system, pickup/transport/delivery system, fixing system, and externals/auxiliary control system.



F-2-1

Basic Sequence

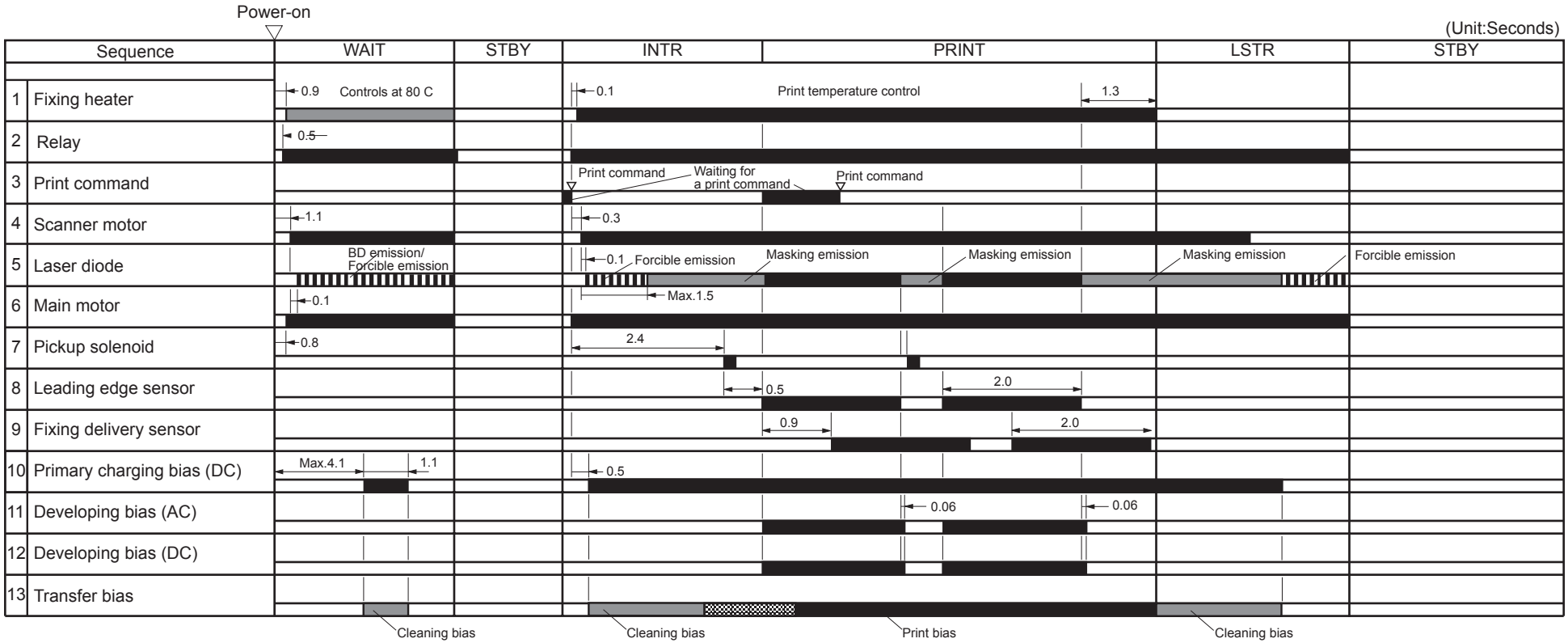
Basic Sequence of Operation

The engine controller controls the operation sequence. The following table provides an outline of machine operation occurring from when the power switch is turned on to when printing ends and motors stop, indicating the purposes of intervals and engine operation. For details of various loads, see the timing chart.

Interval		Purpose	Remarks
WAIT (Wait)	From power-ON until initial drive for main motor is completed.	To clear potential from the drum surface and to clean the transfer roller. Also to bring the heater temperature up to the targeted temperature.	Detect whether the Toner cartridge is installed or not.
STBY (Standby)	From the end of the WAIT period or the LSTR period until the print command is sent from the main controller. Or, from the end of the LSTR period until power switch is turned OFF.	To keep the printer ready to print.	
INTR (initial rotation)	From the input of the print command from the main controller until the pick-up solenoid is turned ON.	To stabilize the photosensitive drum sensitivity in preparation for printing. Also to clean the transfer roller.	
PRINT (print)	From the end of the INTR period until the top of page sensor detects the trailing edge of paper.	To form image on the photosensitive drum based on the VIDEO (/VD01, /VD02, VD01, VD02) signals input from the main controller, and to transfer the toner image onto paper.	
LSTR (last rotation)	From the end of PRINT period until the Main motor stops.	To deliver the last paper completely out of the printer.	Return to the INTR period as soon as another print command is sent from the main controller.

T-2-1

■ Print Sequence



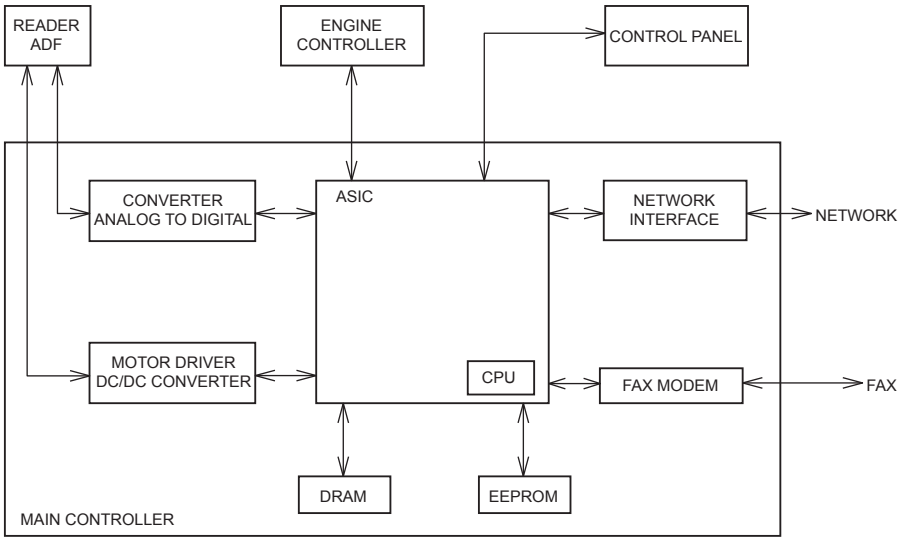
F-2-2

Controller System

Main Controller

General description

The Main Controller receives print information from the Reader and ADF, Fax, and network.
Video data is created from the received print information and is sent to the Engine Controller.

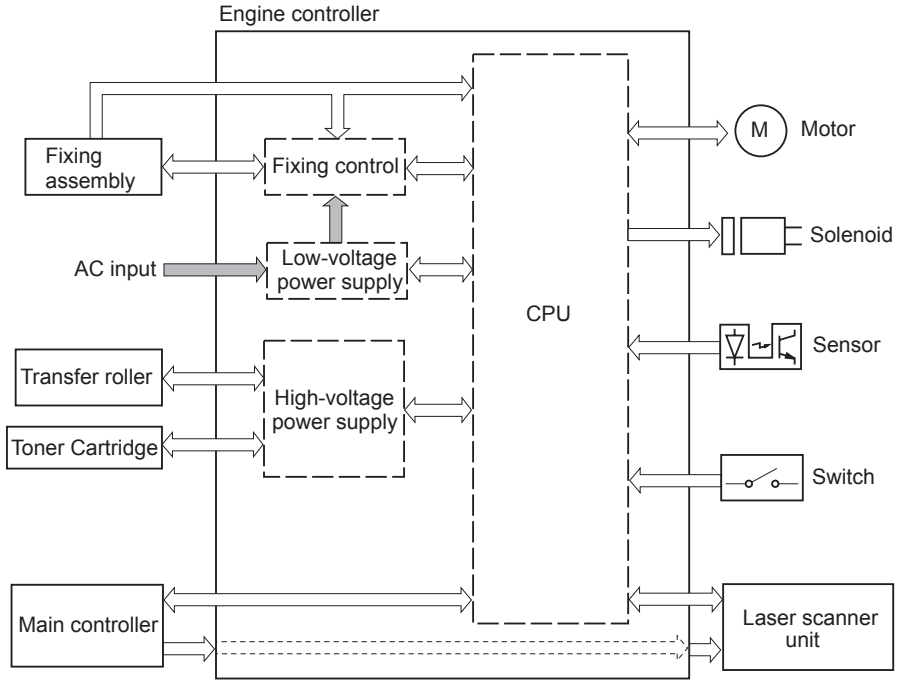


F-2-3

Engine Controller

General description

Engine controller is the circuit to control the operation sequence of the host machine and it is controlled by the CPU inside the engine controller.
When the power is turned ON and DC power is supplied through the low voltage power inside engine controller, CPU starts the printer operation control.
Then, CPU drives the loads such as laser diode, motors and solenoids etc. according to the image data that is input by the main controller when status becomes stand-by mode.
The following is the block diagram of this circuit.



F-2-4

Service Works

At parts replacement

No work is required for this product at parts replacement.

Maintenance

No periodically replaced parts, durable parts or periodical service is set for this product.

Notes on service works

None.

Document Exposure/Feeder System

Document Exposure System

Overview

item	function / method
document exposure	LED
document scan	Book mode: scan by the shift of the contact Book mode: scan by the shift of the contact sensor (CS) SADF/DADF: document stream reading by fixed contact sensor (CS)
scanning resolution	600 dpi (horizontal scanner) X 600 dpi (vertical scanner)
number of gradations	256 gradations
magnification	50% to 200% horizontal: image processing by SCNT PCB vertical: change of carriage shift speed, image processing by SCNT PCB
lens	rod lens array
CMOS sensor	number of lines: 1 line number of pixels: 5148 pixels as total pixels (5107 pixels as effective pixels) maximum document scanning width: 216 mm
CS drive control	drive control by Reader motor
document size detection	none

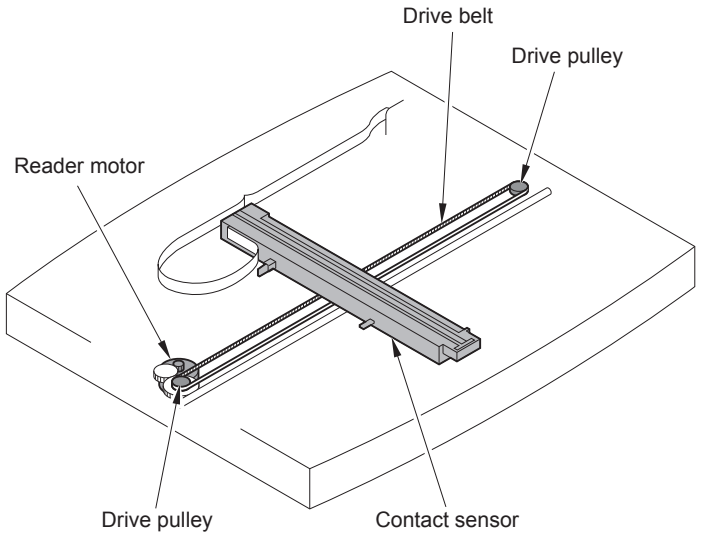
T-2-2

Major Components

Followings are the major components for Document Exposure System.

- The contact sensor to scan document
- The Reader motor, the drive pulley, the drive belt, to shift the contact sensor

In image scanning control, the contact sensor is shifted by rotating the Reader motor based on the drive signal from the DCNT PCB and scan the original on the copyboard glass. When ADF is in use, image is scanned by feeding the originals by ADF instead of shifting the contact sensor.



F-2-5

Document Feeder System

Overview

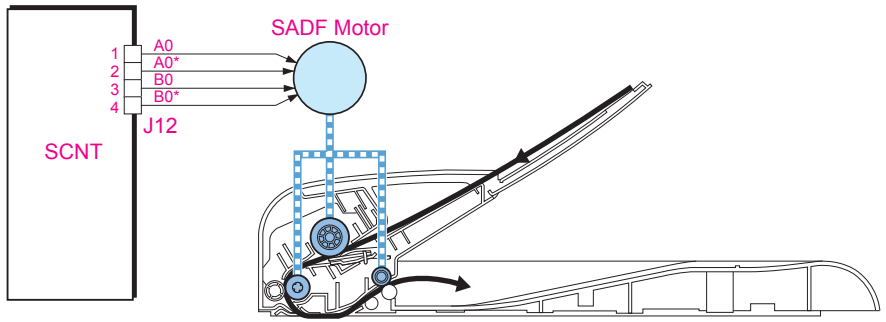
SADF

The Single-side Auto Document Feeder (SADF) mounted onto this host machine is dedicated to stream-reading.

1 motor (SADF motor) is engaged in pickup/feeding/delivery.

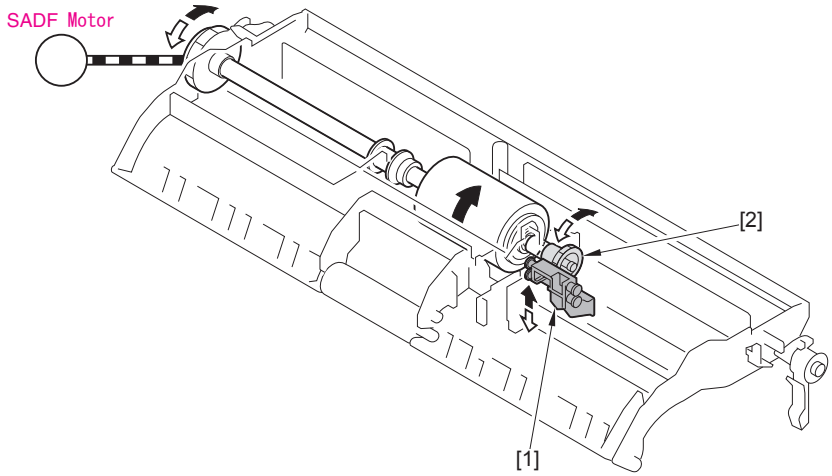
At the start of copy/fax/scan, the SADF motor is driven by the drive command from the SCNT to pickup/feed the originals set face up on the original tray one by one in order from the top.

The original is scanned by the contact sensor when moving through the copyboard glass, and then delivered face down to the original delivery assembly.



F-2-6

Within the SADF pickup assembly is the stop [1] for the purpose of preventing the push-in of original, which descends/ascends in conjunction with the gear [2] on the end of the pickup roller shaft.



F-2-7

- When the originals are moving through the machine

(➡)

By the CW drive of the SADF motor, which is transmitted to the pickup roller via the gear/spring clutch and results in positive rotation of the pickup roller, original pickup is performed. At this point, the gear on the pickup roller shaft rotates positively as well, ascending the stop. When the originals are moving through the equipment, the stop is kept ascended.

- At detection of original being set and after delivery of the last sheet of the original

(⇨)

The gear on the pickup roller shaft rotates negatively by the CCW drive of the SADF motor, descending the stop. At the CCW drive, the drive is not transmitted to the pickup roller via the spring clutch, leaving the pickup roller stopped.

DADF

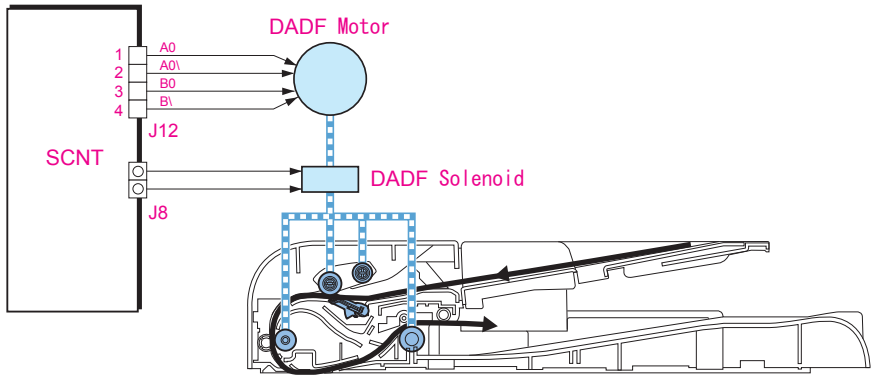
Pickup/Feed/Delivery Operation

The Double-side Auto Document Feeder (DADF) mounted onto this host machine is dedicated to stream-reading.

1 motor (DADF motor) is engaged in pickup/feeding/delivery.

At the start of copy/fax/scan, the DADF motor is driven by the drive command from the SCNT to pickup/feed the originals set face up on the original tray one by one in order from the top.

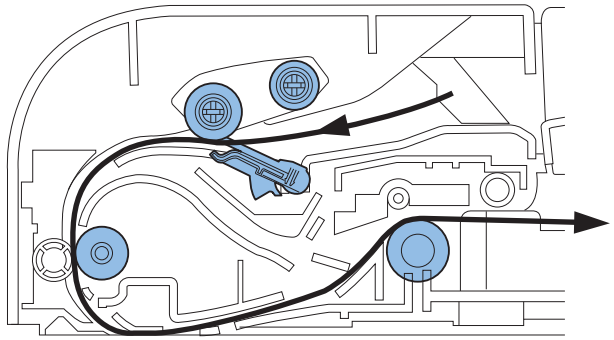
The original is scanned by the contact sensor when moving through the copyboard glass, and then delivered face down to the original delivery assembly.



F-2-8

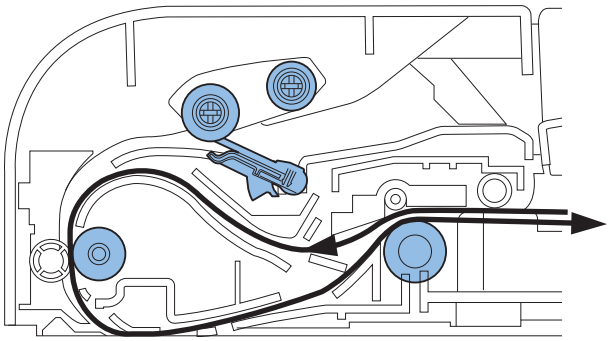
Operation at duplex reading

- Pickup to Reading of the 1st side



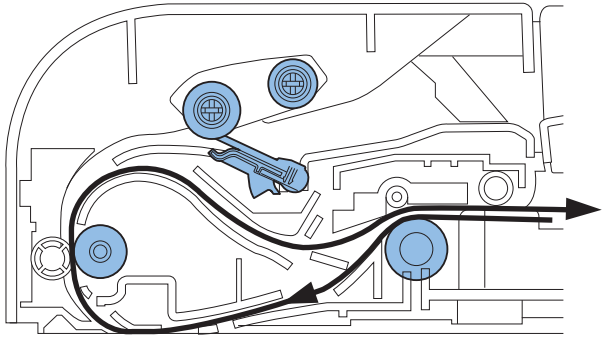
F-2-9

- Reverse to Reading of the 2nd side



F-2-10

- Delivery



F-2-11

Various Control

Original Detection

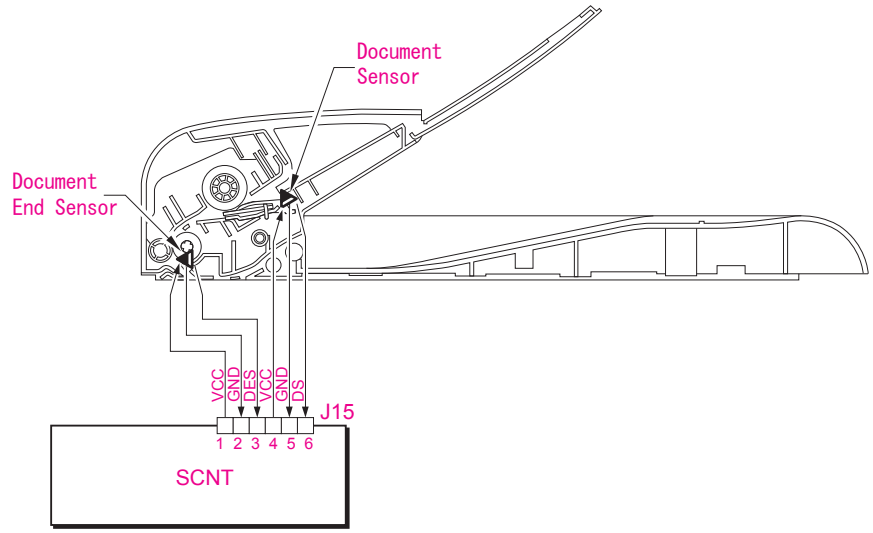
There are two types of original detection in this equipment.

1. Original Presence / Absence Detection
   Detected by DS (Document Sensor
   Setting the original onto the original tray pushes up the actuator, activating (light shielded =>light transmitted) the DS, and resulting in detection of the presence of original.

2. Detection of the End of the Original
   Detected by the DES (Document End Sensor)
   The leading edge of the original that is fed pushes up the actuator, activating the DES (light shielded =>light transmitted) and resulting in detection of the reach of the leading edge of original. Furthermore, when the trailing edge of the original passes the actuator position, the actuator returns to the original position, inactivating the DES (light transmitted => light shielded). The trailing edge of the original is detected by this mechanism. The original length that can be scanned with this equipment is less than 400 mm. Passing of the original longer than this results in jam stop. The original length is calculated by the time it takes from detection of the leading edge of the original to detection of the trailing edge of the original.

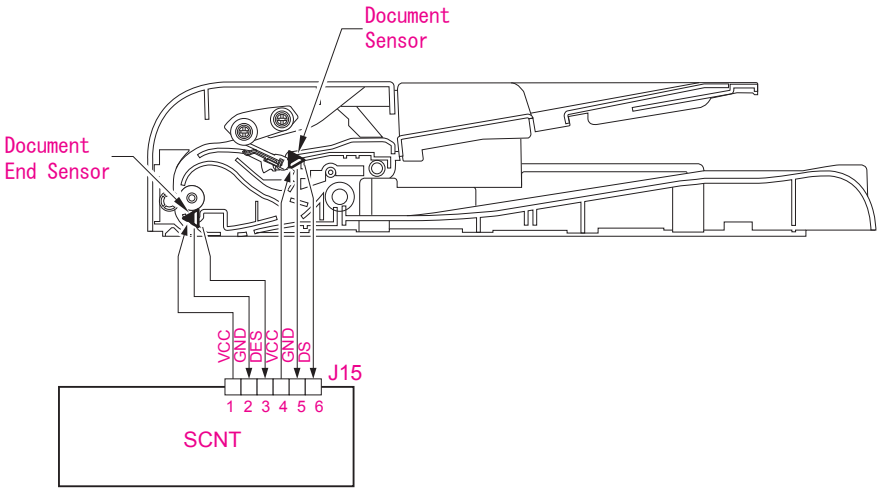
Note:
There is no function to detect the original size (original width, length) in this equipment.

In the case of SADF



F-2-12

In the case of DADF



F-2-13

Jam Detection

The following cases are judged as jam.

1. In case of delay in reaching DS/DES or stationary during scanning of original
2. In case DS/DES is detected as ON at power-on (residual paper jam)
3. In case of detecting original of which length is 400 mm or longer

- Operation after Detection of Jam
  The host machine stops scanning operation and displays "CHECK DOCUMENT" on the control panel. No jam code is displayed. In case of the model equipped with fax function (with built-in speaker), the warning beep occurs at the detection of jam.

- How to release Jam
  Remove the jammed paper and open / close the SADF/DADF upper cover

Service Works

At parts replacement

No work is required for this product at parts replacement.

Maintenance

No periodically replaced parts, durable parts or periodical service is set for this product.

Notes on service works

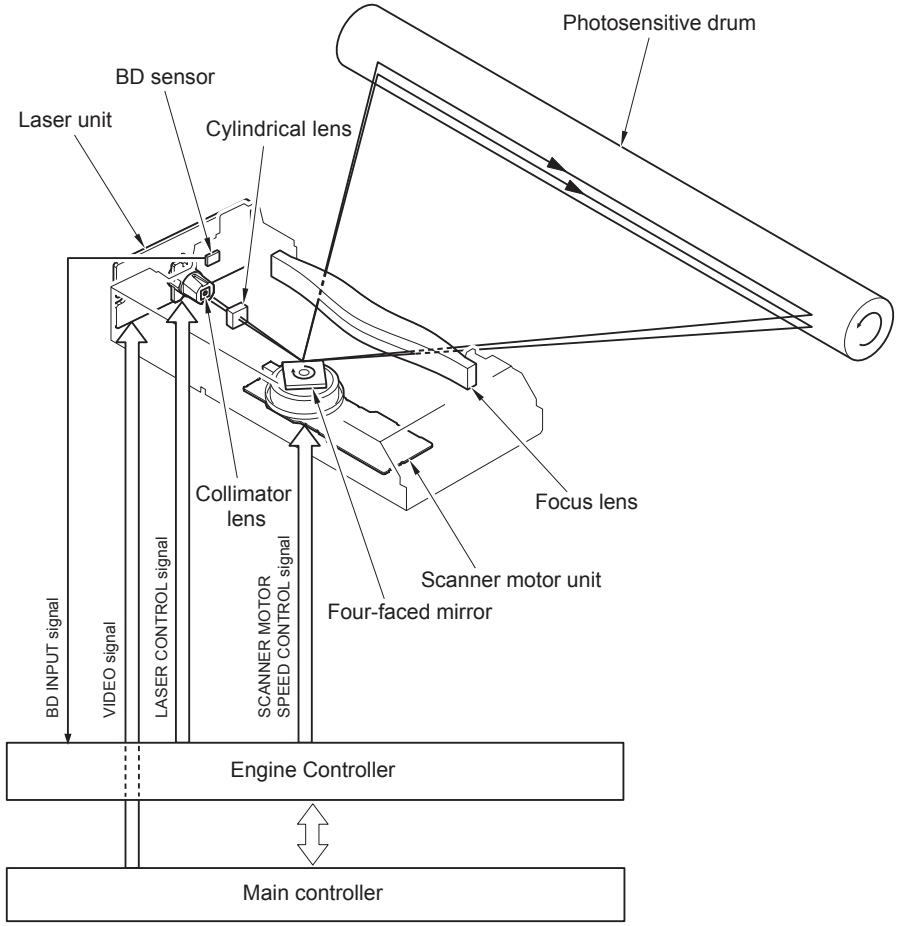
None.

Laser Exposure System

Overview

Overview

The laser exposure system forms static latent images on the photosensitive drum according to the VIDEO signals sent from the main controller, and is comprised of the laser driver and scanner motor, etc. These are controlled by the engine controller. The following is the outline.



F-2-14

The operational sequence of the laser scanner unit is described below.

1) When the Main controller sends print instruction command, the Engine controller rotates the Four-faced mirror, causing the Scanner motor to rotate.

2) When the Scanner motor starts to rotate, the Engine controller emits the laser forcibly using the Laser control signal, causing the Engine controller to start rotation control for the Scanner motor.

3) The Engine controller controls to keep a constant speed of rotation of the Scanner motor using the Scanner motor speed control signal.

4) After the rotation speed of the Scanner motor reaches its target, the Main controller sends VIDEO signals to the Laser driver PCB.

5) The Laser driver emits laser diode according to these signals.

6) The laser beam passes through the collimator lens and the cylindrical lens and enters the Four-faced mirror rotating at a constant speed.

7) The laser beam reflected by the Four-faced mirror is focused on the Photosensitive drum via the image-forming lens at the front of the Four-faced mirror.

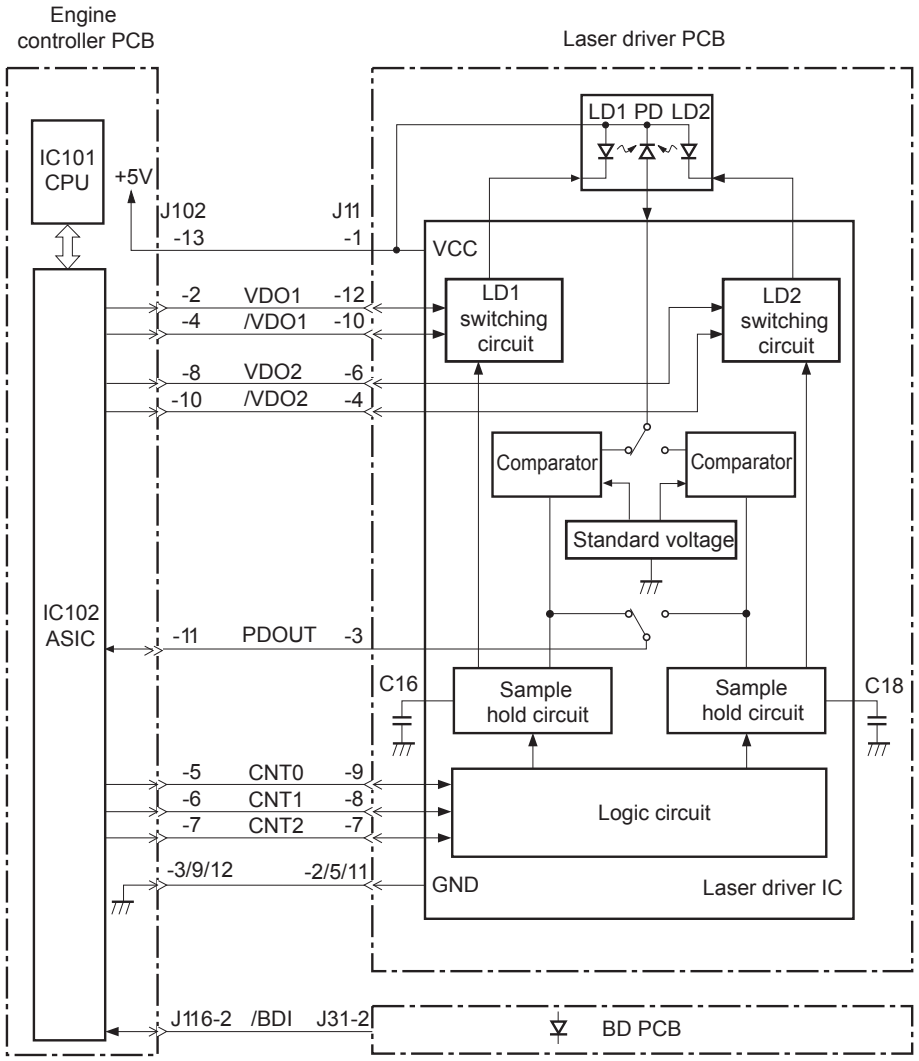
8) When the Four-faced mirror rotates at a constant speed, the laser beam on the Photosensitive drum is scanned on the Photosensitive drum at a constant speed.

9) When the Photosensitive drum rotates at a constant speed and the laser beam is scanned on the Photosensitive drum at a constant speed, latent images are formed on the Photosensitive drum.

Controlling the Laser Activation Timing

Laser ON/OFF Control

In this control, the laser driver turns on/off the 2 laser diodes (LD1, LD2) according to the laser control signal sent from the engine controller.
The following is the circuit diagram of the laser control.



F-2-15

The engine controller sends the laser control signals (CNT0, CNT1, CNT2) for changing the operation mode of the laser to the logic circuit in the laser driver IC, as well as the video signals (VDO1, /VDO1, VDO2, /VDO2) for image formation.
The laser driver IC executes laser control according to the combination of the CNT0, CNT1, CNT2 signals.
The following is the combination of the laser control signal (CNT0, CNT1, CNT2).

Operation mode	CNT0	CNT1	CNT2	Details
Standby	L	L	L	Laser control OFF
Print	H	H	H	Can emit the laser according to the video signal
LD1 forced ON	L	H	L	LD1 forcibly turned ON
LD2 forced ON	H	L	L	LD2 forcibly turned ON
LD forced OFF	H	H	L	LD1, LD2 forcibly turned OFF

T-2-3

Horizontal Sync Control

This is the control to adjust the writing position in the image horizontal direction.
The following is the details of control procedure.

1) The engine controller controls the laser control signal during unblanking (*) to emit the laser diode (LD) forcibly.

2) The BD PCB exists on the scanning route of the laser beam, which is sent to the BD PCB.

3) The BD PCB detects this laser beam, creates BD input signal (/BDI) and sends it to the engine controller.

4) The engine controller creates horizontal sync signals (/BD) based on /BDI signal and sends the /BD signal to the main controller.

5) When /BD signal is input, the main controller outputs the video signal (VD0, /VD0) to the engine controller to adjust the writing position in image horizontal direction.

*: Unblanking period
The period during which the laser diode is emitted in non-image area.

Laser Control

Auto Power Control (APC)

This is the control to emit a constant level of laser diode.
There are two types of APC; initial APC (note 1), and line space APC (note 2). The laser driver executes the same procedure for both controls. The following is the details of the control procedure.

1) When the laser control signal enters LD1 forced ON mode (CNT0, CNT1, CNT2), the laser driver emits LD1 forcibly.

2) The emission level of LD1 is detected with photo diode (PD), converted from current output to voltage, and compared with the standard voltage (voltage equivalent to the target laser level) with the comparator.

3) The laser driver controls the laser current to achieve the voltage of LD1 target level.

4) When the laser control signal enters LD forced OFF mode, the LD1 is forcibly turned off. The laser driver saves the adjusted laser intensity of the capacitor (C16).

5) When the adjustment of LD1 laser intensity is completed, the laser control signal enters LD2 forced ON mode; the laser driver emits LD2 forcibly.
The laser driver adjusts the LD2 laser intensity as in the case of LD1 and saves the adjusted laser intensity to the capacitor (C18).

1. Initial APC

APC that is executed during initial rotation. APC adjusts laser intensity and detects faults in the laser.

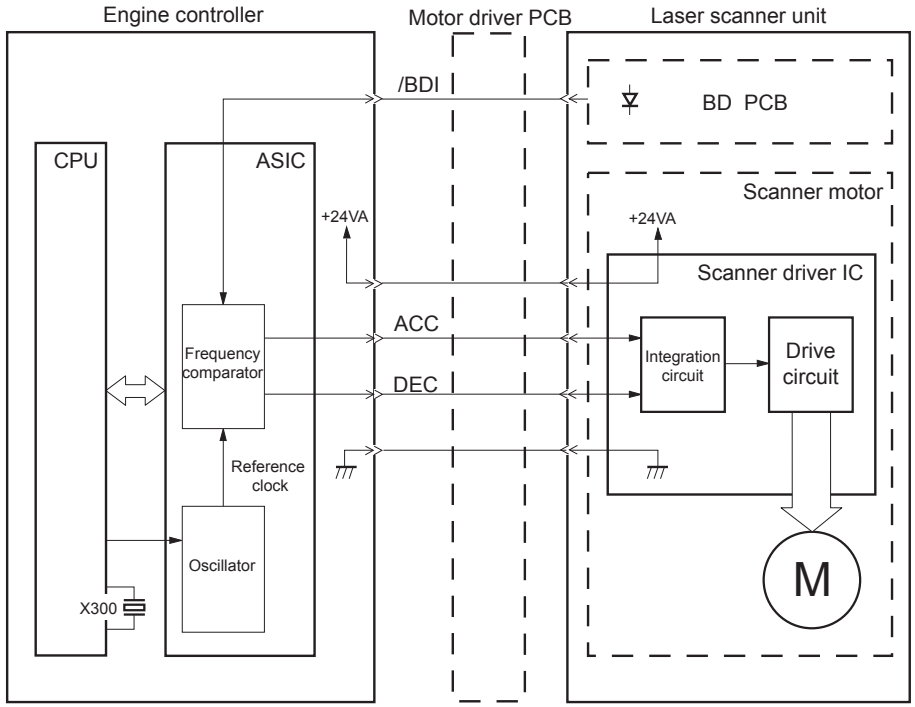
2. Line space APC

APC that is executed during printing. Laser intensity for one line is adjusted before writing one line.

Laser Scanner Motor Control

Overview

This is the control to rotate the scanner motor at a constant speed to emit the laser beam on the correct position on the photosensitive drum.
The following is the control circuit of the scanner motor.



F-2-16

The engine controller creates standard clock based on oscillation frequency of the oscillator (X300); the cycles of the standard clock is compared with that of BD input signal (/BDI) with a frequency comparator and the rotations of the scanner motor is monitored.
The engine controller sends the scanner motor acceleration signal (ACC) and scanner motor deceleration signal (DEC) to the scanner motor driver according to the detected rotation speed to control the rotation speed.

Scanner Motor Fault Detection

This is the detection of faults in the laser scanner unit.
When the laser unit scanner unit falls into either of the following status, the engine controller judges it as a fault in the laser scanner unit system and notices the status of fault to the main controller.
The operations of the host machine are stopped.

1. Fault in BD input
   At startup of the scanner, /BDI signal cannot be detected within 0.1 sec from the completion of forced acceleration of the scanner motor.
2. Fault in startup
   During activating the scanner motor at startup of the scanner, the motor rotation exceeds the specified range (98.3 to 102.1%).
3. Fault in control
   After startup of the scanner completes correctly, /BDI signal exceeds the specified value of cycle 10 consecutive times.

Service Works

At parts replacement

No work is required for this product at parts replacement.

Maintenance

No periodically replaced parts, durable parts or periodical service is set for this product.

Notes on service works

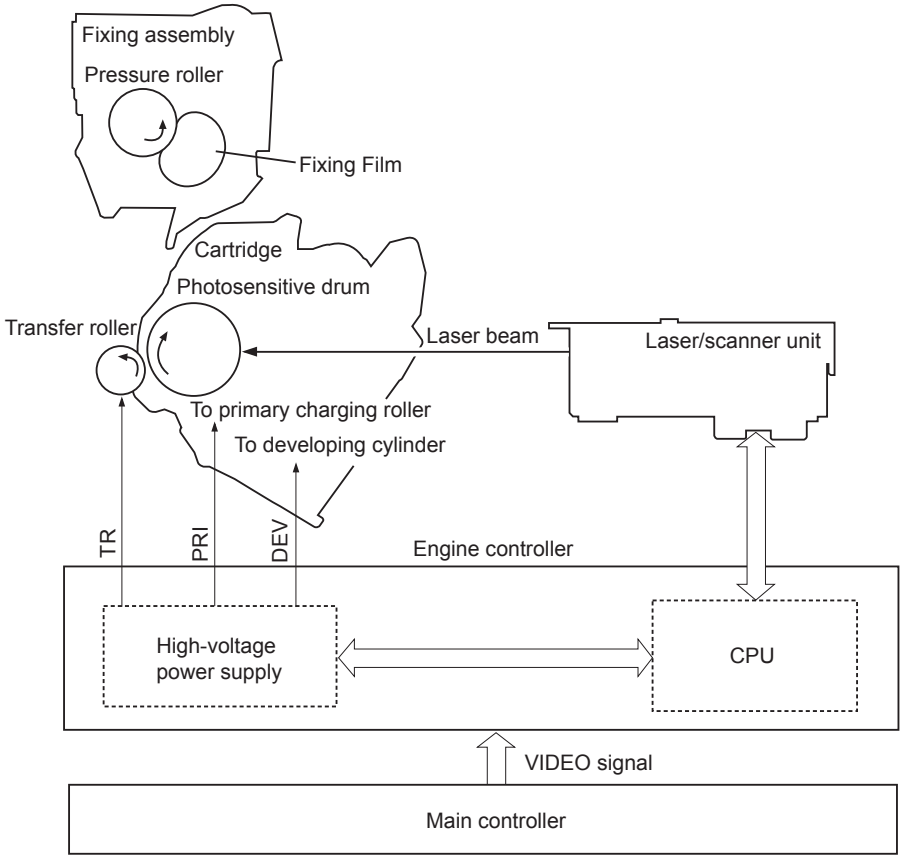
None.

Image Formation System

Overview/Configuration

Overview

The image formation system is the core of this equipment; it forms toner images on papers.
The image formation system is comprised of the following components.
The engine controller controls the laser scanner unit and high-voltage power supply circuit and forms images based on the video signals on papers.
The following are the details of print process for this equipment and the functions of image formation.

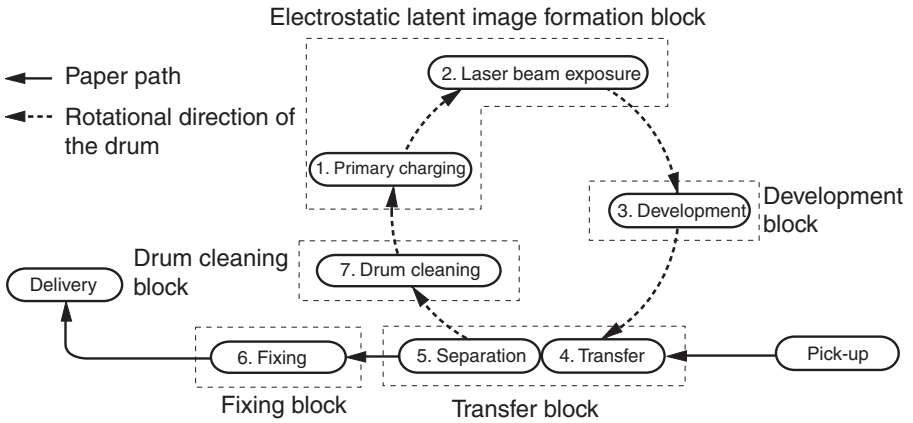


F-2-17

Print Process

This explains the basic process of the operations that a printer executes for image formation.
The print process of this equipment is divided largely into 5 blocks, 7 steps.
Toner images are formed on papers by executing the steps of each block in order.
The following are the blocks of print process and the steps.

1. Static latent image formation block
   Step 1: Primary charging
   Step 2: Laser beam exposure
2. Development block
   Step 3: Development
3. Transfer block
   Step 4: Transfer
   Step 5: Separation
4. Fixing block
   Step 6: Fixing
5. Drum cleaning block
   Step 7: Drum cleaning

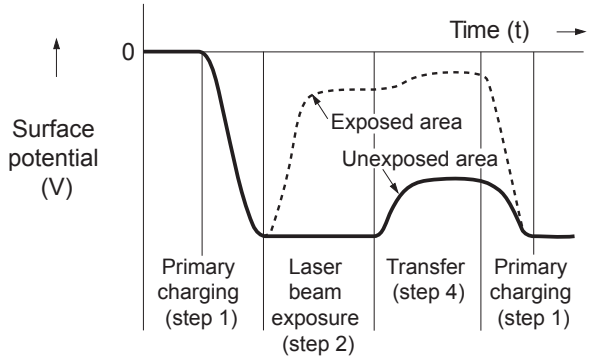


F-2-18

Static Latent Image Formation Block

This block is comprised of two steps and forms static latent images on the photosensitive drum.

When the final step of this block completes, negative charge remains at dark areas on the drum surface where laser beam has not been exposed, and negative charge is eliminated from bright areas on the drum surface with laser beam exposed. The images on the drum with negative charge are called static latent images because human eyes cannot detect them.

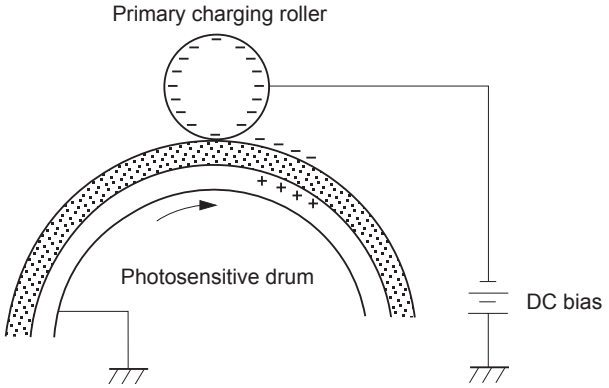


F-2-19

Step 1: Primary charging

For preparation of latent image formation, the surface of photosensitive drum is charged with even negative potential. In this primary charging, the charge is applied from the primary charging roller directly to the photosensitive drum.

DC bias is applied to the primary charging roller to maintain an even potential on the surface of the photosensitive drum.

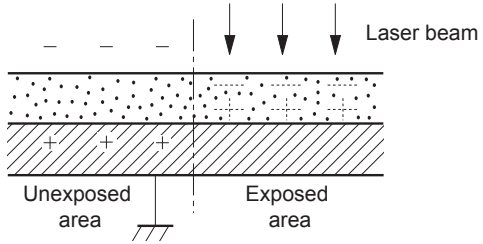


F-2-20

Step 2: Laser beam exposure

In this step, static latent images are formed on the photosensitive drum with laser beam.

When laser beams are scanned on the photosensitive drum negatively charged, bright areas lose their charges, eliminating negative potential on the surface of the photosensitive drum; on those portions, static latent images are formed.



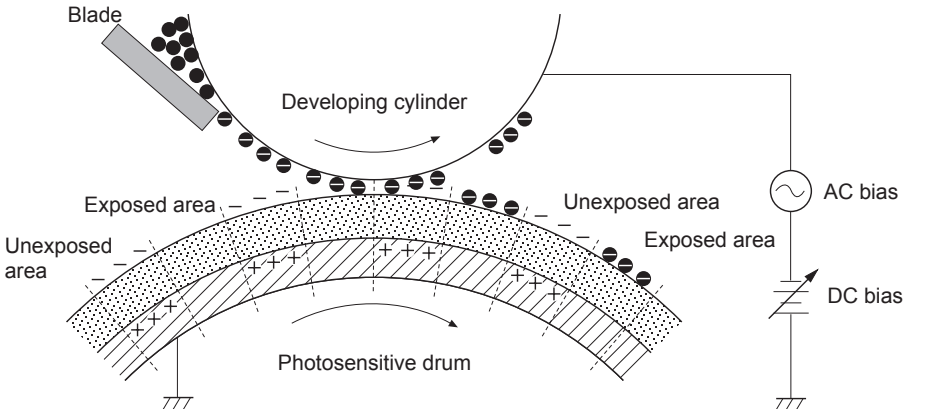
F-2-21

Development Block

This block is comprised of one step; it puts toners to the static latent images on the surface of the photosensitive drum and visualizes the images using toner projection development. The toner projection development makes the toner jump on the surface of the photosensitive drum and develops the images.
The toner (developer) used for this equipment is a one-component toner that comprises magnetic body and resin, etc.

Step 3: Development

Toner is affixed to static latent images on the surface of the photosensitive drum.
The toner is charged negatively by friction between the developing cylinder and the surface of the developing blade.
An area on the photosensitive drum exposed with laser beam has higher potential than the developing cylinder; the potential difference between the drum surface and the cylinder enables the toner to jump on the drum surface and makes them visible images.
AC bias superimposed with the development DC negative bias is applied to the developing cylinder.



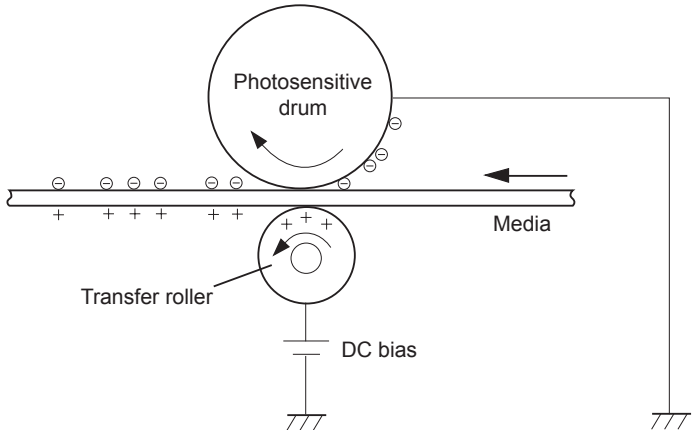
F-2-22

Transfer Block

This block is comprised of two steps; it transfers toner images on the surface of the photosensitive drum to papers.

Step 4: Transfer

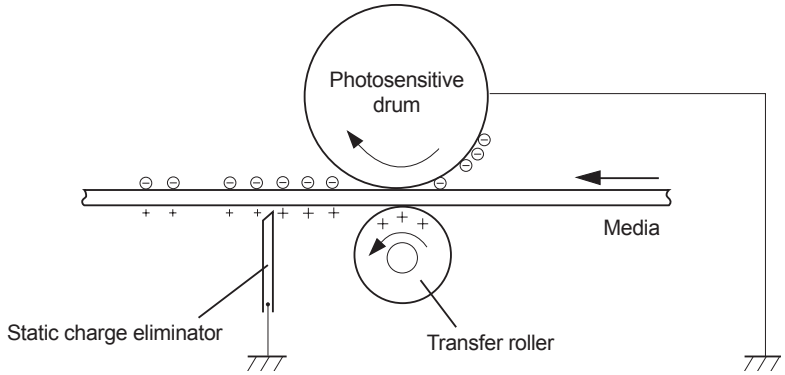
In this step, toner images on the photosensitive drum are transferred to papers.
This equipment applies DC positive bias to the transfer roller facing the photosensitive drum and charges papers positively. This enables toner negatively charged on the surface of the photosensitive drum to be transferred to papers.



F-2-23

Step 5: Separation

In this step, DC negative bias is applied to the static eliminator according to the elasticity of papers to separate the papers from the photosensitive drum. The static eliminator is used to stabilize the paper feed system (prevention of toner stray that appears as polka-dots on print images in a low-temperature, low-humidity environment), and neutralizes the electric charge at the back of papers.



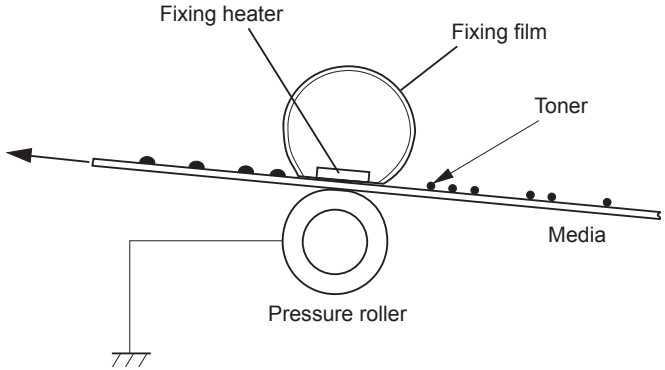
F-2-24

Fixing Block

This block applies pressure and heat to papers and the toner on them to fix toner images to the papers.

Step 6: Fixing

This step employs on-demand fixing that fixes toner images transferred to papers on the papers.



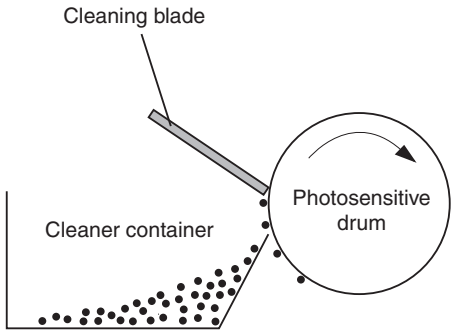
F-2-25

Drum Cleaning Block

The drum cleaning block removes the toner remained on the photosensitive drum.

Step 7: Drum cleaning

In this step, toner remained on the photosensitive drum is removed.
The cleaning blade scrapes the leftover toner on the surface of the photosensitive drum; the toner is collected into the cleaner container.
By implementing the above step, the surface of the photosensitive drum is cleaned.

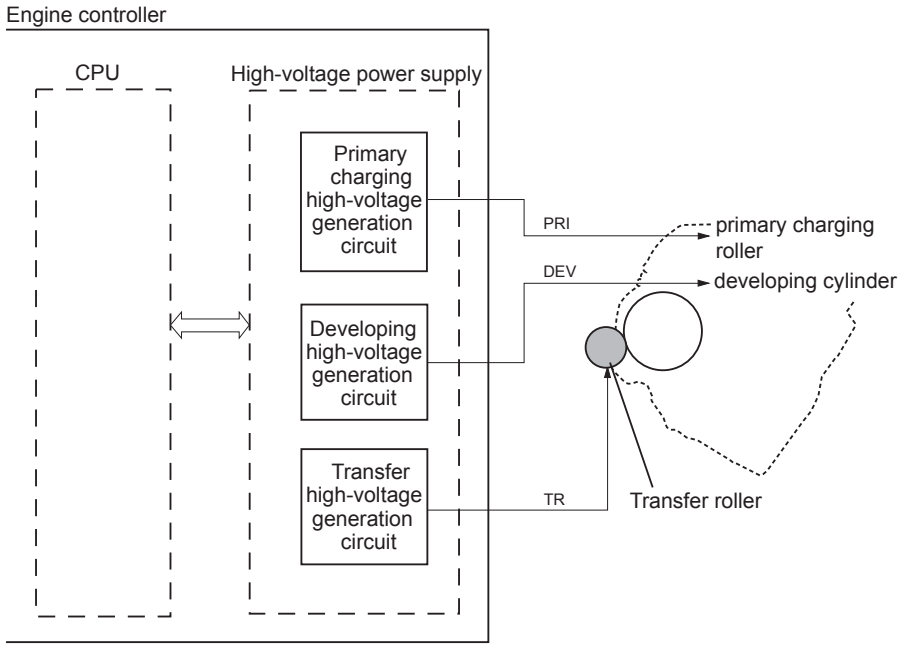


F-2-26

High-Voltage Control

Overview

This circuit is comprised of the circuits that apply biases to the primary charging roller, developing cylinder, transfer roller, and the fixing control circuit. The CPU of the engine controller controls the high-voltage power supply circuit to generate these biases. The fixing control circuit executes heater control of the fixing assembly according to the instruction by the CPU of the engine controller.
The following is the block diagram of this circuit.



F-2-27

Generating Primary Charging Bias

The primary charging bias (PRI) is a DC negative bias that is output to apply an even negative potential to the surface of the photosensitive drum. The primary charging high-voltage generating circuit in the high-voltage power supply circuit generates this bias.
The high-voltage power supply circuit applies the generated primary charging bias to the primary charging roller at a specified timing.
The primary charging bias varies in conjunction with the developing bias according to the information of image density sent from the main controller.

Generating Developing Bias

The developing bias is a DC negative bias that is output to affix toner to the static latent images formed on the photosensitive drum. This bias is a development DC and AC superimposed bias and generated by the development high-voltage generating circuit in the high-voltage power supply circuit.
The high-voltage power supply circuit applies the generated developing bias to the developing cylinder at a specified timing.
The developing bias varies in conjunction with the primary charging bias according to the information of image density sent from the main controller.

Generating Transfer Bias

Transfer bias (TR) is a bias that is output to transfer toner to papers. There are two types of bias; DC positive bias and DC negative bias, and generated by the transfer high-voltage generating circuit in the high-voltage power supply circuit. The DC positive bias is output at the time of toner transfer, and the DC negative bias at the time of cleaning the photosensitive drum.
The high-voltage power supply circuit applies the generated transfer bias to the transfer roller according to each print sequence.
Each print sequence is described below.

- Cleaning bias:
  The bias to move (clean) the toner attached to the transfer roller to the photosensitive drum at the time of warming up or last rotation sequence.
  The transfer negative bias is applied to the transfer roller.

- Paper intervals bias:
  The bias to prevent the toner remained on the photosensitive drum from attaching to the transfer roller at paper intervals during continuous printing. A minor transfer positive bias is applied to the transfer roller.

- Print bias:
  The bias to transfer the toner on the surface of the photosensitive drum to papers at the time of print sequence. The transfer positive bias is applied to the transfer roller.

Toner Cartridge

Toner Level Detection

MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453

Toner level is detected by the Toner Sensor (Magnetic Sensor). When a Toner Cartridge is installed, the Toner Sensor contacts with the lower side of the cartridge and it converts the magnetic changes in the cartridge into voltage.
Then, MPU of DCNT PCB compares the output voltage of the Toner Sensor with the reference value to detect the toner level.
Toner level detection is performed at startup of the Main Motor.
The toner level detection sequence starts after the Main Motor is started up and stabilization time (200msec) has passed. The toner level detection sequence continues until the Main Motor stops. There are following 2 types of toner level detection sequence: sequence at warm-up rotation when opening door or turning ON the power, and sequence at normal rotation.

1)Sequence at normal rotation

From the start of detection, detection value of magnetic toner is sampled for every 5 msec. Remaining toner level is judged based on the average value and ripple value (V Peak to Peak) of the Magnetic Sensor output while the Stirring Stick makes a full turn.

Time the Stirring Stick makes a full turn and number of samples
In case the process speed is 150mm/sec, time is 1.9 sec (380 samples).
In case the process speed is 75mm/sec, time is 3.8 sec (760 samples).

2)Sequence at warm-up rotation

Conditions of sampling and remaining toner level judgment are the same as those mentioned above.
However, in the case that toner Low is detected even at once during warm-up rotation sequence, toner Low is remained to be displayed.

D550/D520/MF4430/MF4420n/MF4410/MF4412

This equipment has no function of toner level detection.

Specification of Toner level display

Toner level can be checked by pressing Status Monitor/Cancel key and selecting toner level. Display patters are as follow: OK, Low, and Nearly Out. See the table below for the display pattern.

1)OK: Toner level** status is 10% or higher and 100% or less, or toner level unidentified** status

2)Low: Toner level** status is 5% or higher and less than 10%.

3)Nearly Out: Toner level** status is less than 5%.

* Toner level unidentified: Status until the engine determines the toner level.
** Toner level: Reference value (%) (which varies depending on the stirring condition of toner) is displayed.

As for the toner stop processing according to job types, follow the list of stop processing according to toner level.

In the following cases, status of toner level is considered as unidentified, and OK (100%) is displayed on the panel.

- After power-on
- Right after recovery from engine sleep mode
- During opening/closing the door
- When the cartridge is not installed

Operation when toner level is Low/Nearly Out

Operation when toner level is Low or Nearly Out is as follow. If another job which can be processed is introduced while there is a job which is stopped due to "Nearly Out", the job is output by overtaking the preceding job.

List of stop processing according to toner level

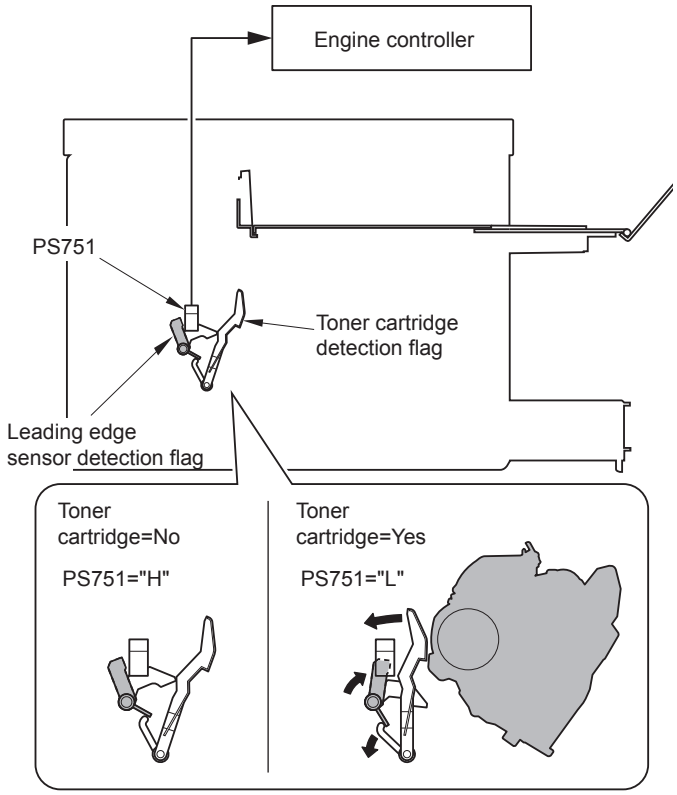
Copy		PDL		Receive print		Manual report		Auto report	
Low	Nearly Out	Low	Nearly Out	Low	Nearly Out	Low	Nearly Out	Low	Nearly Out
○	○	○	○	○	-	○	○	○	-

T-2-4

○: Continues
-: Page output is stopped immediately after detection, but it can be continued by user mode.

Toner Cartridge Absence/Presence Detection

The engine controller detects the position of the Toner cartridge detection flag to judge the absence/presence of the Toner cartridge.
At the time of turning on the power or closing the upper cover, the engine controller judges the position of the Toner cartridge flag based on the output result of the leading edge sensor (PS751).
When the output result of the leading edge sensor (PS751) is L, it is judged that the Toner cartridge is absent; If being H, it is judged that the Toner cartridge is present.



F-2-28

The leading edge sensor performs both this detection and paper feed detection. Therefore, the engine controller cannot make a judgment of 'Toner cartridge absent' or 'jam occurrence' when jam occurs.
The engine controller judges this case as 'Toner cartridge absent' and notices it to the main controller.

If jam occurs when 'Toner cartridge absent' is detected, check if there is a fault in the leading edge sensor and the detection flag.

Service Works

At parts replacement

No work is required for this product at parts replacement.

Maintenance

No periodically replaced parts, durable parts or periodical service is set for this product.

Notes on service works

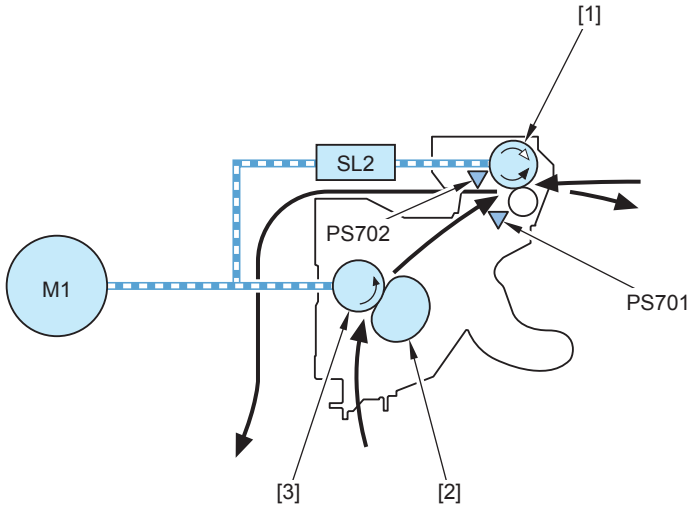
None.

Fixing System

Overview/Configuration

Overview

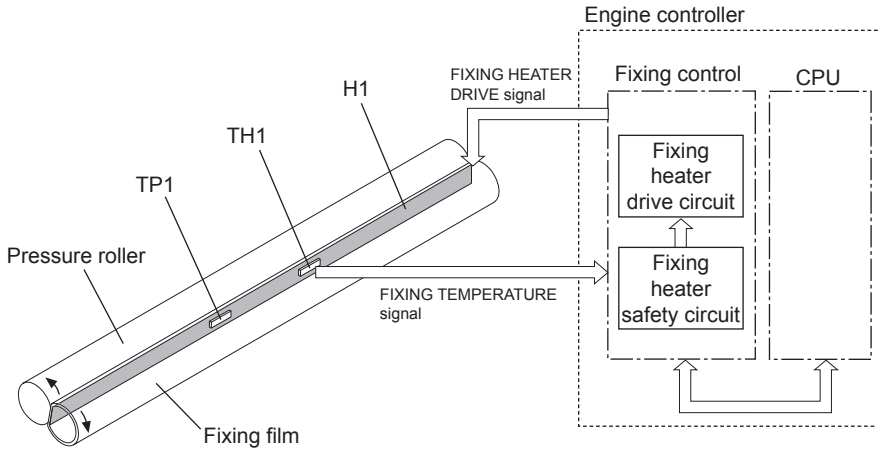
Fixing/delivery system consists of the fixing film unit, pressure roller and delivery roller etc.
These rollers are driven by the main motor (M1).
The paper that toner is transferred to are heated by the fixing heater of the fixing film unit and pressured by the pressure roller.
The paper that toner is fused on is delivered from the fixing assembly, detected by the fixing delivery sensor (PS701) and the paper width sensor (PS702), and then delivered to the delivery tray by the delivery roller.



F-2-29

[1]	Delivery Roller
[2]	Fixing Film Unit
[3]	Fixing Pressure Roller
PS701	Fixing delivery sensor
PS702	Paper width sensor
M1	Main motor

Main Parts of Fixing assembly



F-2-30

H1	: Fixing heater	For heating the fixing film (ceramic heater)	1 pc
TH1	: Main thermistor	For controlling the fixing heater temperature (contact type thermistor)	1 pc
TP1	: Temperature fuse	For detecting the fixing heater overheat (non-contact type fuse) When the heater overheats, the fuse melts to cut the power supply to the heater.	1 pc

T-2-5

Various Control Mechanisms

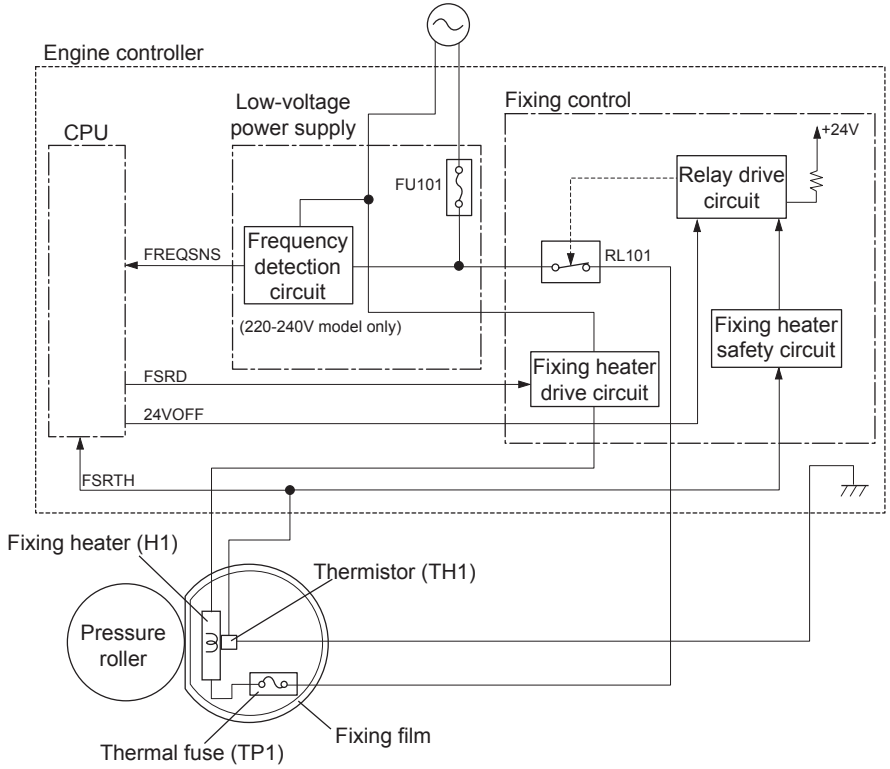
Fixing Temperature Control

Heater Temperature Control

The heater temperature control is to keep the fixing heater in the fixing film unit to the specified temperature.

The engine controller monitors the fixing heater temperature detection signal (FSRTH) and outputs the fixing heater drive signal (FSRD) according to the detected temperature.

The fixing heater drive PCB controls the fixing heater according to this signal to keep the fixing heater temperature within the target values.



F-2-31

There are 11 types of target fixing temperature depending on the fixing mode.

These types are according to the paper type settings and resolution settings on a driver.

	fixing mode							
The number of sheets	Normal	Heavy1	Heavy2	Light	OHT	Envelope	Envelope2	Quiet
1	185	175	185	160	165	165	145	150
2 to 6	185	175	185	160	165	165	143	150
7 to 26	185	175	185	160	165	165	140	150
27 to 41	185	175	185	160	165	165	140	150
42 to 76	185	173	185	160	165	165	138	148
77 to 150	183	170	185	160	165	165	135	145
151 to 197	180	170	185	160	165	165	135	145
More than 198	180	170	185	160	165	165	135	145

T-2-6

	fixing mode		
The number of sheets	Post	Nomal N/N	Nomal (Copy)
1	185	185	190
2 to 6	185	185	190
7 to 26	185	185	190
27 to 41	185	185	190
42 to 76	185	185	190
77 to 150	185	183	188
151 to 197	185	180	185
More than 198	185	180	185

T-2-7

Protective Functions

Protective Function of fixing assembly

Host machine carries the following 3 functions to prevent the fixing heater from overheating.

1) Protective function by CPU

CPU of engine controller monitors the thermistor (TH1) temperature consistently.

When TH1 reaches approx 220 deg C, CPU determines that the fixing heater is overheating and stops the fixing heater drive signal (FSRD) output and also turns OFF relays to shut the power supply to fixing heater.

2) Protection function by fixing heater safety circuit

Fixing heater safety circuit monitors the thermistor (TH1) temperature consistently.

When TH1 reaches approx 235 deg C, it determines that the fixing heater is overheating and the fixing heater safety circuit turns OFF the relay drive circuit to shut the power supply

to the fixing heater.

3) Protection function by temperature fuse (TP1)
When the fixing heater temperature rises abnormally and temperature fuse (TP1) temperature reaches approx 226 deg C, TP1 opens to shut the power supply to the fixing heater.

Failure detection

With this machine, 8 types of failure detection are available.

1) Initial startup failure detection
When temperature of the Fixing Assembly does not exceed 50 deg C within 1.48 sec after the start of temperature control performed at initial rotation, it is judged as initial startup failure.

2) Initial Thermistor open detection
When temperature of the Fixing Assembly does not exceed 35 deg C within 1.48 sec after the start of temperature control at warm-up rotation temperature control or at cleaning mode, it is judged as Thermistor open failure.

3) Short circuit of Thermistor/abnormal high temperature detection
When temperature of the Fixing Assembly is 220 deg C or higher for 30 consecutive times by monitoring the temperature for every 5 msec, it is judged as Thermistor short circuit failure. In addition, this function also doubles as abnormal high temperature detection function of the Fixing Assembly.

4) Abnormal low temperature detection
After temperature of the Fixing Assembly exceeds 50 deg C at least once, monitor temperature of the Thermistor for every 5 msec. It is judged as heater abnormal low temperature when the following condition is detected 240 consecutive times: the temperature is 100 deg C or lower while paper is at fixing nip, or it is 55 deg C or lower during paper interval temperature control or at cleaning mode.

5) Thermistor open detection
After temperature of the Fixing Assembly exceeds 50 deg C, monitor temperature of the Thermistor for every 5 msec. When it is detected that the temperature is lower than 20 deg C for 6 consecutive times, it is judged as Thermistor open failure.

6) Startup failure detection
If temperature of the Fixing Assembly is 100 deg C or higher when the machine becomes in pickup enabled state after entering fixing low voltage inlet sequence, it is judged as startup failure.

7) Thermistor low temperature detection 2)
Temperature of the Thermistor is monitored for every 200 msec when paper is at fixing nip during the Fixing Assembly control. When the temperature is lower than 135 deg C (120 deg C), increase the value of low temperature detection counter by 1 (+1). When it is 135 deg C (120 deg C) or higher, decrease the value by 1 (-1). When the value of low temperature counter becomes +150, it is judged as Thermistor low temperature failure. The default and minimum value of low temperature detection counter is 0.

8) Frequency detection circuit error (230V models only)
When frequency measurement is not completed within 3255 msec after the completion of previous frequency measurement, it is judged as frequency detection circuit error.

Processing after failure detection

If the Main Motor is in driving state when Fixing Assembly failure is detected, rotation of the motor is maintained for 300 msec after the machine moves in Fixing Assembly failure state. Then, drive systems (Main Motor system, Laser/Scanner system, high voltage system, and fixing system) are stopped immediately and the machine moves in failure state.
If the Main Motor is not in driving state, drive systems are stopped immediately and the machine moves in failure state.

Other Functions

Throughput Down Control

This machine performs the throughput down control that extends the paper interval and lower the printing speed to prevent the edge of the fixing heater from overheating at continuous printing of small paper (the paper with narrow width) and to prevent the fixing heater unit from overheating at high-volume continuous printing.
An extended paper interval lowers the fixing heater temperature between the papers, preventing the edge of the roller of fixing assembly and the delivery unit from overheating.
This control has the following 6 modes and the operation sequence differs depending on each modes.

	Paper Size				
Paper Type	Large-sized	Small-sized or Narrow	Long and Narrow		16K
	Length: 271 mm or more Width: 190 mm or more	Length: less than 271 mm (Width: less than 190 mm)	Length: less than 313 mm Width: less than 190 mm	Length: 313 mm or more Width: less than 190 mm	Length: 270 +/- 15 mm
Plain Paper	25 (Full speed) -> 12 (Half speed) *1	(2)	3 ppm (half speed)	1 ppm (half speed) *2	(5)
Plain Paper L	25 (Full speed) -> 12 (Half speed) *1	(2)	3 ppm (half speed)	1 ppm (half speed) *2	(5)
Heavy Paper	-	(1)	3 ppm (half speed)	1 ppm (half speed) *2	(6)
Rough Paper 1	-	(1)	3 ppm (half speed)	1 ppm (half speed) *2	(6)
Rough Paper 2	-	(1) / (3) (In the case of user definition)	3 ppm (half speed)	1 ppm (half speed) *2	(6)
Label Paper	-	-	-	-	-
Transparency	-	-	-	-	-
Postcard	(4)	(4)	-	-	-
Envelope	-	(1)	-	-	-

T-2-8

*1 : When the number of fed paper reaches 270 after starting from Cold state, the speed changes from full speed to half speed, and the throughput changes from 25ppm to 12ppm. The number of fed paper at which the throughput changes from full speed to half speed may vary according to temperature control of the Fixing Assembly.

*2 : Measures against wrinkle and curl.

Number of Fed Sheets	(1)	(2)	(3)	(4)
	Half speed	Half speed	Half speed	Half speed
1 to 2	11 ppm	12 ppm	6 ppm	7 ppm
3 to 5	9 ppm	12 ppm	4 ppm	5 ppm
6 to 10	8 ppm	11 ppm	4 ppm	4 ppm
11 to 15	6 ppm	11 ppm	3 ppm	4 ppm
16 to 20	6 ppm	8 ppm	3 ppm	4 ppm
21 to 30	6 ppm	8 ppm	3 ppm	4 ppm
31 to 40	4 ppm	7 ppm	3 ppm	4 ppm
41 to 75	4 ppm	6 ppm	3 ppm	4 ppm
From 76	4 ppm	6 ppm	3 ppm	4 ppm

T-2-9

Number of Fed Sheets	(5)	(6)
	Full speed	Half speed
1 to 55	20 ppm	10 ppm
56 to 110	16 ppm	8 ppm
111 to 120	13 ppm	7 ppm
121 to 150	11 ppm	6 ppm
151 to 250	10 ppm	5 ppm
From 251	8 ppm	4 ppm

T-2-10

Service Works

At parts replacement

No work is required for this product at parts replacement.

Maintenance

No periodically replaced parts, durable parts or periodical service is set for this product.

Notes on service works

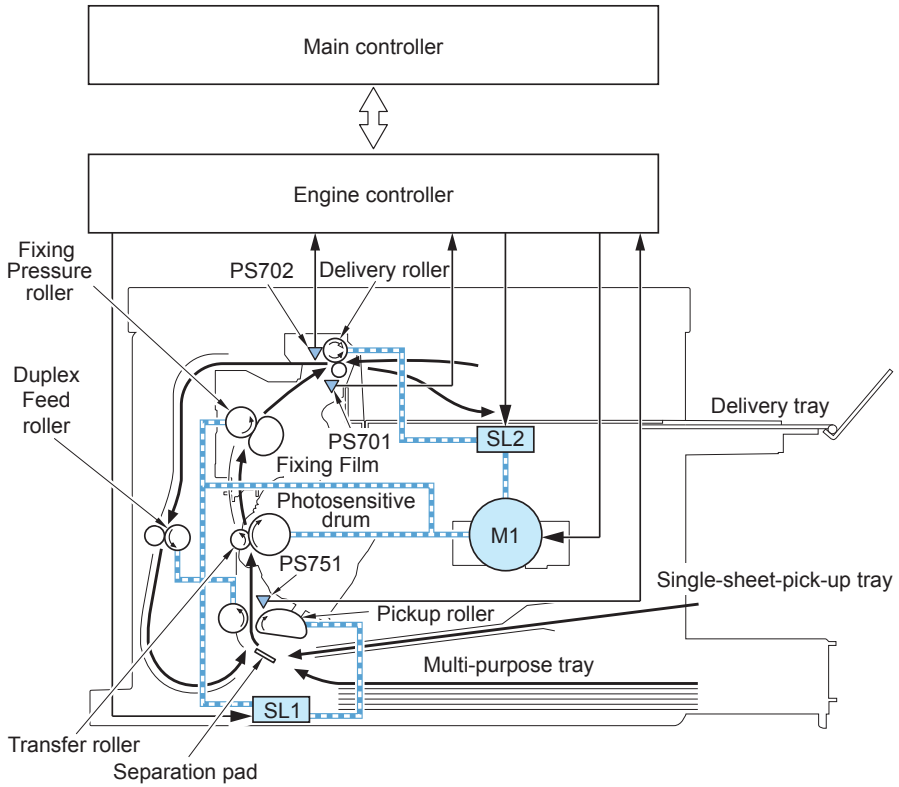
None.

Pickup And Feeding System

Overview

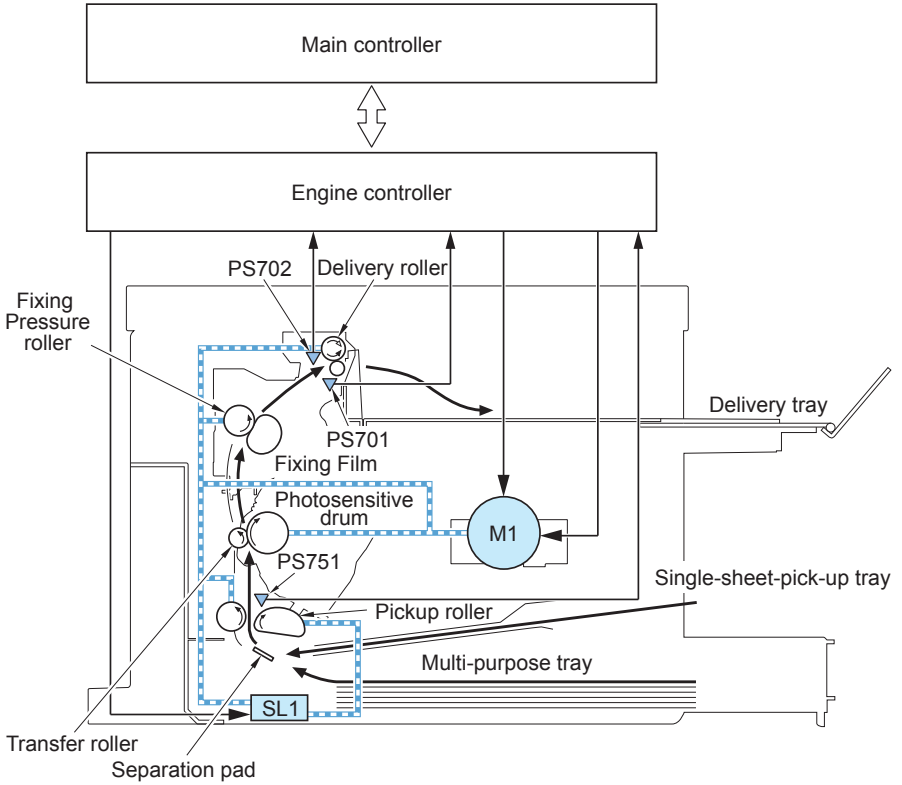
Overview

Duplex Feed



F-2-32

Single Feed



F-2-33

The pickup and feeding system executes pickup and feeding of papers and is composed of the main motor, solenoid, and rollers.
In this equipment, pickup from the pickup tray and manual feed tray is available. There is only a face-down delivery.
Papers set on the pickup tray and manual feed tray are fed by the same pickup roller. The papers are fed to the photosensitive drum, the transfer charging roller, the fixing sleeve unit, the pressure roller and then to delivery roller in this order; and then they are delivered to the delivery tray.
The feeding route of papers has three photointerrupters; the leading edge sensor (PS801), the fixing delivery sensor (PS701), the paper width sensor (PS702). They detect arrival and passing of papers.
If a paper does not reach or pass through each sensor within a specified time, the engine controller judges this status as jam and notices the jam occurrence to the main controller.

PS701: Fixing delivery sensor
PS702: Paper width sensor
PS801: Leading edge sensor
M1: Main motor
SL1: Pickup solenoid
SL2: Duplex Reverse solenoid

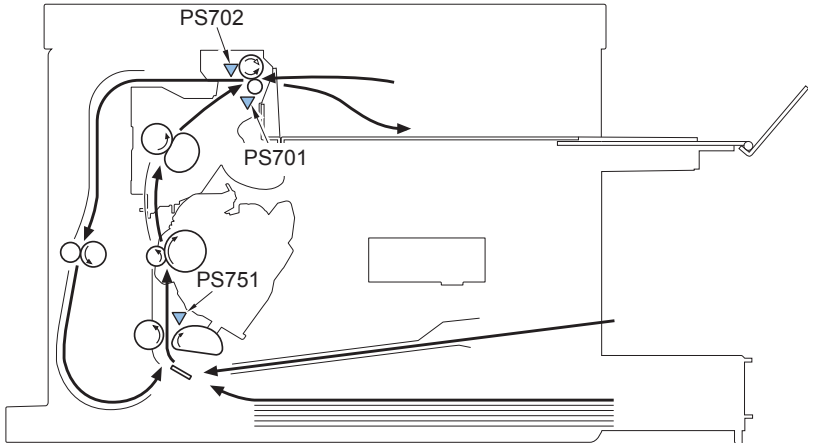
Detecting Jams

Jam Detection Outline

Overview

The following sensors are installed to detect absence/presence of papers and whether papers are correctly fed.

- Fixing delivery sensor (PS701)
- Paper width sensor (PS702)
- Leading edge sensor (PS751)



F-2-34

Whether jam occurs or not is judged according to whether a paper is absent/present on the sensor at the check timing that has been stored in the CPU of the engine controller.
When the engine controller judged that jam has occurred, print operation is stopped and jam occurrence is noticed to the main controller.

Delay Jams

Delivery Delay Jam

There are 3 types of delivery delay jam detections as follows:

A. When there is no preceding paper

B. When there is a preceding paper 1

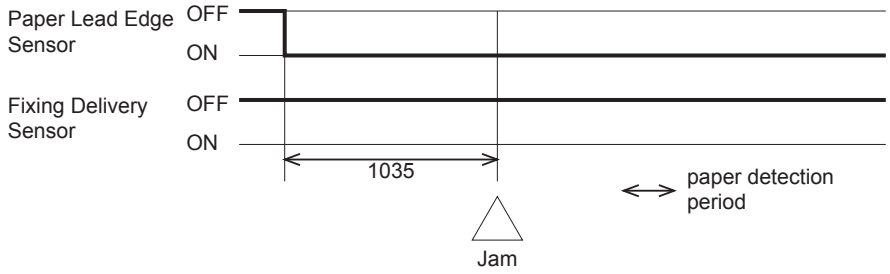
In the case of narrow paper interval with the preceding paper

C. When there is a preceding paper 2

In the case of wide paper interval with the preceding paper

A. When there is no preceding paper

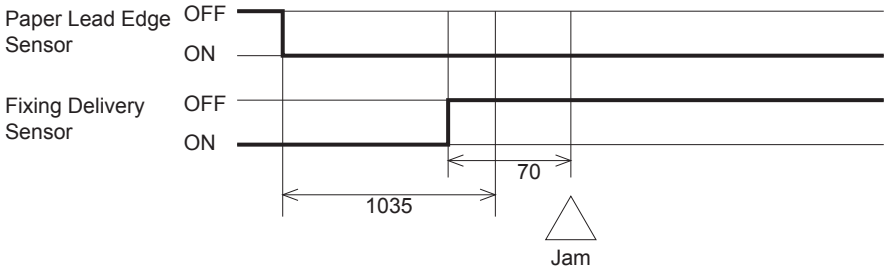
If the delivery sensor (PS701)detects no paper from 700 (1400) ms to 1235 (2470) ms after detection by the TOP sensor (PS751), a delivery delay jam is determined.



F-2-35

Note :
"700 (1400) ms" was calculated from the distance of 104.8 mm from the leading edge of the TOP sensor (PS751) to the fixing nip. "1235 (2470) ms" was calculated from the distance of 135.5 mm from the leading edge of the TOP sensor (PS751) to that of the delivery sensor (PS701) and the delivery delay jam margin of 50 mm. Since the distance from the fixing nip to the delivery sensor (PS701) is 30.7 mm, the length of wrapping from the leading edge will be 80.7 mm. Since one lap of the film is 18.2π (57.2) mm, the length of wrapping is more than one lap. Considering paper looping, sensor accuracy, and thick-paper delivery, however, the value cannot be made smaller.

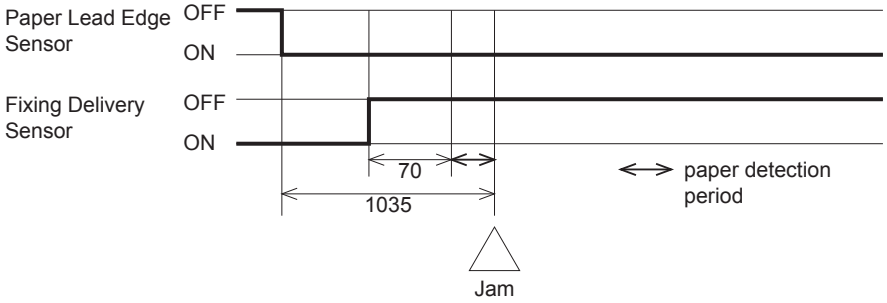
B. When there is a preceding paper 1



F-2-36

When there is preceding paper at the delivery sensor (PS701) 700 (1400) ms after paper detection by the TOP sensor (PS751) and the delivery sensor (PS701) does not detect the no-paper status until 1165 (2400) ms later, a delivery delay jam is determined.

C. When there is a preceding paper 2



F-2-37

When there is preceding paper at the delivery sensor (PS701) 700 (1400) ms after paper detection by the TOP sensor (PS751) and the delivery sensor (PS701) detects the no-paper status by 1165 (2400) ms later, a delivery delay jam is determined only if the delivery sensor (PS701) does not detect paper in the period from 70 ms after no paper detection by the delivery sensor (PS701) until 1235 (2470) ms after paper detection by the TOP sensor (PS751).

Note :
"1165 (2400) ms" is the balance of subtracting a margin of 70 ms from the delivery delay jam detection end time of 1235 (2470) ms by considering chattering from the trailing edge of the preceding paper is at the delivery sensor until the leading edge of the next paper is detected.

Reversal Delay Jam

A reversal delay jam is determined when the Fixing Delivery Sensor (PS701) detects absence of paper at the time of 440 msec elapsed after the start of reversal operation.

Note :
The jam margin is 30 mm.
The sum of the distance from the reversing position to the leading edge detection position of the delivery sensor (PS701) plus the jam margin of 30 mm is equal to 520 ms at full speed and 1040 ms at half speed in terms of time. From the times, the delivery sensor (PS701) detection time of 30 ms is subtracted to calculate the jam judgment time.

Re-pickup Delay Jam

After the start of reversal, if the TOP sensor (PS751) does not detect paper within 2445 (4895) ms after paper detection by the delivery sensor (PS701), a re-pickup delay jam is determined.

Note :
The jam margin is 90 mm. This margin is set long because the paper path after reversal between paper detection by the delivery sensor (PS701) and that by the TOP sensor (PS751) is long, the paper path length depends on the paper quality, and the stop time at the registration shutter prepared on the path for skew correction depends on the delivered paper.

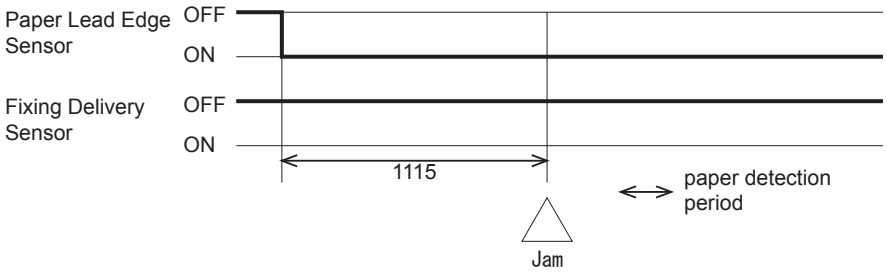
Delivery Delay Jam during auto delivery

A delivery delay jam is determined if the Paper Lead Edge Sensor (PS751) detects presence of paper and the Fixing Delivery Sensor (PS701) detects absence of paper at the time of 1115 msec elapsed after the start of auto delivery.

Note :
The auto delivery start timing is when the scanner stops.

Delivery Delay during cleaning

A delivery delay jam is determined if the Fixing Delivery Sensor (PS701) fails to detect presence of paper within 1115 msec since the Paper Lead Edge Sensor (PS751) detected presence of paper.



F-2-38

Multi-purpose tray pickup delay jam

When the multi-purpose tray (MPT) is specified as the paper source and paper is at the multi-purpose tray sensor, a feed delay jam is determined if the TOP sensor (PS751) does not detect fed paper with 1370 ms after the start of paper feed from the multi-purpose tray.
When the specified paper source is MPT, no jam status is output but the MPT no-paper status of the video interface.

Stationary Jams

Pickup Stationary Jam

Without pre-feed, a feed stationary jam is determined if the TOP sensor (PS751) cannot detect the trailing edge of paper within 3960 (7920) ms after the leading edge is detected by the TOP sensor (PS751).
With pre-feed, a feed stationary jam is determined if the TOP sensor (PS751) cannot detect the trailing edge of paper within 4740 (9480) ms after the leading edge is detected by the TOP sensor (PS751).

Note :
"4740 ms" is the time equivalent of two LGL sheets. If LGL sheets are fed after A4-size standard continuous printing at pre-feed, the second LGL sheet may be fed as an A4-size standard sheet and therefore two LGL sheets may be fed almost with no break. To prevent this from stopping the machine by a jam, the feed stationary jam detection time during pre-feed is set to 4740 ms at full speed.

Delivery Stationary Jam

The delivery sensor (PS701) is monitored for 265 (530) ms from 715 (1430) ms after no-paper detection by the TOP sensor (PS751), a delivery stationary jam is determined.

Note :
The margin is set to 20 mm because paper may spring up.

Reversal Stationary Jam

After the start of reversal, if the delivery sensor (PS701) does not detect the no-paper status within 2570 (5140) ms after paper detection, a reverse stationary jam is determined.

Note :
This jam is determined if the delivery sensor (PS701) keeps detecting sensor for the time of delivering LEGAL + 30 mm.

Pickup Stationary Jam during auto delivery

A pickup stationary jam is determined if the Paper Lead Edge Sensor (PS751) detects presence of paper at the time of 1115 msec elapsed after the start of auto delivery and then the Paper Lead Edge Sensor (PS751) detects presence of paper after the paper continued to be fed for 2730 msec.

Derivery Stationary Jam during auto delivery

If there is no paper at the TOP sensor (PS751) 1235 (2470) ms after the start of auto delivery and there is paper at the delivery sensor (PS701) after further paper delivery of 980 (1965) ms, a delivery stationary jam is determined.
If there is paper at the TOP sensor (PS751) 1235 (2470) ms after the start of auto delivery and there is paper at the delivery sensor (PS701) after further paper delivery of 3075 (7410) ms, a delivery stationary jam is determined.

Delivery Stationary Jam during cleaning

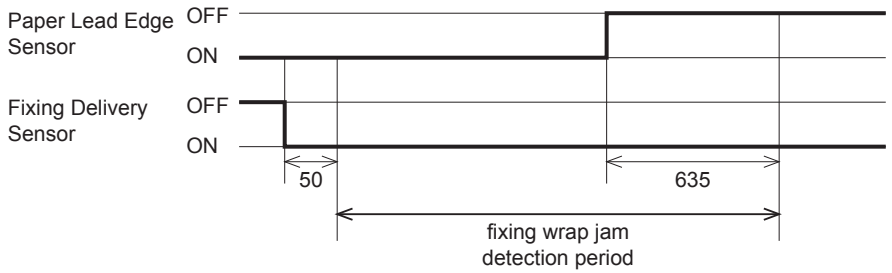
A delivery stationary jam is determined if the Fixing Delivery Sensor (PS701) fails to detect absence of paper within 2535 msec since the Main Motor started rotating after the cleaning step.

Delivery Stationary Jam during warm-up rotation

If the delivery sensor (PS701) detects paper during warm-up rotation, a delivery stationary jam is determined.

Other Jams

Fixing Wrap Jam



F-2-39

A fixing wrap jam is determined if the Fixing Delivery Sensor (PS701) detects absence of paper between the time of 50 msec after the Fixing Delivery Sensor (PS701) detected presence of paper and the time of 635 msec after the Paper Lead Edge Sensor (PS751) detected absence of paper.

Note :
The leading edge detection margin is 8 mm and the trailing edge detection margin is 20 mm. The leading edge margin is set to prevent the erroneous detection of a wrapping jam during chattering at paper entry. The trailing edge margin is set long because the detection time is not stable due to paper springing or other.

Initial Paper Jam during printing

An initial paper jam is determined if either the Fixing Delivery Sensor (PS701) or the Paper Width Sensor (PS702) detects presence of paper immediately before the Print Main Motor started its rotation.

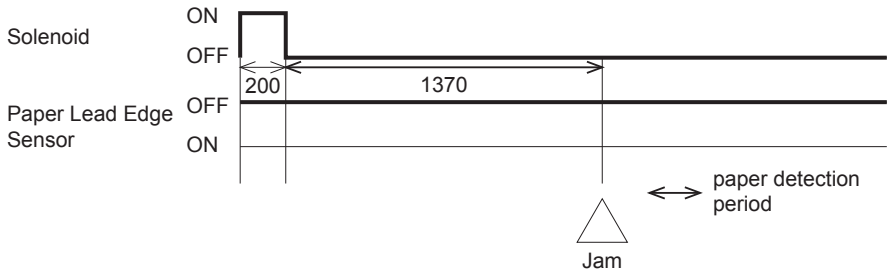
Door Open Jam

A door open jam is determined when printing is interrupted due to the door open detection during printing while there is paper at the Paper Lead Edge Sensor (PS751) or the Fixing Delivery Sensor (PS702). The status value is retained if any jam has been already reported to the jam status.

Initial paper presence Jam during warm-up rotation

If either the delivery sensor (PS701) or the paper width sensor (PS702) detects paper at the start of warm-up rotation, an initial paper presence jam is determined.

No-paper detection during cleaning



F-2-40

If the TOP sensor (PS751) does not detect paper for 1370 ms from 200 ms after the start of paper feed, the no-paper status is determined.

Service Works

At parts replacement

No work is required for this product at parts replacement.

Maintenance

No periodically replaced parts, durable parts or periodical service is set for this product.

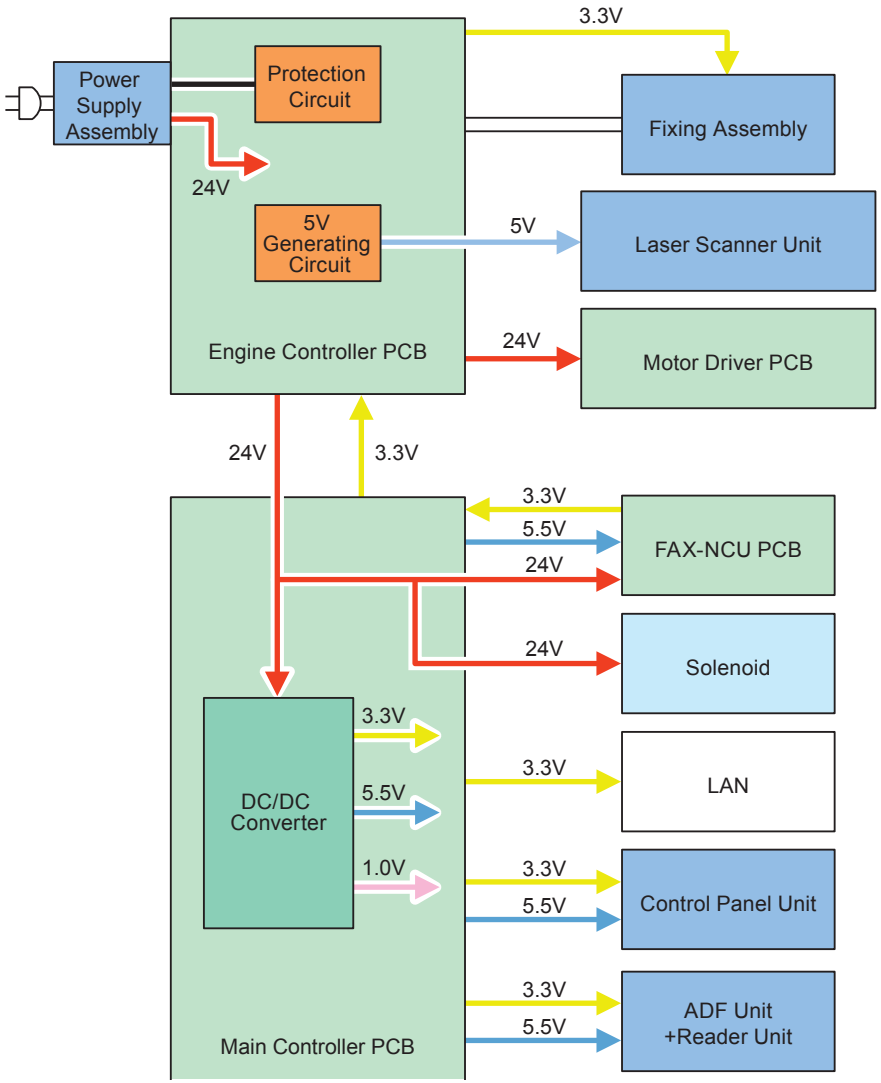
Notes on service works

None.

External And Controls System

Power Supply

Power Supply



F-2-41

Protective Functions

Power protective function

Low voltage power circuit carries the overcurrent preventive function against and overvoltage preventive function that block the voltage output automatically to prevent the power circuit brokerage when the overcurrent or overvoltage occur due to load errors such as short circuit etc.

Thus, when the DC power cannot be output from the low voltage circuit, the protective function against overcurrent or overvoltage may be working. Turn OFF the power switch (SW1) to fix load errors and turn ON the switch again (see note 1).

Also the circuit carries the 2 fuses (FU101, FU102) as a preventive function (see note 2). The fuses blow to block the power supply when overcurrent occurs in AC line.

⚠

1. When restoring the low voltage power after protective function is activated, leave it for 2 minutes or more from turning off the switch or plugging out before turning ON.
2. 200V series products carry FU101 fuse only.

Safety function

The host machine equips the function of stopping 24V of fixing assembly and the high voltage power unit to avoid users and engineers from getting burned or electric shock.

When the cartridge door is opened, the interlock switch (SW501) is turned off and 24V supplied to fixing assembly and the high voltage power unit is shut.

Engine controller CPU determines the door open when each interlock switch is turned OFF.

Service Works

At parts replacement

No work is required for this product at parts replacement.

Maintenance

No periodically replaced parts, durable parts or periodical service is set for this product.

Notes on service works

None.

Periodical Services

- Periodically Replaced Parts
- Consumables
- Periodical Service
- Cleaning

Periodically Replaced Parts

Periodically Replaced Parts

There is no periodically replaced part with this machine.

Consumables

Consumables

There is no consumable with this machine.

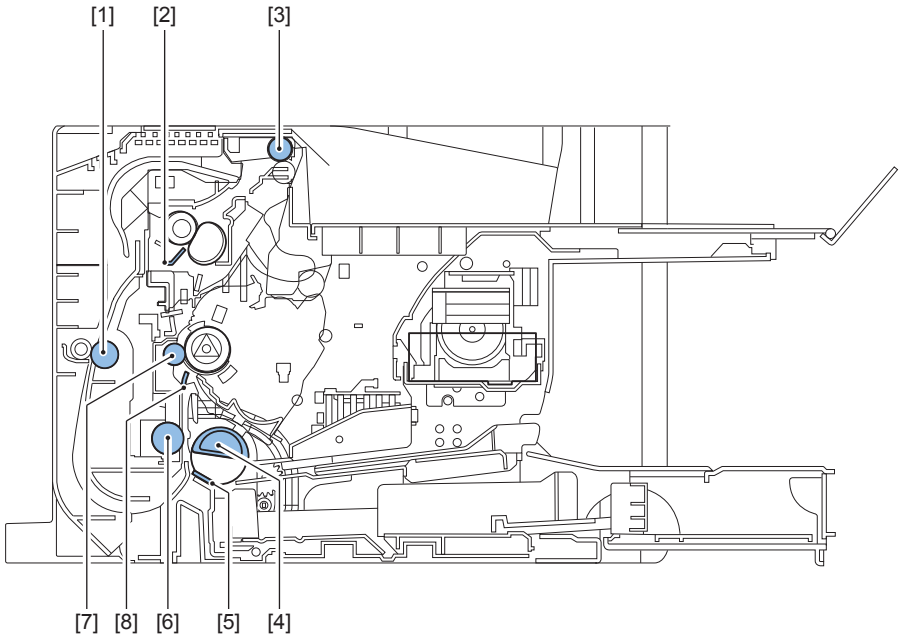
Periodical Service

Scheduled Servicing

There is no portion that requires schedule servicing in this equipment.

Cleaning

Printer



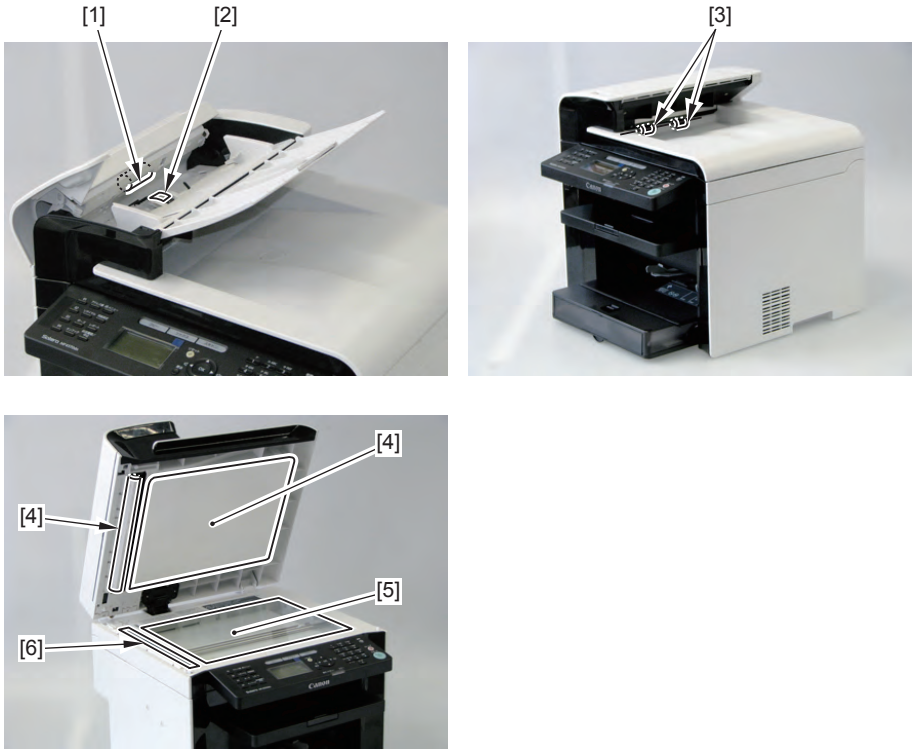
F-3-1

	Cleaning parts	Procedure
1	Duplex Feed Roller	Clean it with a dry lint-free paper.
2	Fixing inlet guide	Clean it with a dry lint-free paper.
3	Delivery Roller	Clean it with a dry lint-free paper.
4	Pickup Roller	Clean it with a dry lint-free paper.
5	Separation Pad	Clean the rubber part with a lint-free paper.
6	Feed Roller	Clean it with a dry lint-free paper.
7	Transfer Roller	Basically, do not touch it with your hands or clean it. When cleaning is absolutely necessary, clean with a dry lint-free paper. Take care not to touch the roller and let solvents or oils be removed.
8	Static eliminator	Clean it with a dry lint-free paper.

T-3-1

Reader ADF

SADF

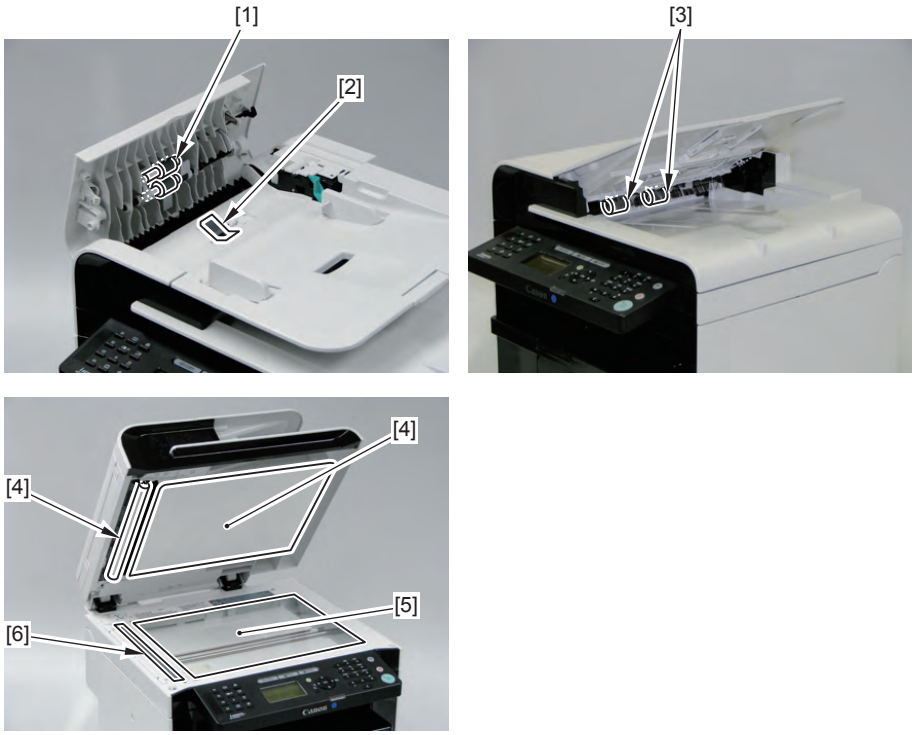


F-3-2

	Cleaning parts	Procedure
1	SADF Pickup Roller	Open the ADF and wipe off the smudge with the soft dry cloth.
2	SADF Separation Pad	Open the ADF and wipe off the smudge with the soft dry cloth.
3	Delivery Roller	Wipe off the smudge with the soft dry cloth.
4	Backside of copyboard cover	Open the copyboard cover and wipe off the smudge with the soft dry cloth.
5	Copyboard glass	Open the copyboard cover and wipe off the smudge with the soft dry cloth.
6	ADF reading area	Open the copyboard cover and wipe off the smudge with the soft dry cloth.

T-3-2

DADF



F-3-3

	Cleaning parts	Procedure
1	DADF Pickup Roller Unit	Open the ADF and wipe off the smudge with the soft dry cloth.
2	DADF Separation Pad	Open the ADF and wipe off the smudge with the soft dry cloth.
3	Delivery Roller	Wipe off the smudge with the soft dry cloth.
4	Backside of copyboard cover	Open the copyboard cover and wipe off the smudge with the soft dry cloth.
5	Copyboard glass	Open the copyboard cover and wipe off the smudge with the soft dry cloth.
6	ADF reading area	Open the copyboard cover and wipe off the smudge with the soft dry cloth.

T-3-3

4 Disassembly/Assembly

- List of Parts
- List of Connectors
- External Cover, Interior
- Document Exposure/Feeder System
- Controller System
- Laser Exposure System
- Image Formation System
- Fixing System
- Pickup And Feeding System

Outline

This chapter describes disassembling/assembling procedure of this equipment.
The service technician is to identify the cause of the failures according to "Chapter 5 Troubleshooting" and to replace the faulty parts by following the disassembling procedure. In addition, replace the consumable parts by following the same disassembling procedure.
Note the following precautions when working.

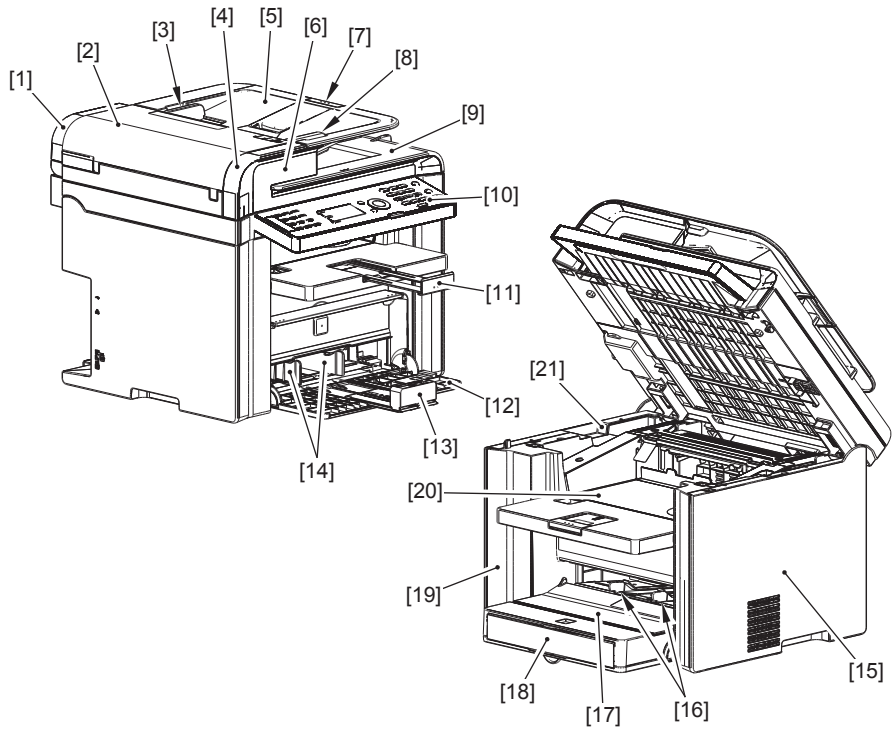
1. CAUTION: Be sure to disconnect the power plug before disassembling/assembling for safety.
2. When disassembling/assembling or transporting the machine, be sure to remove the cartridge beforehand as needed. However, when the cartridge is removed from the machine, be sure to put the Photosensitive Drum in a protective bag even in a short period of time to prevent the adverse effect of light.
3. When assembling, perform the disassembling procedure in reverse order unless otherwise specified.
4. When assembling, be sure to tighten the screws to their appropriate locations according to the screw types (length, diameter).
5. Do not run the machine with any parts removed as a general rule.
6. When handling the PCB, be sure to touch the metal part of the printer to ground yourself to prevent damaging the PCB by static electricity.
7. When replacing the part with the rating name plate, be sure to affix it to the new part.

List of Parts

External View

List of External Cover/Interior: DADF Models (MF4580dn/D550)

Front Side

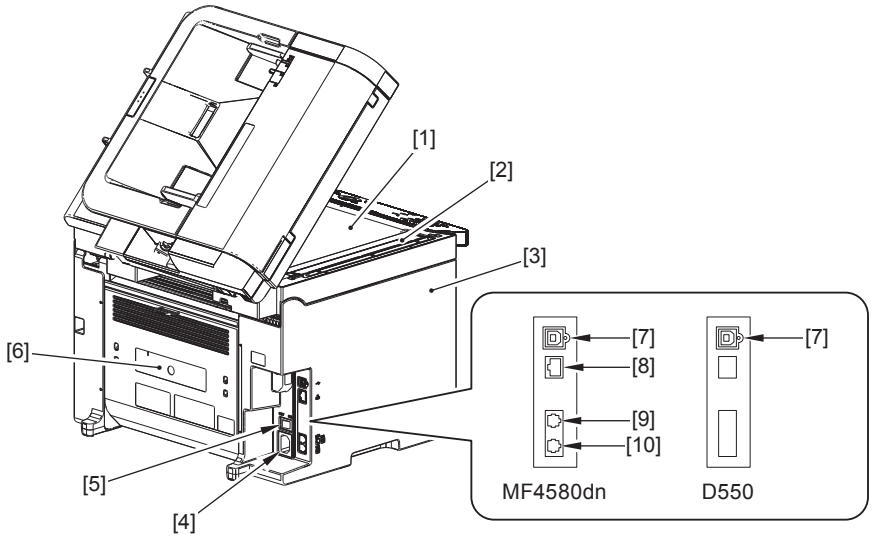


F-4-1

No.	Name	Reference
[1]	DADF Rear Cover	p. 4-44
[2]	DADF Upper Cover	p. 4-44
[3]	Side Guide Plate (Rear)	-
[4]	DADF Front Upper Cover	-
[5]	Original Feed Tray	-
[6]	DADF Front Cover	-
[7]	Original Feed Auxiliary Tray	-
[8]	Side Guide Plate (Front)	-
[9]	Original Delivery Tray	-
[10]	Control Panel Unit	p. 4-79 p. 4-79
[11]	Delivery Auxiliary Tray	-
[12]	Pickup Tray	-
[13]	Trailing Edge Paper Guides	-
[14]	Pickup Tray Paper Guides	-
[15]	Right Cover	p. 4-33
[16]	Multi-Purpose Tray Paper Guides	-
[17]	Multi-Purpose Tray	-
[18]	Tray Cover	-
[19]	Front Cover Unit	p. 4-35
[20]	Delivery Tray	p. 4-35
[21]	Upper Cover	p. 4-35

T-4-1

● Rear Side



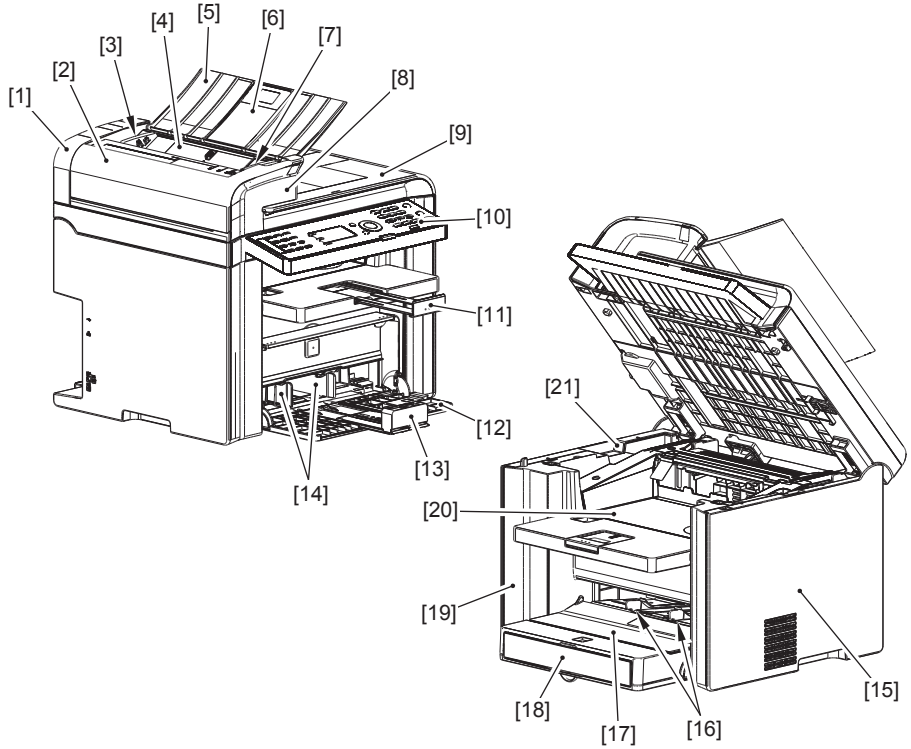
F-4-2

No.	Name	Reference
[1]	Copyboard Glass	p. 4-68
[2]	Copyboard Upper Cover	-
[3]	Left Cover	p. 4-31
[4]	Power Supply Cord Slot	-
[5]	Power Switch	-
[6]	Rear Cover	-
[7]	USB Device Port	-
[8]	LAN Port	-
[9]	External Device Jack	-
[10]	Telephon Line Jack	-

T-4-2

■ List of External Cover/Interior: SADF Models (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430)

● Front Side



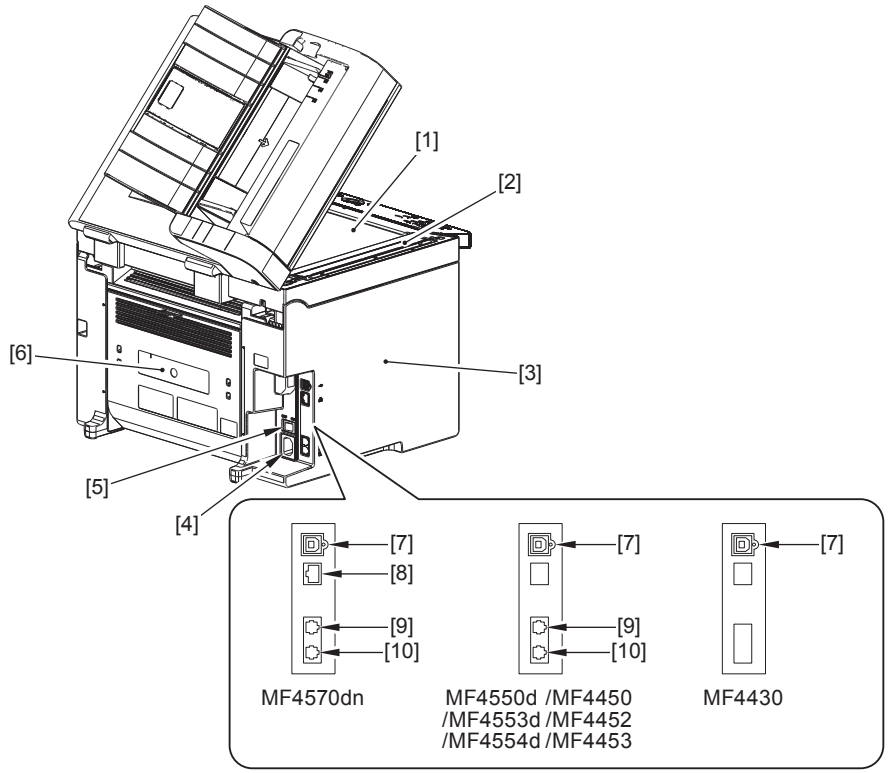
F-4-3

No.	Name	Reference
[1]	SADF Rear Cover	p. 4-57
[2]	SADF Upper Cover	p. 4-57
[3]	Side Guide Plate (Rear)	-
[4]	Original Feed Tray	-
[5]	Original Feed Auxiliary Tray	-
[6]	Original Feed Auxiliary Extension Tray	-

No.	Name	Reference
[7]	Side Guide Plate (Front)	-
[8]	SADF Front Cover	p. 4-57
[9]	Original Delivery Tray	-
[10]	Control Panel Unit	p. 4-79 p. 4-79
[11]	Delivery Auxiliary Tray	-
[12]	Pickup Tray	-
[13]	Trailing Edge Paper Guides	-
[14]	Pickup Tray Paper Guides	-
[15]	Right Cover	p. 4-33 p. 4-34
[16]	Multi-Purpose Tray Paper Guides	-
[17]	Multi-Purpose Tray	-
[18]	Tray Cover	-
[19]	Front Cover Unit	p. 4-35
[20]	Delivery Tray	p. 4-35
[21]	Upper Cover	p. 4-35

T-4-3

Rear Side



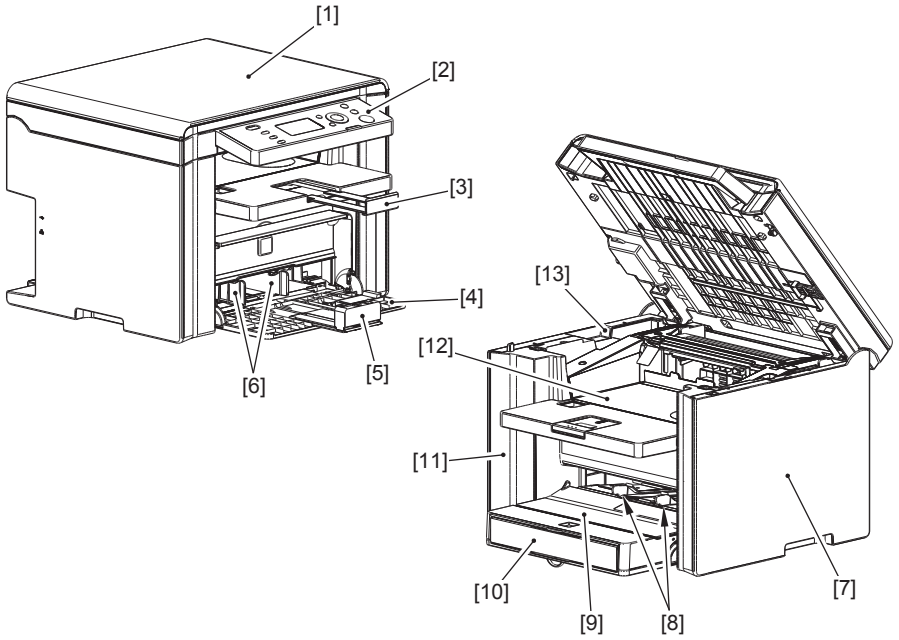
F-4-4

No.	Name	Reference
[1]	Copyboard Glass	p. 4-68
[2]	Copyboard Upper Cover	-
[3]	Left Cover	p. 4-31 p. 4-32
[4]	Power Supply Cord Slot	-
[5]	Power Switch	-
[6]	Rear Cover	- p. 4-37
[7]	USB Device Port	-
[8]	LAN Port	-
[9]	External Device Jack	-
[10]	Telephon Line Jack	-

T-4-4

List of External Cover/Interior: Copyboard Models (MF4420n/MF4410/MF4412/D520)

Front Side



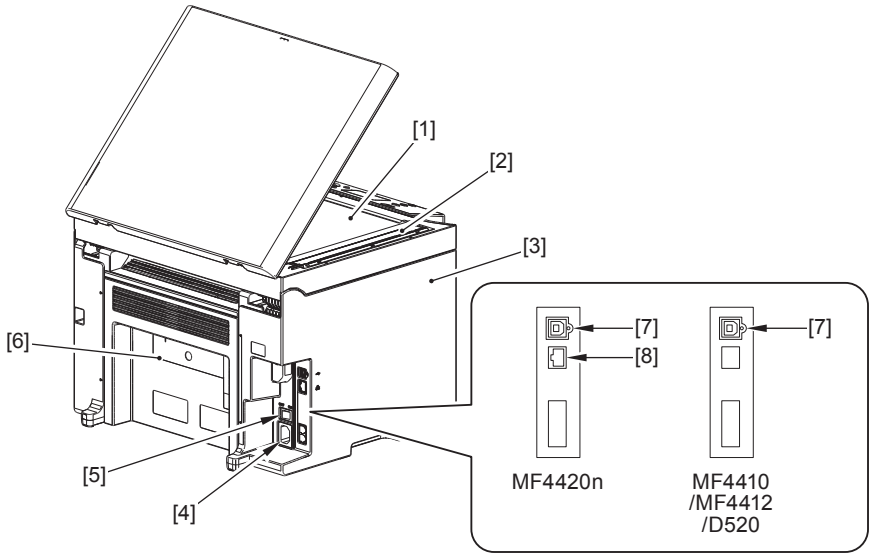
F-4-5

No.	Name	Reference
[1]	Copyboard Cover	p. 4-64
[2]	Control Panel Unit	p. 4-79
[3]	Delivery Auxiliary Tray	-
[4]	Pickup Tray	-
[5]	Trailing Edge Paper Guides	-
[6]	Pickup Tray Paper Guides	-
[7]	Right Cover	p. 4-34 p. 4-33
[8]	Multi-Purpose Tray Paper Guides	-
[9]	Multi-Purpose Tray	-

No.	Name	Reference
[10]	Tray Cover	-
[11]	Front Cover Unit	p. 4-35
[12]	Delivery Tray	p. 4-35
[13]	Upper Cover	p. 4-35

T-4-5

Rear Side



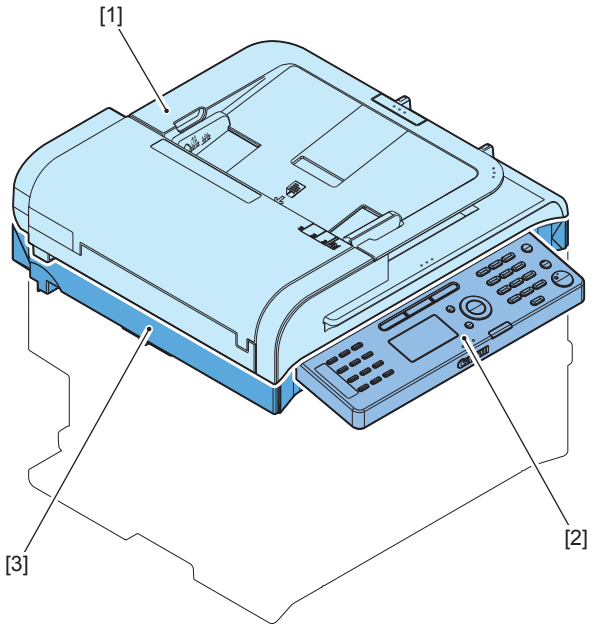
F-4-6

No.	Name	Reference
[1]	Copyboard Glass	p. 4-66
[2]	Copyboard Upper Cover	-
[3]	Left Cover	p. 4-32
		p. 4-31
[4]	Power Supply Cord Slot	-
[5]	Power Switch	-
[6]	Rear Cover	p. 4-37
		-
[7]	USB Device Port	-
[8]	LAN Port	-

T-4-6

Main Unit

Lists of DADF Unit and Reader Unit: FAX Models (MF4580dn)

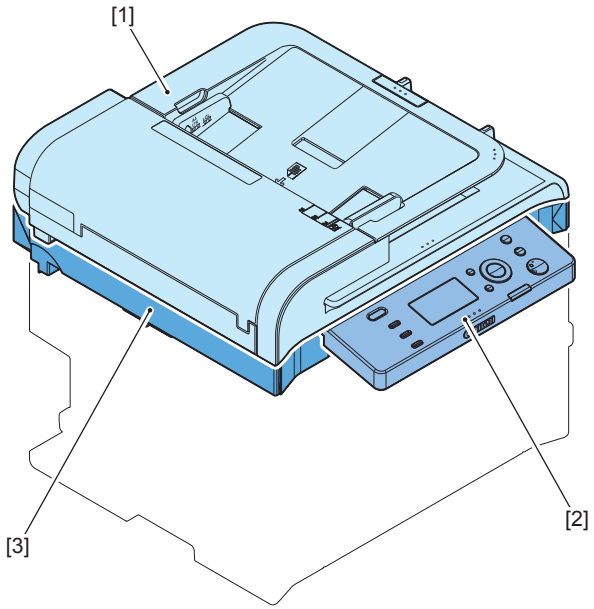


F-4-7

No.	Name	Reference
[1]	DADF Unit	p. 4-42
[2]	Control Panel Unit	p. 4-79
[3]	Reader Unit	p. 4-40

T-4-7

Lists of DADF Unit and Reader Unit: Models without FAX (D550)

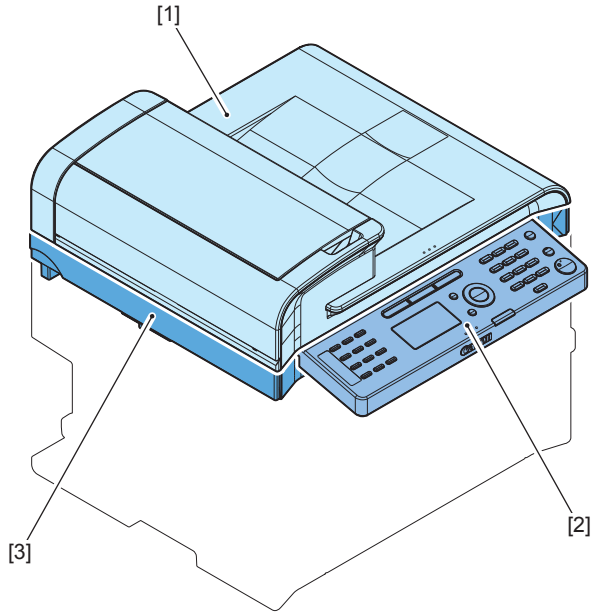


F-4-8

No.	Name	Reference
[1]	DADF Unit	p. 4-42
[2]	Control Panel Unit	p. 4-79
[3]	Reader Unit	p. 4-40

T-4-8

Lists of SADF Unit and Reader Unit: FAX Models (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)

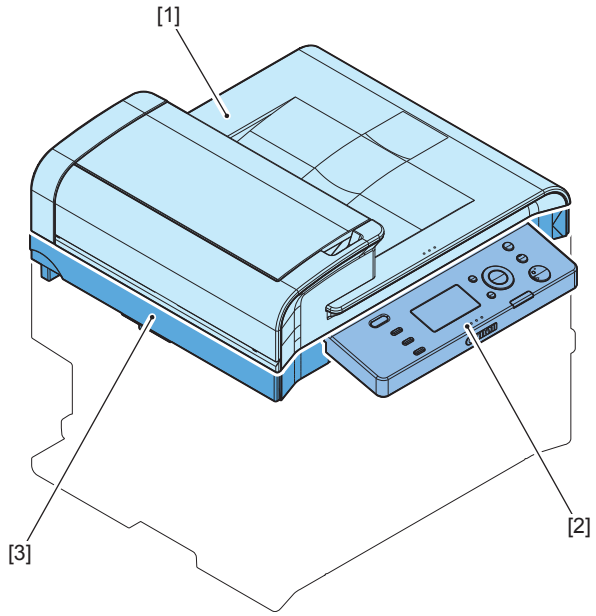


F-4-9

No.	Name	Service Parts No.		Reference
[1]	SADF Unit	-	-	p. 4-55
[2]	Control Panel Unit	FM4-7518 FM4-6922 FM4-7512 FM4-7496 FM4-6963 FM4-7506 FM4-6960 FM4-7519 FM4-7513 FM4-7497 FM4-7501 FM4-7507 FM4-7527 FM4-7526 FM4-7520 FM4-6971 FM4-7514 FM4-7499 FM4-7502 FM4-7508 FM4-7523 FM4-7504 FM4-7528	MF4570dn (JP) MF4570dn (US, CA, LTN) MF4570dn (EUR) MF4570dn (LTN, SG, HK, AU) MF4570dn (CN) MF4570dn (KR) MF4570dn (TW) MF4550d (JP) MF4550d (EUR) MF4550d (LTN, SG, HK, AU) MF4550d (CN) MF4550d (KR) MF4553d (KR) MF4554d (KR) MF4450 (JP) MF4450 (US, CA, LTN) MF4450 (EUR) MF4450 (LTN, SG, HK) MF4450 (CN) MF4450 (KR) MF4450 (TW) MF4452 (CN) MF4453 (KR)	p. 4-79
[3]	Reader Unit	FM4-6904 FM4-6949	MF4570dn/MF4550d MF4553d/MF4554d/MF4450/ MF4452/MF4453/	p. 4-53

T-4-9

Lists of SADF Unit and Reader Unit: Models without FAX (MF4430)

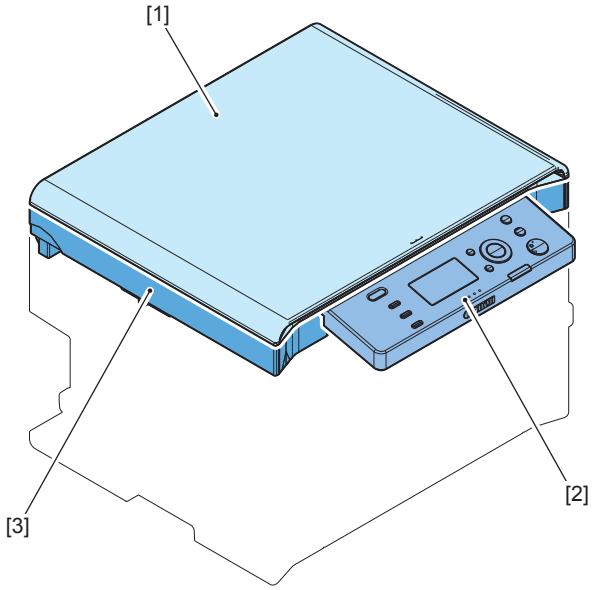


F-4-10

No.	Name	Service Parts No.		Reference
[1]	SADF Unit	-	-	p. 4-55
[2]	Control Panel Unit	FM4-6962 FM4-6954 FM4-6958	MF4430 (JP) MF4430 (KR) MF4430 (EUR)	p. 4-79
[3]	Reader Unit	FM4-6950	MF4430	p. 4-53

T-4-10

Lists of Copyboard Cover and Reader Unit (MF4420n/MF4410/MF4412/D520)

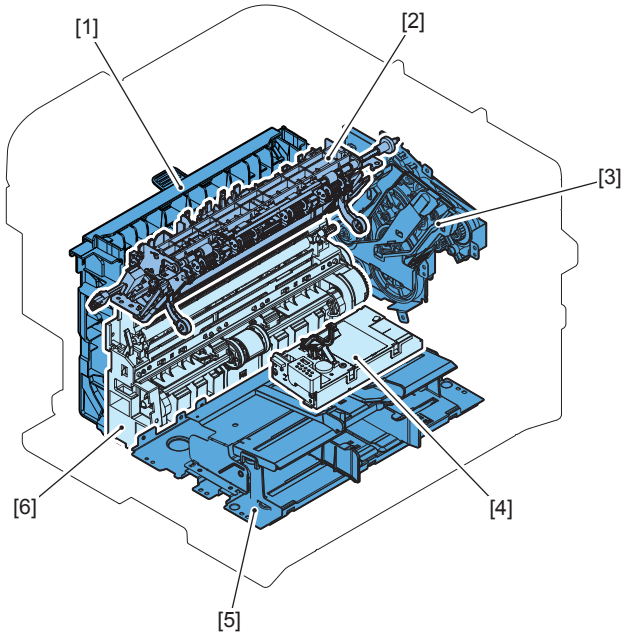


F-4-11

No.	Name	Service Parts No.		Reference
[1]	Document Cover	-	-	-
[2]	Control Panel Unit	FM4-7521 FM4-6951 FM4-6964 FM4-7522 FM4-7515 FM4-7503 FM4-7510 FM4-7500 FM4-7505 FM4-7495 FM4-7516 FM4-6952 FM4-6965	MF4420n (JP) MF4420n (AU) MF4420n (CN) MF4410 (JP) MF4410 (EUR) MF4410 (CN) MF4410 (KR) MF4412 (LTN, SG, HK) MF4412 (CN) D520 (US, CA, LTN) D520 (EUR) D520 (LTN, SG, HK) D520 (CN)	p. 4-79
[3]	Reader Unit	FM4-6937 FM4-6921	D520 MF4420n/MF4410/MF4412	p. 4-64

T-4-11

List of 2-sided Printer Unit (MF4580dn/MF4550d/MF4570dn/D520/D550)

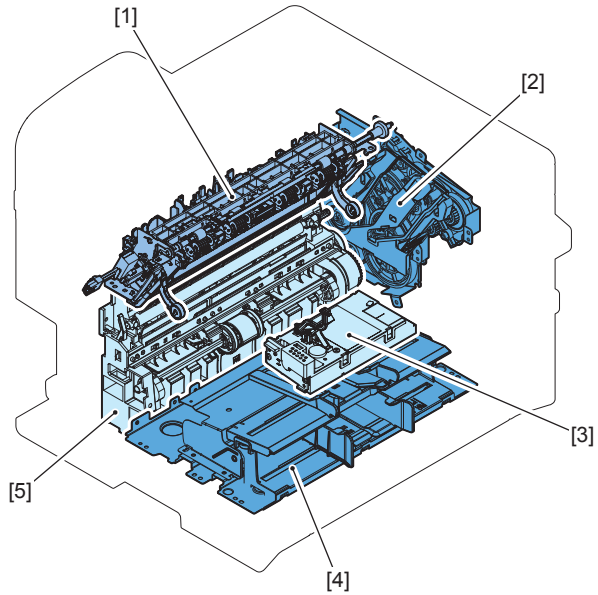


F-4-12

No.	Name	Service Parts No.		Reference
[1]	Duplex Feed Unit	-	-	p. 4-155
[2]	Fixing Assembly	FM4-6983 RM1-7576 RM1-7577	(100V) (120V) (230V)	p. 4-121
[3]	Main Drive Unit	-	-	-
[4]	Laser Scanner Unit	FM4-6894 FM4-6929	MF4550d MF4450/MF4452/MF4453/ MF4430/MF4410/MF4412/ MF4420n	p. 4-115
[5]	Pickup Tray Unit	-	-	p. 4-143
[6]	Pickup Unit	FM4-6892 FM4-6926	MF4550d MF4450/MF4452/MF4453/ MF4430/MF4410/MF4412/ MF4420n	p. 4-134

T-4-12

List of 1-sided Printer Unit (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)



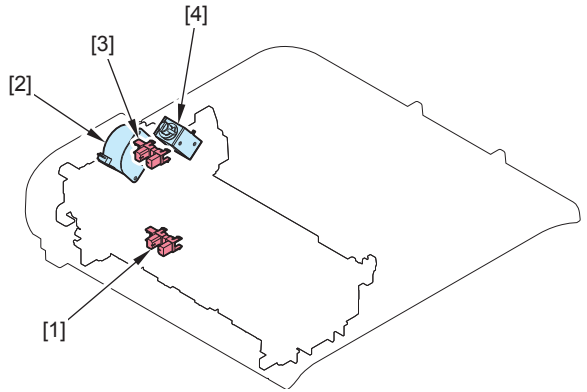
F-4-13

No.	Name	Service Parts No.		Reference
[1]	Fixing Assembly	FM4-6983 RM1-7576 RM1-7577	(100V) (120V) (230V)	p. 4-125
[2]	Main Drive Unit	-	-	-
[3]	Laser Scanner Unit	FM4-6929	MF4450/MF4452/MF4453/MF4430/MF4410/MF4412/MF4420n	p. 4-117
[4]	Pickup Tray Unit	-	-	p. 4-145
[5]	Pickup Unit	FM4-6926	MF4450/MF4452/MF4453/MF4430/MF4410/MF4412/MF4420n	p. 4-138

T-4-13

Location of Electric parts

List of DADF Unit

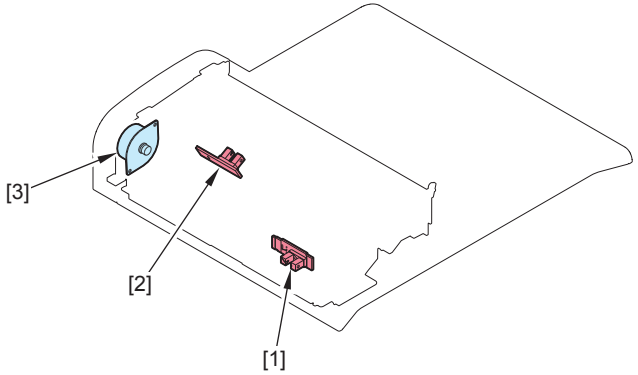


F-4-14

No.	Name	Service Parts No.		Main Unit	Reference
[1]	DS Sensor	WG8-5696	-	DADF Unit	-
[2]	DADF Motor	-	-	DADF Unit	p. 4-48
[3]	DES Sensor	WG8-5696	-	DADF Unit	-
[4]	DADF Solenoid	-	-	DADF Unit	p. 4-49

T-4-14

List of SADF Unit

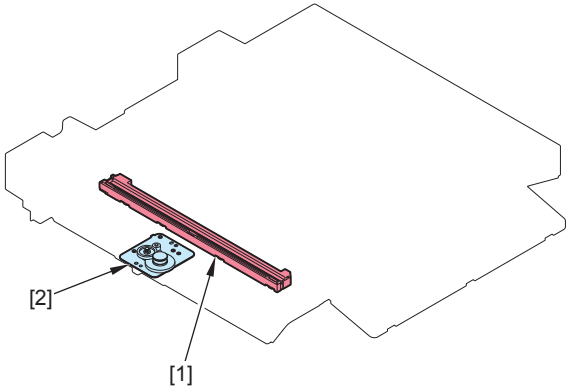


F-4-15

No.	Name	Service Parts No.		Main Unit	Reference
[1]	DS Sensor	WG8-5696	-	SADF Unit	-
[2]	DES Sensor	WG8-5696	-	SADF Unit	-
[3]	SADF Motor	FK3-1164	-	SADF Unit	p. 4-59

T-4-15

List of Reader Unit



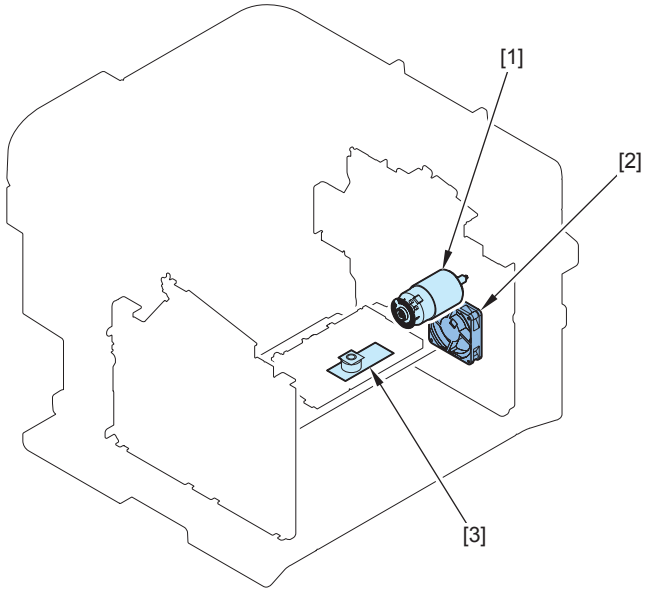
F-4-16

No.	Name	Service Parts No.		Main Unit	Reference
[1]	CIS UNIT	FK3-1153	-	Reader Unit	p. 4-72, p. 4-74
[2]	Reader Motor	FM4-6916	-	Reader Unit	p. 4-70

T-4-16

List of 2-sided Printer Unit (MF4580dnMF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

List of Motor/Fan

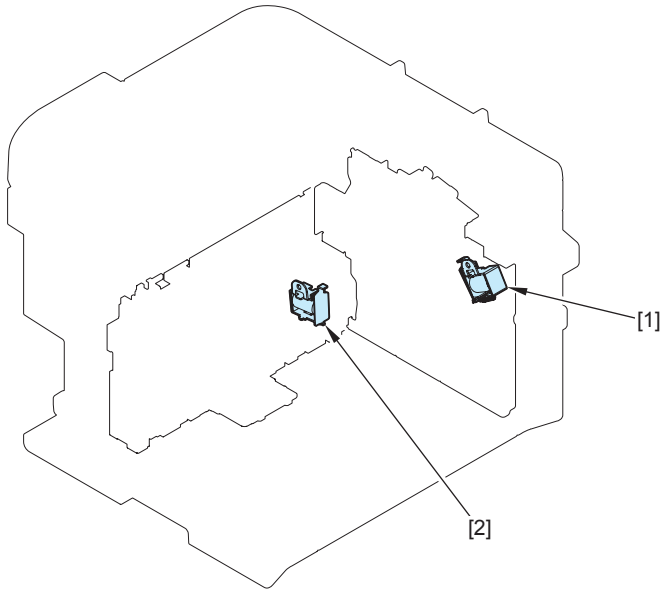


F-4-17

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Main Motor	FM4-7491	-	Main Unit	p. 4-88
[2]	Main Fan Unit	RK2-3438	-	Main Unit	p. 4-91
[3]	Laser Scanner Motor	-	-	Laser Scanner Unit	-

T-4-17

List of Solenoid

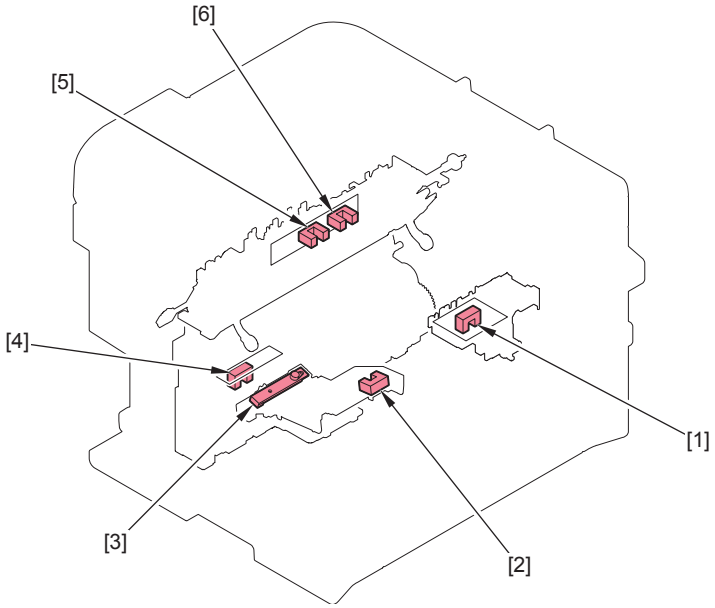


F-4-18

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Duplex Solenoid	RK2-0420	-	Main Unit	-
[2]	Pickup Solenoid	-	-	Pickup Unit	p. 4-148

T-4-18

List of Sensor

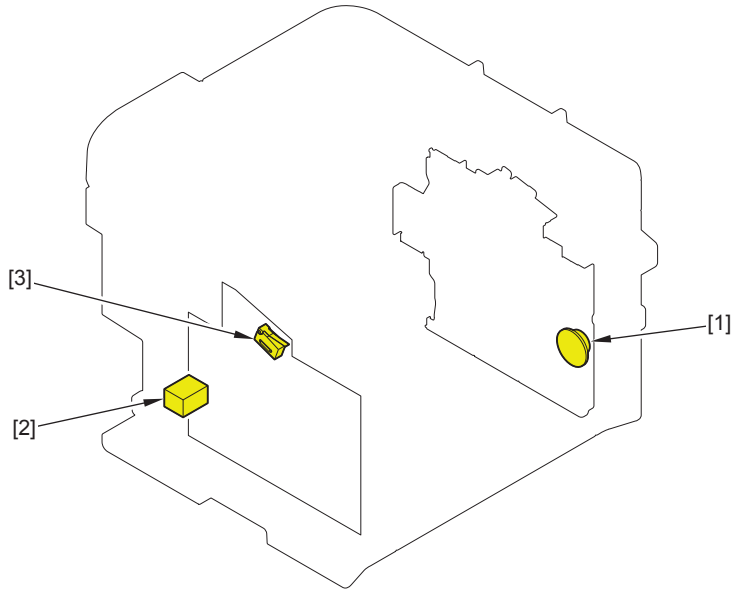


F-4-19

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Encoder Sensor	-	-	Main Unit	-
[2]	Multi Pickup Sensor	-	-	Main Unit	p. 4-110
[3]	Toner Sensor	-	FAX model MF4580dn/ MF4570dn/MF4550d/ MF4553d/MF4554d	Main Unit	p. 4-110
[4]	Paper Leading Edge Sensor	-	-	Pickup Unit	p. 4-104
[5]	Paper Width Sensor	-	-	Fixing Assembly	-
[6]	Fixing Delivery Sensor	-	-	Fixing Assembly	-

T-4-19

List of Switch

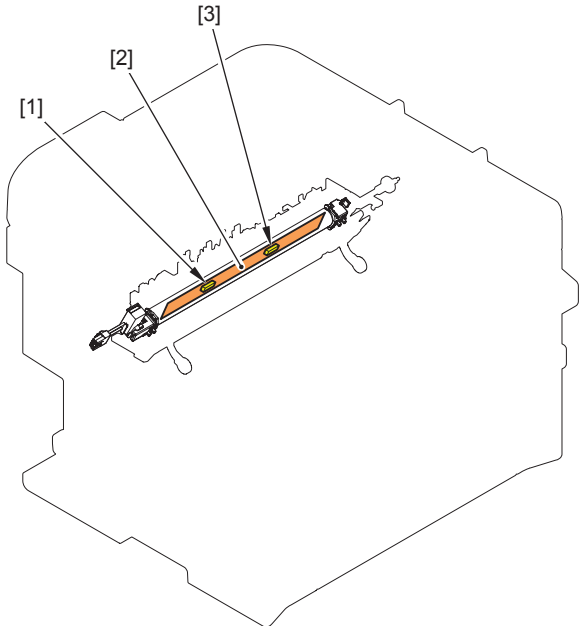


F-4-20

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Speaker	FK3-1144	FAX model MF4580dn/ MF4570dn/ MF4550d/ MF4553d/ MF4554d	Main Unit	p. 4-113
[2]	Power Switch	-	-	Main Unit	-
[3]	Door Switch	-	-	Main Unit	-

T-4-20

List of Heater/Thermoswitch/Thermistor

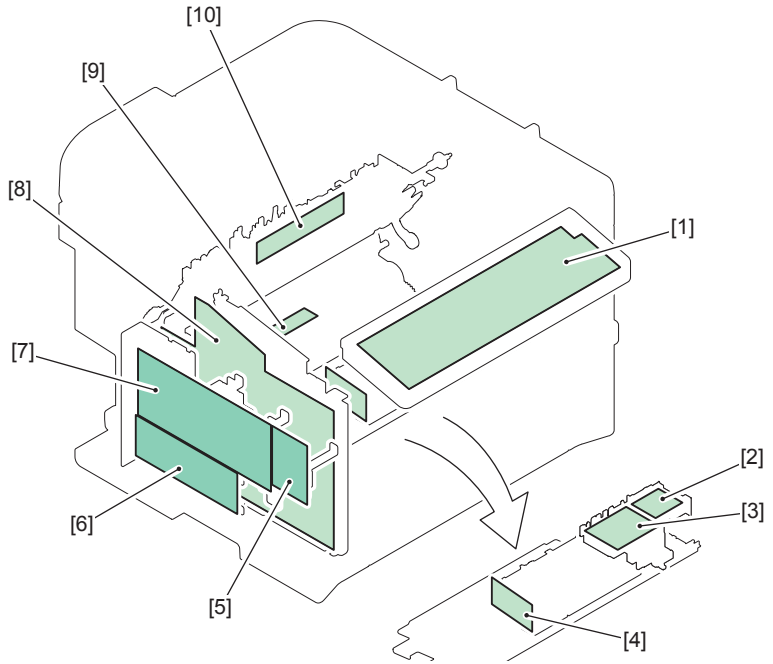


F-4-21

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Thermoswitch	-	-	Fixing Assembly	-
[2]	Fixing Heater	-	-	Fixing Assembly	-
[3]	Thermistor	-	-	Fixing Assembly	-

T-4-21

List of PCB



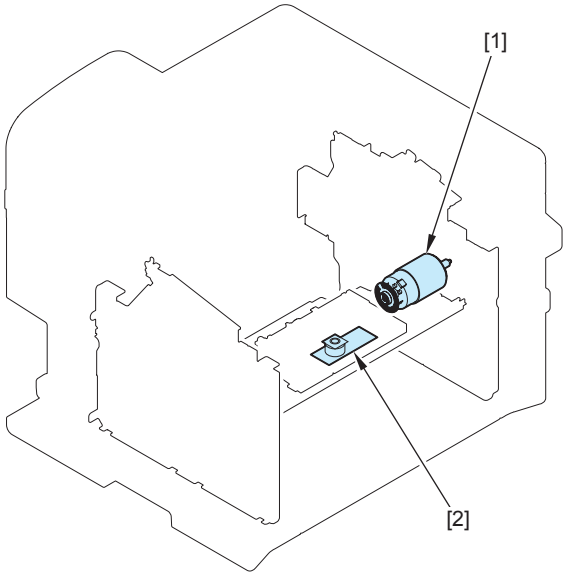
F-4-22

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Control Panel PCB	-	-	Control Panel Unit	-
[2]	Duplex Driver PCB	FM4-7064	-	Main Unit	-
[3]	Motor Driver PCB	FM4-7062	-	Main Unit	-
[4]	Laser Driver PCB	-	-	Laser Scanner Unit	-
[5]	Pseudo CI PCB	FM4-7187	FAX model MF4580dn (100V)/MF4570dn (100V)/MF4550d (100V)	Main Unit	p. 4-103
[6]	FAX-NCU PCB	FM4-7185 FM4-7176 FM4-7186	FAX model MF4580dn (JP)/MF4570dn (JP)/ MF4550d (JP) FAX model MF4580dn (LTN, SG, HK, KR, EUR)/ MF4570dn (TW, US, CA, LTN, SG, HK, CN, KR, EUR)/MF4550d (LTN, SG, HK, CN, KR, EUR)/ MF4553d (KR)/MF4554d (KR) FAX model MF4580dn (AU)/MF4570dn (AU)/ MF4550d (AU)	Main Unit	p. 4-102, p. 4-103
[7]	Main Controller PCB	FM4-7163 FM4-7162 FM4-7165 FM4-7164 FM4-7167 FM4-7166 FM4-7168 FM4-7169	MF4580dn (100V) MF4580dn (230V) MF4570dn (100V) MF4570dn (120V, 230V) MF4550d (100V) MF4550d (230V)/4553d (230V)/4554d (230V) D550 D520	Main Unit	p. 4-96, p. 4-99
[8]	Engine Controller PCB	FM4-7087 FM4-7057 FM4-7058 FM4-7059	MF4580dn (100V) MF4570dn (100V)/ MF4550d (100V) MF4570dn (120V)/D550 (120V)/D520 (120V) MF4580dn (230V)/ MF4570dn (230V)/ MF4550d (230V)/ MF4553d (230V)/ MF4554d (230V)/D550 (230V)/D520 (230V)	Main Unit	p. 4-93, p. 4-96
[9]	Paper Leading Edge Sensor PCB	FM4-7066	-	Pickup Unit	-
[10]	Fixing Delivery/Paper Width Sensor PCB	-	-	Fixing Assembly	p. 4-107

T-4-22

List of 1-sided Printer Unit (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410 / MF4412)

List of Motor/Fan

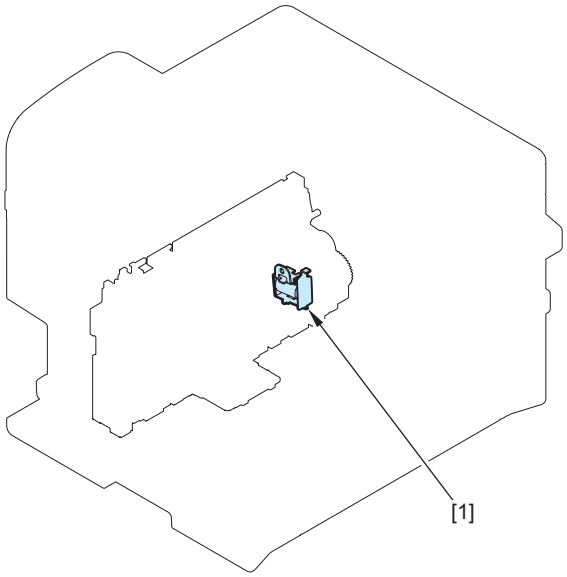


F-4-23

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Main Motor	FM4-7491	-	Main Unit	p. 4-85
[2]	Laser Scanner Motor	-	-	Laser Scanner Unit	-

T-4-23

List of Solenoid

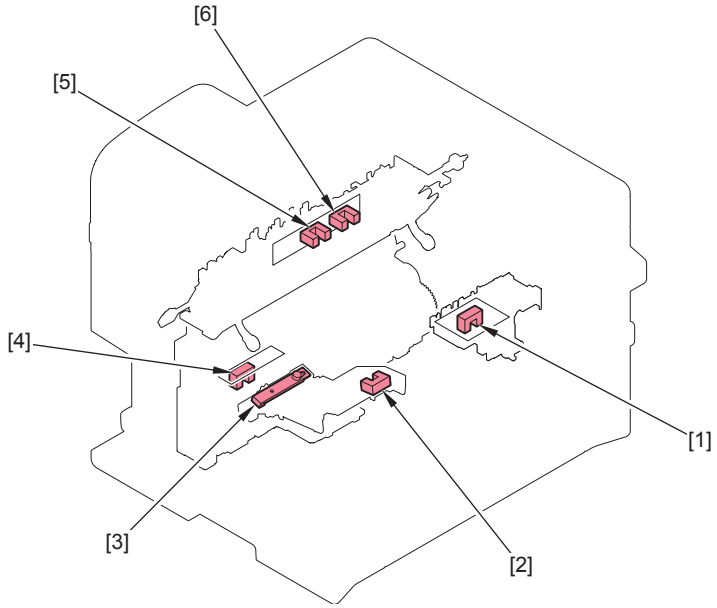


F-4-24

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Pickup Solenoid	-	-	Pickup Unit	p. 4-151

T-4-24

List of Sensor

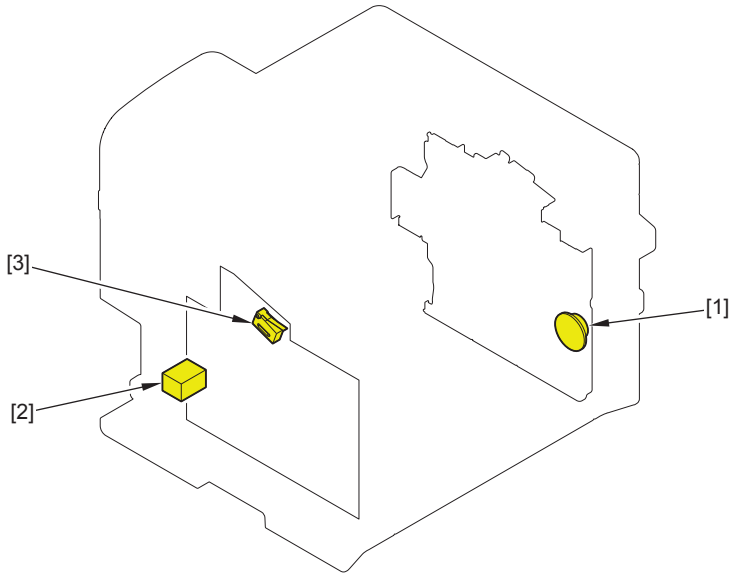


F-4-25

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Encoder Sensor	-	-	Main Unit	-
[2]	Multi Pickup Sensor	-	-	Main Unit	p. 4-110, p. 4-112
[3]	Toner Sensor	-	FAX model MF4450/ MF4452/MF4453	Main Unit	p. 4-110
[4]	Paper Leading Edge Sensor	-	-	Pickup Unit	p. 4-104
[5]	Paper Width Sensor	-	-	Fixing Assembly	-
[6]	Fixing Delivery Sensor	-	-	Fixing Assembly	-

T-4-25

List of Switch

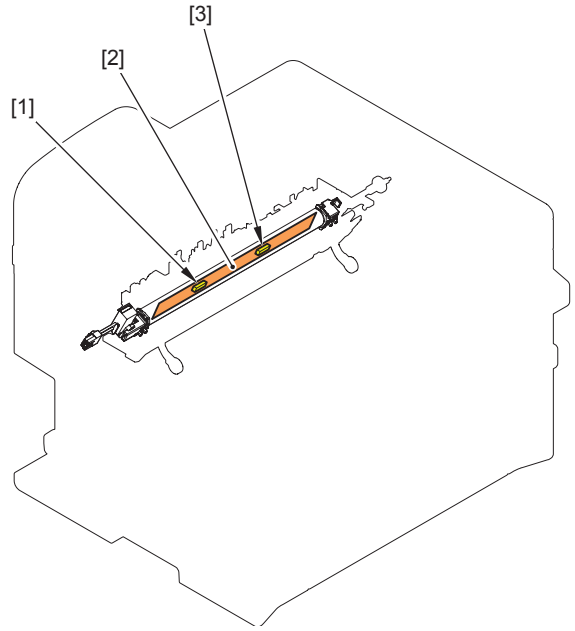


F-4-26

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Speaker	FK3-1144	FAX model MF4450/ MF4452/MF4453	Main Unit	p. 4-113
[2]	Power Switch	-	-	Main Unit	-
[3]	Door Switch	-	-	Main Unit	-

T-4-26

List of Heater/Thermoswitch/Thermistor

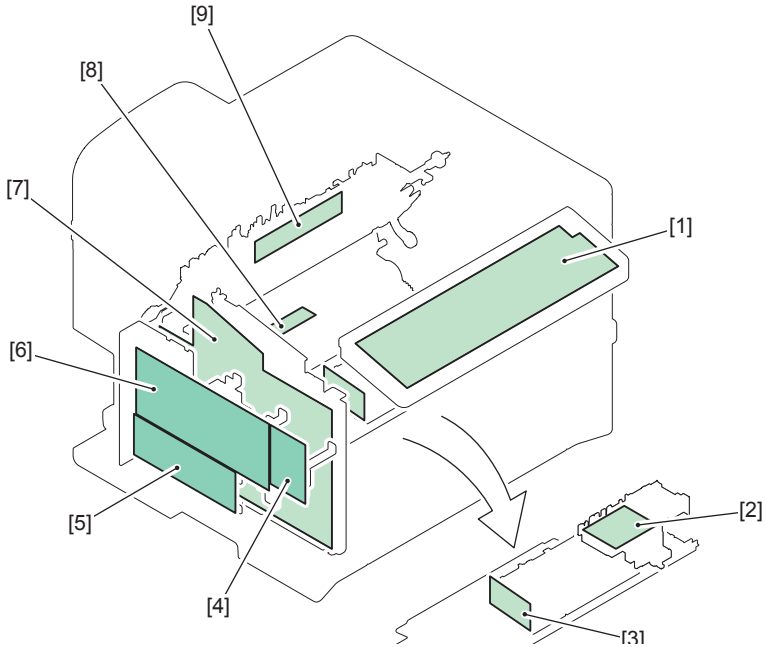


F-4-27

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Thermoswitch	-	-	Fixing Assembly	-
[2]	Fixing Heater	-	-	Fixing Assembly	-
[3]	Thermistor	-	-	Fixing Assembly	-

T-4-27

List of PCB



F-4-28

No.	Name	Service Parts No.		Main Unit	Reference
[1]	Control Panel PCB	-	-	Control Panel Unit	-
[2]	Motor Driver PCB	FM4-7063	-	Main Unit	-
[3]	Laser Driver PCB	-	-	Laser Scanner Unit	-
[4]	Pseudo CI PCB	FM4-7187	FAX model MF4450 (100V)	Main Unit	p. 4-103
[5]	FAX-NCU PCB	FM4-7185 FM4-7176	FAX model MF4450 (JP) FAX model MF4450 (TW, US, CA, LTN, SG, HK, CN, KR, EUR)/ MF4452 (CN)/MF4453 (KR)	Main Unit	p. 4-102, p. 4-103

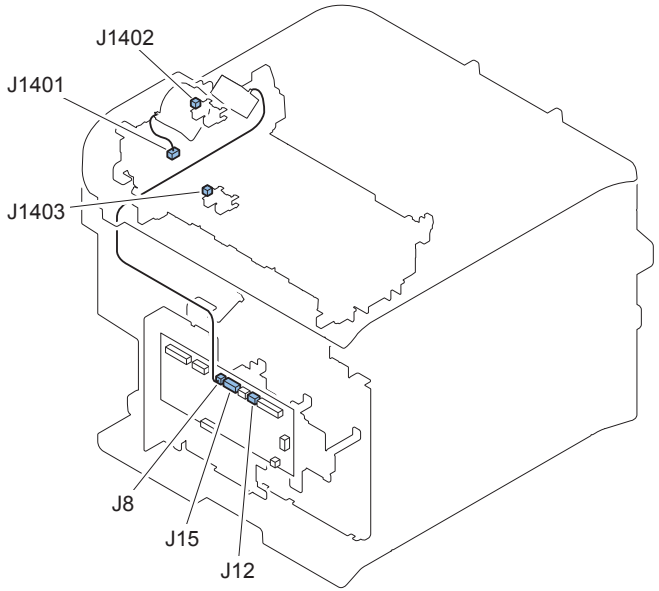
TONER
www.tonerplus.com.ua

No.	Name	Service Parts No.		Main Unit	Reference
[6]	Main Controller PCB	FM4-7283 FM4-7282 FM4-7171 FM4-7172 FM4-7173 FM4-7174 FM4-7175	MF4450 (100V) MF4450 (120V, 230V)/ MF4453 (230V) MF4452 (230V) MF4430 MF4420n MF4410/ MF4412(LTN,SG,HK) MF4412(CN)	Main Unit	p. 4-99, p. 4-100, p. 4-102
[7]	Engine Controller PCB	FM4-7057 FM4-7058 FM4-7059 FM4-7087	MF4450 (100V) MF4450 (120V) MF4450 (230V)/MF4452 (230V)/MF4453 (230V)/ MF4430 (230V)/ MF4420n (230V)/ MF4410 (230V)/MF4412 (230V) MF4430 (100V)/ MF4420n (100V)/ MF4410 (100V)	Main Unit	p. 4-93, p. 4-96
[8]	Paper Leading Edge Sensor PCB	FM4-7066	-	Pickup Unit	-
[9]	Fixing Delivery/ Paper Width Sensor PCB	-	-	Fixing Assembly	p. 4-107

T-4-28

List of Connectors

DADF Unit (MF4580dn/D550)

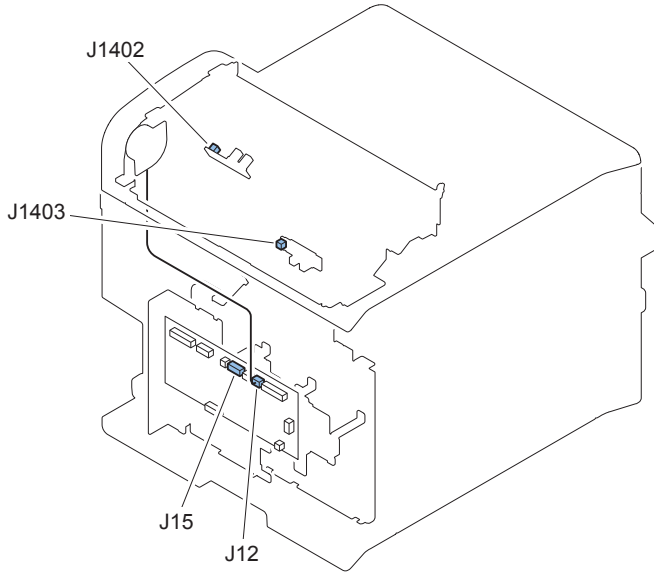


F-4-29

J No.	Name	Relay Connector	J No.	Name	REMARKS
J15	Main Controller PCB		J1402	DES Sensor	-
J15	Main Controller PCB		J1403	DS Sensor	-
J12	Main Controller PCB		J1401	DADF Motor	-
J8	Main Controller PCB		J8	DADF Solenoid	-

T-4-29

SADF Unit (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430)

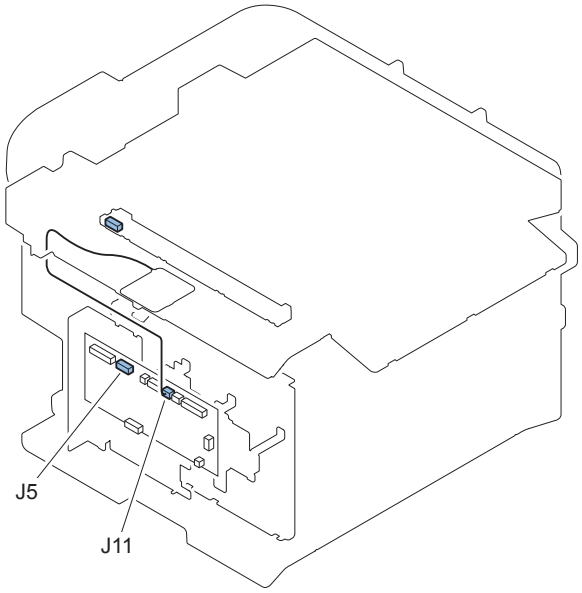


F-4-30

J No.	Name	Relay Connector	J No.	Name	REMARKS
J15	Main Controller PCB		J1402	DES Sensor	-
J15	Main Controller PCB		J1403	DS Sensor	-
J12	Main Controller PCB		J12	SADF Motor	-

T-4-30

Reader Unit

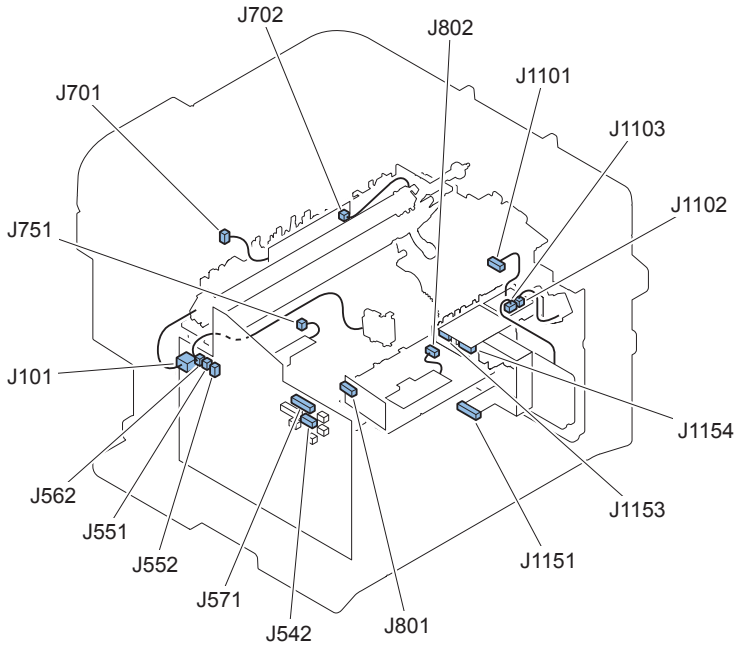


F-4-31

J No.	Name	Relay Connector	J No.	Name	REMARKS
J5	Main Controller PCB		-	CIS UNIT	-
J11	Main Controller PCB		J11	Reader Motor	-

T-4-31

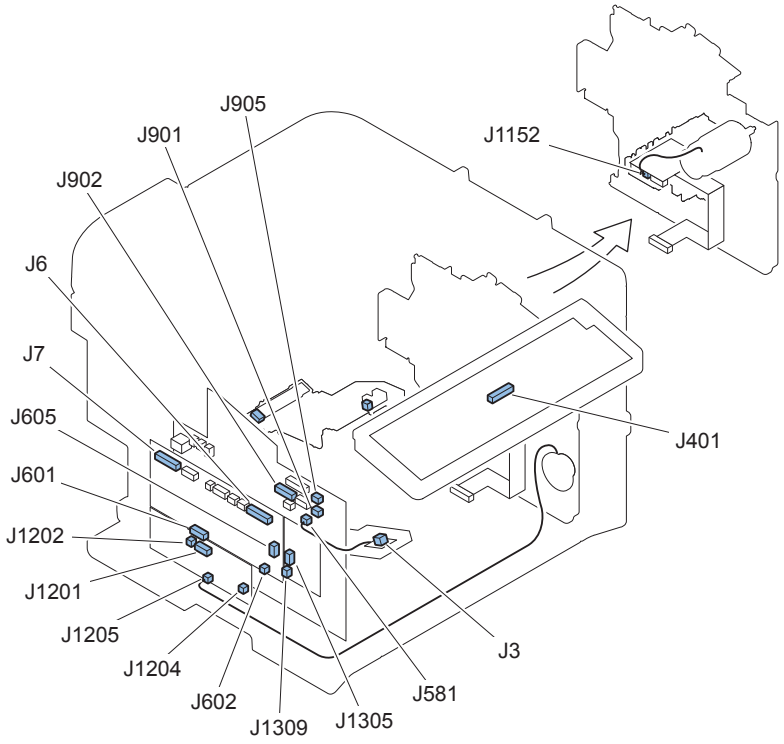
2-sided Printer Unit (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)



F-4-32

J No.	Name	Relay Connector	J No.	Name	REMARKS
J1101	Duplex Driver PCB		J1154	Motor Driver PCB	-
J1102	Duplex Driver PCB		J1102	Duplex Solenoid	-
J1103	Duplex Driver PCB		J1103	Main Fan Unit	-
J1151	Motor Driver PCB		J571	Engine Controller PCB	-
J1153	Motor Driver PCB		J802	Laser Scanner Motor	-
J801	Laser Driver PCB		J542	Engine Controller PCB	-
J101	Engine Controller PCB		-	Fixing Film Unit	-
J551	Engine Controller PCB		J751	Paper Leading Edge Sensor	-
J552	Engine Controller PCB		J701	Fixing Delivery/Paper Width Sensor PCB	-
J562	Engine Controller PCB		J562	Pickup Solenoid	-
J702	Fixing Delivery/Paper Width Sensor PCB		-	Fixing Film Unit	-

T-4-32



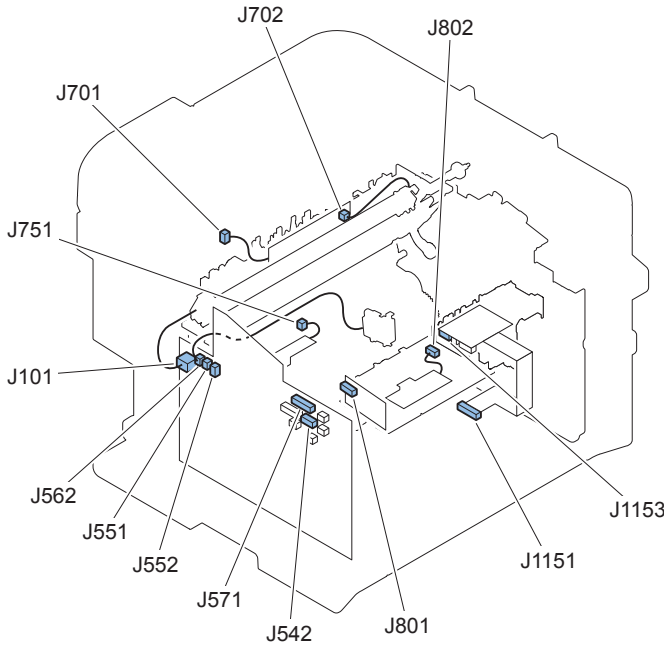
F-4-33

J No.	Name	Relay Connector	J No.	Name	REMARKS
J1152	Motor Driver PCB		J1152	Main Motor	-
J581	Engine Controller PCB		-	Memory Tag	-
J901	Engine Controller PCB		-	Toner Sensor	FAX model (MF4580dn/ MF4570dn/MF4550d/ MF4553d/MF4554d)
J902	Engine Controller PCB		J6	Main Controller PCB	-
J905	Engine Controller PCB		-	Multi Pickup Sensor	-
J3	Memory Tag		-	Cartridge	-
J605	Main Controller PCB		J1305	Pseudo CI PCB	FAX model (MF4580dn/ MF4570dn/MF4550d/ MF4553d/MF4554d)

J No.	Name	Relay Connector	J No.	Name	REMARKS
J602	Main Controller PCB		J1204	FAX-NCU PCB	FAX model (MF4580dn/ MF4570dn/MF4550d/ MF4553d/MF4554d)
J601	Main Controller PCB		J1201	FAX-NCU PCB	FAX model (MF4580dn/ MF4570dn/MF4550d/ MF4553d/MF4554d)
J7	Main Controller PCB		J401	Control Panel PCB	-
J1202	FAX-NCU PCB		J1309	Pseudo CI PCB	FAX model (MF4580dn/ MF4570dn/MF4550d/ MF4553d/MF4554d)
J1205	FAX-NCU PCB		J1205	Speaker	FAX model (MF4580dn/ MF4570dn/MF4550d/ MF4553d/MF4554d)

T-4-33

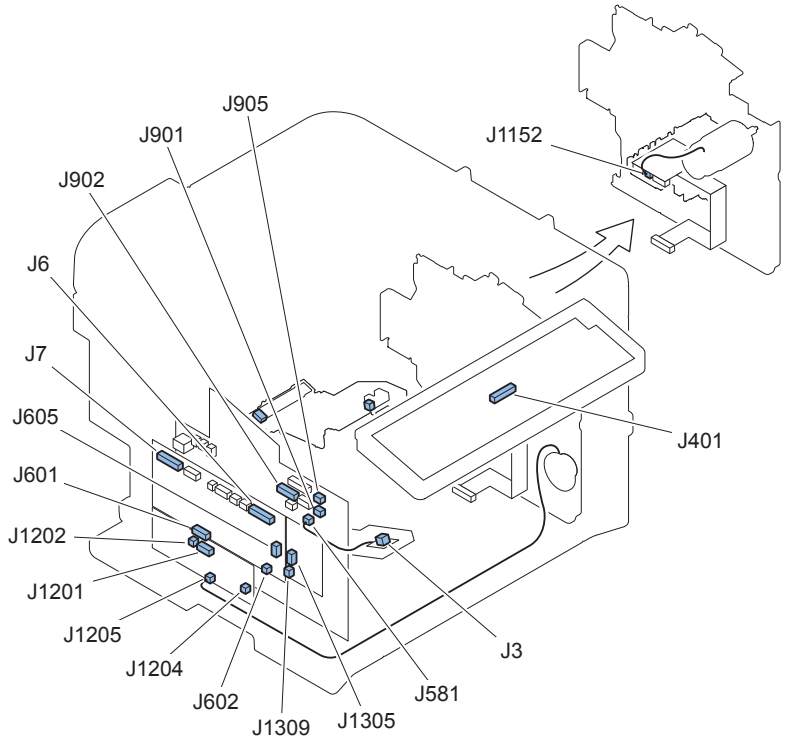
1-sided Printer Unit (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)



F-4-34

J No.	Name	Relay Connector	J No.	Name	REMARKS
J1151	Motor Driver PCB		J571	Engine Controller PCB	-
J1153	Motor Driver PCB		J802	Laser Scanner Motor	-
J801	Laser Driver PCB		J542	Engine Controller PCB	-
J101	Engine Controller PCB		-	Fixing Film Unit	-
J551	Engine Controller PCB		J751	Paper Leading Edge Sensor	-
J552	Engine Controller PCB		J701	Fixing Delivery/Paper Width Sensor PCB	-
J562	Engine Controller PCB		J562	Pickup Solenoid	-
J702	Fixing Delivery/Paper Width Sensor PCB		-	Fixing Film Unit	-

T-4-34



F-4-35

J No.	Name	Relay Connector	J No.	Name	REMARKS
J1152	Motor Driver PCB		J1152	Main Motor	-
J581	Engine Controller PCB		-	Memory Tag	-
J901	Engine Controller PCB		-	Toner Sensor	FAX model (MF4450)
J902	Engine Controller PCB		J6	Main Controller PCB	-
J905	Engine Controller PCB		-	Multi Pickup Sensor	-
J3	Memory Tag		-	Cartridge	-
J605	Main Controller PCB		J1305	Pseudo CI PCB	FAX model (MF4450)
J602	Main Controller PCB		J1204	FAX-NCU PCB	FAX model (MF4450)
J601	Main Controller PCB		J1201	FAX-NCU PCB	FAX model (MF4450)
J7	Main Controller PCB		J401	Control Panel PCB	-

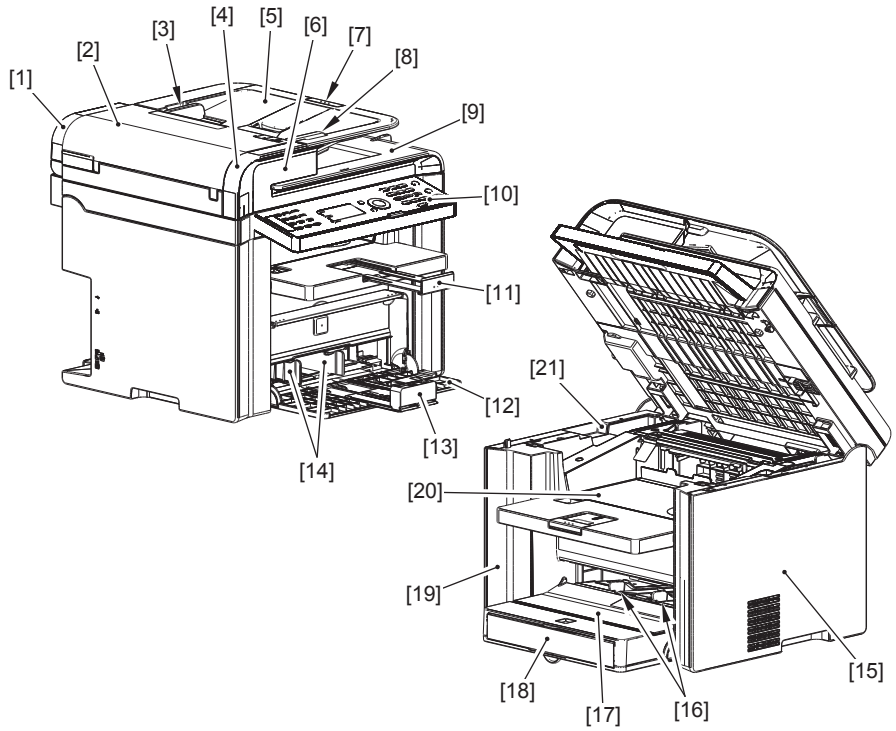
J No.	Name	Relay Connector	J No.	Name	REMARKS
J1202	FAX-NCU PCB		J1309	Pseudo CI PCB	FAX model (MF4450)
J1205	FAX-NCU PCB		J1205	Speaker	FAX model (MF4450)

T-4-35

External Cover, Interior

Location of DADF Models (MF4580dn/D550)

Front Side

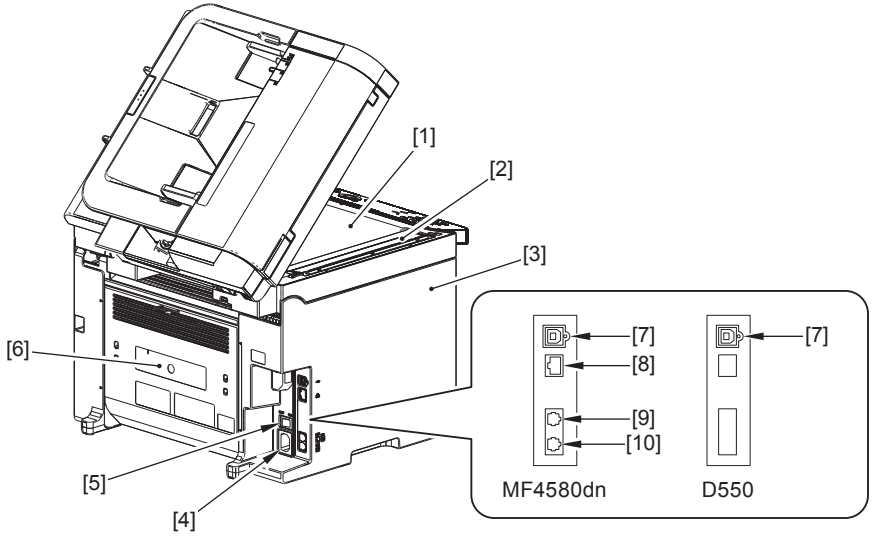


F-4-36

No.	Name	Reference
[1]	DADF Rear Cover	p. 4-44
[2]	DADF Upper Cover	p. 4-44
[3]	Side Guide Plate (Rear)	-
[4]	DADF Front Upper Cover	-
[5]	Original Feed Tray	-
[6]	DADF Front Cover	-
[7]	Original Feed Auxiliary Tray	-
[8]	Side Guide Plate (Front)	-
[9]	Original Delivery Tray	-
[10]	Control Panel Unit	p. 4-79 p. 4-79
[11]	Delivery Auxiliary Tray	-
[12]	Pickup Tray	-
[13]	Trailing Edge Paper Guides	-
[14]	Pickup Tray Paper Guides	-
[15]	Right Cover	p. 4-33
[16]	Multi-Purpose Tray_ Paper Guides	-
[17]	Multi-Purpose Tray	-
[18]	Tray Cover	-
[19]	Front Cover Unit	p. 4-35
[20]	Delivery Tray	p. 4-35
[21]	Upper Cover	p. 4-35

T-4-36

Rear Side



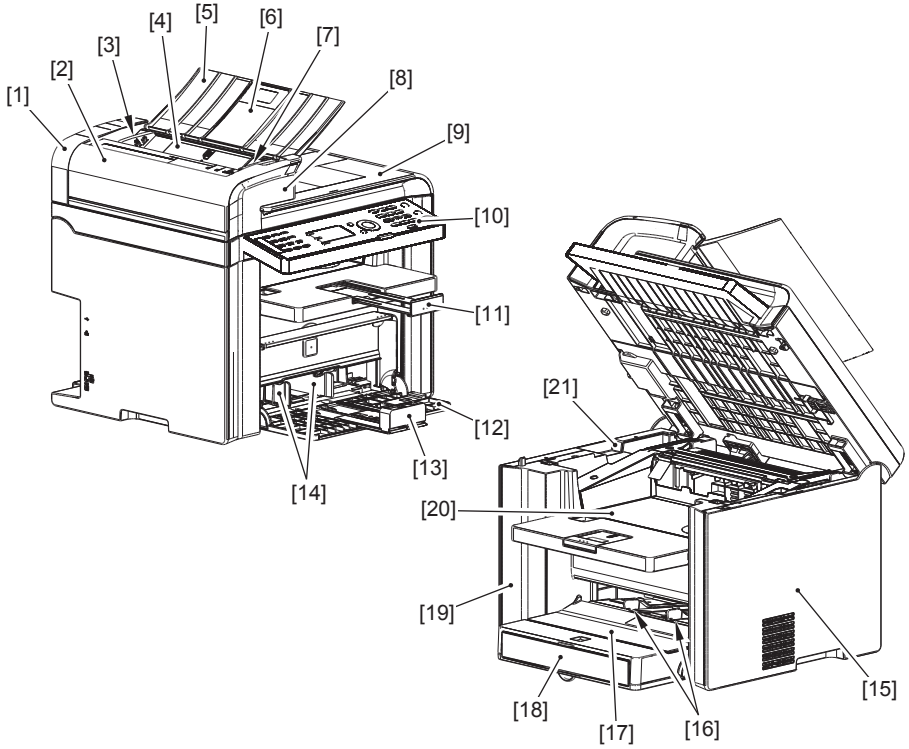
F-4-37

No.	Name	Reference
[1]	Copyboard Glass	p. 4-68
[2]	Copyboard Upper Cover	-
[3]	Left Cover	p. 4-31
[4]	Power Supply Cord Slot	-
[5]	Power Switch	-
[6]	Rear Cover	-
[7]	USB Device Port	-
[8]	LAN Port	-
[9]	External Device Jack	-
[10]	Telephon Line Jack	-

T-4-37

Location of SADF Models (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430)

Front Side



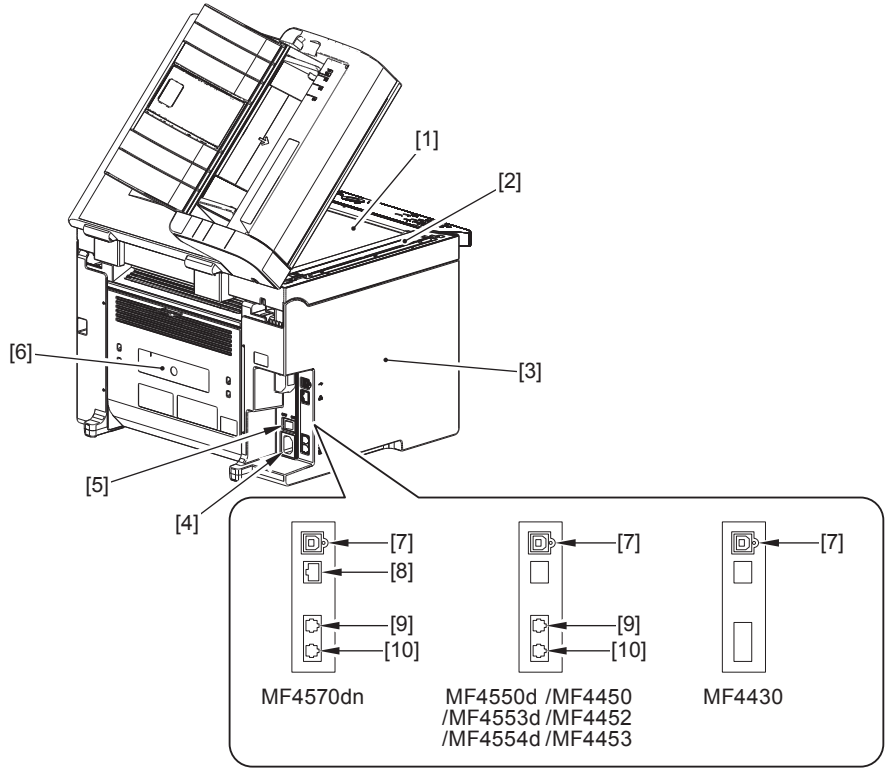
F-4-38

No.	Name	Reference
[1]	SADF Rear Cover	p. 4-57
[2]	SADF Upper Cover	p. 4-57
[3]	Side Guide Plate (Rear)	-
[4]	Original Feed Tray	-
[5]	Original Feed Auxiliary Tray	-
[6]	Original Feed Auxiliary Extension Tray	-

No.	Name	Reference
[7]	Side Guide Plate (Front)	-
[8]	SADF Front Cover	p. 4-57
[9]	Original Delivery Tray	-
[10]	Control Panel Unit	p. 4-79
		p. 4-79
[11]	Delivery Auxiliary Tray	-
[12]	Pickup Tray	-
[13]	Trailing Edge Paper Guides	-
[14]	Pickup Tray Paper Guides	-
[15]	Right Cover	p. 4-33
		p. 4-34
[16]	Multi-Purpose Tray Paper Guides	-
[17]	Multi-Purpose Tray	-
[18]	Tray Cover	-
[19]	Front Cover Unit	p. 4-35
[20]	Delivery Tray	p. 4-35
[21]	Upper Cover	p. 4-35

T-4-38

Rear Side



F-4-39

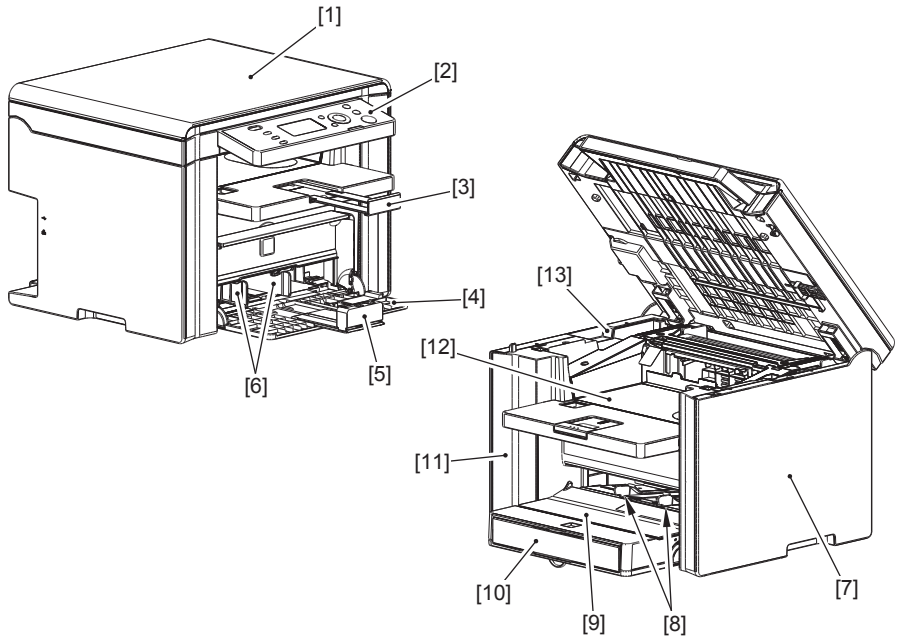
No.	Name	Reference
[1]	Copyboard Glass	p. 4-68
[2]	Copyboard Upper Cover	-
[3]	Left Cover	p. 4-31
		p. 4-32
[4]	Power Supply Cord Slot	-
[5]	Power Switch	-
[6]	Rear Cover	-
		p. 4-37
[7]	USB Device Port	-
[8]	LAN Port	-
[9]	External Device Jack	-

No.	Name	Reference
[10]	Telephon Line Jack	-

T-4-39

Location of Copyboard Models (MF4420n/MF4410/MF4412/D520)

Front Side



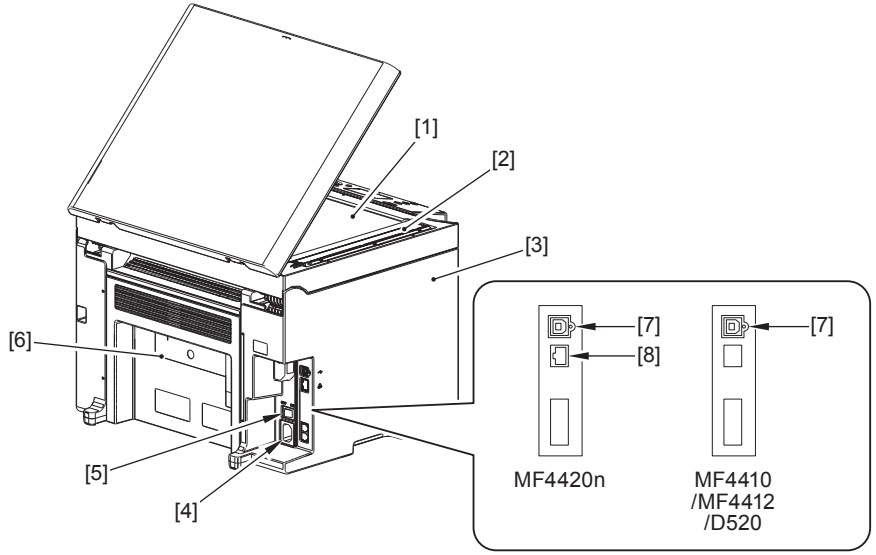
F-4-40

No.	Name	Reference
[1]	Copyboard Cover	p. 4-64
[2]	Control Panel Unit	p. 4-79
[3]	Delivery Auxiliary Tray	-
[4]	Pickup Tray	-
[5]	Trailing Edge Paper Guides	-
[6]	Pickup Tray Paper Guides	-
[7]	Right Cover	p. 4-34 p. 4-33
[8]	Multi-Purpose Tray Paper Guides	-
[9]	Multi-Purpose Tray	-

No.	Name	Reference
[10]	Tray Cover	-
[11]	Front Cover Unit	p. 4-35
[12]	Delivery Tray	p. 4-35
[13]	Upper Cover	p. 4-35

T-4-40

Rear Side



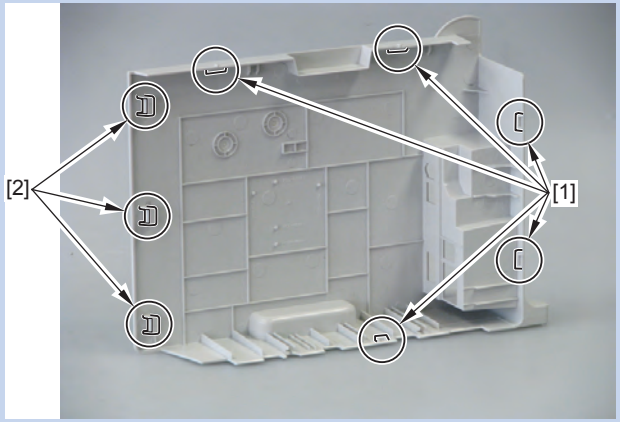
F-4-41

No.	Name	Reference
[1]	Copyboard Glass	p. 4-66
[2]	Copyboard Upper Cover	-
[3]	Left Cover	p. 4-32
		p. 4-31
[4]	Power Supply Cord Slot	-
[5]	Power Switch	-
[6]	Rear Cover	p. 4-37
		-
[7]	USB Device Port	-
[8]	LAN Port	-

T-4-41

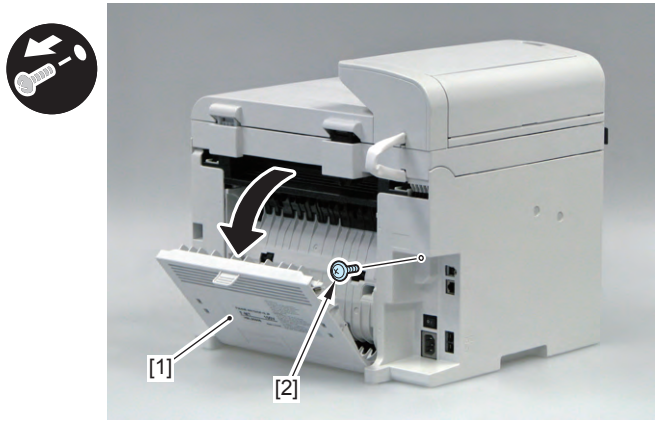
Removing the Left Cover Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

Note:
The locations of the 5 left cover claws [1] and 3 hooks [2] are shown here.



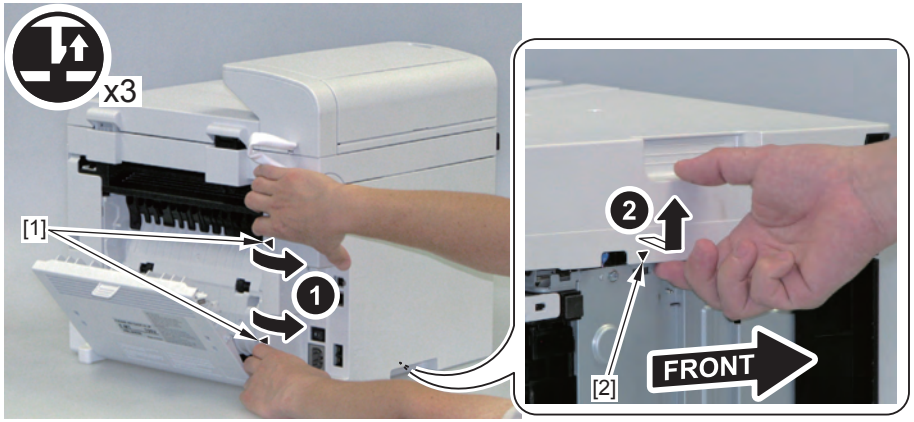
F-4-42

1) Open the rear cover [1] and remove the screw (black TP) [2].



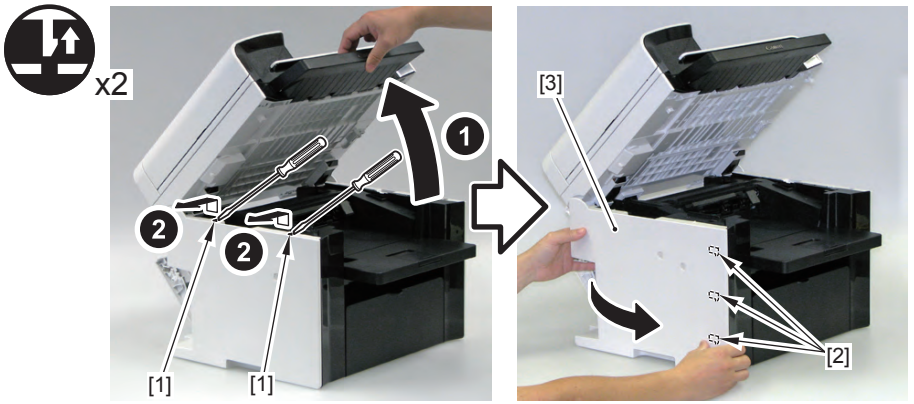
F-4-43

2) Remove the 2 rear claws [1] and the claw in the lower side [2].



F-4-44

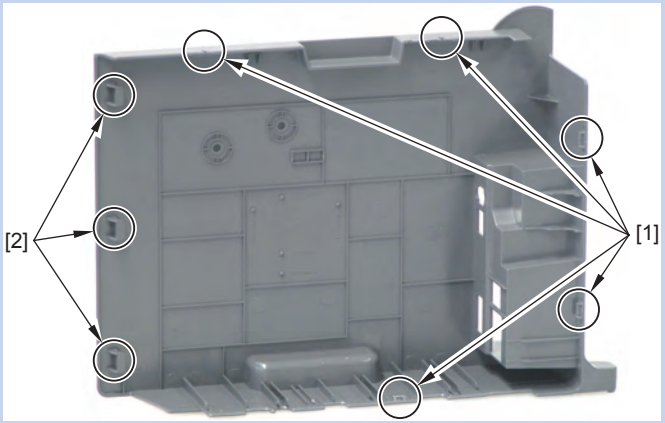
3) Open the reader unit and remove the 2 upper claws [1].
4) Remove the 3 hooks [2] to remove the left cover [3].



F-4-45

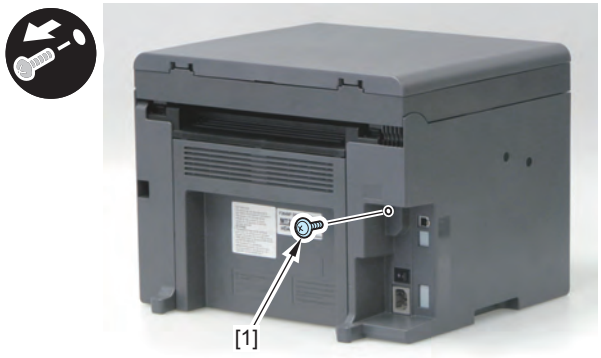
Removing the Left Cover Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)

Note:
The locations of the 5 left cover claws [1] and 3 hooks [2] are shown here.



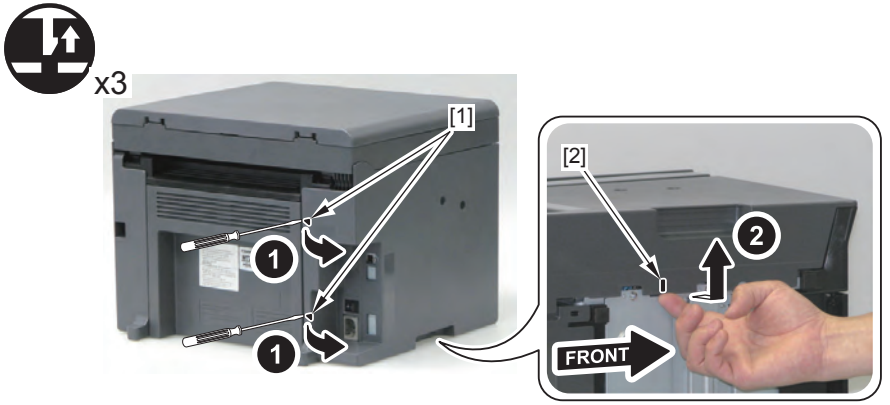
F-4-46

1) Remove the screw (black TP) [1].



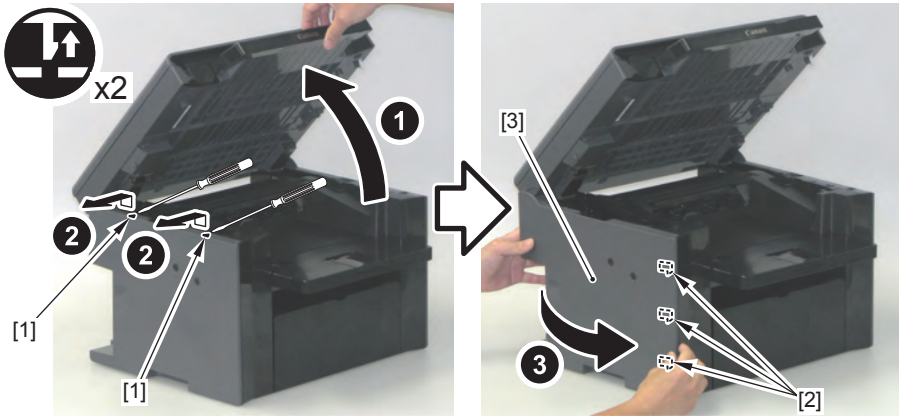
F-4-47

2) Remove the 2 rear claws [1] and the lower claw [2].



F-4-48

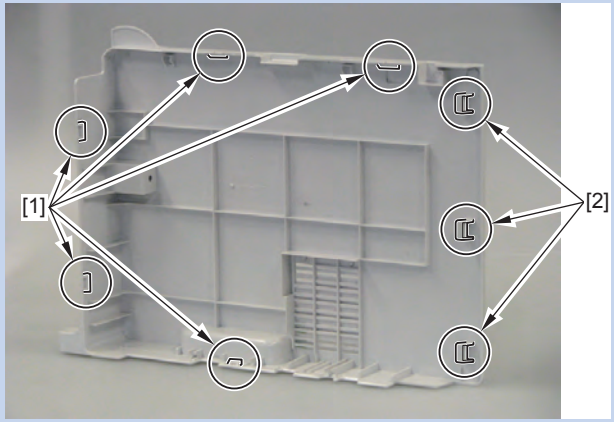
3) Open the reader unit and remove the 2 upper claws [1].
4) Remove the 3 hooks [2] to remove the left cover [3].



F-4-49

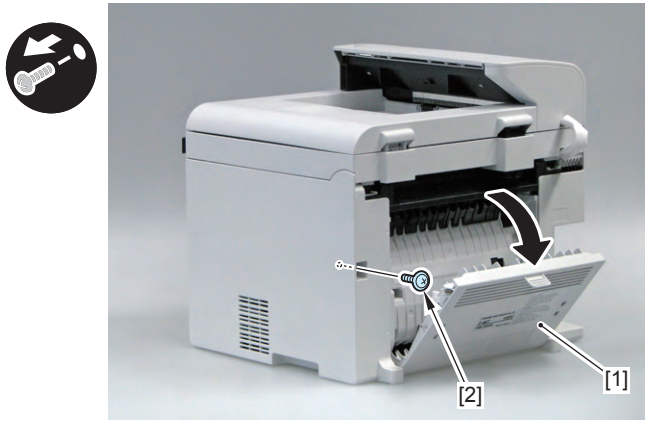
Removing the Right Cover Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

Note:
The locations of the 5 right cover claws [1] and 3 hooks [2] are shown here.



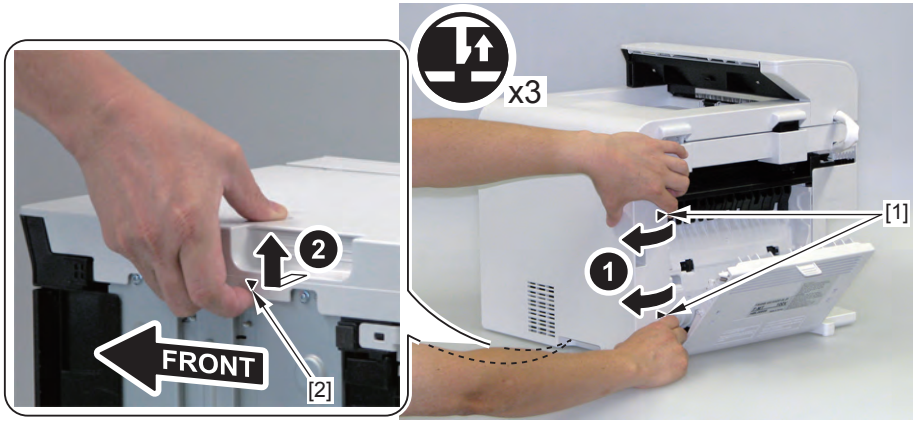
F-4-50

1) Open the rear cover [1] and remove the screw (black TP) [2].



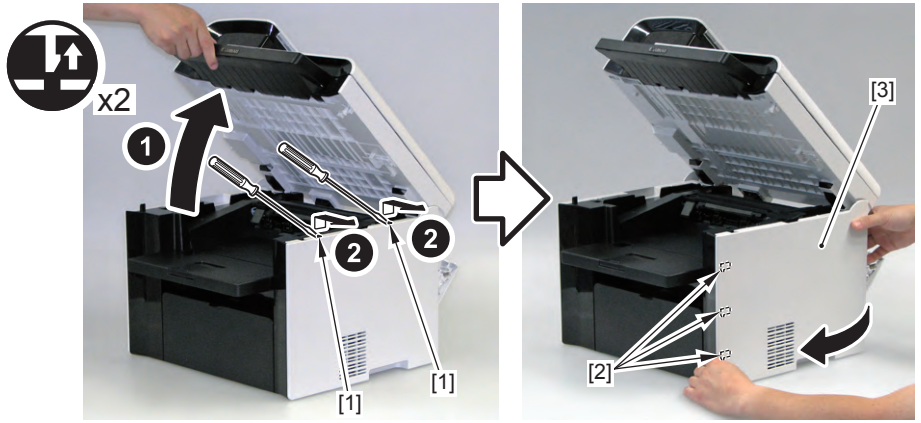
F-4-51

2) Remove the 2 rear claws [1] and the lower claw [2].



F-4-52

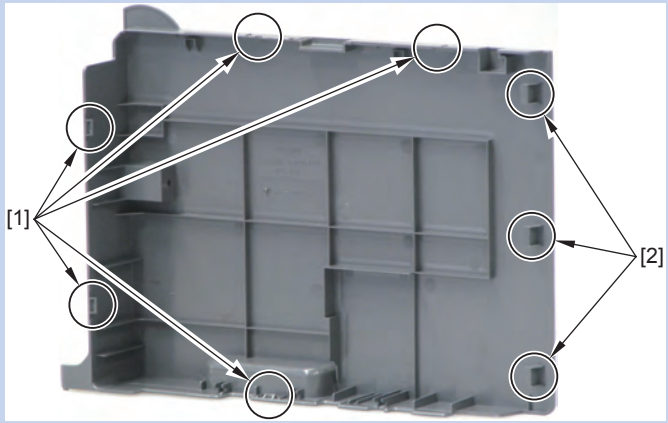
3) Open the reader unit and remove the 2 upper claws [1].
4) Remove the 3 hooks [2] to remove the right cover [3].



F-4-53

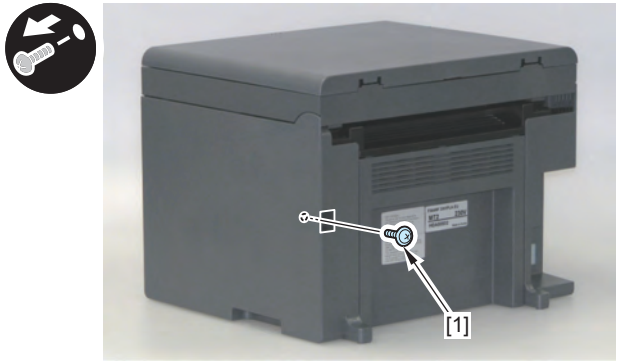
Removing the Right Cover Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)

Note:
The locations of the 5 right cover claws [1] and 3 hooks [2] are shown here.



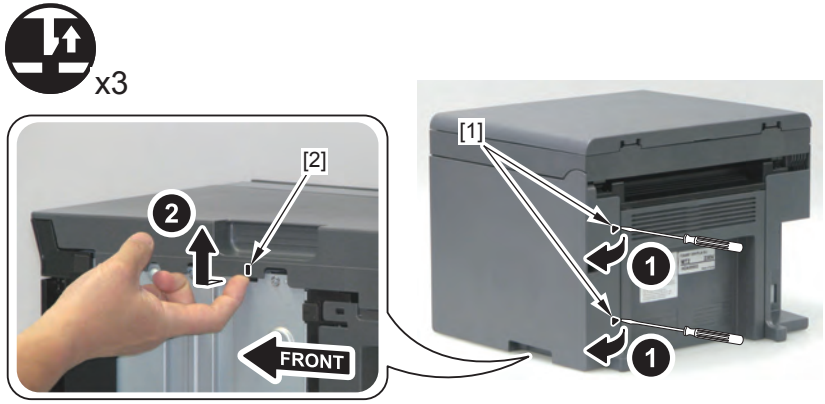
F-4-54

1) Remove the screw (black TP) [1].



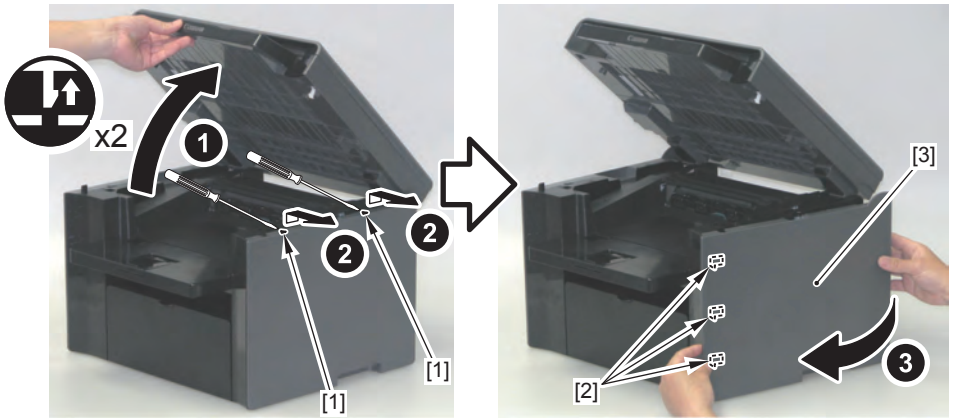
F-4-55

2) Remove the 2 rear claws [1] and the lower claw [2].



F-4-56

3) Open the reader unit and remove the 2 upper claws [1].
4) Remove the 3 hooks [2] to remove the right cover [3].



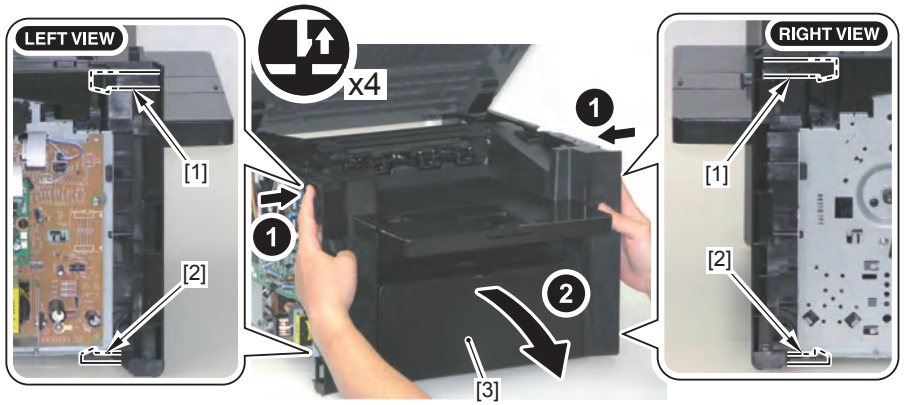
F-4-57

Before Removing the Front Cover Unit

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
2-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)

Removing the Front Cover Unit

1) While removing the 2 upper claws [1], also remove the 2 lower claws [2] and remove the front cover unit [3].



F-4-58

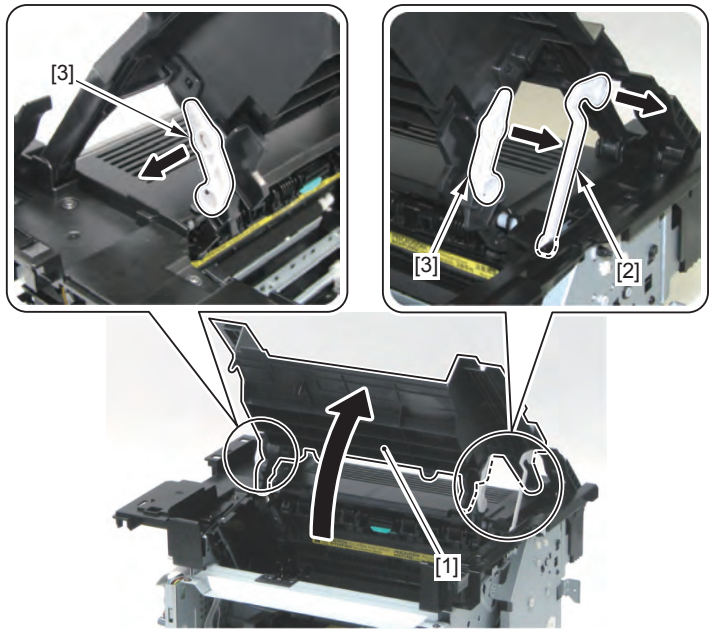
Before Removing the Upper Cover

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
3-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)

Removing the Upper Cover

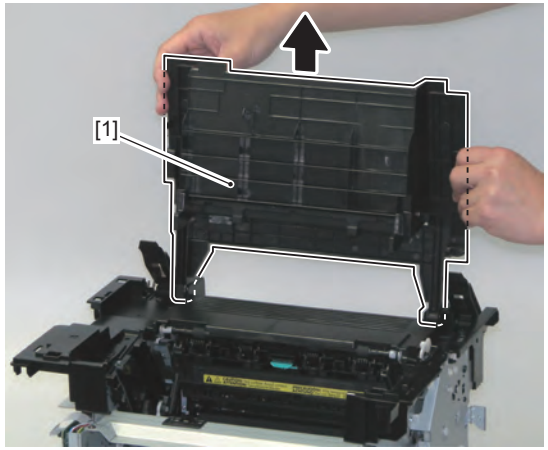
1) Open the delivery tray [1].
2) Remove the cartridge arm [2].
3) Remove the 2 fixing pressure arms [3].

Caution:
When assembling/disassembling the upper cover, take care not to lose the cartridge arm [2] and the 2 fixing pressure arms [3].



F-4-59

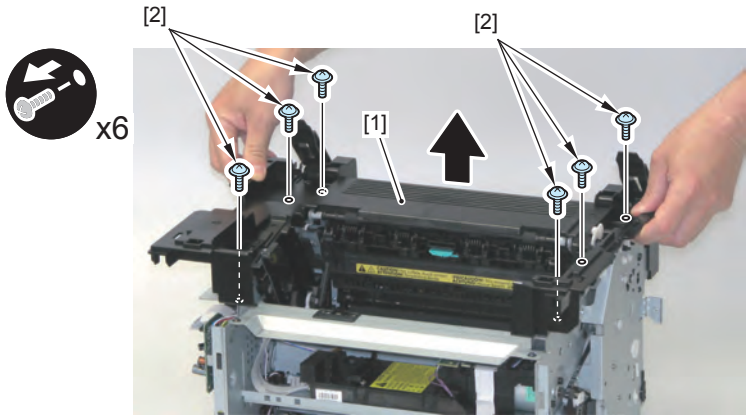
4) Remove the delivery tray [1].



F-4-60

5) Remove the upper cover [1].

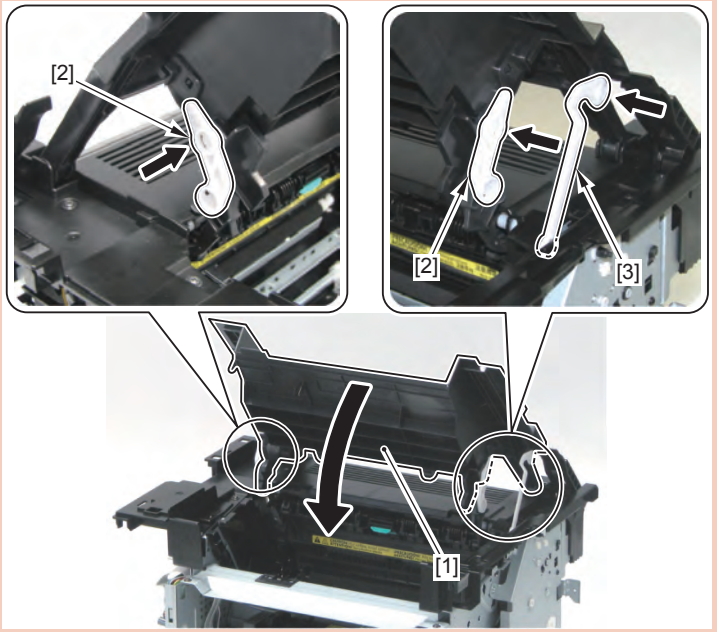
- 6 screws (black TP) [2]



F-4-61

Caution:

When assembling the upper cover, mount 2 fixing pressure arms [2] and a cartridge lock arm [3] to the delivery tray [1].



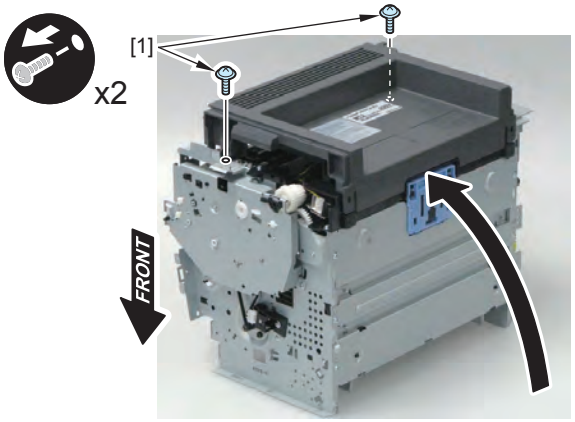
F-4-62

Before Removing the Rear Cover Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-2) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

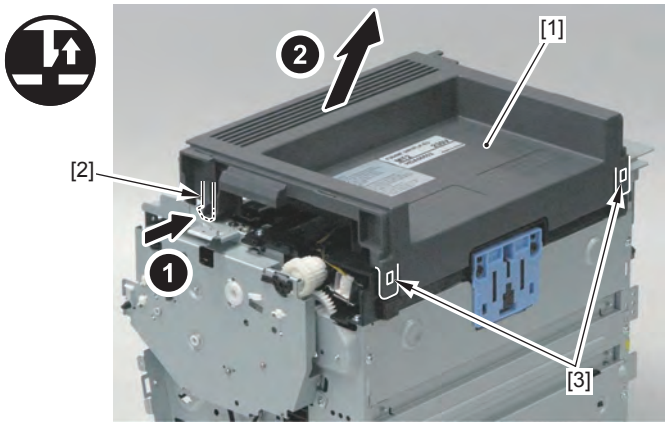
Removing the Rear Cover Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Face the front of the host machine downwards.
2) Remove the 2 screws (black TP) [1].



F-4-63

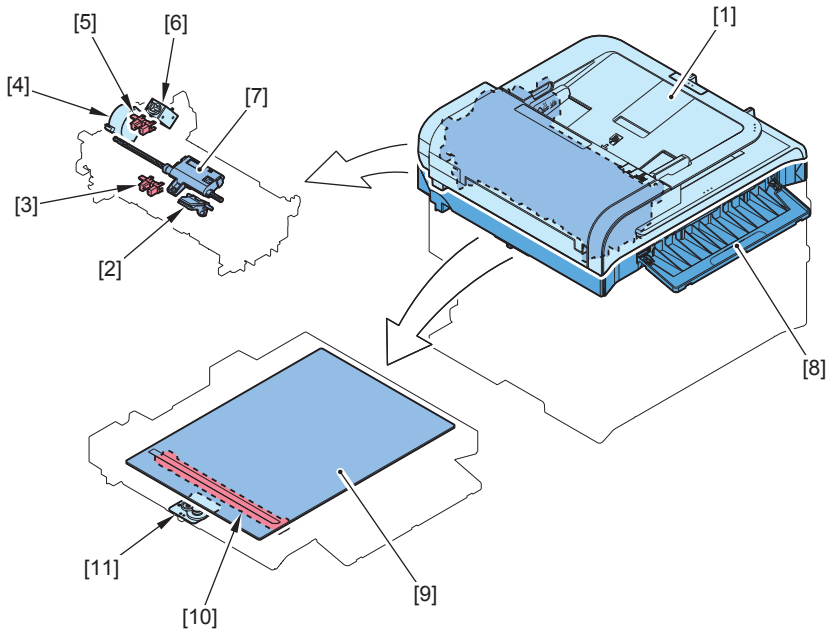
3) Remove the rear cover [1].
- 1 claw [2]
- 2 hooks [3]



F-4-64

Document Exposure/Feeder System

Location of DADF Unit and Reader Unit (MF4580dn/D550)

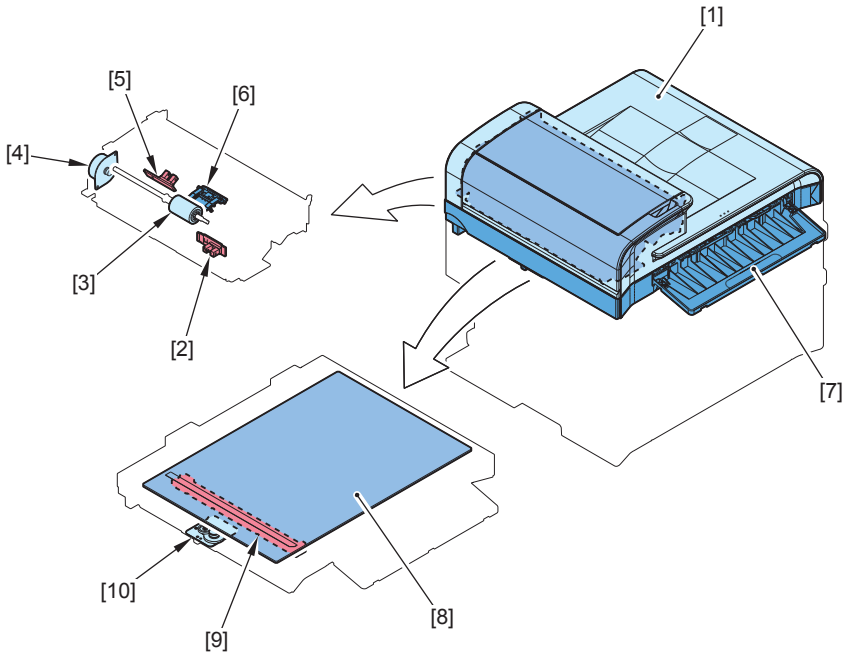


F-4-65

No.	Name	Service Parts No.		Reference
[1]	DADF Unit	-	-	p. 4-42
[2]	DADF Separation Pad	-	-	p. 4-52
[3]	DS Sensor	WG8-5696	-	-
[4]	DADF Motor	-	-	p. 4-48
[5]	DES Sensor	WG8-5696	-	-
[6]	DADF Solenoid	-	-	p. 4-49
[7]	DADF Pickup Roller Unit	FM3-8679	-	p. 4-50
[8]	Reader Unit	FM4-6915 FM4-7494	MF4580dn D550	p. 4-40
[9]	Copyboard Glass	FL2-5621	-	p. 4-68
[10]	CIS UNIT	FK3-1153	-	p. 4-74
[11]	Reader Motor	FM4-6916	-	p. 4-70

T-4-42

Location of SADF Unit and Reader Unit (MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453/MF4430)

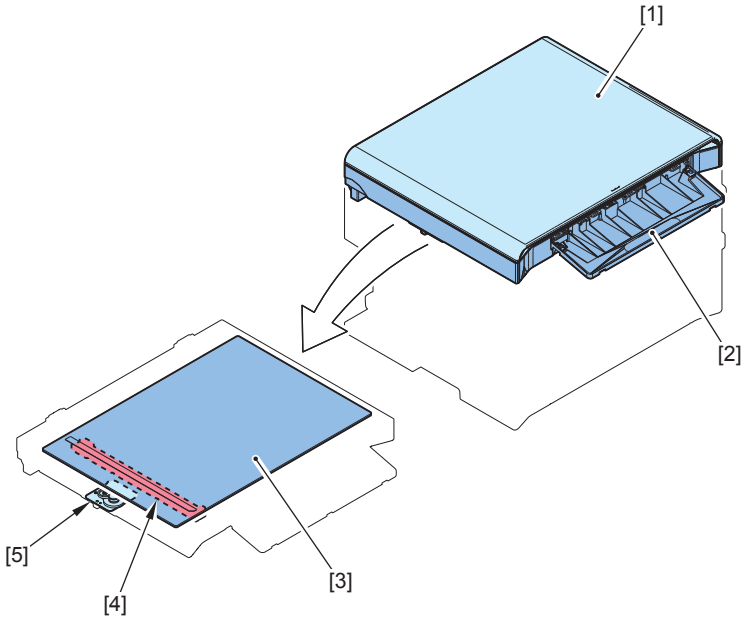


F-4-66

No.	Name	Service Parts No.		Reference
[1]	SADF Unit	-	-	p. 4-55
[2]	DS Sensor	-	-	-
[3]	SADF Pickup Roller	-	-	p. 4-60
[4]	SADF Motor	-	-	p. 4-59
[5]	DES Sensor	-	-	-
[6]	SADF Separation Pad	-	-	p. 4-63
[7]	Reader Unit	FM4-6904 FM4-6949 FM4-6950	MF4570dn/MF4550d/MF4553d/MF4554d MF4450/MF4452/MF4453 MF4430	p. 4-53
[8]	Copyboard Glass	FL2-8496	-	p. 4-68
[9]	CIS UNIT	FK3-1153	-	p. 4-74
[10]	Reader Motor	FM4-6916	-	p. 4-70

T-4-43

Location of Copyboard Cover and Reader Unit (MF4420n/MF4410/MF4412/D520)



F-4-67

No.	Name	Service Parts No.		Reference
[1]	Copyboard Cover	-	-	-
[2]	Reader Unit	FM4-6921 FM4-6937	MF4420n/MF4410/MF4412 D520	p. 4-64
[3]	Copyboard Glass	FL2-5621	-	p. 4-66
[4]	CIS UNIT	FK3-1153	-	p. 4-72
[5]	Reader Motor	FM4-6916	-	p. 4-70

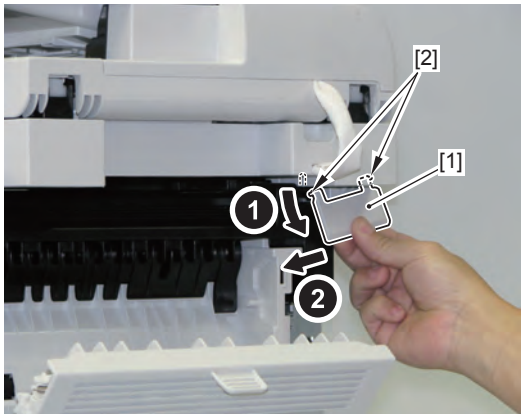
T-4-44

Before Removing the DADF Unit and Reader Unit

1) Remove the left cover. (Duplex models) (Refer to page 4-31)

Removing the DADF Unit and Reader Unit

1) Close the DADF Unit + Reader Unit.
2) Remove the Hinge Face Cover [1].
- 1 shaft [2]

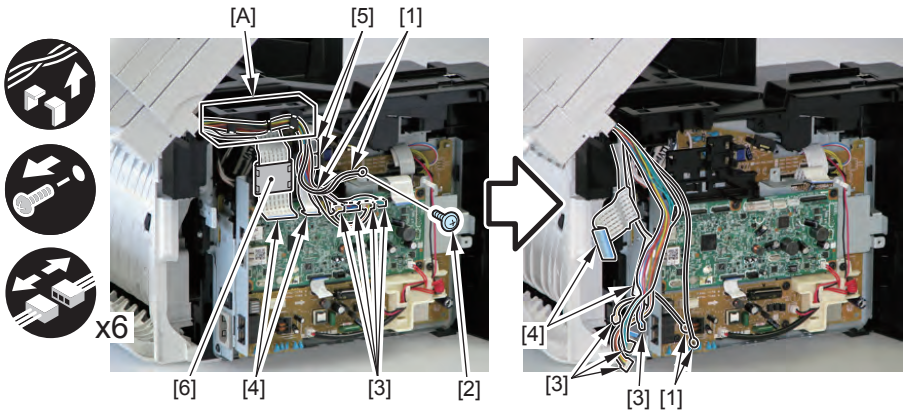


F-4-68

3) Open the DADF Unit and the Reader Unit.
4) Remove the grounding wire [1].
- 1 screw (black TP) [2]

5) Remove the 4 connectors [3] and 2 flat cables [4].
- 2 ferrite cores (small) [5]
- 1 ferrite core (large) [6]

6) Disengage the 2 detached grounding wires [1], 4 harnesses [3] and 2 flat cables [4] from the harness guide [A].



F-4-69

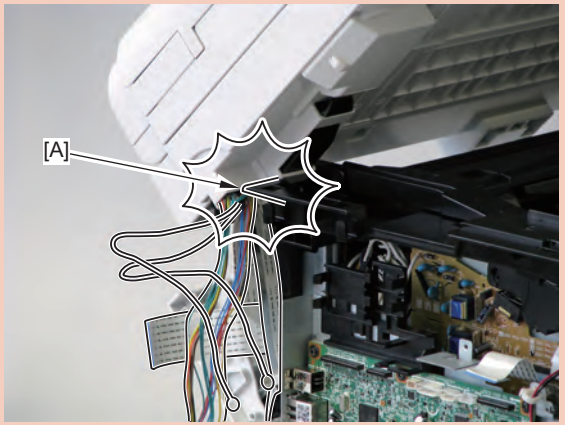
7) Remove the DADF unit and reader unit [1].

- 2 claws [2]

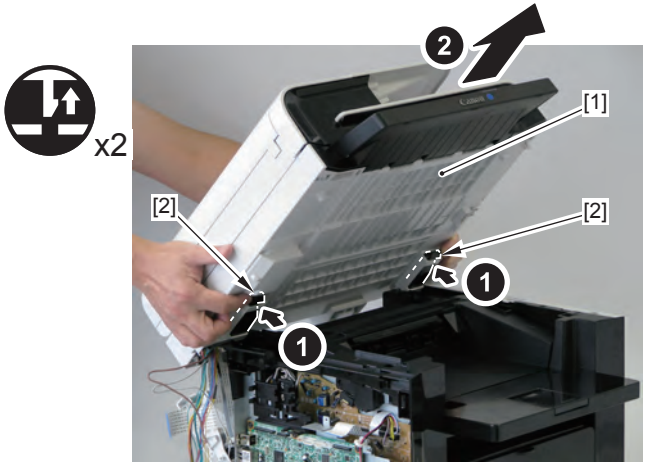
Caution:

When disassembling/assembling the DADF unit and reader unit, be careful not to damage the flat cables and harnesses with [A] part.

When assembling, be sure to put the flat cables and harnesses through the [A] part before installing the DADF unit and reader unit.



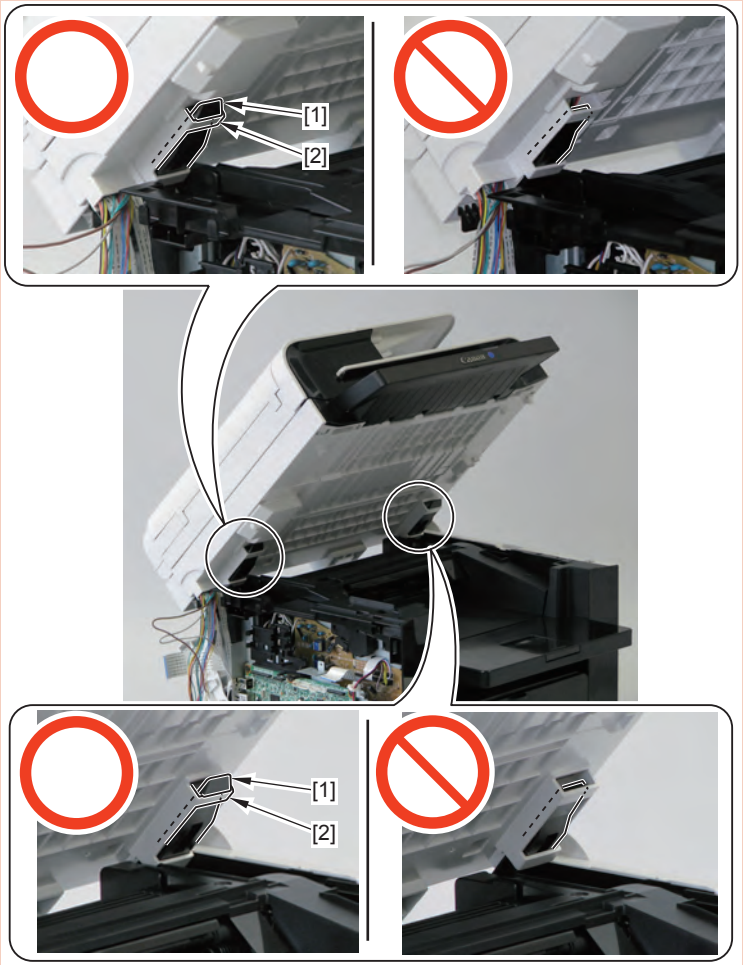
F-4-70



F-4-71

Caution:

When mounting the DADF unit and reader unit, fix the 2 hinge arm claws [1] to the 2 latches [2] in the reader unit.



F-4-72

Before Removing the DADF Unit

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2) Remove the DADF unit and reader unit. (Refer to page 4-40)

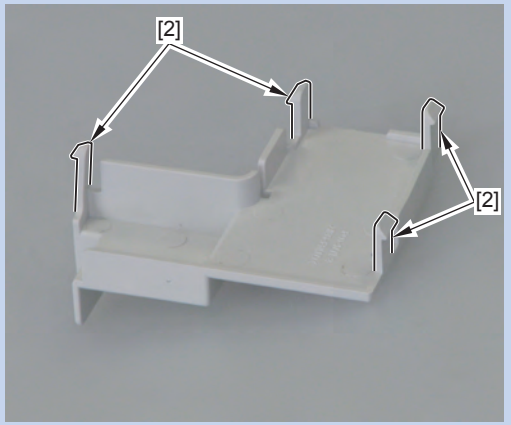
Removing the DADF Unit

Caution:

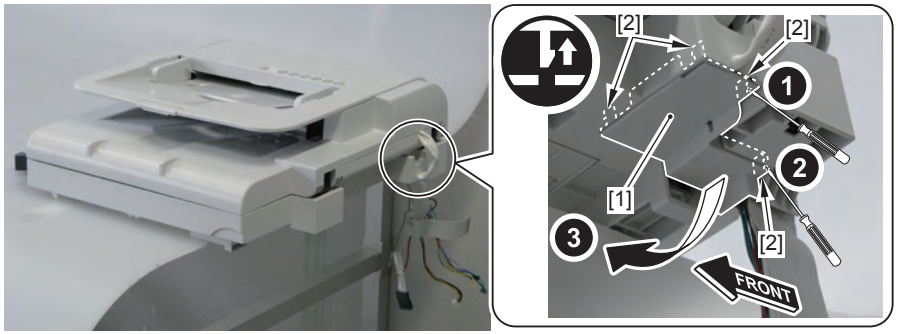
Place the detached DADF unit to avoid damaging the bottom sheet.

1) Remove the connector cover [1].
- 4 claws [2]

Note:
The locations of the 4 connector cover claws [2] are shown here.

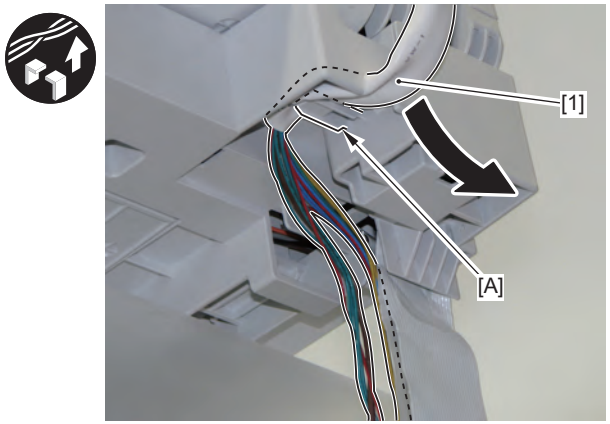


F-4-73



F-4-74

2) Disengage the reader harness [1] from the harness guide [A].

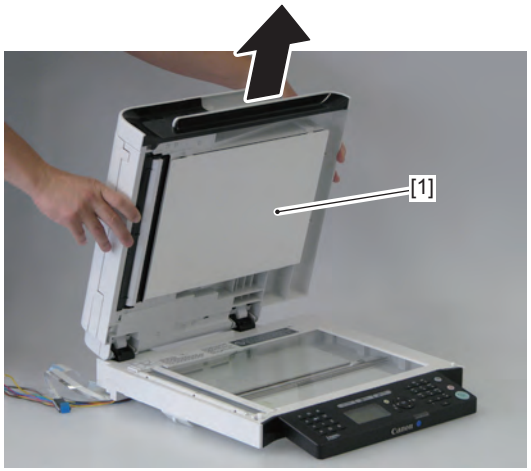


F-4-75

3) Unlock the reader lock [1] in the lower side of the reader unit and open the DADF unit [2].

F-4-76

4) Remove the DADF unit [1].

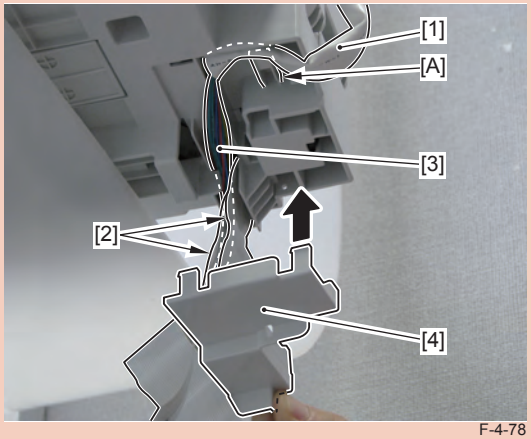


F-4-77

Caution:

When assembling the DADF unit, pass the DADF harness [1] through the harness guide [A].

When assembling the DADF unit, wind the DADF harness [1] and reader harness [3] around the inside of the 2 flat cables [2], and mount the connector cover [4].



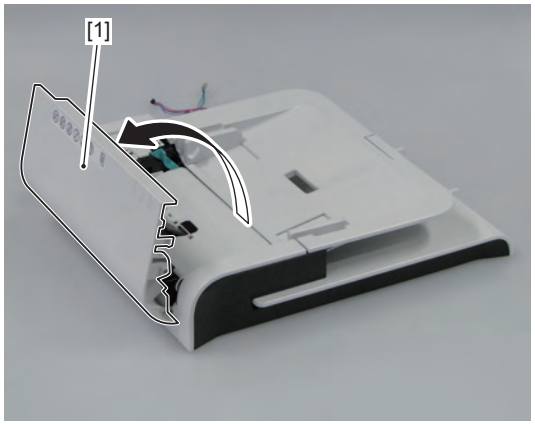
F-4-78

Before Removing the DADF Pickup Unit

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2) Remove the DADF unit and reader unit. (Refer to page 4-40)
3) Remove the DADF unit. (Refer to page 4-42)

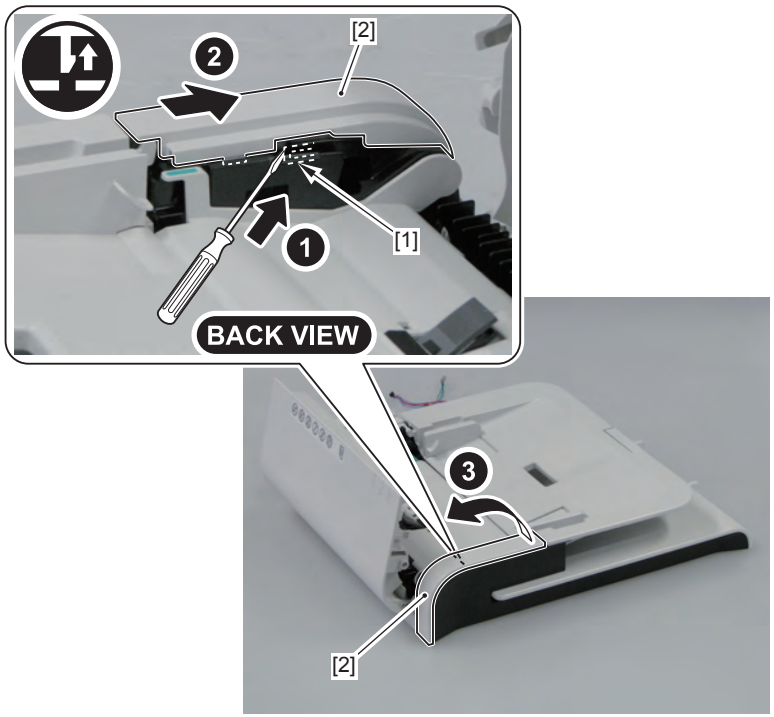
Removing the DADF Pickup Unit

1) Open the DADF upper cover [1].



F-4-79

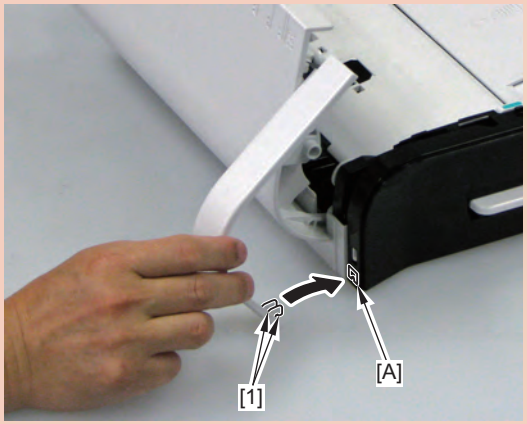
2) Push the claw [1] down to remove the DADF upper front cover [2].



F-4-80

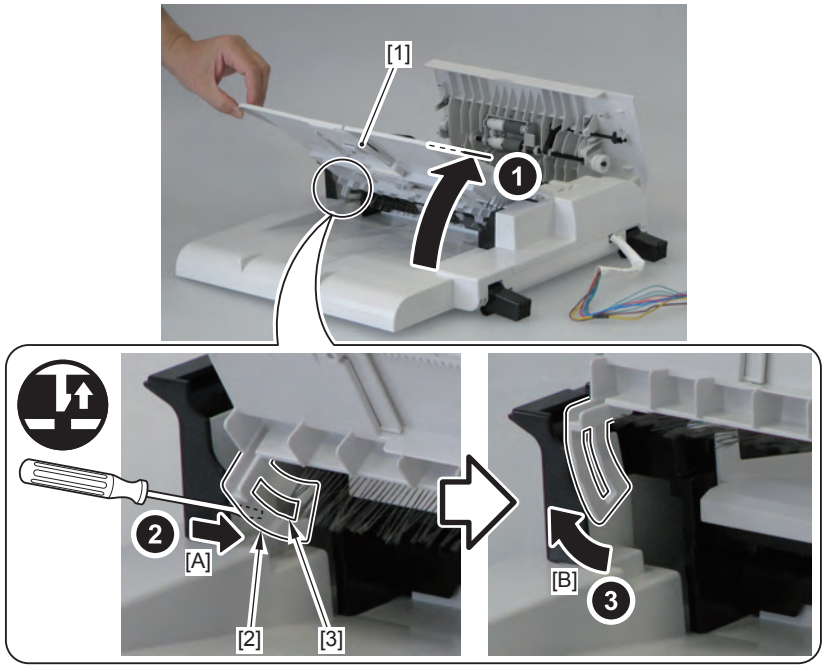
Caution:

When assembling the DADF upper front cover, align the 2 left-side hook [1] to the DADF front cover hole [A] to mount the cover.



F-4-81

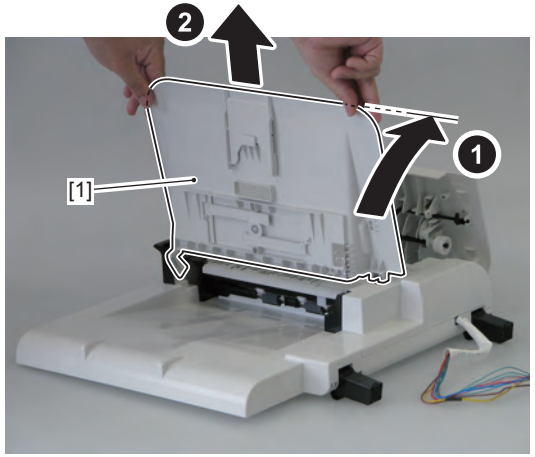
3) Open the DADF tray [1] to the stop position. Then, release the claw [3] by pushing the hook [2] in the direction of the arrow [A] with a flat-blade screwdriver, and move the tray in the direction of the arrow [B].



F-4-82

TONER
www.tonerplus.com.ua

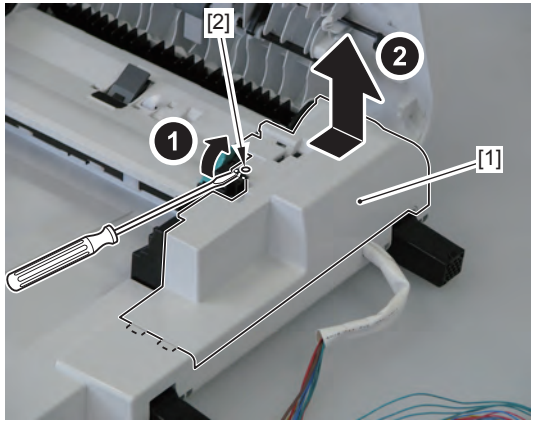
4) Open the DADF tray [1] as far as the position shown in the below diagram and then remove in an upward direction.



F-4-83

5) Remove the DADF upper rear cover [1].

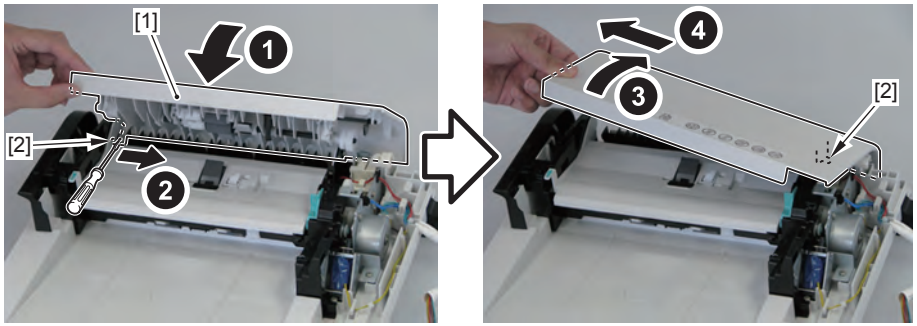
- 1 boss [2]



F-4-84

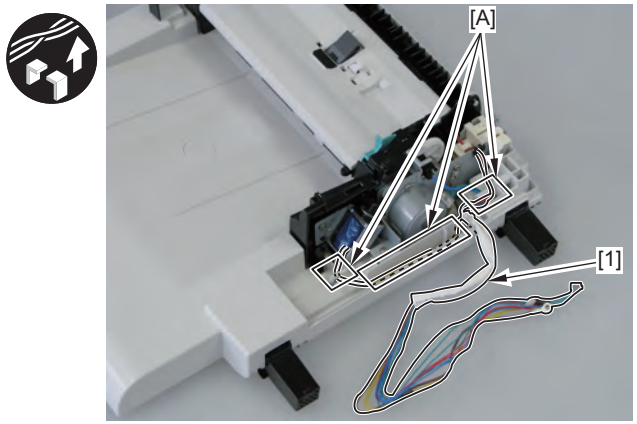
6) Remove the DADF upper cover [1].

- 2 shafts [2]



F-4-85

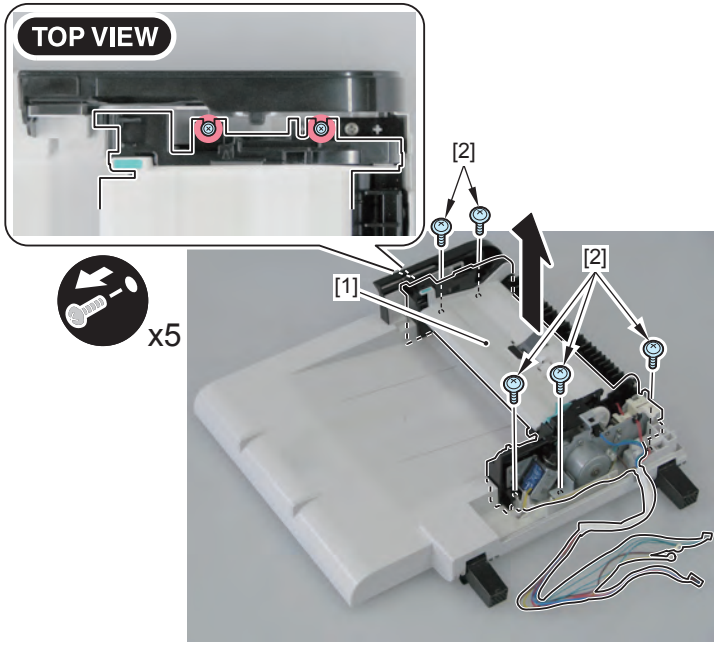
7) Disengage the DADF unit communication cable [1] from the harness guide [A].



F-4-86

8) Remove the DADF unit [1].

- 5 screws [2]



F-4-87

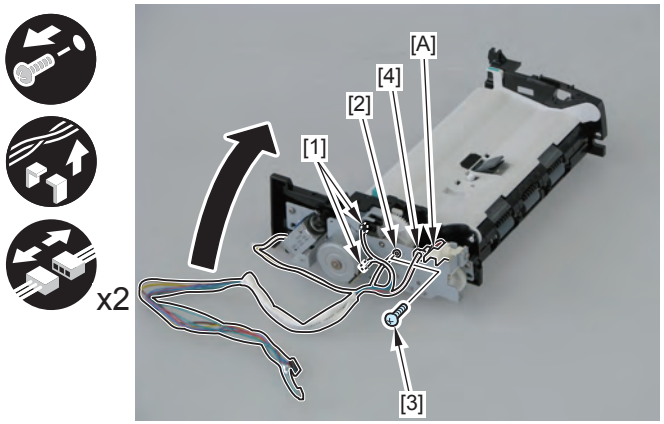
Before Removing the DADF Motor Unit

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2) Remove the DADF unit and reader unit. (Refer to page 4-40)
3) Remove the DADF unit. (Refer to page 4-42)
4) Remove the DADF pickup unit. (Refer to page 4-44)

Removing the DADF Motor Unit

1) Disengage the 2 connectors [1] and the grounding terminal [2] from the DADF communication cable.

- 1 screw [3]
- 1 edge saddle [4]
- 1 harness guide [A]

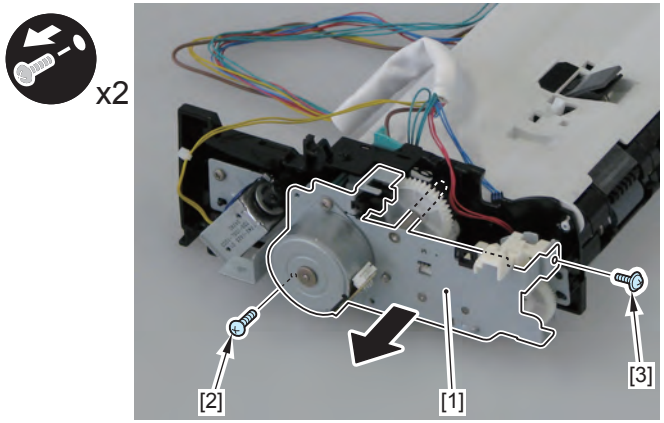


F-4-88

2) Remove the DADF motor unit [1].

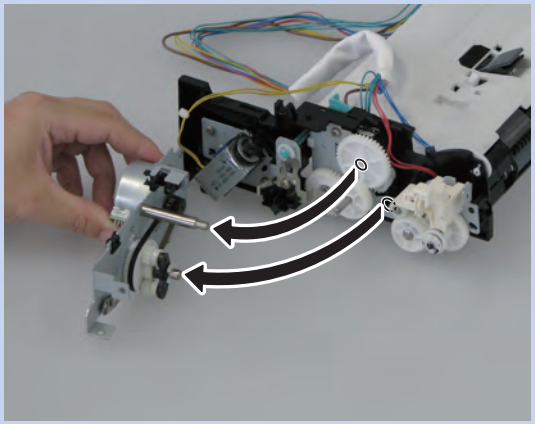
Caution:
Gently remove the DADF motor unit to prevent the gear phase from becoming displaced.

- 1 screw (binding) [2]
- 1 screw (tapping) [3]



F-4-89

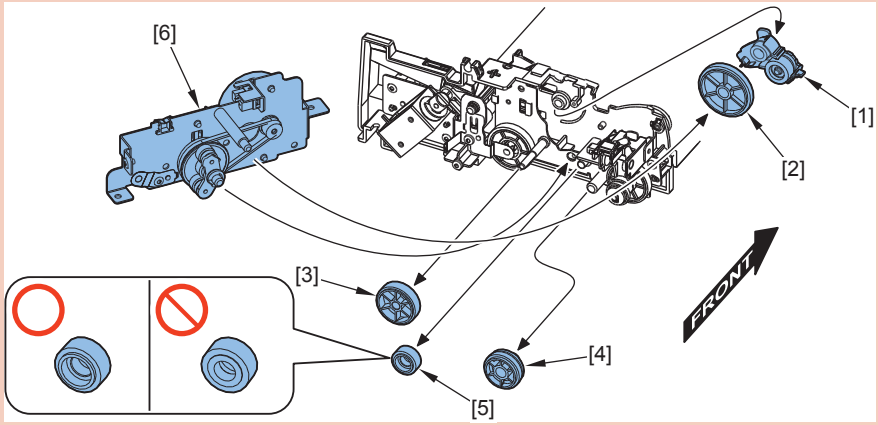
Note:
The state of the detached DADF motor unit is shown below.



F-4-90

Caution:

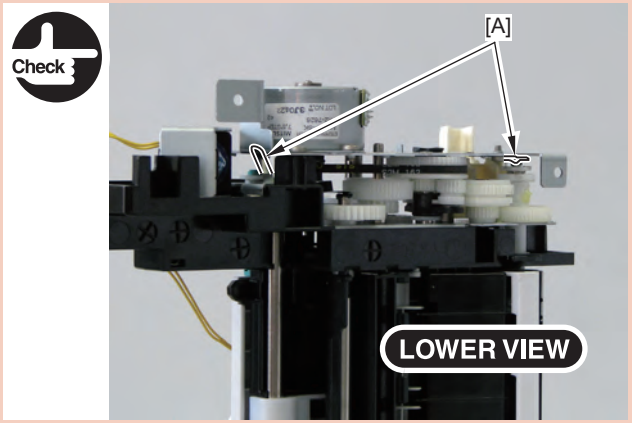
When assembling the DADF motor unit, follow the below steps.



F-4-91

[1] Separation swing arm
[2] Separation gear 21T/42T
[3] Gear 17T/51T
[4] Gear 23T/46T
[5] Gear 20T
[6] DADF motor unit

When assembling the DADF motor unit, ensure that both the DADF pickup unit and DADF motor unit contact points [A] are in contact.



F-4-92

Before Removing the DADF Solenoid Unit

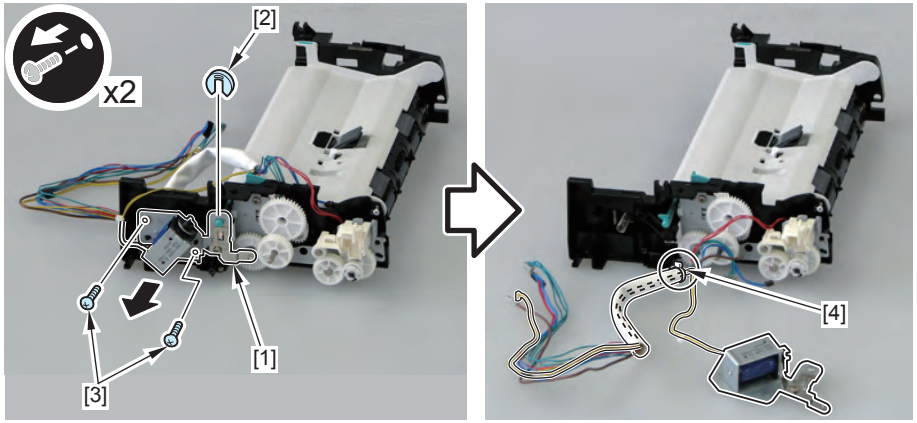
1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2) Remove the DADF unit and reader unit. (Refer to page 4-40)
3) Remove the DADF unit. (Refer to page 4-42)
4) Remove the DADF pickup unit. (Refer to page 4-44)
5) Remove the DADF pickup motor unit. (Refer to page 4-48)

Removing the DADF Solenoid Unit

Caution:

Gently remove the DADF solenoid unit to prevent the gear phase from becoming displaced.

1) Remove the DADF solenoid unit [1].
- 1 e-ring [2]
- 2 screws [3]
- 1 harness band [4]

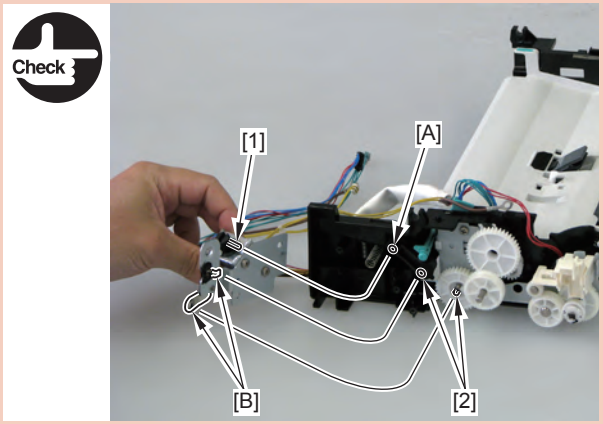


F-4-93

Caution:

When assembling the DADF solenoid unit, be sure to put the solenoid shaft [1] through the hole [A] on the solenoid arm.

When assembling the DADF solenoid unit, ensure that the 2 DADF pickup unit shafts [2] and the 2 DADF solenoid unit contact points [B] are in contact.



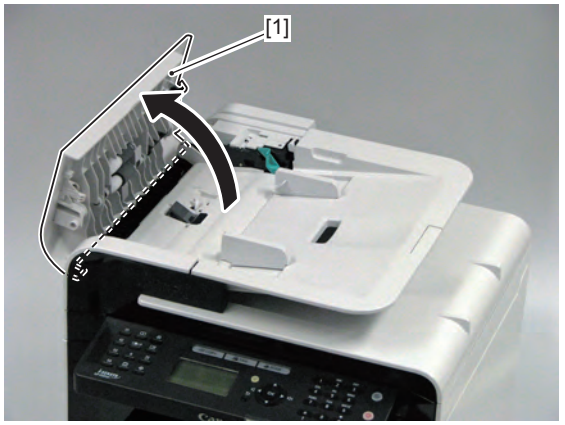
F-4-94

Removing the DADF Pickup Roller Unit

Caution:

Do not touch the surface of the roller.

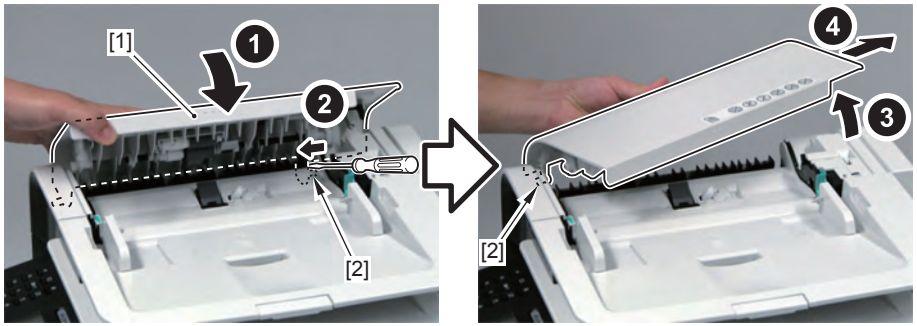
1) Open the DADF upper cover [1].



F-4-95

2) Remove the DADF upper cover [1].

- 2 shafts [2]

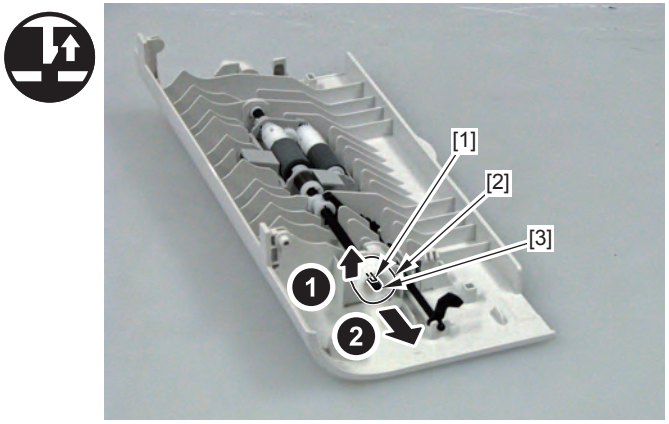


F-4-96

3) Release the claw [1] and remove the gear [2].

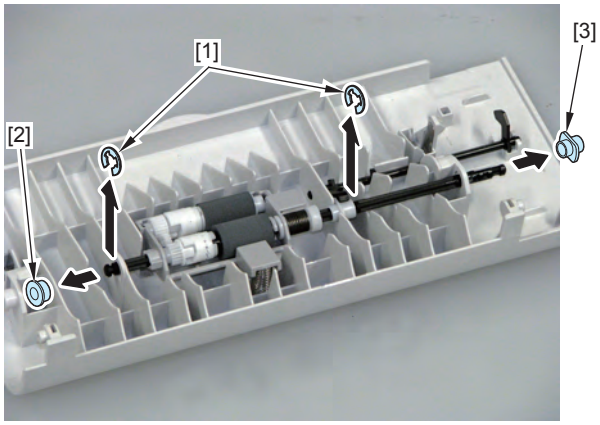
Caution:

When assembling the DADF pickup roller unit, align the gear [2] and the D-cut surface of the DADF pickup roller shaft [3] to mount the unit.



F-4-97

4) Remove the 2 e-rings [1], and 2 shaft supports [2] [3].

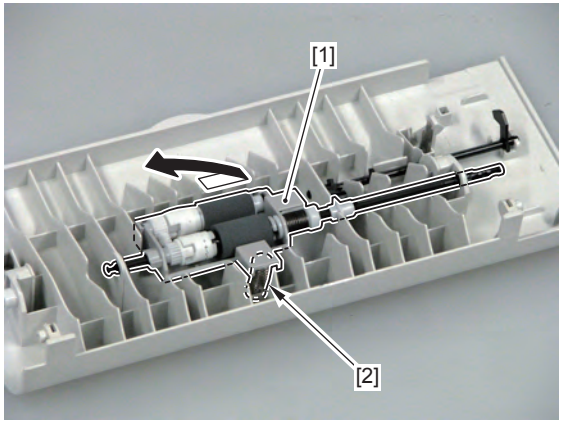


F-4-98

5) Remove the DADF pickup roller unit [1].

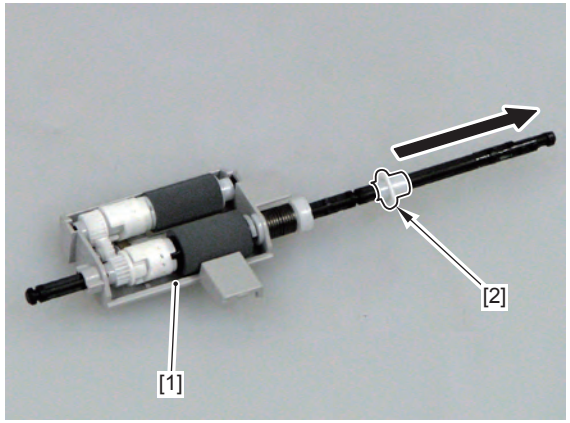
Caution:

When assembling/disassembling the DADF pickup roller unit, take care not to lose the spring [2].



F-4-99

6) Remove the shaft support [2] from the DADF pickup roller unit [1].



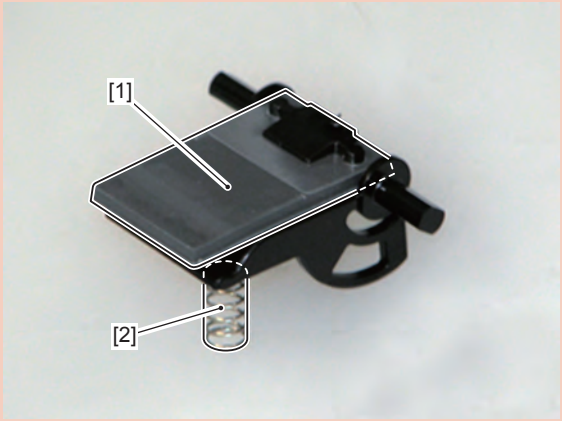
F-4-100

Removing the DADF Separation Pad

Caution:

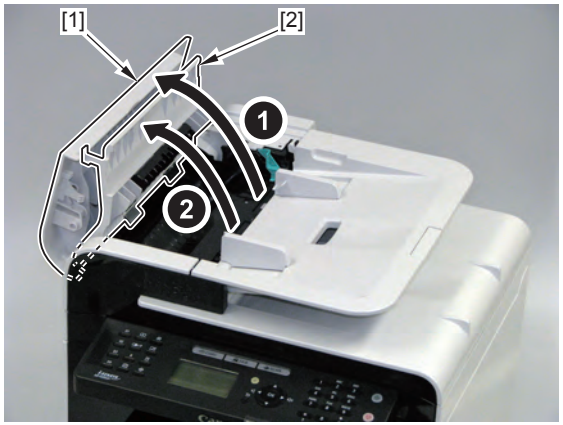
Do not touch the pad surface [1].

When disassembling/assembling the DADF separation pad, take care not to lose the spring [2] on the underside of the pad.



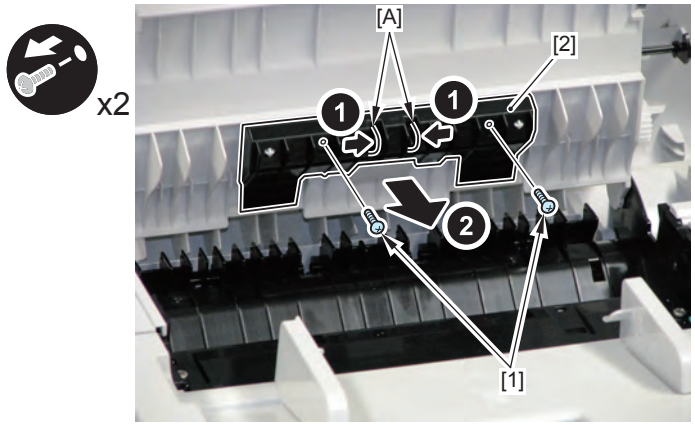
F-4-101

1) Open the DADF cover [1].
2) Open the inner guide [2].



F-4-102

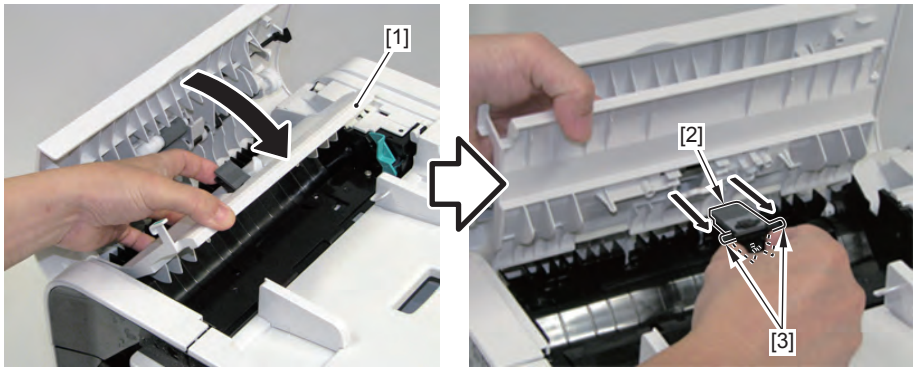
3) Remove the 2 screws [1], hold the 2 protruding parts [A] of the DADF separation pad and then remove the DADF separation pad cover [2].



F-4-103

4) Tilt the inner guide [1] and remove the DADF separation pad [2].

- 2 shafts [3]

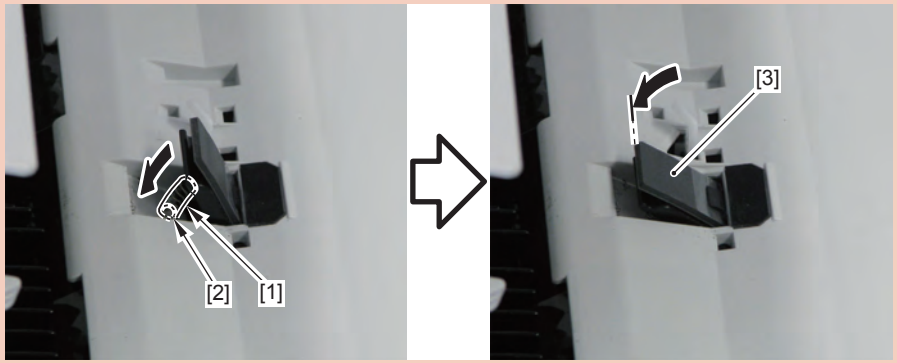


F-4-104

Caution:

When assembling the DADF separation pad, set the separation pad spring [1] onto the boss [2].

Push the DADF Separation Pad [3] until it stops to install it.



F-4-105

Before Removing the SADF Unit and Reader Unit

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)

1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)

Removing the SADF Unit and Reader Unit

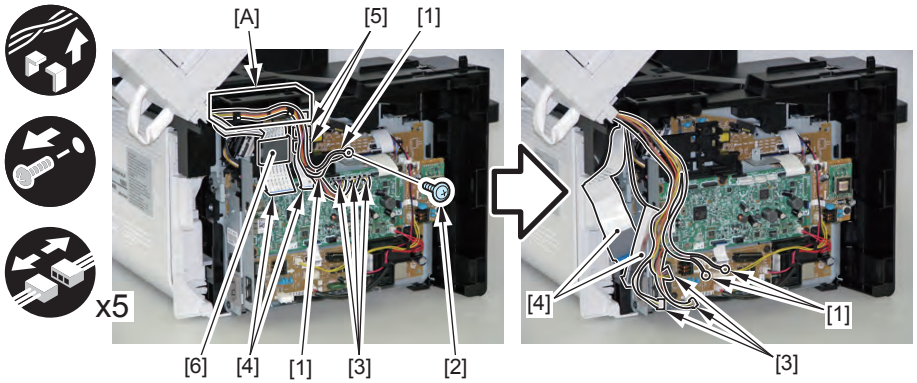
1) Remove the 2 grounding wires [1].

- 1 screw (black TP) [2]

2) Remove the 3 connectors [3] and 2 flat cables [4].

- 2 ferrite cores [5]
- 1 ferrite core [6]

3) Disengage the 2 detached grounding wires [1], 3 harnesses [3] and 2 flat cables [4] from the harness guide [A].



F-4-106

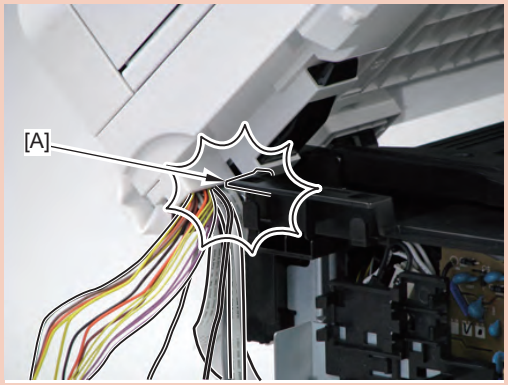
4) Remove the SADF unit and reader unit [1].

- 2 claws [2]

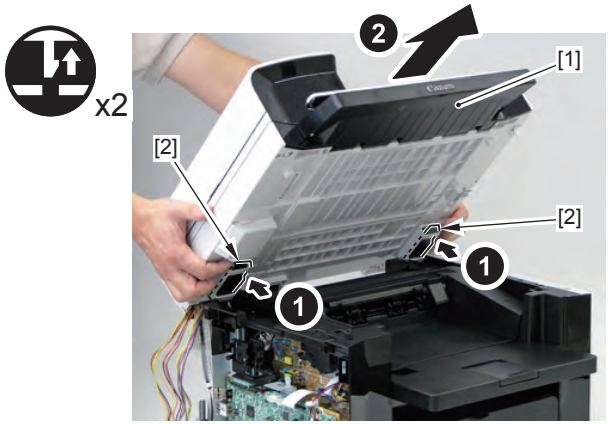
Caution:

When disassembling/assembling the SADF unit and reader unit, be careful not to damage the flat cables and harnesses with [A] part.

When assembling, be sure to put the flat cables and harnesses through the [A] part before installing the SADF unit and reader unit.



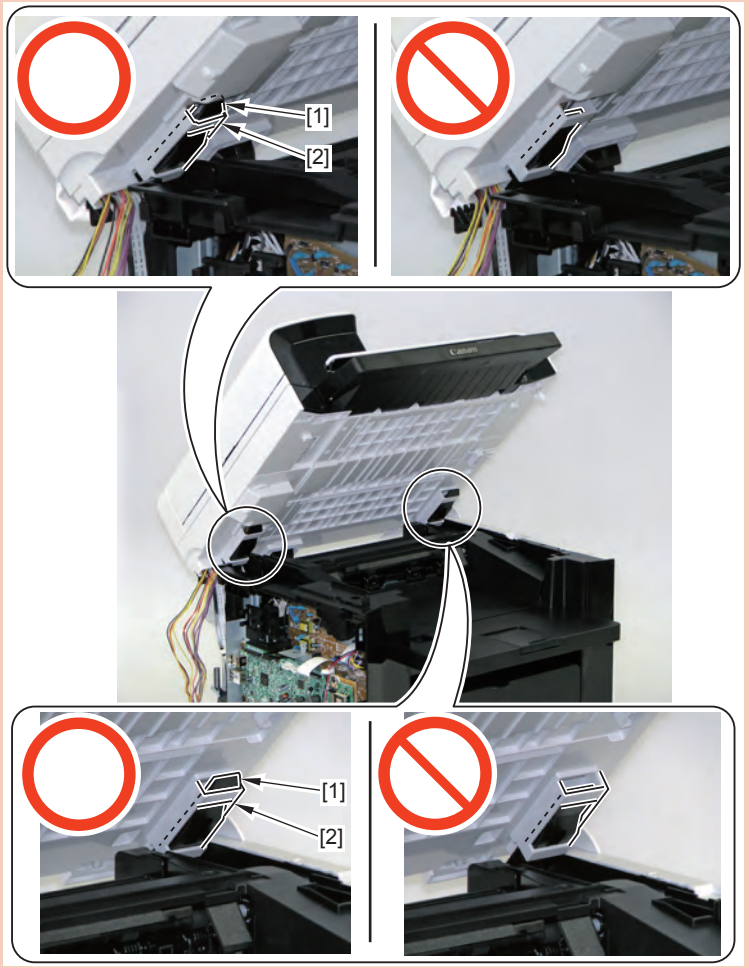
F-4-107



F-4-108

Caution:

When mounting the SADF unit and reader unit, fix the 2 hinge arm claws [1] to the 2 latches [2] of the reader unit.



F-4-109

Before Removing the SADF Unit

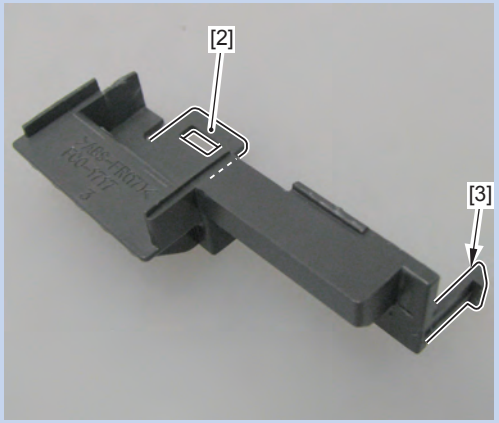
1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2) Remove the SADF unit and reader unit. (Refer to page 4-53)

Removing the SADF Unit

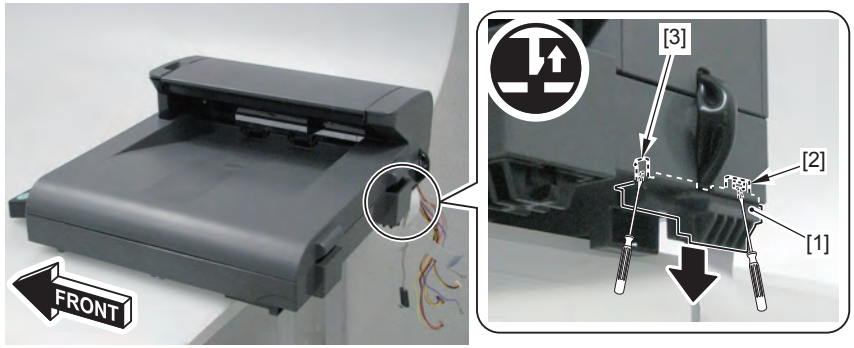
Caution:
Place the detached SADF unit to avoid damaging the bottom sheet.

1) Remove the connector cover [1].
- 1 hook [2]
- 1 claw [3]

Note:
The locations of the connector cover hook [2] and claw [3] are shown here.

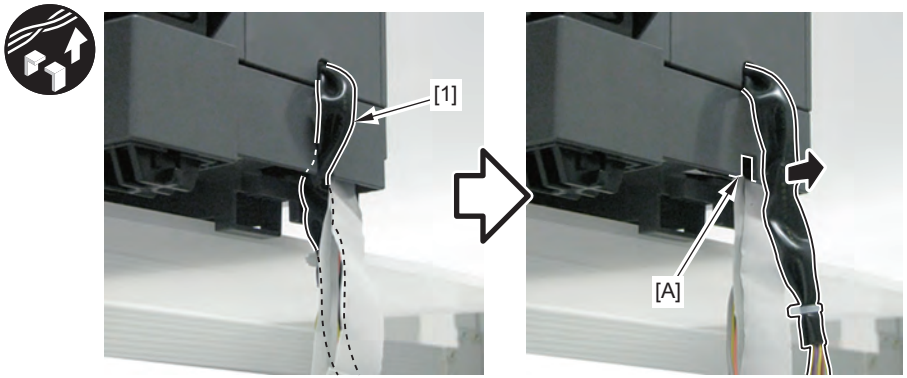


F-4-110



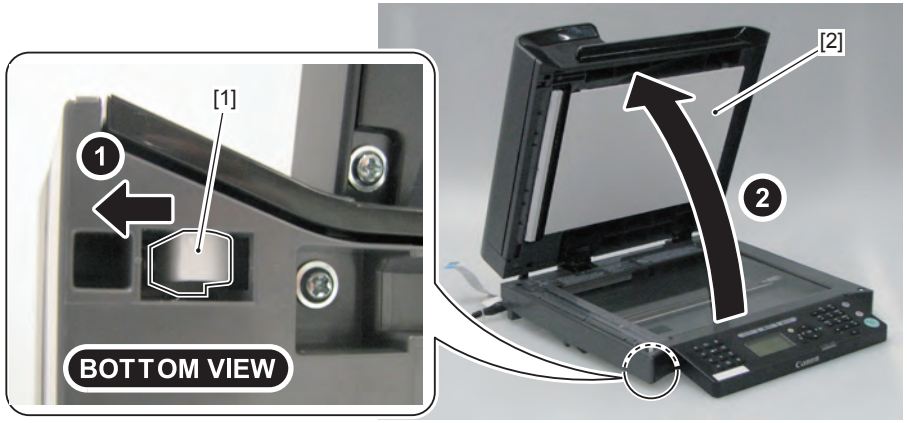
F-4-111

2) Disengage the reader harness [1] from the cut-out [A].



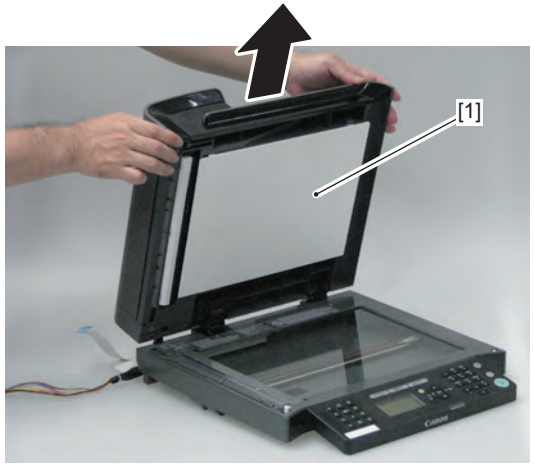
F-4-112

3) Unlock the reader lock [1] in the lower side of the reader unit and open the SADF unit [2].



F-4-113

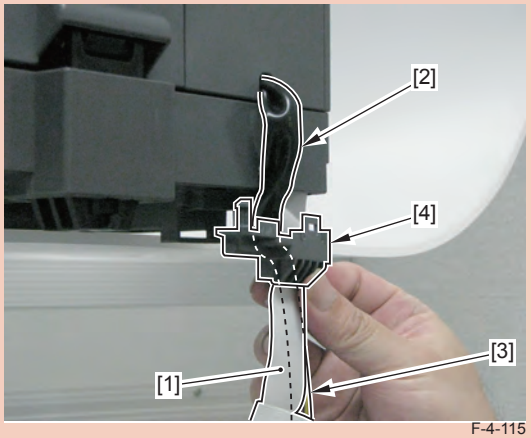
4) Remove the SADF unit [1].



F-4-114

Caution:

When mounting the SADF unit to the reader unit, wind the SADF harness [2] and reader harness [3] around the inside of the 2 flat cables [1], and then mount the connector cover [4].



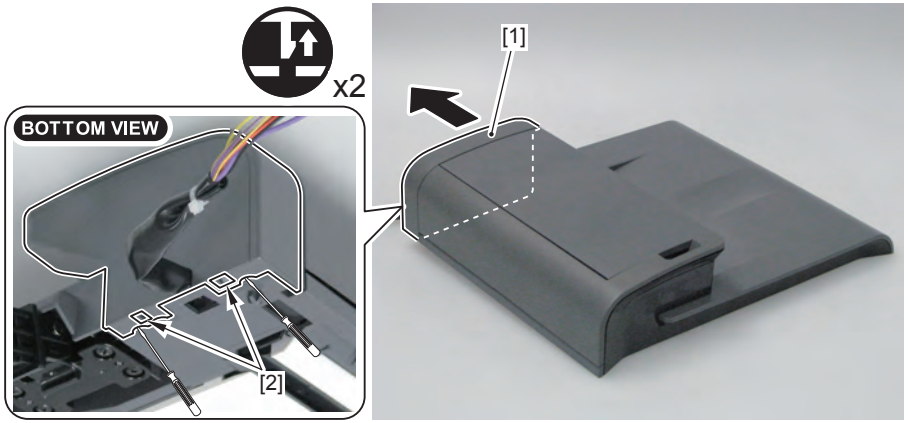
F-4-115

Before Removing the SADF Pickup Unit

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2) Remove the SADF unit and reader unit. (Refer to page 4-53)
3) Remove the SADF unit. (Refer to page 4-55)

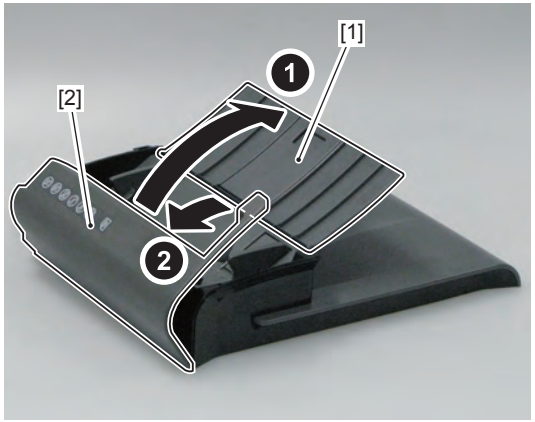
Removing the SADF Pickup Unit

1) Remove the SADF rear cover [1].
- 2 claws [2]



F-4-116

2) Open the SADF pickup tray [1] and SADF upper cover [2].

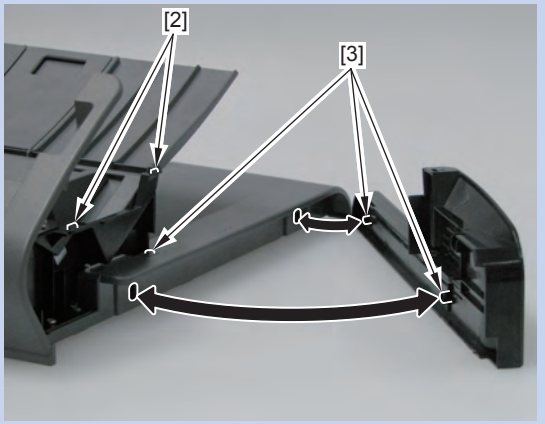


F-4-117

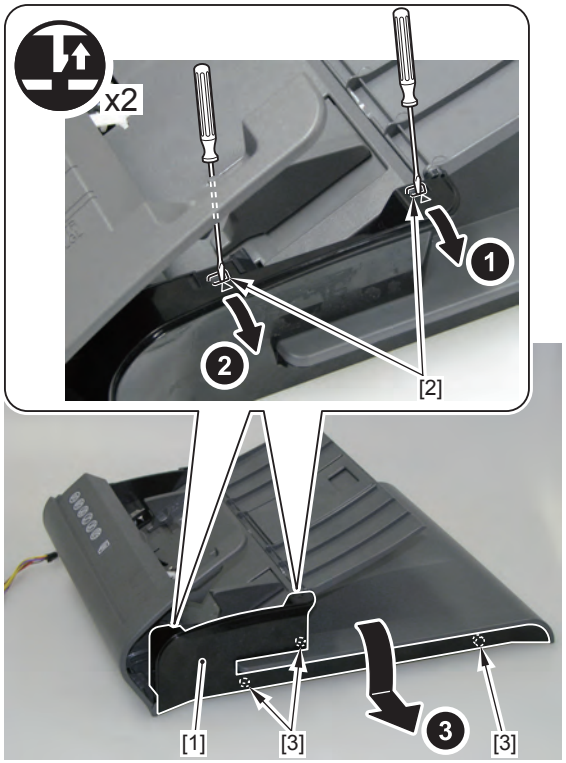
3) Remove the SADF front cover [1].
- 2 claws [2]
- 3 bosses [3]

Caution:
When releasing the 2 claws [2] on the front cover, be careful not to put too much force or it may get damage.

Note:
The locations of the 2 claws [2] and 3 bosses [3] in the SADF front cover are shown here.



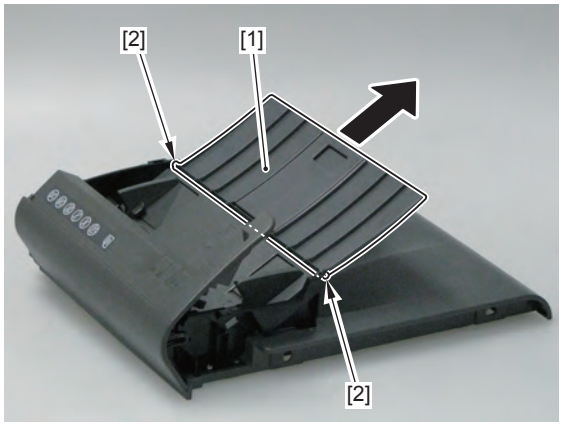
F-4-118



F-4-119

4) Remove the SADF pickup tray [1].

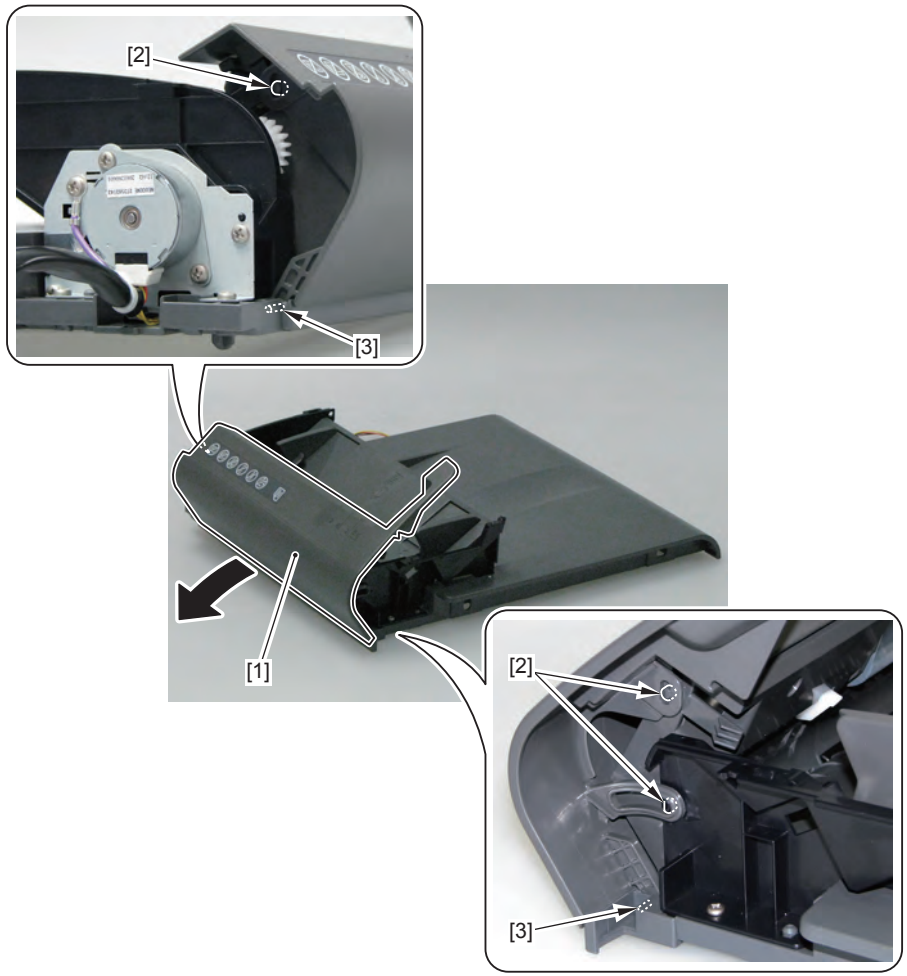
- 2 shafts [2]



F-4-120

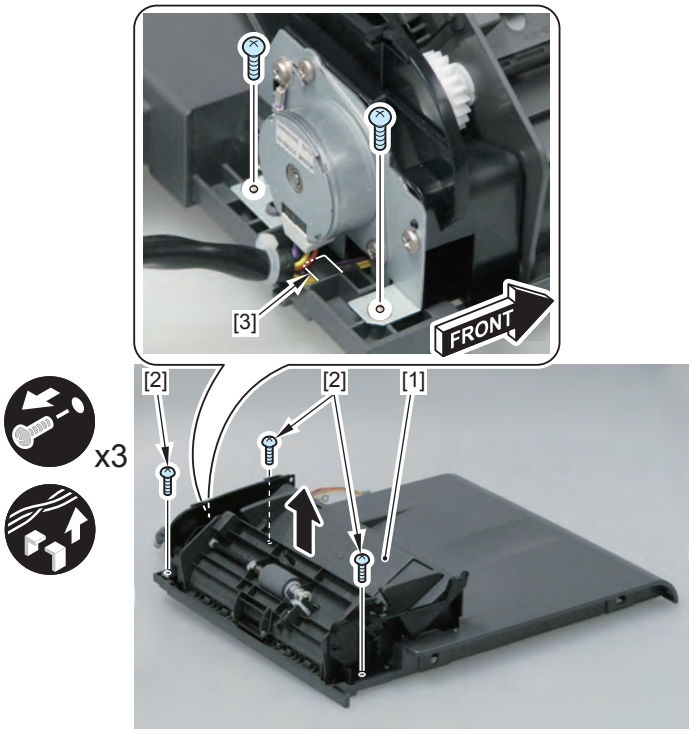
5) Remove the SADF upper cover [1].

- 3 bosses [2]
- 2 shafts [3]



F-4-121

6) Remove the SADF pickup unit [1].
- 3 screws [2]
- 1 harness guide [3]



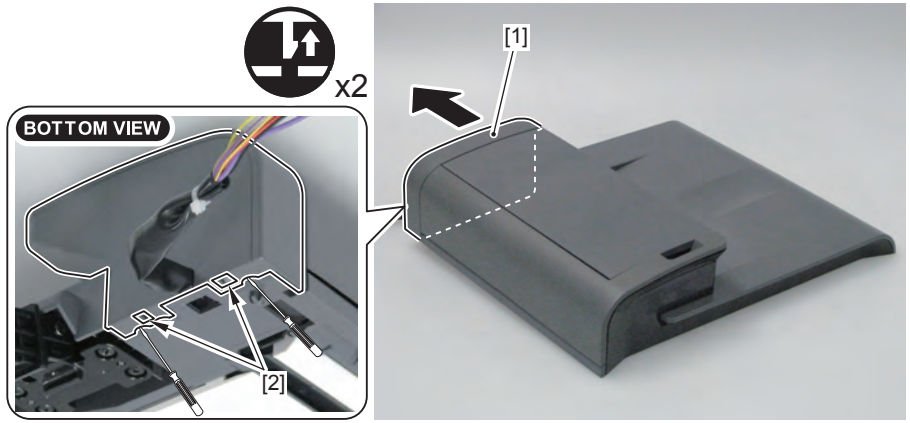
F-4-122

Before Removing the SADF Motor

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2) Remove the SADF unit and reader unit. (Refer to page 4-53)
3) Remove the SADF unit. (Refer to page 4-55)

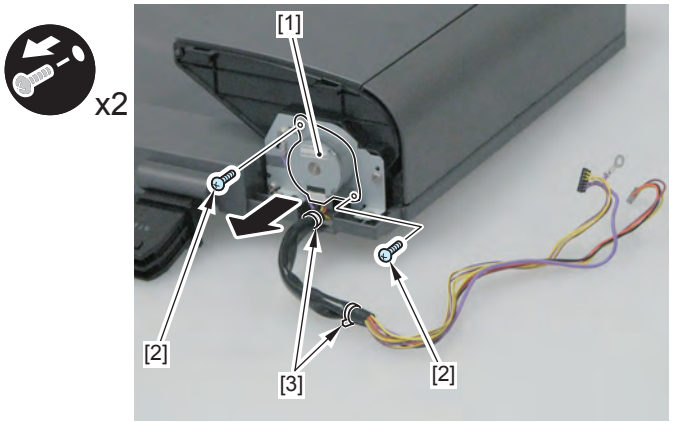
Removing the SADF Motor

1) Remove the SADF rear cover [1].
- 2 claws [2]



F-4-123

2) Remove the SADF motor [1].
- 2 screws [2]
- 2 harness bands [3]

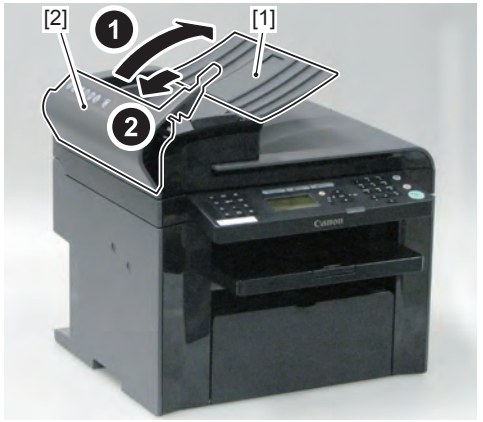


F-4-124

Removing the SADF Pickup Roller

Caution:
Do not touch the surface of the roller.

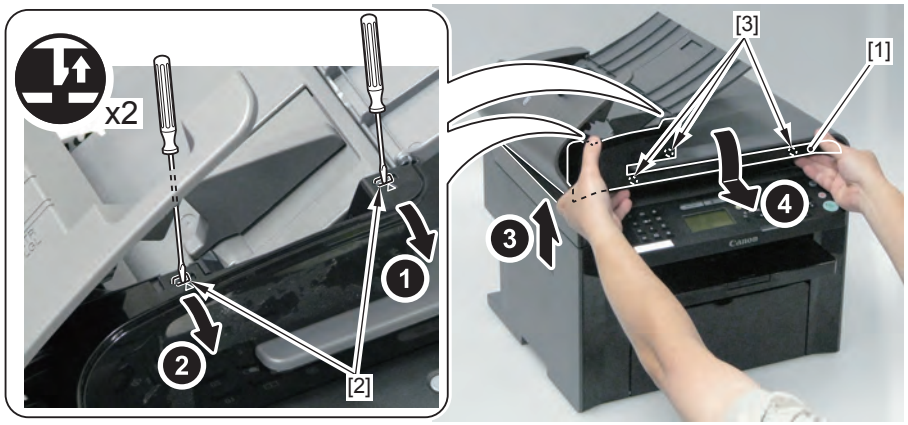
1) Open the SADF pickup tray [1] and SADF upper cover [2].



F-4-125

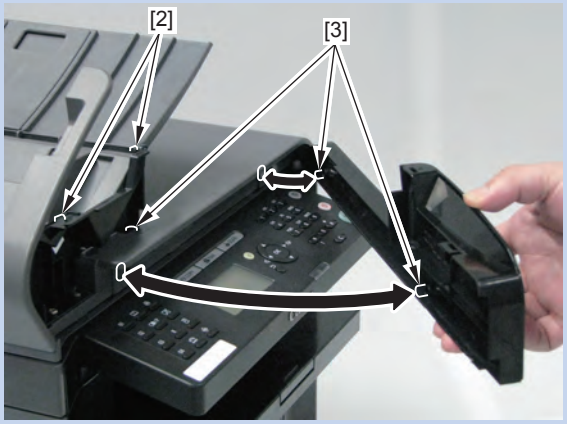
2) Lift the SADF unit and remove the SADF front cover [1].
- 2 claws [2]
- 3 bosses [3]

Caution:
When releasing the 2 claws [2] on the front cover, be careful not to put too much force or it may get damage.



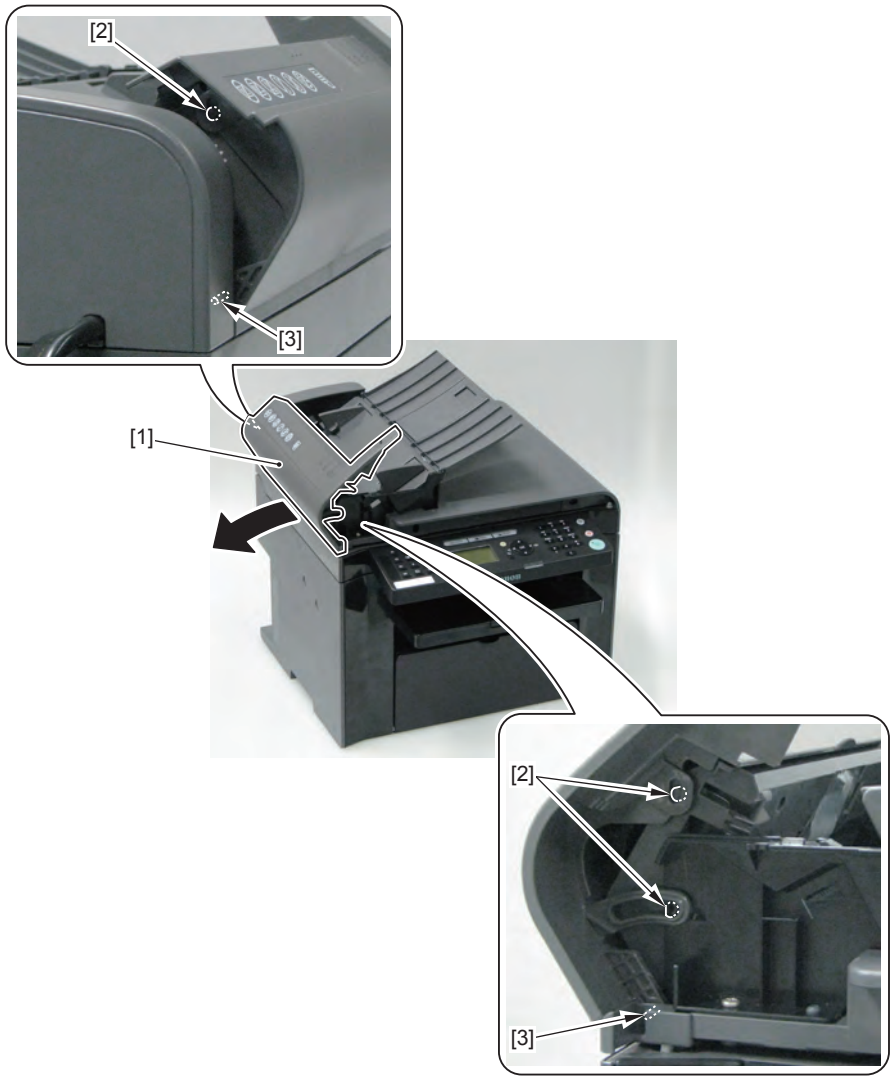
F-4-126

Note:
The locations of the 2 claws [2] and 3 bosses [3] in the SADF front cover are shown here.



F-4-127

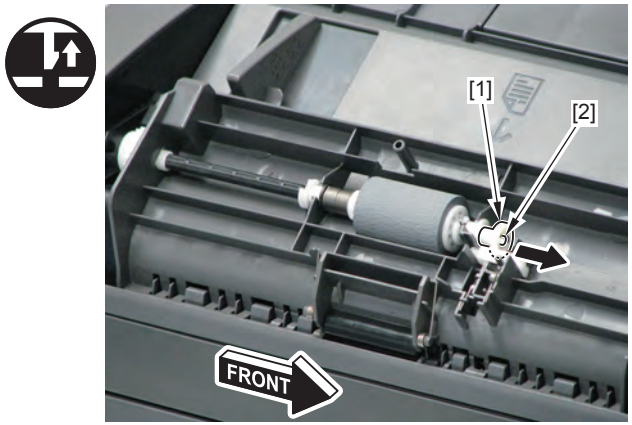
3) Remove the SADF upper cover [1].
- 3 bosses [2]
- 2 shafts [3]



F-4-128

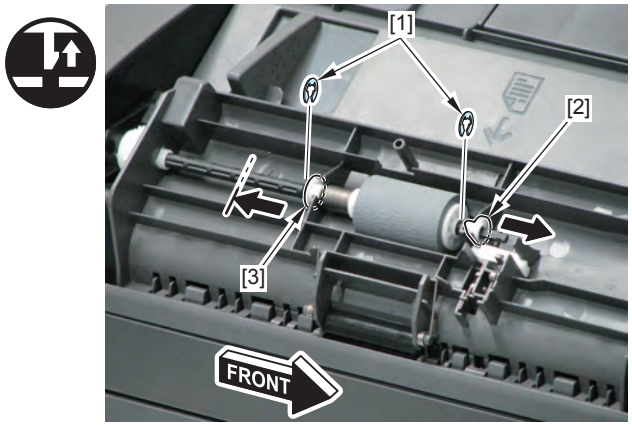
4) Remove the gear [1].

- 1 claw [2]



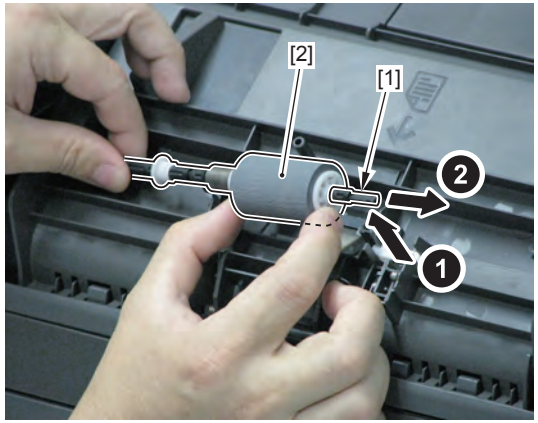
F-4-129

5) Remove the 2 e-rings [1] and the bushing [2], and then move the bushing [3].



F-4-130

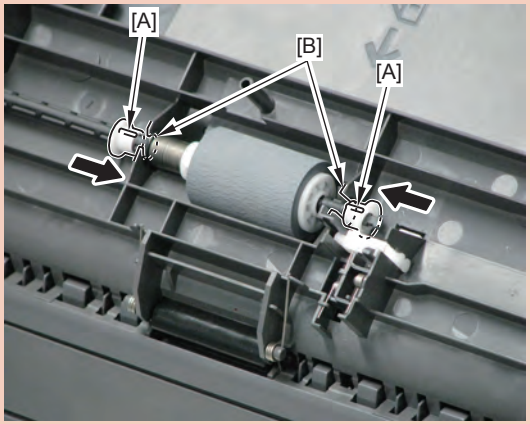
6) Lift the SADF pickup roller shaft [1] and remove the SADF pickup roller [2].



F-4-131

Caution:

Align the protruding part [A] of the bushing to the cut-out [B] of the shaft support to mount the bushing.



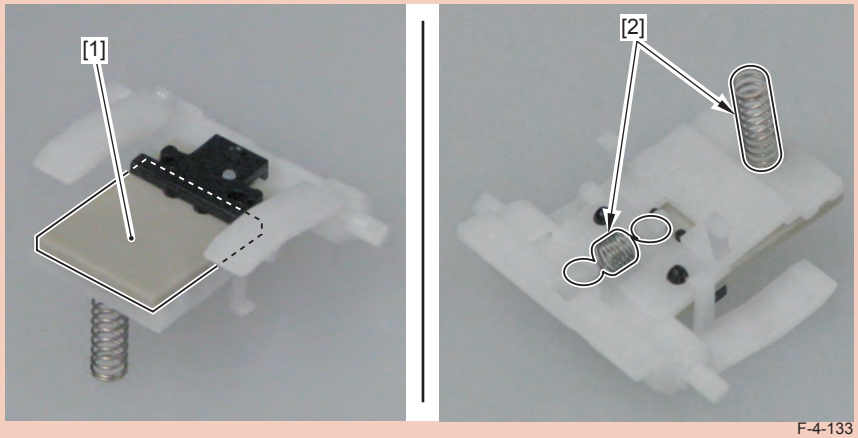
F-4-132

Removing the SADF Separation Pad

Caution:

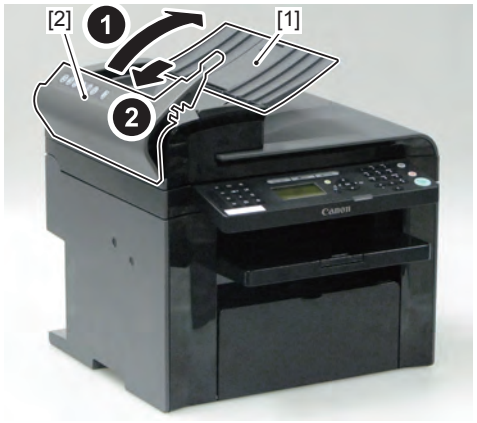
Do not touch the pad surface [1].

When assembling/disassembling the SADF separation pad, take care not to lose the 2 springs [2] on the underside of the pad.



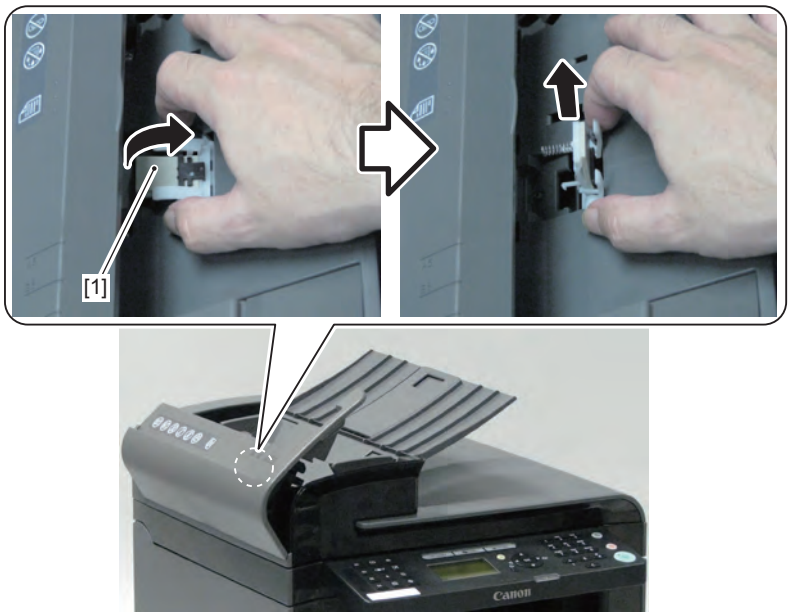
F-4-133

1) Open the SADF pickup tray [1] and SADF upper cover [2].



F-4-134

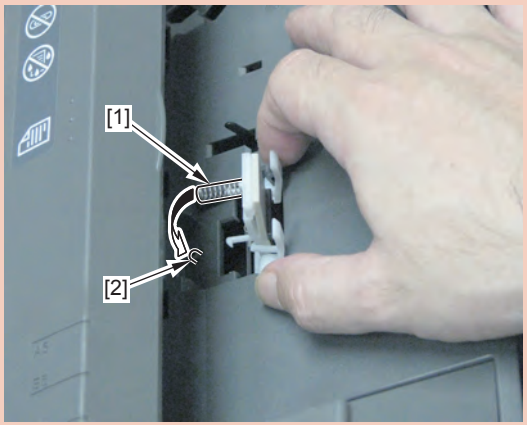
2) Remove the SADF separation pad [1].



F-4-135

Caution:

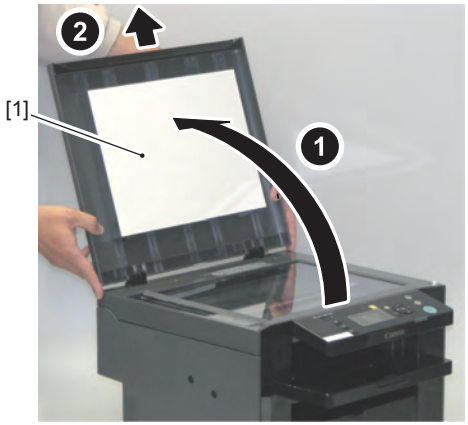
When assembling the separation pad, set the separation pad spring [1] onto the boss [2].



F-4-136

Removing the Copyboard Cover

1) Remove the copyboard cover [1].



F-4-137

Before Removing the Copyboard Cover and Reader Unit

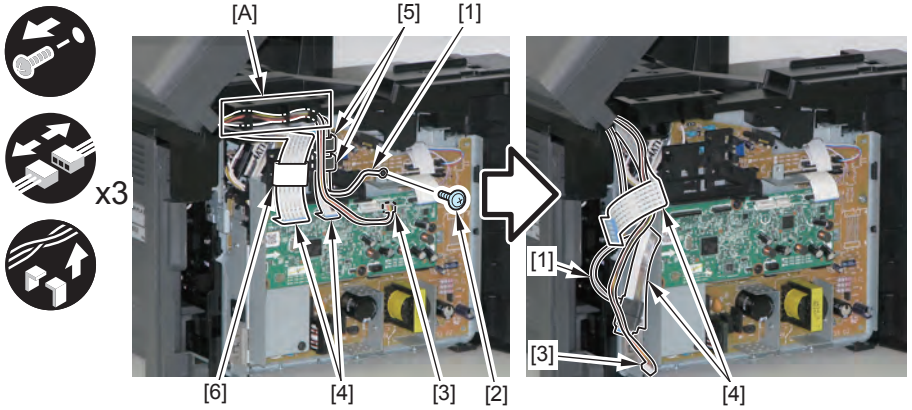
1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)

Removing the Copyboard Cover and Reader Unit

1) Remove the grounding wire [1].
- 1 screw (black TP) [2]

2) Remove the connector [3] and 2 flat cables [4].
- 2 ferrite cores (small) [5]
- 1 ferrite core (large) [6]

3) Disengage the disconnected grounding wire [1], harness [3] and 2 flat cables [4] from the harness guide [A].



F-4-138

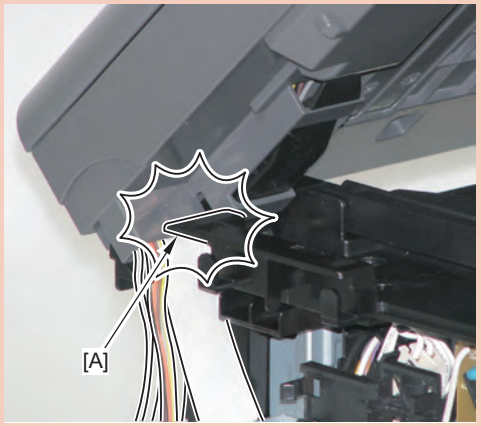
4) Remove the copyboard cover and reader unit [1].

- 2 claws [2]

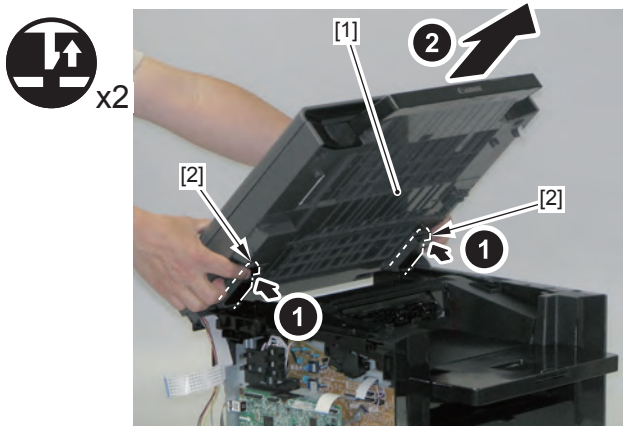
Caution:

When disassembling/assembling the copyboard cover and reader unit, be careful not to damage the flat cables and harnesses with [A] part.

When assembling, be sure to put the flat cables and harnesses through the [A] part before installing the copyboard cover unit and reader unit.



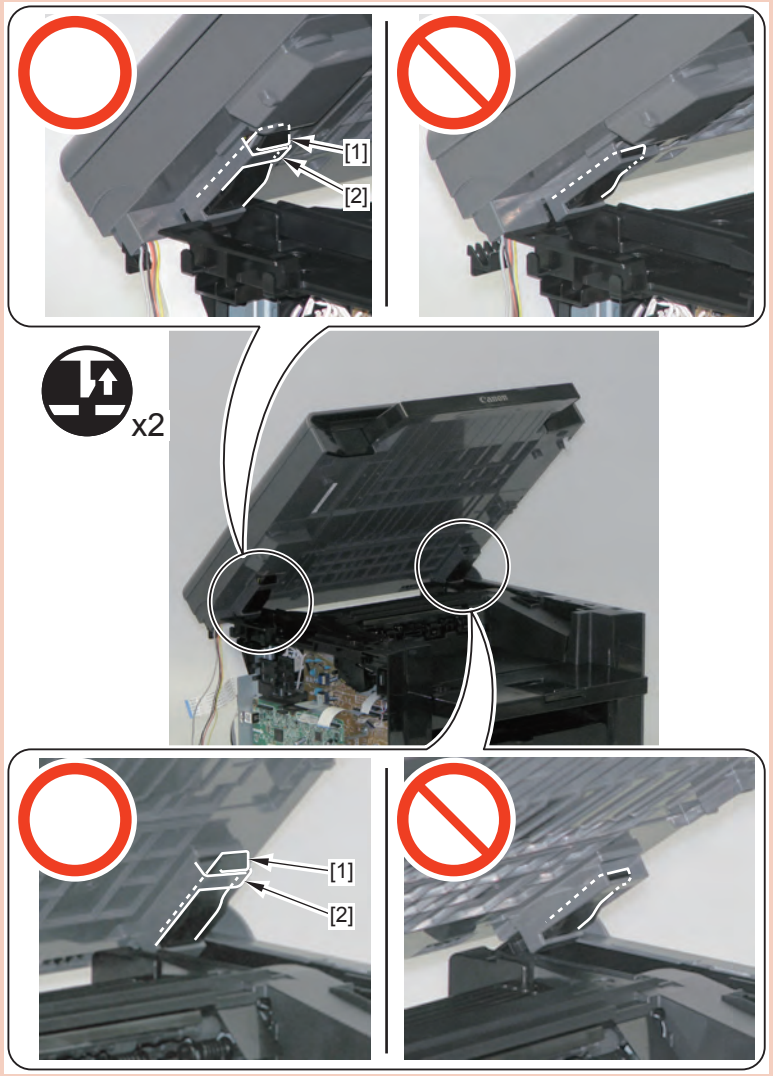
F-4-139



F-4-140

Caution:

When mounting the reader unit and copyboard cover, fix the 2 hinge arm claws [1] to the 2 latches [2] of the reader unit.



F-4-141

Before Removing the Copyboard Glass Models with copyboard

1) Remove the copyboard cover. (Refer to page 4-64)
2) Remove the control panel unit. (models without FAX) (Refer to page 4-79)

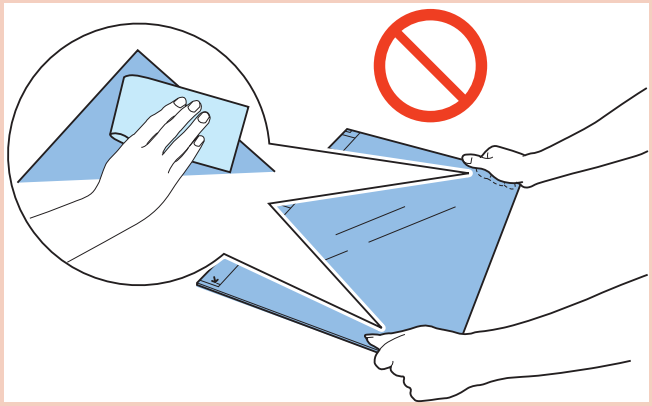
Removing the Copyboard Glass Models with copyboard

Caution:

Place the detached copyboard glass cover on a cloth etc. to avoid damaging the bottom sheet.

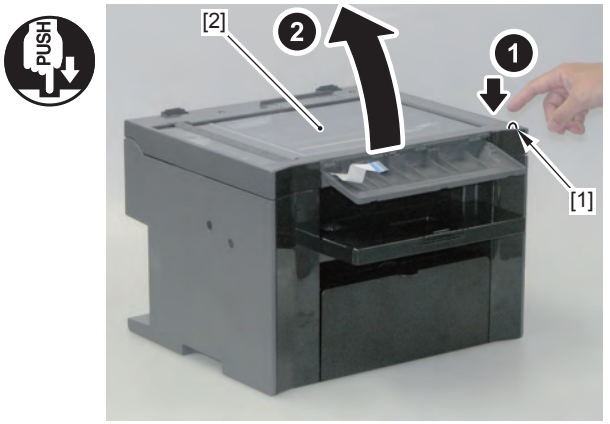
When removing the copyboard glass, take care not to touch the glass surface.

If the surface becomes dirty, clean it with lens-cleaning paper.



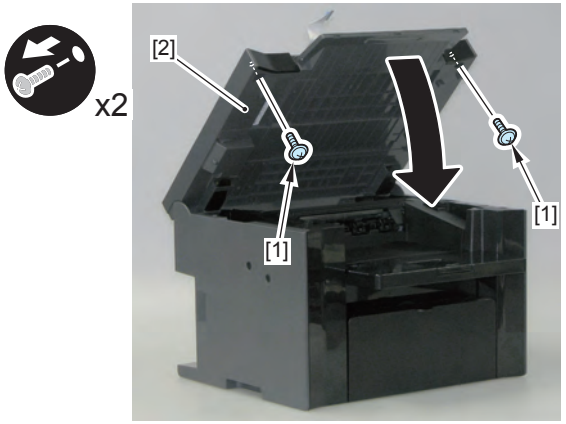
F-4-142

1) Press the unlock button [1] and open the reader unit [2].



F-4-143

2) Remove the 2 screws [1] and close the reader unit [2].

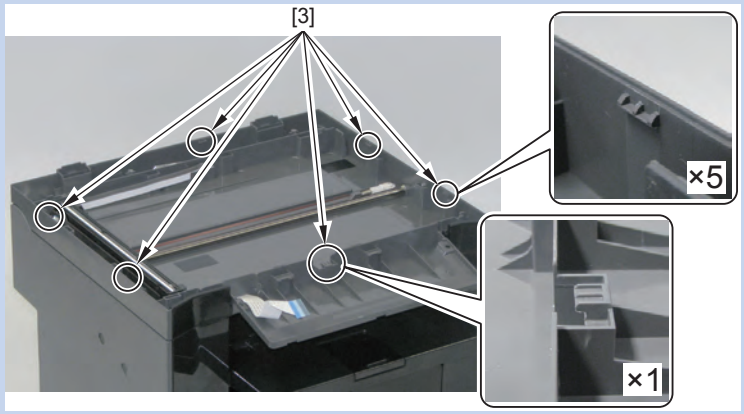


F-4-144

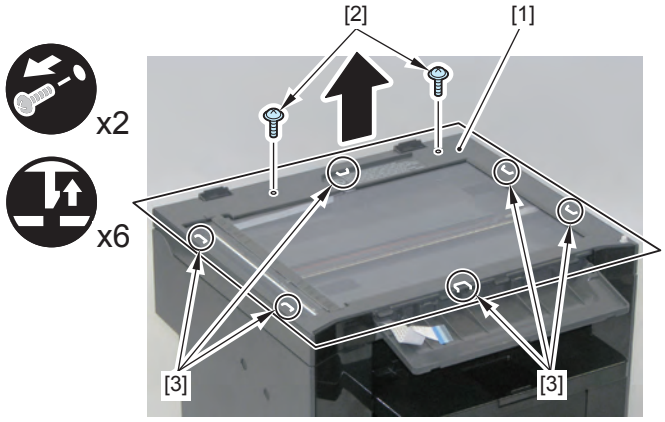
3) Remove the reader upper cover [1].

- 2 screws [2]
- 6 claws [3]

Note:
The locations of the 6 claws in the reader upper cover [3] are shown here.



F-4-145



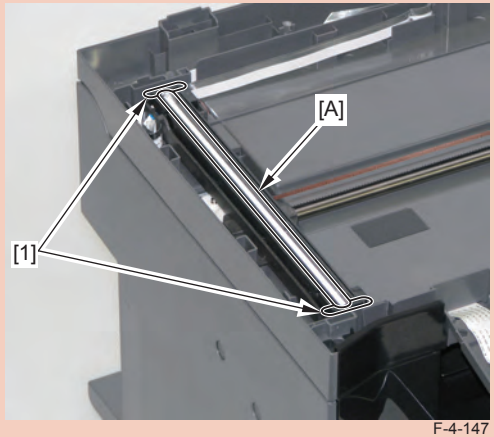
F-4-146

4) Remove the copyboard glass [1].

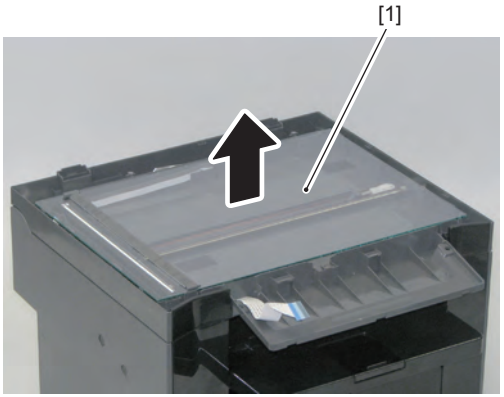
Caution:

When assembling/disassembling the copyboard glass, take care not to lose the 2 CIS unit spacers [1].

When assembling/disassembling the copyboard glass, do not touch the copy reading area [A] of the CIS unit.



F-4-147



F-4-148

Before Removing the Copyboard Glass Models with DADF/Models with SADF

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
3-1) Remove the DADF unit. (models with DADF) (Refer to page 4-42)
3-2) Remove the SADF unit. (models with SADF) (Refer to page 4-55)
4-1) Remove the control panel unit. (models with FAX) (Refer to page 4-79)
4-2) Remove the control panel unit. (models without FAX) (Refer to page 4-79)

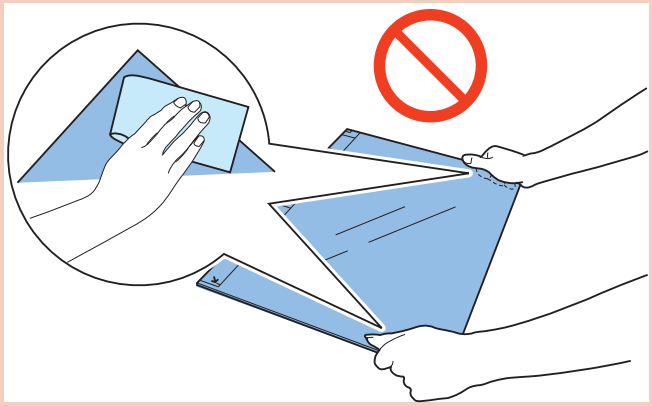
Removing the Copyboard Glass Models with DADF/Models with SADF

Caution:

Place the detached copyboard glass cover on a cloth etc. to avoid damaging the bottom sheet.

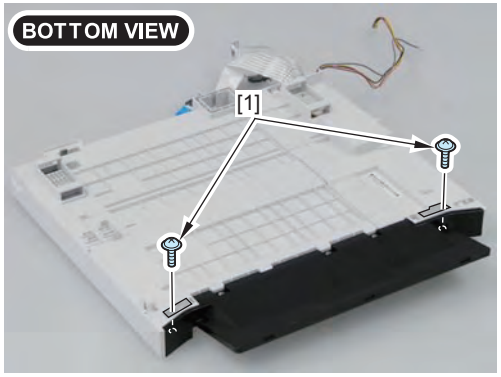
When removing the copyboard glass, take care not to touch the glass surface.

If the surface becomes dirty, clean it with lens-cleaning paper.



F-4-149

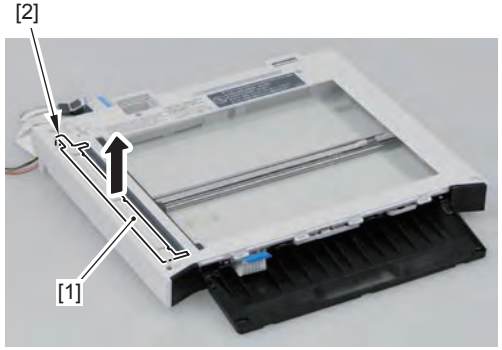
1) Remove the 2 screws [1].



F-4-150

2) Remove the copy guide holder [1].

- 1 claw [2]

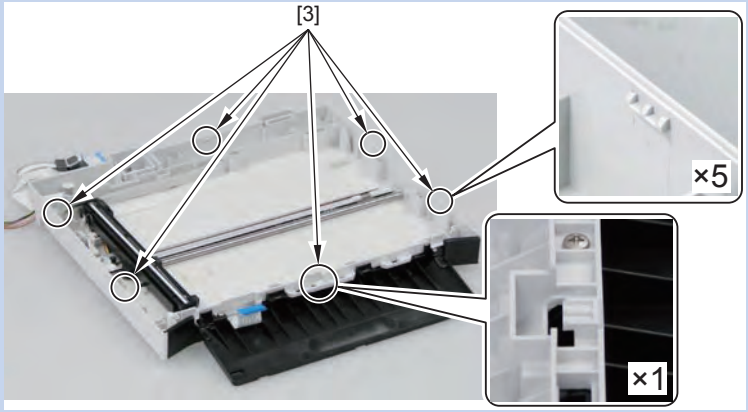


F-4-151

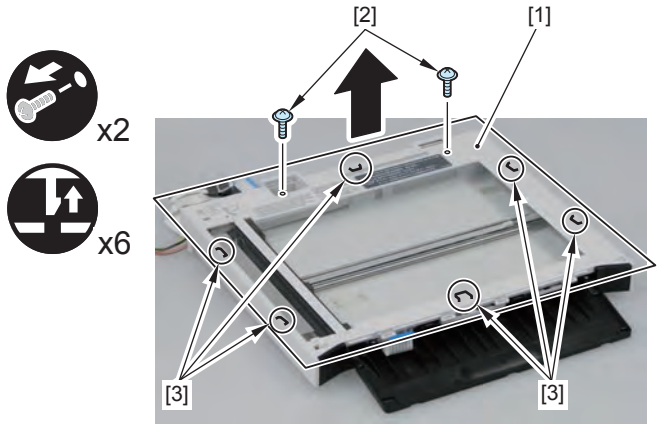
3) Remove the reader upper cover [1].

- 2 screws [2]
- 6 claws [3]

Note:
The locations of the 6 claws [3] in the reader upper cover are shown here.



F-4-152



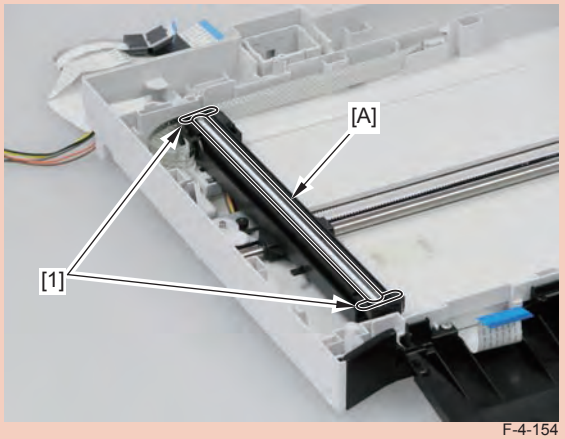
F-4-153

4) Remove the copyboard glass [1].

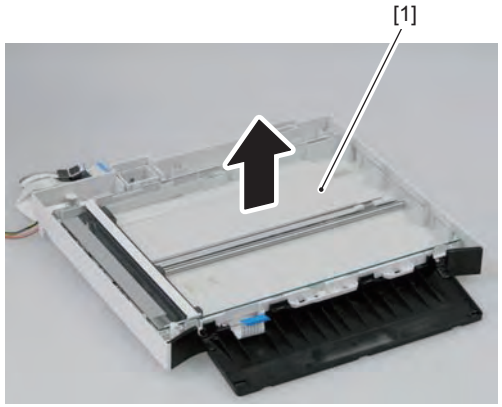
Caution:

When assembling/disassembling the copyboard glass, take care not to lose the 2 CIS unit spacers [1].

When assembling/disassembling the copyboard glass, do not touch the copy reading area [A] of the CIS unit.



F-4-154



F-4-155

Before Removing the Flatbed Motor Unit

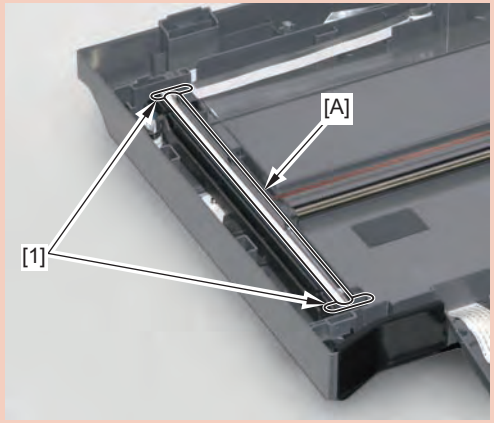
1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3-1) Remove the DADF unit. (models with DADF) (Refer to page 4-42)
3-2) Remove the SADF unit. (models with SADF) (Refer to page 4-55)
3-3) Remove the copyboard cover. (models with copyboard) (Refer to page 4-64)
4-1) Remove the control panel unit. (models with FAX) (Refer to page 4-79)
4-2) Remove the control panel unit. (models without FAX) (Refer to page 4-79)
5-1) Remove the copyboard glass. (models with copyboard) (Refer to page 4-66)
5-2) Remove the copyboard glass. (models with DADF/models with SADF) (Refer to page 4-68)

Removing the Flatbed Motor Unit

Caution:

When assembling/disassembling the flatbed motor unit, take care not to lose the 2 CIS unit spacers [1].

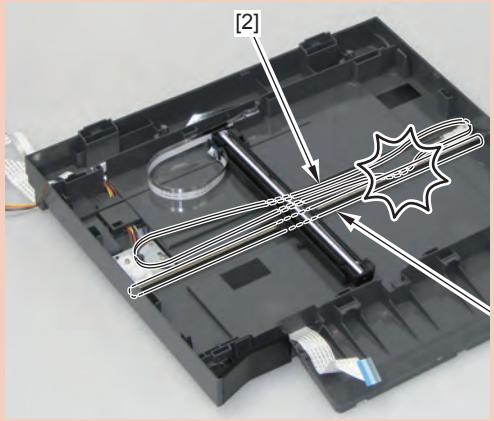
When assembling/disassembling the flatbed motor unit, do not touch the copy reading area [A] of the CIS unit.



F-4-156

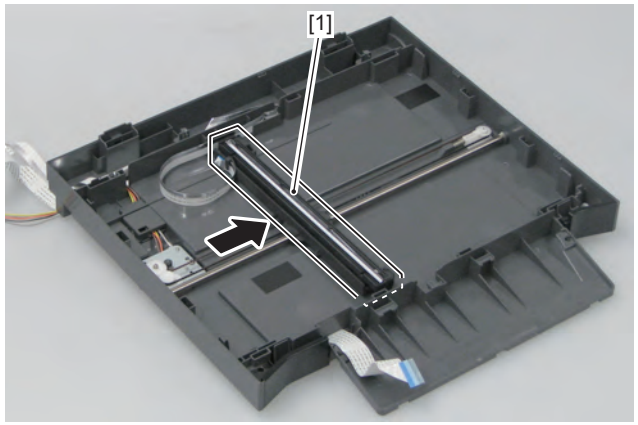
Caution:

Grease is applide on the shaft [1] of the Contact Sensor, so be careful not to let the belt [2] come in contact with the shaft.



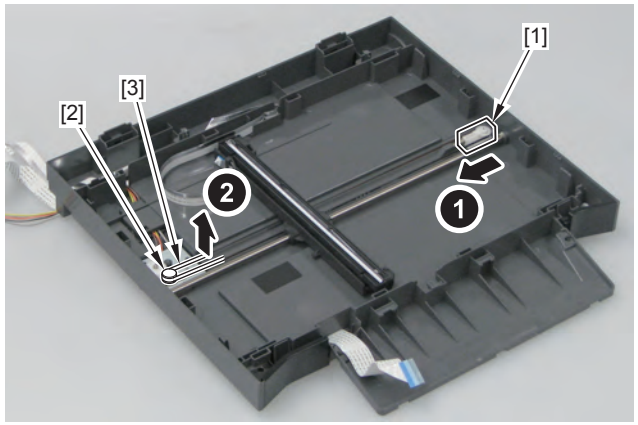
F-4-157

1) Move the CIS unit [1].



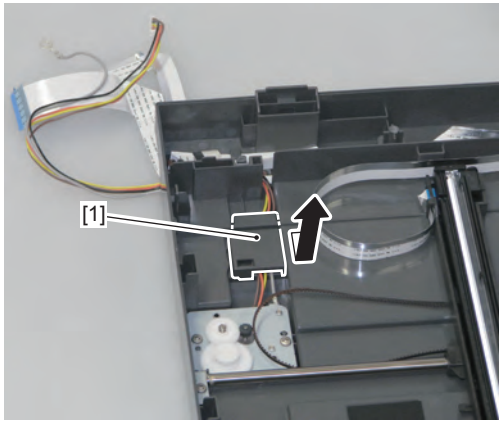
F-4-158

2) Move the gear [1], and remove the belt [3] from the gear [2].



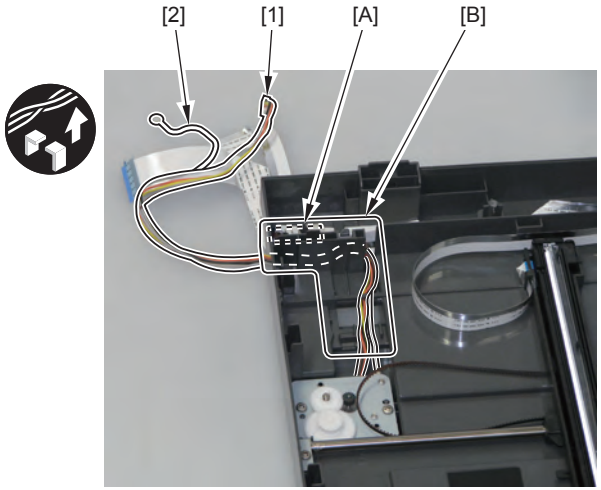
F-4-159

3) Remove the guide cover [1].



F-4-160

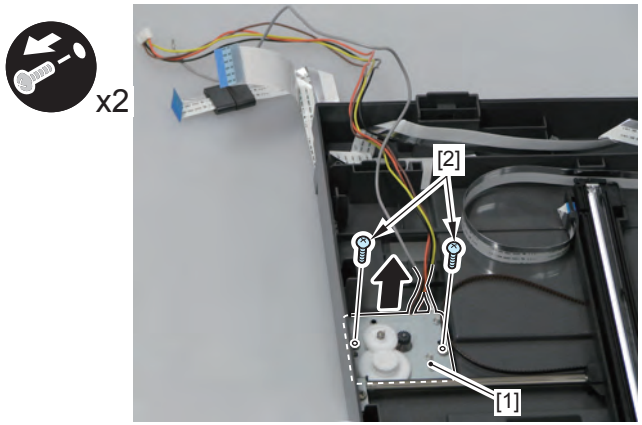
4) Disengage the harness [1] and the grounding wire [2] from the reader unit hole [A] and the harness guide [B].



F-4-161

5) Remove the flatbed motor unit [1].

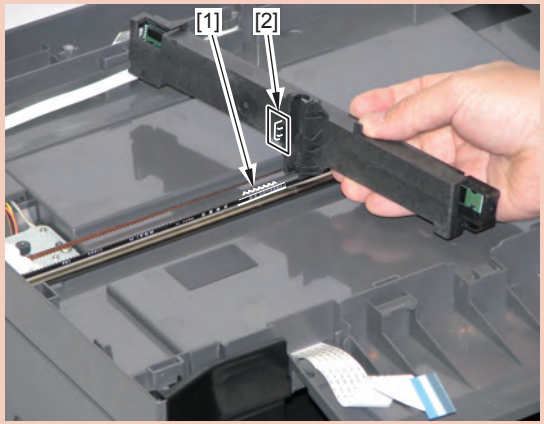
- 2 screws [2]



F-4-162

Caution:

If the CIS unit comes off, be sure to align the tooth [1] on the belt with the tooth [2] on the bottom of the CIS unit to install the unit.



F-4-163

Before Removing the CIS Unit Models with copyboard

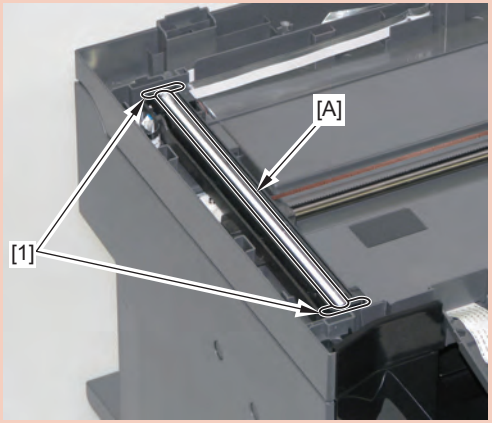
1) Remove the copyboard cover. (models with copyboard) (Refer to page 4-64)
2) Remove the control panel unit. (models without FAX) (Refer to page 4-79)
3) Remove the copyboard glass. (models with copyboard) (Refer to page 4-66)

Removing the CIS Unit Models with copyboard

Caution:

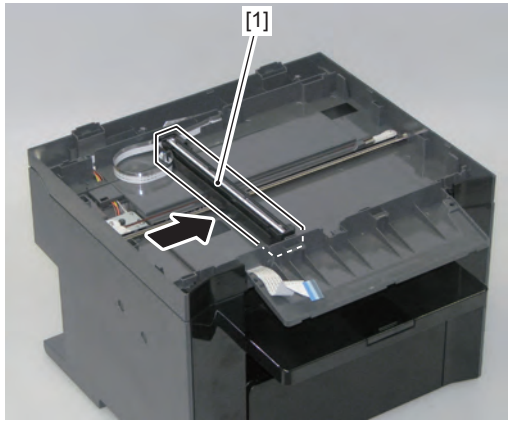
When assembling/disassembling the CIS unit, take care not to lose the 2 CIS unit spacers [1].

When assembling/disassembling the CIS unit, do not touch the copy reading area [A] of the CIS unit.



F-4-164

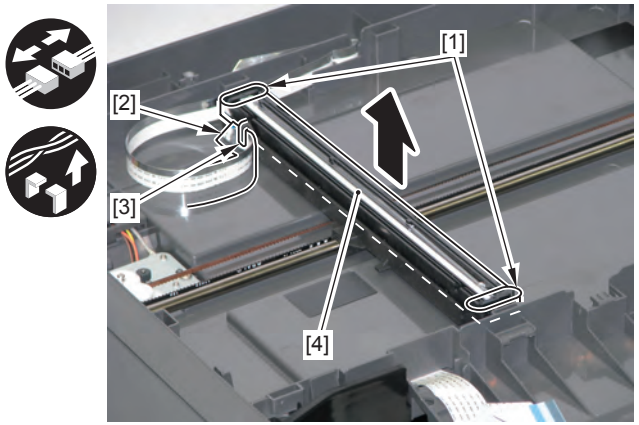
1) Move the CIS unit [1].



F-4-165

2) Remove the 2 spacers [1], flat cable [2] and guide [3].

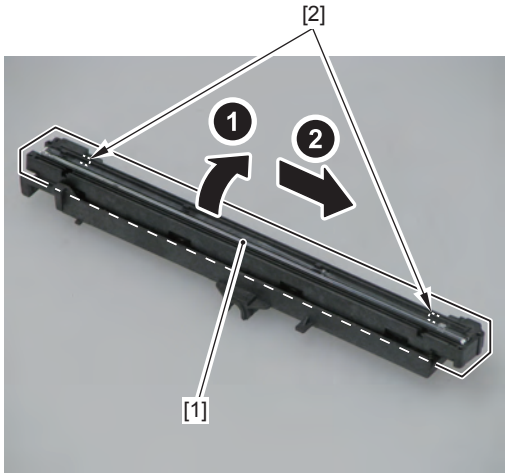
3) Remove the CIS unit [4].



F-4-166

4) Remove the CIS unit [1].

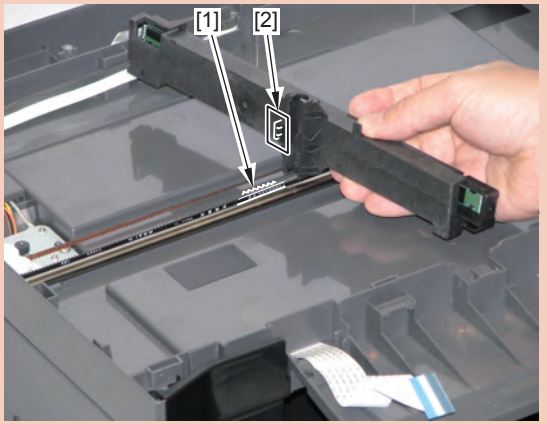
- 2 shafts [2]



F-4-167

Caution:

When mounting the CIS unit, align the teeth of the belt [1] to the teeth at the bottom of the CIS unit [2] to mount the unit.



F-4-168

Before Removing the CIS unit Models with DADF/Models with SADF

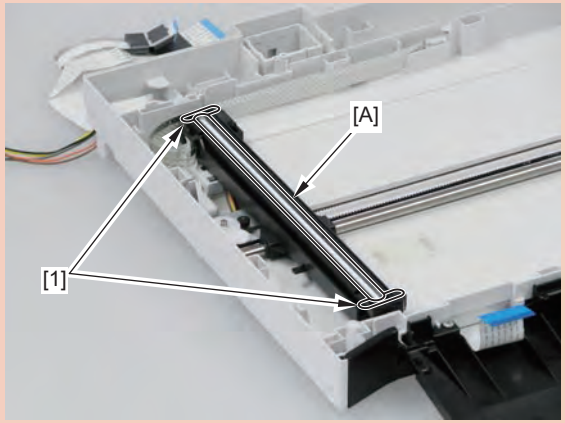
1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
3-1) Remove the DADF unit. (models with DADF)) (Refer to page 4-42)
3-2) Remove the SADF unit. (models with SADF) (Refer to page 4-55)
4-1) Remove the control panel unit. (models with FAX) (Refer to page 4-79)
4-2) Remove the control panel unit. (models without FAX) (Refer to page 4-79)
5) Remove the copyboard glass. (models with DADF/models with SADF) (Refer to page 4-66)

Removing the CIS Unit Models with DADF/Models with SADF

Caution:

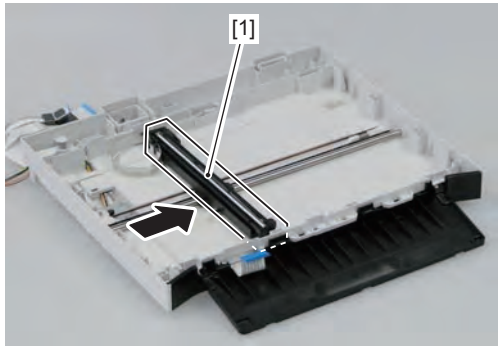
When assembling/disassembling the CIS unit, take care not to lose the 2 CIS unit spacers [1].

When assembling/disassembling the CIS unit, do not touch the copy reading area [A] of the CIS unit.



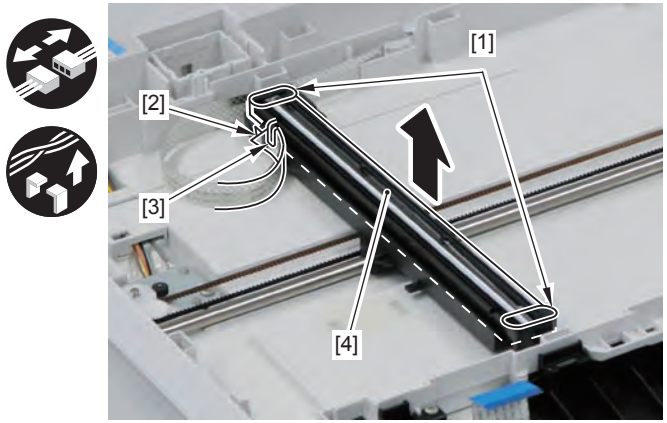
F-4-169

1) Move the CIS unit [1].



F-4-170

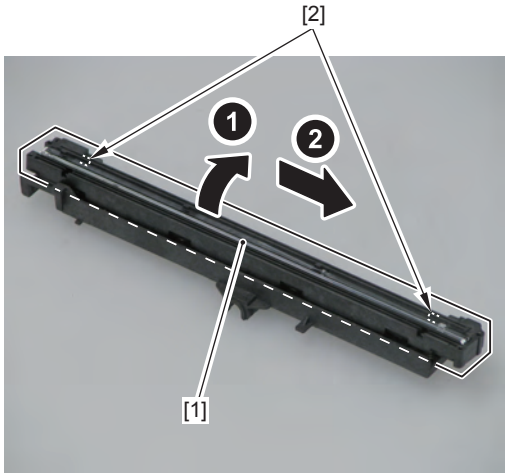
2) Remove the 2 spacers [1], flat cable [2] and guide [3].
3) Remove the CIS unit [4].



F-4-171

4) Remove the CIS unit [1].

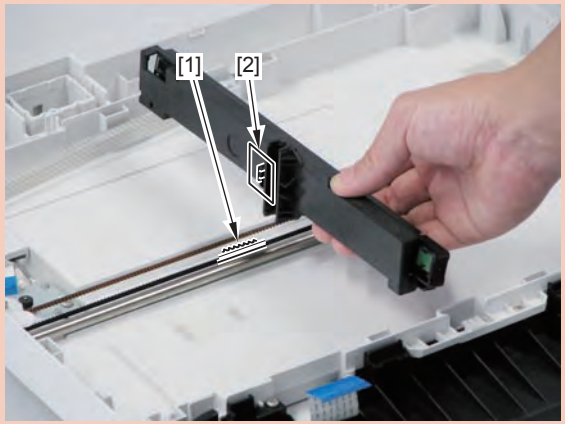
- 2 shafts [2]



F-4-172

Caution:

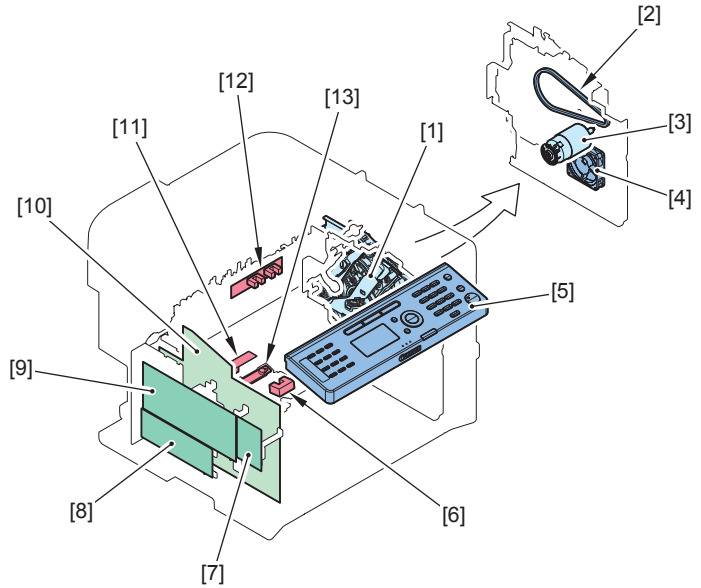
When mounting the CIS unit, align the teeth of the belt [1] to the teeth at the bottom of the CIS unit [2] to mount the unit.



F-4-173

Controller System

Location of Duplex Models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)



F-4-174

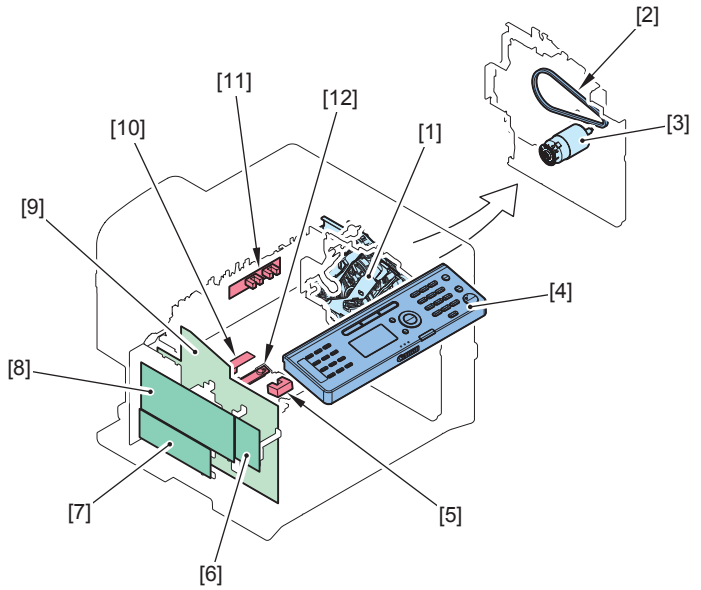
No.	Name	Service Parts No.		Reference
[1]	Main Drive Unit	-	-	-
[2]	Drive Belt	-	-	p. 4-82
[3]	Main Motor	FM4-7491	-	p. 4-88
[4]	Main Fan Unit	RK2-3438	-	p. 4-91

No.	Name	Service Parts No.		Reference
[5]	Control Panel Unit	FM4-6961 FM4-6938 FM4-6953 FM4-6957 FM4-7518 FM4-6922 FM4-6960 FM4-7496 FM4-6963 FM4-7506 FM4-7512 FM4-7519 FM4-7497 FM4-7501 FM4-7507 FM4-7513 FM4-7527 FM4-7526	MF4580dn (JP) MF4580dn (LTN, SG, HK, AU) MF4580dn (KR) MF4580dn (EUR) MF4570dn (JP) MF4570dn (US, CA, LTN) MF4570dn (TW) MF4570dn (LTN, SG, HK, AU) MF4570dn (CN) MF4570dn (KR) MF4570dn (EUR) MF4550d (JP) MF4550d (LTN, SG, HK. AU) MF4550d (CN) MF4550d (KR) MF4550d (EUR) MF4553d (KR) MF4554d (KR)	p. 4-79
		FM4-6923 FM4-6959 FM4-7495 FM4-6952 FM4-6965 FM4-7516	D550 (US, CA, LTN) D550 (EUR) D520 (US, CA, LTN) D520 (LTN, SG, HK) D520 (CN) D520 (EUR)	p. 4-79
[6]	Multi Pickup Sensor	-	-	p. 4-110, p. 4-112
[7]	Pseudo CI PCB	-	FAX model MF4580dn (100V)/ MF4570dn (100V)/ MF4550d (100V)	p. 4-103
[8]	FAX-NCU PCB	-	FAX model MF4580dn (100V)/ MF4570dn (100V)/ MF4550d (100V)	p. 4-102
[9]	Main Controller PCB	FM4-7163 FM4-7162 FM4-7165 FM4-7164 FM4-7167 FM4-7166	MF4580dn (100V) MF4580dn (230V) MF4570dn (100V) MF4570dn (120V, 230V) MF4550d (100V) MF4550d (230V)/4553d (230V)/4554d (230V)	p. 4-99
		FM4-7168 FM4-7169	D550 D520	p. 4-100

No.	Name	Service Parts No.		Reference
[10]	Engine Controller PCB	FM4-7057 FM4-7058 FM4-7059	MF4580dn (100V)/MF4570dn (100V)/MF4550d (100V) MF4570dn (120V)/ D550 (120V)/D520 (120V) MF4580dn (230V)/MF4570dn (230V)/MF4550d (230V)/MF4553d (230V)/MF4554d (230V)/ D550 (230V)/D520 (230V)	p. 4-93, p. 4-96
[11]	Paper Leading Edge Sensor	-	-	p. 4-104
[12]	Fixing Delivery/Paper Width Sensor PCB	RM1-7440	-	p. 4-107
[13]	Toner Sensor	-	FAX model MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d	p. 4-110

T-4-45

Location of Single-sided Models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)



F-4-175

No.	Name	Service Parts No.		Reference
[1]	Main Drive Unit	-	-	-
[2]	Drive Belt	-	-	p. 4-80
[3]	Main Motor	FM4-7491	-	p. 4-85

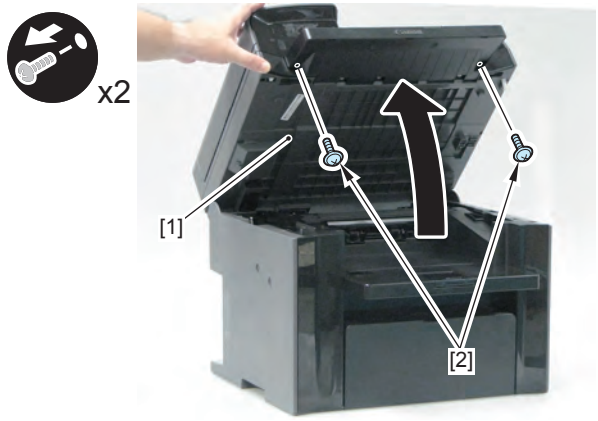
No.	Name	Service Parts No.		Reference
[4]	Control Panel Unit	FM4-7520 FM4-6971 FM4-7523 FM4-7499 FM4-7502 FM4-7508 FM4-7514 FM4-7504 FM4-7528	MF4450 (JP) MF4450 (US, CA, LTN) MF4450 (TW) MF4450 (LTN, SG, HK) MF4450 (CN) MF4450 (KR) MF4450 (EUR) MF4452 (CN) MF4453 (KR)	p. 4-79
		FM4-6962 FM4-6954 FM4-6958 FM4-7521 FM4-6951 FM4-6964 FM4-7522 FM4-7503 FM4-7510 FM4-7515 FM4-7500 FM4-7505	MF4430 (JP) MF4430 (KR) MF4430 (EUR) MF4420n (JP) MF4420n (AU) MF4420n (CN) MF4410 (JP) MF4410 (CN) MF4410 (KR) MF4410 (EUR) MF4412 (LTN, SG, HK) MF4412 (CN)	p. 4-79
[5]	Multi Pickup Sensor	-	-	p. 4-110, p. 4-112
[6]	Pseudo CI PCB	-	FAX model MF4450 (100V)	p. 4-103
[7]	FAX-NCU PCB	-	FAX model MF4450 (100V)	p. 4-102
[8]	Main Controller PCB	FM4-7283 FM4-7282 FM4-7171	MF4450 (100V) MF4450 (120V, 230V)/MF4453 (230V) MF4452 (230V)	p. 4-99
		FM4-7172	MF4430	p. 4-100
		FM4-7173	MF4420n	p. 4-102
		FM4-7174 FM4-7175	MF4410 MF4412	p. 4-100
[9]	Engine Controller PCB	FM4-7057 FM4-7058 FM4-7059 FM4-7087	MF4450 (100V) MF4450 (120V) MF4450 (230V)/MF4452 (230V)/ MF4453 (230V)/MF4430 (230V)/ MF4420n (230V)/MF4410 (230V)/ MF4412 (230V) MF4430 (100V)/MF4420n (100V)/ MF4410 (100V)	p. 4-93, p. 4-96
[10]	Paper Leading Edge Sensor	-	-	p. 4-104
[11]	Fixing Delivery/Paper Width Sensor PCB	RM1-7440	-	p. 4-107

No.	Name	Service Parts No.		Reference
[12]	Toner Sensor	-	FAX model MF4450/MF4452/MF4453	p. 4-110

T-4-46

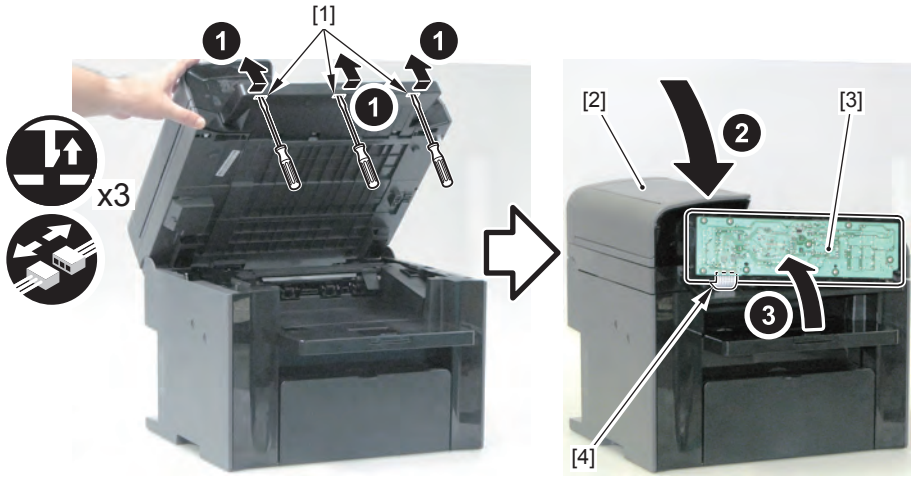
Removing the Control Panel Unit Models with FAX (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/MF4450/MF4452/MF4453)

1) Open the reader unit [1] and remove the 2 screws (black TP) [2].



F-4-176

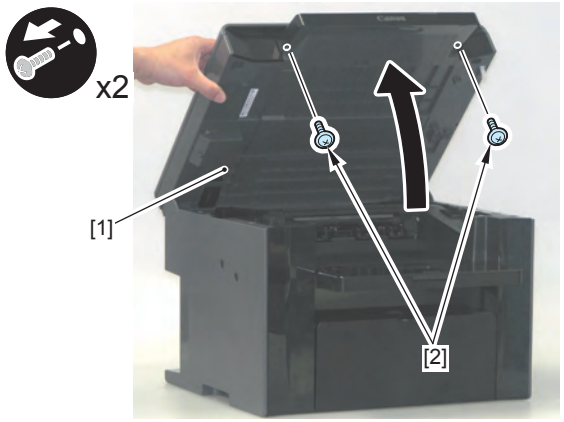
2) Remove the 3 lower claws [1] and close the reader unit [2].
3) Remove the control panel unit [3].
- 1 flat cable [4]



F-4-177

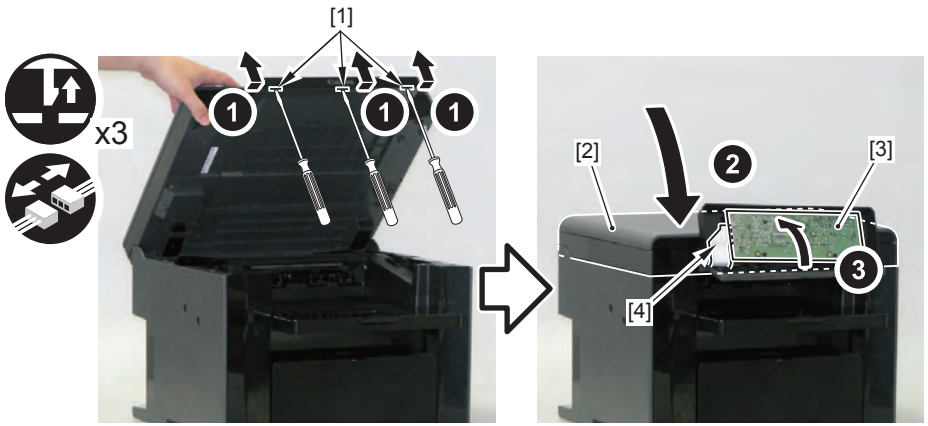
Removing the Control Panel Unit Models without FAX (MF4430/MF4420n/MF4410/ MF4412/D550/D520)

1) Open the reader unit [1] and remove the 2 screws (black TP) [2].



F-4-178

2) Remove the 3 lower claws [1] and close the reader unit [2].
3) Remove the control panel unit [3].
- 1 flat cable [4]



F-4-179

Before Removing the Drive Belt Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

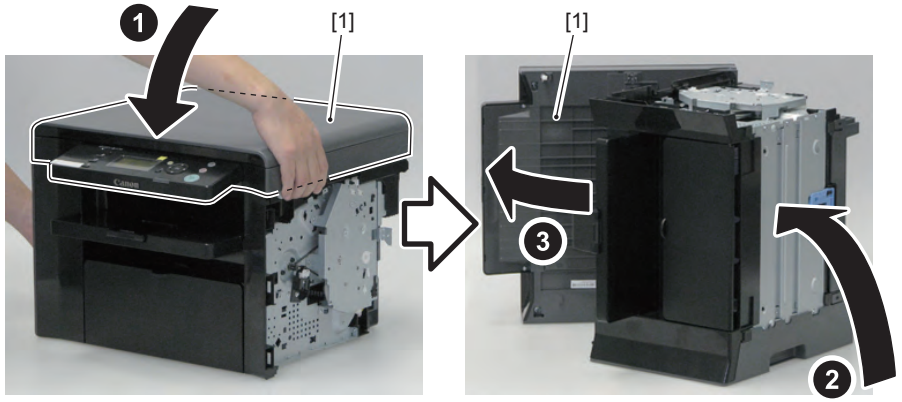
1) Remove the right cover. (Single-sided models) (Refer to page 4-34)

Removing the Drive Belt Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Close the reader unit [1] and face the left side of the host machine downwards.
2) Open the reader unit [1].

Caution:

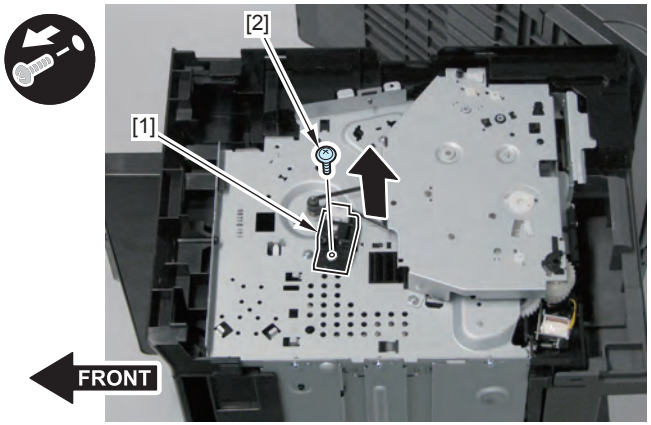
Take care when facing the left side of the host machine downwards because the reader unit [1] will be forced open by hinge spring pressure.



F-4-180

3) Remove the tension unit [1].

- 1 screw [2]



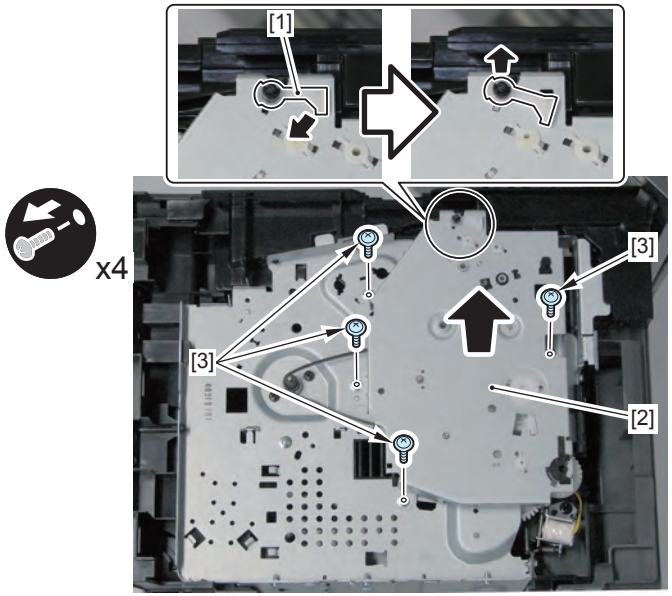
F-4-181

4) Remove the shaft support [1] and then the drive cover [2].

- 4 screws [3]

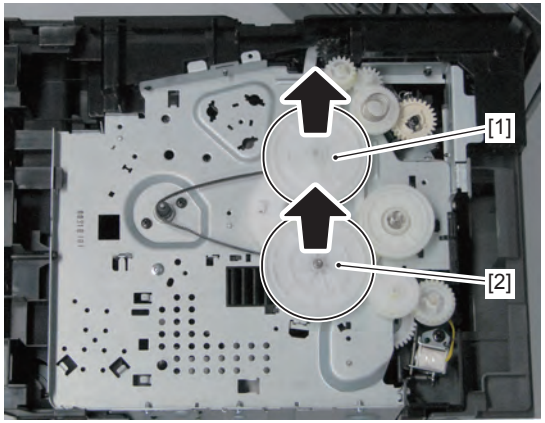
Caution:

Gently raise the drive cover [2] straight above to prevent the gear phase from becoming displaced.



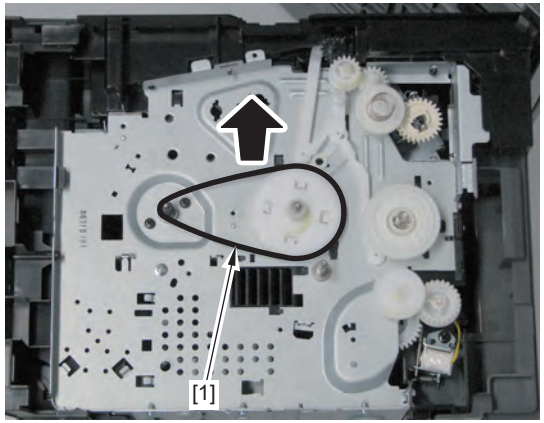
F-4-182

5) Remove the fixing transmission gear [1] and the cartridge transmission gear [2].



F-4-183

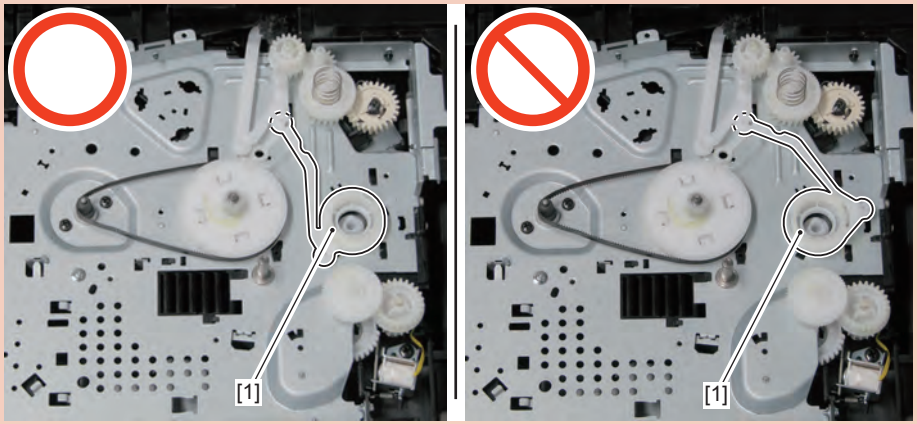
6) Remove the drive belt [1].



F-4-184

Caution:

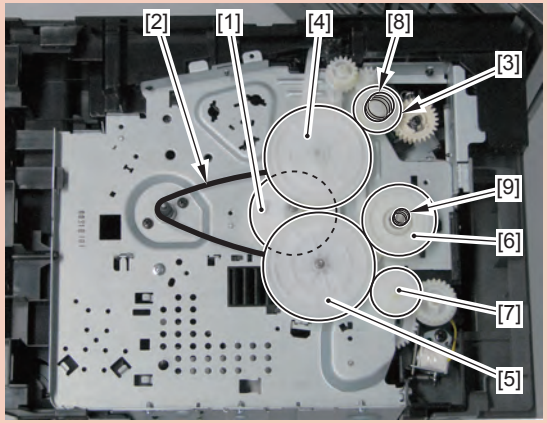
When assembling the drive gear, install the cartridge arm [1] according to the position shown in the left picture.



F-4-185

Caution:

Assemble the drive gear in the order shown in the below picture.

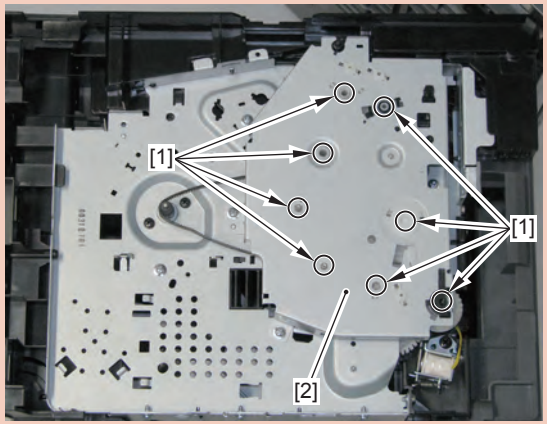


F-4-186

[1] Primary deceleration pulley
[2] Timing belt
[3] Fixing ratchet gear
[4] Fixing transmission gear
[5] Cartridge transmission gear
[6] Gear coupling
[7] Feed deceleration gear
[8] Compression spring
[9] Compression spring

Caution:

Align the drive cover [2] with the 8 shaft holes [1] to mount it.



F-4-187

Before Removing the Drive Belt Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

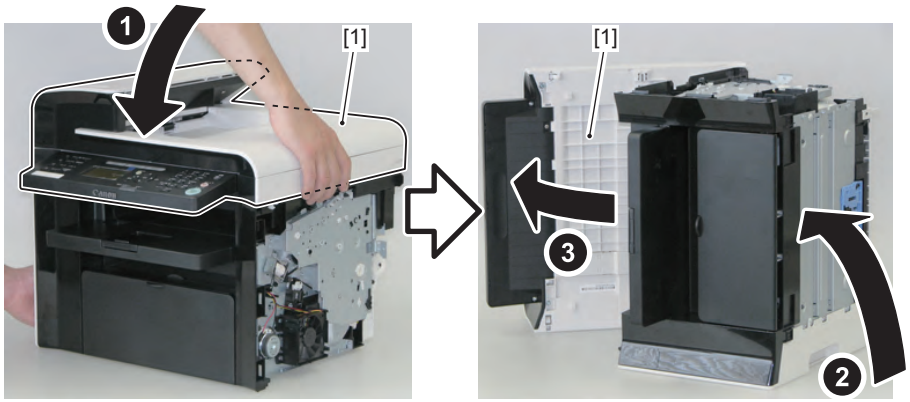
1) Remove the right cover. (Duplex models) (Refer to page 4-33)

Removing the Drive Belt Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Close the reader unit [1] and face the left side of the host machine downwards.
2) Open the reader unit [1].

Caution:

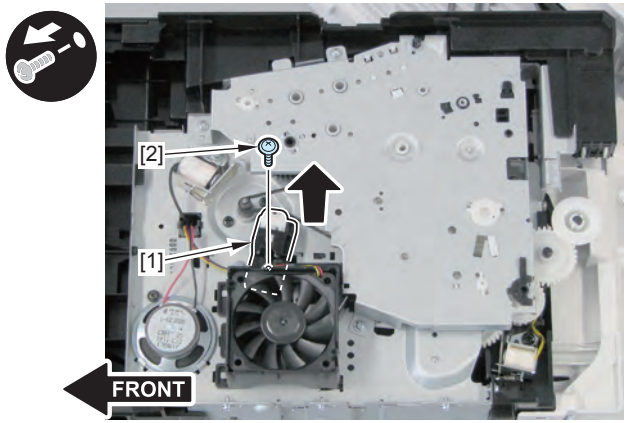
Take care when facing the left side of the host machine downwards because the reader unit [1] will be forced open by hinge spring pressure.



F-4-188

3) Remove the tension unit [1].

- 1 screw [2]

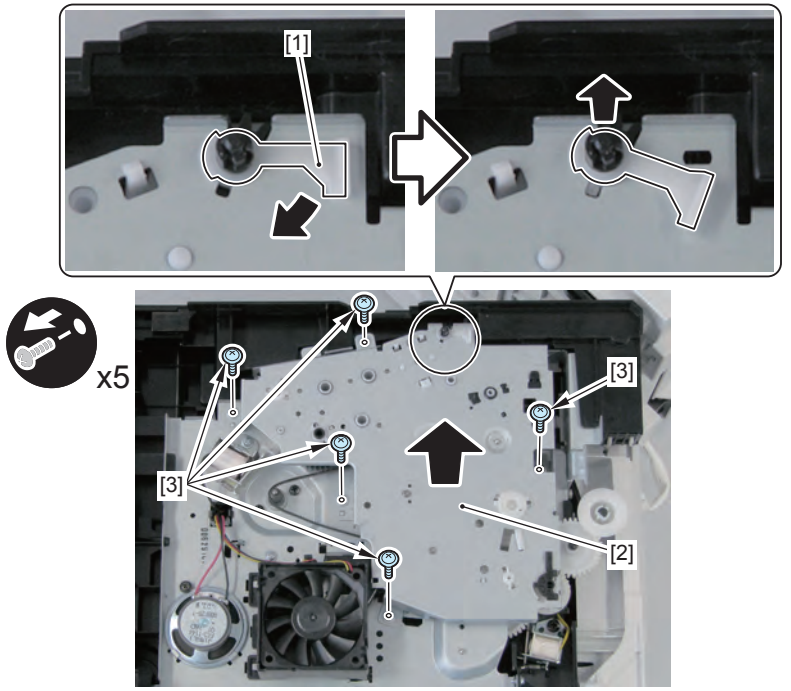


F-4-189

4) Remove the shaft support [1] and then the drive cover [2].

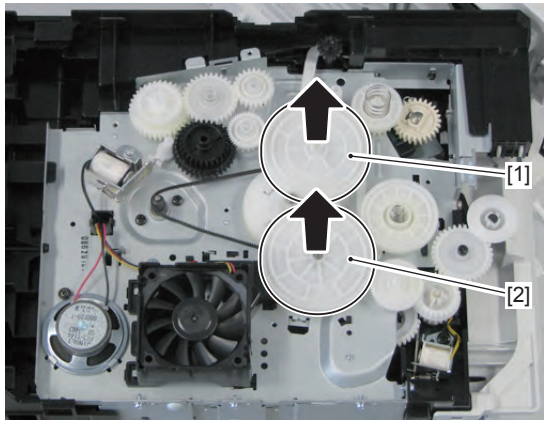
- 5 screws [3]

> Caution:
>
> Gently raise the drive cover [2] straight above to prevent the gear phase from becoming displaced.



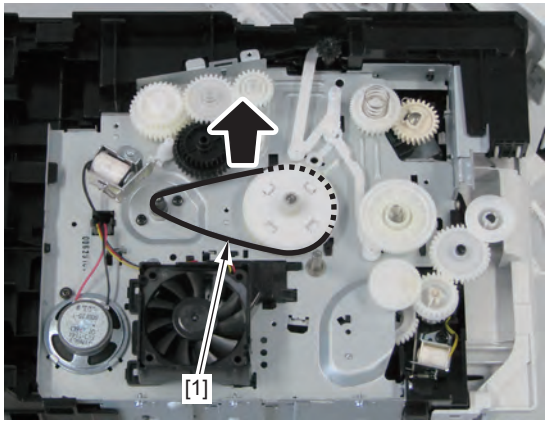
F-4-190

5) Remove the fixing transmission gear [1] and the cartridge transmission gear [2].



F-4-191

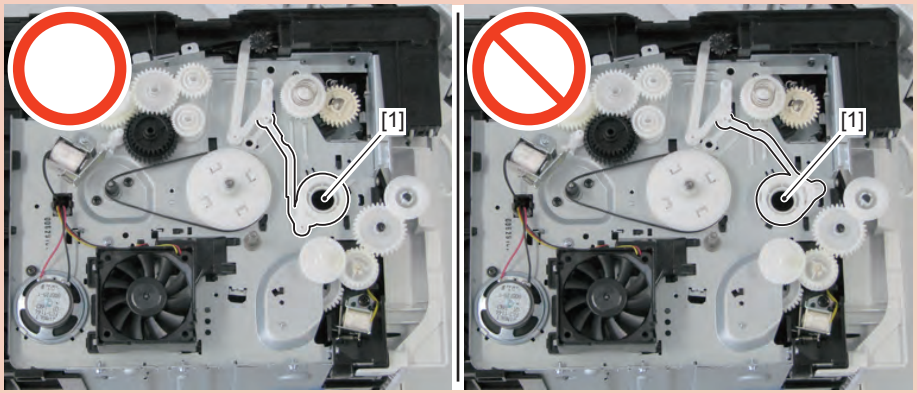
6) Remove the drive belt [1].



F-4-192

Caution:

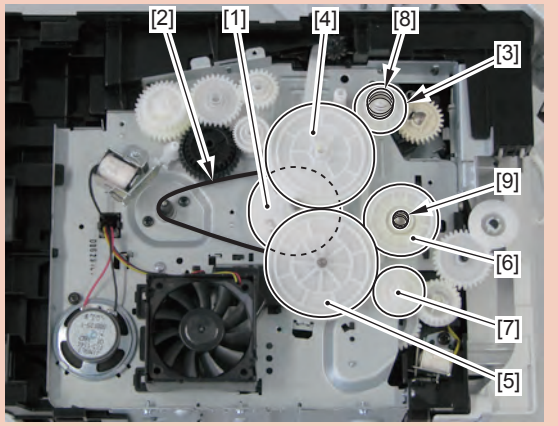
When assembling the drive gear, install the cartridge arm [1] according to the position shown in the left picture.



F-4-193

Caution:

Assemble the drive gear in the order shown in the below picture.

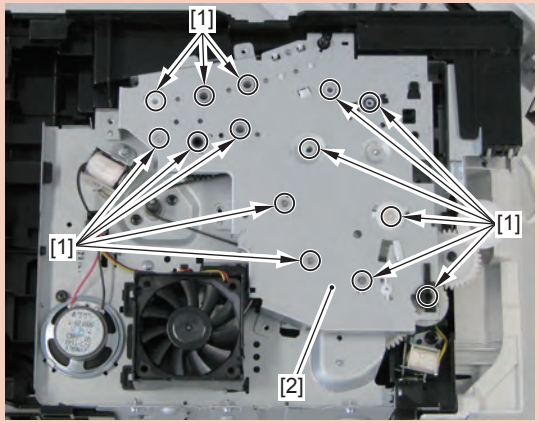


F-4-194

[1] Primary deceleration pulley
[2] Timing belt
[3] Fixing ratchet gear
[4] Fixing transmission gear
[5] Cartridge transmission gear
[6] Gear coupling
[7] Feed deceleration gear
[8] Compression spring
[9] Compression spring

Caution:

Align the drive cover [2] with the 14 shaft holes [1] to mount it.



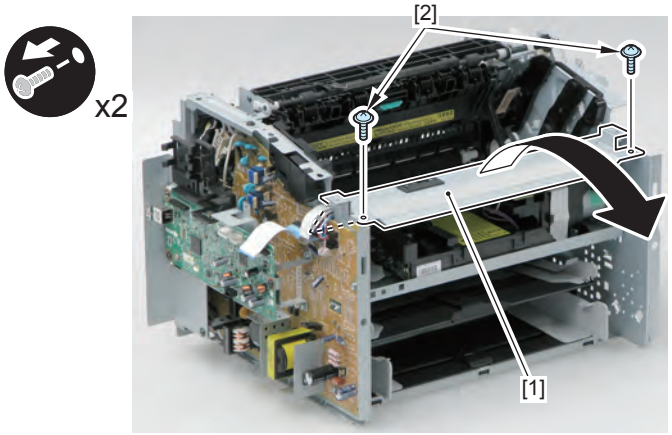
F-4-195

Before Removing the Main Motor Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-2) Remove the copyboard cover and reader unit. (models with copyboard)(Refer to page 4-64)
3) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

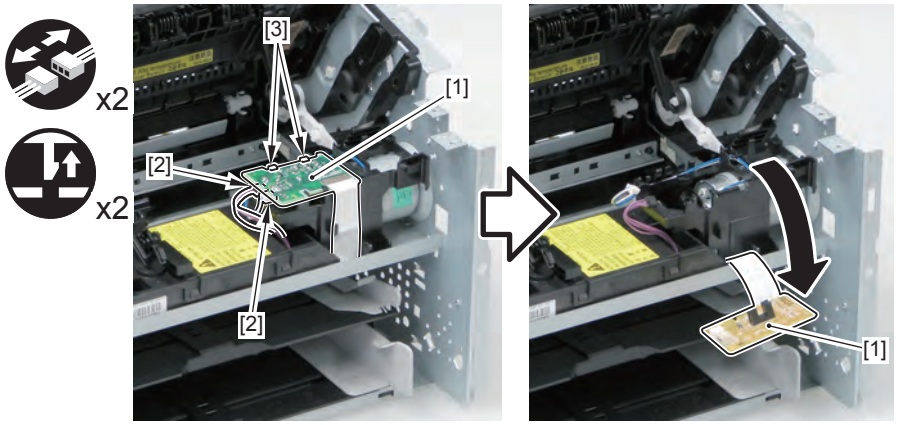
Removing the Main Motor Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Remove the scanner cover [1].
- 2 screws (black TP) [2]



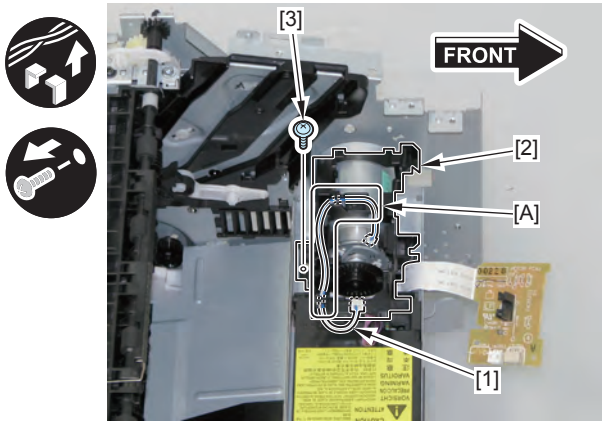
F-4-196

2) Remove the motor driver PCB [1].
- 2 connectors [2]
- 2 claws [3]



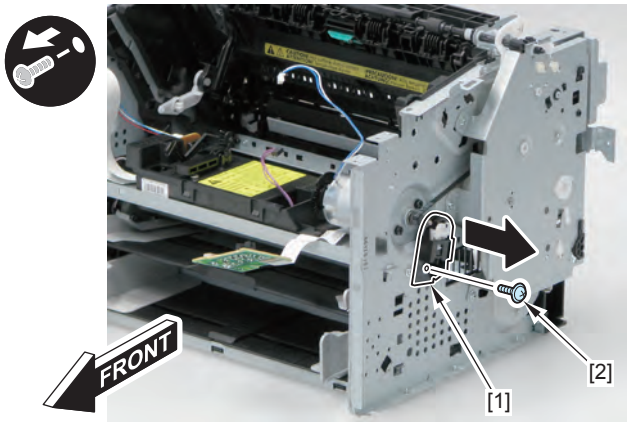
F-4-197

3) Disengage the motor harness [1] from the harness guide [A].
4) Remove the motor guide [2].
- 1 screw [3]



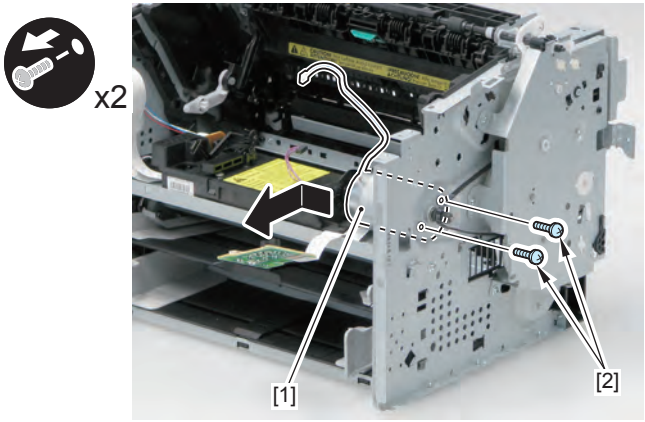
F-4-198

5) Remove the tension unit [1].
- 1 screw [2]



F-4-199

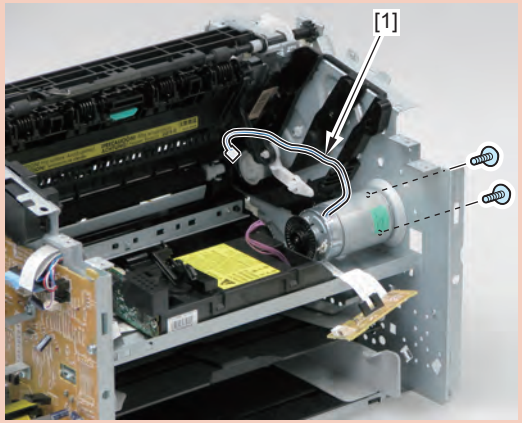
6) Remove the main motor [1].
- 2 screws (with washer) [2]



F-4-200

Caution:

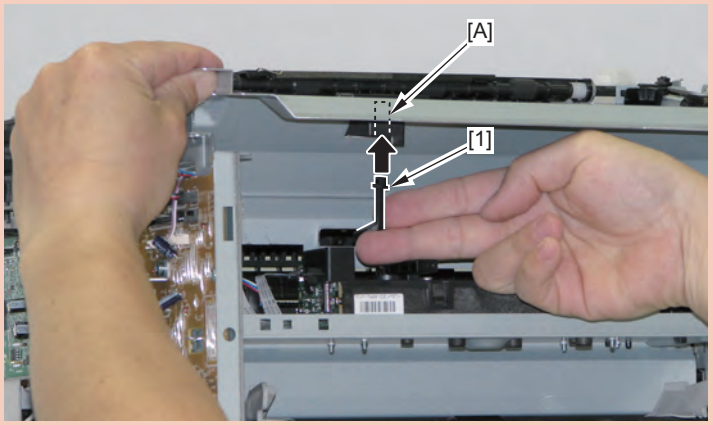
When mounting the main motor, attach the harness [1] to the upper side of the motor .



F-4-201

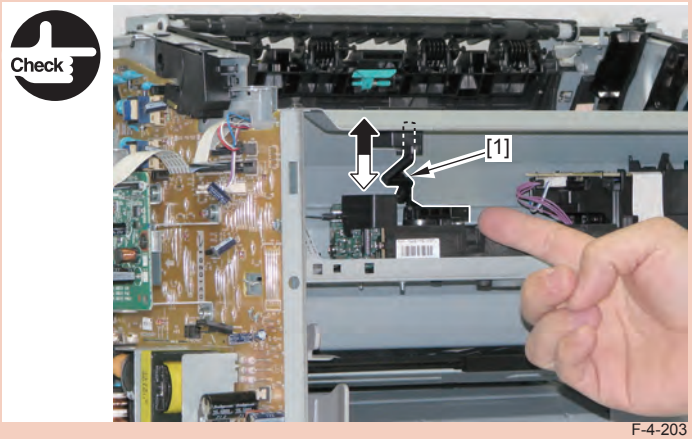
Caution:

When mounting the scanner cover, pass the shutter open/close lever [1] through the hole [A] in the scanner cover.



F-4-202

Ensure that the shutter open/close lever [1] can move vertically.



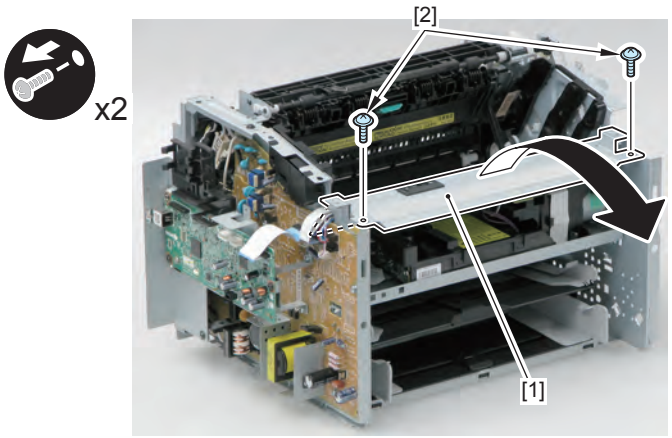
F-4-203

Before Removing the Main Motor Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

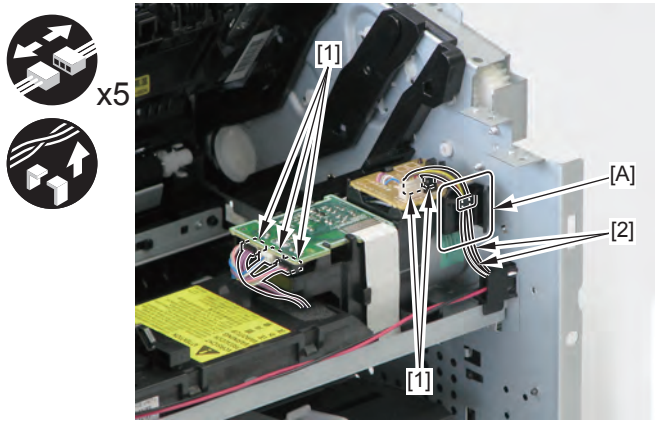
Removing the Main Motor Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Remove the scanner cover [1].
- 2 screws (black TP) [2]



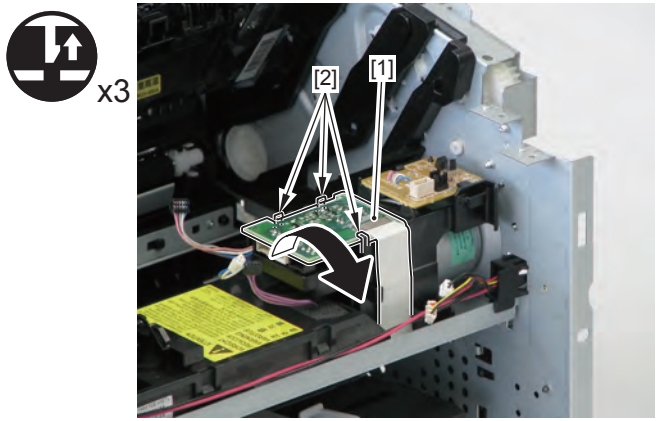
F-4-204

2) Disengage the 2 harnesses [2] from the 5 connectors [1] and harness guide [A].



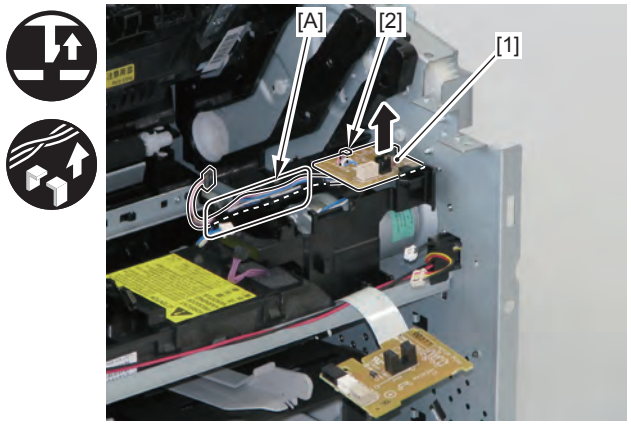
F-4-205

3) Remove the motor driver PCB [1].
- 3 claws [2]



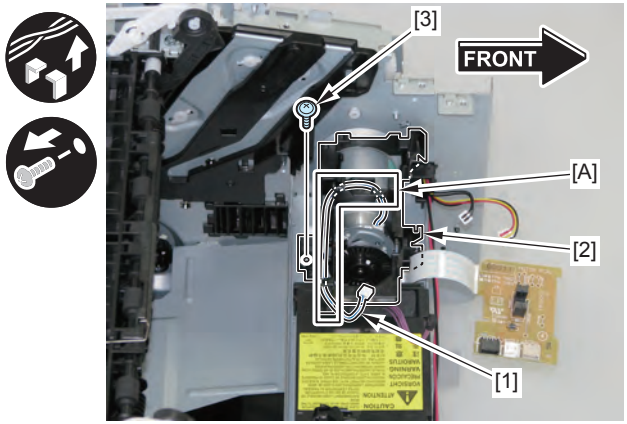
F-4-206

4) Remove the duplex relay PCB [1].
- 1 claw [2]
- Harness guide [A]



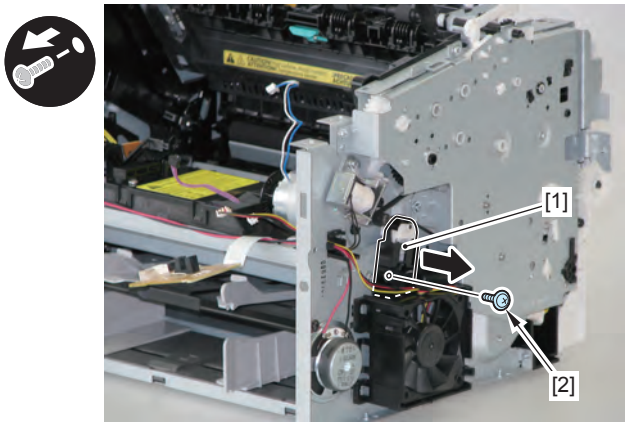
F-4-207

5) Disengage the motor harness [1] from the harness guide [A].
6) Remove the motor guide [2].
- 1 screw [3]



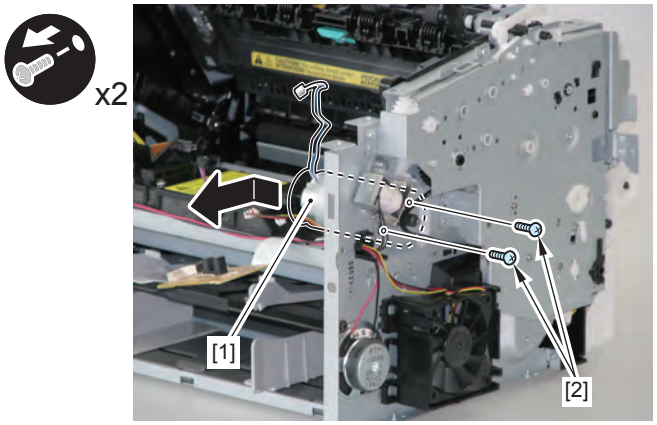
F-4-208

7) Remove the tension unit [1].
- 1 screw [2]



F-4-209

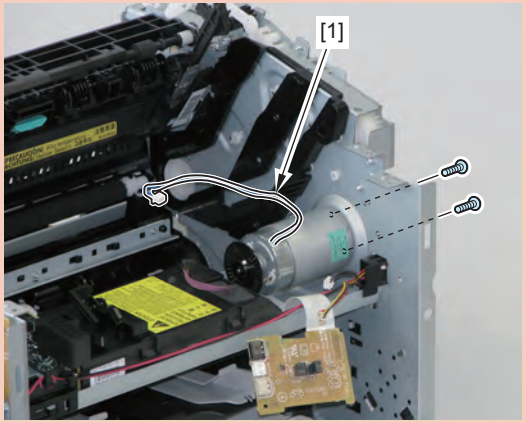
8) Remove the main motor [1].
- 2 screws (with washer) [2]



F-4-210

Caution:

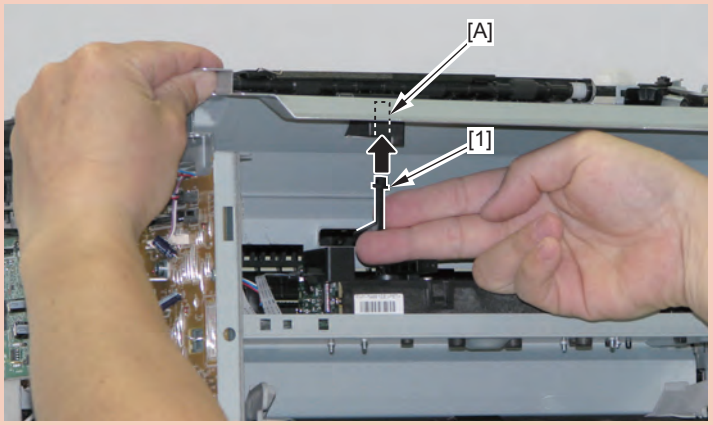
When mounting the main motor, attach the harness [1] to the upper side of the motor .



F-4-211

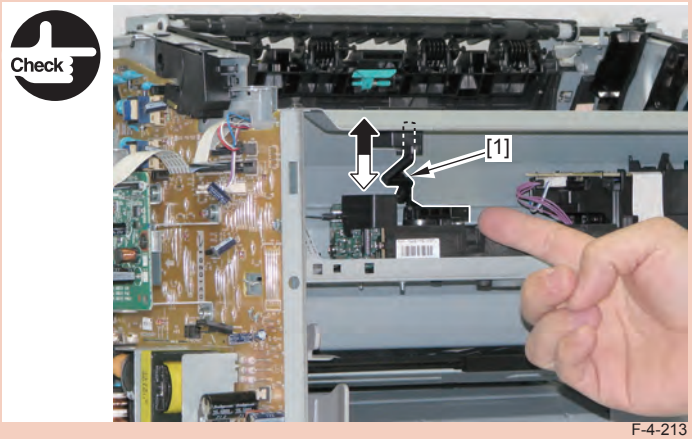
Caution:

When mounting the scanner cover, pass the shutter open/close lever [1] through the hole [A] in the scanner cover.



F-4-212

Ensure that the shutter open/close lever [1] can move vertically.



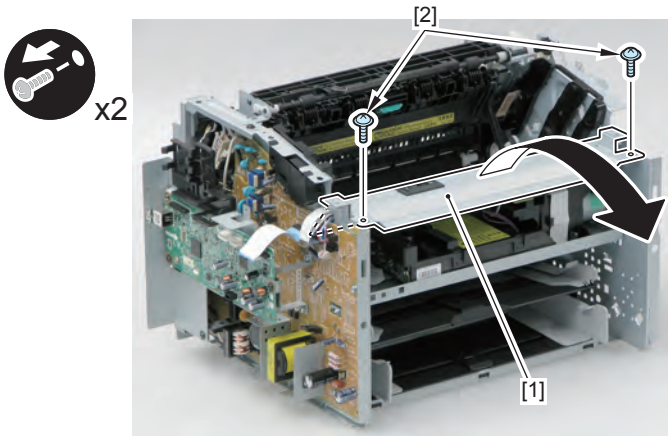
F-4-213

Before Removing the Main Fan Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

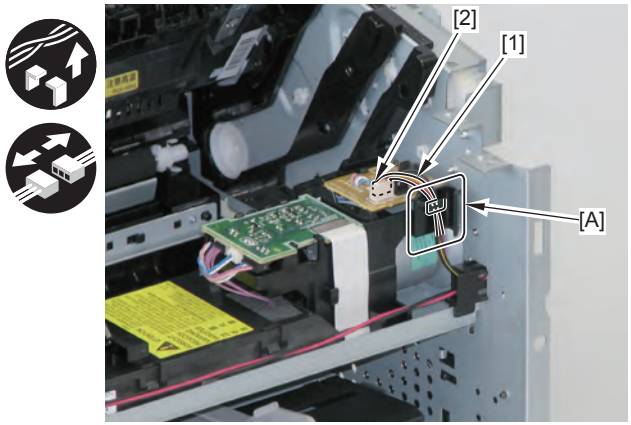
Removing the Main Fan Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

1) Remove the scanner cover [1].
- 2 screws (black TP) [2]



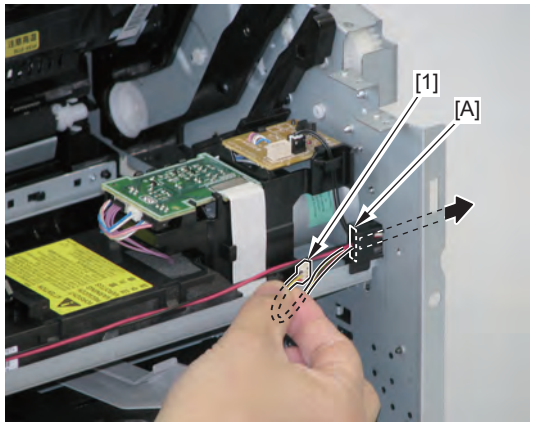
F-4-214

2) Disengage the solenoid harness [1] from the guide [A].
- 1 connector [2]



F-4-215

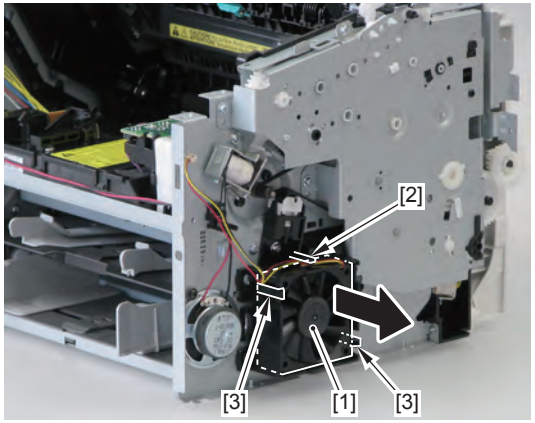
3) Pass the main fan harness [1] out through the hole [A] in the right panel.



F-4-216

4) Remove the main fan [1].

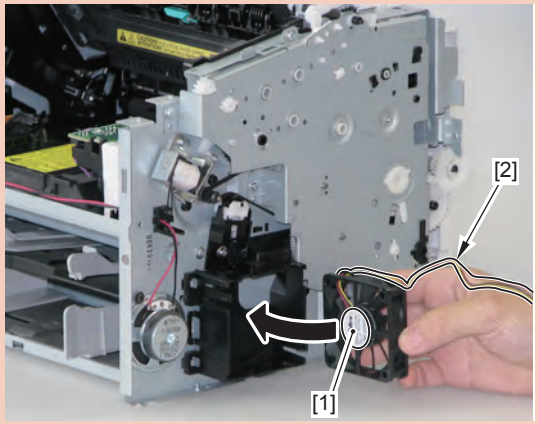
- 1 guide [2]
- 2 claws [3]



F-4-217

Caution:

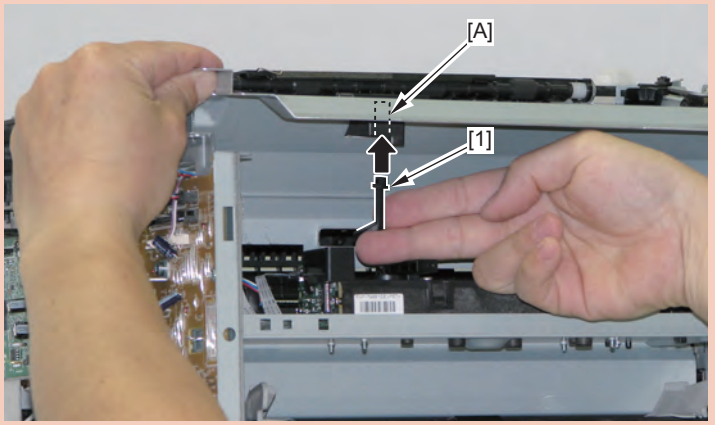
When mounting the main fan, attach the harness [2] to the upper-right side of the fan with the fan label [1] facing inwards.



F-4-218

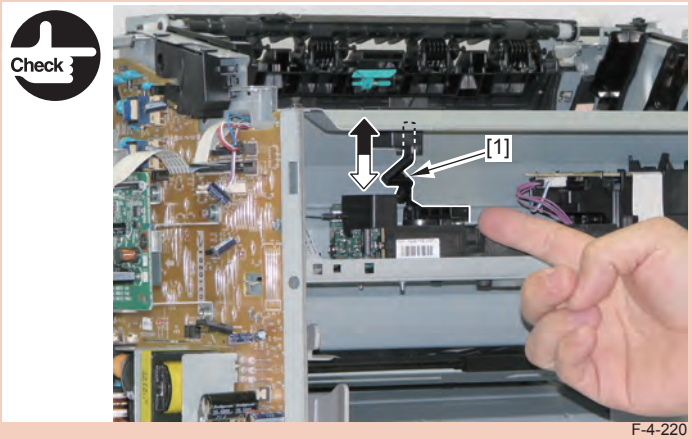
Caution:

When mounting the scanner cover, pass the shutter open/close lever [1] through the hole [A] in the scanner cover.



F-4-219

Ensure that the shutter open/close lever [1] can move vertically.



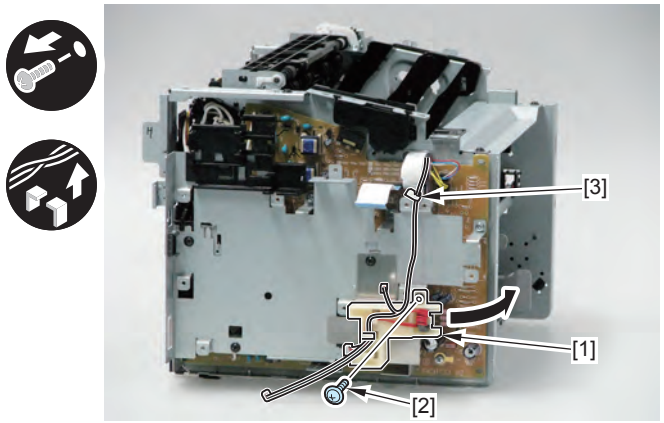
F-4-220

Before Removing the Engine Controller PCB Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-2) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
3-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
3-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6-1) Remove the rear cover. (Single-sided models) (Refer to page 4-37)
6-2) Remove the duplex feed unit. (Duplex models) (Refer to page 4-155)
7) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
8-1) Remove the FAX-NCU PCB. (100V models with FAX) (Refer to page 4-102)
8-2) Remove the FAX-NCU PCB. (120V/230V models with FAX) (Refer to page 4-103)
9) Remove the pseudo CI board PCB. (100V models with FAX) (Refer to page 4-103)

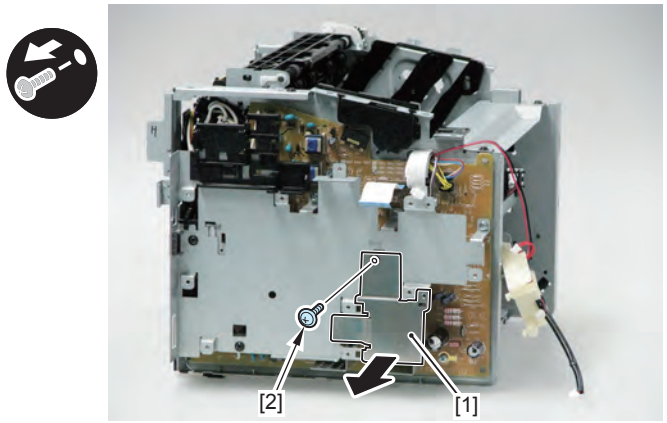
Removing the Engine Controller PCB Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)

1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



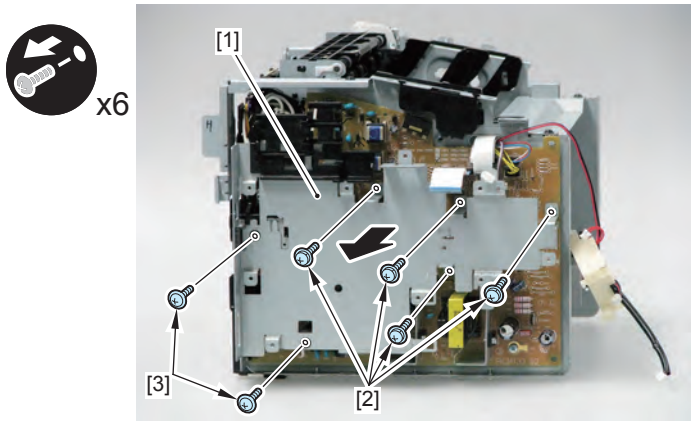
F-4-221

2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



F-4-222

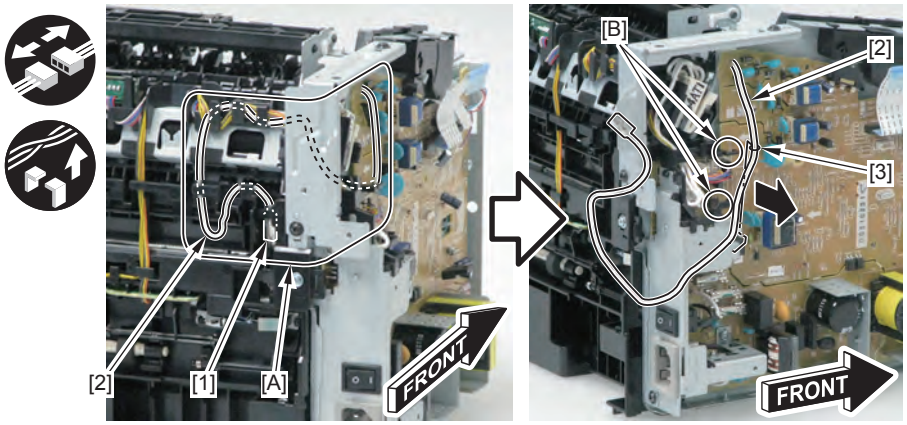
3) Remove the main controller mounting plate [1].
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



F-4-223

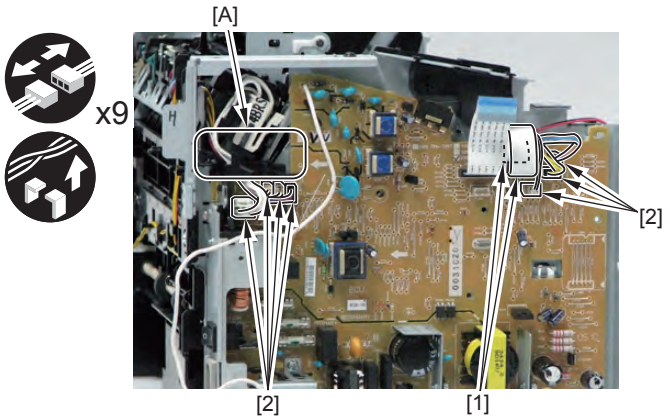
4) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].

5) Free the harness retaining spring [3] from the 2 hooks [B].



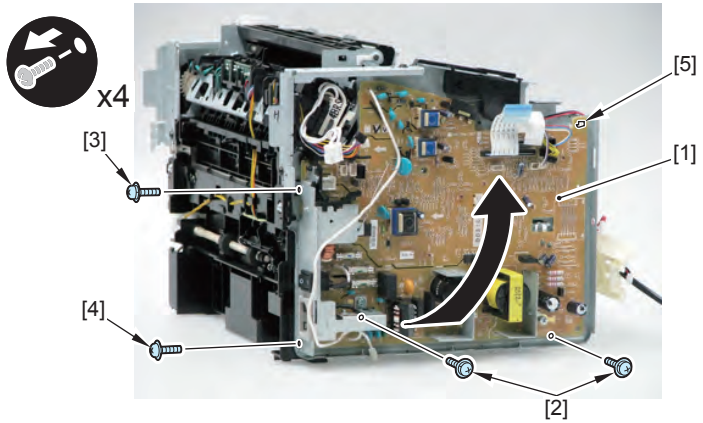
F-4-224

6) Remove the 2 flat cables [1] and 7 connectors [2], and then disengage the harness from the guide [A].



F-4-225

7) Remove the engine controller PCB [1].
- 2 screws (with washer) [2]
- 1 screw (with tooth lock washer) [3]
- 1 screw (black TP) [4]
- 1 hook [5]

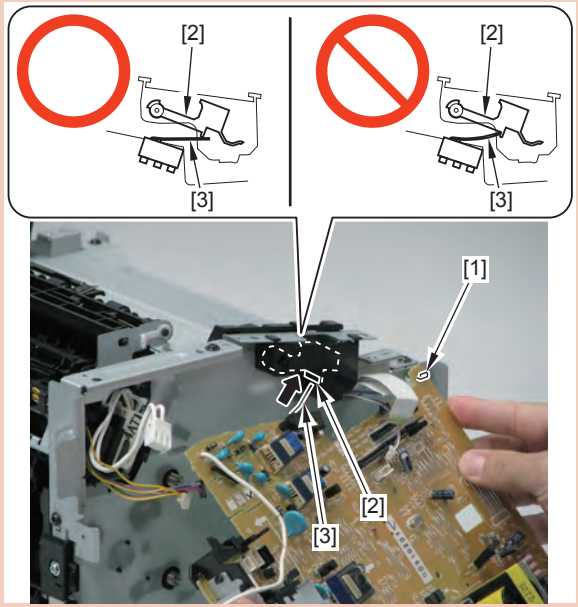


F-4-226

TONER+
www.tonerplus.com.ua

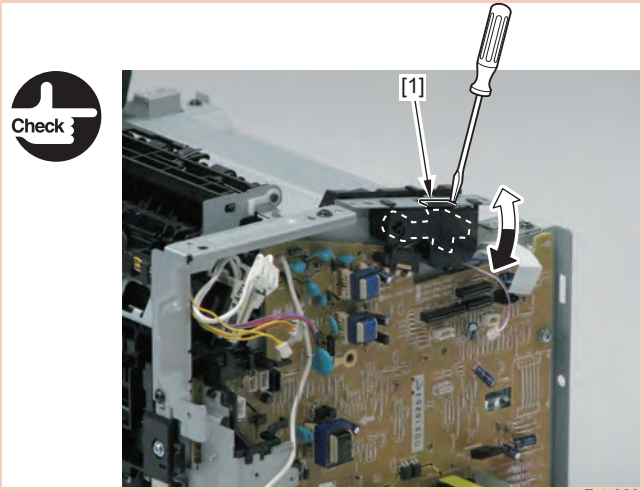
Caution:

When reassembling, attach the engine controller PCB to the hook [1] and then mount the switchboard [3] to the lower side of the switch arm [2].



F-4-227

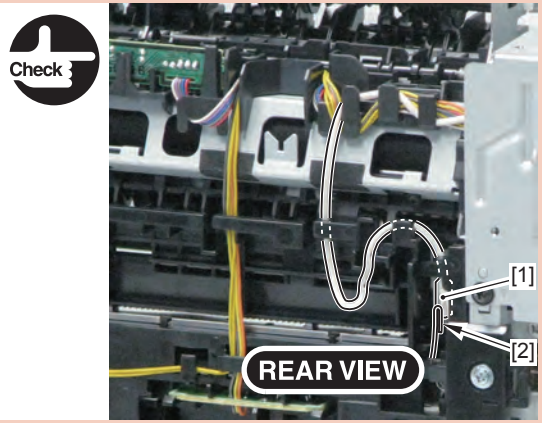
Ensure that the switch arm [1] can move vertically.



F-4-228

Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



F-4-229

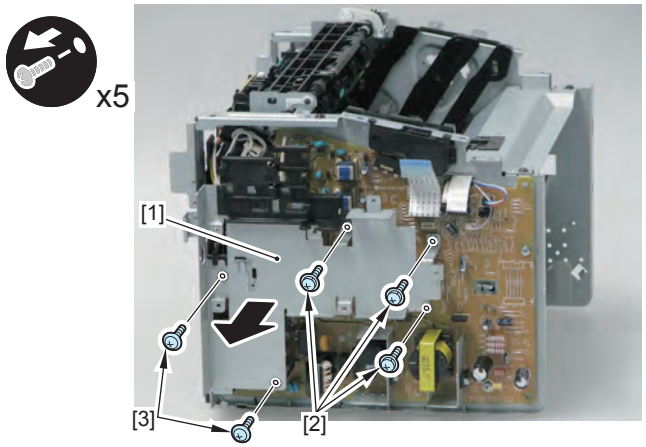
Before Removing the Engine Controller PCB Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
3-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6-1) Remove the rear cover. (Single-sided models) (Refer to page 4-37)
6-2) Remove the duplex feed unit. (Duplex models) (Refer to page 4-155)
7-1) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
7-2) Remove the main controller PCB. (models without FAX, with NET) (Refer to page 4-102)

Removing the Engine Controller PCB Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520)

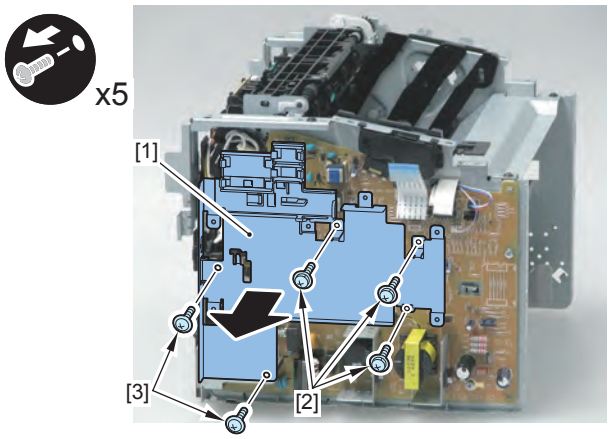
Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.
Refer to step 1-1) for the models without FAX or NET (MF4430/MF4550d/MF4410/MF4412/D550/D520)
Refer to step 1-2) for the models without FAX, with NET (MF4420n)

1-1) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



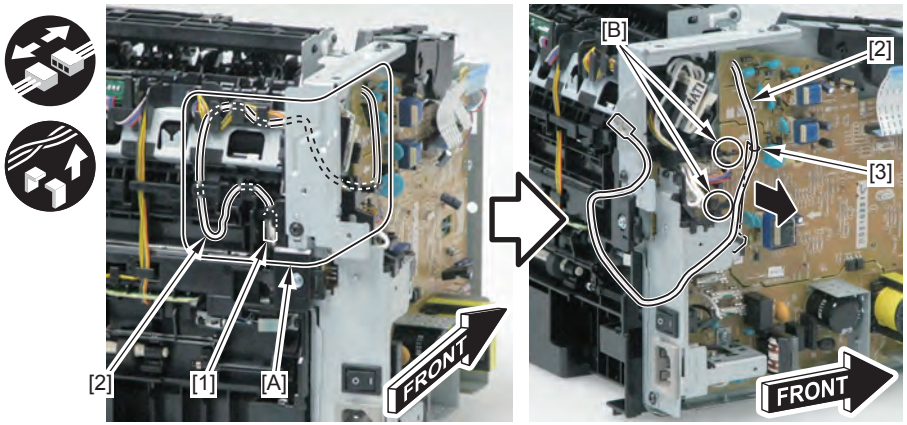
F-4-230

1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



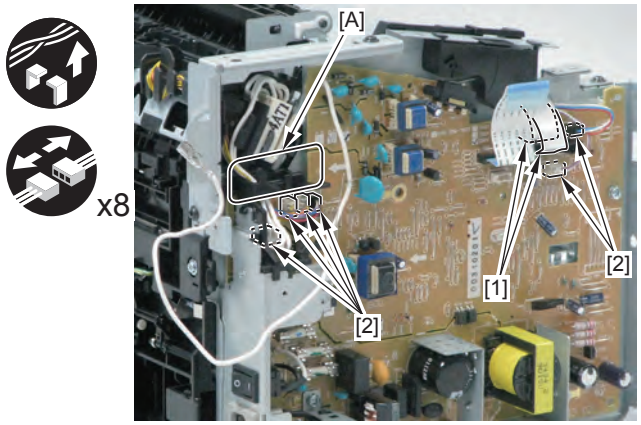
F-4-231

2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].
3) Free the harness retaining spring [3] from the 2 hooks [B].



F-4-232

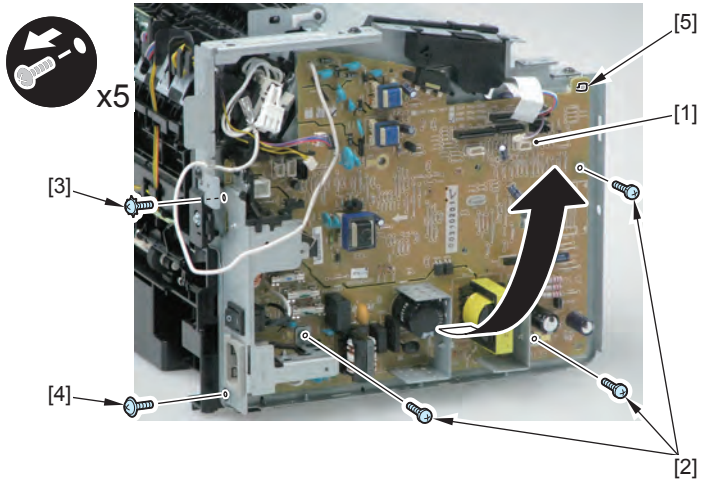
4) Remove the 2 flat cables [1] and 6 connectors [2], and then disengage the harness from the guide [A].



F-4-233

5) Remove the engine controller PCB [1].

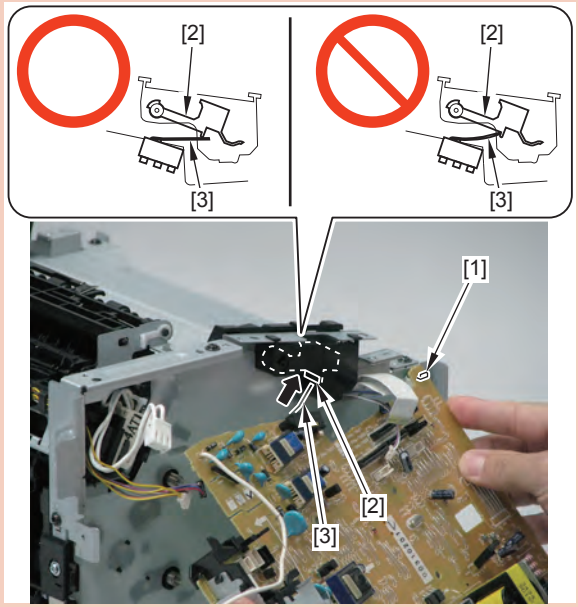
- 3 screws (with washer) [2]
- 1 screw (with tooth lock washer) [3]
- 1 screw (black TP) [4]
- 1 hook [5]



F-4-234

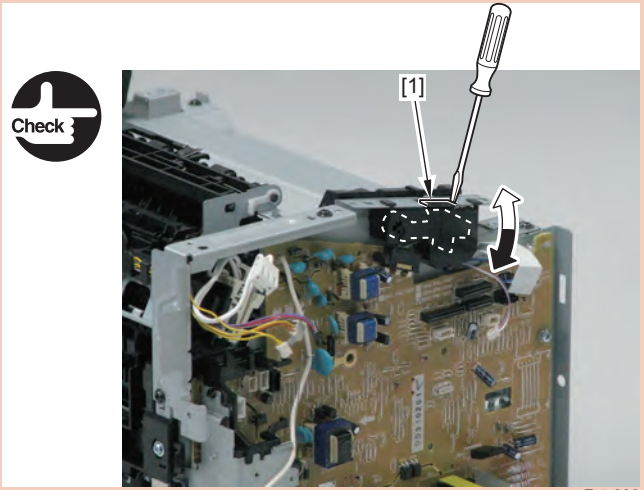
Caution:

When reassembling, attach the engine controller PCB to the hook [1] and then mount the switchboard [3] to the lower side of the switch arm [2].



F-4-235

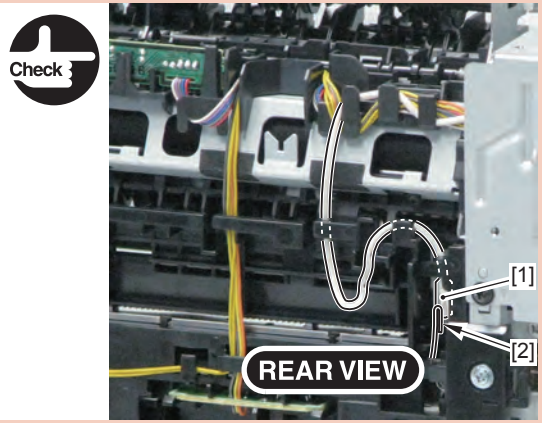
Ensure that the switch arm [1] can move vertically.



F-4-236

Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



F-4-237

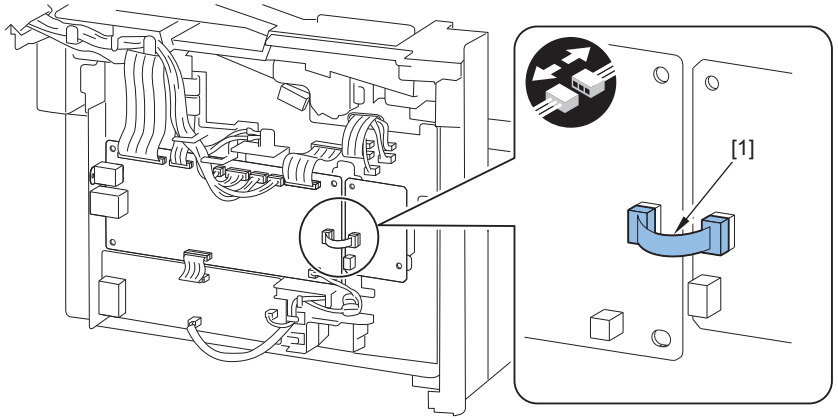
Before Removing the Main Controller PCB Models with FAX (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/MF4450/MF4452/MF4453)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)

Removing the Main Controller PCB Models with FAX (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/MF4450/MF4452/MF4453)

Note:
Proceed from step 1) for the 100V models.
Proceed from step 2-1) or 2-2) for the 120V/230V models.

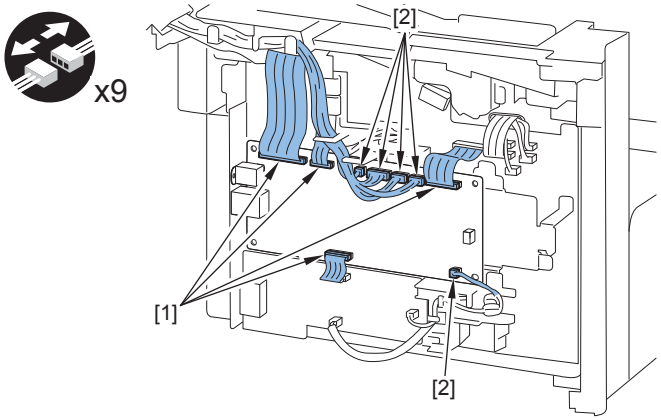
1) Remove the pseudo CI flat cable [1].



F-4-238

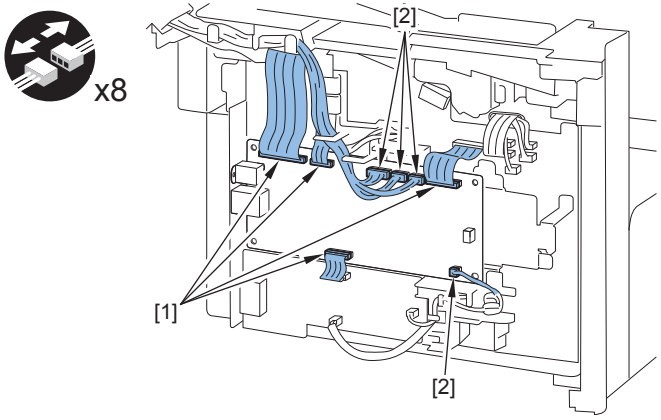
Note:
Refer to step 2-1) for the models with DADF.
Refer to step 2-2) for the models with SADF.

2-1) Models with DADF
Remove the 4 flat cables [1] and 5 connectors [2].



F-4-239

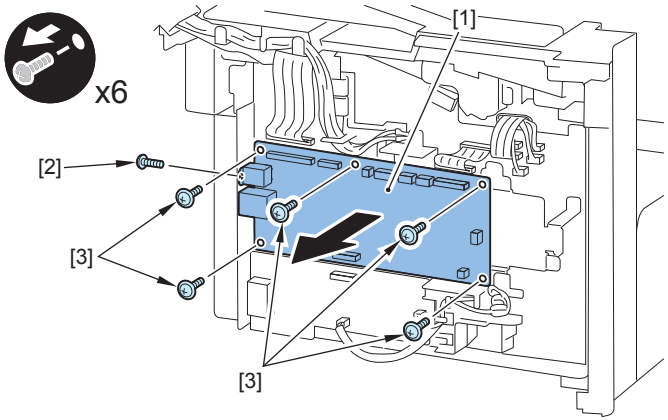
2-2) Models with SADF
Remove the 4 flat cables [1] and 4 connectors [2].



F-4-240

3) Remove the main controller PCB [1].

- 1 screw (binding) [2]
- 5 screws (black TP) [3]



F-4-241

Before Removing the Main Controller PCB Models without FAX or NET (MF4430/MF4410/MF4412/D550/D520)

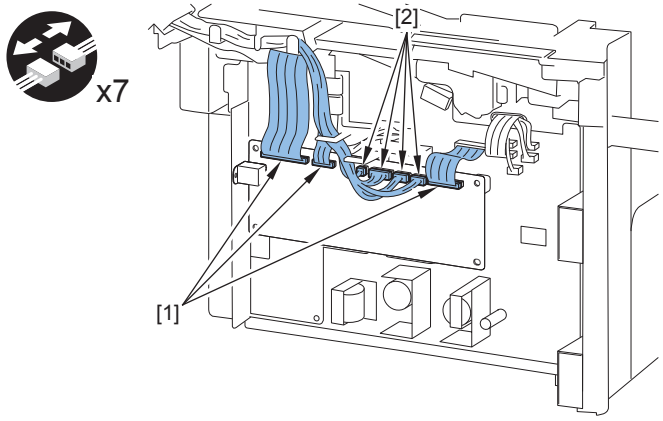
1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)

1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)

Removing the Main Controller PCB Models without FAX or NET (MF4430/MF4410/MF4412/D550/D520)

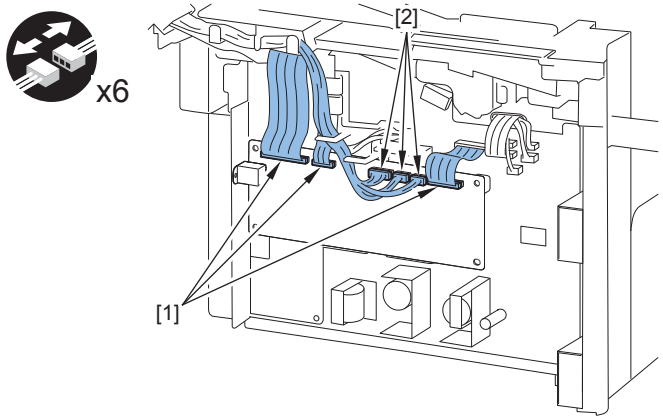
Note:
Refer to step 1-1) for the models with DADF.
Refer to step 1-2) for the models with SADF.
Refer to step 1-3) for the models with copyboard.

1-1) Remove the 3 flat cables [1] and 4 connectors [2].



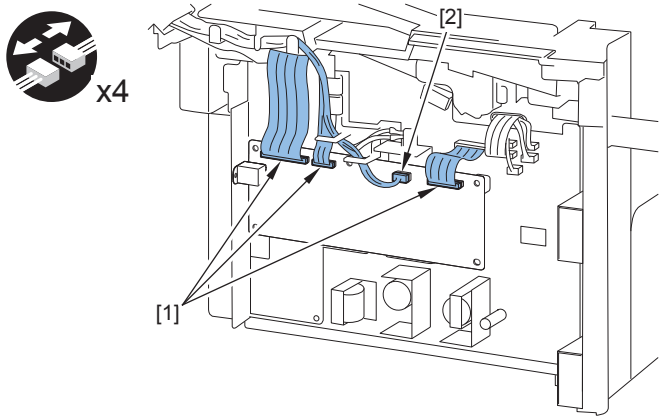
F-4-242

1-2) Remove the 3 flat cables [1] and 3 connectors [2].



F-4-243

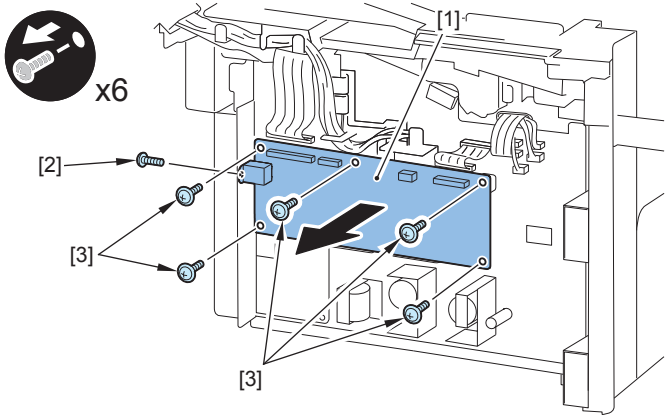
1-3) Remove the 3 flat cables [1] and 1 connector [2].



F-4-244

2) Remove the main controller PCB [1].

- 1 screw (binding) [2]
- 5 screws (black TP) [3]



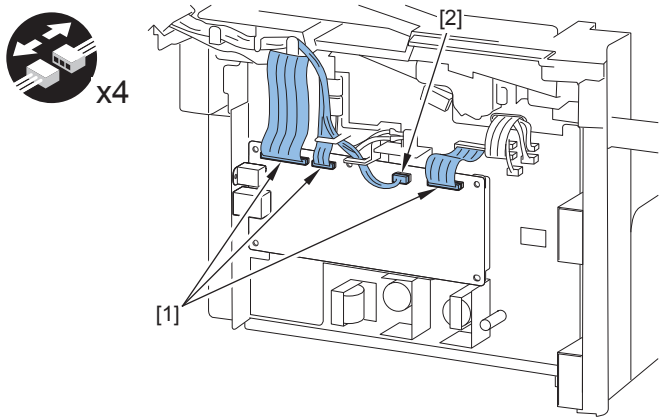
F-4-245

Before Removing the Main Controller PCB Model without FAX, with NET (MF4420n)

1) Remove the left cover. (Single-sided models) (Refer to page 4-32)

Removing the Main Controller PCB Model without FAX, with NET (MF4420n)

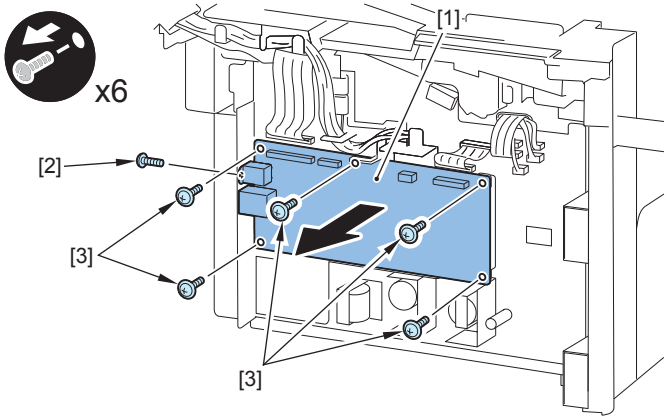
1) Remove the 3 flat cables [1] and 1 connector [2].



F-4-246

2) Remove the main controller PCB [1].

- 1 screw (binding) [2]
- 5 screws (black TP) [3]



F-4-247

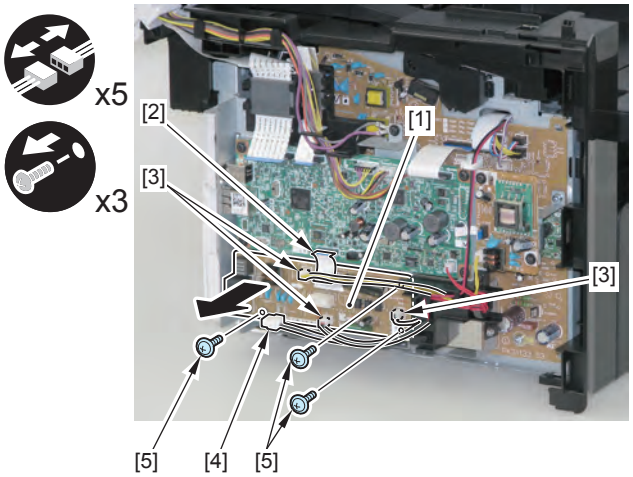
Before Removing the FAX-NCU PCB Models with FAX (100V)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)

Removing the FAX-NCU PCB Models with FAX (100V)

1) Remove the FAX-NCU PCB [1].

- 1 flat cable [2]
- 3 connectors [3]
- 1 terminal [4]
- 3 screws (black TP) [5]



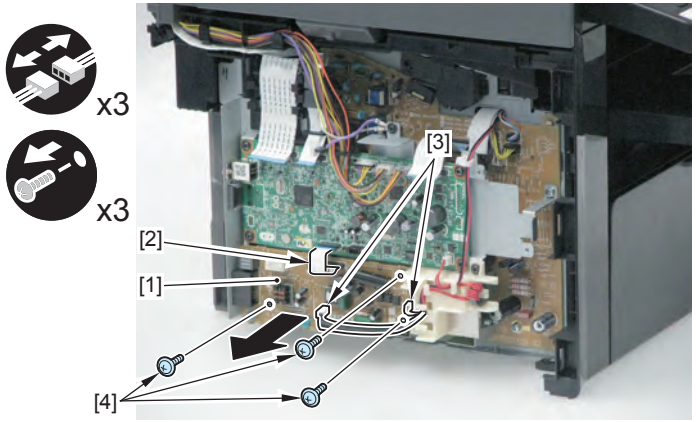
F-4-248

Before Removing the FAX-NCU PCB Models with FAX (120V/230V)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)

Removing the FAX-NCU PCB Models with FAX (120V/230V)

1) Remove the FAX-NCU PCB [1].
- 1 flat cable [2]
- 2 connectors [3]
- 3 screws (black TP) [4]



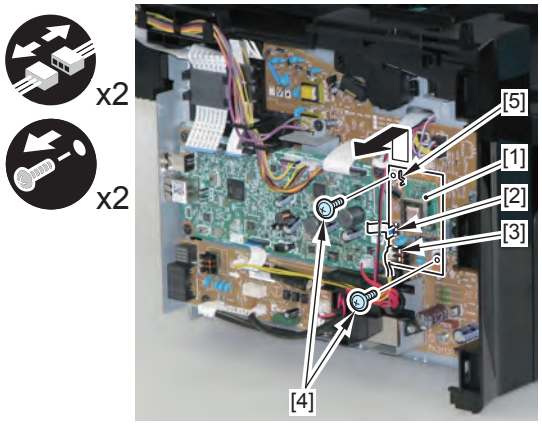
F-4-249

Before Removing the Pseudo CI PCB Models with FAX (100V)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)

Removing the Pseudo CI PCB Models with FAX (100V)

1) Remove the pseudo CI PCB [1].
- 1 flat cable [2]
- 1 connector [3]
- 2 screws (black TP) [4]
- 1 hook [5]



F-4-250

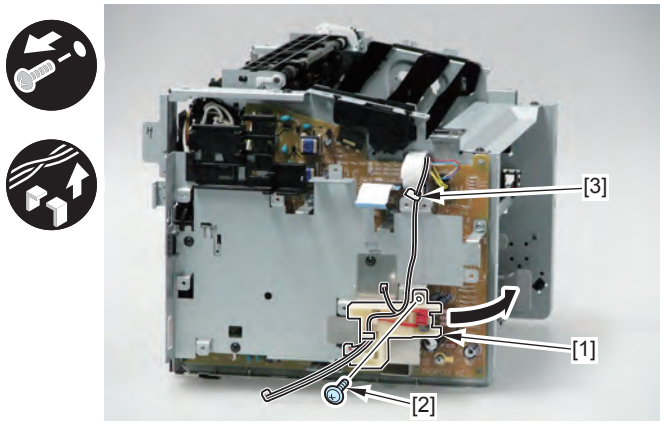
Before Removing the Paper Leading Edge Sensor

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
3-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6-1) Remove the rear cover. (Single-sided models) (Refer to page 4-37)
6-2) Remove the duplex feed unit. (Duplex models) (Refer to page 4-155)
7-1) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
7-2) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
7-3) Remove the main controller PCB. (models without FAX, with NET) (Refer to page 4-102)

Removing the Paper Leading Edge Sensor

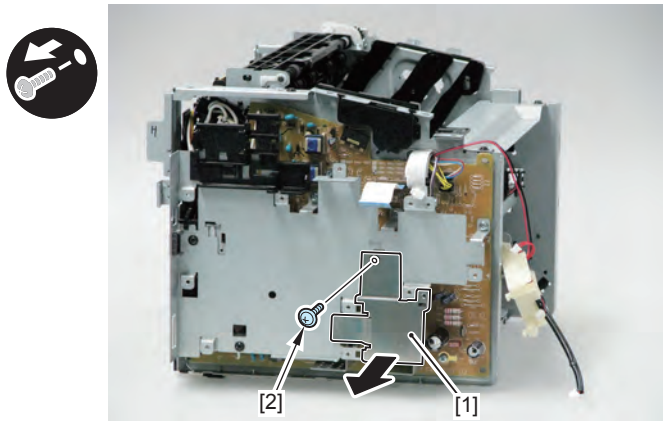
Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.
Refer to steps 1-1-1), 1-1-2) and 1-1-3) for the models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)
Refer to step 1-2) for the models without FAX or NET (MF4430/MF4550d/MF4410/MF4412/D550/D520)
Refer to step 1-3) for the models without FAX, with NET (MF4420n)

1-1-1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



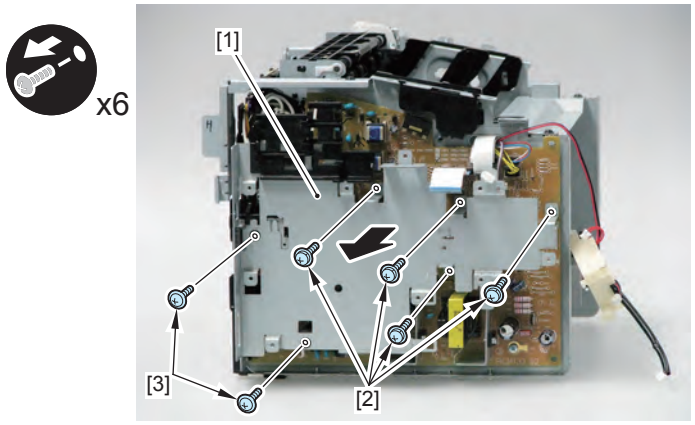
F-4-251

1-1-2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



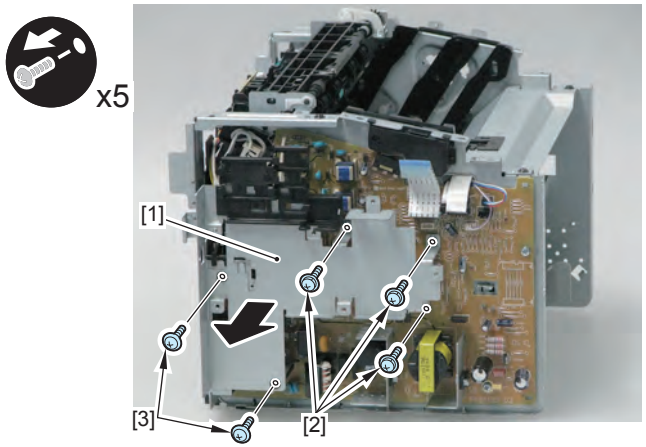
F-4-252

1-1-3) Remove the main controller mounting plate [1].
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



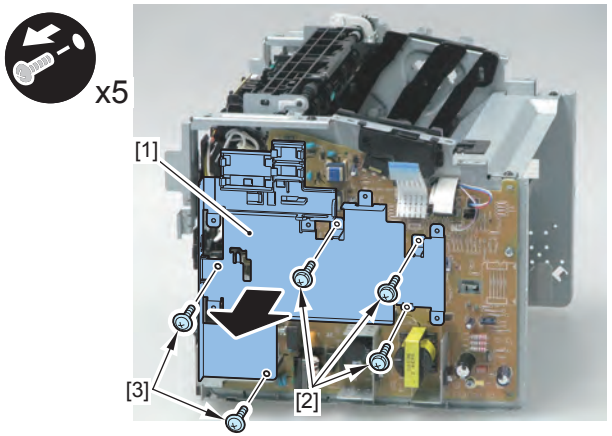
F-4-253

1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



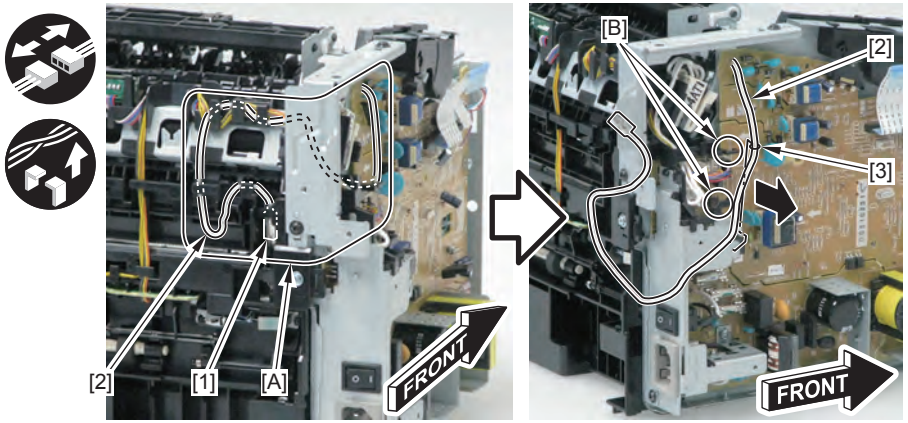
F-4-254

1-3) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



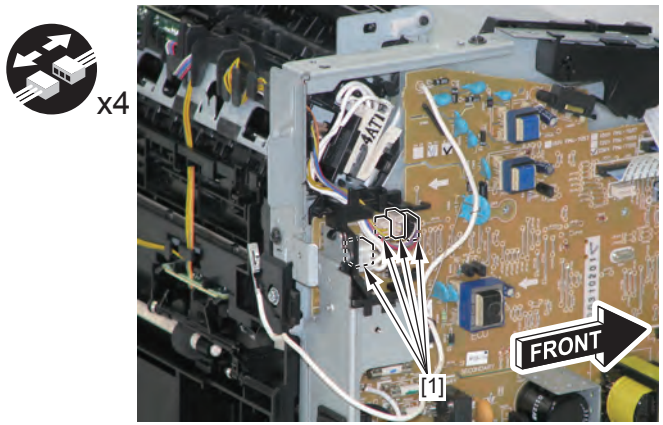
F-4-255

2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].
3) Free the harness retaining spring [3] from the 2 hooks [B].



F-4-256

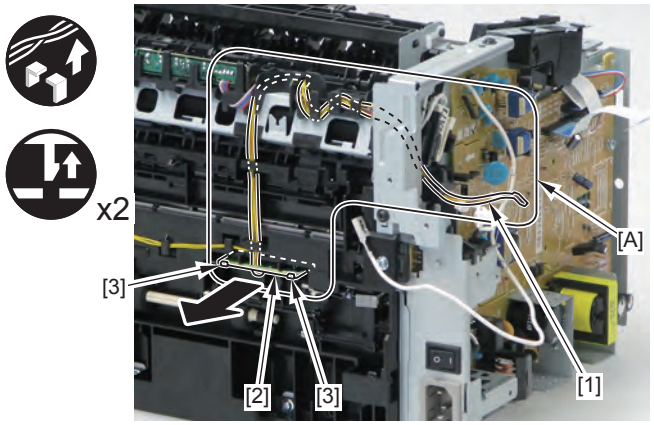
4) Remove the 4 connectors [1].



F-4-257

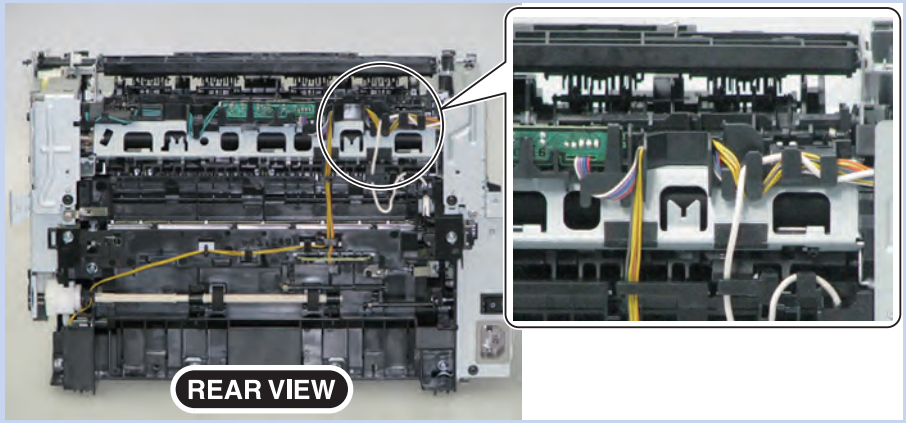
5) Disengage the harness [1] from the harness guide [A], and remove the paper leading edge sensor [2].

- 2 claws [3]



F-4-258

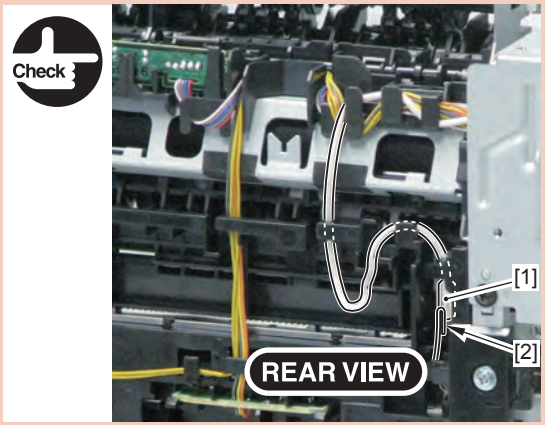
Note:
The below picture shows how to wind the harness.



F-4-259

Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



F-4-260

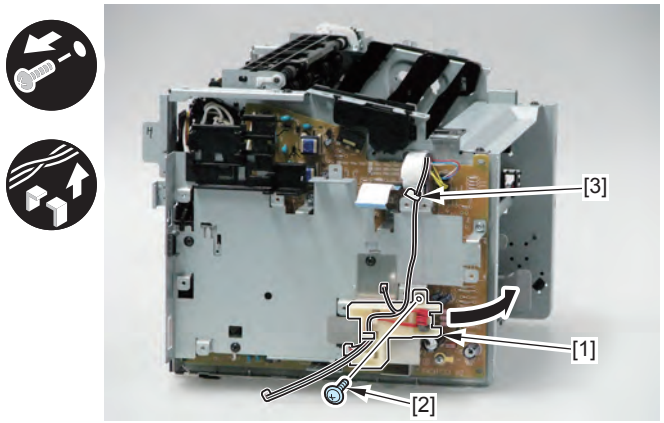
Before Removing the Fixing Delivery/Paper Width Sensor PCB

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
3-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6-1) Remove the rear cover. (Single-sided models) (Refer to page 4-37)
6-2) Remove the duplex feed unit. (Duplex models) (Refer to page 4-155)
7-1) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
7-2) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
7-3) Remove the main controller PCB. (models without FAX, with NET) (Refer to page 4-102)

Removing the Fixing Delivery/Paper Width Sensor PCB

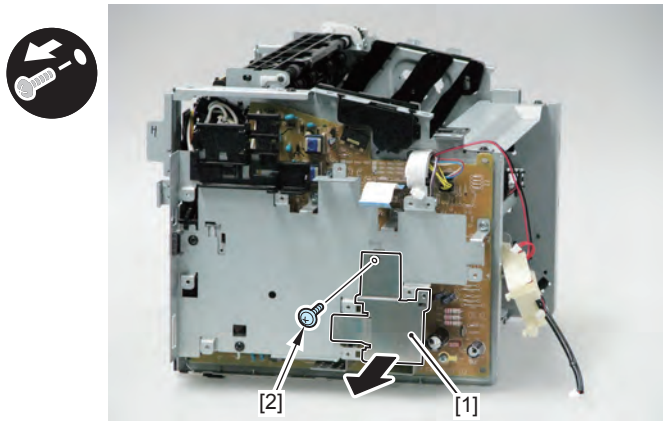
Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.
Refer to steps 1-1-1), 1-1-2) and 1-1-3) for the models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)
Refer to step 1-2) for the models without FAX or NET (MF4430/MF4550d/MF4410/MF4412/D550/D520)
Refer to step 1-3) for the models without FAX, with NET (MF4420n)

1-1-1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



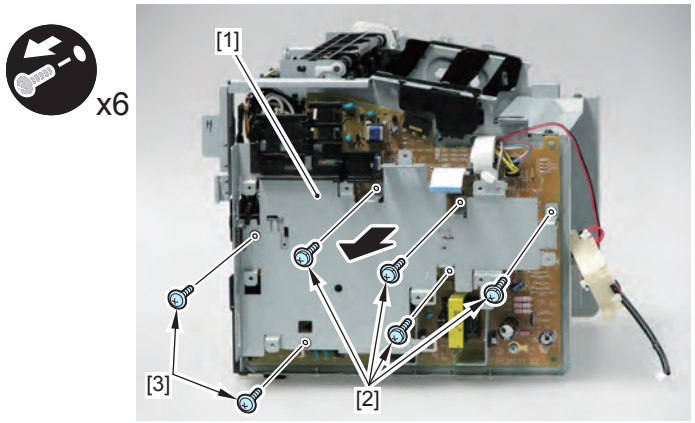
F-4-261

1-1-2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



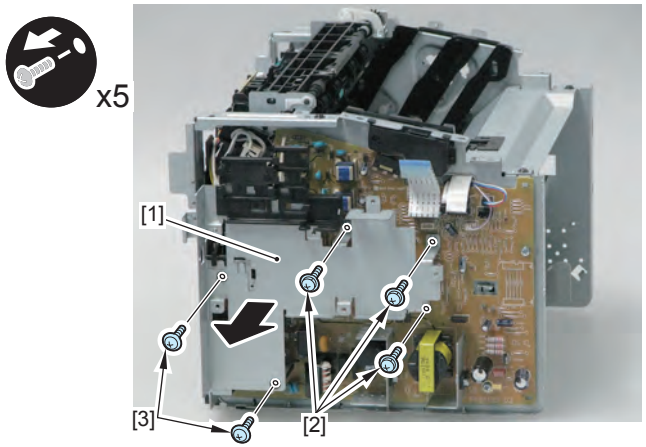
F-4-262

1-1-3) Remove the main controller mounting plate [1].
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



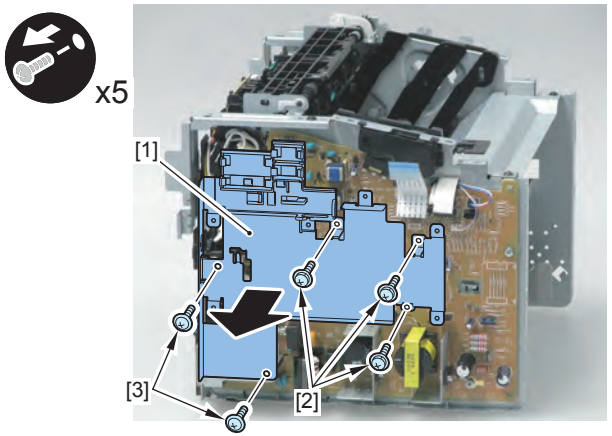
F-4-263

1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



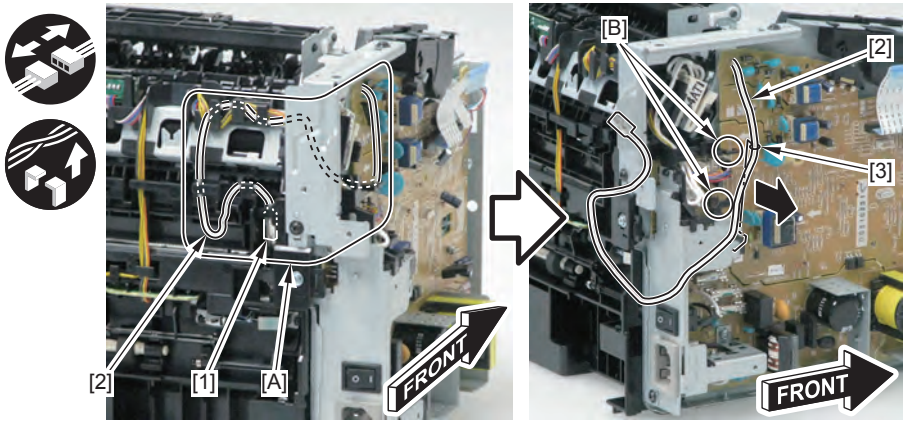
F-4-264

1-3) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



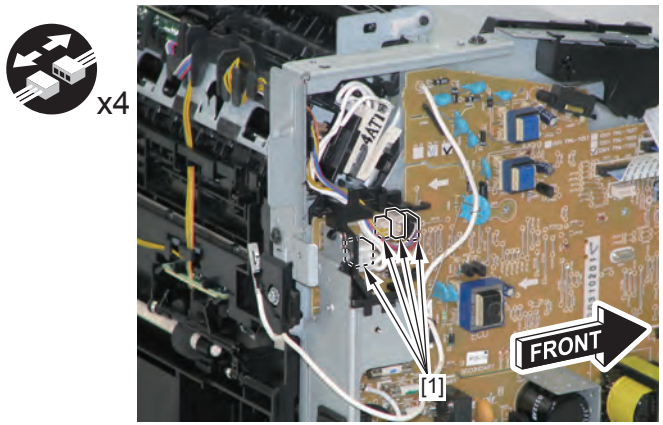
F-4-265

2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].
3) Free the harness retaining spring [3] from the 2 hooks [B].



F-4-266

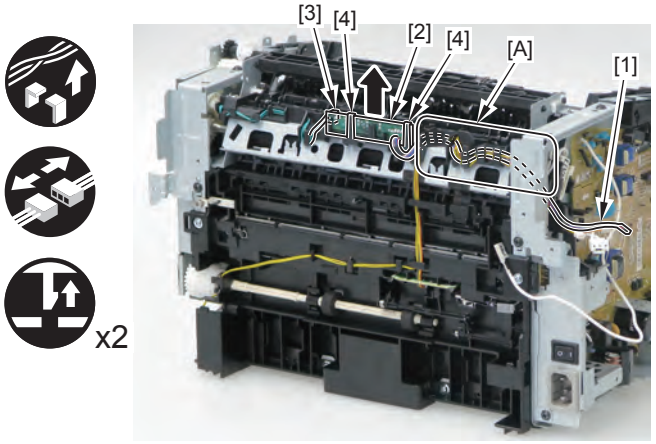
4) Remove the 4 connectors [1].



F-4-267

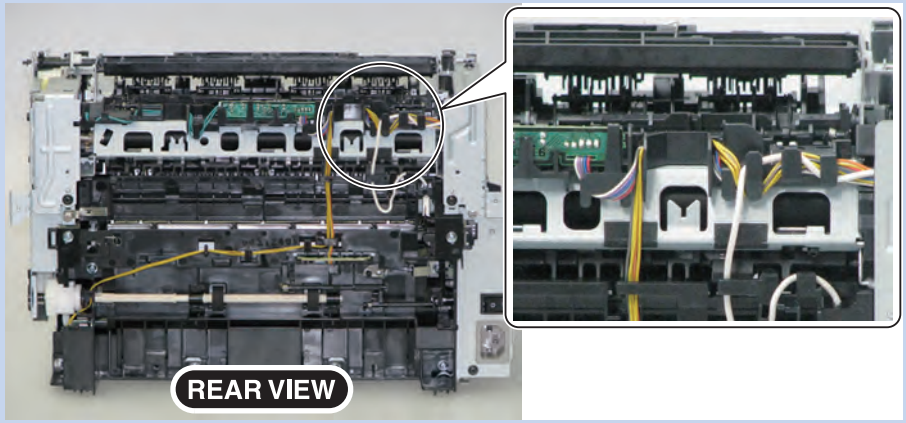
5) Disengage the harness [1] from the harness guide [A], and remove the fixing delivery/paper width sensor PCB [2].

- 1 connector [3]
- 2 claws [4]



F-4-268

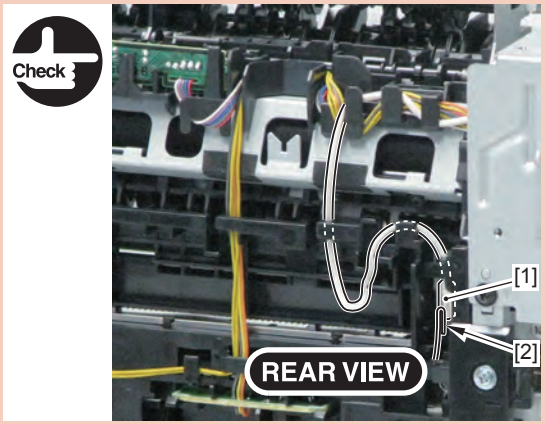
Note:
The below picture shows how to wind the harness.



F-4-269

Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



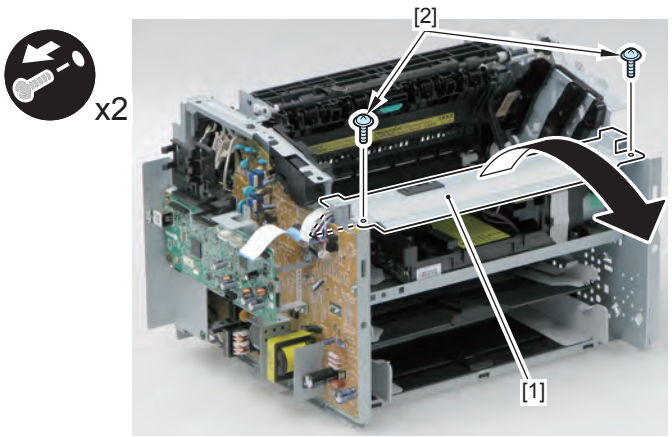
F-4-270

Before Removing the Toner Sensor and Multi Pickup Sensor Unit Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
3-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
3-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

Removing the Toner Sensor and Multi Pickup Sensor Unit Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)

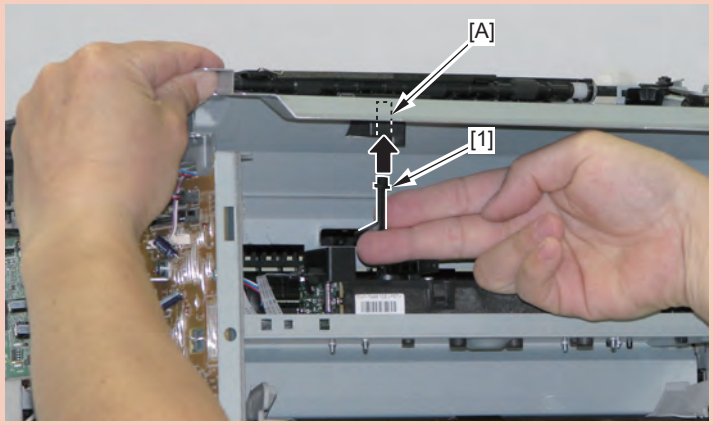
1) Remove the scanner cover [1].
- 2 screws (black TP) [2]



F-4-271

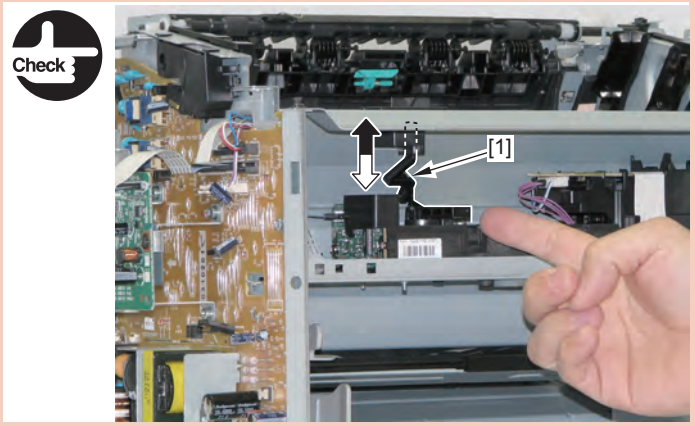
Caution:

When mounting the scanner cover, pass the shutter open/close lever [1] through the hole [A] in the scanner cover.



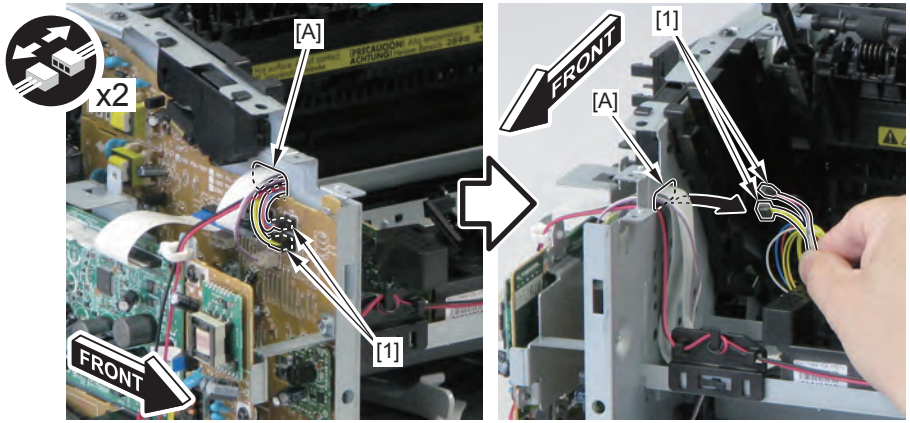
F-4-272

Ensure that the shutter open/close lever [1] can move vertically.



F-4-273

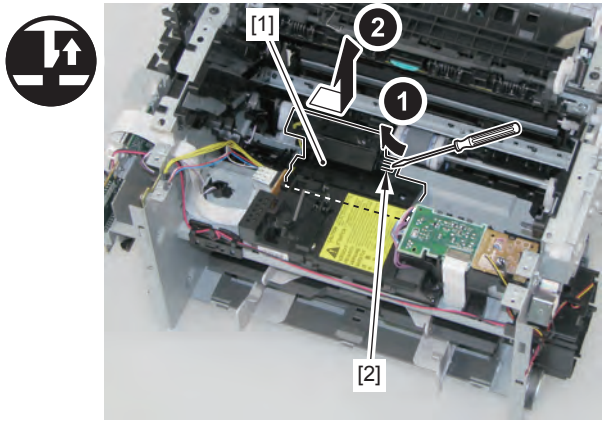
2) Remove the 2 connectors [1] and pass it inside through the hole [A] in the left panel.



F-4-274

3) Remove the Toner sensor and multi pickup sensor unit [1].

- 1 claw [2]



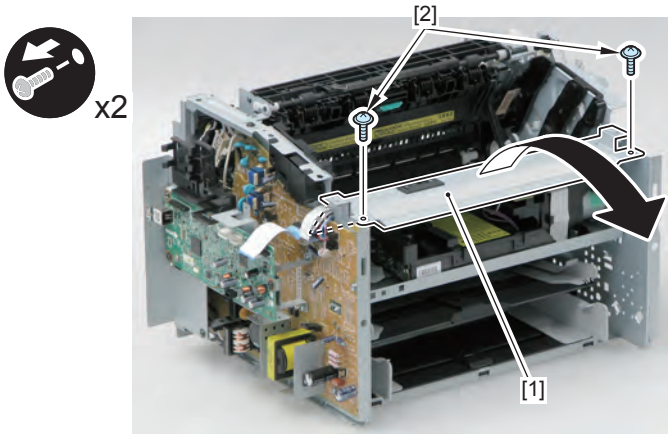
F-4-275

Before Removing the Multi Pickup Sensor Unit Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
3-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

Removing the Multi Pickup Sensor Unit Models without FAX (MF4430/MF4420n/MF4410/MF4412/D550/D520)

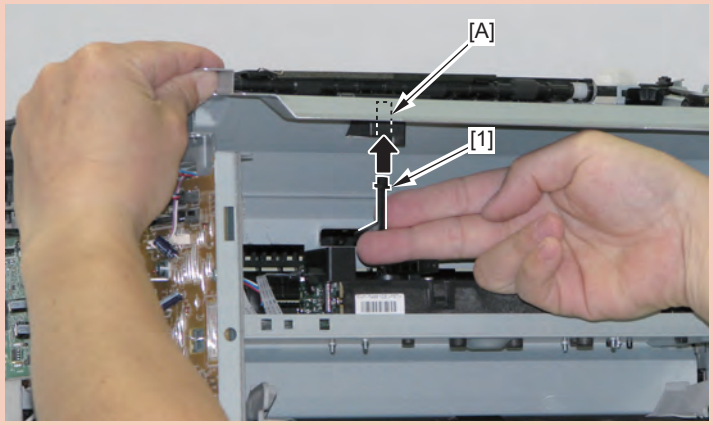
1) Remove the scanner cover [1].
- 2 screws (black TP) [2]



F-4-276

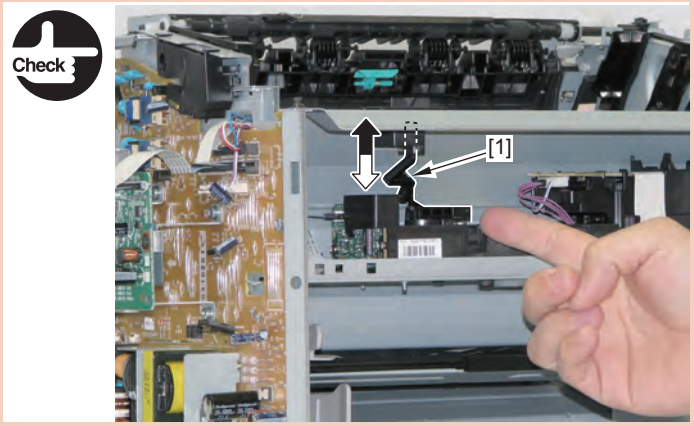
Caution:

When mounting the scanner cover, pass the shutter open/close lever [1] through the hole [A] in the scanner cover.



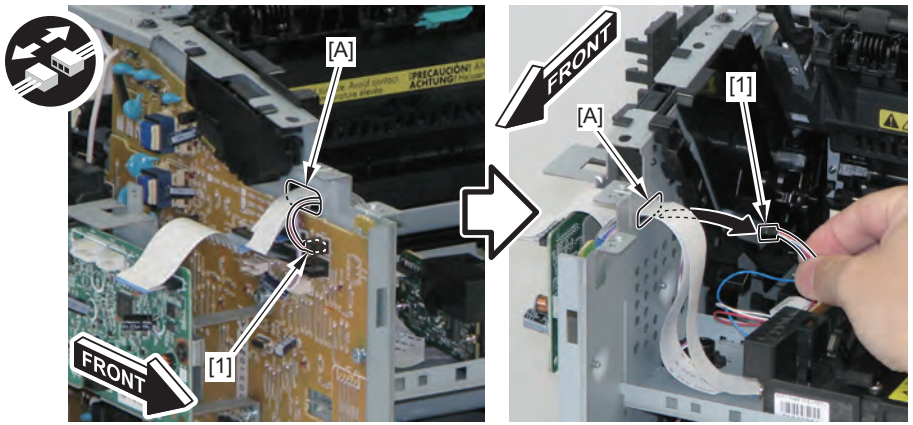
F-4-277

Ensure that the shutter open/close lever [1] can move vertically.



F-4-278

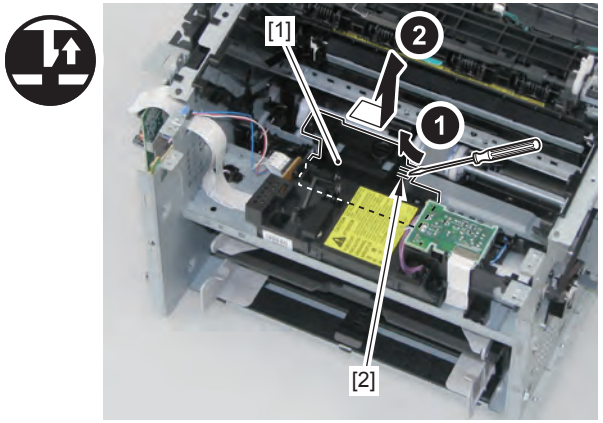
2) Remove the connector [1] and pass it inside through the hole [A] in the left panel.



F-4-279

3) Remove the multi sensor unit [1].

- 1 claw [2]



F-4-280

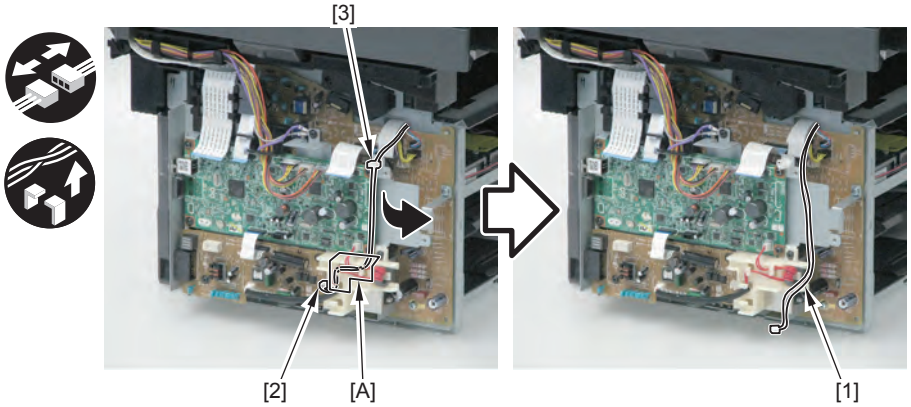
Before Removing the Speaker Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)

1-1) Remove the left cover. (Duplex models) (Refer to page 4-31)
1-2) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the right cover. (Duplex models) (Refer to page 4-33)
2-2) Remove the right cover. (Single-sided models) (Refer to page 4-34)
3) Remove the front cover unit. (Refer to page 4-35)

Removing the Speaker Models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)

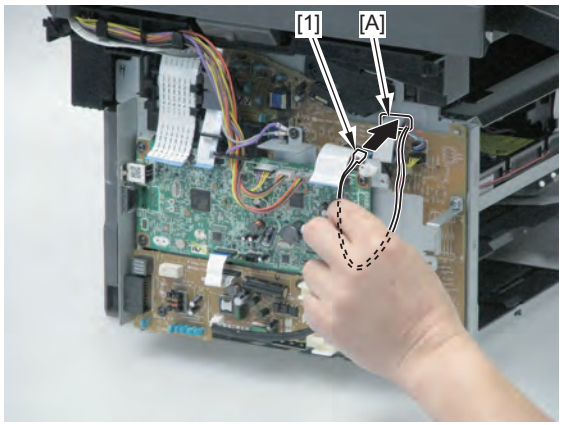
1) Remove the speaker harness [1].

- 1 connector [2]
- Harness guide [A]
- 1 clamp [3]



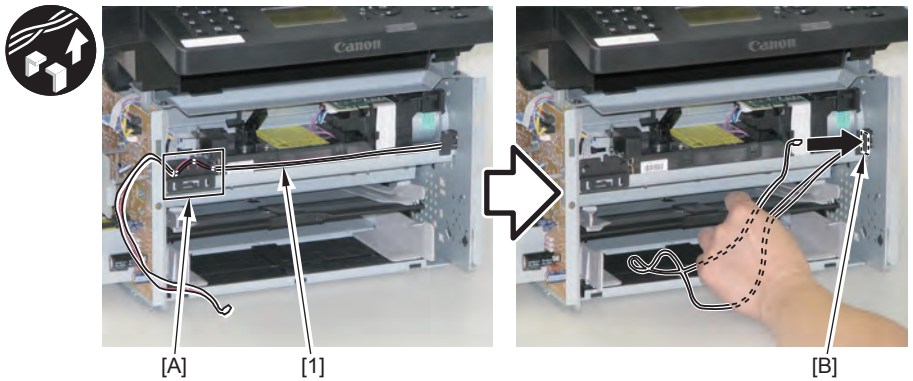
F-4-281

2) Pass the speaker harness [1] inside through the hole [A] in the left panel.



F-4-282

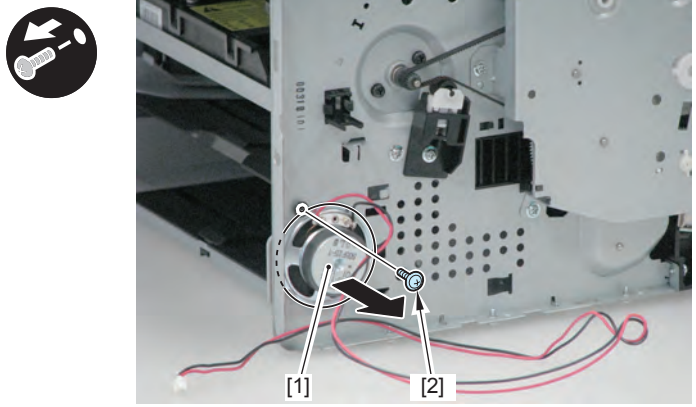
3) Disengage the speaker harness [1] from the harness guide [A] and pass it out through the hole [B] in the right panel.



F-4-283

4) Remove the speaker [1].

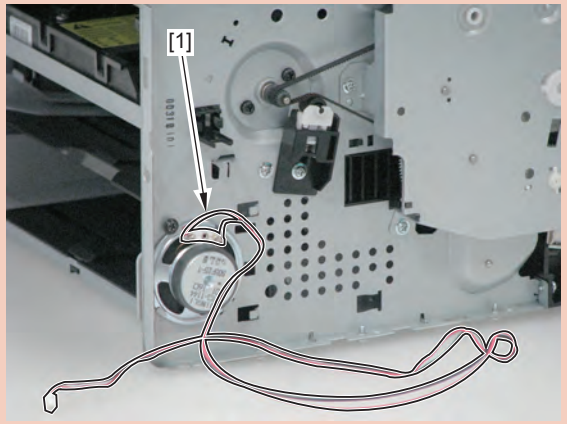
- 1 screw (black TP) [2]



F-4-284

Caution:

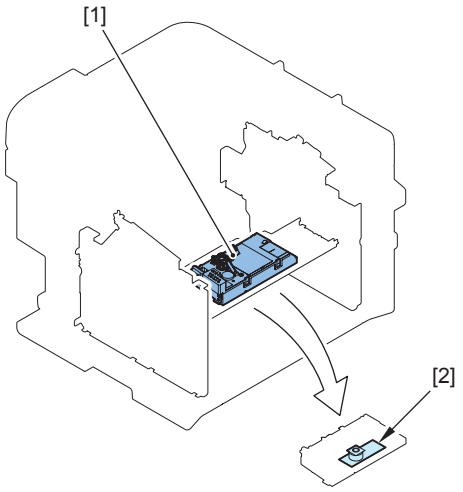
When mounting the speaker, attach the harness [1] to the upper side of the speaker. (So that the speaker harness connector can reach the main controller.)



F-4-285

Laser Exposure System

Location



F-4-286

No.	Name	Service Parts No.		Reference
[1]	Laser Scanner Unit	FM4-6894	MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520	p. 4-115
		FM4-6929	MF4450/MF4452/MF4453/MF4430/ MF4420n/MF4410/MF4412	p. 4-117
[2]	Laser Scanner Motor	-	-	-

T-4-47

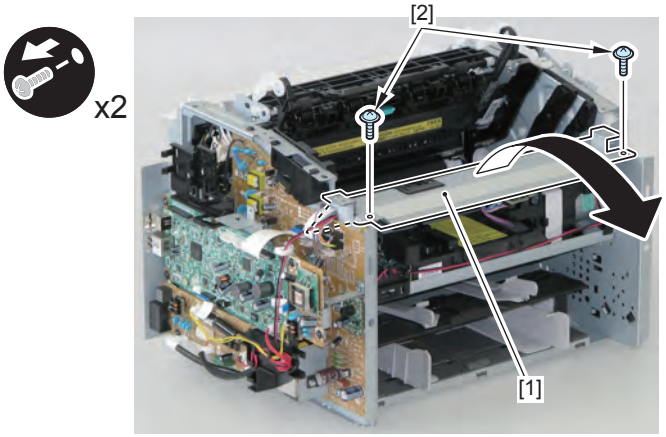
Before Removing the Laser Scanner Unit Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

Removing the Laser Scanner Unit Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

Caution:
Do not disassemble the laser scanner unit because adjustment is required.

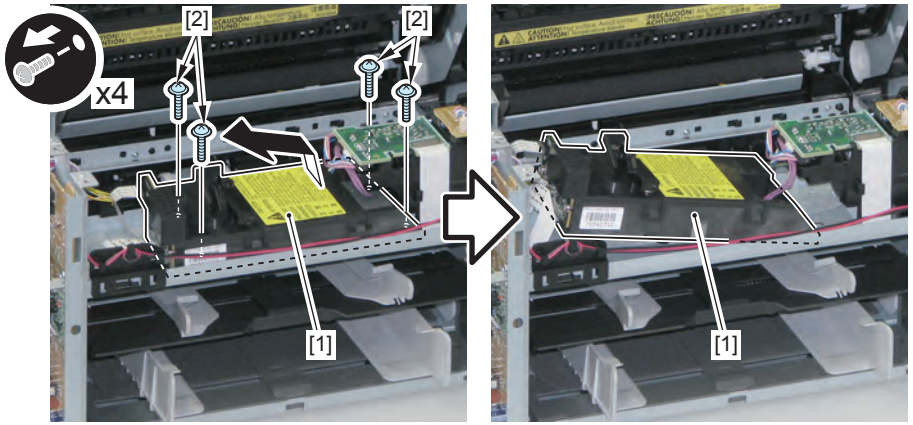
1) Remove the scanner cover [1].
- 2 screws (black TP) [2]



F-4-287

2) Move the laser scanner unit [1].

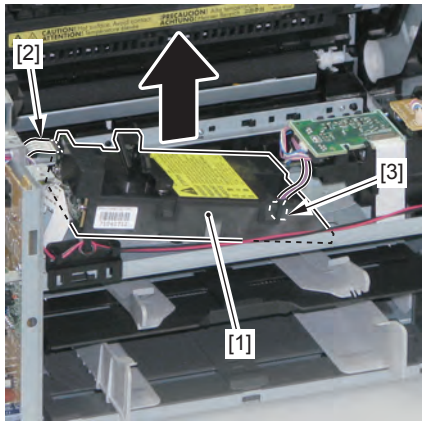
- 4 screws [2]



F-4-288

3) Remove the laser scanner unit [1].

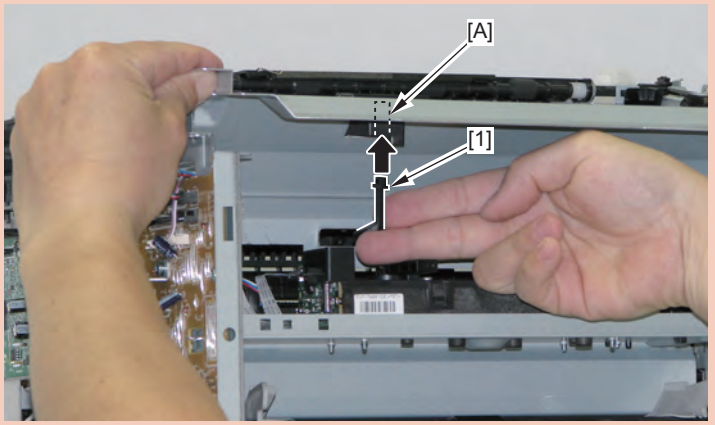
- 1 flat cable [2]
- 1 connector [3]



F-4-289

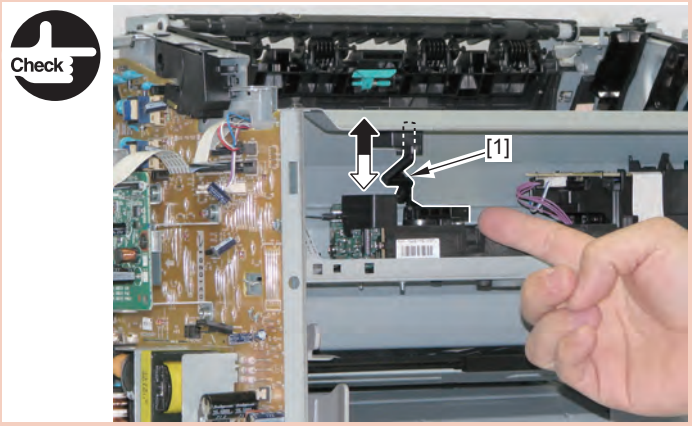
Caution:

When mounting the scanner cover, pass the shutter open/close lever [1] through the hole [A] in the scanner cover.



F-4-290

Ensure that the shutter open/close lever [1] can move vertically.



F-4-291

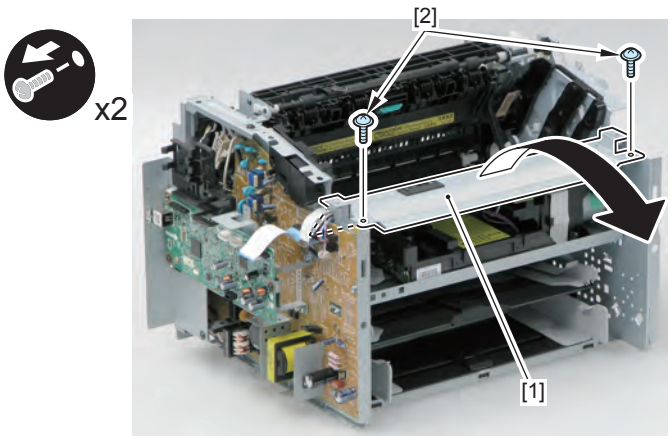
Before Removing the Laser Scanner Unit Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)

1) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-2) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

Removing the Laser Scanner Unit Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)

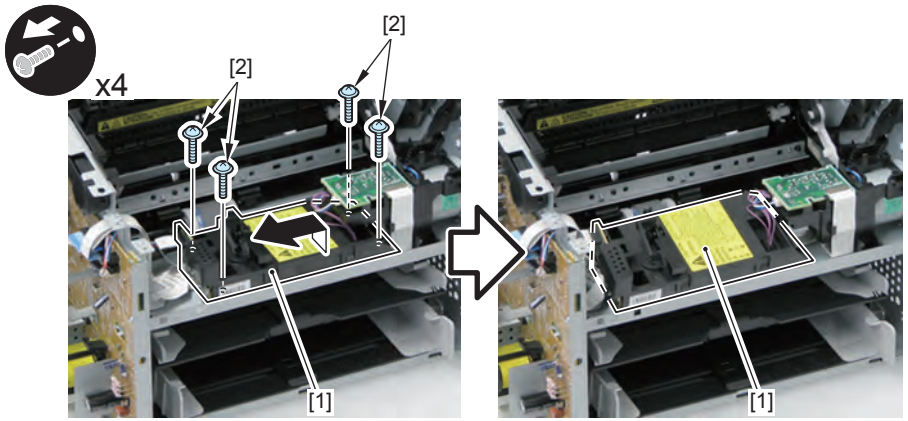
Caution:
Do not disassemble the laser scanner unit because adjustment is required.

1) Remove the scanner cover [1].
- 2 screws (black TP) [2]



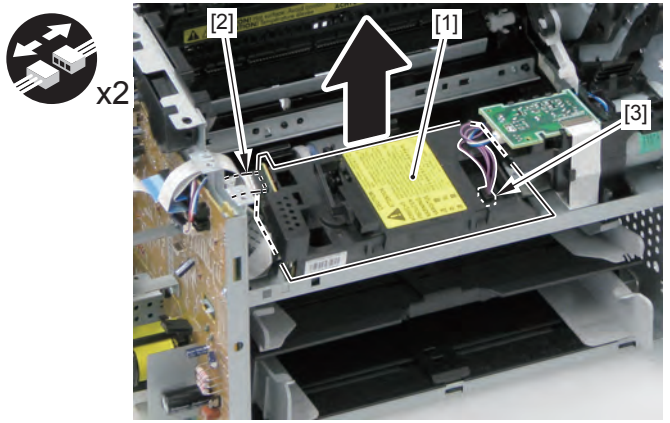
F-4-292

2) Move the laser scanner unit [1].
- 4 screws [2]



F-4-293

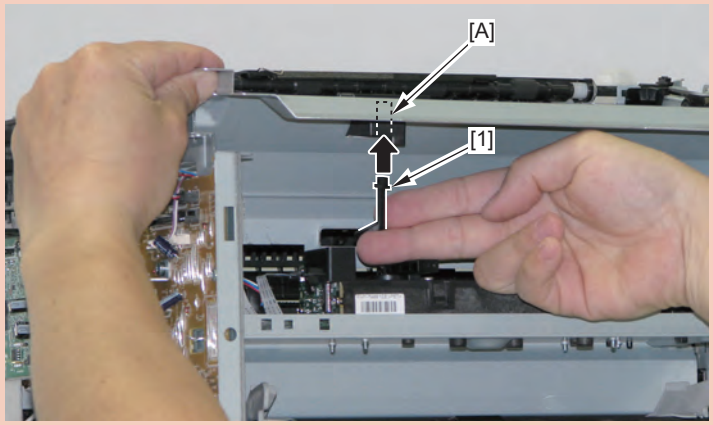
3) Remove the laser scanner unit [1].
- 1 flat cable [2]
- 1 connector [3]



F-4-294

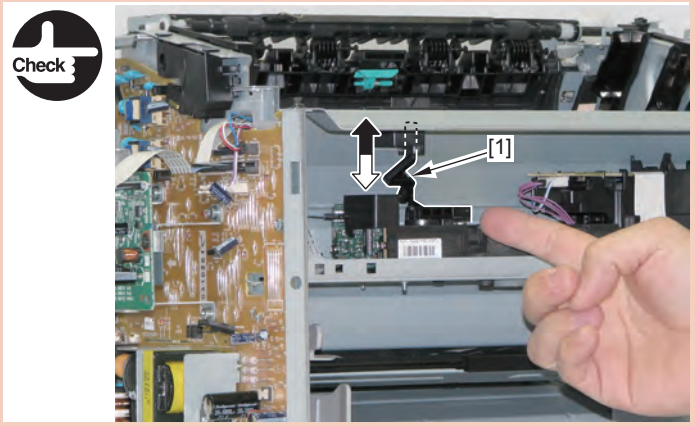
Caution:

When mounting the scanner cover, pass the shutter open/close lever [1] through the hole [A] in the scanner cover.



F-4-295

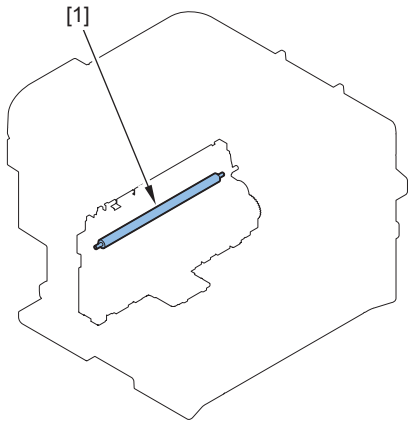
Ensure that the shutter open/close lever [1] can move vertically.



F-4-296

Image Formation System

Location



F-4-297

No.	Name	Service Parts No.		Reference
[1]	Transfer Roller	-	-	p. 4-119

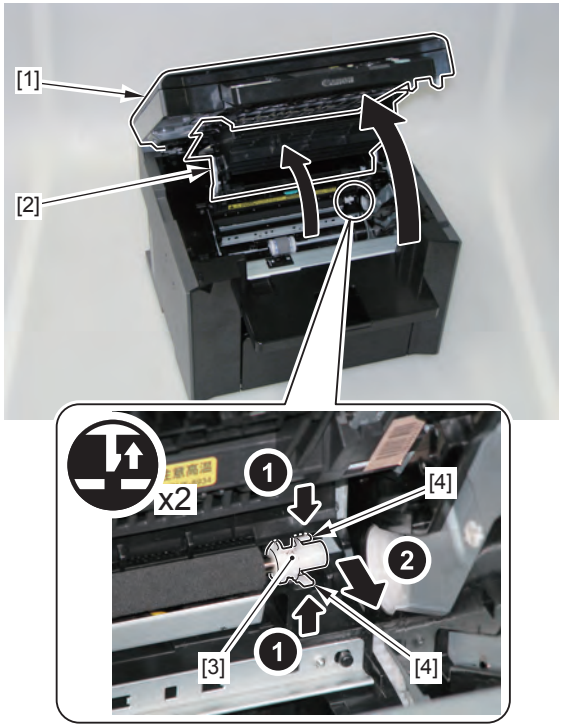
T-4-48

Removing the Transfer Roller

Caution:

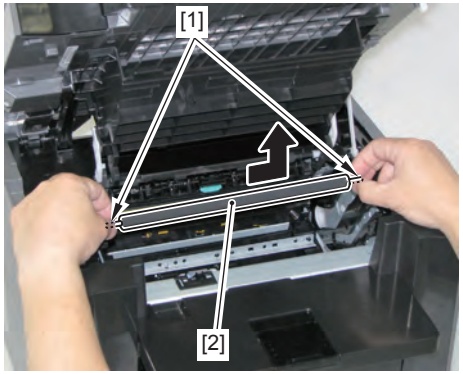
When assembling/disassembling the transfer roller, do not touch the surface of the roller.

1) Open the reader unit [1] and delivery tray [2].
2) Remove the transfer roller bushing [3].
- 2 claws [4]



F-4-298

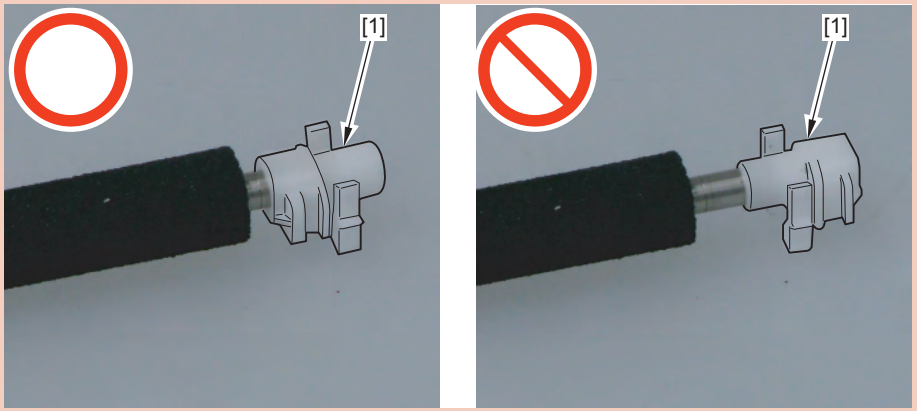
3) Hold both shafts [1] of the transfer roller and remove the roller [2].



F-4-299

Caution:

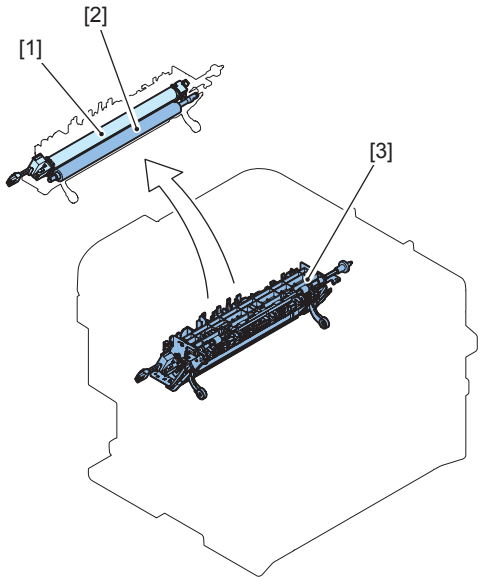
When reassembling, take care not to mistake the direction of the bushing [1].



F-4-300

Fixing System

Location



F-4-301

No.	Name	Service Parts No.		Reference
[1]	Fixing Film Unit	- - -	(100V) (120V) (230V)	
[2]	Fixing Pressure Roller	- -	(100V) (120V, 230V)	
[3]	Fixing Assembly	FM4-6983 RM1-7576 RM1-7577	(100V) (120V) (230V)	p. 4-121, p. 4-125

T-4-49

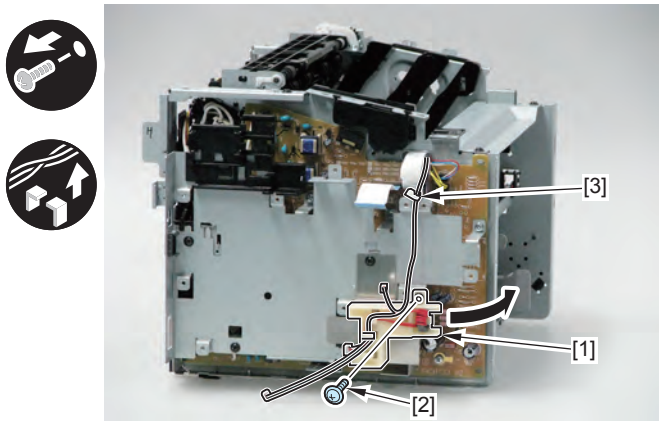
Before Removing the Fixing Assembly Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6) Remove the duplex feed unit. (Duplex models) (Refer to page 4-155)
7-1) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
7-2) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
8-1) Remove the FAX-NCU PCB. (100V models with FAX) (Refer to page 4-102)
8-2) Remove the FAX-NCU PCB. (120V/220V models with FAX) (Refer to page 4-103)
9) Remove the pseudo CI board PCB. (100V models with FAX) (Refer to page 4-103)

Removing the Fixing Assembly Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

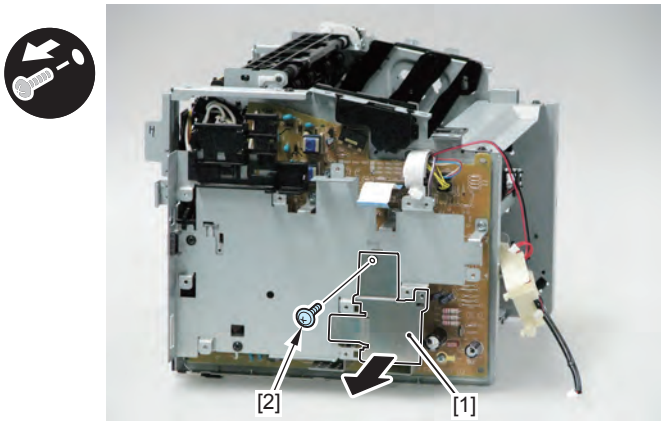
Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.
- Refer to steps 1-1-1), 1-1-2) and 1-1-3) for the models with FAX (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)
- Refer to step 1-2) for the models without FAX or NET (MF4430/MF4550d/MF4410/MF4412/D550/D520)

1-1-1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



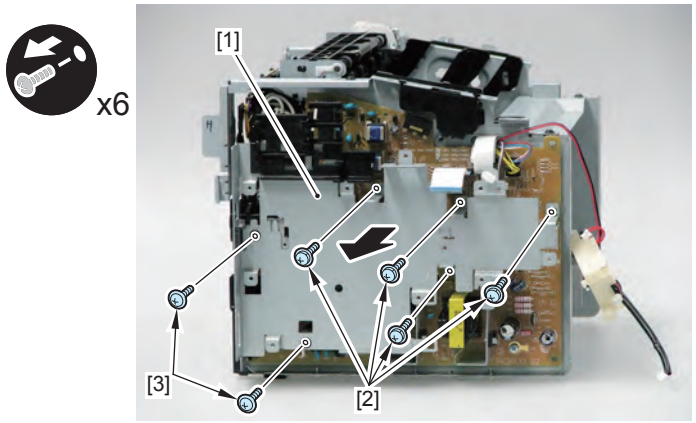
F-4-302

1-1-2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



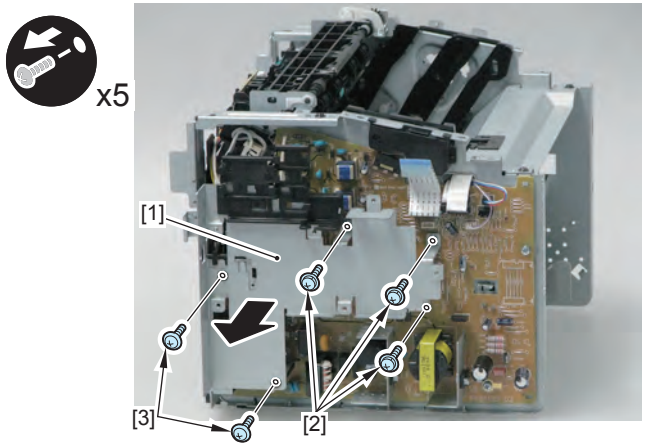
F-4-303

1-1-3) Remove the main controller mounting plate [1].
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



F-4-304

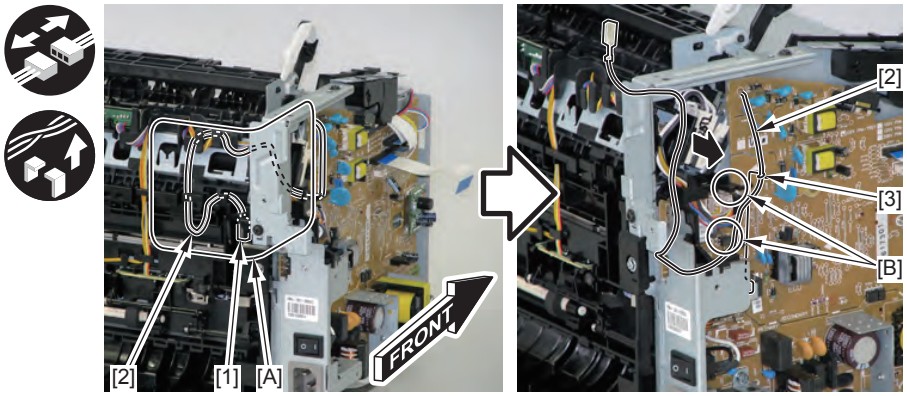
1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



F-4-305

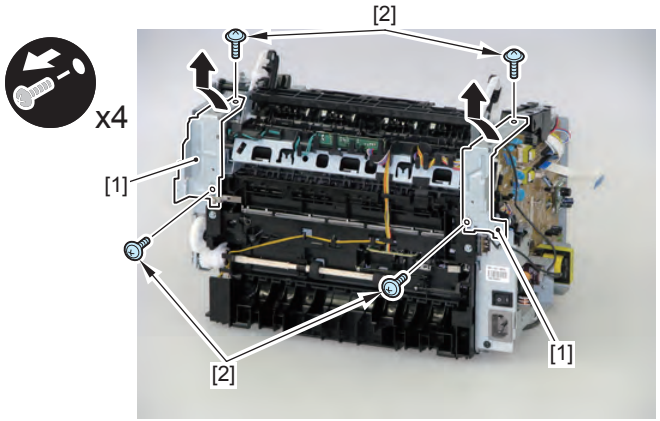
TONER
www.tonerplus.com.ua

2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].
3) Free the harness retaining spring [3] from the 2 hooks [B].



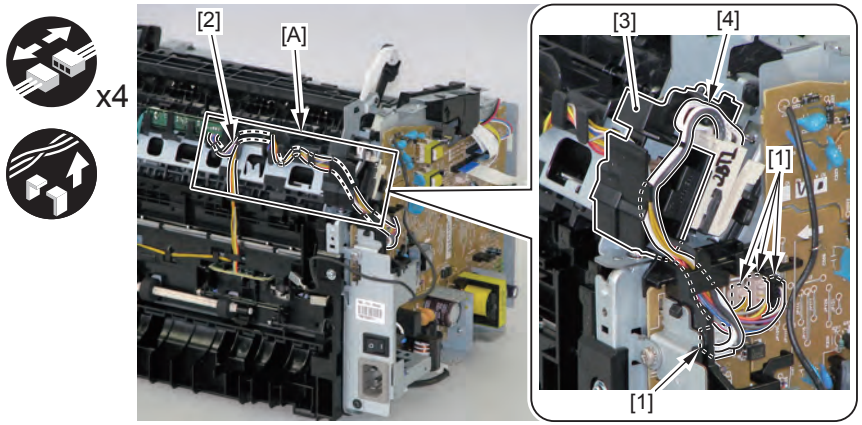
F-4-306

4) Remove the 2 left/right reinforcing plates [1].
- 4 screws (black TP) [2]



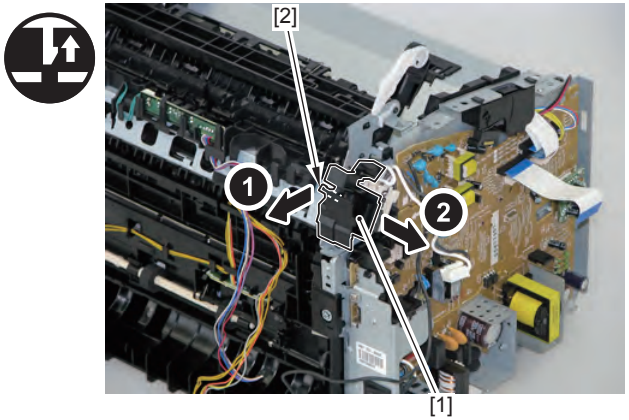
F-4-307

5) Remove the 4 connectors [1].
6) Disengage the harness [2] from the harness guide [A].
7) Disengage the fixing harness [4] from the harness holder [3].



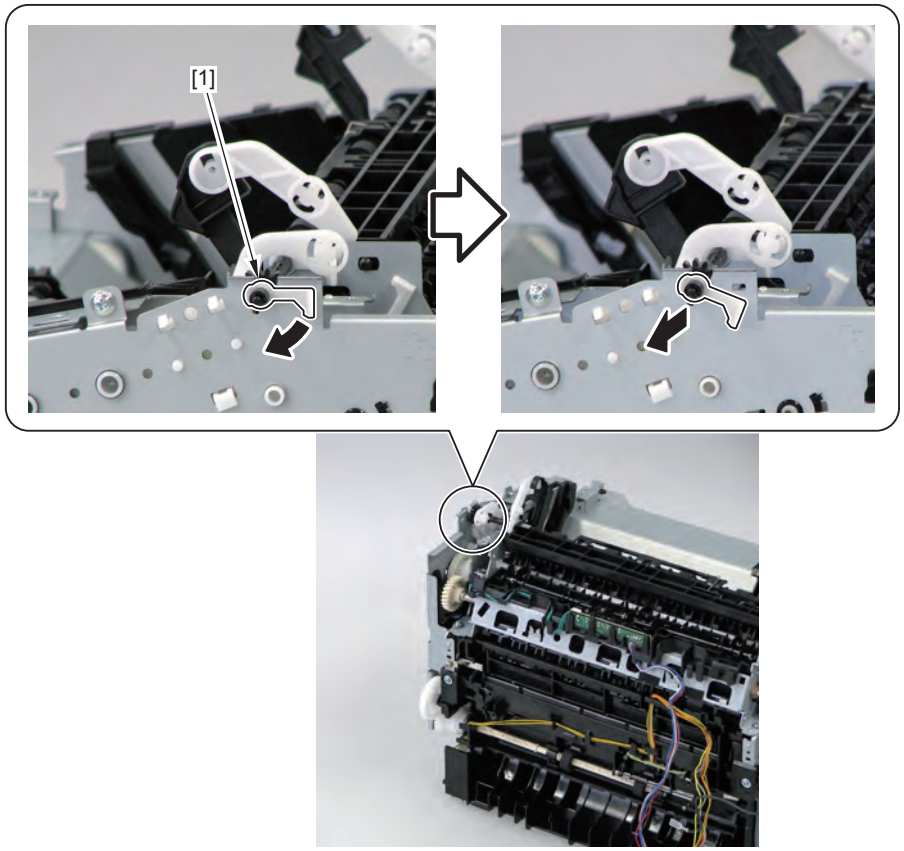
F-4-308

8) Remove the harness holder [1].
- 1 claw [2]



F-4-309

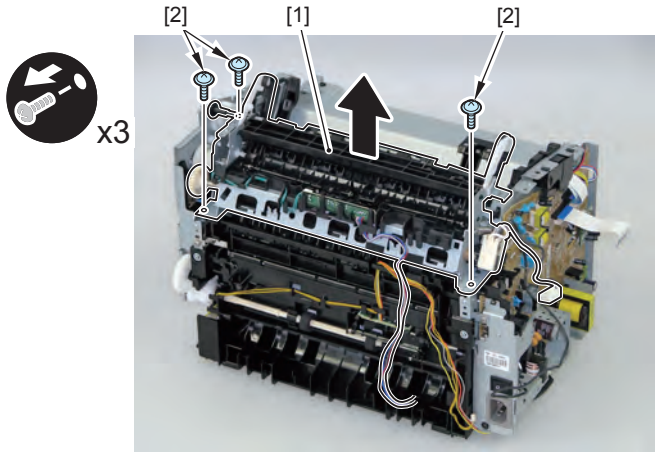
9) Remove the shaft support [1] of the delivery roller.



F-4-310

10) Remove the fixing assembly [1].

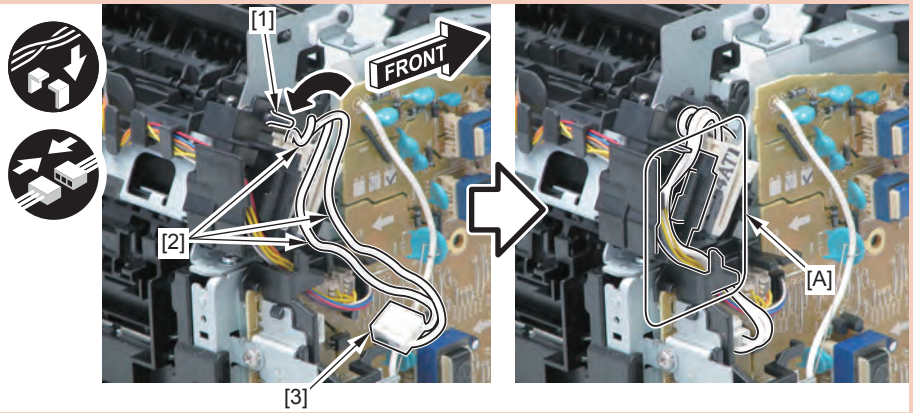
- 3 screws [2]



F-4-311

Caution:

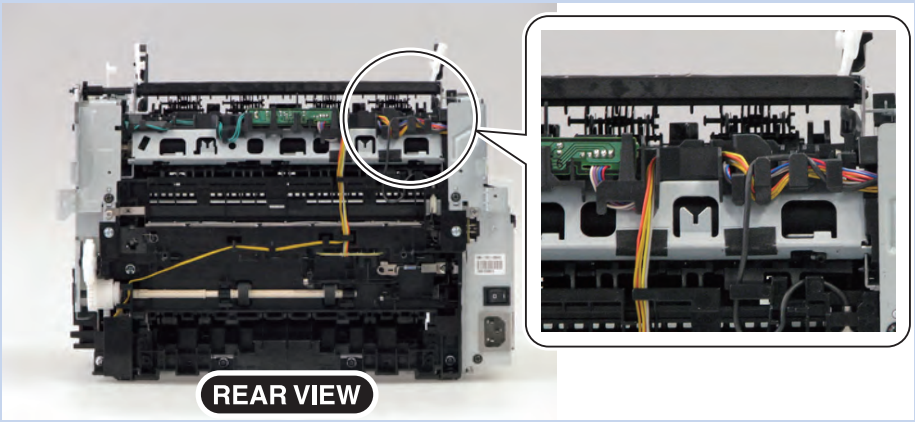
When mounting the fixing harness, wrap the fixing harness [2] around the protruding part [1] of the harness holder, pass it through the harness guide [A], and then mount the connector [3].



F-4-312

Note:

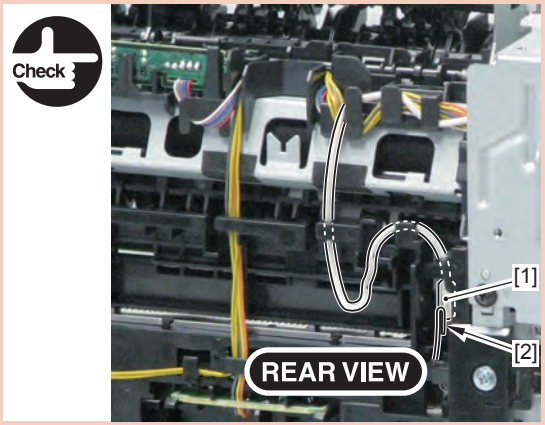
The below picture shows how to wind the harness.



F-4-313

Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



F-4-314

Before Removing the Fixing Assembly Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

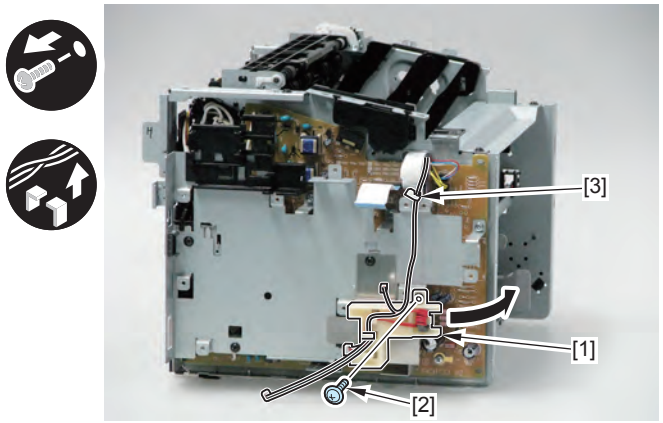
1) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-2) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6) Remove the rear cover. (Single-sided models) (Refer to page 4-37)
7-1) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
7-2) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
7-3) Remove the main controller PCB. (models without FAX, with NET) (Refer to page 4-102)
8-1) Remove the FAX-NCU PCB. (100V models with FAX) (Refer to page 4-102)
8-2) Remove the FAX-NCU PCB. (120V/220V models with FAX) (Refer to page 4-103)
9) Remove the pseudo CI board PCB. (100V models with FAX) (Refer to page 4-103)

Removing the Fixing Assembly Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.

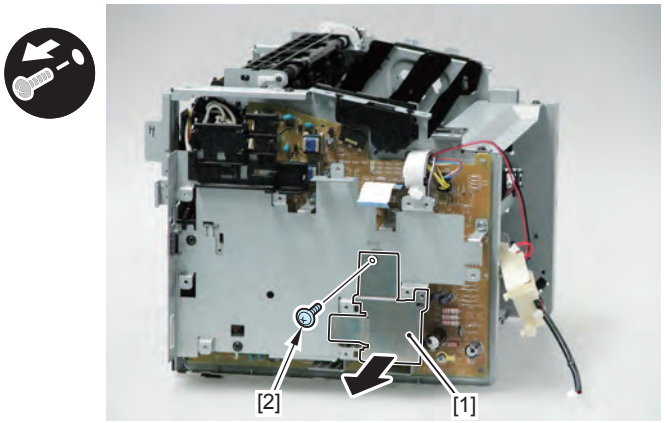
- Refer to steps 1-1-1), 1-1-2) and 1-1-3) for the models with FAX (MF4580dn/MF4570dn/ MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)
- Refer to step 1-2) for the models without FAX or NET (MF4430/MF4420n/MF4550d/ MF4410/MF4412/D550/D520)
- Refer to step 1-3) for the models without FAX, with NET (MF4420n)

1-1-1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



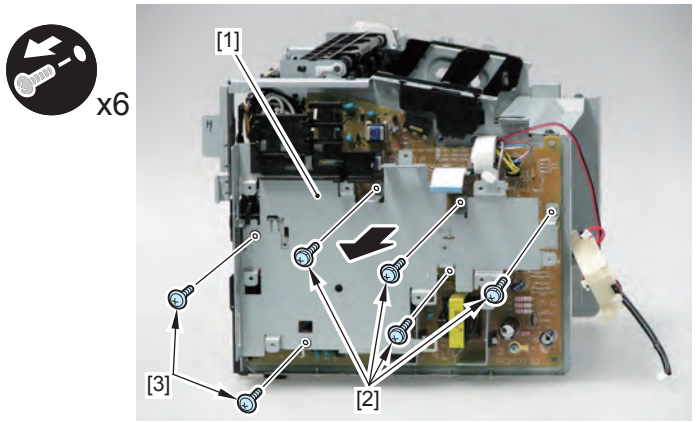
F-4-315

1-1-2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



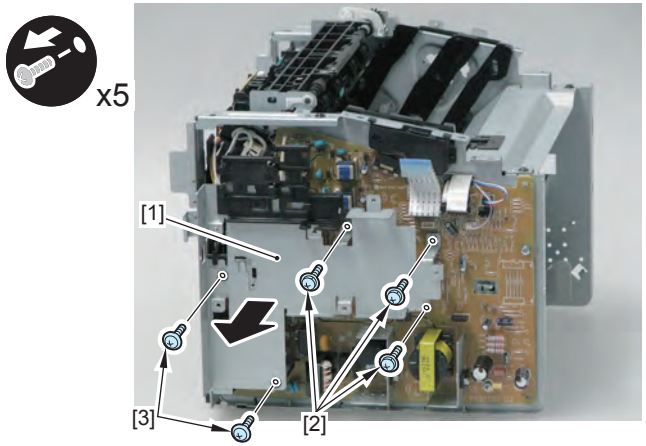
F-4-316

1-1-3) Remove the main controller mounting plate [1].
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



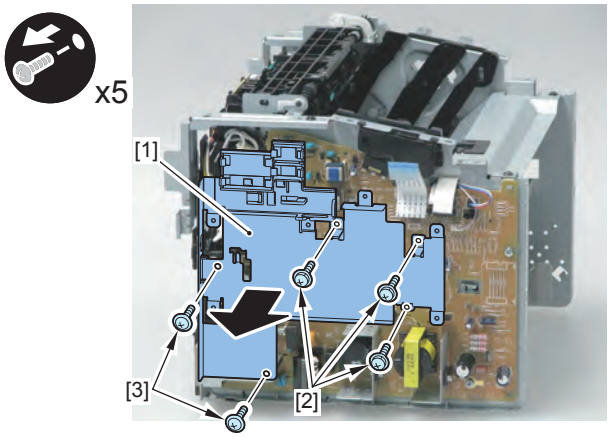
F-4-317

1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



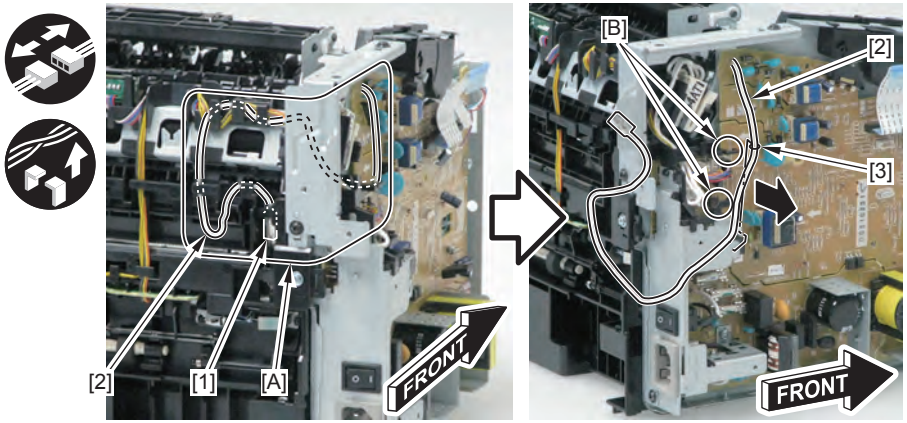
F-4-318

1-3) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



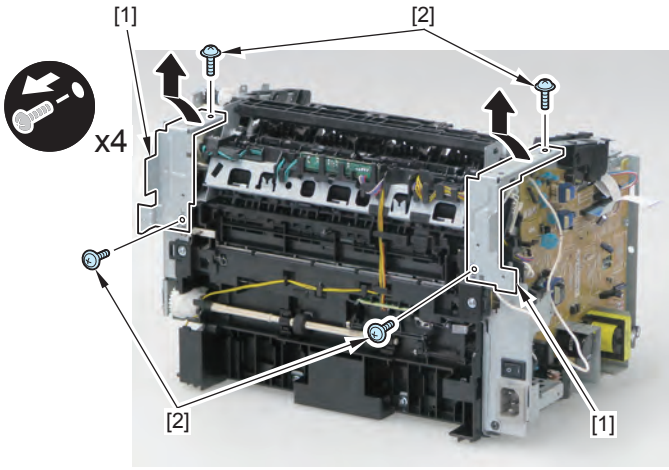
F-4-319

2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].
3) Free the harness retaining spring [3] from the 2 hooks [B].



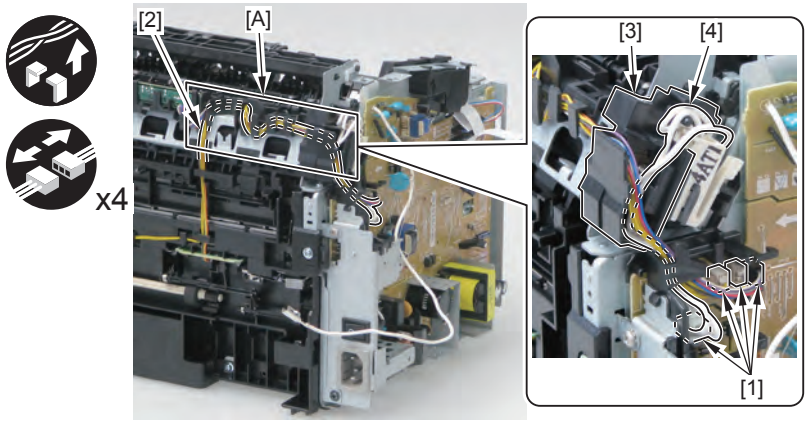
F-4-320

4) Remove the 2 left/right reinforcing plates [1].
- 4 screws (black TP) [2]



F-4-321

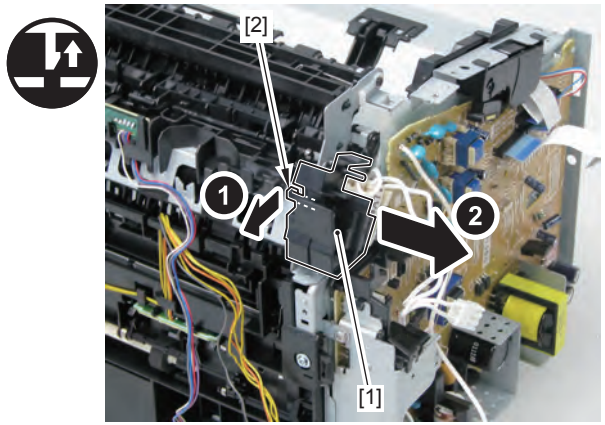
5) Remove the 4 connectors [1].
6) Disengage the harness [2] from the harness guide [A].
7) Disengage the fixing harness [4] from the harness holder [3].



F-4-322

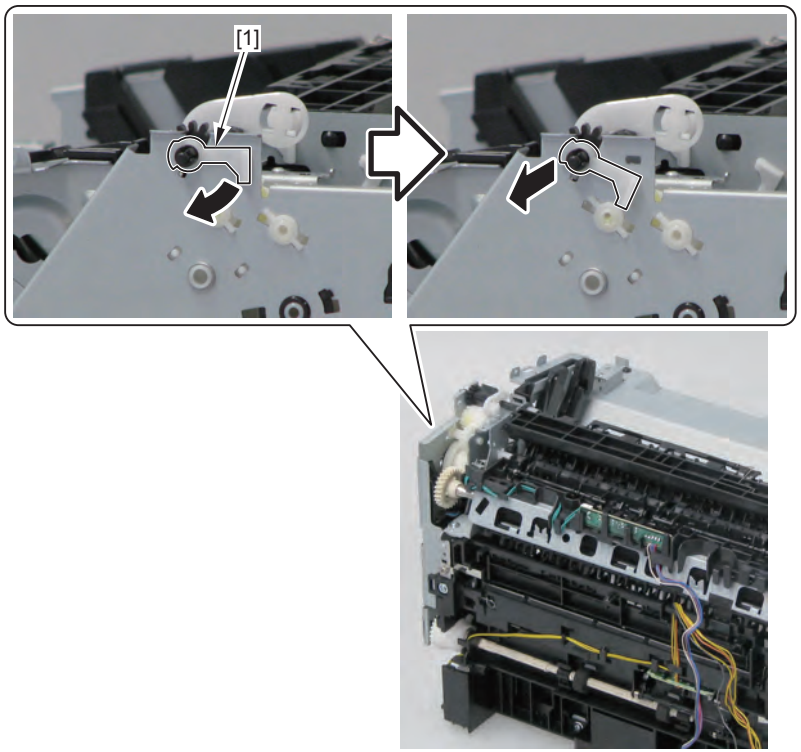
8) Remove the harness holder [1].

- 1 claw [2]



F-4-323

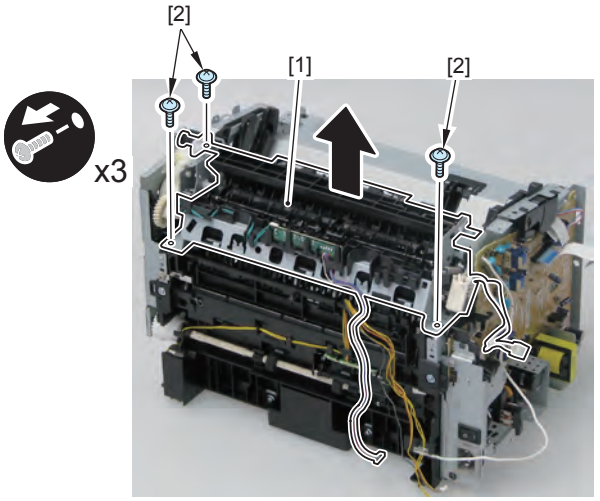
9) Remove the shaft support [1] of the delivery roller.



F-4-324

10) Remove the fixing assembly [1].

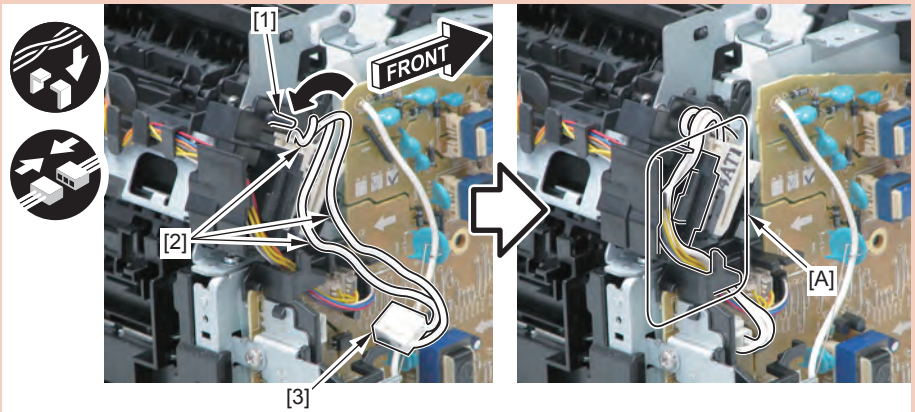
- 3 screws [2]



F-4-325

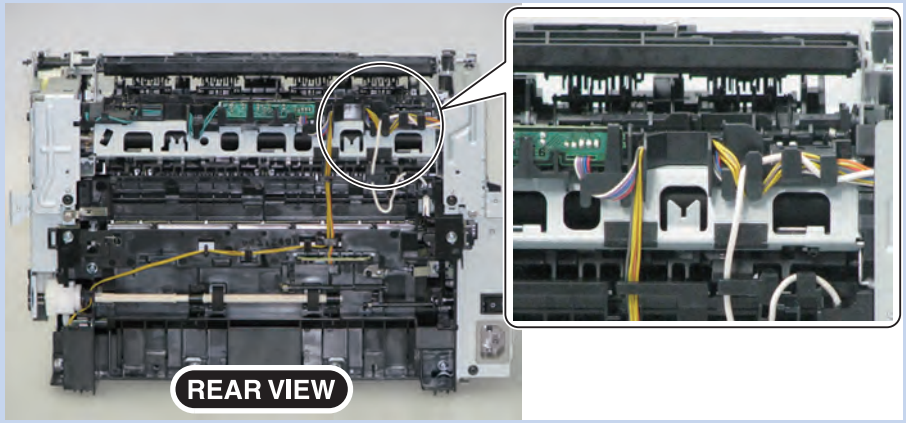
Caution:

When mounting the fixing harness, wrap the fixing harness [2] around the protruding part [1] of the harness holder, pass it through the harness guide [A], and then mount the connector [3].



F-4-326

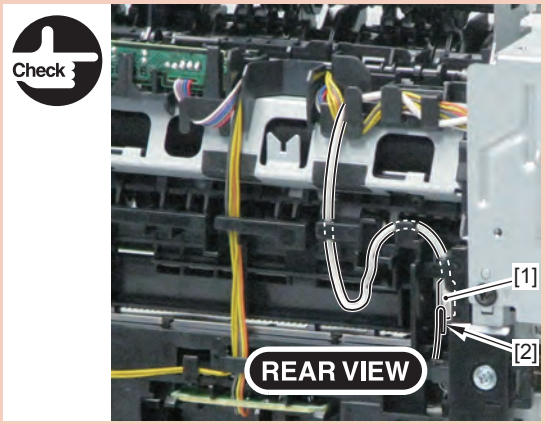
Note:
The below picture shows how to wind the harness.



F-4-327

Caution:

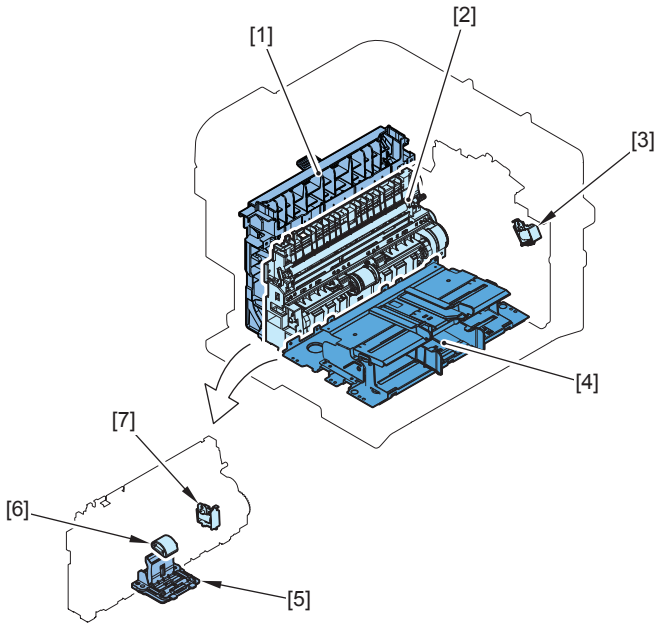
Ensure that the terminal [1] is in contact with the contact spring [2].



F-4-328

Pickup And Feeding System

Location of Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

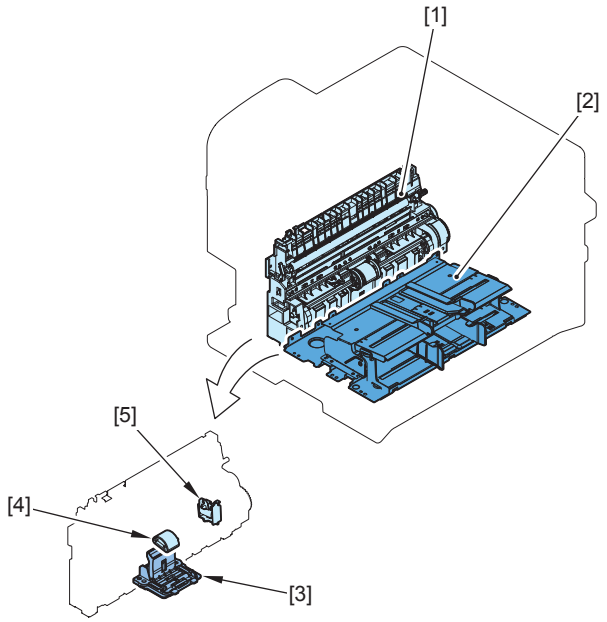


F-4-329

No.	Name	Service Parts No.		Reference
[1]	Duplex Feed Unit	-	-	p. 4-155
[2]	Pickup Unit	FM4-6892	-	p. 4-134
[3]	Duplex Solenoid	RK2-0420	-	-
[4]	Pickup Tray Unit	-	-	p. 4-143
[5]	Separation Pad	FM4-6893	-	p. 4-154
[6]	Pickup Roller	-	-	-
[7]	Pickup Solenoid	-	-	p. 4-148

T-4-50

Location of Single-sided models (MF4450/MF4452/MF4453/MF4430/MF4420n/MF4410/MF4412)



F-4-330

No.	Name	Service Parts No.		Reference
[1]	Pickup Unit	FM4-6926	-	p. 4-138
[2]	Pickup Tray Unit	-	-	p. 4-145
[3]	Separation Pad	FM4-6893	-	p. 4-154
[4]	Pickup Roller	-	-	-
[5]	Pickup Solenoid	-	-	p. 4-151

T-4-51

TONER
www.tonerplus.com.ua

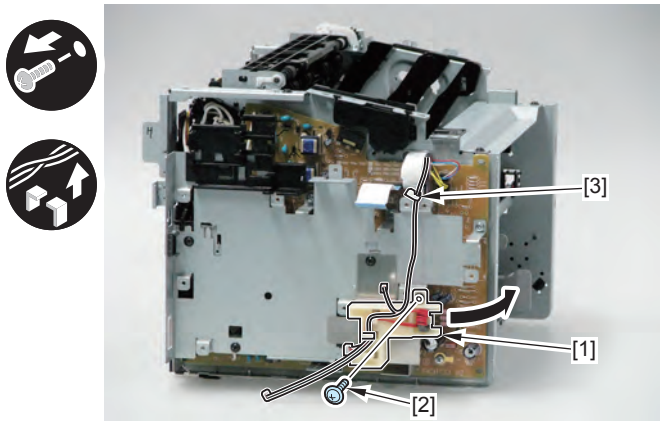
Before Removing the Pickup Unit Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6) Remove the duplex feed unit. (Duplex models) (Refer to page 4-155)
7-1) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
7-2) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
8-1) Remove the FAX-NCU PCB. (100V models with FAX) (Refer to page 4-102)
8-2) Remove the FAX-NCU PCB. (120V/220V models with FAX) (Refer to page 4-103)
9) Remove the pseudo CI board PCB. (100V models with FAX) (Refer to page 4-103)
10) Remove the separation pad. (Refer to page 4-154)

Removing the Pickup Unit Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

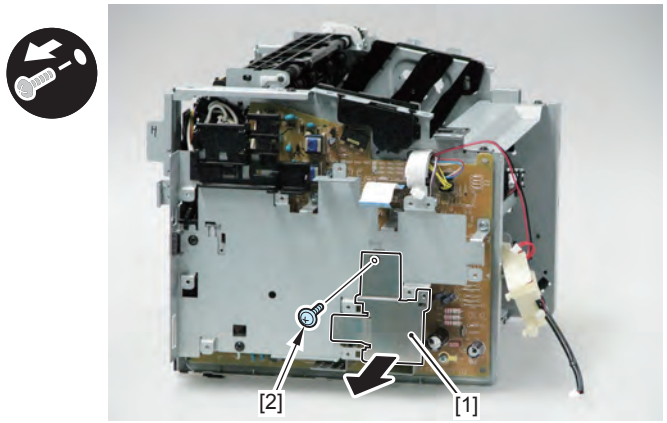
Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.
Refer to steps 1-1-1), 1-1-2) and 1-1-3) for the models with FAX (MF4580dn/MF4570dn/ MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)
Refer to step 1-2) for the models without FAX or NET (MF4430/MF4420n/MF4550d/ MF4410/MF4412/D550/D520)

1-1-1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



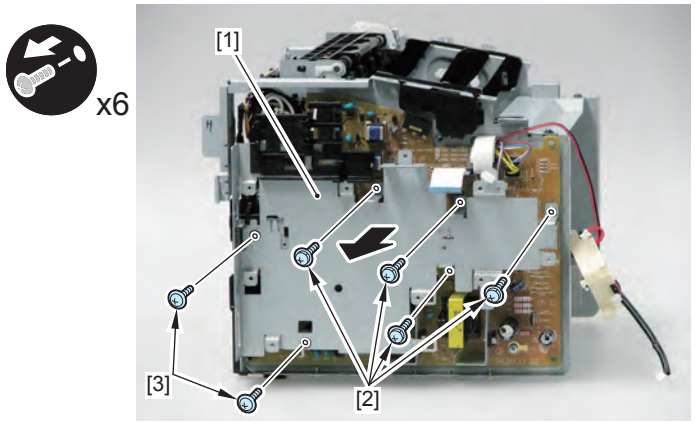
F-4-331

1-1-2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



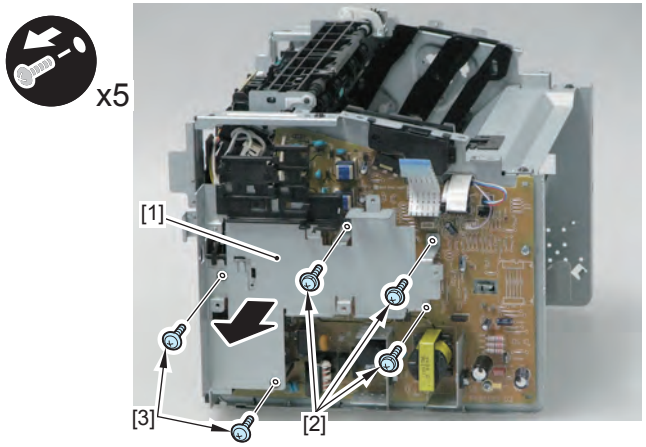
F-4-332

1-1-3) Remove the main controller mounting plate [1].
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



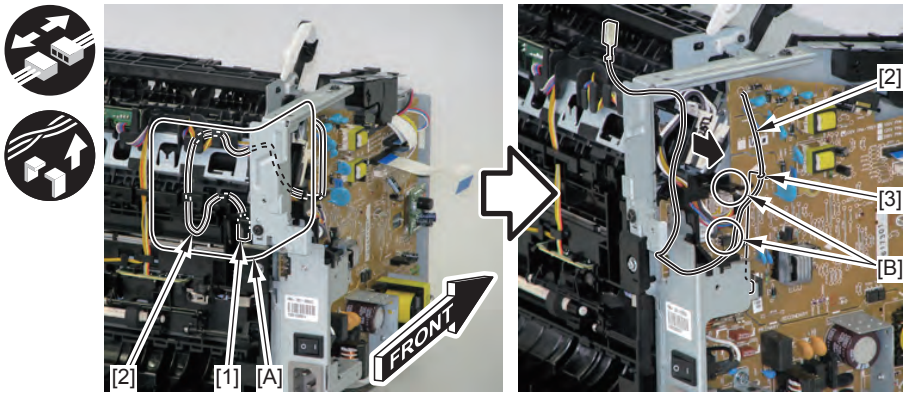
F-4-333

1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



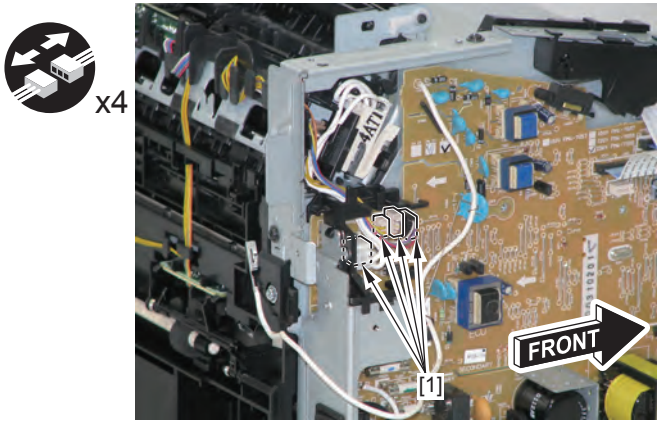
F-4-334

2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].
3) Free the harness retaining spring [3] from the 2 hooks [B].



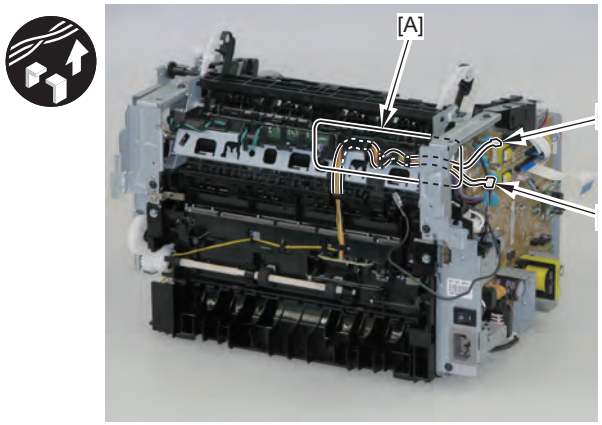
F-4-335

4) Remove the 4 connectors [1].



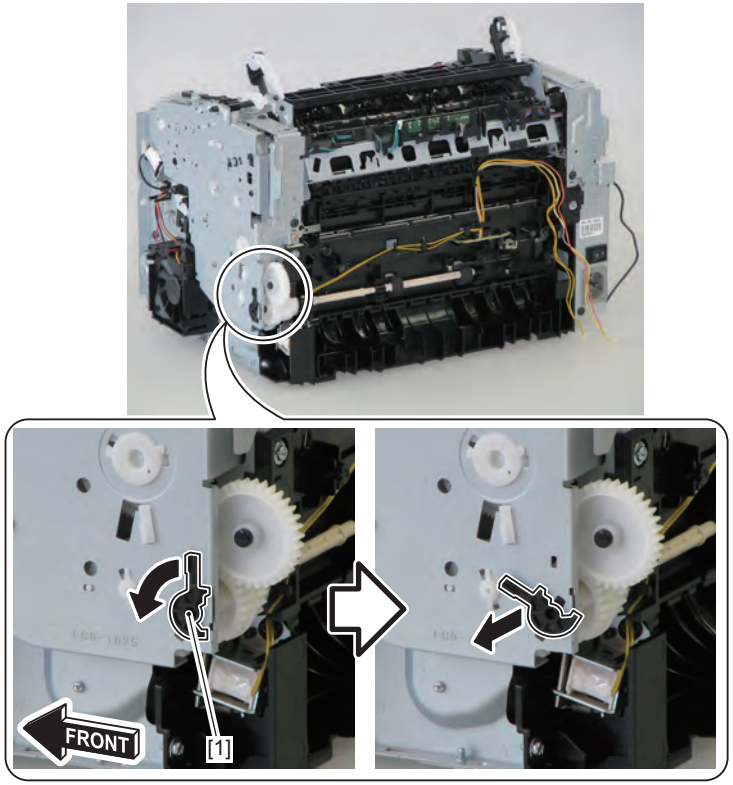
F-4-336

5) Free the paper leading edge sensor harness [1] and pickup solenoid harness [2] from the harness guide [A].



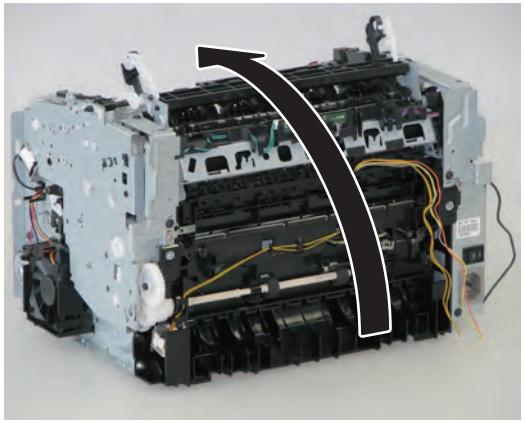
F-4-337

6) Remove the shaft retainer [1].



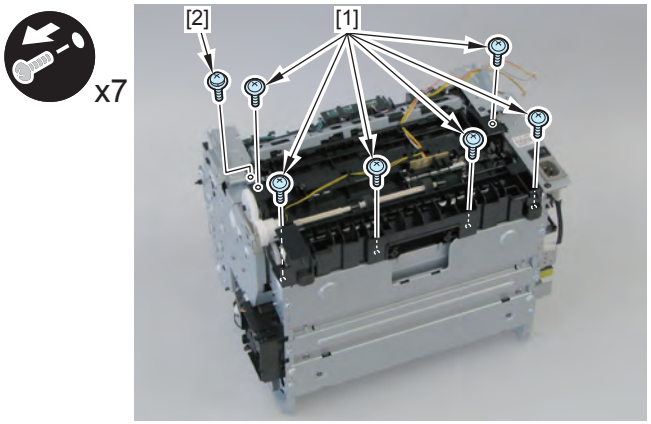
F-4-338

7) Face the front of the host machine downwards.



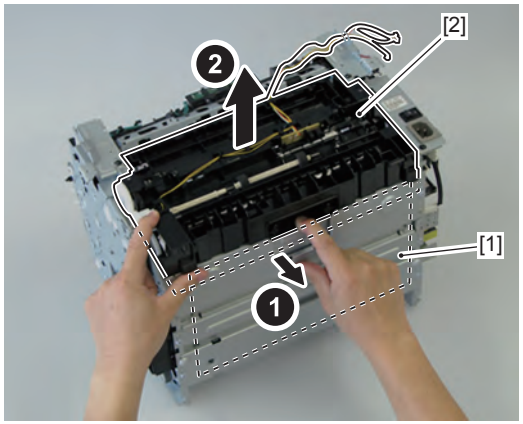
F-4-339

8) Remove the 6 screws (TP) [1] and the screw (with washer) [2].



F-4-340

9) Remove the pickup unit [2] while holding down the pickup tray [1].

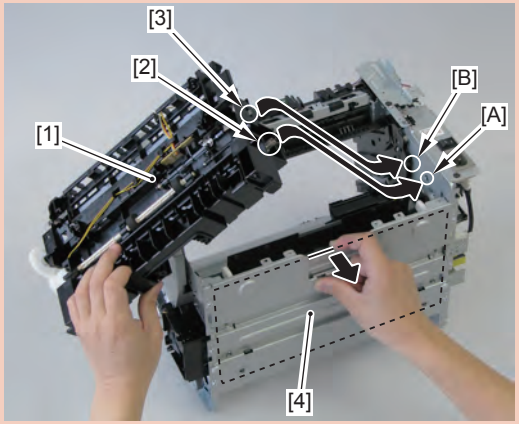


F-4-341

Caution:

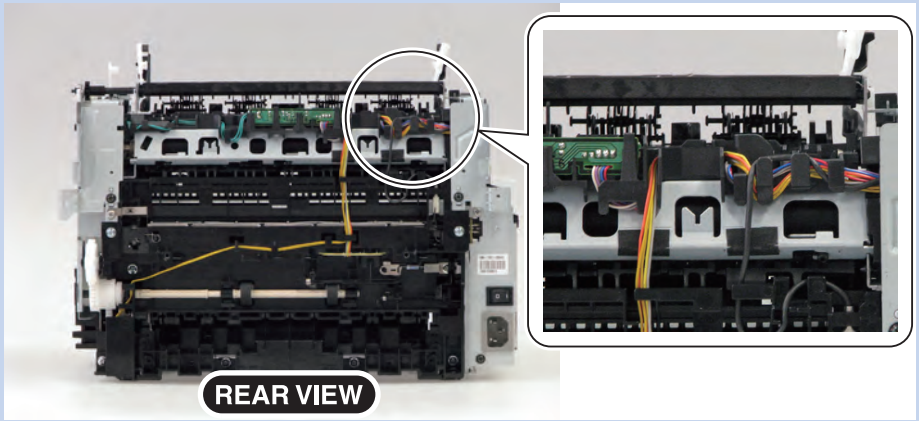
When mounting the pickup unit [1], ensure that the contact spring [2] is in contact with the area [A]. Make sure the grounding contact point [3] is in contact with the area [B].

Mount the pickup unit [1] while holding down the pickup tray [4].



F-4-342

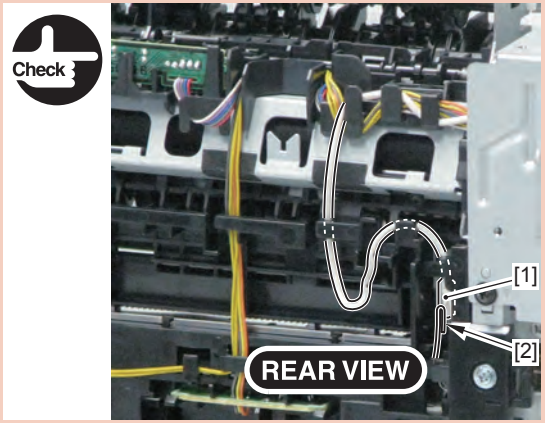
Note:
The below picture shows how to wind the harness.



F-4-343

Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



F-4-344

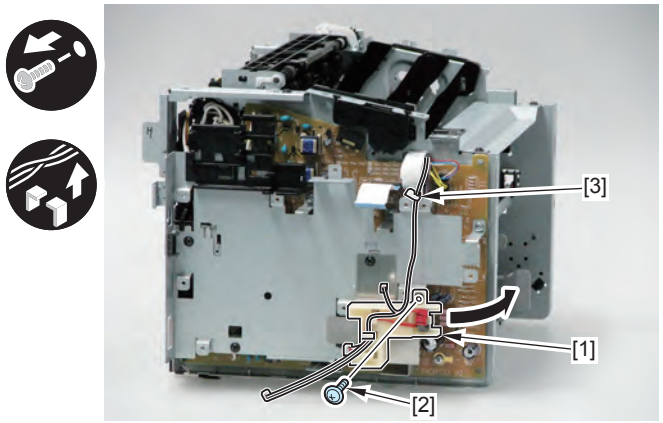
Before Removing the Pickup Unit Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-2) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6) Remove the rear cover. (Single-sided models) (Refer to page 4-37)
7-1) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
7-2) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
7-3) Remove the main controller PCB. (models without FAX, with NET) (Refer to page 4-102)
8-1) Remove the FAX-NCU PCB. (100V models with FAX) (Refer to page 4-102)
8-2) Remove the FAX-NCU PCB. (120V/220V models with FAX) (Refer to page 4-103)
9) Remove the pseudo CI board PCB. (100V models with FAX) (Refer to page 4-103)
10) Remove the separation pad. (Refer to page 4-154)

Removing the Pickup Unit Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

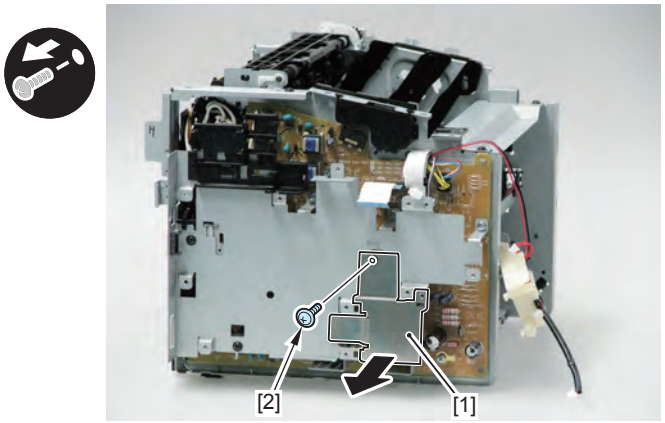
Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.
Refer to steps 1-1-1), 1-1-2) and 1-1-3) for the models with FAX (MF4580dn/MF4570dn/ MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)
Refer to step 1-2) for the models without FAX or NET (MF4430/MF4420n/MF4550d/ MF4410/MF4412/D550/D520)
Refer to step 1-3) for the models without FAX, with NET (MF4420n)

1-1-1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



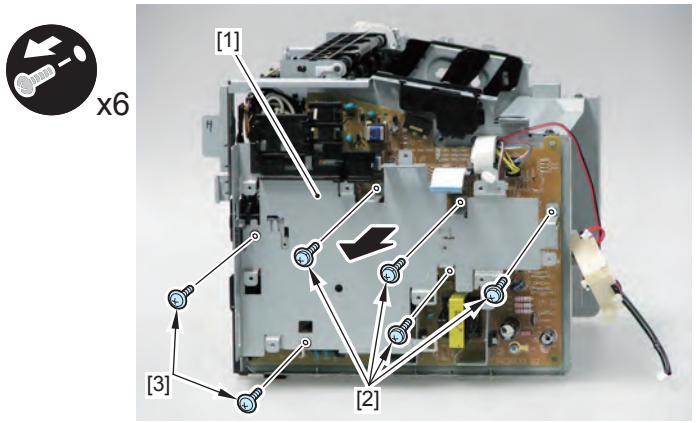
F-4-345

1-1-2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



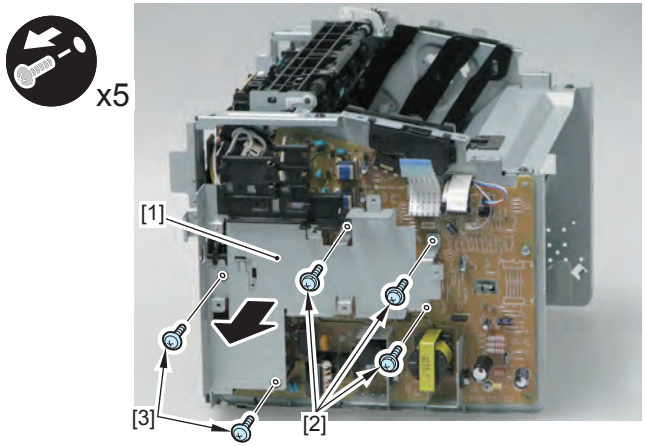
F-4-346

1-1-3) Remove the main controller mounting plate [1].
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



F-4-347

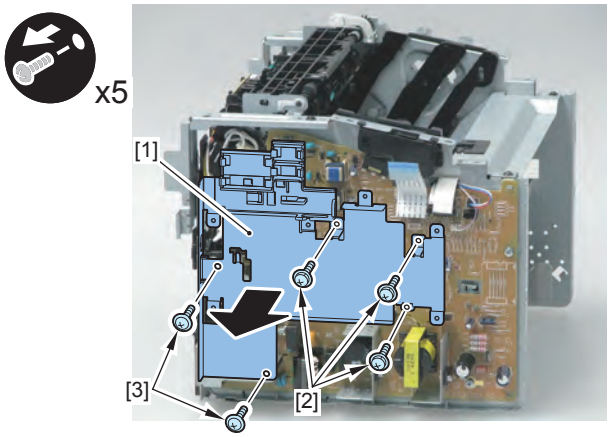
1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



F-4-348

1-3) Remove the main controller mounting plate [1].

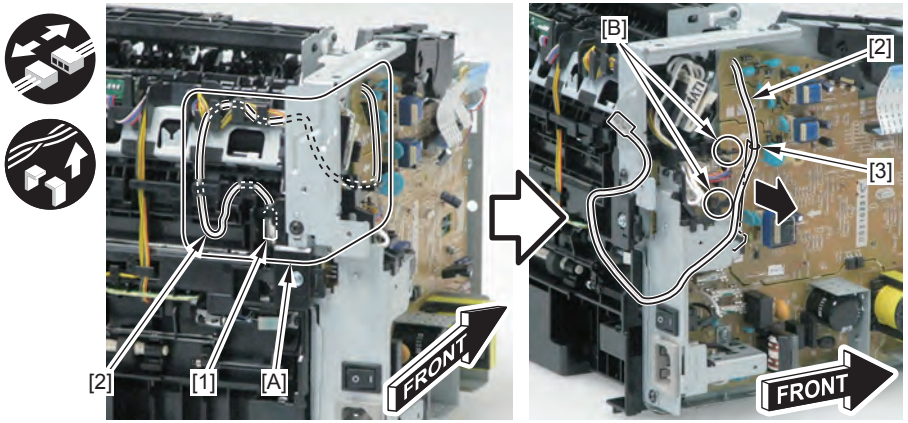
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



F-4-349

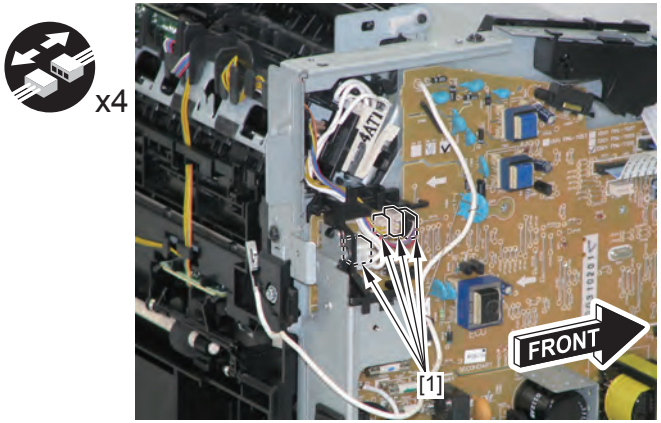
2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].

3) Free the harness retaining spring [3] from the 2 hooks [B].



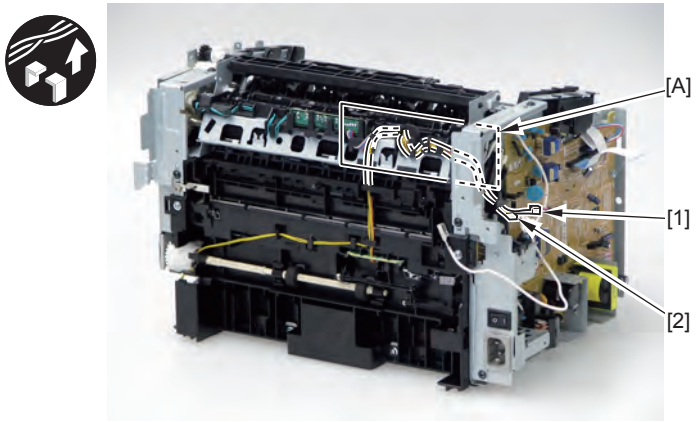
F-4-350

4) Remove the 4 connectors [1].



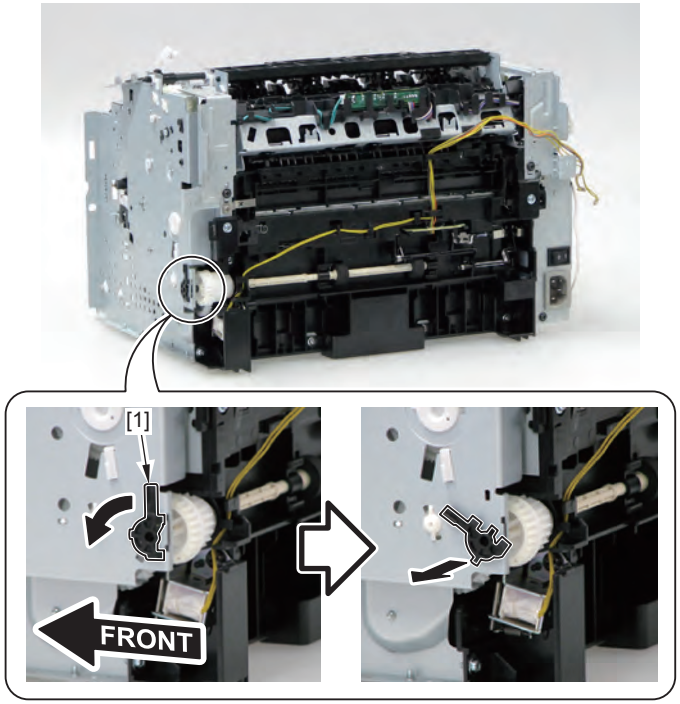
F-4-351

5) Free the paper leading edge sensor harness [1] and pickup solenoid harness [2] from the harness guide [A].



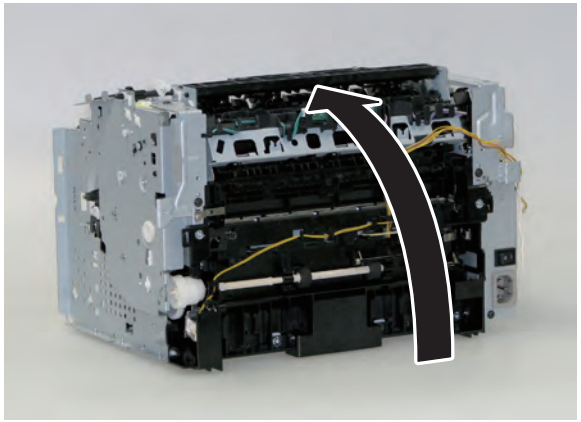
F-4-352

6) Remove the shaft retainer [1].



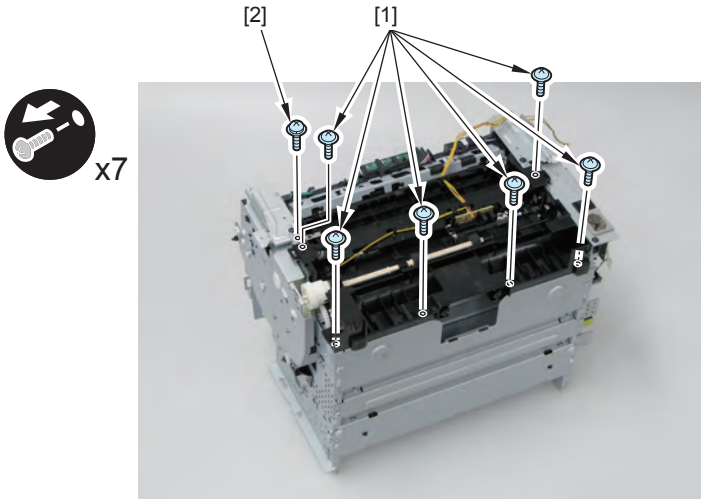
F-4-353

7) Face the front of the host machine downwards.



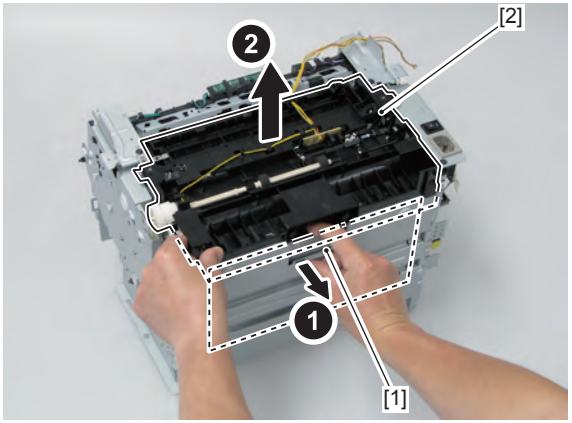
F-4-354

8) Remove the 6 screws (TP) [1] and the screw (with washer) [2].



F-4-355

9) Remove the pickup unit [2] while holding down the pickup tray [1].

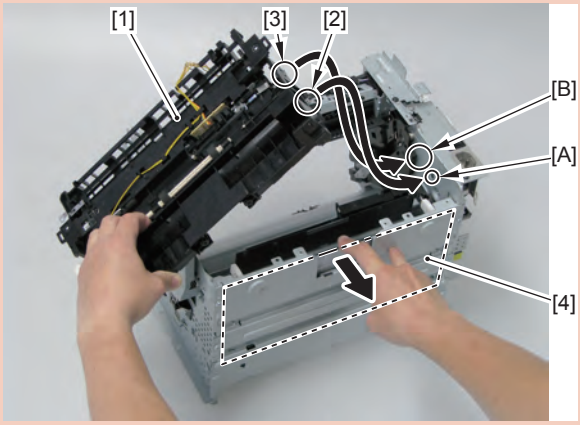


F-4-356

Caution:

When mounting the pickup unit [1], ensure that the contact spring [2] is in contact with the area [A]. Make sure the grounding contact point [3] is in contact with the area [B].

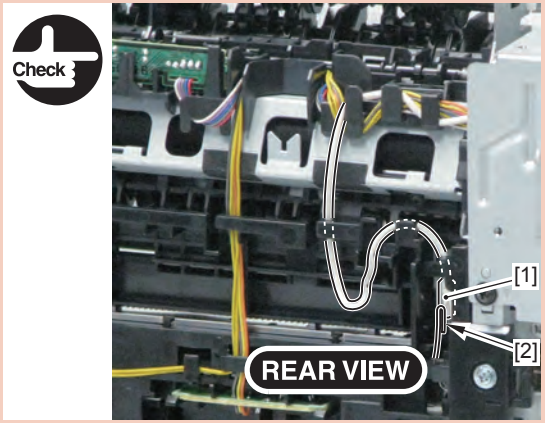
Mount the pickup unit [1] while holding down the pickup tray [4].



F-4-357

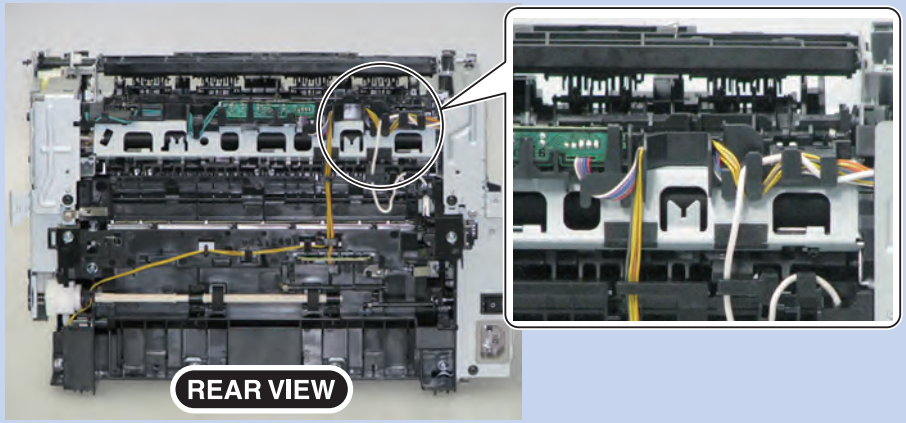
Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



F-4-359

Note:
The below picture shows how to wind the harness.



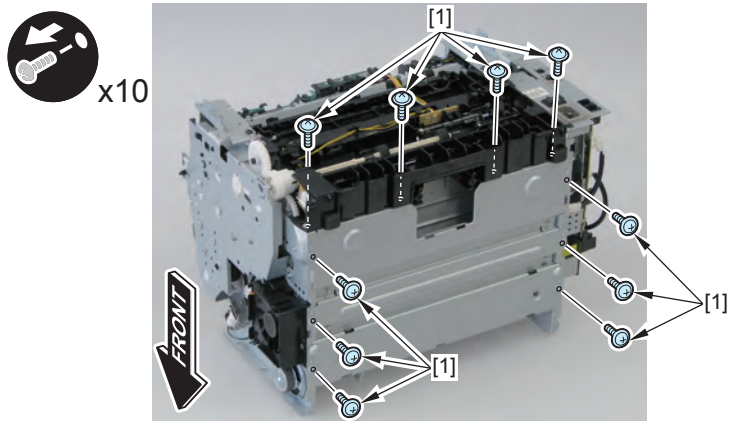
F-4-358

Before Removing the Pickup Tray Unit Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6) Remove the duplex feed unit. (Duplex models) (Refer to page 4-155)
7) Remove the separation pad. (Refer to page 4-154)

Removing the Pickup Tray Unit Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Remove the 10 screws [1].



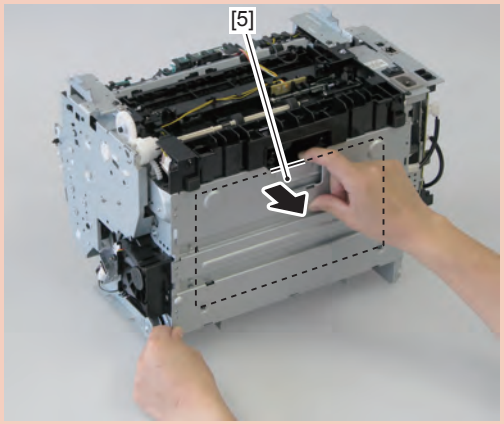
F-4-360

2) Remove the pickup tray unit [1].

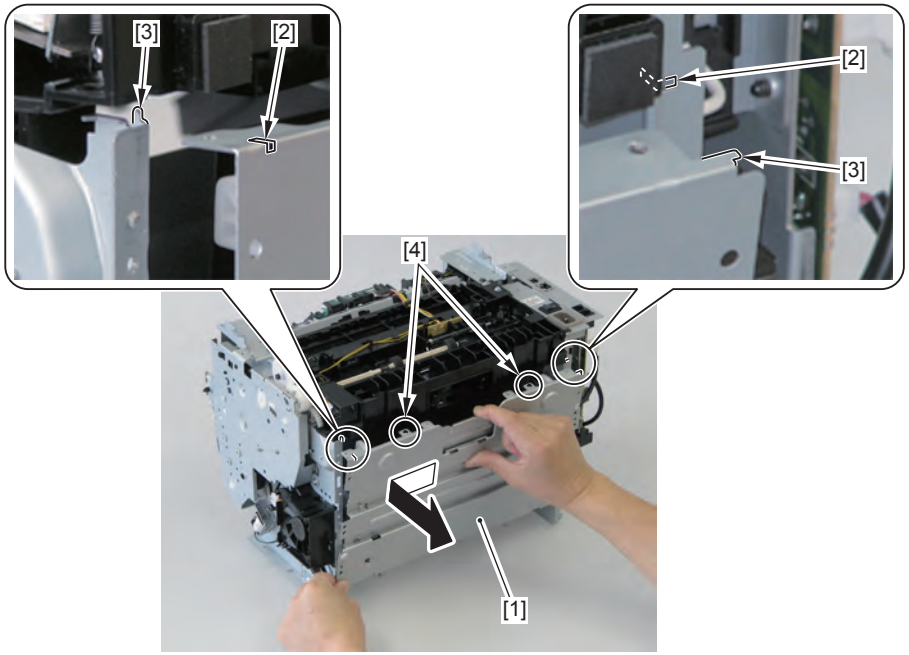
- 2 boss holes [2]
- 2 hooks [3]
- 2 bosses [4]

Caution:

When assembling/disassembling the pickup tray unit, hold the pickup tray [5] down to attach/release it.



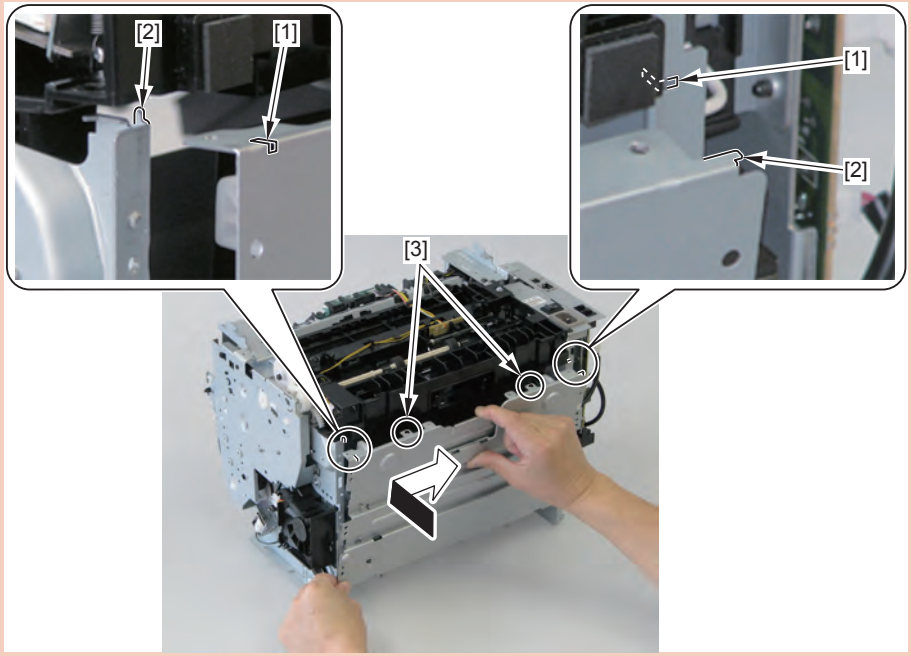
F-4-361



F-4-362

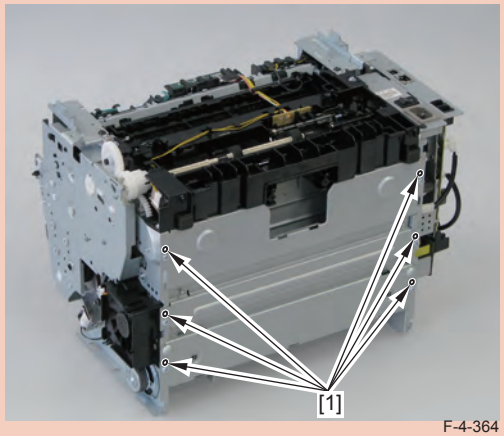
Caution:

Align the 2 boss holes [1], 2 hooks [2] and 2 bosses [3] of the pickup tray unit with the pickup unit to mount the unit.



F-4-363

When assembling the pickup tray unit, check the positioning of the 6 bosses [1] in the unit.



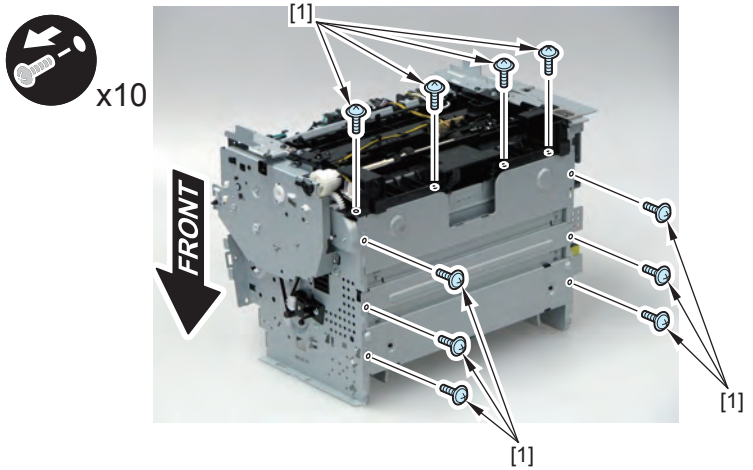
F-4-364

Before Removing the Pickup Tray Unit Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-2) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6) Remove the rear cover. (Single-sided models) (Refer to page 4-37)
7) Remove the separation pad. (Refer to page 4-154)

Removing the Pickup Tray Unit Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Remove the 10 screws [1].



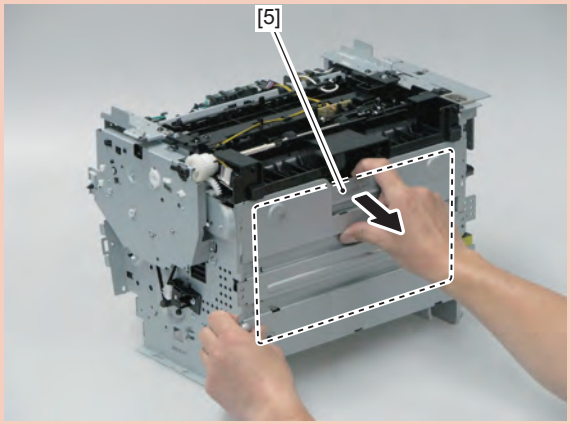
F-4-365

2) Remove the pickup tray unit [1].

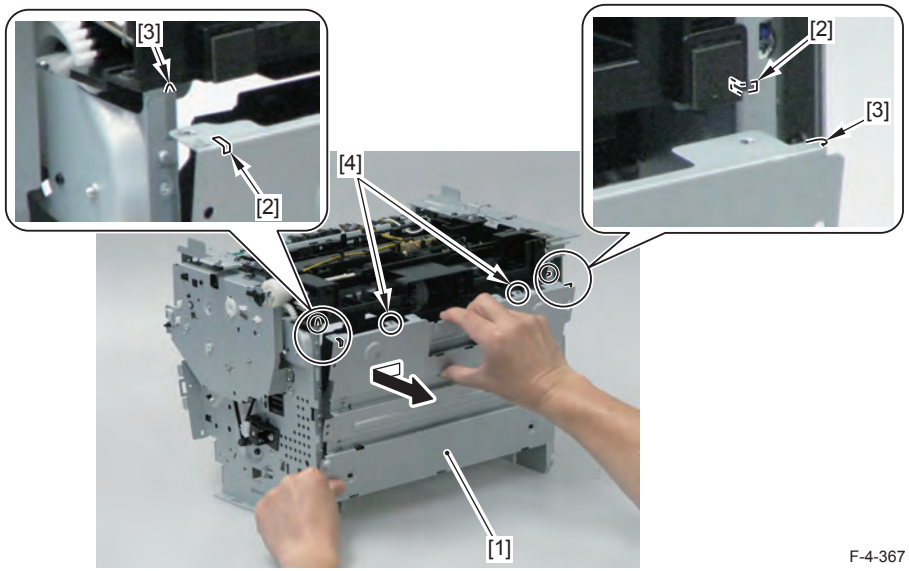
- 2 boss holes [2]
- 2 hooks [3]
- 2 bosses [4]

Caution:

When assembling/disassembling the pickup tray unit, hold the pickup tray [5] down to attach/release it.



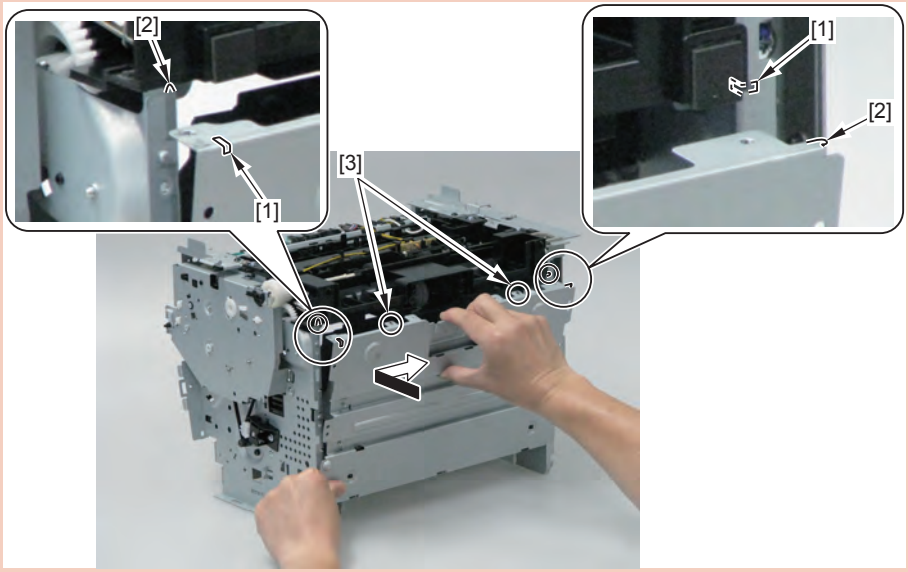
F-4-366



F-4-367

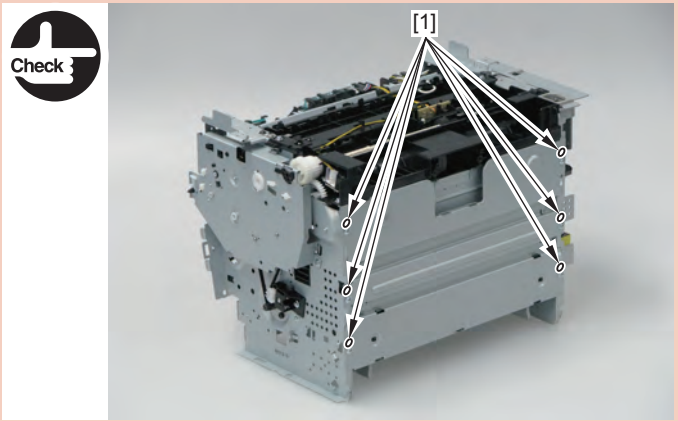
Caution:

Align the 2 boss holes [1], 2 hooks [2] and 2 bosses [3] of the pickup tray unit with the pickup unit to mount the unit.



F-4-368

When assembling the pickup tray unit, check the positioning of the 6 bosses [1] in the unit.



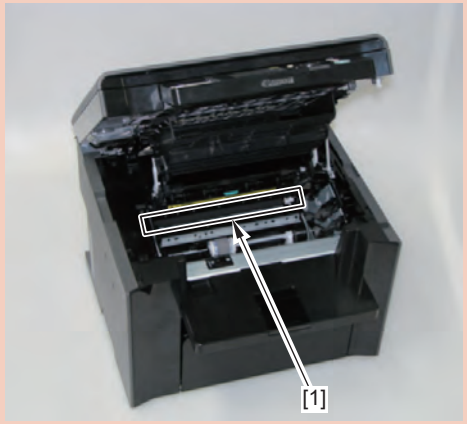
F-4-369

Removing the Pickup Roller

Caution:

When assembling/disassembling the pickup roller, do not touch the surface of the roller.

When assembling/disassembling the pickup roller, do not touch the transfer roller [1].

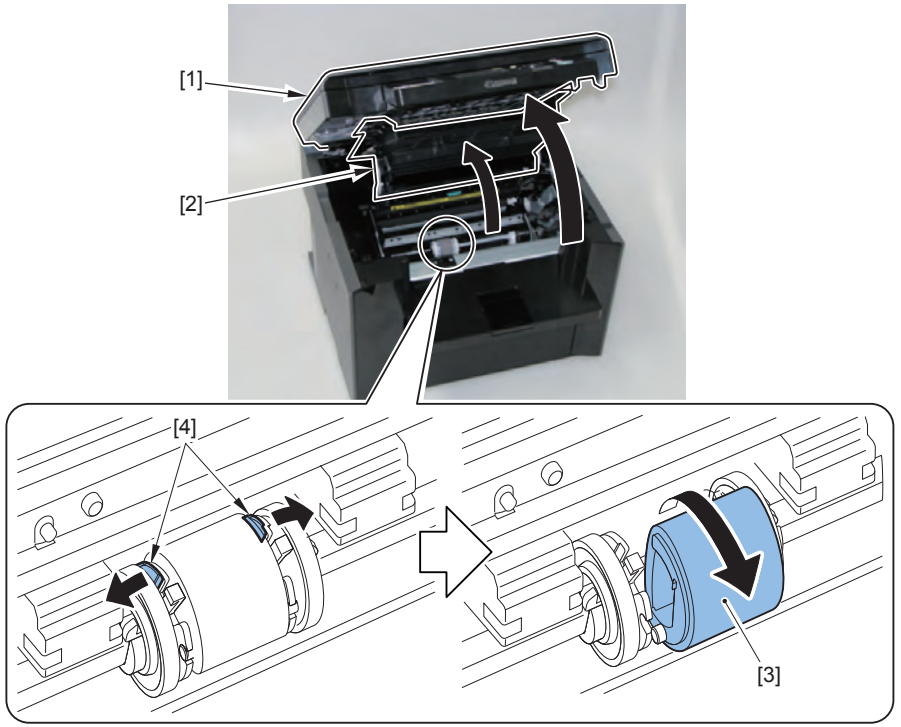


F-4-370

1) Open the reader unit and copyboard cover [1] and delivery tray [2].

2) Remove the pickup roller [3].

- 2 claws [4]



F-4-371

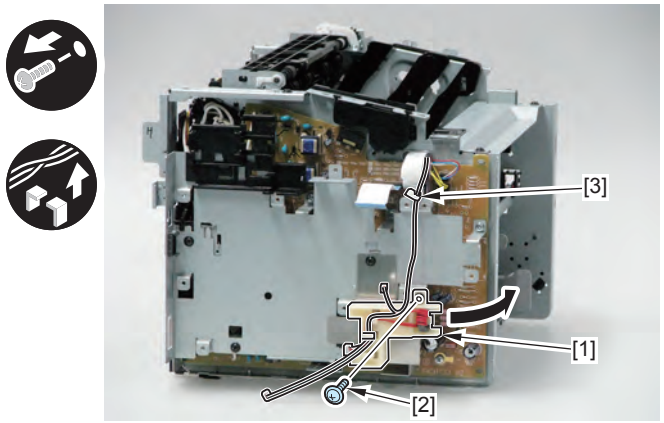
Before Removing the Pickup Solenoid Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6) Remove the duplex feed unit. (Duplex models) (Refer to page 4-155)
7-1) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
7-2) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
8-1) Remove the FAX-NCU PCB. (100V models with FAX) (Refer to page 4-102)
8-2) Remove the FAX-NCU PCB. (120V/220V models with FAX) (Refer to page 4-103)
9) Remove the pseudo CI board PCB. (100V models with FAX) (Refer to page 4-103)

Removing the Pickup Solenoid Duplex models (MF4580dn/MF4570dn/MF4550d/ MF4553d/MF4554d/D550/D520)

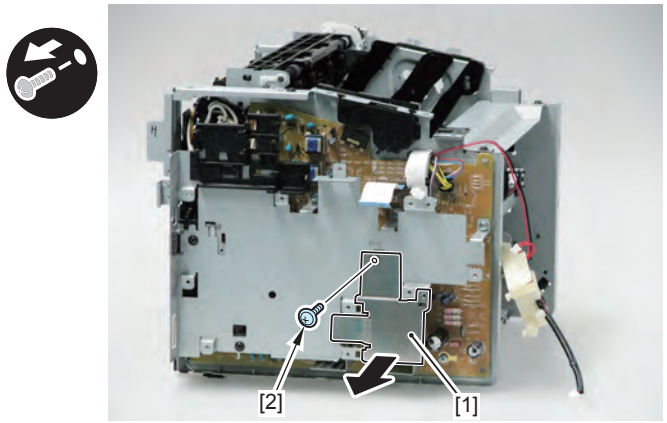
Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.
Refer to steps 1-1-1), 1-1-2) and 1-1-3) for the models with FAX (MF4580dn/MF4570dn/ MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)
Refer to step 1-2) for the models without FAX or NET (MF4430/MF4550d/MF4410/ MF4412/D550/D520)

1-1-1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



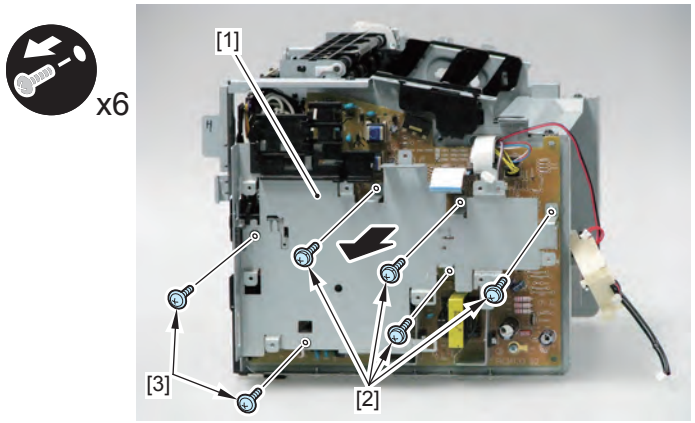
F-4-372

1-1-2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



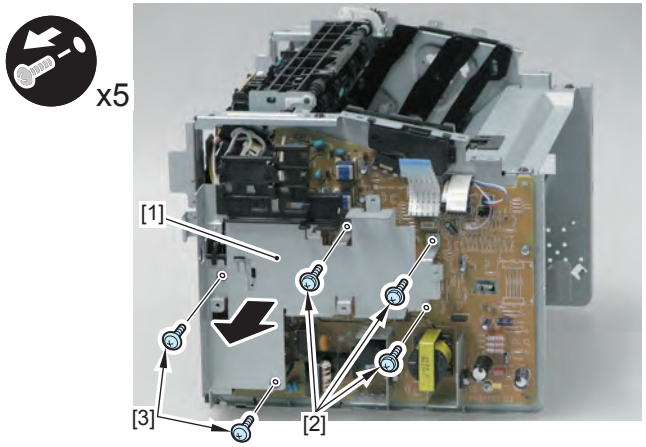
F-4-373

1-1-3) Remove the main controller mounting plate [1]
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



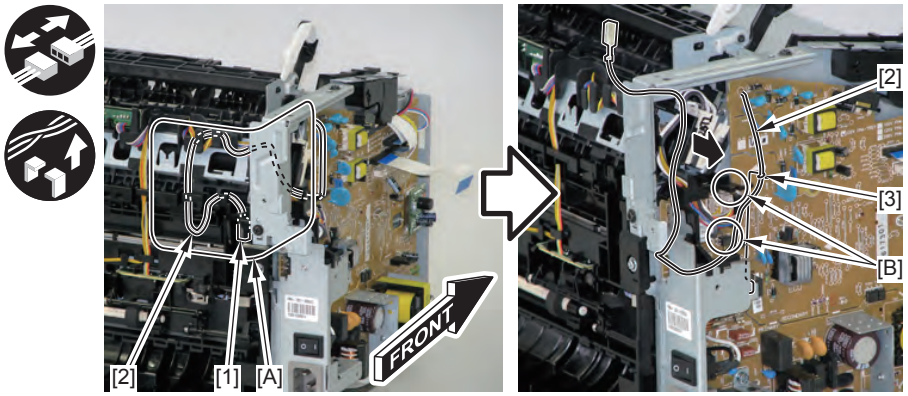
F-4-374

1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



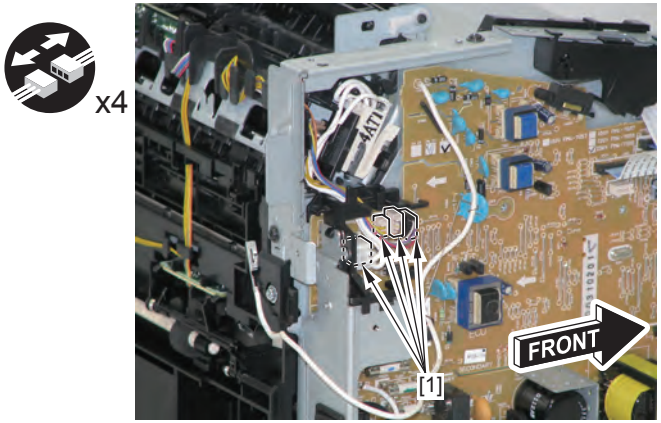
F-4-375

2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].
3) Free the harness retaining spring [3] from the 2 hooks [B].



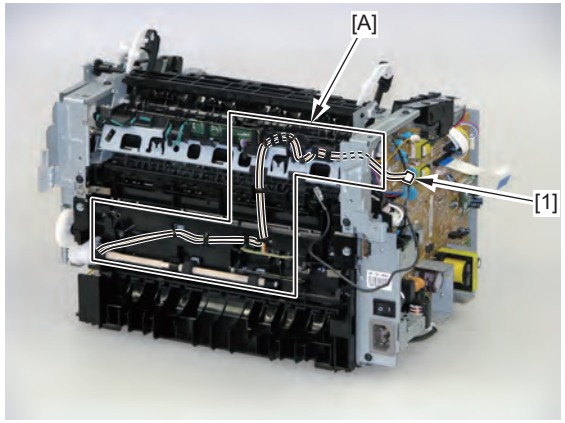
F-4-376

4) Remove the 4 connectors [1].



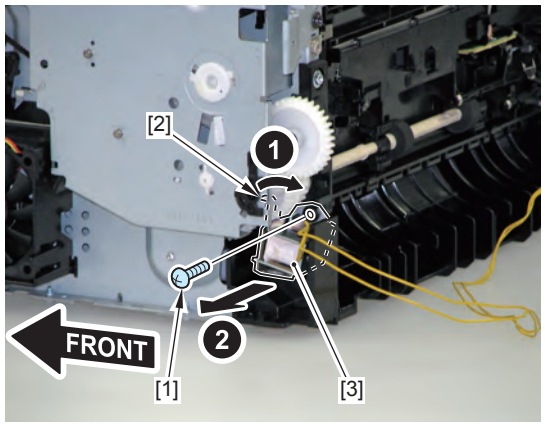
F-4-377

5) Free the pickup solenoid harness [1] from the harness guide [A].



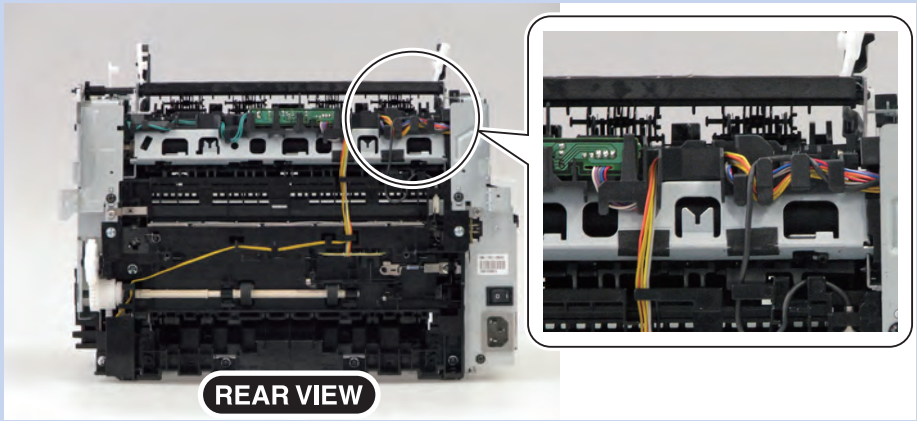
F-4-378

6) Remove the screw [1], move the solenoid arm [2] and remove the pickup solenoid [3].



F-4-379

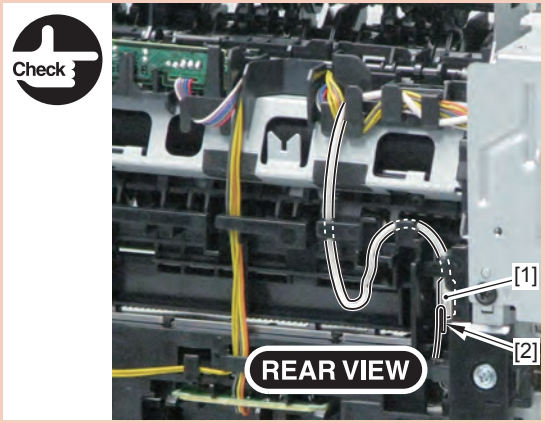
Note:
The below picture shows how to wind the harness.



F-4-380

Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



F-4-381

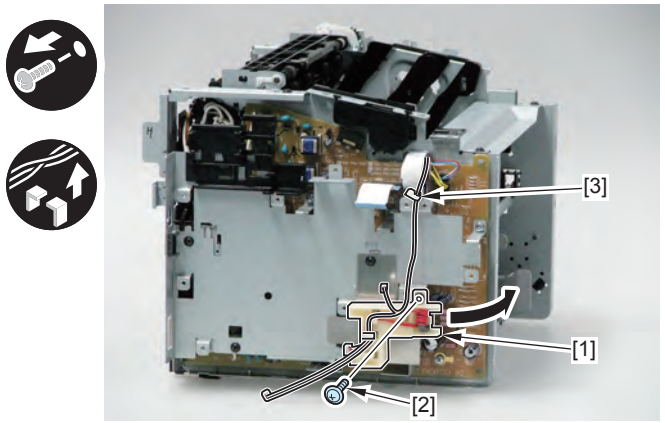
Before Removing the Pickup Solenoid Single-sided models(MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

1) Remove the left cover. (Single-sided models) (Refer to page 4-32)
2-1) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-2) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Single-sided models) (Refer to page 4-34)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)
6) Remove the rear cover. (Single-sided models) (Refer to page 4-37)
7-1) Remove the main controller PCB. (models with FAX) (Refer to page 4-99)
7-2) Remove the main controller PCB. (models without FAX or NET) (Refer to page 4-100)
7-3) Remove the main controller PCB. (models without FAX, with NET) (Refer to page 4-102)
8-1) Remove the FAX-NCU PCB. (100V models with FAX) (Refer to page 4-102)
8-2) Remove the FAX-NCU PCB. (120V/220V models with FAX) (Refer to page 4-103)
9) Remove the pseudo CI board PCB. (100V models with FAX) (Refer to page 4-103)

Removing the Pickup Solenoid Single-sided models (MF4450/MF4452/MF4453/ MF4430/MF4420n/MF4410/MF4412)

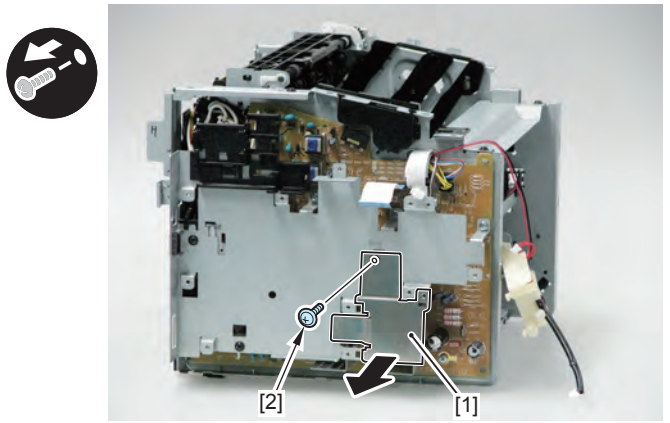
Note:
Refer to the below steps when removing a main controller mounting plate because steps differ according to model.
Refer to steps 1-1-1), 1-1-2) and 1-1-3) for the models with FAX (MF4580dn/MF4570dn/ MF4550d/MF4553d/MF4554d/MF4450/MF4452/MF4453)
Refer to step 1-2) for the models without FAX or NET (MF4430/MF4550d/MF4410/ MF4412/D550/D520)
Refer to step 1-3) for the models without FAX, with NET (MF4420n)

1-1-1) Remove the harness guide [1].
- 1 screw (black TP) [2]
- 1 wire saddle [3]



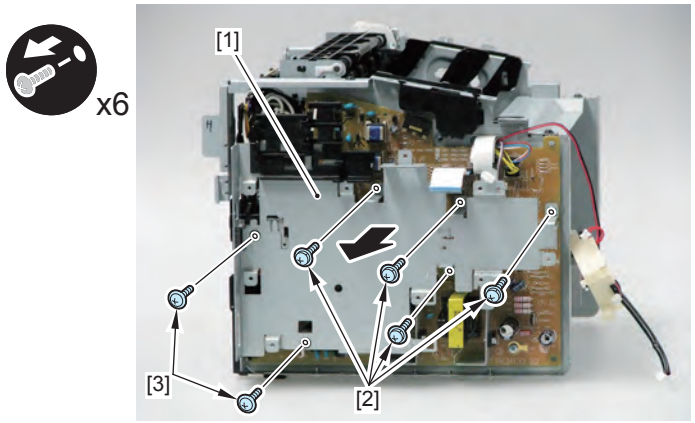
F-4-382

1-1-2) Remove the anti-noise plate [1].
- 1 screw (black TP) [2]



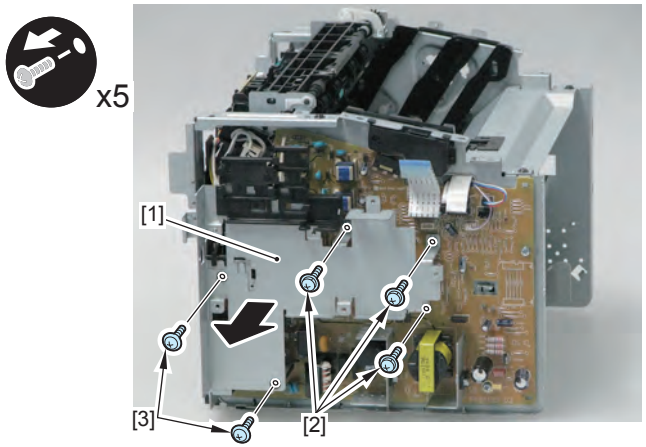
F-4-383

1-1-3) Remove the main controller mounting plate [1].
- 4 screws (with washer) [2]
- 2 screws (black TP) [3]



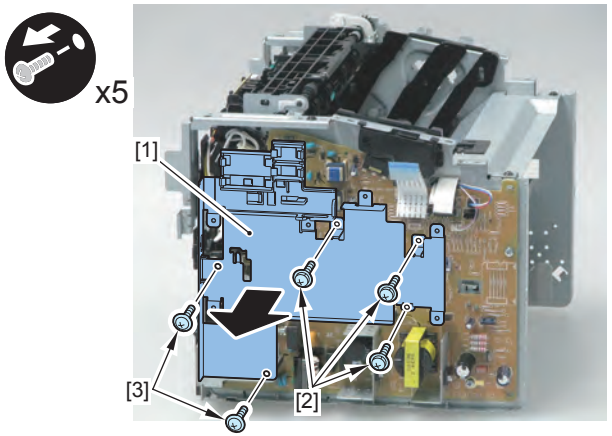
F-4-384

1-2) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



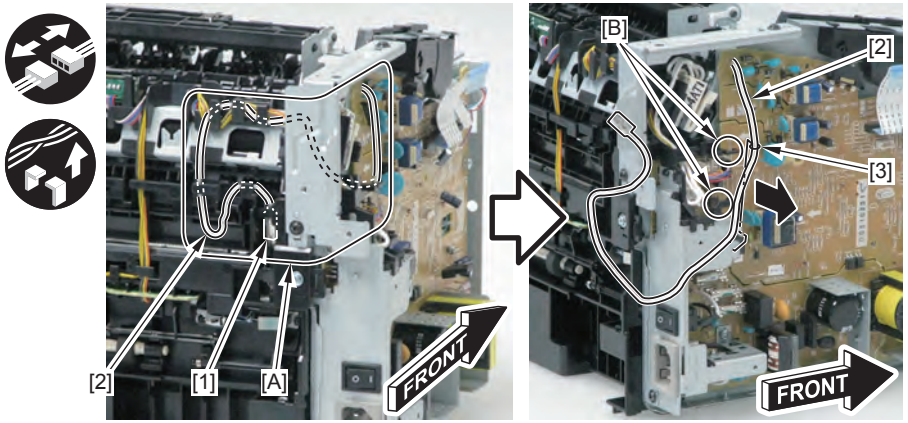
F-4-385

1-3) Remove the main controller mounting plate [1].
- 3 screws (with washer) [2]
- 2 screws (black TP) [3]



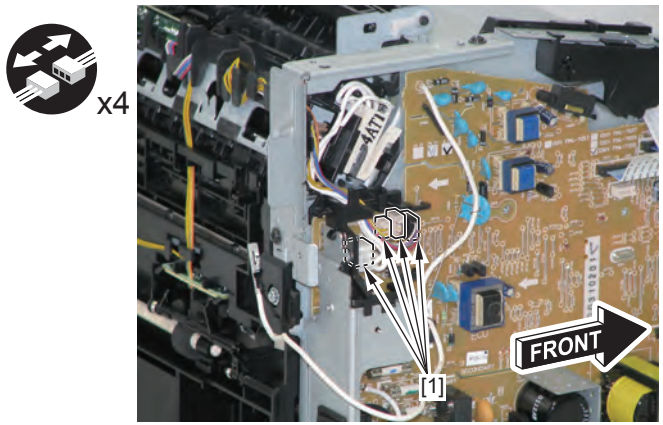
F-4-386

2) Remove the terminal [1], and then disengage the harness [2] from the harness guide [A].
3) Free the harness retaining spring [3] from the 2 hooks [B].



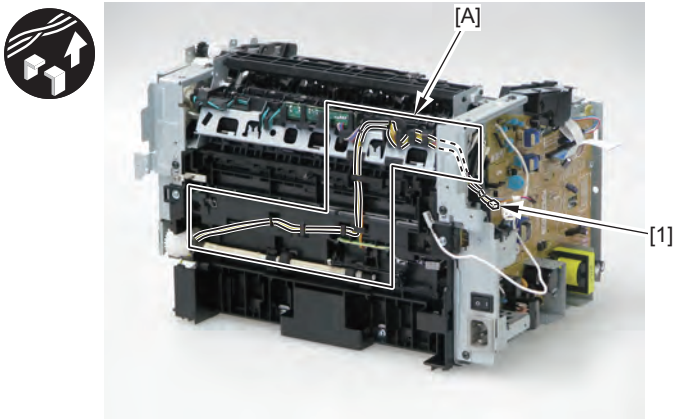
F-4-387

4) Remove the 4 connectors [1].



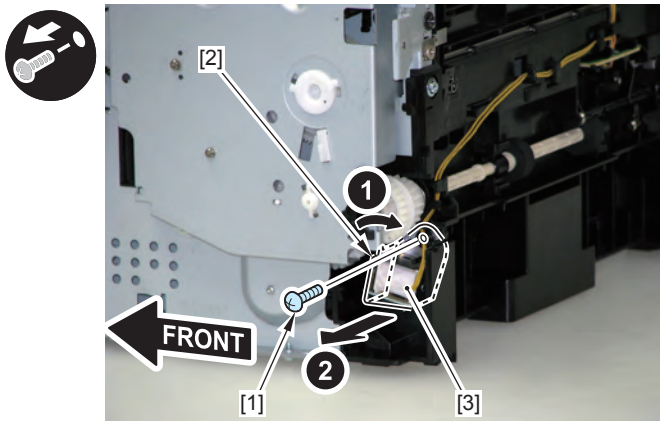
F-4-388

5) Free the pickup solenoid harness [1] from the harness guide [A].



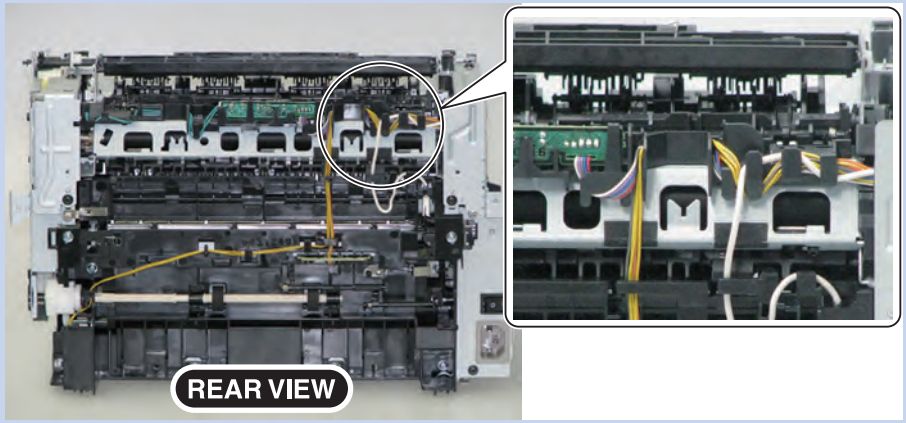
F-4-389

6) Remove the screw [1], move the solenoid arm [2] and remove the pickup solenoid [3].



F-4-390

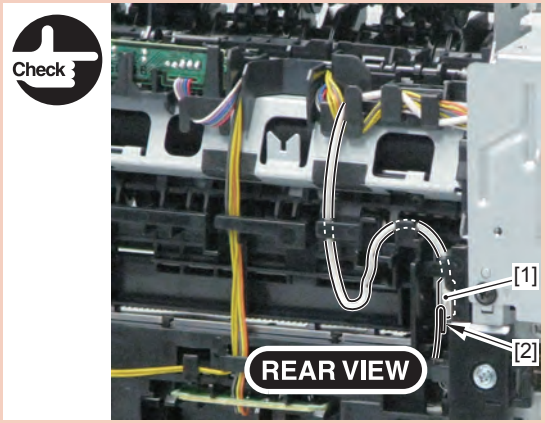
Note:
The below picture shows how to wind the harness.



F-4-391

Caution:

Ensure that the terminal [1] is in contact with the contact spring [2].



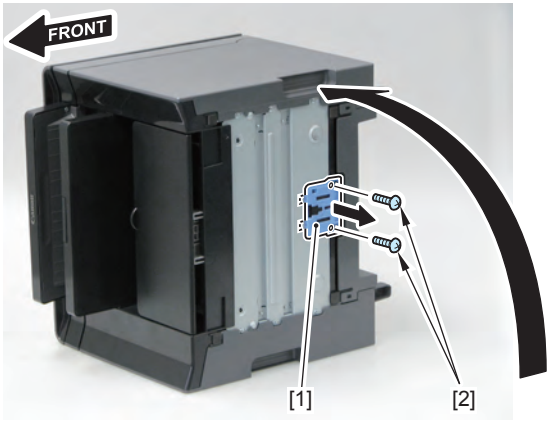
F-4-392

Removing the Separation Pad

Caution:

When assembling/disassembling the separation pad, do not touch the surface of the pad.

1) Face the left side of the host machine downwards.
2) Remove the separation pad [1].
- 2 screws [2]



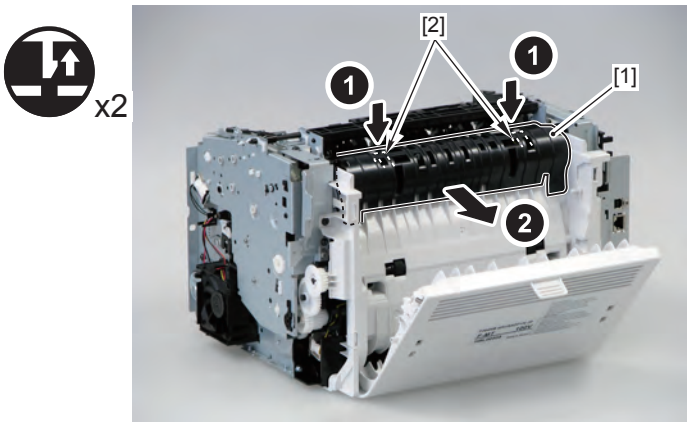
F-4-393

Before Removing the Duplex Feed Unit Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

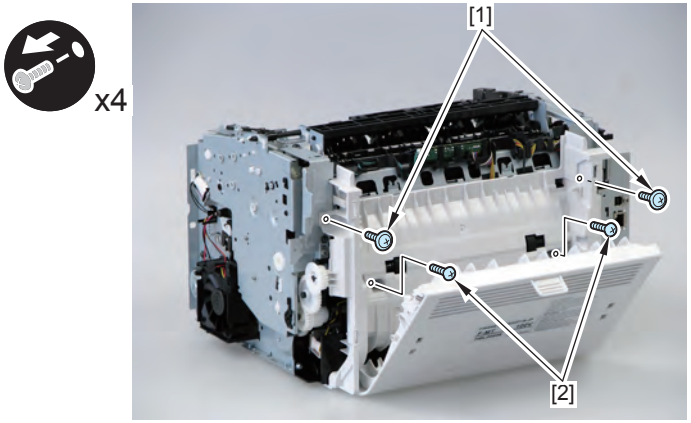
Removing the Duplex Feed Unit Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Remove the duplex guide [1].
- 2 claws [2]



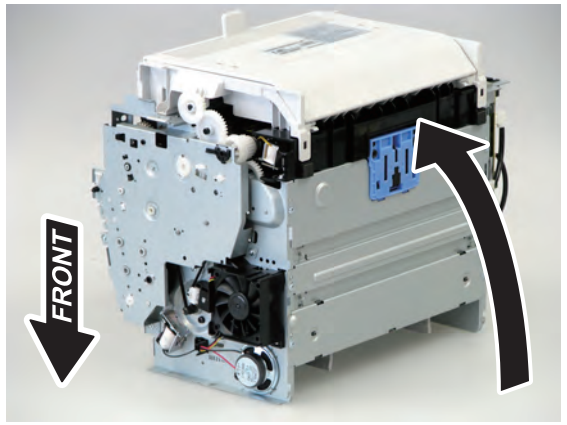
F-4-394

2) Remove the 2 screws (TP) [1] and 2 screws (tapping) [2] using a stubby screwdriver.



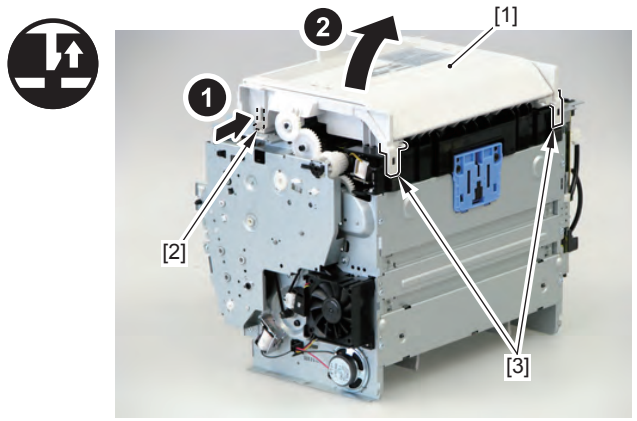
F-4-395

3) Close the rear cover.
4) Face the front of the host machine downwards.



F-4-396

5) Remove the duplex feed unit [1].
- 1 claw [2]
- 2 hooks [3]



F-4-397

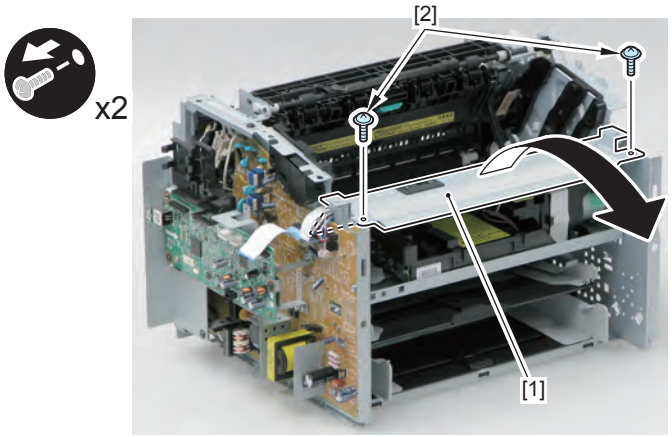
TONER
www.tonerplus.com.ua

Before Removing the Duplex Reverse Solenoid Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

1) Remove the left cover. (Duplex models) (Refer to page 4-31)
2-1) Remove the DADF unit and reader unit. (models with DADF) (Refer to page 4-40)
2-2) Remove the SADF unit and reader unit. (models with SADF) (Refer to page 4-53)
2-3) Remove the copyboard cover and reader unit. (models with copyboard) (Refer to page 4-64)
3) Remove the right cover. (Duplex models) (Refer to page 4-33)
4) Remove the front cover unit. (Refer to page 4-35)
5) Remove the upper cover. (Refer to page 4-35)

Removing the Duplex Reverse Solenoid Duplex models (MF4580dn/MF4570dn/MF4550d/MF4553d/MF4554d/D550/D520)

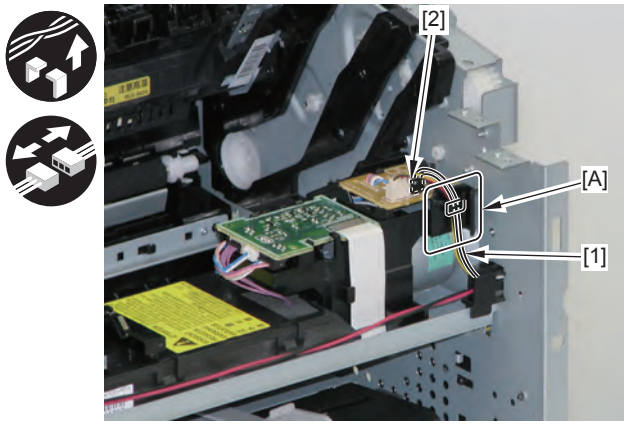
1) Remove the scanner cover [1].
- 2 screws (black TP) [2]



F-4-398

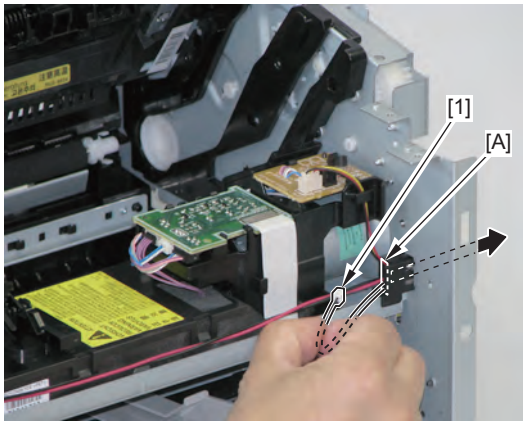
2) Disengage the solenoid harness [1] from the guide [A].

- 1 connector [2]



F-4-399

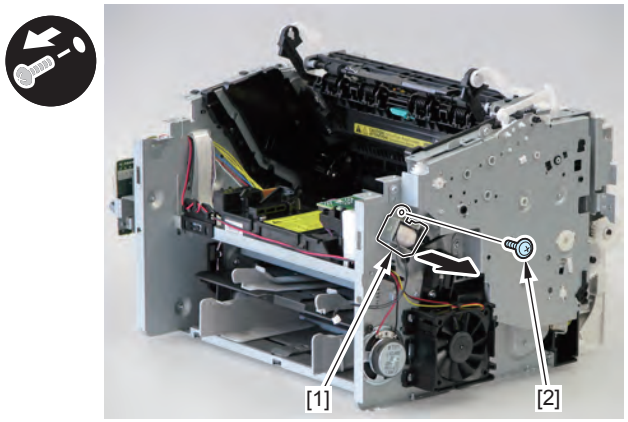
3) Pass the solenoid harness [1] out through the hole [A] in the right panel.



F-4-400

4) Remove the duplex reverse solenoid [1].

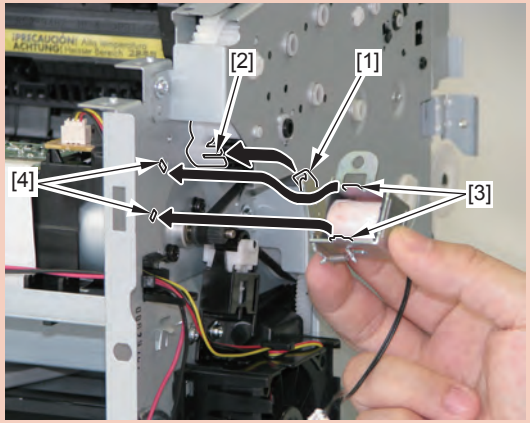
- 1 screw [2]



F-4-401

Caution:

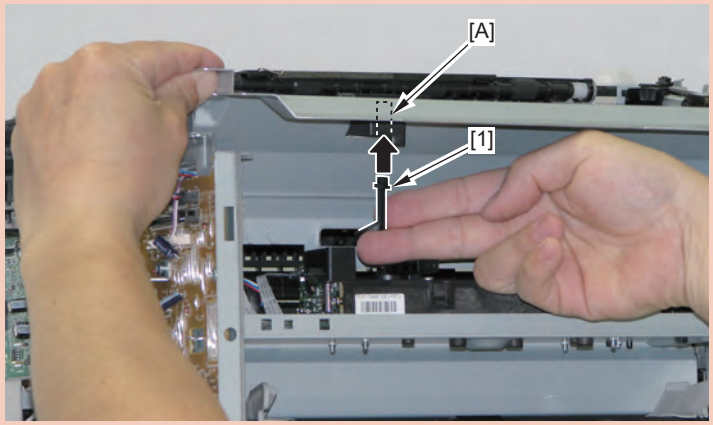
When mounting the duplex reverse solenoid, align the solenoid lever [1] with the groove in the link [2], and insert the 2 solenoid positioning protrusions [3] into the 2 positioning holes [4] in the side panel to mount the solenoid.



F-4-402

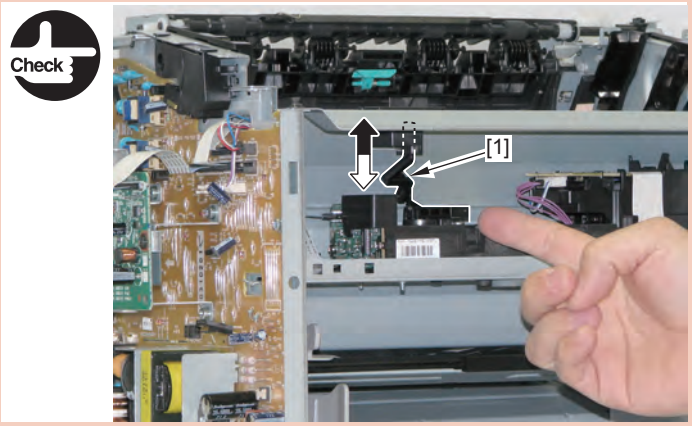
Caution:

When mounting the scanner cover, pass the shutter open/close lever [1] through the hole [A] in the scanner cover.



F-4-403

Ensure that the shutter open/close lever [1] can move vertically.



F-4-404

5 Adjustment

Mechanical Adjustment

Mechanical Adjustment

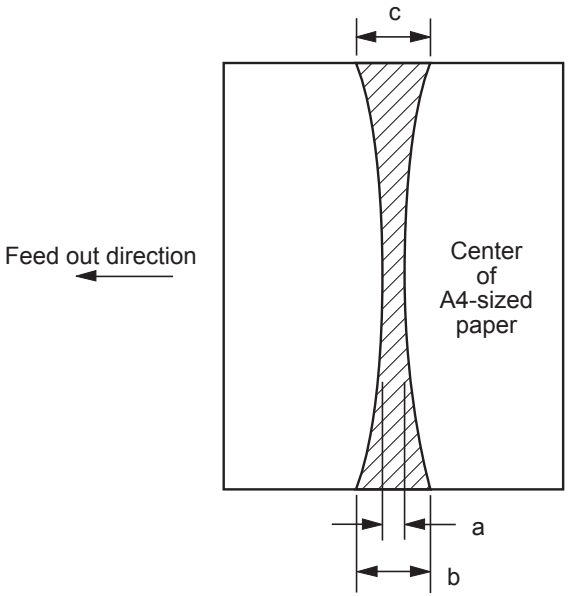
Confirming Nip Width

Caution :

Be sure to follow the procedures below, otherwise the fixing film or the fixing sleeve may be damaged.

The nip width of the fixing unit is not adjustable in this printer, however, the incorrect nip width may cause the faulty fixing.
Follow the procedures below to check the nip width.

1) Prepare an all-black print of A4 size made by the same type of EP Toner cartridge for this printer before visiting the customer site.
2) Load the printed sheet facing DOWN on the pickup tray.
3) Print a test-page.
4) Turn off the printer when the leading edge of the paper appears in the face-down delivery slot.
   Wait for 60 seconds and open the cartridge door to remove the paper from the printer.
5) Measure the width of the glossy band across the paper and check if it is meeting the requirements below.
   Wasp/Horsethief/Blackrock
   - Center (a): 5.5mm to 8.1mm
   - Right and left (b, c): 5.5mm to 8.1mm



F-5-1

6 Trouble Shooting

- Test Print
- Trouble Shooting Items
- Version Upgrade

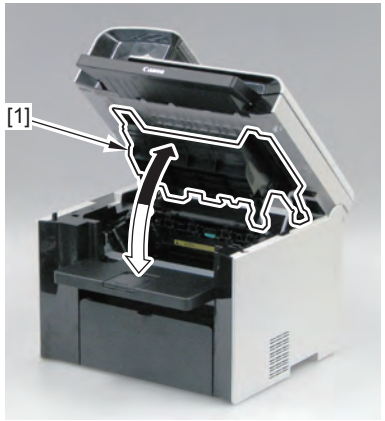
Test Print

Test Print Function

This equipment has a test print function to check if the printer engine normally operates.
Test patterns (horizontal lines) are output when executing this test print.

The following is the operation procedure;
a.1-sided print
1) Set A4/LTR papers on the pickup tray or the manual feed pickup tray.
2) Continuously open and close the Delivery Tray [1] at least 5 times for odd number of times with the Power Switch ON.
3) A 1-sided engine test print is executed.

b. 2-sided print
1) Set A4/LTR papers on the pickup tray or the manual feed pickup tray.
2) Continuously open and close the Delivery Tray [1] at least 5 times for even number of times with the Power Switch ON.
3) A 2-sided engine test print is executed.



F-6-1

Trouble Shooting Items

Image Faults

Smudged/Streaked

Bleeding (smear) occurs immediately after the power is turned on for the first time for the day

Description

There is sometimes a case where the difference of temperature between air and inside of the machine causes moisture to occur on the toner immediately after the power is turned on for the first time for the day.

As a result, when the toner transferred on a sheet at the time of initial printing passes through the fixing assembly, moisture on the toner is vaporized into steam, causing breading (smear) to occur.

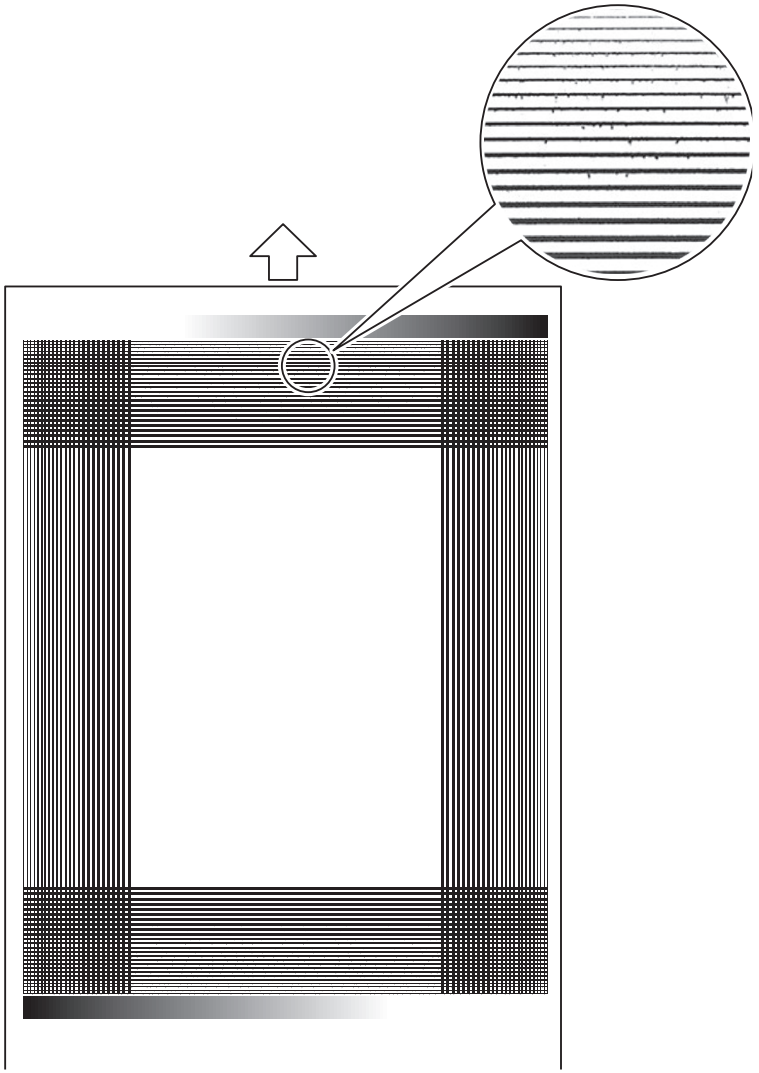
Field Remedy

Prevent bleeding using the following user mode items.

Setting items	Setting value	Description	Additional information
Finishing > Processing Option > Special Print Mode A	Not used,Mode 1 through 4 (Factory setting: Mode 2)	Make a setting to perform thinning of printed image data by processing of the controller. When the value set for the mode increases, the amount of thinning increases. (The image density decreases.)	Printing time does not increase because the method of image processing performed by the controller is changed. This mode is less effective than Mode B.
Finishing > Processing Option > Special Print Mode B	Not used,Mode 1 through 3 (Factory setting: Not used)	Extend the initial rotation period by processing of the engine. When the value set for the mode increases, the initial rotation period is extended.	The initial rotation period in engine operation is extended, and printing time increases. The initial rotation period for each mode is shown below. Mode 1: 13 sec, Mode 2: 30 sec, Mode 3: 60 sec

T-6-1

Image sample

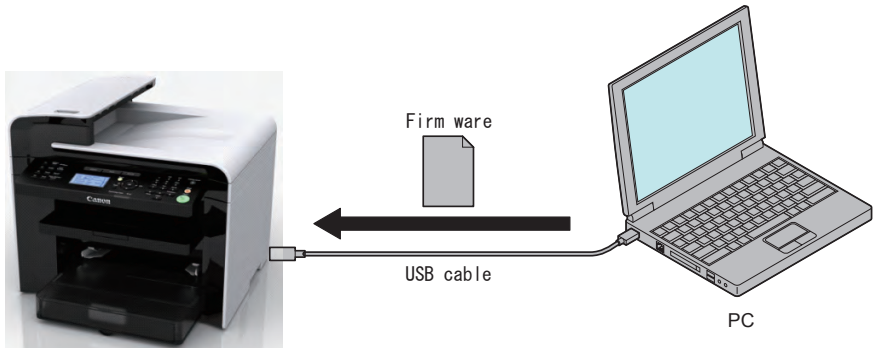


F-6-2

Version Upgrade

Overview

To upgrade versions, use the user support tool (hereinafter UST) and download firmware from a personal computer (hereinafter PC) to this product.



F-6-3

Firmware configuration

Firmware	Function	Stored in
BOOTROM	Start the main controller.	Main controller PCB
BOOTABLE	Control overall performance.	Main controller PCB
LANGUAGE	Manage languages used in panel / Remote UI and font data.	Main controller PCB
DEMO PRINT	Manage data for demo printing.	Main controller PCB
DCON	Control the printer unit.	DC controller PCB

T-6-2

Some UST versions meet less numbers of firmware than those listed above.

Preparation

System Requirements

- OS (one of the following)
  - Microsoft Windows 2000 Server/Professional
  - Microsoft Windows XP Professional/Home Edition
  - Microsoft Windows Server 2003
  - Microsoft Windows Vista*
    *: Only as for the 32 bit processor version
  - Microsoft Windows Server 2008
    (Microsoft Windows 7 to be supported)
- PC
  - Compatible to the selected OS
  - Memory (RAM): 32MB or more free space
  - Hard Disk: 100MB or more free space
  - Display: 640x480 pixels or more in resolution, 256 tones or more
  - With USB ports
- UST file for this product*
  *: Download the corresponding file from the system CD or the service site (ask the service technician in charge for details)
- USB cable (USB1.1/2.0)

Preparation

1) Start the PC.
2) Connect the device to the PC with the USB cable.
3) Turn on the device on standby.
4) Press [Menu] key to upgrade firmware in User mode.
   System Settings > Update Firmware
   The message, “Will you restart the device to upgrade firmware?”, is shown on the display.
   Select Yes.
5) Press OK to automatically restart the device. “***DOWNLOAD MODE***” is shown on the display.
6) Wait for the motor of the host machine to stop.

Note:
Press STOP key to cancel Download mode and return to the normal operation.

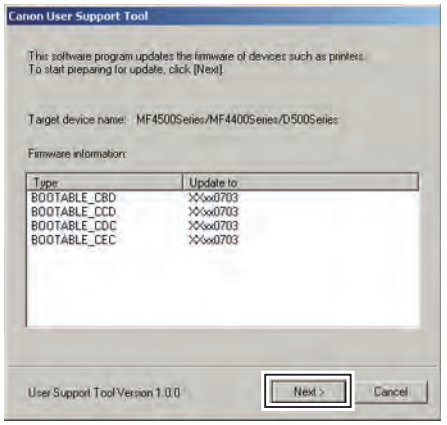
Downloading System Software

1) Open UST.

USTUPD.exe

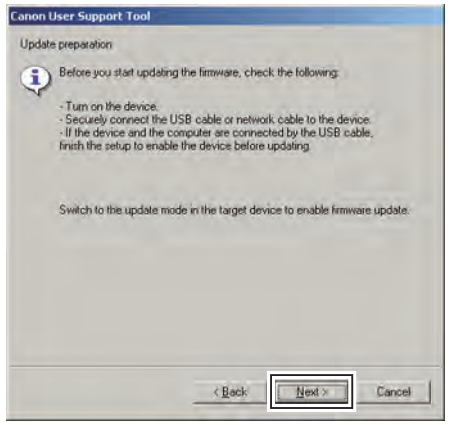
F-6-4

2) Take a note of the firmware version to upgrade and click [Next] button.



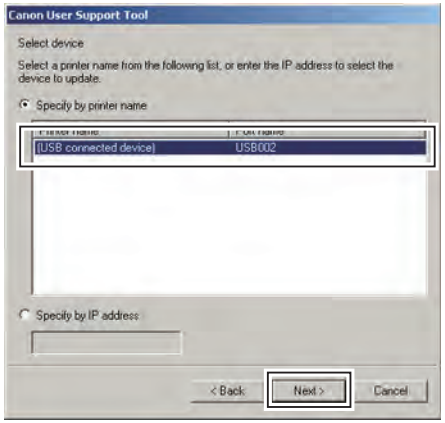
F-6-5

3) Click [Next] button.



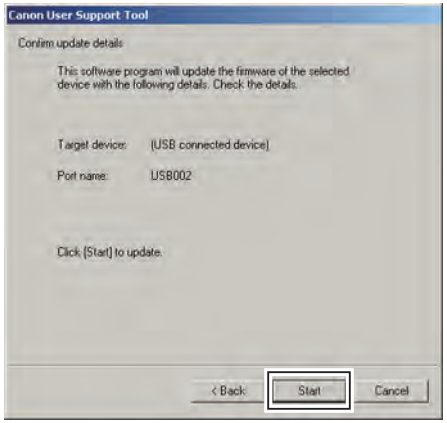
F-6-6

4) Select [USB Device] and click [Next] button.



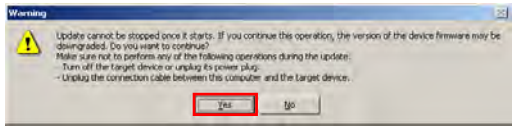
F-6-7

5) Click [Start] button.



F-6-8

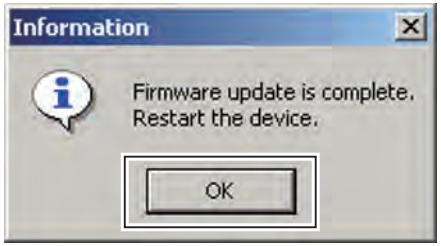
6) Click [Yes] button for the warning message to start download.



F-6-9

F-6-10

7) Click [OK] button when download is completed.



F-6-11

8) Turn off and on the power to restart the device.

9) Output the spec report from Service mode to confirm if the firmware version is the same as that on the note taken in Step 2).

COPIER > FUNCTION > MISC-P > OUTPUT > SPEC

7 Error Codes

- Overview
- Error Codes

Overview

This section describes codes shown in case any problem is occurred.

Since this product does not collect logs for jams and alarms, no jam / alarm code is shown.

Code type	Description	Reference
Error code	Shown for any problem occurred in the device.	List of error codes
Jam code	N/A	-
Alarm code	N/A	-

T-7-1

TONER
www.tonerplus.com.ua

Error Codes

Code		Detection description	Remedy
E000	0000	Fixing Assembly does not start up within specified time.	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check that the heater resistance measured between 1PIN and 2PIN of the cable (J101) on the Main Controller Board is in the following range. Replace the Fixing Assembly when the resistance value is abnormal. [1] 100 V machine - Heater resistance: 12.9 Ω ±7% [2] 120 V machine - Heater resistance: 16.0 Ω ±7% [3] 230 V machines - Heater resistance: 53.8 Ω ±7% (2) Check the connection of connector (J101) on the Engine Controller Board. (3) Check the connection of connector (J552) on Engine Controller Board. (4) Replace the Fixing Assembly. (5) Replace the Engine Controller Board.
E001	0000	Abnormal high-temperature detection	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check that the heater resistance measured between 1PIN and 2PIN of the cable (J101) on the Main Controller Board is in the following range. Replace the Fixing Assembly when the resistance value is abnormal. [1] 100 V machine - Heater resistance: 12.9 Ω ±7% [2] 120 V machine - Heater resistance: 16.0 Ω ±7% [3] 230 V machines - Heater resistance: 53.8 Ω ±7% (2) Check the connection of connector (J101) on the Engine Controller Board. (3) Check the connection of connector (J552) on Engine Controller Board. (4) Replace the Fixing Assembly. (5) Replace the Engine Controller Board.
E003	0000	Abnormal low-temperature detection	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check that the heater resistance measured between 1PIN and 2PIN of the cable (J101) on the Main Controller Board is in the following range. Replace the Fixing Assembly when the resistance value is abnormal. [1] 100 V machine - Heater resistance: 12.9 Ω ±7% [2] 120 V machine - Heater resistance: 16.0 Ω ±7% [3] 230 V machines - Heater resistance: 53.8 Ω ±7% (2) Check the connection of connector (J101) on the Engine Controller Board. (3) Check the connection of connector (J552) on Engine Controller Board. (4) Replace the Fixing Assembly. (5) Replace the Engine Controller Board.
E004	0000	Fixing power supply drive circuit error	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Replace the Engine Controller Board. (2) Replace the Fixing Assembly.
E100	0001	Error detection on any of scanner motor, laser unit, and BD detection at scanner area.	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Replace the Laser Scanner Unit. (2) Replace the Engine Controller Board.
E196	2000	ROM read/write error (Error in storing each setting values for user mode / service mode / factory mode)	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Update the set of the Controller Firmware (2) Replace the Main Controller Board.
E202	0002	Contact Sensor HP error, Failure in return	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check the connection of Flat Cable between Main Controller Board (J5) and Contact Sensor. (2) Replace the Flat Cable between Main Controller Board (J5) and Contact Sensor. (3) Replace the Contact Sensor. (4) Replace the Main Controller Board.

Code		Detection description	Remedy
E225	0001	Light intensity of a lamp is less or equal to the criteria	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check the connection of Flat Cable between Main Controller Board (J5) and Contact Sensor. (2) Replace the Flat Cable between Main Controller Board (J5) and Contact Sensor. (3) Replace the Contact Sensor. (4) Replace the Main Controller Board.
E301	0001	Insufficient light intensity in shading	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check the connection of Flat Cable between Main Controller Board (J5) and Contact Sensor. (2) Replace the Flat Cable between Main Controller Board (J5) and Contact Sensor. (3) Replace the Contact Sensor. (4) Replace the Main Controller Board.
E736	0000	Communication error with CCU/modem, or no FAX board installed on FAX model.	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check the connection of connectors between the Main Controller Board (J601, J602) and the FAX-NCU Board (J1201, J1204). (2) Replace the connectors between the Main Controller Board (J601, J602) and the FAX-NCU Board (J1201, J1204). (3) Replace the FAX-NCU Board. (4) Replace the Main Controller Board.
E740	0002	Error detection on either Network Board or Mac address	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check the connection of the network cable. (2) Replace the Main Controller Board.
E744	0002	Language file error	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. Update the set of the Controller Firmware
	4000	Engine ID error (Invalid engine connection is detected)	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Check the Engine Controller Board. (2) Update the Engine Firmware. (3) Update the set of the Controller Firmware

Code		Detection description	Remedy
E806	0000	Fan Motor cannot rotate at specified revolution speed.	When the same error repeatedly occurs after several times of turning the power OFF/ON, execute the following remedies. (1) Replace the Main Fan Unit. (2) Replace the Engine Controller Board.

T-7-2

8 Service Mode

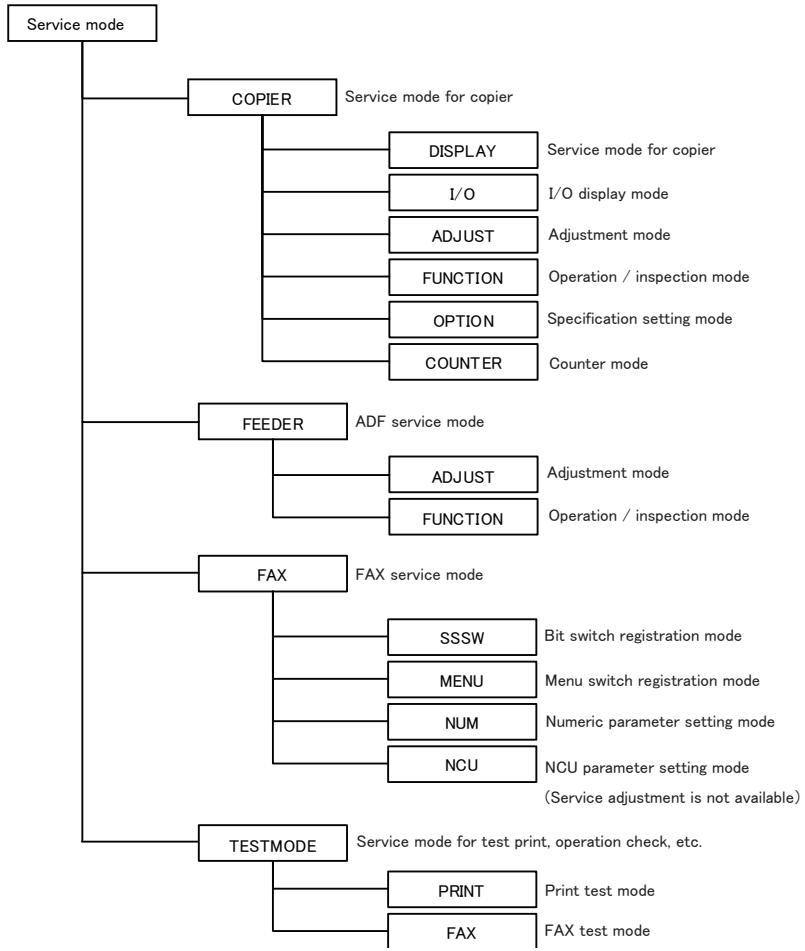
- Overview
- COPIER
- FEEDER
- FAX
- TESTMODE

Overview

Entering Service Mode.

Contact the sales company for the method to enter service mode.

Service Mode Menu

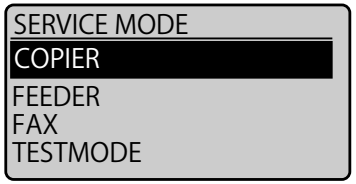


F-8-1

Screen flow of Service mode

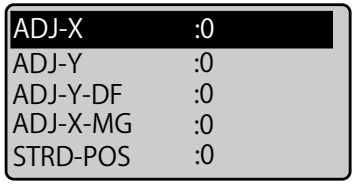
- Initial / Category / Sub category screen

  Select the item : Up-arrow / down-arrow key
  Go to Sub category screen : OK key
  Go to Initial screen : Return key



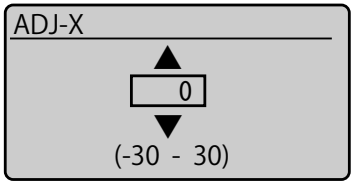
- Item selection screen

  Select the item : Up-arrow / down-arrow key
  Go to Setting screen : OK key
  Go to Sub category screen : Return key



- Input value screen

  Enter the setting value : numeric keypad
  Increment the setting value one by one : Up-arrow key
  Decrease the setting value one by one : Down-arrow key
  Nullify the setting value : Clear key
  Change the setting : OK key
  Maintain the setting : Return key



- How to input the switch setting value

  [Enter the decimal value converted from binary 8 bit value.]
  See the table below to obtain the total decimal value by summating respective digits with 1.

Bit	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Decimal value for "1"	128	64	32	16	8	4	2	1

T-8-1

(Ex.)
When converting "00100010", enter "34" as the sum of 32 (Bit 2) + 2 (Bit 6).

COPIER

DISPLAY

VERSION

COPIER>DISPLAY>VERSION	
Sub item	Description
MAIN	Display version/checksum/date of Bootable (Product program area)
ECONT	Display ROM version of recording engine

T-8-2

CCD

COPIER>DISPLAY>CCD			
Sub item	Description	Common to all models	ADF model only
FB-TARGET-B	Shading target value for BLUE of Reader Copyboard	Yes	
FB-TARGET-G	Shading target value for GREEN of Reader Copyboard	Yes	
FB-TARGET-R	Shading target value for RED of Reader Copyboard	Yes	
FB-TARGET-BW	Shading target value of Reader Copyboard in black and white	Yes	
DF-TARGET-B	Shading target value for BLUE of DF		Yes
DF-TARGET-G	Shading target value for GREEN of DF		Yes
DF-TARGET-R	Shading target value for RED of DF		Yes
DF-TARGET-BW	Shading target value of DF in black and white		Yes

T-8-3

TONER
www.tonerplus.com.ua

I/O

R-CON

COPIER>I/O>R-CON		
Address	BIT	Contents of display
P001	0	Sensor state display (DES)
	1	Sensor state display (DS)

T-8-4

ADJUST

ADJ-XY

COPIER>ADJUST>ADJ-XY			
Sub item	Description	Common to all models	ADF model only
ADJ-X	Adjustment value of image reading start position (Horizontal scanning direction) (X direction) [Applicable case] When the reading position of vertical scanning direction in fixed reading is incorrect [Adjustment] • Reduce the setting value when non-image width is larger than criteria. • Increase the setting value when the area out of original area is copied. • When increment the setting value by 1, the image reading start position is moved toward trailing edge by 0.1mm. Setting range: - 30 ~ 30 [Value after RAM clear: 0]	Yes	
STRD-POS	Adjusting reading position in DF stream reading [Applicable case] When the reading position of vertical scanning direction in DF stream reading is incorrect [Adjustment] • When increment the setting value by 1, image reading start position is moved toward leading edge by 0.1mm. Setting range: - 30 ~ 30 [Value after RAM clear: 0]		Yes
ADJ-X-MG	Fine adjustment (0.1% precision) of magnification ratio in Horizontal scanning direction in copyboard reading ±3% [Applicable case] When copy output image is larger or smaller than original image [Adjustment] Adjust by comparing the copy output and original. Increase the value when output image is smaller. Decrease the value when output image is larger. Setting range: - 30 ~ 30 [Factory default settings/ Value after RAM clear] 0 [Caution] This adjustment is targeted to adjust the image position on copy output. This may affect to the image of SCAN.	Yes	

T-8-5

CCD

COPIER>ADJUST>CCD			
Sub item	Description	Common to all models	ADF model only
FBTAR-R	Shading target value for RED in copyboard reading Setting range: 128 ~ 384 [Value after RAM clear: 290]	Yes	
FBTAR-G	Shading target value for GREEN in copyboard reading Setting range: 128 ~ 384 [Value after RAM clear: 284]	Yes	
FBTAR-B	Shading target value for BLUE in copyboard reading Setting range: 128 ~ 384 [Value after RAM clear: 278]	Yes	
FBTAR-BW	Shading target value in copyboard black and white reading Setting range: 128 ~ 384 [Value after RAM clear: 301]	Yes	
DFTAR-R	Shading target value for RED in DF reading Setting range: 128 ~ 384 [Value after RAM clear: 334]		Yes
DFTAR-G	Shading target value for GREEN in DF reading Setting range: 128 ~ 384 [Value after RAM clear: 323]		Yes
DFTAR-B	Shading target value for BLUE in DF reading Setting range: 128 ~ 384 [Value after RAM clear: 318]		Yes
DFTAR-BW	Shading target value in black and white reading Setting range: 128 ~ 384 [Value after RAM clear: 341]		Yes

T-8-6

FUNCTION

CLEAR

COPIER>FUNCTION>CLEAR			
Sub item	Description	Common to all models	Network model and FAX model only
TEL-USER	Clear the user data and the registered address data. SSSW is not cleared. When this service mode is executed, a message "REBOOTING..." is displayed on the Control Panel, and the host machine is automatically restarted.	Yes	
SRVC-DAT	SERVICE DATA is cleared. User data is not cleared.	Yes	
HIST	Each log data is cleared. ACT-HIST: Communication log is cleared. ACT-HIST: Each print log is cleared.	Yes	
PWD-CLEAR	Password of the system administrator is cleared.		Yes
ALL	The following data are cleared. • USER DATA • SERVICE DATA • JOB ID • Each log • CLEAR DATE USER DATA/ SERVICE DATA are reset to the default location value. Appropriate values for LOCAL / SIZE-LC needs to be preset before executing of CLEAR -> ALL When this service mode is executed without setting the appropriate values for LOCAL / SIZE-LC, factory default settings are continued to use. When this service mode is executed, a message "REBOOTING..." is displayed on the Control Panel, and the host machine is automatically restarted.	Yes	

T-8-7

MISC-R

COPIER>FUNCTION>MISC-R	
Sub item	Description
SCANLAMP	Execution of lighting function for Scanning Lamp.

T-8-8

MISC-P

OUTPUT

When outputting the report, place paper in the Pickup Cassette, and remove paper from the Multi-purpose Tray.

If paper is placed in the Multi-purpose Tray, the report is not output even if paper is placed in the Pickup Cassette.

COPIER>FUNCTION>MISC-P	
Sub item	Description
SRVC-DAT	To output the system data list/ system dump list as follows;
SYS-DAT	To output the system data list. Service software switches and parameters used in FAX function are mainly outputted.
SYS-DMP	To output the system dump list. Service data such as the number of communications, the number of receiving pages and sending pages, and the number of error are outputted.
CNTR	To output the counter report. Counter values of use trend for reading, storage, communications, and copy are displayed.
SPEC	To output the spec report. Current device status is printed out.

T-8-9

SYSTEM

COPIER>FUNCTION>SYSTEM	
Sub item	Description
DOWNLOAD	To switch to the download mode.

T-8-10

PARAM

COPIER>FUNCTION>PARAM	
Sub item	Description
EXC-NAVI	To switch of installation navigation. Setting value 0: Enable (Default) 1: Disable Set this switch to 1 after the termination of installation navigation. Installation navigation is not executed when this switch is 1 at next start-up. When this service mode is executed, a message "REBOOTING..." is displayed on the Control Panel, and the host machine is automatically restarted.

T-8-11

■ SPLMAN

COPIER>FUNCTION>SPLMAN			
Sub item	Description	Common to all models	Double sided printing model only
TOP-MPT	Adjustment of leading edge margin when feeding from MP tray. Adjustment in: 0.1mm Setting range: 50 ~ 150 (Default value: 100)	Yes	
TOP-DUP-MPT	Adjustment of leading edge margin on both sides/ back side when feeding from MP tray. Adjustment in: 0.1mm Setting range: 50 ~ 150 (Default value: 100)		Yes
LEFT-MPT	Adjustment of left margin when feeding from MP tray. Adjustment in: 0.1mm Setting range: 50 ~ 150 (Default value: 100)	Yes	
LEFT-DUP-MPT	Adjustment of left margin on both sides/ back side when feeding from MP tray. Adjustment in: 0.1mm Setting range: 50 ~ 150 (Default value: 100)		Yes
TOP-CST	Adjustment of leading edge margin when feeding from cassette. Adjustment in: 0.1mm Setting range: 50 ~ 150 (Default value: 100)	Yes	
TOP-DUP-CST	Adjustment of leading edge margin on both sides/ back side when feeding from cassette. Adjustment in: 0.1mm Setting range: 50 ~ 150 (Default value: 100)		Yes
LEFT-CST	Adjustment of left margin when feeding from cassette. Adjustment in: 0.1mm Setting range: 50 ~ 150 (Default value: 100)	Yes	
LEFT-DUP-CST	Adjustment of left margin on both sides/ back side when feeding from cassette. Adjustment in: 0.1mm Setting range: 50 ~ 150 (Default value: 100)		Yes

T-8-12

OPTION

■ BODY

COPIER>OPTION>BODY	
Sub item	Description
LOCALE	To set country group. 1: Japan 2: North America 3: Korea 4: China 5: Taiwan 6: Europe 7: Asia 8: Oceania Execute the following service mode to enable this setting.

T-8-13

COUNTER

TOTAL

COPIER>COUNTER>TOTAL				
Display/ Setting/ Adjustment rage: 0 ~ 999,999 Return to 0 when exceeding 999,999.				
Sub item	Description	Common to all models	FAX model only	Double sided printing model only
SERVICE1	Total counter 1 for service Count up when a paper is ejected from the machine (regardless of sizes such as large size and small size.)	Yes		
SERVICE2	Total counter 2 for service Count up when a paper is ejected from the machine (regardless of sizes such as large size and small size.)	Yes		
TTL	Total counter (Copier + Printer + FAX + Combination)	Yes		
COPY	Total copy counter Count up when a paper is ejected from the machine after execution of copy operation.	Yes		
PDL-PRT	PDL printing counter Count up when PDL printing, ejecting a paper from the machine, and duplex stacking. Blank paper is also counted. Count up by 1 regardless of large or small.	Yes		
FAX-PRT	FAX reception printing counter Count up when FAX reception printing, ejecting a paper from the machine, and duplex stacking. Blank paper is also counted. Count up by 1 regardless of large or small. It can be cleared.		Yes	
RPT-PRT	Report printing counter Count up when report printing, ejecting a paper from the machine, and duplex stacking. Blank paper is also counted. Count up by 1 regardless of large or small. It can be cleared.	Yes		
2-SIDE	2 sided copy/ print counter Count up the number of passing through the duplex path in copying/ printing when ejecting a paper from the machine and duplex stacking. Blank paper is also counted. Count up by 1 regardless of large or small. It can be cleared.			Yes
SCAN	Scanning counter Count up the number of scanning when scanning is completed. Count up by 1 regardless of large or small. It can be cleared.	Yes		

T-8-14

PICK-UP

COPIER>COUNTER>PICK-UP			
Display/ Setting/ Adjustment rage: 0 ~ 999,999 Return to 0 when exceeding 999,999.			
Sub item	Description	Common to all models	Double sided printing model only
C1	Total counter of cassette 1 pickup Display the number of pages picked up from cassette 1.	Yes	
MF	Total counter of multi-purpose tray pickup Display the number of pages picked up from multi-purpose tray.	Yes	
2-SIDE	Total counter of 2-sided pickup Display the number of pages by 2-sided pickup.		Yes

T-8-15

FEEDER

COPIER>COUNTER>FEEDER		
Display/ Setting/ Adjustment rage: 0 ~ 999,999 Return to 0 when exceeding 999,999.		
Sub item	Description	ADF model only
FEED	Total counter of document pickup by ADF	Yes

T-8-16

JAM

COPIER>COUNTER>JAM				
Display/ Setting/ Adjustment rage: 0 ~ 999,999 Return to 0 when exceeding 999,999.				
Sub item	Description	Common to all models	ADF model only	Double sided printing model only
TOTAL	Total jam counter	Yes		
FEEDER	Total jam counter for feeder		Yes	
2-SIDE	Jam counter for duplex unit			Yes
MF	Jam counter for multi-purpose tray	Yes		
C1	Jam counter for cassette 1	Yes		

T-8-17

FEEDER

ADJUST

FEEDER>ADJUST		
Sub item	Description	ADF model only
DOCST	Adjustment of the page front reading position when using duplex ADF Setting range: -30 ~ 30	Yes
LA-SPD	Adjustment of magnification ratio in vertical scanning direction in stream feeding Setting range: -200 ~ 200	Yes

T-8-18

FUNCTION

FEEDER>FUNCTION		
Sub item	Description	ADF model only
FEED-CHK	Paper feeding test for only ADF Setting value 0: Simplex 1:Duplex	Yes
SL-ON	Operation start-up for solenoid	Yes
MTR-ON	Operation start-up for motor	Yes
FEED-ON	Paper feeding test for only ADF	Yes

T-8-19

FAX

List of SSSW

- FAX model only

FAX>SSSW		
SSSW No.	Bit No.	Function
SW 01		(Errors, COPY functions)
	Bit 0	Output error codes for service technicians
	Bit 1	Error in memory dump
	Bit 2	Enter the password for transferring received confidential image
	Bit 3	Prohibit COPY
	Bit 4	Display No. 300s
	Bit 6	Prohibit users from setting date/time
	Bit 7	Collectively clear user setting prohibition
SW 02		(Setting for network connection criteria)
	Bit 0	Do not start when memory clear list is unable to output
	Bit 4	V34 CCRTN OFF
	Bit 7	Connect the terminal as F network type 2
SW 03		(Echo measures)
	Bit 0	Check EQM of TCF
	Bit 1	Apply echo protect tone to V.29
	Bit 4	Heard DIS twice
	Bit 5	First DIS interference
	Bit 6	Interfered DIS frequency
	Bit 7	Output 1080Hz before CED
SW 04		(Measures against communication troubles)
	Bit 0	Monitor LC
	Bit 1	Check CI signal frequency
	Bit 2	V21 end flag
	Bit 3	Prohibit T.30 node F kept by both parties
	Bit 4	T.30 node F echo timer
	Bit 5	Check CI signal frequency when setting PBX
	Bit 6	Do not send CNG for manual outgoing transmission
	Bit 7	Do not send CED for manual incoming transmission
SW 05		(Standard functions, DIS signal setting)
	Bit 1	mm/inch conversion (text mode)
	Bit 2	mm/inch conversion (text and picture / picture mode)
	Bit 3	Prohibit DIS from transmitting bit33 and the followings.
	Bit 4	Declare cut sheets
	Bit 5	Declare LRT/LGL in DIS
	Bit 6	Prohibit ECM outgoing transmission
	Bit 7	Prohibit ECM incoming transmission

FAX>SSSW		
SSSW No.	Bit No.	Function
SW 06		(Setting of reading criteria)
	Bit 0	Move from DES to pre-scan position
	Bit 1	Pre-scan at time other than power-ON
	Bit 2	Restrict document length
	Bit 3	Stamp option
	Bit 4	Reading width 0:A4 1: LTR
	Bit 5	Record memory copy time sharing
	Bit 6	Variable resolution at COPY
	Bit 7	Half tone + super fine
SW 07-SW 11		
		Not in use
SW 12		(Page timer setting)
	Bit 0	1 page timeout (outgoing transmission)
	Bit 1	
	Bit 2	1 page timeout (HT transmission)
	Bit 3	
	Bit 4	1 page timeout (incoming transmission)
	Bit 5	
	Bit 7	1 page timeout
SW 13		
	Bit 0	Prohibit relay broadcasting / transfer while receiving relay / transfer
	Bit 1	Response to faulty image while receiving relay / transfer
	Bit 2	Convert mm/inch when transmitting received image
SW 14		
	Bit 0	Standard paper size type
	Bit 1	<NADA>COPIER > OPTION > BODY > MODEL-SZ
	Bit 2	Convert inch to mm in both main/vertical scanning directions or only in vertical scanning direction
	Bit 3	Convert inch to mm only for OCR transmission
	Bit 4	Declare resolution for Inch series
SW 15		
	Bit 1	Polarity memory timing at dial-in
	Bit 2	Receive incoming calls to ND circuit: device circuit
	Bit 6	Detect continuous signals when switching F/T
SW 16-SW 17		
		Not in use
SW 18		
	Bit 0	Detect carrier disconnection between DCS and TCF
	Bit 1	Waiting time for carrier disconnection between DCS and TCF
	Bit 2	Prohibit communication control for IP network
SW 19-SW 21		
		Not in use

FAX>SSSW		
SSSW No.	Bit No.	Function
SW 22		
	Bit 0	Prohibit NSX transmission
	Bit 1	Prohibit separated A4 record
	Bit 2	Prohibit broadcasting transmission
	Bit 3	Prohibit manual polling actions
	Bit 4	Prohibit manual transmission when transmitting archives
	Bit 6	With archive transmission function
SW 23-SW 24		
		Not in use
SW 25		(Setting for report display function)
	Bit 0	Prioritize the received telephone number to the dialed number
	Bit 1	Prioritize the received abbreviated name to the dialed abbreviated name
	Bit 2	Regard a received blank CIS as an unreceived CIS
	Bit 3	Message language selection for user SW
SW 26-SW 27		
		Not in use
SW 28		
	Bit 0	Prohibit calling party for V8 procedure
	Bit 1	Prohibit called party from V8 procedure
	Bit 2	Prohibit calling party from V8 late-start
	Bit 3	Prohibit called party from V8 late-start
	Bit 4	Prohibit V.34 called party from starting fallback
	Bit 5	Prohibit V.34 calling party from starting fallback
SW 29		
		Not in use
SW 30		
	Bit 0	Support for 1284 device ID
	Bit 5	New dial tone detection method
SW 31		
		Not in use
SW 32		
	Bit 0	Canon/NTT NSX switching SW
	Bit 5	0:NCU2004 1:NCU2002
SW 33-SW 50		
		Not in use

T-8-20

List of Menu

- FAX model only

Menu switch registration mode		
No.	Parameter	Selection
01-04	Not in use	
05	ON/OFF of NL equalizer	0: OFF 1: ON
06	Telephone line monitor	0-3 0: DIAL 1: SERVICEMAN 1 2: SERVICEMAN 2 3: OFF
07	Transmission level (ATT)	0-15
08	Upper limit of V.34 modulation speed	0-5 0: 3429BAUD 1: 3200BAUD 2: 3000BAUD 3: 2800BAUD 4: 2743BAUD 5: 2400BAUD
09	Upper limit of V.34 data speed	0-13 0: 33.6kbps, 1:31.2, 2: 28.8, 3: 26.4, 4: 24.0, 5: 21.6, 6: 19.2, 7: 16.8, 8: 14.4, 9: 12.0, 10: 9.6, 11: 7.2, 12: 4.8, 13: 2.4
10	Pseudo-CI signal frequency	0-2 0: 50Hz, 1: 25Hz, 2: 17Hz
11-20	Not in use	

T-8-21

List of NUM

- FAX model only

Numeric parameter setting mode		
No.	Parameter	Allowable setting range
01	Not in use	
02	RTN transmission criteria X	1 to 99%
03	RTN transmission criteria n	2 to 99 times
04	RTN transmission criteria m	1 to 99 lines
05	NCC pause (before ID code)	1 to 60s
06	NCC pause (after ID code)	1 to 60s
07-09	Not in use	
10	T.30 T0 timer	55s principally
11	T.30 T1 timer (for incoming transmission)	0 to 9999 (France=3500, Others=3000)
12	Maximum incoming lines	0 to 65535 (line) 0: without limitation
13	T.30 EOL timer	500 to 3000 (set to 55s by default)
14	Not in use	
15	Threshold between hooking and on-hook	0 to 999
16	Lead time to the first response when switching between FAX and TEL	0 to 9
17	Duration to activate pseudo-RBT cadence	0 to 999
18	Duration to deactivate pseudo-RBT cadence (short)	0 to 999
19	Duration to deactivate pseudo-RBT cadence (long)	0 to 999
20	Duration to activate pseudo-ring cadence	0 to 999
21	Duration to deactivate pseudo-CI cadence (short)	0 to 999
22	Duration to deactivate pseudo-CI cadence (long)	0 to 999
23	CNG detection level when switching between FAX and TEL	0 to 7
24	Pseudo-RBT outgoing level when switching between FAX and TEL	10 to 20 (100v), 0 to 20 (120, 230v)
25	CNG monitor duration while the answering device is activated	0 to 999
26	No signal detection level while the answering device is activated	0 to 7
27	Duration to detect preamble of V21 low-speed flag	20 (*10ms)
28-50	Not in use	
51	Threshold to detect hook	10 to 9999
53	Set DTMF calling counts when receiving FAX remotely	0 to 9999
54	Set BusyTone outgoing duration when using handset	0 to 9999
55-73	Not in use	
78-80	Exclusive use of a developer	

T-8-22

List of NCU

- FAX model only

TONE/PULSE

(1)Setting of Tone Parameters

While “#NCU” is displayed, press “OK” key -> Select “#TONE” and press “OK” key so that it becomes tone parameter setting mode.

(2)Setting of Pulse Parameters

While “#NCU” is displayed, press “OK” key -> Select “#PULSE” and press “OK” key so that it becomes pulse parameter setting mode.

Item			Function	Setting range
TONE		01:	Tone signal sending time (PSTN)	10 to 9999 (ms)
		02:	Minimum pause time (PSTN)	10 to 9999 (ms)
PULSE	PULSE FORM		Pulse digit format	0 -> DP (N)
				1 -> DP (N+1)
				2 -> DP (10-N)
	PULSE NUM	01:	Pulse dial speed (10pps)	5 to 300 (x0.1pps)
		02:	Pulse dial speed (20pps)	5 to 300 (x0.1pps)
		03:	Pulse dial make ratio	10 to 90 (%)
		04:	Minimum pause time	10 to 9999 (ms)

T-8-23

TONE/PULSE

(1) Bit switch

Bit No.	Function	1	0
Bit 0	Frequency detection method	Modem	Tonal counter
Bit 1			
Bit 2	Signal frequency	Changed	Not changed
Bit 3			
Bit 4	Judgment of intermittent signal	Start from valid ON signal	Start from either valid ON signal or OFF signal
Bit 5			
Bit 6	Signal form	Continuous	Intermittent
Bit 7	Signal detection	Detected	Not detected

T-8-24

(2) Numeric value parameter

Parameter No.	Function	Setting range
01;	T0 timer	0 to 9999 (x10ms)
02;	T1 timer	0 to 9999 (x10ms)
03;	T2 timer	0 to 9999 (x10ms)
04;	T3 timer	0 to 9999 (x10ms)
05;	T4 timer	0 to 9999 (x10ms)
06;	Signal detection table	0 to 16
07;	Signal detection level	0 to 7
08;	Number of valid tone detection	0 to 9999 (times)

T-8-25

2nd DIAL TONE

(1) Bit switch

Bit No.	Function	1	0
Bit 0	Frequency detection method	Modem	Tonal counter
Bit 1			
Bit 2	Signal frequency	Changed	Not changed
Bit 3			
Bit 4	Judgment of intermittent signal	Start from valid ON signal	Start from either valid ON signal or OFF signal
Bit 5			
Bit 6	Signal form	Continuous	Intermittent
Bit 7	Signal detection	Detected	Not detected

T-8-26

(2) Numeric value parameter

Parameter No.	Function	Setting range
01;	T0 timer	0 to 9999 (x10ms)
02;	T1 timer	0 to 9999 (x10ms)
03;	T2 timer	0 to 9999 (x10ms)
04;	T3 timer	0 to 9999 (x10ms)
05;	T4 timer	0 to 9999 (x10ms)
06;	Signal detection table	0 to 16
07;	Signal detection level	0 to 7
08;	Number of valid tone detection	0 to 9999 (times)

T-8-27

BUSY TONE0

(1) Bit switch

Bit No.	Function	1	0
Bit 0			
Bit 1			
Bit 2	Signal frequency	Changed	Not changed
Bit 3			
Bit 4	Judgment of intermittent signal	Start from valid ON signal	Start from either valid ON signal or OFF signal
Bit 5			
Bit 6	Signal form	Continuous	Intermittent
Bit 7	Signal detection	Detected	Not detected

T-8-28

(2) Numeric value parameter

Parameter No.	Function	Setting range
01;		
02;	T1 timer	0 to 9999 (x10ms)
03;	T2 timer	0 to 9999 (x10ms)
04;	T3 timer	0 to 9999 (x10ms)
05;	T4 timer	0 to 9999 (x10ms)
06;	Signal detection table	0 to 16
07;	Signal detection level	0 to 7
08;	Number of valid tone detection	0 to 9999 (times)

T-8-29

BUSY TONE1

(1) Bit switch

Bit No.	Function	1	0
Bit 0			
Bit 1			
Bit 2	Signal frequency	Changed	Not changed
Bit 3	RBT signal detection	Detected	Not detected
Bit 4	Judgment of intermittent signal	Start from valid ON signal	Start from either valid ON signal or OFF signal
Bit 5	RBT signal check cycle	1 cycle	1/2 cycle
Bit 6	Signal form	Continuous	Intermittent
Bit 7	Signal detection	Detected	Not detected

T-8-30

(2) Numeric value parameter

Parameter No.	Function	Setting range
01;		
02;	T1 timer	0 to 9999 (x10ms)
03;	T2 timer	0 to 9999 (x10ms)
04;	T3 timer	0 to 9999 (x10ms)
05;	T4 timer	0 to 9999 (x10ms)
06;	Signal detection table	0 to 16
07;	Signal detection level	0 to 7
08;	Number of valid tone detection	0 to 9999 (times)

T-8-31

REORDER TONE

(1) Bit switch

Bit No.	Function	1	0
Bit 0			
Bit 1	Signal detection method	FED	FR3
Bit 2	Signal frequency	Changed	Not changed
Bit 3			
Bit 4	Judgment of intermittent signal	Start from valid ON signal	Start from either valid ON signal or OFF signal
Bit 5			
Bit 6	Signal form	Continuous	Intermittent
Bit 7	Signal detection	Detected	Not detected

T-8-32

(2) Numeric value parameter

Parameter No.	Function	Setting range
01;		
02;	T1 timer	0 to 9999 (x10ms)
03;	T2 timer	0 to 9999 (x10ms)
04;	T3 timer	0 to 9999 (x10ms)
05;	T4 timer	0 to 9999 (x10ms)
06;	Signal detection table	0 to 16
07;	Signal detection level	0 to 7
08;	Number of valid tone detection	0 to 9999 (times)

T-8-33

AUTO RX

(1) Numeric value parameter

Parameter No.	Function	Setting range
01;	CI ON time	0 to 9999 (x10ms)
02;	CI long off time	0 to 9999 (x10ms)
03;	CI off time	0 to 9999 (x10ms)
04;	CL long off time	0 to 9999 (x10ms)
05;	CI MAX off time	0 to 9999 (x10ms)
06;	CI wait time	0 to 9999 (x10ms)
07;	CI frequency	0 to 9999 (cycle)
08;	CI frequency lower limit	0 to 9999 (Hz)
09;	CI frequency upper limit	0 to 9999 (Hz)

T-8-34

CNG DETECT

(1) Numeric value parameter

Parameter No.	Function		Setting range
01;	At F/T switching	CNG MIN ON time	0 to 9999 (x10ms)
02;		CNG MAX ON time	0 to 9999 (x10ms)
03;			
04;			
05;			
06;		Hit ratio	0 to 9999 (%)
07;	At direct connecting to answering phone	CNG MIN ON time	0 to 9999 (x10ms)
08;		CNG MAX ON time	0 to 9999 (x10ms)
09;		Tolerable time of instantaneous interruption	0 to 9999 (x10ms)
10;			
11;		Number of detection	0 to 9999 (Times)
12;		Hit ratio	0 to 9999 (%)

T-8-35

RKEY

(1) Numeric value parameter

Parameter No.	Function	Setting range
01;	Connection time of flash	0 to 9999 (x10ms)
02;	Connection time of grounding wire	0 to 9999 (x10ms)
03;		

T-8-36

PBX DIAL TONE

(1) Bit switch

Bit No.	Function	1	0
Bit 0	Frequency detection method	Modem	Tonal counter
Bit 1			
Bit 2	Signal frequency	Changed	Not changed
Bit 3			
Bit 4	Judgment of intermittent signal	Start from valid ON signal	Start from either valid ON signal or OFF signal
Bit 5			
Bit 6	Signal form	Continuous	Intermittent
Bit 7	Signal detection	Detected	Not detected

T-8-37

(2) Numeric value parameter

Parameter No.	Function	Setting range
01;	T0 timer	0 to 9999 (x10ms)
02;	T1 timer	0 to 9999 (x10ms)
03;	T2 timer	0 to 9999 (x10ms)
04;	T3 timer	0 to 9999 (x10ms)
05;	T4 timer	0 to 9999 (x10ms)
06;	Signal detection table	0 to 16
07;	Signal detection level	0 to 9
08;	Number of valid tone detection	0 to 9999 (times)

T-8-38

PBX BUSY TONE

(1) Bit switch

Bit No.	Function	1	0
Bit 0			
Bit 1			
Bit 2	Signal frequency	Changed	Not changed
Bit 3			
Bit 4	Judgment of intermittent signal	Start from valid ON signal	Start from either valid ON signal or OFF signal
Bit 5			
Bit 6	Signal form	Continuous	Intermittent
Bit 7	Signal detection	Detected	Not detected

T-8-39

(2) Numeric value parameter

Parameter No.	Function	Setting range
01;	T0 timer	0 to 9999 (x10ms)
02;	T1 timer	0 to 9999 (x10ms)
03;	T2 timer	0 to 9999 (x10ms)
04;	T3 timer	0 to 9999 (x10ms)
05;	T4 timer	0 to 9999 (x10ms)
06;	Signal detection table	0 to 16
07;	Signal detection level	0 to 9
08;	Number of valid tone detection	0 to 9999 (times)

T-8-40

TESTMODE

SYSTEM

DRAM

TESTMODE>SYSTEM>DRAM	
Sub item	Description
TEST1	Data read/write check for DRAM (except system work area)

T-8-41

SPEAKER

TESTMODE>SYSTEM>SPEAKER		
Sub item	Description	FAX model only
ON	Volume level is stepped up by 1 from minimum to maximum every time pressing OK key. When the volume level is reached to maximum, it changes to silence and minimum volume.	Yes
MIN	Play with minimum volume by pressing OK key.	Yes
MAX	Play with maximum volume by pressing OK key.	Yes

T-8-42

SCAN

ADJUST

ADF-ADJ

TESTMODE>SCAN>ADJUST>ADF-ADJ		
Sub item	Description	ADF model only
DF-SPEED	Enter the adjustment value for the magnification ratio in vertical scanning direction in stream feeding Setting range: -200 ~ 200	Yes
DF-OFFSET	Enter for the adjustment of DF original stop position Setting value: -30 ~ 30	Yes

T-8-43

SENSOR

TESTMODE>SCAN>ADJUST>SENSOR	
Sub item	Description
TRAY PAPER SENS	Display the status of Multi Pickup Sensor 1: Paper existing 0: No paper
REGI SENS	Display the status of Leading Edge Sensor 1: Paper existing 0: No paper
ESS DOOR SENS	Display the status of Delivery Tray Open/ Close Switch 1: ON 0: OFF

T-8-44

■ ADFTEST

TESTMODE>SCAN>ADFTEST			
Sub item	Description	Single-sided ADF model	Double-sided ADF model
SPEED	For testing of ADF feeding speed. Execute feeding test of ADF motor at specified speed. [Setting value] STD-FAX Fine-FAX SFine-FAX RGB-600dpi RGB-300dpi RGB-150dpi Gray600dpi Gray300dpi Gray150dpi Mono600dpi Mono300dpi Mono150dpi	Yes	Yes
2-SIDE	Specify ON/OFF for duplex mode		Yes
COUNT	Page counter for originals: Existing	Yes	Yes
START	Start feeding	Yes	Yes

T-8-45

■ BOOKFEED

TESTMODE>SCAN>BOOKFEED	
Sub item	Description
SPEED	For testing of feeding speed. Execute feeding test of the book motor at specified speed. [Setting value] STD-FAX Fine-FAX SFine-FAX RGB-600dpi RGB-300dpi RGB-150dpi Gray600dpi Gray300dpi Gray150dpi Mono600dpi Mono300dpi Mono150dpi
PAGE	Display the number of bookfeed pages
START	Start of bookfeed
STOP	End of bookfeed

T-8-46

FAX

■ MODEM

TESTMODE>FAX>MODEM		
Sub item	Description	FAX model only
FREQ	Transmit selected frequency in closed DC circuit using tone generation function of modem. [Setting values] 462Hz 1100Hz 1300Hz 1500Hz 1650Hz 1850Hz 2100Hz	Yes
G3TX	Transmit selected signal pattern in closed DC circuit at selected frequency using G3 signal transmission function of modem. [Setting values] 300bps 2400bps 4800bps 7200bps 9800bps TC7200 TC9600 12000bp 14400bp	Yes
DTMFTX(LONG)	Transmit DTMF signal using DTMF transmission function of modem after DC circuit closure.	Yes
V34G3TX	Transmit selected frequency using G3 signal transmission function (V.34) after DC circuit closure. [Setting values] SPEED 3429baud 3200baud 3000baud 2800baud 2743baud 2400baud	Yes

T-8-47

RELAY-1

TESTMODE>FAX>MODEM>RELAY-1		
Sub item	Description	FAX model only
CML	Test ON/OFF of port SW and relay on NCU Setting value: ON, OFF	Yes
H	Test ON/OFF of port SW and relay on NCU Setting value: ON, OFF	Yes

T-8-48

FACULTY

TESTMODE>FAX>FACULTY		
Sub item	Description	FAX model only
G34800TX	Transmit the frequency of 4800bps using G3 signal transmission function after DC circuit closure.	Yes
DETECT1	Ring detection Check the status (ON, OFF) of hook and Ci, Fc from i line.	Yes
DETECT2	CNG detection test 1 Execute CNG signal check and FED check. Detect CNG after CML relay is ON.	Yes
DETECT3	CNG detection test 2 Execute CNG signal check and FED check. Detect CNG after CML relay is OFF.	Yes

T-8-49

PANEL

TESTMODE>FAX>PANEL	
Sub item	Description
KEY CHECK START	Key check [Applicable case] Check if all keys functions normally after replacement of Control Panel.
LED CHECK START	LED check [Applicable case] Check if all LEDs are lit normally after replacement of Control Panel.
LCD CHECK START	LCD check [Applicable case] Check if LCD can display without any missing dot after replacement of Control Pannel.

T-8-50

NETWORK

SSSW

NETWORK>SSSW		
Sub item	BIT	Description
SW01 ~ SW09	0	Not in use
	1	
	2	
	3	
	4	
	5	
	6	
	7	
SW10 Network Config System	0	Not in use
	1	
	2	
	3	Turn ON(Enable)/ OFF(Disable) for acquisition of host name (Option 12) by DHCP Default value: 0
	4	Turn ON(Enable)/ OFF(Disable) for registration of host name (Option 81) by DHCP Default value: 1
	5	Not in use
	6	
	7	
SW11 ~ SW50	0	Not in use
	1	
	2	
	3	
	4	
	5	
	6	
	7	

T-8-51

Appendix

- Service Tools
- Solvent/Oil List
- General Circuit Diagram
- General Timing Chart

Service Tools

The followings are the required tools to perform the service operation.

No.	Tool name	Tool number	Usage/remarks
1	Tool case	TKN-0001	
2	Jumper wire	TKN-0069	With clip
3	Gap gauge	CK-0057	0.02 to 0.03mm
4	Spring scale	CK-0058	To check cassette spring pressure
5	Philips screwdriver	CK-0101	M4, M5 Length: 363mm
6	Philips screwdriver	CK-0104	M3, M4 Length: 155mm
7	Philips screwdriver	CK-0105	M4, M5 Length: 191mm
8	Philips screwdriver	CK-0106	M4, M5 Length: 85mm
9	Flat-blade screwdriver	CK-0111	
10	Precision slot head screwdriver	CK-0114	6 pieces set
11	Hex-key wrench set	CK-0151	5 pieces set
12	Smooth file	CK-0161	
13	Hex screwdriver	CK-0170	M4, Length: 107mm
14	Nipper	CK-0201	
15	Long-nose pliers	CK-0202	
16	Pliers	CK-0203	
17	Stop-ring pliers	CK-0205	For shaft ring
18	Crimping tool	CK-0218	
19	Tweezers	CK-0302	
20	Scale	CK-0303	150mm For measurement
21	Plastic hummer	CK-0314	
22	Brush	CK-0315	
23	Penlight	CK-0327	
24	Plastic bottle	CK-0328	
25	Lint-free paper	CK-0336	500SH/PKG
26	Oiler	CK-0349	30cc
27	Plastic bottle	CK-0351	30cc
28	Digital multi-meter	FY9-2032	

T-9-1

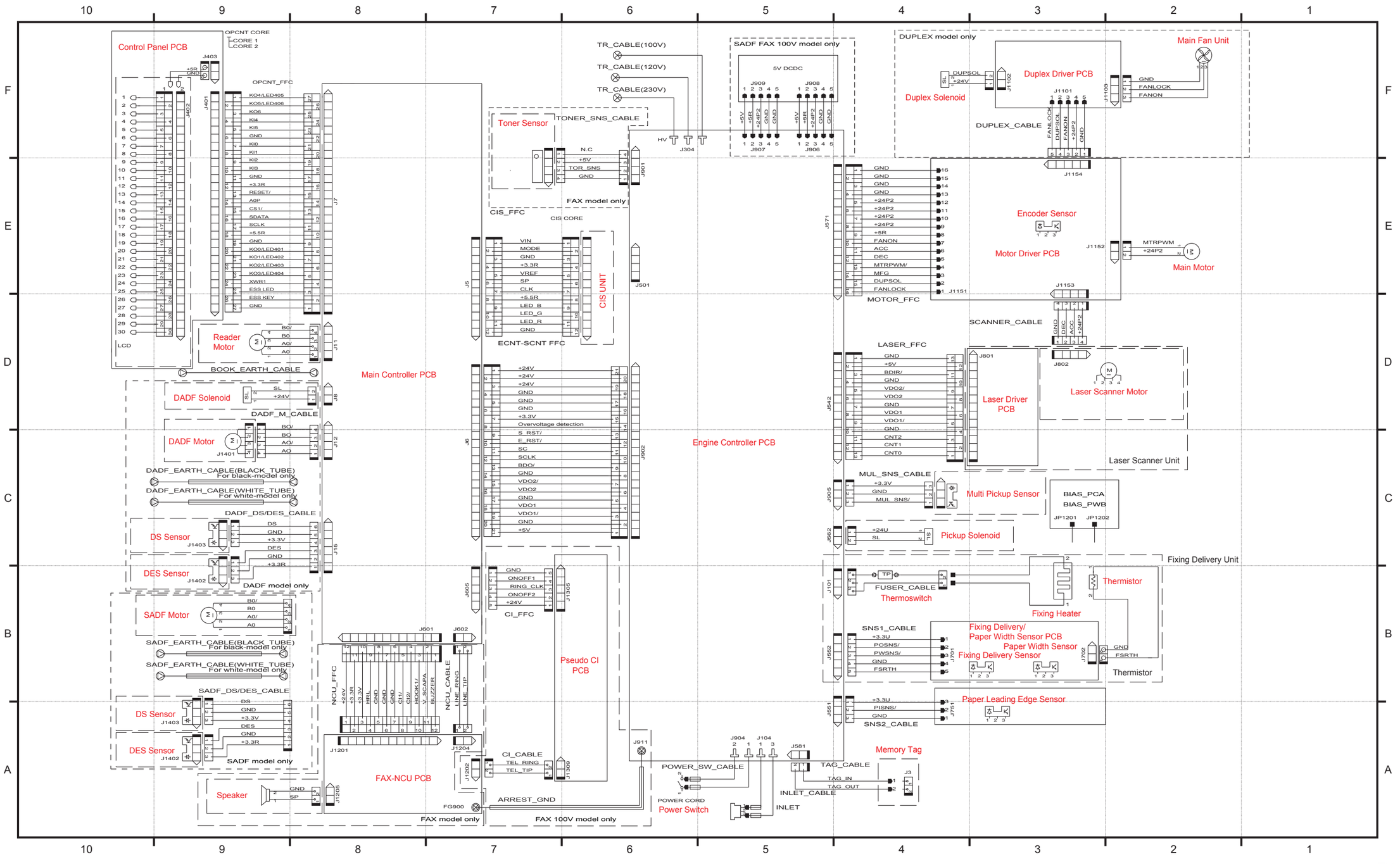
Solvent/Oil List

Name	Usage	Remarks
Ethyl alcohol	Cleaning e.g.) Metal parts Grease Toner contamination	• Local procurement • Keep fire away
Lubricant	• Apply it on gears etc. • Apply it on shafts and shaft supports etc.	• tool number: HY9-0007 (Dow Corning made Molykote EM-50L)

T-9-2

General Circuit Diagram

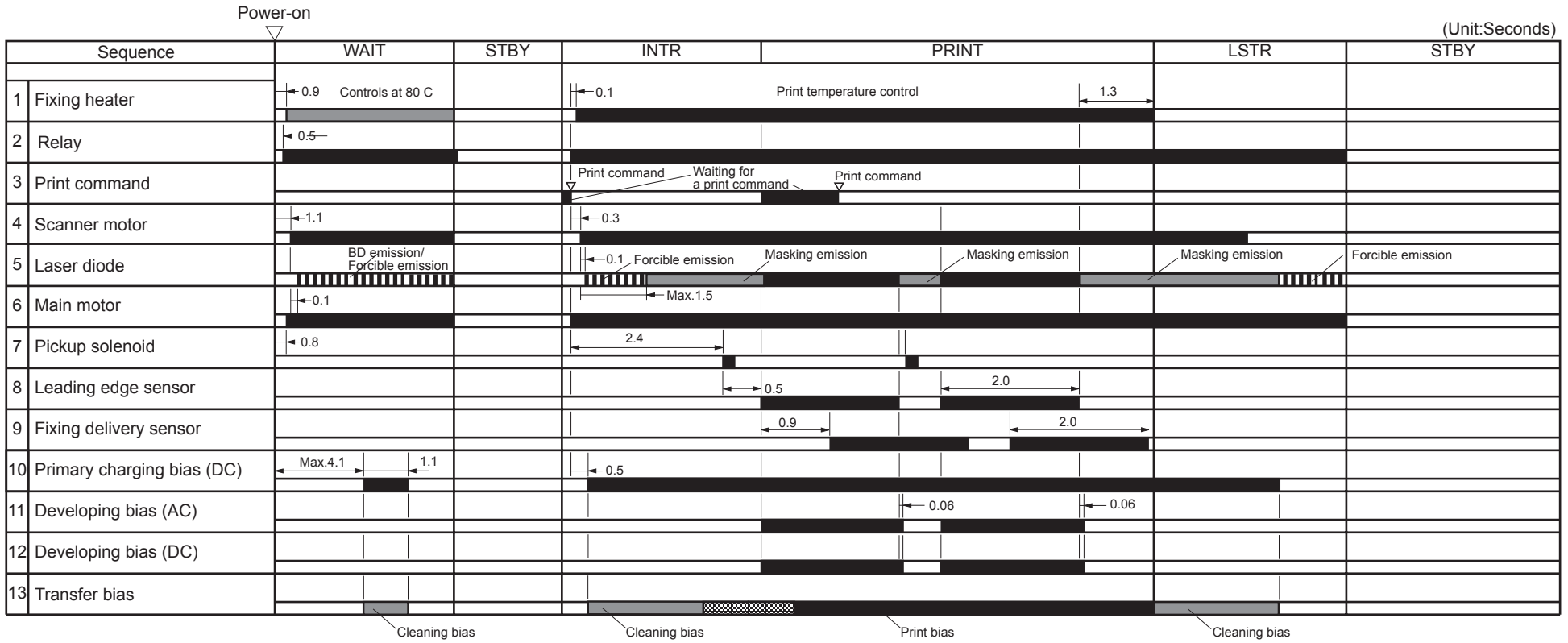
Appendix > General Circuit Diagram



F-9-1

General Timing Chart

Print on A4 plain paper (2 pages) (Unit: second)



F-9-2